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CONTENTS

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ABBREVIATIONS

AACR	Australasian Association of Cancer Registries
ABCR	Australian Blood Cancer Registry
ABS	Australian Bureau of Statistics
ACD	Australian Cancer Database
ACIM books	Australian Cancer Incidence and Mortality books
ACT	Australian Capital Territory
ASGC	Australian Standard Geographical Classification
AIHW	Australian Institute of Health and Welfare
ASR	age-standardised rate
BCC	basal cell carcinoma
CI	confidence interval
COAG	Council of Australian Governments
DALY	disability-adjusted life year
DoHA	Australian Government Department of Health and Ageing
FOBT	faecal occult blood test
HPV	human papilloma virus
IARC	International Agency for Research on Cancer
ICD-10	International Statistical Classification of Diseases and Related Health Problems, tenth revision
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, tenth revision, Australian modification
ICD-O-3	International Classification of Diseases for Oncology, third edition
IRSD	Index of Relative Socio-economic Disadvantage
MIR	mortality-to-incidence ratio
NBCSP	National Bowel Cancer Screening Program
NHMD	National Hospital Morbidity Database
NMD	National Mortality Database
NMSC	non-melanoma skin cancer

NOS	not otherwise specified
NSW	New South Wales
NT	Northern Territory
NZ	New Zealand
Pap	Papanicolaou (cervical smear test)
PSA	prostate-specific antigen
Qld	Queensland
RS	relative survival
SA	South Australia
SCC	squamous cell carcinoma
Tas	Tasmania
UK	United Kingdom
USA	United States of America
Vic	Victoria
WA	Western Australia
WHO	World Health Organization
YLL	years of life lost
YLD	years lost due to disability

SYMBOLS

. .	not applicable
n.a.	not available
<	less than
>	greater than
+	over
n.p.	not published (data cannot be released due to quality issues)

SUMMARY

Cancer in Australia: an overview, 2010 is a joint report by the Australian Institute of Health and Welfare (AIHW) and the state and territory members of the Australasian Association of Cancer Registries (AACR) as a product of the National Cancer Statistics Clearing House. It provides a comprehensive picture of national statistics on cancer using a range of resources, presenting the latest available data and trends over time. As well, differences by Aboriginal and Torres Strait Islander status, state and territory, remoteness area and socioeconomic status are discussed.

Cancer is a major cause of illness in Australia

Excluding basal and squamous cell carcinomas of the skin, a total of 108,368 new cases of cancer (62,019 males and 46,349 females) were diagnosed in Australia in 2007. Of these, 68% were diagnosed in people aged 60 years and older.

Prostate cancer was the most common type of newly diagnosed cancer among males in 2007 (excluding basal and squamous cell carcinomas of the skin), with 19,403 cases diagnosed that year. The most commonly diagnosed cancer in females in 2007 was breast cancer, with 12,567 cases.

In 2007, the age-standardised incidence rate for all cancers combined was 485 cases per 100,000 people. This rate was markedly higher than the rate recorded for 1982 (the year in which national incidence data were first available), at 383 cases per 100,000 people. Accordingly, the incidence rate of the most commonly diagnosed cancers increased from 1982 to 2007, including the rate of melanoma of the skin; prostate cancer; bowel cancer in males; and lung cancer and breast cancer in females.

By the age of 85 years, 1 in 2 males and 1 in 3 females will have been diagnosed with cancer at some stage in their life.

Cancer is estimated to be the leading cause of the burden of disease in Australia in 2010, accounting for 19% of the total burden.

The rate of death from cancer has fallen

Cancer accounted for three of every ten deaths registered in Australia in 2007, making it one of the most common causes of death in that year. A total of 39,884 deaths from cancer occurred in 2007, an average of 109 deaths every day.

However, the age-standardised mortality rate has decreased significantly by 16% from 209 deaths per 100,000 people in 1982 to 176 deaths per 100,000 people in 2007. Decreases in the rate of death were also observed for the most common causes of cancer deaths, the exception being lung cancer in females for which the rate of death increased by 56% between 1982 and 2007 (from 15 to 24 deaths per 100,000 females).

Some Australian population groups tend to do worse than others

Between 2003 and 2007, mortality rates of cancer varied across different population groups. Indigenous Australians had higher mortality rates than non-Indigenous Australians for all cancers combined, as well as for cervical cancer and lung cancer. Furthermore, people living in Remote and very remote areas of Australia had higher mortality rates for all cancers combined, lung cancer, cervical cancer and cancer of unknown primary site, than those living in more urbanised areas. Lastly, Australians living in lower socioeconomic areas had higher mortality rates from all cancers combined, bowel cancer, lung cancer, prostate cancer, cervical cancer and cancer of unknown primary site than those living in other areas.

1

INTRODUCTION

1 INTRODUCTION

Cancer has a greater overall impact on the health of Australians than any other disease group. On average, one in two Australians will develop cancer and one in five will die from it before the age of 85 years. Furthermore, according to the most recent burden of disease data, cancer is estimated to be the leading cause of burden of disease and injury in Australia in 2010, accounting for almost one-fifth of all burden. Since cancer affects so many people—either directly through personally developing the disease or indirectly through family and community members—cancer is a topic of interest to many and a priority issue for the Australian health system. This is reflected in the number of national cancer control plans and reports produced by Australia's government and community cancer organisations over the past two decades. The key plans and reports include:

- Health for all Australians
- Goals and targets for Australia's health in the year 2000 and beyond (1993)
- Better health outcomes for Australians (1994)
- First report on National Health Priority Areas (1997)
- National Health Priority Area: cancer control 1997 (1997)
- Cancer control towards 2002: the first stage of a national coordinated plan for cancer control (1998)
- Optimising cancer care in Australia (2001)
- Priorities for action in cancer control 2001–2003 (2003)
- National Chronic Disease Strategy (2006)
- National Service Improvement Framework for Cancer (2006)
- National cancer prevention policy 2007–2009 (2007)
- A national cancer data strategy for Australia (2008)

What is cancer?

Cancer describes a diverse group of over 100 diseases in which some of the body's cells become abnormal and begin to multiply out of control as a result of changes (mutations) in the genetic information of a cell. These abnormal cells can form an invasive (that is, malignant) tumour which can invade and damage the area around it and spread to other parts of the body through the bloodstream or the lymphatic system. If the spread of these tumours is not controlled, they can result in death. Not all tumours are invasive; some are benign tumours that do not spread to other parts of the body and are rarely life-threatening.

The original site in which a cancerous tumour is formed is referred to as the primary cancer. The spread of cancerous cells from the primary tumour to another (that is, secondary) site is referred to as metastasis.

Cancers are distinguished from each other by the place in the body in which the disease begins. Thus, cancer that begins in the lung is called lung cancer and cancer that begins in the breast is breast cancer, regardless of whether or not it has metastasised to other sites. In addition, cancers are classified by the type of cell involved, which is referred to as the histological type of the cancer. Examples of histological types are carcinomas (which are cancers that begin in the skin or in tissues that line or cover internal organs), sarcomas (which develop in connective and supportive tissues, such as bone, cartilage and muscle), and hematopoietic cancers (which are cancers that begin in blood-forming tissues, such as the bone marrow). Note that, unlike most other forms of cancer, cancers of the blood such as leukaemia do not form a tumour but instead invade other areas of the body through the bloodstream.

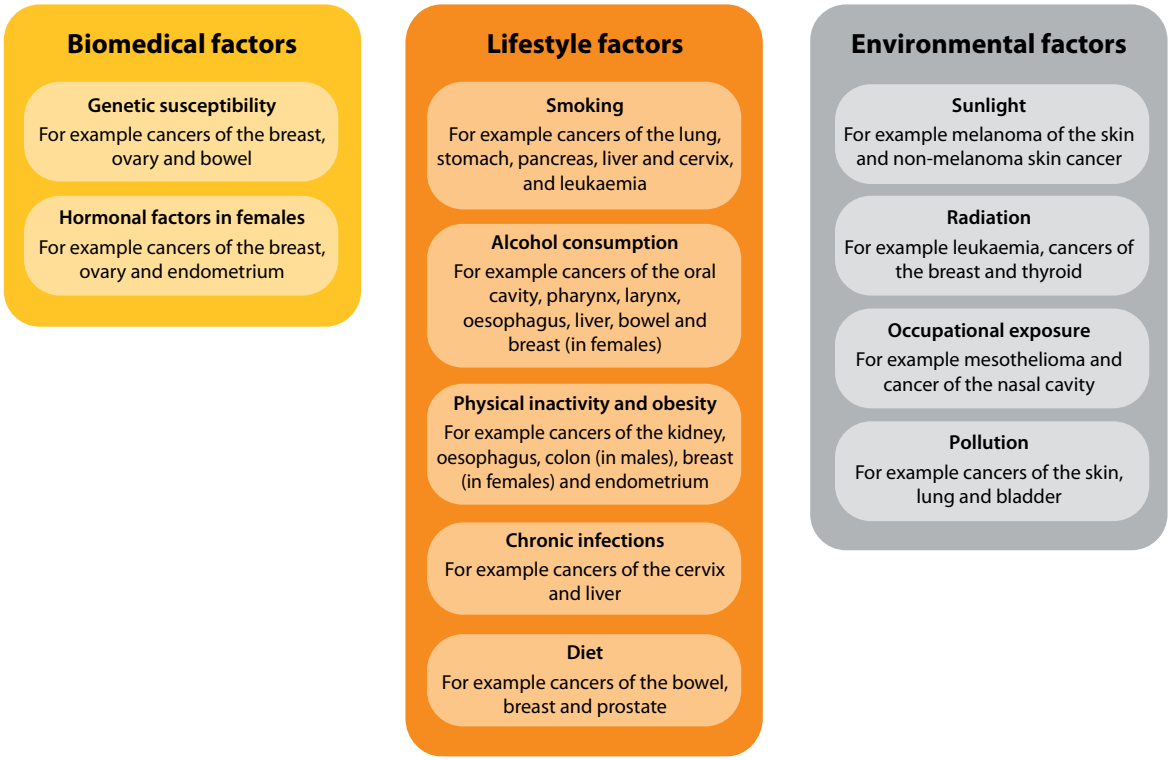
What are the known risk factors for cancer?

Understanding what causes cancer is essential in order to successfully prevent, detect and treat the disease. For most cancers the causes are not fully understood. However, some factors that place individuals at a greater risk for cancer are well recognised. These include biomedical factors (for example, hormones), lifestyle factors (for example, smoking) and environmental factors (for example, sunlight).

While some risk factors cannot be changed, others—mainly those related to behaviours and lifestyle—are modifiable.

It should be noted that having a risk factor does not mean that a person will develop cancer. Many people have at least one cancer risk factor but will never get cancer, while others with this disease may have had no known risk factors.

The section below, as well as Figure 1.1, summarises information about the most common risk factors for cancers, with the information primarily sourced from the World cancer report 2008 (IARC 2008).



Note: Based on information published in the World cancer report 2008 (IARC 2008).

Figure 1.1: Risk factors for cancer

Smoking

Smoking is the largest cause of cancer in humans, accounting for approximately 20–30% of all cancers. There is consistent evidence that both active and passive smoking increase the risk of lung cancer as well as 12 other cancers, including stomach cancer, pancreatic cancer, liver cancer, cervical cancer and leukaemia. The association between smoking and cancer is dose-related, with longer duration and heavier consumption increasing the chance of developing a cancer. However, stopping smoking can greatly reduce the risk of smoking-related cancers.

Alcohol consumption

Alcohol consumption is associated with cancer of the oral cavity, pharynx, larynx, oesophagus, liver, bowel, rectum and, in women, breast cancer. Unlike cardiovascular diseases, there is no evidence that drinking regular, small amounts of alcohol has any protective affect against these cancers. In contrast, the risk of developing cancer increases with the amount of alcohol a person drinks. Moreover, the risk of an alcohol-related cancer is increased for people who also smoke (Cancer Council New South Wales 2008; Olver 1998).

Diet

Many different types of food have been associated with an increased cancer risk. However, according to the International Agency for Research on Cancer (IARC), diet contributes to the burden of cancer in a limited way.

Physical inactivity and obesity

Doing little or no physical activity is associated with a higher risk of developing cancer. In contrast, physical activity is an important part of a healthy lifestyle and decreases the risk of cancer as well as other chronic diseases. There is evidence to suggest that the more exercise a person does, the lower the risk is of developing cancer.

According to international standards, overweight is defined as a body mass index (BMI) of 25 to 29, and obesity as a BMI of 30 or higher. Being overweight or obese raises a person's risk of kidney cancer, oesophageal cancer, colon cancer (men only), breast cancer (women only) and endometrial cancer (women only).

Hormonal factors in females

Reproductive hormones (such as oestrogens) are thought to influence the risk of developing breast cancer, ovarian cancer and endometrial cancer. Factors that may increase a woman's risk of developing these cancers by affecting the levels of reproductive hormones in the body include early onset of menses, older age at menopause, older age at first pregnancy and fewer pregnancies. Use of oral contraceptives and postmenopausal hormone replacement therapy are also associated with an increased risk of some of these cancers (Robotin et al. 2010).

Chronic infections

It is estimated that approximately 8% of the cancers occurring in Australia are induced by an infectious agent (that is, viruses, bacteria and parasites). Examples include cervical cancer caused by human papilloma virus (also known as HPV) and liver cancer caused by chronic infection with hepatitis B or C.

Sunlight

Excessive exposure to the ultraviolet (UV) rays of the sun is the main cause of malignant melanoma and non-melanoma skin cancer. Although anyone can get skin cancer, the risk is higher for people who have fair skin, blonde or red hair, freckles, and/or a tendency to burn easily.

Radiation

Ionising radiation can act as a carcinogen (that is, a factor that causes cancer) and increase the risk of a variety of cancers, including leukaemia, breast cancer and thyroid cancer. Ionising radiation comes from natural sources, such as radon gas and cosmic radiation; from nuclear accidents and explosions; and from diagnostic X-rays. The most common source of radiation for the average person is diagnostic X-rays. But the risk of developing a cancer after an X-ray is minimal and the benefits nearly always outweigh the risk.

Occupational exposures

It has been estimated that, in Australia, approximately 5,000 cancer cases a year are related to occupational exposures (ASCC 2006), which equates to approximately 5% of the cancers diagnosed in 2007. Occupational exposures that are known to cause cancer include certain chemicals (for example, benzene and vinyl chloride), dusts (for example, asbestos and wood dust), radiation (for example, sunlight and radon) and industrial processes (for example, underground mining with exposure to uranium and/or radon). The different carcinogens are associated with different cancers. For example, exposure to asbestos is known to increase the risk of mesothelioma (that is, a rare tumour of the outer covering of the lungs or lining of the abdomen), whereas exposure to wood dust is associated with cancer of the nasal cavity.

Pollution

There are many pollutants in the environment that may cause cancer and all people carry traces of these pollutants in their body. People are exposed to these pollutants through the air, drinking water, food, soil, sediment, surface waters and groundwater. For example, arsenic in contaminated drinking water is associated with cancer of the skin, lung and bladder.

Genetic susceptibility

Some gene mutations that increase the risk of cancer pass from parent to child. Thus, some individuals are born with a markedly increased susceptibility to cancer. The inheritance of such mutations results in several cases of the same cancer type in a family. Cancers that are known to occur in families include breast cancer, ovarian cancer and bowel cancer. However, even for common types of cancers, inherited susceptibility is rare (5–10% of cancer cases).

Purpose and structure of this report

Cancer in Australia: an overview, 2010 provides a comprehensive overview of national statistics on cancer in Australia. The report presents the latest available statistics on cancer as a whole, as well as on many individual types of cancer. It includes information on incidence, mortality, survival, prevalence, burden of disease due to cancer, hospitalisations, and the national cancer screening programs. The report is aimed at a wide audience, including health professionals, policy makers, health planners, educators, researchers, consumers and the general public.

The Australian Institute of Health and Welfare (AIHW) has produced an overview report on cancer, either annually or biennially since 1987, with this report being the fifteenth report in the series.

Compared with the previous editions of the report (AIHW & AACR 2008), a number of changes have been made. In particular, compared with the 2008 report, this edition includes information on how incidence and mortality have changed over time and how Australian cancer data compare globally. A separate chapter on how incidence and mortality data differ according to Aboriginal and Torres Strait Islander status, state and territory, remoteness area and socioeconomic status is also provided. Furthermore, changes have been made to the way in which cancer sites are grouped, with the new cancer groupings shown in Appendix A and key changes described in Box 1.1. Also, more methodological details are provided in the 2010 report, together with caveats around data interpretation and use. Lastly, in the 2010 Cancer in Australia report, key findings are highlighted in graphs and succinct tables within the text, with detailed statistics shown in appendixes B, C and D. For incidence and mortality statistics a summary page has been devoted to each cancer grouping for which there were at least 500 newly diagnosed cases or deaths in 2007 (Appendix B), with these pages presenting data for 2007 (the most recent completed year of data), as well as estimates for 2010. For cancers with less than 500 cases and deaths in 2007, a more limited amount of information is provided in Appendix C (for example the number of cases and deaths).

Note that for each summary page presented in the Cancer in Australia report a corresponding Australian Cancer Incidence and Mortality (ACIM) book has been produced. The ACIM books are available on the AIHW website and provide more detailed statistics than presented in the summary pages, including detailed trend data and data by age groups.

This report presents information in eight thematic chapters. This introductory chapter provides some background information, describes what cancer is and what the known risk factors for cancer are, and provides some details on data interpretation and data sources. The remaining chapters address the following topics:

- the number of cases of cancer diagnosed each year (Chapter 2)
- the number of people who die from cancer each year (Chapter 3)
- differences in incidence and mortality across selected population groups (Chapter 4)
- survival prospects for those diagnosed with cancer (Chapter 5)
- the number of people alive who have been diagnosed with cancer (Chapter 6)
- the burden of disease due to cancer (Chapter 7)
- the number of hospitalisations for cancer (Chapter 8)
- how many people participate in each of the national cancer screening programs (Chapter 9).

Box 1.1: Key changes to the way in which cancer sites are grouped

The incidence and mortality data in this report are presented for individual or grouped cancer sites, with the sites defined according to the tenth version of the International Classification of Diseases and Related Health Problems (ICD-10). Appendix A lists the cancer groupings used in this report.

Compared with the 2008 edition of this report (AIHW & AACR 2008), a number of changes have been made to the way cancer sites are grouped. The key changes are as follows:

- Data for cancer of unknown primary site (ICD–10 codes of C80) and for each of the cancers of 'other and ill-defined sites' (namely C26, C39 and C76) are shown separately.
- The AIHW has devised a new grouping system for cancers of the blood and lymphatic system (ICD–10 codes of C81–C96, D45, D46, D47.1 and D47.3) in order to present data on such cancers in a meaningful way for a range of audiences. The new groupings are more closely aligned with the current understanding of these cancers. The system groups similar types of cancers into broader categories according to their lineage. The two main groupings are: Lymphoid cancers (that is, cancers that start in lymphocytes of the immune system) and Myeloid cancers (that is, cancers that develop in the blood-forming cells of the bone marrow). An additional grouping captures other cancers of the blood and lymphatic system. Both of the two main cancer groups are further divided into subgroups that are of clinical relevance.

Data interpretation

In this report, the term 'cancer' is used to refer to primary tumours which are invasive (that is, malignant). It does not encompass secondary cancers, nor does it include benign or non-invasive tumours.

A number of different classifications are referred to in this report, such as ICD (that is, International Statistical Classification of Disease and Related Health Problems) and ICD-O (that is, International Classification of Disease for Oncology). Information about these classifications is included in Appendix E.

Information on the actual number of cancer cases and deaths is presented in this report, together with age-standardised rates. The use of age-standardised rates is important when making comparisons between groups and within groups over time, in order to take into account differences in the age structure and size of the population. This is especially important with regard to cancer since the risk of many cancers increases with age. Rates have been standardised to the Australian population at 30 June 2001 and are generally expressed per 100,000 population. Further information on age standardisation and other technical matters can be found in Appendix F.

Confidence intervals (at the 95% level) are shown in graphs (as error bars) and tables in this report. As explained more fully in Appendix F, confidence intervals can be used as a guide when considering whether differences in rates may be a result of chance variation. Where confidence intervals do not overlap, the difference between rates may be greater than would readily be attributable to chance. While such differences may be regarded as 'significant' in statistical terms, they may or may not be 'significant' from a practical or clinical perspective.

International comparisons are provided in relation to cancer incidence, mortality and survival. While such comparisons help to put the Australian situation into a global context, caution must be taken when comparing cancer data from different countries since observed differences may be influenced not only by the underlying number of cancer cases (or the number of deaths when considering mortality data), but also by differences in the following:

- age distribution and composition of populations
- cancer detection and screening
- types of treatment provided and access to treatment services
- characteristics of the cancer, such as stage at diagnosis and histological type
- coding practices and cancer registration methods, as well as the accuracy and level of coverage of the data.

Data sources

A key data source for this report was the Australian Cancer Database (ACD). The ACD is a database that holds information on 1.8 million Australian cancer cases diagnosed between 1982 and 2007. Through the National Cancer Statistics Clearing House the AIHW compiles and maintains the ACD, in partnership with the Australasian Association of Cancer Registries (AACR), whose member registries provide data to the AIHW on an annual basis. Each Australian state and territory has legislation that makes the reporting of all cancers (other than basal and squamous cell carcinomas of the skin) mandatory. Note that compared with past reports prepared by the AIHW, a different approach was used to exclude non-melanoma skin cancers from the analysis conducted for this report. Additional information about this change, as well as about the ACD itself, can be found in Appendix G.

Another key data source was the National Mortality Database (NMD). This database contains information on the date and cause of death for all registered deaths in Australia from 1964 onwards. In this report, mortality data are shown for selected cancer sites as well as all cancers combined from 1982 to 2007. Additional information about the NMD is provided in Appendix G.

In addition, several other data sources—including the National Death Index, the National Hospital Morbidity Database, and the 2008 GLOBOCAN database—have been used to present a broad picture of cancer in Australia in this report. Information about each of these data sources can also be found in Appendix G.

Box 1.2: Throughout this report:

- The term 'cancer' is used to refer to primary tumours which are invasive.
- Differences that are described as 'significant' refer to a statistically significant difference. Such differences may or may not be significant from a practical or clinical perspective.

2

INCIDENCE OF CANCER

Key findings

- 108,368 new cases of cancer were diagnosed in Australia in 2007 (excluding basal and squamous cell carcinomas of the skin), the highest number registered to date.
- In 2007, 57% of all the newly diagnosed cancer cases were in males.
- 74% of all new cancer cases in males and 62% of new cancer cases in females occurred in those aged 60 years and older.
- In 2007, the age-standardised incidence rate stood at 485 cases per 100,000 people and this rate was significantly higher than the rate of 383 cases per 100,000 people in 1982.
- Between 1982 and 2007, the incidence rate of lung cancer decreased by 32% in males (from 85 to 58 cases per 100,000 males) but increased by 72% in females (from 18 to 31 cases per 100,000 females).
- In 2007, prostate cancer was the most commonly diagnosed cancer in males (19,403 cases), while breast cancer was the most commonly diagnosed cancer in females (12,567 cases).
- The risk of being diagnosed with cancer before the age of 85 years was 1 in 2 for males and 1 in 3 for females.

2 INCIDENCE OF CANCER

Incidence data indicate the number of new cases of cancer diagnosed during a specified time period, usually 1 year. While these data refer to the number of cases diagnosed and not the number of people diagnosed with cancer, it is rare (although possible) that a person would be diagnosed with two or more primary cancers during a one-year period. Thus, the annual number of new cancer cases is basically the same as the annual number of people diagnosed with cancer.

Details on the incidence of cancer over time are provided in this chapter for all cancers combined as well as for selected cancer sites. Information is also presented on the risk of a person being diagnosed with cancer by the age of 75 and 85 years, as is information on incidence among people according to age. Data on how Australia's cancer rate compares internationally are also shown.

Note that additional incidence data for selected cancer sites and all cancers combined can be found in Appendix B, including estimates for 2010.

As mentioned in Chapter 1, only those cases in which cancer was a primary, invasive cancer are considered. Additionally, to be counted, the case must be a 'new' primary cancer and not a recurrence of a previous primary cancer (IARC 2004).

The main data source for this chapter was the Australian Cancer Database (ACD), which consists of data provided to the AIHW by the members of the Australasian Association of Cancer Registries (AACR) (see Appendix G for more information about the ACD).

How many people were diagnosed with cancer in 2007?

Since data on two types of non-melanoma skin cancer, namely basal cell carcinoma and squamous cell carcinoma, are not reported to cancer registries, data on these two types of cancers are not included in the ACD and are therefore not included in this chapter. However, past research has shown that basal and squamous cell carcinomas of the skin are by far the most frequently diagnosed cancers in Australia (AIHW & CA 2008).

Excluding basal and squamous cell carcinomas of the skin, 108,368 new cases of cancer were diagnosed in Australia in 2007 (Table 2.1). More than half (57%) of the cases diagnosed in 2007 were in males.

In 2007, the age-standardised incidence rate of all cancers combined was 485 cases per 100,000 people. The incidence rate was significantly higher for males than for females (595 and 394 cases per 100,000, respectively).

Table 2.1: Incidence of all cancers combined[a], Australia, 2007

	Males	Females	Persons
Number of cases	62,019	46,349	108,368
Age-standardised rate[b]	595.1	393.9	484.6
95% confidence interval	590.4–599.8	390.3–397.5	481.7–487.5
Per cent of all cancer cases	57.2	42.8	100.0

(a) Includes cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3 with the exception of those C44 codes which indicate a basal or squamous cell carcinoma of the skin.

(b) The rates were standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

Source: AIHW Australian Cancer Database.

Which cancers were the most common?

In 2007, the most commonly reported cancers were prostate cancer (19,403 cases), bowel cancer (14,234 cases), breast cancer (12,670 cases), melanoma of the skin (10,342 cases) and lung cancer (9,703 cases). These five cancers accounted for over half (61%) of the reportable cancers diagnosed in 2007.

Differences are evident among males and females as to which cancers were the most common cancers in 2007 (Table 2.2). Excluding basal and squamous cell carcinomas of the skin, prostate cancer was the most commonly diagnosed cancer among males in 2007, with 19,403 new cases diagnosed in that year. Bowel cancer (7,804 cases) was a distant second, followed by melanoma of the skin (5,980 cases), lung cancer (5,948 cases) and lymphoid cancers (4,116 cases). Together these five cancers accounted for nearly three-quarters (70%) of all new cancer cases in males, with prostate cancer alone accounting for one third (32%) of all new cases.

Breast cancer was the most commonly diagnosed cancer in females in 2007 (12,567 cases). Bowel cancer (6,430 cases), melanoma of the skin (4,362 cases), lung cancer (3,755 cases) and lymphoid cancers (3,160 cases) were the next most common cancers. Grouped together these five cancers accounted for nearly two-thirds (65%) of all newly diagnosed cancer cases in females in 2007.

Table 2.2: The 10 most commonly diagnosed cancers, Australia, 2007

Males				Females			
Site/type	Cases	ASR[a]	CI (95%)	Site/type	Cases	ASR[a]	CI (95%)
Prostate (C61)	19,403	182.9	180.3–185.5	Breast (C50)	12,567	109.2	107.3–111.1
Bowel (C18–C20)	7,804	75.2	73.5–76.9	Bowel (C18–C20)	6,430	53.4	52.1–54.7
Melanoma of skin (C43)	5,980	57.2	55.7–58.7	Melanoma of skin (C43)	4,362	38.2	37.1–39.4
Lung (C33–C34)	5,948	57.9	56.5–59.4	Lung (C33–C34)	3,755	31.3	30.3–32.4
Lymphoid cancers[b]	4,116	39.6	38.4–40.8	Lymphoid cancers[b]	3,160	26.8	25.9–27.8
Myeloid cancers[c]	1,859	18.5	17.7–19.4	Uterus (C54–C55)	1,942	16.5	15.8–17.3
Kidney (C64)	1,716	16.3	15.5–17.1	Unknown primary (C80)	1,401	11.0	10.4–11.6
Bladder (C67)	1,644	16.5	15.7–17.3	Thyroid (C73)	1,331	12.2	11.6–12.9
Unknown primary (C80)	1,496	14.9	14.2–15.7	Ovary (C56)	1,266	10.8	10.2–11.4
Pancreas (C25)	1,352	13.1	12.4–13.8	Myeloid cancers[c]	1,232	10.1	9.5–10.7
All cancers[d]	**62,019**	**595.1**	**590.4–599.8**	**All cancers[d]**	**46,349**	**393.9**	**390.3–397.5**

(a) The rates were standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(b) Lymphoid cancers (ICD-10 codes of C81–C85, C88, C90 and C91) are cancers that start in lymphocytes of the immune system. The most common types are lymphoma, lymphoid leukaemia and myeloma.

(c) Myeloid cancers (ICD-10 codes of C92–C94, C96.2, D45, D46, D47.1 and D47.3) are cancers that develop in the blood-forming cells of the bone marrow. The most common types are myeloid leukaemia and myelodysplastic syndrome.

(d) Includes cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3 with the exception of those C44 codes which indicate a basal or squamous cell carcinoma of the skin.

Source: AIHW Australian Cancer Database.

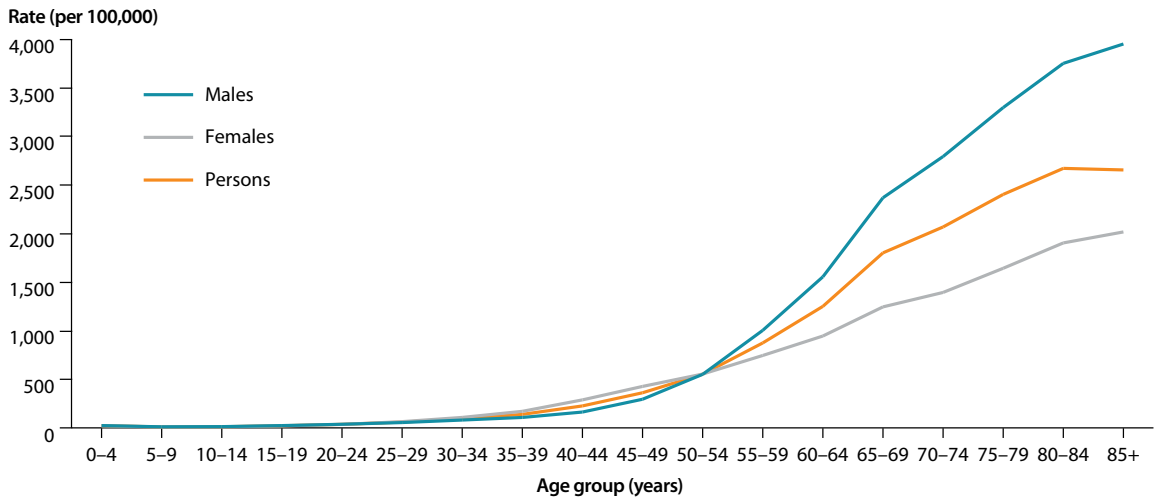
Box 2.1: Incidence of cancers of the blood and lymphatic system

In the body of this report, blood and lymphatic system cancers are grouped according to the tenth version of the International Classification of Diseases and Related Health Problems (ICD-10) in order to provide consistent incidence and mortality data (mortality data are only available coded according to the ICD-10). However, in Appendix H, incidence data for cancers of the blood and lymphatic system are also presented according to a modern classification scheme developed by the World Health Organisation (WHO), with additional input from AACR and the Australian Blood Cancer Registry.

Does incidence differ by age?

Cancer is primarily a disease that affects older people. In 2007, 74% of new cancer cases in males and 62% of new cancer cases in females occurred among those aged 60 years and older. The mean age of diagnosis was 67 years for males and 64 years for females.

As illustrated in Figure 2.1, the age-specific incidence rate for all cancers combined increased steadily and significantly between most age groups in 2007. The highest incidence rate was observed for those aged 80 years and older (i.e. more than 2,657 cases per 100,000 persons for each of those age groups).



Notes

1. The rates shown are age-specific rates.
2. The data pertain to cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3 with the exception of those C44 codes which indicate a basal or squamous cell carcinoma of the skin.
3. The data for this figure are shown in the ACIM book for all cancers that are available on the AIHW website.

Source: AIHW Australian Cancer Database.

Figure 2.1: Age-specific incidence rates for all cancers combined, Australia, 2007

Figure 2.1 also illustrates that the incidence rate was higher among females than males in those aged 30 to 49 years, while a significantly higher incidence rate was observed for males than for females in those aged 55 years and over. For the youngest age groups (below the age of 30 years), there was no statistically significant difference in the incidence rate between males and females, although males tended to have a higher incidence than females. The high incidence of cancer in females between the ages of 30 and 49 years was largely due to the incidence of breast cancer in these age groups. Prostate cancer, bowel cancer, lung cancer and melanoma of the skin were responsible for the high incidence observed in males over the age of 55 years.

For the majority of the most commonly diagnosed cancers in 2007, a steep increase in the age-specific incidence rates was observed in both males and females from the age of 40 years and onwards (see Appendix B). Cancers that do not follow this general pattern include melanoma of the skin, brain cancer and thyroid cancer in both males and females; and breast cancer and cervical cancer in females. These cancers were all characterised by an earlier rise in the incidence rates at around the age of 15 to 25 years.

What is the risk?

Based on 2007 data, 1 in 3 males and 1 in 4 females will be diagnosed with cancer before the age of 75 years. The risk of being diagnosed before the age of 85 years was 1 in 2 for males and 1 in 3 for females (Table 2.3).

Table 2.3: Risk of being diagnosed with cancer, Australia, 2007

	Risk to age 75 years	Risk to age 85 years
Males	1 in 3	1 in 2
Females	1 in 4	1 in 3
Persons	**1 in 3**	**1 in 2**

Source: AIHW Australian Cancer Database.

For males, the risk of being diagnosed with cancer was greatest for prostate cancer, at 1 in 7 before the age of 75 years and 1 in 4 before the age of 85 years. The risk was also relatively high for bowel cancer, at 1 in 18 before the age of 75 years and 1 in 10 before the age of 85 years.

For females, the risk of being diagnosed with cancer was greatest for breast cancer, with the risk being 1 in 11 before the age of 75 years and 1 in 9 before the age of 85 years. In comparison, the risk of a woman being diagnosed with bowel cancer before the age of 75 years was 1 in 26 and before the age of 85 years was 1 in 14.

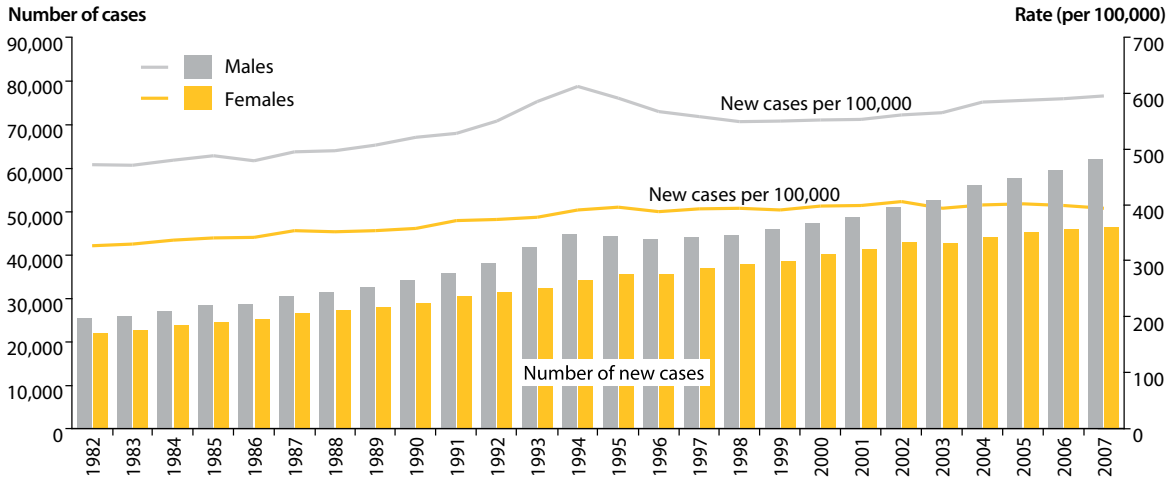
What has changed?

In this section, trends in incidence for all cancers combined and selected cancer sites are presented for the period 1982 (the year in which national incidence data were first available) to 2007.

Trends for all cancers combined

Figure 2.2 presents the number of new cancer cases for males and females, together with the corresponding age-standardised rates for the 26-year period from 1982 to 2007. Between 1982 and 2007, the number of new cancer cases more than doubled for both males and females. In 1982, 47,350 new cases of cancer were diagnosed in Australia compared with 108,368 cases in 2007. Furthermore, the number of new cancer cases diagnosed in 2007 was 3% higher than the number diagnosed in the previous year (105,453 cases). This increase in cases was primarily due to an increase in the number of prostate cancer cases (an additional 1,828 cases), bowel cancer cases (an additional 595 cases) and lung cancer cases (an additional 24 cases).

When the age structure and size of the population is taken into account, the trend data indicate that the incidence rate for all cancers combined increased by 27% from 383 cases per 100,000 people in 1982 to 485 cases per 100,000 people in 2007. This suggests that the increase in the absolute number of cancer cases over the years can only partly be explained by the ageing and increasing size of the population.



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data pertain to cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3 with the exception of those C44 codes which indicate a basal or squamous cell carcinoma of the skin.
3. The data for this figure are shown in the ACIM book for all cancers that are available on the AIHW website.

Source: AIHW Australian Cancer Database.

Figure 2.2: Incidence of all cancers combined, Australia, 1982 to 2007

As illustrated in Figure 2.2 the pattern of the incidence rate for all cancers combined was markedly different for males and females. The incidence rate for males increased steadily until 1994, where the rate peaked at 612 cases per 100,000 males. This was followed by a decline until the late 1990s when the rate began to increase again. By 2007, the rate had climbed to 595 cases per 100,000 males. The trend in the incidence rate for males is strongly influenced by large changes in the incidence rate of prostate cancer—the leading type of cancer in males.

Among females, the overall cancer incidence rate rose steadily during the 1980s and early 1990s, reaching 396 cases per 100,000 females in 1995. Since that time, the cancer incidence rate has been fairly stable, ranging between 388 and 406 cases per 100,000 females. The cancer incidence rate for females has been strongly influenced by the trend in the incidence rate of breast cancer.

Trends for specific cancer sites

Between 1982 and 2007, cancer incidence rates increased for most of the common cancers including melanoma of the skin, non-Hodgkin lymphoma, liver cancer and mesothelioma in both males and females; bowel cancer, prostate cancer and testicular cancer in males; and breast cancer, lung cancer, pancreatic cancer and uterine cancer in females. Over the same period, the incidence rates decreased significantly for bladder cancer, kidney cancer, laryngeal cancer, stomach cancer and cancer of unknown primary site in both males and females; lip cancer and lung cancer in males; and cervical cancer and ovarian cancer in females.

Trends in incidence rates of prostate cancer, breast cancer in females, bowel cancer, melanoma of the skin and lung cancer are discussed further below.

Prostate cancer

As illustrated in Figure 2.3, the age-standardised incidence rate of prostate cancer has been characterised by five distinct phases. The rate remained fairly level during the 1980s. This was followed by a steep increase in the rate in the early 1990s, with a peak of 184 cases per 100,000 males in 1994. After 1994 the incidence rate declined rapidly to 130 per 100,000 males in 1997, after which the rate was stable for several years. From 2002, the rate began to increase rapidly again, reaching 183 cases per 100,000 males in 2007.

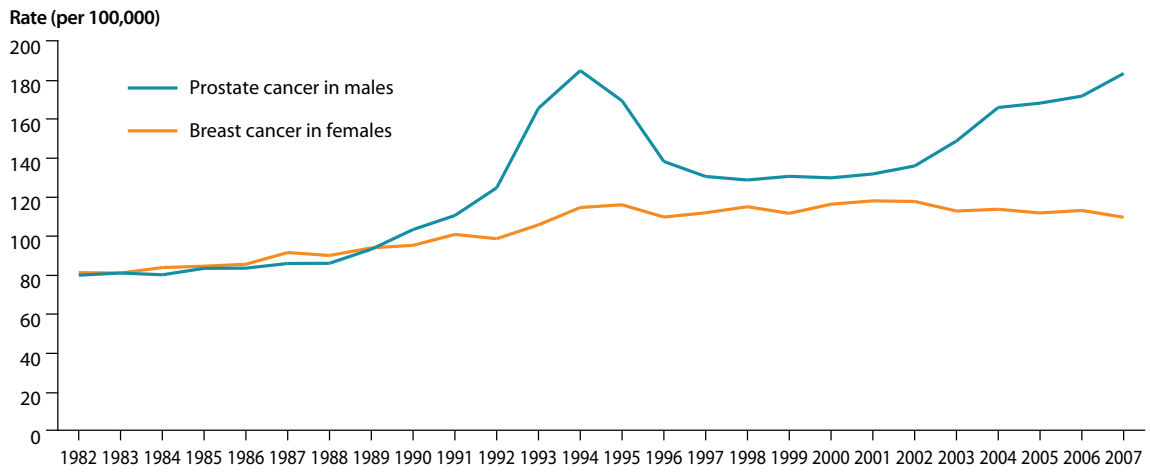
The fluctuations in the incidence rate of prostate cancer is thought to be due to prostate-specific antigen (PSA) testing, with changes in the rate of PSA testing mirrored by similar changes in the incidence rate of prostate cancer.

Breast cancer in females

The age-standardised incidence rate of new breast cancer cases was 81 per 100,000 females in 1982. It increased in the following years and reached 116 cases per 100,000 females in 1995. Somewhat lower rates were seen in the remainder of the 1990s but, in 2001, the rate peaked at 118 new cases per 100,000 females. Since 2002, the rate has generally declined, reaching 109 cases per 100,000 females in 2007 (Figure 2.3).

Bowel cancer

During the 26-year period from 1982 to 2007, the incidence rate of bowel cancer in males has increased significantly (Figure 2.4). In 1982, the incidence rate stood at 67 cases per 100,000 males, while it was 75 cases per 100,000 males in 2007. This indicates an overall increase of 13%. In contrast, the incidence rate of bowel cancer in females remained fairly stable during the same period, varying between 50 and 55 cases per 100,000 females. Furthermore, the incidence rate for females was considerably lower than that for males during the entire period. This may be related to differences in behaviour that increases the risk of bowel cancer and the differing effect of obesity in males and females (Center et al. 2009).

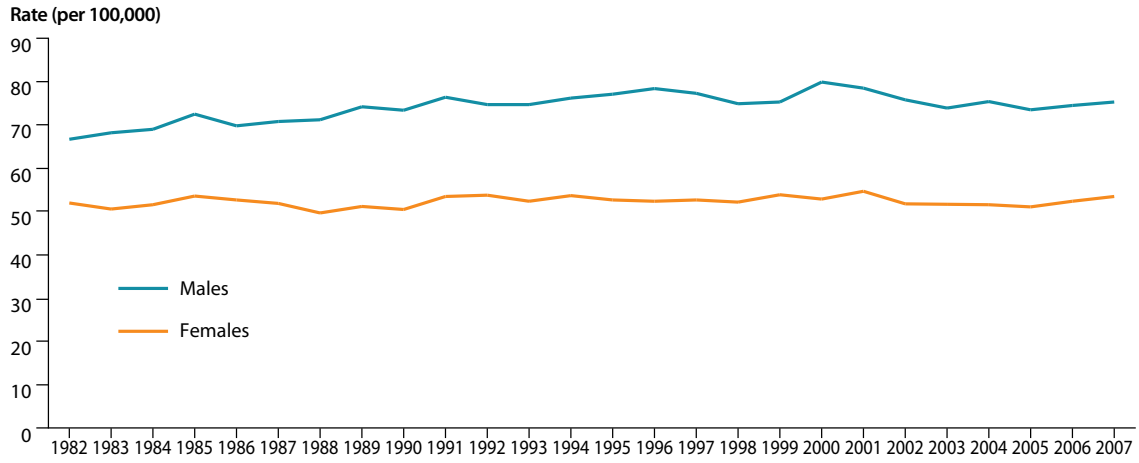


Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data for this figure are shown in the ACIM books for prostate cancer and breast cancer that are available on the AIHW website.

Source: AIHW Australian Cancer Database.

Figure 2.3: Incidence of prostate cancer in males and breast cancer in females, Australia, 1982 to 2007



Notes

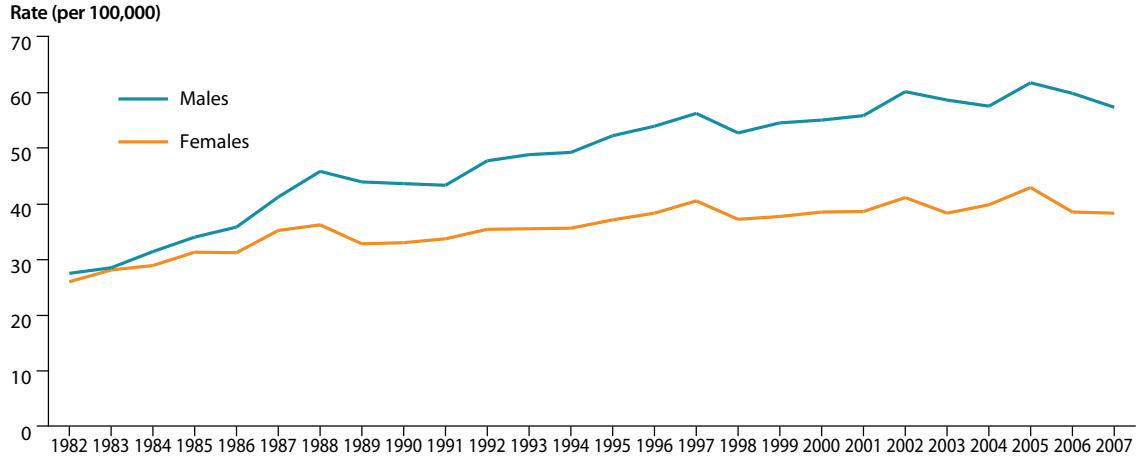
1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data for this figure are shown in the ACIM book for bowel cancer that is available on the AIHW website.

Source: AIHW Australian Cancer Database.

Figure 2.4: Incidence of bowel cancer, Australia, 1982 to 2007

Melanoma of skin

The incidence rate of melanoma of the skin has increased in both males and females since 1982 (Figure 2.5). For males, the incidence rate more than doubled over the 26-year period from 27 cases per 100,000 males in 1982 to 57 cases per 100,000 males in 2007. The rate for females increased by 47% from 26 cases per 100,000 females in 1982 to 38 cases per 100,000 females in 2007.



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data for this figure are shown in the ACIM book for melanoma of the skin that is available on the AIHW website.

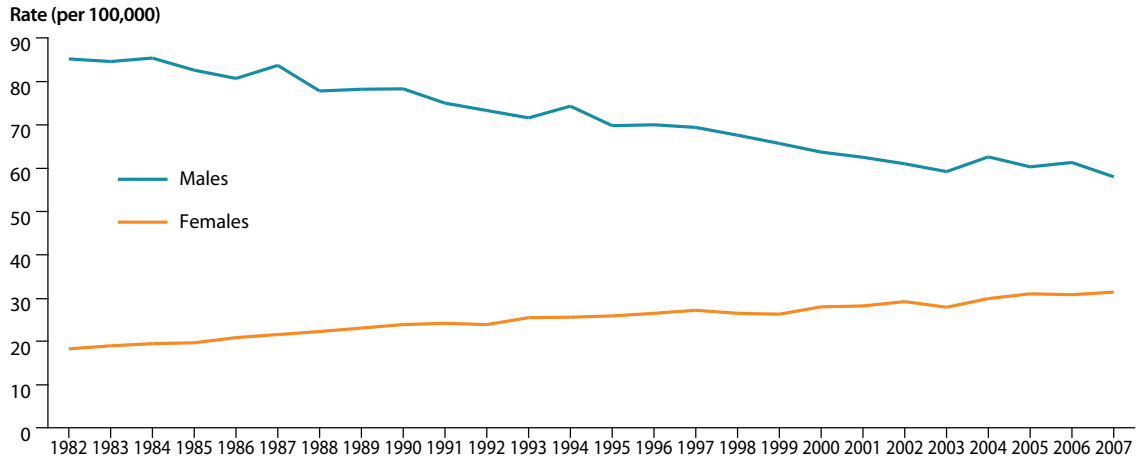
Source: AIHW Australian Cancer Database.

Figure 2.5: Incidence of melanoma of the skin, Australia, 1982 to 2007

Lung cancer

Figure 2.6 shows that, between 1982 and 2007, the incidence rate of lung cancer decreased in males but increased in females. The incidence rate for males decreased from 85 cases per 100,000 males in 1982 to 58 cases per 100,000 males in 2007, indicating an overall decrease of 32%. In comparison, the incidence rate of lung cancer in females increased by 72% over the same period. In 1982, the rate stood at 18 per 100,000 females and by 2007 the rate had increased to 31 per 100,000 females.

The different pattern of lung cancer incidence rates in males and females is probably due to different histories of tobacco smoking. As overall tobacco consumption began to decline in males in the second half of the 20th century, the incidence rate of lung cancer for males have followed, with a time lapse of about 20 years. Cigarette smoking in women peaked later than in men, which may explain the fact that the lung cancer incidence rate for females is still rising (AIHW 2010b; Scollo & Winstanley 2008).



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data for this figure are shown in the ACIM book for lung cancer that is available on the AIHW website.

Source: AIHW Australian Cancer Database.

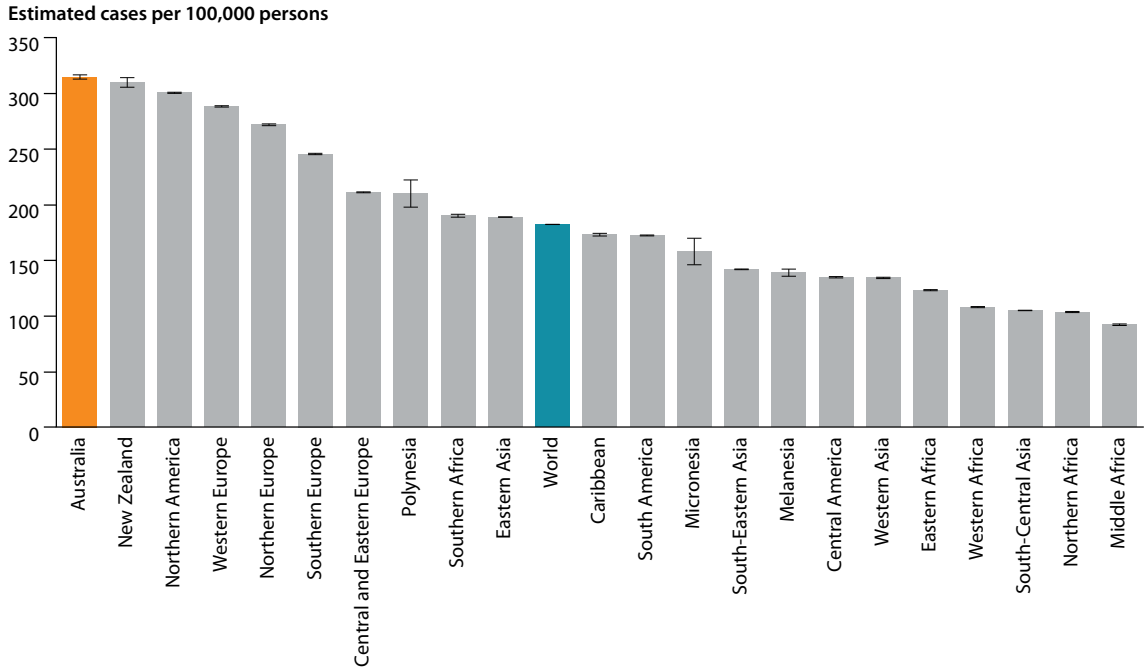
Figure 2.6: Incidence of lung cancer, Australia, 1982 to 2007

How does Australia compare internationally?

In this section of the report, the incidence rate of cancer in Australia is compared with the rate for other countries and regions using data from the GLOBOCAN database—a database which is prepared by the International Agency for Research on Cancer (IARC) (Ferlay et al. 2010). The most recent GLOBOCAN estimates are for 2008, with these estimates based on cancer incidence rates from approximately two to five years earlier. The GLOBOCAN data for all cancers combined pertain to cancers coded in ICD-10 as C00–C97, excluding C44 (that is, non-melanoma skin cancer), and thus encompass a narrower range of cancers than is generally considered in this report. See Appendix G for further details about this database.

As discussed in Chapter 1, caution must be taken when comparing data from different countries since observed differences may be due to a range of methodological factors, not just differences in the underlying rates.

The estimated number of new cases of cancer around the world in 2008 was approximately 12.7 million (Appendix Table D2.1). Figure 2.7 shows the estimated incidence rates of cancer by region. The estimated age-standardised incidence rate for Australia was 314 new cases per 100,000 people. While this rate was generally at the same level as that estimated for people in New Zealand (309 cases per 100,000 people), it was significantly higher than the rates estimated for all other regions in the world. This is probably a consequence of the high rate of melanoma of the skin in Australia. In 2008, Australia had the world's highest age-standardised incidence rate of melanoma of skin (37 cases per 100,000 people), with this rate being more than 13 times higher than the average world rate (3 cases per 100,000 people). Australia also had the highest incidence rate of prostate cancer (105 cases per 100,000 males) and the third highest rate of breast cancer in females (85 cases per 100,000 people) in 2008 (Ferlay et al. 2010).



Notes

1. The data were estimated by IARC for 2008.
2. The data pertain to cancers coded in ICD-10 as C00–C97, excluding C44.
3. The rates were age-standardised by the IARC using the Doll et al. (1966) World Standard Population. The confidence intervals (as shown by the error bars) are approximations and were calculated by the AIHW (see Appendix F).
4. The data for this figure are shown in Appendix Table D2.1.

Source: Ferlay et al. 2010.

Figure 2.7: International comparison of estimated incidence from all cancers combined, people, 2008

3

MORTALITY FROM CANCER

Key findings

- Cancer was the second most common cause of death in Australia in 2007, exceeded only by cardiovascular disease.
- A total of 39,884 deaths from cancer occurred in Australia in 2007, an average of 109 deaths every day.
- In 2007, the majority of cancer deaths occurred in males (57%).
- Lung cancer was the leading cause of cancer death in both males and females in 2007.
- The number of deaths from cancer has increased by 60% from 1982 to 2007.
- In 2007, the mortality rate stood at 225 deaths per 100,000 for males and 179 deaths per 100,000 for females.
- The mortality rate from all cancers combined has decreased for both males and females over the 26-year period from 1982 to 2007.
- The likelihood of dying from cancer increased with age.
- The risk of a male in the general population dying from cancer before the age of 85 years was 1 in 4. The corresponding risk for a female was 1 in 6.

3 MORTALITY FROM CANCER

The number of deaths from cancer in a given time period is a result of the incidence of cancer, as well as factors that affect the likelihood of fatality, such as the characteristics of the cancers diagnosed (for example stage at diagnosis and histological type of cancer) and the nature and quality of treatments received.

In this report, mortality refers to the number of deaths for which the underlying cause was a primary site cancer. The cancer that led to the death of the person may have been diagnosed many years previously, in the same year in which the person died or, in some cases, after death (for example at autopsy). Information on the underlying cause of death is derived from the medical certificate of cause of death which is issued by a certified medical practitioner.

Note that additional mortality data for selected cancer sites and all cancers combined can be found in Appendix B, including estimates for 2010.

The main data source used in this chapter was the National Mortality Database (see Appendix G for further information).

In this chapter, information on the number of deaths attributed to cancer from 1982 to 2007 is presented. In addition, death rates for Australia and other countries and regions are compared.

How many people died from cancer in 2007?

Cancer accounted for approximately three of every ten deaths (29%) registered in Australia in 2007 (Table 3.1). This makes cancer the second most common cause of death, exceeded only by cardiovascular diseases (34% of all deaths). A total of 39,884 deaths from cancer occurred in 2007, an average of 109 deaths every day.

More males (57%) than females (43%) died of cancer in 2007. Male cancer deaths accounted for 32% of all male deaths; the corresponding figure for females was 26%.

The age-standardised death rate for all cancers combined was 176 (deaths per 100,000 people) in 2007. The age-standardised death rate of males was 225 deaths per 100,000 and this rate was significantly higher than that of females, which was 139 deaths per 100,000.

Table 3.1: Deaths from all cancers combined[(a)], Australia, 2007

	Males	Females	Persons
Number of deaths	22,562	17,322	39,884
Age-standardised rate[(b)]	224.9	139.1	176.1
95% confidence interval	222.0–227.9	137.0–141.2	174.3–177.8
Per cent of all cancer deaths	56.6	43.4	100.0
Per cent of all deaths	32.0	25.7	28.9

(a) Includes cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.

(b) The rates were standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

Source: AIHW National Mortality Database.

Which cancers led to most deaths?

In Australia in 2007, lung cancer (7,626 deaths), bowel cancer (4,047 deaths), prostate cancer (2,938 deaths), breast cancer (2,706 deaths) and lymphoid cancers (2,552 deaths) were the most common causes of cancer death. Together these five cancers represented half (50%) of all deaths from cancer, with lung cancer alone accounting for one in every five deaths due to cancer (19%).

Among males, lung cancer was the leading cause of cancer death, with 4,715 deaths in 2007. Prostate cancer (2,938 deaths), bowel cancer (2,191 deaths), lymphoid cancers (1,423 deaths) and cancer of unknown primary site (1,247 deaths) were the next most common causes of cancer deaths. These five cancers accounted for 55% of all deaths due to cancer among males.

Lung cancer was also the most common cancer causing deaths in females in 2007 (2,911 deaths). Breast cancer (2,680 deaths), bowel cancer (1,856 deaths), lymphoid cancers (1,129 deaths) and cancer of unknown primary site (1,097 deaths) were the next most common causes of cancer deaths. Together these five cancers accounted for 56% of all deaths from cancer in females.

Table 3.2: The 10 most common causes of death from cancer, Australia, 2007

Males				Females			
Site/type	Cases	ASR[a]	CI (95%)	Site/type	Cases	ASR[a]	CI (95%)
Lung (C33–C34)	4,715	46.3	45.0–47.6	Lung (C33–C34)	2,911	24.0	23.1–24.9
Prostate (C61)	2,938	31.0	29.9–32.2	Breast (C50)	2,680	22.1	21.2–22.9
Bowel (C18–C20)	2,191	21.7	20.8–22.6	Bowel (C18–C20)	1,856	14.6	13.9–15.3
Lymphoid cancers[b]	1,423	14.2	13.4–14.9	Lymphoid cancers[b]	1,129	8.8	8.3–9.3
Unknown primary (C77–C80)	1,247	12.5	11.8–13.2	Unknown primary (C77–C80)	1,097	8.5	8.0–9.1
Pancreas (C25)	1,233	12.1	11.4–12.8	Pancreas (C25)	1,015	8.0	7.6–8.6
Myeloid cancers[c]	867	8.8	8.2–9.4	Ovary (C56)	848	7.0	6.5–7.5
Melanoma of skin (C43)	864	8.5	7.9–9.1	Myeloid cancers[c]	592	4.6	4.2–5.0
Oesophagus (C15)	790	7.7	7.1–8.2	Brain (C71)	457	3.9	3.6–4.3
Liver (C22)	717	6.9	6.4–7.5	Other digestive organs (C26)	441	3.4	3.1–3.7
All cancers[d]	**22,562**	**224.9**	**222.0–227.9**	**All cancers[d]**	**17,322**	**139.1**	**137.0–141.2**

(a) The rates were standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(b) Lymphoid cancers (ICD-10 codes of C81–C85, C88, C90 and C91) are cancers that start in lymphocytes of the immune system. The most common types are lymphoma, lymphoid leukaemia and myeloma.

(c) Myeloid cancers (ICD-10 codes of C92–C94, C96.2, D45, D46, D47.1 and D47.3) are cancers that develop in the blood-forming cells of the bone marrow. The most common types are myeloid leukaemia and myelodysplastic syndrome.

(d) Includes cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.

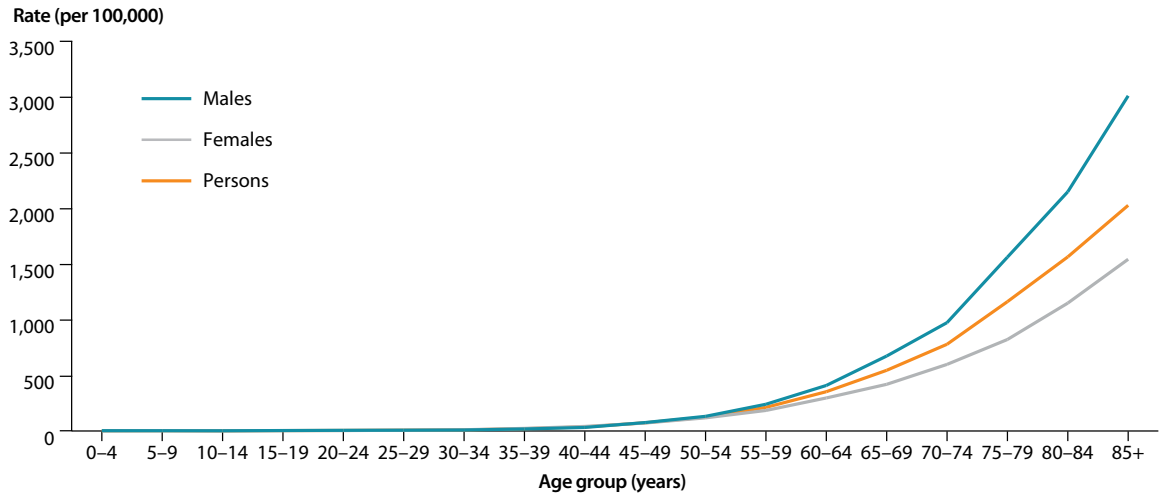
Source: AIHW National Mortality Database.

Does mortality differ by age?

Although cancer deaths occur in people of every age, most cancer deaths are recorded in the oldest age groups. More precisely, 84% of all cancer deaths in males and 81% all cancer deaths in females occurred in people over the age of 60 years in 2007. The average age at death due to cancer was 72 years for both males and females.

Similar to the incidence rate, the rate of death from cancer increased with increasing age (Figure 3.1). The rate of death was relatively low for people below the age of 35 years (that is, less than 10 deaths per 100,000 people). From that age onwards, the mortality rate increased steadily and significantly between each of the age groups. The highest mortality rate of 2,025 deaths per 100,000 people was observed in the oldest age group (that is, those aged 85 years and over).

The likelihood of dying from cancer was similar for men and women up to and including the age of 50 to 54 years. However, after the age of 55 years the rate of death was higher and increased more steeply in males. Prostate cancer, lung cancer and bowel cancer accounted for the high mortality rate in older men.



Notes

1. The rates shown are age-specific rates.
2. The data pertain to cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.
3. The data for this figure are shown in the ACIM book for all cancers that are available on the AIHW website.

Source: AIHW National Mortality Database.

Figure 3.1: Age-specific mortality rates for all cancers combined, Australia, 2007

For the majority of the individual cancer sites, the rate of death started to increase markedly in the older age groups, in general after the age of 40 years (see Appendix B). Cancers with an earlier rise in mortality include breast cancer in females (increased sharply after the age of 35 years), cervical cancer (increased sharply after the age of 30 years) and brain cancer (gradually increased after the age of 25 years).

What is the risk?

Based on 2007 data, the risk of dying from cancer before the age of 75 years was 1 in 8 for males and 1 in 12 for females. The risk of dying before the age of 85 years was slightly higher at 1 in 4 for males and 1 in 6 for females (Table 3.3).

Table 3.3: Risk of death from cancer, Australia, 2007

	Risk to age 75 years	Risk to age 85 years
Males	1 in 8	1 in 4
Females	1 in 12	1 in 6
Persons	**1 in 10**	**1 in 5**

Source: AIHW National Mortality Database.

The risk of dying from lung cancer was high for both males and females. Specifically, before the age of 75 years, the risk of dying from lung cancer was 1 in 33 for males and 1 in 59 for females. The risk of dying from lung cancer before the age of 85 years was double these proportions: 1 in 15 for males and 1 in 29 for females.

Box 3.1: Cancer as an associated cause of death

The data presented in this chapter apply to deaths for which the underlying cause of death was cancer. In addition to an underlying cause of death, associated causes of death can be listed on a death certificate. An associated cause of death is any other condition or event that was not the underlying cause of death, but was considered to contribute to the individual's death.

In 2007, 13,398 of the people who died in Australia had a cancer recorded as an associated cause of death. This represents 10% of all deaths that year. The cancers most commonly recorded as an associated cause of death were prostate cancer, breast cancer and lung cancer.

What has changed?

In this section of the report, trends in mortality from cancer are presented for the 26-year period from 1982 to 2007 for all cancers combined and for individual cancer sites.

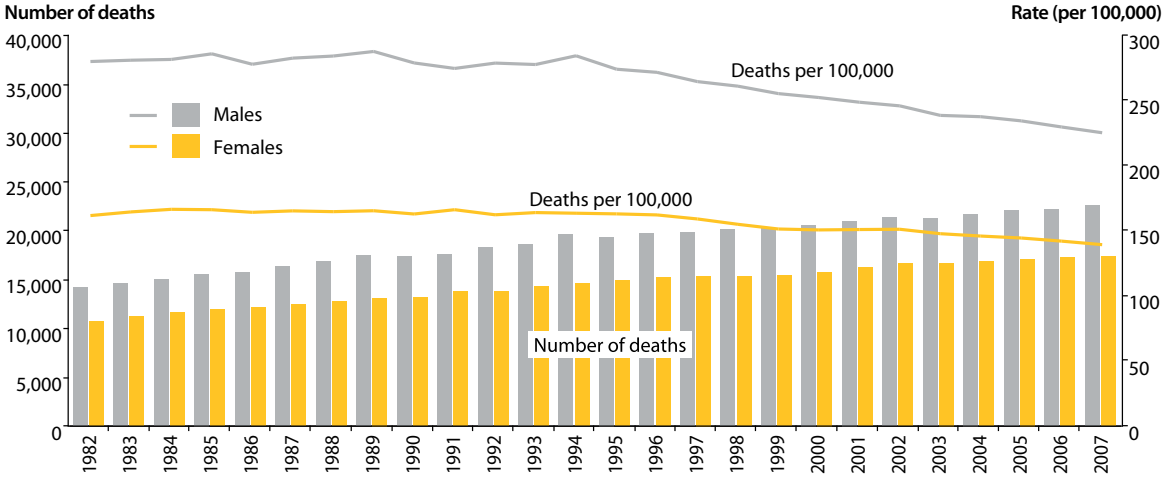
Trends for all cancers combined

The number of deaths from cancer has increased steadily over time in both males and females (Figure 3.2). In 1982, 24,922 Australians died from cancer compared with 39,884 in 2007, indicating an overall increase of 60%. Furthermore, the number of deaths recorded for 2007 is the largest number reported in any year to date.

In contrast, there was a statistically significant decrease in the age-standardised death rate from all cancers combined. Between 1982 and 2007, the age-standardised death rate fell by 16% from 209 deaths per 100,000 people to 176 deaths per 100,000 people.

The trend data indicates that the pattern of the mortality rate for all cancers combined was similar among males and females during 1982 to 2007, although the mortality rate for females was consistently lower than that for males. Among males, the mortality rate for all cancers combined fluctuated considerably between 1982 and 1994, with no clear pattern evident (Figure 3.2). After that time, the mortality rate for males decreased steadily from 284 deaths per 100,000 in 1994 to 225 deaths per 100,000 in 2007, an overall decrease of 21% in that period. Decreases in the mortality rates from lung cancer, prostate cancer and bowel cancer accounted for approximately 80% of the total decrease in the cancer death rate in males from 1994 to 2007.

The female mortality rate remained fairly stable between 1982 and 1994, at 161 to 166 deaths per 100,000 females. This was followed by a decrease of 15% from 163 deaths per 100,000 females in 1994 to 139 deaths per 100,000 females in 2007 (Figure 3.2). The decline in cancer mortality in Australian women was largely due to declines in death rates from breast cancer and bowel cancer.



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data pertain to cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.
3. The data for this figure are shown in the ACIM book for all cancers that are available on the AIHW website.

Source: AIHW National Mortality Database.

Figure 3.2: Mortality from all cancers combined, Australia, 1982 to 2007

Trends for specific cancer sites

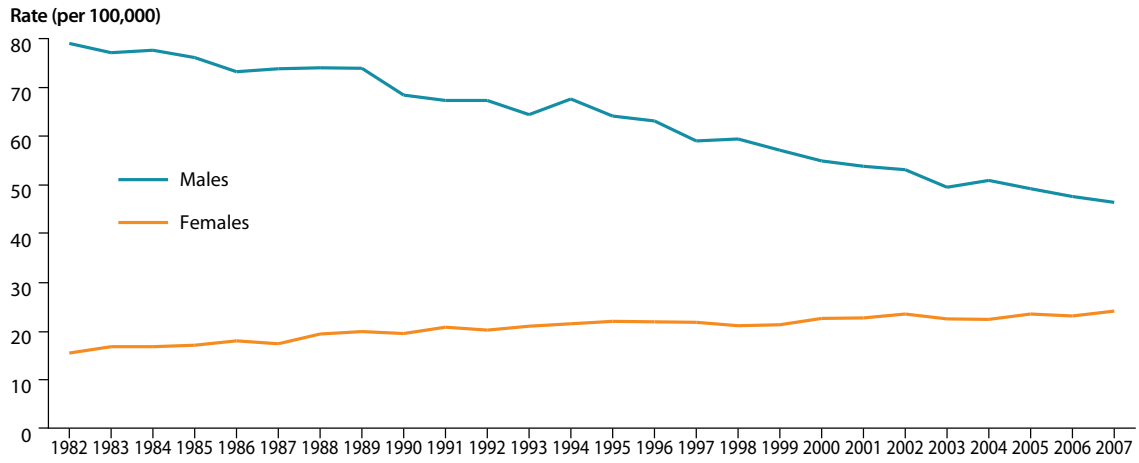
Between 1982 and 2007, the rate of death decreased for the majority of cancer sites, including the rate of bladder cancer, bowel cancer, and stomach cancer in both males and females; lung cancer and laryngeal cancer in males; and breast cancer, cervical cancer and ovarian cancer in females. In contrast, the rate of death increased over time for the following sites: liver cancer in both males and females; melanoma of the skin in males; and lung cancer in females. Cancers for which no change in mortality is evident include brain cancer and lip cancer.

More information is provided below about the trends in mortality rates from lung cancer, bowel cancer, prostate cancer, breast cancer in females and lymphoid cancers.

Lung cancer

Trends in the mortality rate from lung cancer differ starkly in males and females. As illustrated in Figure 3.3, the mortality rate of lung cancer for males decreased steadily from 79 deaths per 100,000 in 1982 to 46 deaths per 100,000 in 2007, an overall decrease of 41%. Over the same period, the mortality rate of lung cancer for females increased and by 2007 the rate (24 deaths per 100,000 women) was 56% higher than it was in 1982 (15 deaths per 100,000 women). While the mortality rate of lung cancer for females was still lower than that for males in 2007, the gap between the two rates has narrowed considerably over the past decades.

The different patterns of mortality from lung cancer in men and women may reflect historical differences in smoking behaviour. The rate of male smoking started to fall in the middle of the 20th century, resulting in a sharp decline in the lung cancer mortality rate from the 1980s and onwards. The rate of smoking levelled off later in females, which may explain the fact that the lung cancer death rate for females is still increasing (AIHW 2010b; Scollo & Winstanley 2008).



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data for this figure are shown in the ACIM book for lung cancer that is available on the AIHW website.

Source: AIHW National Mortality Database.

Figure 3.3: Trends in mortality from lung cancer, Australia, 1982 to 2007

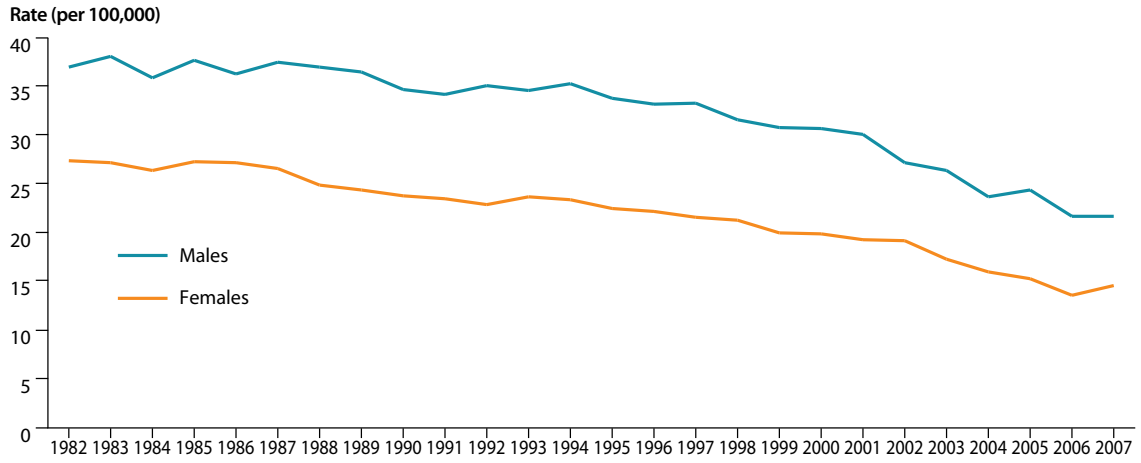
Bowel cancer

The mortality rate of bowel cancer has decreased significantly in both males and females (Figure 3.4). The mortality rate for males decreased by 41% from 37 deaths per 100,000 males in 1982 to 22 deaths per 100,000 males in 2007. The mortality rate for females decreased by 47% from 27 deaths per 100,000 females in 1982 to 15 deaths per 100,000 females in 2007. The reasons for the continued decline in the death rate of bowel cancer are not clear, but may be due to earlier detection of precancerous polyps and improved treatment.

Prostate cancer

In 1982, the mortality rate of prostate cancer was 35 deaths per 100,000 males. It increased in the following years and peaked at 44 deaths per 100,000 males in 1993 (Figure 3.5). Since then the rate tended to decline, with a much sharper decline in the mortality rate occurring in the 1990s than in the 2000s. By 2007, the mortality rate from prostate cancer stood at 31 deaths per 100,000 males, indicating an overall decrease of 30% between 1993 and 2007. Moreover, the mortality rate recorded in 2007 was lower than the rate recorded in 1982.

The fall in the mortality rate of prostate cancer from 1993 and onwards is thought to be due to improved treatment and early detection of prostate cancer cases by prostate-specific antigen (PSA) testing (Baade et al. 2004; CCSC 2010; Schroder et al. 2009).

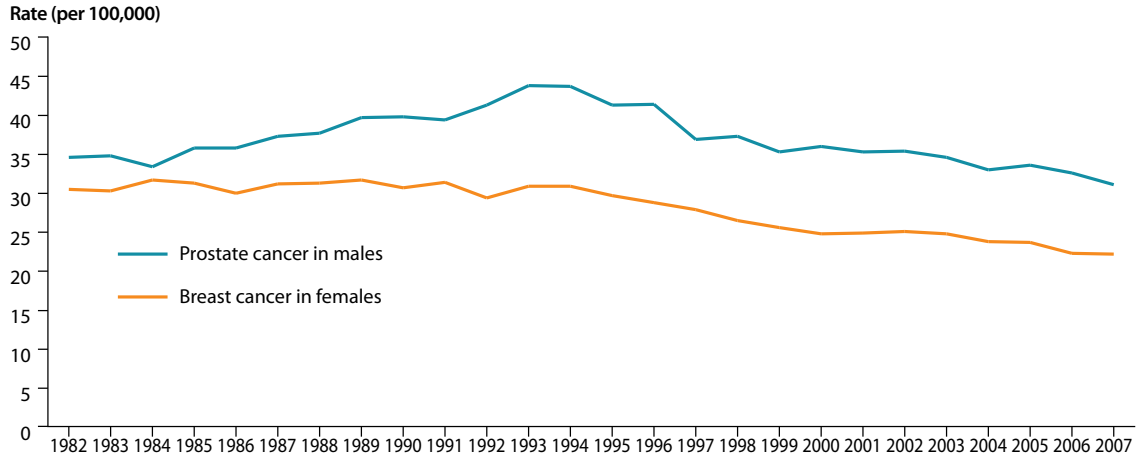


Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data for this figure are shown in the ACIM book for bowel cancer that is available at the AIHW website.

Source: AIHW National Mortality Database.

Figure 3.4: Trends in mortality from bowel cancer, Australia, 1982 to 2007



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001.
2. The data for this figure are shown in the ACIM books for prostate cancer and breast cancer.

Source: AIHW National Mortality Database.

Figure 3.5: Trends in mortality from prostate cancer in males and breast cancer in females, Australia, 1982 to 2007

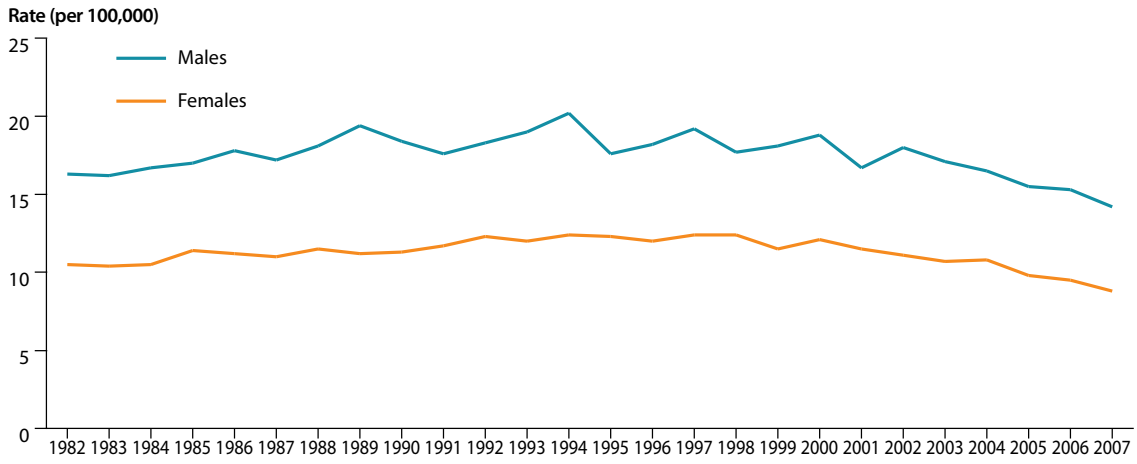
Breast cancer in females

Figure 3.5 shows that the rate of death from breast cancer in females remained fairly level from 1982 to the early 1990s (at around 29 to 31 deaths per 100,000 females). After this time, the mortality rate declined from 31 deaths per 100,000 females in 1994 to 22 per 100,000 females in 2007. This indicates an overall decline of 27% over that period.

The decline in the mortality rate of females from breast cancer in recent decades is also observed in data from other countries and is believed to be due to increased availability and quality of screening mammography and improved treatments (ACS 2009; CCS & NCIC 2007).

Lymphoid cancers

Numerous year-to-year fluctuations were observed in the rate of death from lymphoid cancers in males (Figure 3.6). Nonetheless, the overall pattern indicates that the mortality rate for males rose up to the mid-1990s, whereafter the rate started to decline again. By 2007, the rate of death in males from lymphoid cancer was 14 deaths per 100,000 males, with this rate being significantly lower than that observed in 1982 (16 deaths per 100,000). Trends in deaths of females from lymphoid cancers were similar to that of males, although the rate in females was lower than that of males throughout the period considered.



Notes

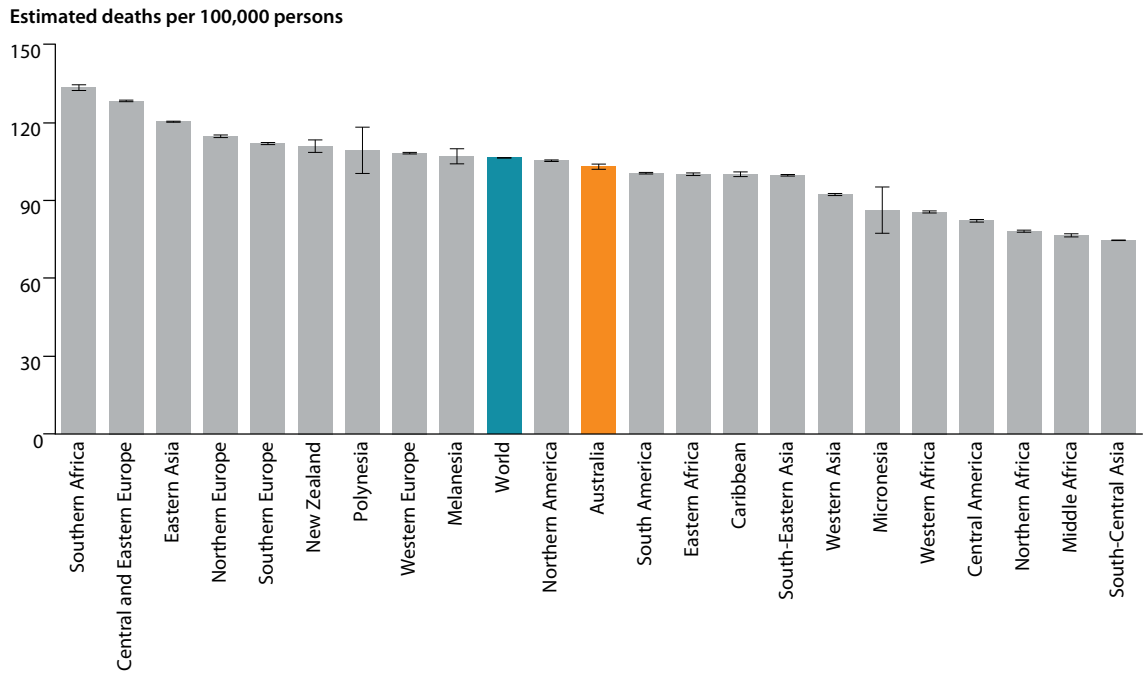
1. The rates were age-standardised to the Australian population as at 30 June 2001.
3. Lymphoid cancers are cancers that start in lymphocytes of the immune system. The most common types are lymphoma, lymphoid leukaemia and myeloma.
2. The data for this figure is are shown in the ACIM book for total lymphoid cancers.

Source: AIHW National Mortality Database.

Figure 3.6: Trends in mortality from lymphoid cancers, Australia, 1982 to 2007

How does Australia compare internationally?

As discussed in Chapter 1, caution must be taken when comparing international data on cancer mortality because observed differences may be due to a range of factors, not just differences in the underlying mortality rates. Data on deaths of people from all cancers combined for different regions and countries are shown in Figure 3.7. The data are from the GLOBOCAN database (Ferlay et al. 2010) and are estimated for 2008 (further information about these data are provided in Appendix G). The confidence intervals indicate the variation that would be expected by chance, assuming that the estimated mortality rates are accurate.



Notes

1. The data pertain to cancers coded in ICD-10 as C00–C97, excluding C44.
2. The data were estimated for 2008 by the International Agency for Research on Cancer (IARC).
3. The age-standardised rates were standardised by the IARC using the Doll et al. (1966) World Standard Population and are expressed per 100,000 people. Countries or regions are ordered in descending order according to the age-standardised rate.
4. The confidence intervals are approximations and were calculated by the AIHW (see Appendix F).
5. The data for this figure are shown in Appendix Table D3.1.

Source: Ferlay et al. 2010.

Figure 3.7: International comparison of estimated mortality, all cancers combined, 2008

The age-standardised mortality rate from cancer varied considerably between different countries and regions. The mortality rate was highest for Southern Africa (133 deaths per 100,000 people) and lowest for South-Central Asia (75 deaths per 100,000 people). The mortality rate for Australia was 103 deaths per 100,000 people, with this estimate being slightly lower than the average world rate (106 deaths per 100,000 people).

4

DIFFERENCES ACROSS POPULATION GROUPS

Key findings

For the 5-year period 2003 to 2007:

- The incidence rate of cancer was significantly higher for Indigenous than for non-Indigenous Australians for cervical cancer, lung cancer and cancer of unknown primary site.
- The mortality rate was significantly higher for Indigenous than for non-Indigenous Australians for cervical cancer and lung cancer.
- The incidence rate for all cancers combined was highest in Queensland (505 cases per 100,000) and Tasmania (495 cases per 100,000) and lowest in the Northern Territory (430 cases per 100,000) and the Australian Capital Territory (458 cases per 100,000).
- The mortality rate for all cancers combined was highest in the Northern Territory (214 deaths per 100,000) and Tasmania (206 deaths per 100,000) and lowest in the Australian Capital Territory (167 deaths per 100,000).
- People living in *Remote and very remote* areas of Australia had higher incidence rates of cervical cancer, lung cancer and cancer of unknown primary site than people living in more urbanised areas, but they had lower rates of melanoma of the skin, bowel cancer, prostate cancer, lymphoid cancers and breast cancer in females.
- People living in *Remote and very remote* areas of Australia had higher mortality rates of all cancers combined and of lung cancer, cervical cancer and cancer of unknown primary site than those living in more urbanised areas.
- People living in areas with the highest socioeconomic status had significantly higher incidence rates of lymphoid cancers, prostate cancer and breast cancer in females than people living in other areas, but significantly lower rates of cervical cancer, lung cancer and cancer of unknown primary site.
- People living in higher socioeconomic areas had significantly lower mortality rates of cervical cancer, bowel cancer, lung cancer and cancer of unknown primary site than those living in other areas.

4 DIFFERENCES ACROSS POPULATION GROUPS

In this section, cancer incidence and mortality data are provided according to four population characteristics: Aboriginal and Torres Strait Islander status; state and territory; remoteness area; and socioeconomic status. Data are shown for 'all cancers combined' and for nine selected cancers: bowel cancer, melanoma of the skin, lung cancer, breast cancer in females, prostate cancer, cervical cancer, pancreatic cancer, lymphoid cancers and cancer of unknown primary site. These cancers are not only among the most commonly diagnosed cancers (see Chapter 2), but are also among the leading causes of mortality from cancer (see Chapter 3). Furthermore, some of these cancers were also identified as National Health Priority Areas in 1997 and are included within the 2007 health performance indicators for the Council of Australian Governments (COAG) recent National Healthcare Agreement.

In order to take into account differences in the age structure and the size of the groups being compared, age-standardised rates are provided for each of the comparisons. The data are presented for the 5-year period from 2003 to 2007 rather than for just 1 year, since presenting the data for multiple years reduces random variation in the data. This is especially important for comparisons of small subgroups (for example people identifying as Aboriginal and/or Torres Strait Islander or people living in *Remote or very remote areas* of Australia). Apart from breast cancer in females, cervical cancer and prostate cancer, results are presented for males and females combined in a further attempt to reduce the random variation in the data.

Observed differences by the characteristics examined in this section may result from a number of factors, including variation in:

- population characteristics (for example a relatively greater proportion of Indigenous people living in remote areas)
- the prevalence of risk and/or protective factors (for example tobacco consumption, physical activity)
- the availability and usage of diagnostic services.

The main data source for this chapter was the Australian Cancer Database (ACD) and the National Mortality Database (NMD).

Aboriginal and Torres Strait Islander status

It is well established that Aboriginal and Torres Strait Islander people generally suffer more ill health than other Australians (AIHW 2010e). The disparity in health experienced by Indigenous Australians may be explained by differences in socioeconomic status, with Indigenous Australians reporting lower incomes, higher rates of unemployment, lower educational attainment, and more overcrowded households than other Australians. This socioeconomic disadvantage places Indigenous Australians at greater risk of engaging in behaviour such as smoking and alcohol misuse that increases the risk of poor health outcomes (AIHW 2010e). However, socioeconomic status alone does not explain all the variation in health status that exists between Indigenous and non-Indigenous Australians. Cultural, historical and environmental factors may also contribute to the poorer health of Indigenous Australians (Booth & Carroll 2005; Thomson et al. 2009).

Do incidence rates differ for Indigenous Australians?

Reliable national data on the incidence of cancer for Indigenous Australians are not available. While all state and territory cancer registries collect information on Indigenous status, in some jurisdictions the level of identification of Indigenous Australians is not considered to be sufficient to enable analysis. In this report, data for four states and territories—Queensland, Western Australia, South Australia and the Northern Territory—

are used to examine the incidence of cancer by Indigenous status. While the majority (60%) of Australian Indigenous people live in these four jurisdictions (ABS 2009), the degree to which data for these jurisdictions are representative of data for all Indigenous people is unknown.

For the four jurisdictions analysed, the overall level of missing data on Indigenous status for cancers diagnosed between 2003 and 2007 was 11% (Appendix Table D4.1). It should be noted however, that the level of missing data was particularly high for prostate cancer (18%) and melanoma of the skin (35%). This may be because these cancers are more likely to be treated outside the hospital setting where the level of Indigenous identification is generally lower than within the hospital system.

In the period 2003 to 2007, an average of 458 Indigenous Australians were diagnosed with cancer each year (excluding basal and squamous cell carcinomas of the skin)—this comprises 1% of all cancer cases diagnosed in that period. Of the nine selected cancers, lung cancer (average of 71 cases per year) was the most commonly diagnosed cancer among Indigenous people, followed by breast cancer in females (average of 49 cases per year) and bowel cancer (average of 37 cases per year).

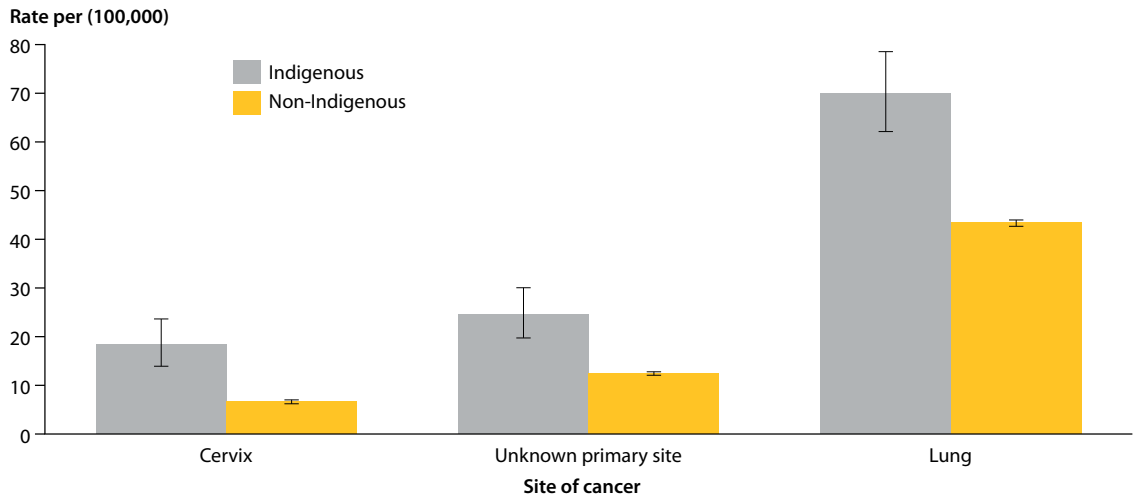
The age-standardised incidence rates for all cancers combined indicate that Indigenous Australians were significantly less likely overall to have been diagnosed with cancer than their non-Indigenous counterparts in the period 2003 to 2007 (385 and 433 cases per 100,000 people, respectively).

When considering the individual cancer sites, the incidence rate for cervical cancer was almost 3 times higher for Indigenous Australians than non-Indigenous Australians (18 and 7 cases per 100,000 females, respectively). Incidence rates of cancer of unknown primary site and lung cancer were also significantly higher for Indigenous Australians than non-Indigenous Australians (2.0 and 1.6 times, respectively) (Figure 4.1).

The higher incidence of cervical cancer in Indigenous Australians is likely to be associated with lower participation in cervical screening and higher rates of infection with human papilloma virus (Condon 2004; Condon et al. 2005; Roder 2005) while the higher incidence of lung cancer is consistent with Indigenous Australians' higher rate of smoking (Scollo & Winstanley 2008; Stumpers & Thomson 2009). The higher incidence of cancer of unknown primary site may be related to late diagnosis (ABS & AIHW 2008; Stumpers & Thomson 2009).

Conversely, incidence rates were significantly lower for Indigenous Australians than non-Indigenous Australians for bowel cancer, breast cancer in females, lymphoid cancers, melanoma of the skin and prostate cancer (see Appendix Tables D4.2, D4.3, D4.6, D4.7 and D4.9).

The reasons for the lower incidence of these cancers among Indigenous Australians are not clear. It may either be a true lower incidence (that is, Indigenous Australians are less likely to develop these cancers) or a lower rate of diagnosis. The former seems most likely for melanoma of the skin and is consistent with the high level of pigment in the skin of Indigenous Australians. However, it is possible that the latter is true for breast cancer in females, bowel cancer and prostate cancer for a number of reasons. Breast cancer, prostate cancer and bowel cancer are primarily diseases that affect older people (see Chapter 2) and the shorter life expectancy of Indigenous Australians (approximately 10 years less than that of non-Indigenous Australians (AIHW 2010e)) may mean that these cancers may not have presented at the time of death (AIHW 2010e). Furthermore, the uptake of screening and diagnostics testing (such as breast and bowel screening and prostate-specific antigen testing) is low among Indigenous people (AIHW 2009a; Condon et al. 2001; Roder 2005; Stumpers & Thomson 2009; Threlfall & Thompson 2009), which may also contribute to a low rate of diagnosis.



Notes

1. The rates were standardised to the Australian population as at 30 June 2001. The rates are based on the total number of cases over the 5-year period from 2003–2007.
2. The data for this figure are shown in Appendix Tables D4.4, D4.5 and D4.10.

Source: AIHW Australian Cancer Database.

Figure 4.1: Incidence of cervical cancer, cancer of unknown primary site and lung cancer by Indigenous status, Queensland, Western Australia, South Australia and the Northern Territory, 2003–2007

Do mortality rates differ for Indigenous Australians?

Information in the National Mortality Database (NMD) on Indigenous status for 2003 to 2007 is considered to be of sufficient quality for use for five jurisdictions: New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Almost nine in ten (89%) Indigenous people live in these five jurisdictions (ABS 2009). In the NMD, the Indigenous status of 1% of the people who had died from cancer was not known (Appendix Table D4.1).

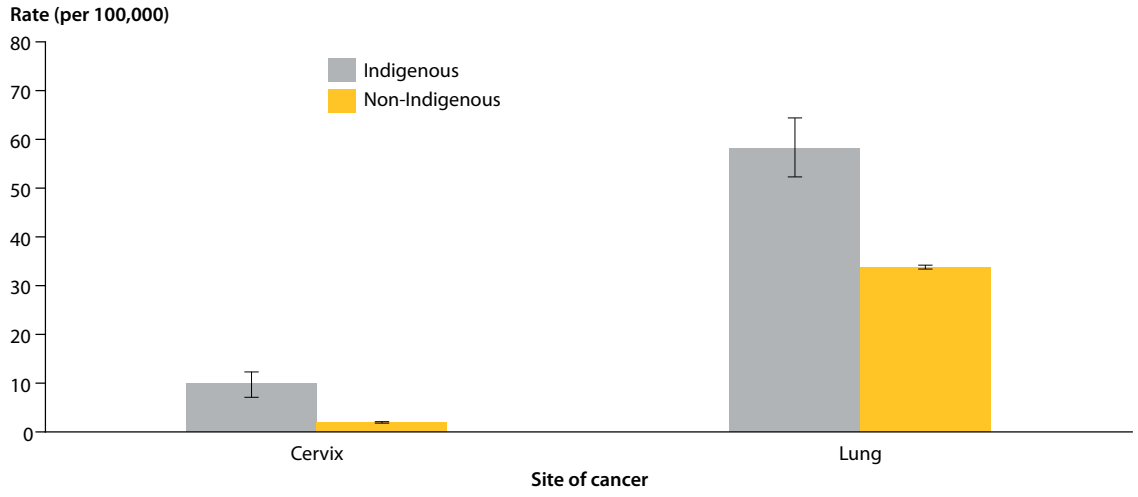
Between 2003 and 2007, there was an annual average of 363 cancer deaths (1% of all deaths due to cancer) recorded for Indigenous Australians in the five jurisdictions analysed, making cancer the second leading cause of death among Indigenous Australians in that period.

Of the selected cancer sites, lung cancer (average of 91 deaths per year), breast cancer in females (average of 23 deaths per year) and bowel cancer (average of 22 deaths per year) were the most common causes of cancer death in Indigenous Australians.

In contrast to the incidence rate, the mortality rate for all cancers combined was significantly higher in Indigenous Australians than in their non-Indigenous counterparts (230 and 178 deaths per 100,000, respectively). The higher mortality rate in Indigenous Australians may be explained by their greater likelihood of being diagnosed with cancers where the prospect of successful treatment and survival is poorer (for example, lung cancer and cancer of unknown primary site) (Condon et al. 2003; Threlfall & Thompson 2009) or being diagnosed at an advanced stage, as well as a lesser likelihood of receiving adequate treatment (AIHW 2010e; Cunningham et al. 2008).

The rate of death was significantly higher for Indigenous than for non-Indigenous Australians for cervical cancer and lung cancer (Figure 4.2). Indigenous Australians were 1.7 times as likely to die from lung cancer as non-Indigenous Australians (58 and 34 deaths per 100,000, respectively), and Indigenous women were about 5 times as likely to die from cervical cancer as non-Indigenous women (10 and 2 deaths per 100,000, respectively).

In contrast, the rate of death was significantly lower for Indigenous Australians than for non-Indigenous Australians for melanoma of the skin. Specifically, Indigenous Australians were 0.3 times as likely to die from melanoma of the skin as their non-Indigenous counterparts (see Appendix Table D4.7). There was no statistically significant difference in the mortality rates from bowel cancer, breast cancer in females, lymphoid cancers, pancreatic cancer and prostate cancer for Indigenous Australians compared to non-Indigenous Australians (see Appendix Tables D4.2, D4.3, D4.6 and D4.8–D4.10).



Notes

1. The rates were standardised to the Australian population as at 30 June 2001. The rates are based on the total number of deaths over the 5-year period from 2003–2007.
2. The data for this figure are shown in Appendix Tables D4.4 and D4.5.

Source: AIHW National Mortality Database.

Figure 4.2: Mortality from cervical cancer and lung cancer by Indigenous status, New South Wales, Queensland, Western Australia, South Australia and the Northern Territory, 2003–2007

State and territory

Do incidence rates differ by state and territory?

In the 5-year period from 2003 to 2007, there was a clear relationship between the population size of the jurisdiction and the average number of cancer cases diagnosed annually, with the largest number of cases diagnosed in New South Wales (34,920 cases) and the smallest number in the Northern Territory (534 cases) (Table 4.1).

When the size and age structure of the population in each state and territory was taken into account, the highest incidence rates for all cancers combined were in Queensland (505 cases per 100,000) and Tasmania (495 cases per 100,000), with both of these rates significantly higher than that of the other states and territories. In contrast, the incidence rate was lowest in the Northern Territory (430 cases per 100,000) and the Australian Capital Territory (458 cases per 100,000). Only the rate for the Northern Territory was significantly lower than that of all other states and territories.

Table 4.1: Incidence of all cancers combined[(a)] by state and territory, Australia, 2003–2007

State or territory	Average annual number of cases[(b)]	Total number of cases	Age-standardised rate[(c)]	95% confidence interval
New South Wales	34,920	174,600	484.4	482.1–486.6
Victoria	24,821	124,105	464.1	461.5–466.6
Queensland	20,192	100,960	504.8	501.7–508.0
Western Australia	9,415	47,075	474.3	470.0–478.7
South Australia	8,439	42,195	467.8	463.3–472.3
Tasmania	2,733	13,665	495.1	486.8–503.5
Australian Capital Territory	1,322	6,610	458.3	447.1–469.7
Northern Territory	534	2,670	430.4	411.1–450.3
Total	**102,376**	**511,880**	**480.6**	**479.3–481.9**

(a) Includes cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3 with the exception of those C44 codes which indicate a basal or squamous cell carcinoma of the skin.

(b) Numbers may not sum to the total due to rounding.

(c) The rates were standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

Source: AIHW Australian Cancer Database.

Incidence rates for most of the selected cancer sites also varied widely according to state and territory in 2003 to 2007. Particularly notable variations by state and territory were evident for cervical cancer, melanoma of the skin and cancer of unknown primary site, where the incidence rates for the Northern Territory were between 1.4–2.3 times higher than that of other jurisdictions (see Appendix Tables D4.4, D4.7 and D4.10).

Do mortality rates differ by state and territory?

Consistent with incidence, the average annual number of deaths from cancer ranged from 13,282 in New South Wales to 209 in Northern Territory between 2003 and 2007. The age-standardised death rate for all cancers combined was significantly lower in the Australian Capital Territory (167 deaths per 100,000) than in other states and territories. In contrast, the highest death rates were observed in the Northern Territory (214 deaths per 100,000) and Tasmania (206 deaths per 100,000), with both of these rates significantly higher than the other states and territories (Table 4.2).

Table 4.2: Mortality from all cancers combined[a] by state and territory, Australia, 2003–2007

State or territory[b]	Average annual number of deaths[c]	Total number of deaths	Age-standardised rate[d]	95% confidence interval
New South Wales	13,282	66,410	181.2	179.8–182.6
Victoria	9,891	49,455	182.1	180.5–183.7
Queensland	7,069	35,345	178.8	177.0–180.7
Western Australia	3,504	17,520	180.4	177.7–183.1
South Australia	3,395	16,975	180.9	178.2–183.7
Tasmania	1,161	5,805	206.4	201.1–211.8
Australian Capital Territory	449	2,245	167.1	160.2–174.3
Northern Territory	209	1,045	213.9	198.8–229.7
Total	**38,960**	**194,800**	**181.5**	**180.7–182.3**

(a) Includes cancers coded in ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.

(b) These may not be comparable with data published in state and territory cancer reports since the data shown in this report relate to the place of residence at the time of death, not the place of residence at the time of diagnosis as is often shown in state and territory reports. Furthermore, the state and territory cancer registries may use a different methodology from that used by the AIHW to determine the cause of death (see Box 4.1).

(c) Numbers may not sum to the total due to rounding.

(d) The rates were standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of deaths over the 5-year period from 2003–2007.

Source: AIHW National Mortality Database.

While the mortality rates from breast cancer in females, bowel cancer and pancreatic cancer appeared to be fairly consistent across Australia, variability in mortality rates were observed for the other six cancer sites. For example, the mortality rate from cervical cancer in the Northern Territory (4 deaths per 100,000 females), the jurisdiction with the highest rate, was almost three times the rate of the Australian Capital Territory (1.4 deaths per 100,000 females), the jurisdiction with lowest rate (see Appendix Table D4.4).

Box 4.1: Mortality data differences

The state and territory data on mortality due to cancer shown in this report may not be comparable with data published by individual state and territory cancer registries for a number of reasons, including the following (Cancer Council Queensland 2009; Tracey et al. 2008):

- The state and territory mortality data presented in this report refer to the place of a person's residence at the time of death. In contrast, the state and territory cancer registries generally present mortality information based on a person's place of residence at the time of diagnosis. In these latter data, the deaths may or may not have occurred in the state or territory indicated.
- Different approaches were used to assign cause of death. In this report, data on mortality for each jurisdiction were derived from the NMD (see Appendix G). Information on cause of death in the NMD is sourced from the Australian Bureau of Statistics which makes use of death certificate information to assign cause of death. In contrast, the state and territory cancer registries may make use of information from a number of different sources, including pathology reports and other notifications, to assign a cause of death.

Remoteness area

People living in less accessible regions of Australia are often disadvantaged regarding access to goods and services, income, educational and employment opportunities and, in some instances, access to basic amenities, such as clean water and fresh food (ABS 2008b). To compare incidence and mortality rates according to level of remoteness of the area in which the person lived, the Australian Standard Geographical Classification Remoteness Area classification (ABS 2001) was used to assign areas across Australia to a remoteness category. More information about this classification is provided in Appendix E.

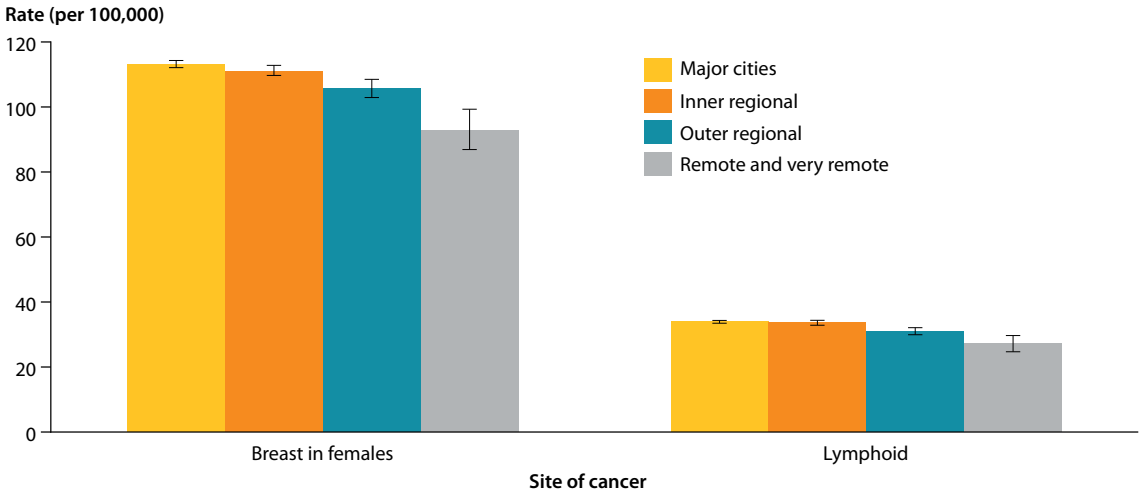
Do incidence rates differ by remoteness area?

From 2003 to 2007, the highest incidence rate of all cancers combined was for people living in *Inner regional* areas of Australia (496 cases per 100,000). While the rate for people living in *Inner regional* areas was not significantly different from that of people living in *Outer regional* areas (487 cases per 100,000), it was significantly higher than the rates for people living in *Major cities* (474 cases per 100,000) and *Remote and very remote* areas (475 cases per 100,000).

Variation by geographical region of residence was also evident for the selected cancer sites, although the direction of the association differed markedly depending on the cancer site. People living in *Inner regional* areas of Australia had higher incidence rates of bowel cancer , melanoma of the skin and prostate cancer than those living in other areas. Interestingly, for these same cancers the lowest incidence rates were observed for people living in the *Remote and very remote* areas at the time of diagnosis (Appendix Tables D4.2, D4.7 and D4.9).

The incidence rates of breast cancer in females and lymphoid cancers tended to decrease with remoteness, with people living in *Remote and very remote* areas having 0.8 times the incidence rate of people living in *Major cities* for both types of cancer (Figure 4.3).

Conversely, the incidence rates of cervical cancer, lung cancer and cancer of unknown primary site increased with increasing remoteness, with people living in *Remote and very remote* areas having 1.5 times the rate of cervical cancer, 1.4 times the rate of cancer of unknown primary site and 1.3 times the rate of lung cancer than those living in *Major cities* (Figure 4.4).

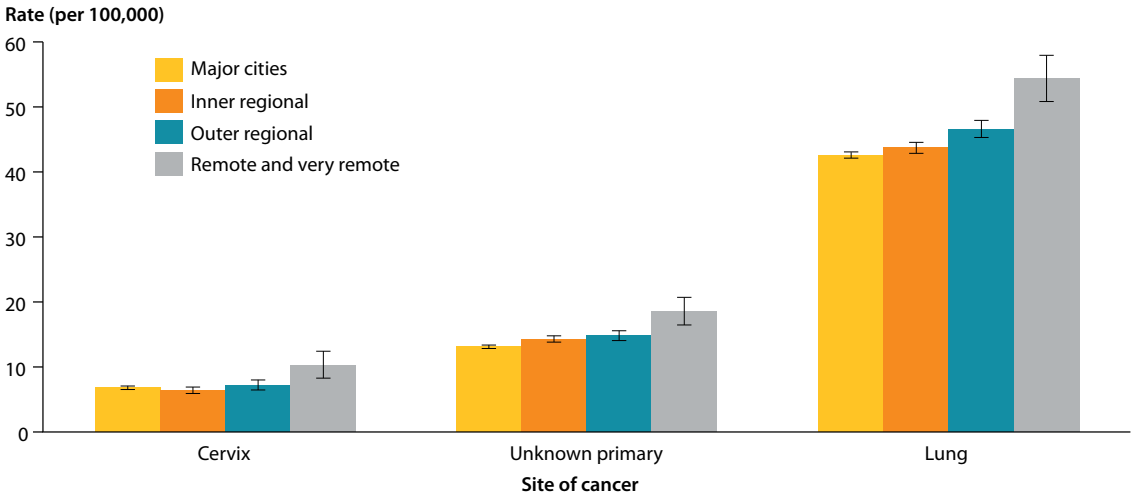


Notes

1. Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E).
2. The rates were age-standardised to the Australian population as at 30 June 2001 and are based on the total number of cases over the 5-year period from 2003–2007.
3. The data for this figure are shown in Appendix Tables D4.3 and D4.6.

Source: AIHW Australian Cancer Database.

Figure 4.3: Incidence of breast cancer in females and lymphoid cancers by remoteness area, Australia, 2003–2007



Notes

1. Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E).
2. The rates were age-standardised to the Australian population as at 30 June 2001 and are based on the total number of cases over the 5-year period from 2003–2007.
3. The data for this figure are shown in Appendix Tables D4.4, D4.5 and D4.10.

Source: AIHW Australian Cancer Database.

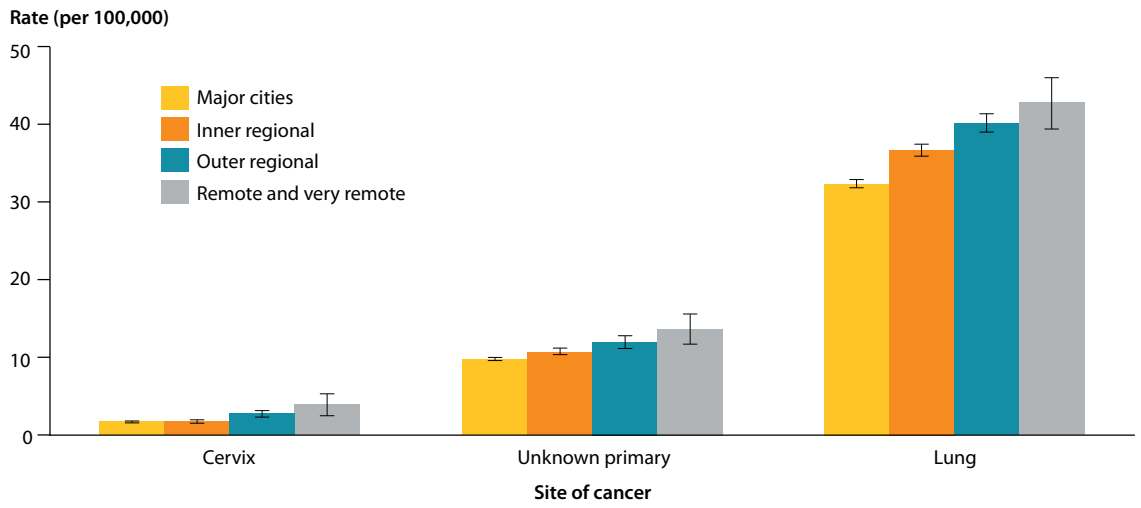
Figure 4.4: Incidence of cervical cancer, cancer of unknown primary site and lung cancer by remoteness area, Australia, 2003–2007

Do mortality rates differ by remoteness area?

While the mortality rate from all cancers combined was similar in *Outer regional* areas (207 deaths per 100,000) and in *Remote and very remote* areas (206 deaths per 100,000) during 2003 to 2007, it was significantly lower in more urbanised areas. The statistically significant lowest rate was observed for people living in *Major cities* (172 deaths per 100,000) (Appendix Table D4.1).

The mortality rates from lung cancer, cervical cancer and cancer of unknown primary site were higher in more remote areas (Figure 4.5). For example, the mortality rate of cervical cancer in *Remote and very remote* areas was more than twice the rate observed for people living in *Major cities*. Some of the differences in mortality from lung cancer and cervical cancer may be explained by the high proportion of Indigenous people who live in more remote areas and who have higher death rates than non-Indigenous people from these cancers (see section about Aboriginal and Torres Strait Islander status).

For bowel cancer, breast cancer in females, lymphoid cancers, melanoma of the skin, pancreatic cancer and prostate cancer, particularly high mortality rates were observed for those who lived in *Inner and Outer regional* areas (see Appendix Tables D4.2, D4.3, D4.6–D4.9).



Notes

1. Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E).
2. The rates were age-standardised to the Australian population as at 30 June 2001 and are based on the total number of deaths over the 5-year period from 2003–2007.
3. The data for this figure are shown in Appendix Tables D4.4, D4.5 and D4.10.

Source: AIHW National Mortality Database.

Figure 4.5: Mortality from cervical cancer, cancer of unknown primary site and lung cancer by remoteness area, Australia, 2003–2007

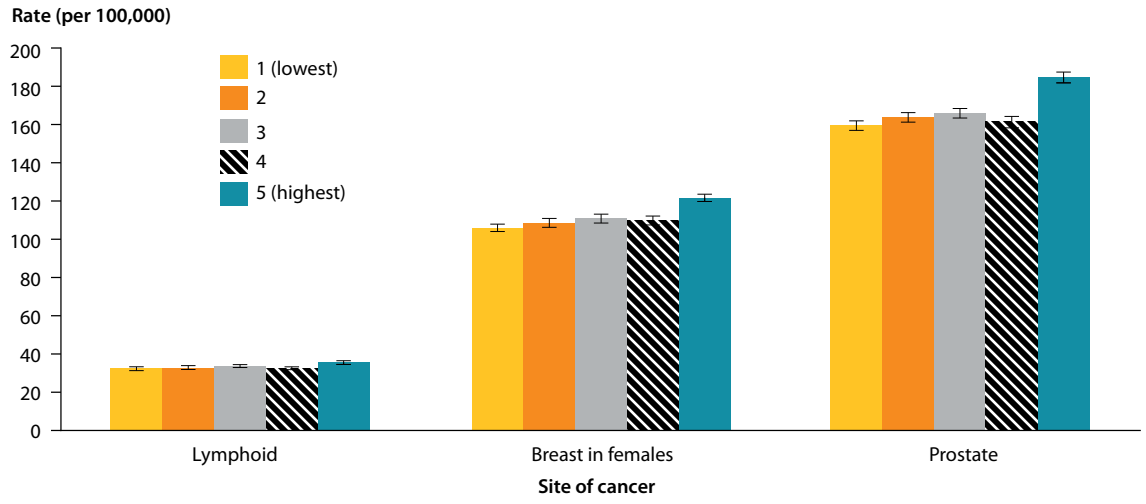
Socioeconomic status

In this report, the Index of Relative Socio-economic Disadvantage (IRSD) is used to indicate socioeconomic status (ABS 2008b). The IRSD scores each area by summarising attributes of the population such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations. In this report, the first socioeconomic status group (labelled '1') corresponds to geographical areas containing the 20% of the population with the lowest socioeconomic status according to the IRSD and the fifth group (labelled '5') corresponds to the 20% of the population with the highest socioeconomic status. Appendix E provides further information about the IRSD.

Do incidence rates differ by socioeconomic status?

In Australia in 2003 to 2007, there was no clear association between the incidence of all cancers combined and socioeconomic status. Nevertheless, people living in areas with the second highest socioeconomic status (group 4) had a significantly lower incidence rate than those living in all other areas (see Appendix Table D4.1).

Trends in incidence rates were evident for most of the selected cancer sites. During 2003 to 2007, people living in areas with the highest socioeconomic status (group 5) had a significantly higher incidence rate of breast cancer in females, prostate cancer and lymphoid cancers than people living in all other areas (Figure 4.6). For all of these cancers the incidence rate of people living in areas with the highest socioeconomic status was around 1.1–1.2 times higher that that of those living in areas with the lowest socioeconomic status (group 1).



Notes

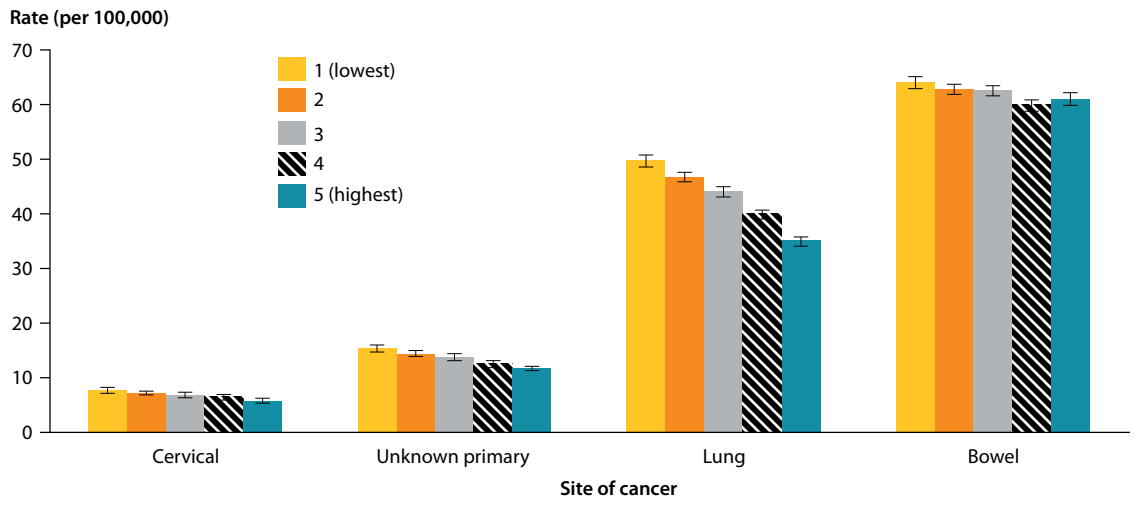
1. Socioeconomic status was classified using the ABS Index of Relative Socio-economic Disadvantage (see Appendix E).
2. The rates were age-standardised to the Australian population as at 30 June 2001 and are based on the total number of cases over the 5-year period from 2003–2007.
3. The data for this figure are shown in Appendix Tables D4.3, D4.6 and D4.9.

Source: AIHW Australian Cancer Database.

Figure 4.6: Incidence of lymphoid cancers, breast cancer in females and prostate cancer by socioeconomic status, Australia, 2003–2007

Cancers for which lower socioeconomic status was associated with higher incidence were bowel cancer, cervical cancer, lung cancer and cancer of unknown primary site (Figure 4.7). Of particular note is that the incidence rate of lung cancer for people living in the areas with the highest socioeconomic status (group 5) was only 0.7 times the rate for those living in areas with the lowest socioeconomic status (group 1).

For melanoma of the skin and pancreatic cancer the association with socioeconomic status was either inconsistent or non-existent. However, the incidence rate of melanoma of the skin was significantly higher among people living in areas with the highest socioeconomic status compared to those living in most other areas. In contrast, the incidence rate of pancreatic cancer was significantly lower in those people living in areas with the second highest socioeconomic status compared to those living in all other areas (Appendix Tables D4.7 and D4.8).



Notes

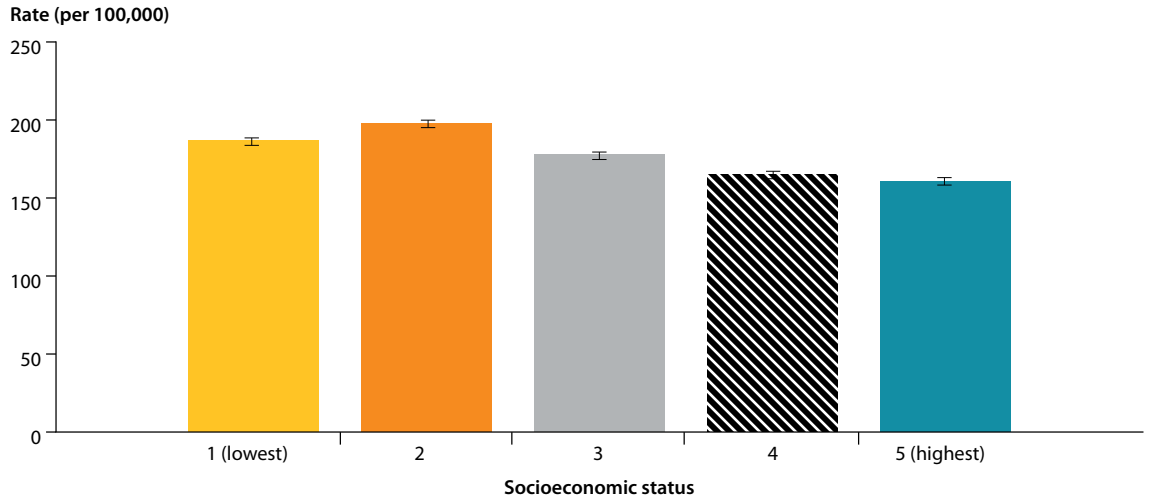
1. Socioeconomic status was classified using the ABS Index of Relative Socio-economic Disadvantage (see Appendix E).
2. The rates were age-standardised to the Australian population as at 30 June 2001 and are based on the total number of cases over the 5-year period from 2003–2007.
3. The data for this figure are shown in Appendix Tables D4.2, D4.4, D4.5 and D4.10.

Source: AIHW Australian Cancer Database.

Figure 4.7: Incidence of cervical cancer, cancer of unknown primary site, lung cancer and bowel cancer by socioeconomic status, Australia, 2003–2007

Do mortality rates differ by socioeconomic status?

Unlike cancer incidence, there is a clear socioeconomic disparity with regard to cancer-related mortality. In 2003 to 2007, Australians living in lower socioeconomic areas experienced higher rates of cancer-related death than those living in other areas (Figure 4.8). The highest mortality rates were observed for people living in areas with the lowest socioeconomic status (groups 1 and 2). Both of these rates were significantly higher than the rates of those living in higher socioeconomic areas (groups 3 to 5). Those living in areas with the highest socioeconomic status (group 5) had a significantly lower mortality rate (0.9 times that of group 1) than that of all other areas.

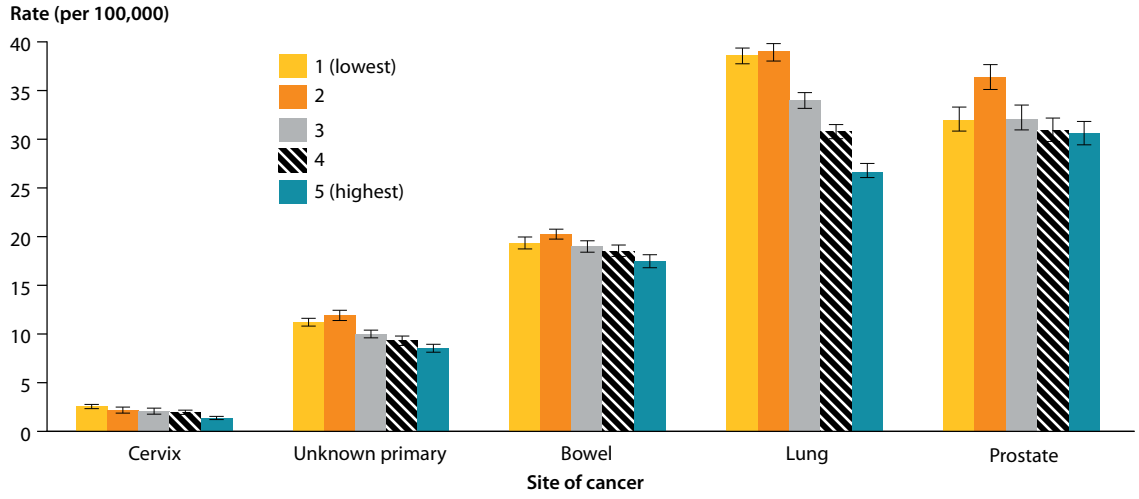


Notes

1. Socioeconomic status was classified using the ABS Index of Relative Socio-economic Disadvantage (see Appendix E).
2. The rates were standardised to the Australian population as at 30 June 2001 and are based on the total number of deaths over the 5-year period from 2003–2007.
3. The data for this Figure are shown in Appendix Table D4.1.

Source: AIHW National Mortality Database.

Figure 4.8: Mortality from all cancers combined by socioeconomic status, Australia, 2003–2007



Notes

1. Socioeconomic status was classified using the ABS Index of Relative Socio-economic Disadvantage (see Appendix E).
2. The rates were standardised to the Australian population as at 30 June 2001 and are based on the total number of deaths over the 5-year period from 2003–2007.
3. The data for this Figure are shown in Appendix Tables D4.2, D4.4, D4.5, D4.9 and D4.10.

Source: AIHW National Mortality Database.

Figure 4.9: Mortality from selected cancers by socioeconomic status, Australia, 2003–2007

Between 2003 to 2007, there was a graded relationship between the rate of death and levels of socioeconomic status for five of the nine selected cancers (Figure 4.9). Specifically, people living in higher socioeconomic areas had lower mortality rates of cervical cancer, cancer of unknown primary site, bowel cancer, lung cancer and prostate cancer than those living in most other areas. The largest relative differences in mortality across socioeconomic groups between 2003 and 2007 was for cervical cancer where the mortality rate for people living in the highest socioeconomic areas was only half the rate for people living in areas with the lowest socioeconomic status (1.3 and 2.5 deaths per 100,000 females, respectively).

5

SURVIVAL AFTER A DIAGNOSIS OF CANCER

Key findings

- For those diagnosed with cancer in 1998–2004, the 5-year relative survival was 61% for all cancers combined (excluding non-melanoma skin cancers).
- Women had a significantly better chance of survival than men (5-year relative survival of 64% and 58%, respectively).
- Of males diagnosed with cancer in 1998–2004, the 5–year relative survival was highest for testicular cancer (97%), melanoma of skin (90%) and thyroid cancer (88%).
- Of females diagnosed with cancer in 1998–2004, the 5-year relative survival was highest for thyroid cancer (95%), melanoma of the skin (94%) and Hodgkin lymphoma (86%).
- For all reportable cancers combined, 5-year relative survival was highest for those diagnosed with cancer between the ages of 20 and 29 years (88%). The lowest survival proportion of 25% was observed for people aged 90 years and over.
- Relative survival has increased significantly over time for both males and females.

5 SURVIVAL AFTER A DIAGNOSIS OF CANCER

Along with details on incidence and mortality, information on the survival of those who were diagnosed with cancer provides an indication of the effect of cancer and the success of cancer control programs and treatments. Survival estimates provide information on the probability that people with cancer will still be alive at a specified point in time (such as 5 years) after diagnosis.

Survival is influenced by a range of factors including the characteristics of those diagnosed with cancer (for example age, sex, additional illnesses and lifestyle); the nature of the tumours (for example stage at diagnosis and histology type); and the health-care system (for example screening, diagnostic and treatment facilities, and follow-up services) (Black et al. 1998; WCRF & AICR 2007).

Most commonly, 'relative survival' estimates are considered when examining survival from cancer. These estimates are derived by comparing the survival of people diagnosed with cancer (that is, observed survival) with that experienced by people in the general population of equivalent age, sex and calendar year (that is, expected survival). The ratio of observed to expected survival is used as an indicator of the proportion of people who survived their cancer. An estimate of less than 100% suggests that those with cancer had a lower chance of survival than the general population. For example, 5-year relative survival of 60% for people diagnosed with a particular type of cancer means that these people had a six in ten chance of surviving 5 years after diagnosis *relative* to comparable people in the general population. Box 5.1 provides additional information on how to interpret relative survival estimates. As well, further technical information about how the relative survival estimates were calculated is provided in Appendix F.

Box 5.1: What does 'relative survival' actually mean?

First, let's consider what relative survival does not mean. It does *not* reflect an *individual's* chance of surviving cancer. How long an individual will live after a diagnosis of cancer is affected by a range of factors, such as the specific characteristics of the individual, the cancer they have and the treatments received. A doctor is the best source of information about an individual's survival prospects.

So then what does 'relative survival' tell us? Since relative survival estimates are based on the outcomes of a group of people with a diverse mix of cancer and other characteristics, they provide an indication of the *average* survival experience. Also, the survival estimates are based on specific years in the past and thus give an indication of survival for people diagnosed in those years. Depending on the degree of change that has occurred, the survival estimates may or may not be similar to the survival experience of those diagnosed more recently.

Often, the period of 5 years after diagnosis is used when talking about relative survival. Survival to 5 years after diagnosis may or may not be of any medical significance in terms of indicating long-term survival prospects for a particular type of cancer. Instead, the use of this period is a statistical convention that allows for the easy comparison of survival estimates across cancer sites and over time.

Lastly, relative survival estimates can be presented in terms of either a probability of being alive or a probability of dying. Thus, for example, a 5-year relative survival estimate of 60% for a particular cancer can also be presented as a 40% chance of dying within 5 years of diagnosis, compared with the general population. When the data are examined from the 'mortality' perspective, the concept is referred to as 'excess mortality' due to cancer.

The most recent national relative survival estimates were released in the 2008 report titled *Cancer survival and prevalence in Australia* (AIHW et al. 2008). A summary of the 5-year relative survival estimates, as presented in that report, are provided in this chapter. This includes: relative survival estimates for selected cancers during the period 1998 to 2004; a discussion of differences in relative survival by sex and age at diagnosis; and consideration of change over time in survival. In addition, international data on survival are provided.

What is the prospect of survival?

For those diagnosed with cancer between 1998 and 2004, the 5-year relative survival for all cancers combined, excluding non-melanoma skin cancers (NMSC), was 61% (Table 5.1). In other words, those diagnosed with a reportable cancer between 1998 and 2004 were 61% as likely to live 5 years after diagnosis as comparable members of the general population. Women had a significantly better chance of survival than men, with the 5-year relative survival estimate equalling 64% for women and 58% for men.

Table 5.1: Five-year relative survival, all cancers combined[(a)], Australia, 1998–2004

	Relative survival (%)	95% confidence interval
Males	58.4	58.2–58.6
Females	64.1	63.9–64.3
Persons	**61.0**	**60.9–61.2**

(a) Includes cancers coded in ICD-10 as C00–C97 (except for C44), D45, D46, D47.1 and D47.3.

Source: AIHW, CA & AACR 2008.

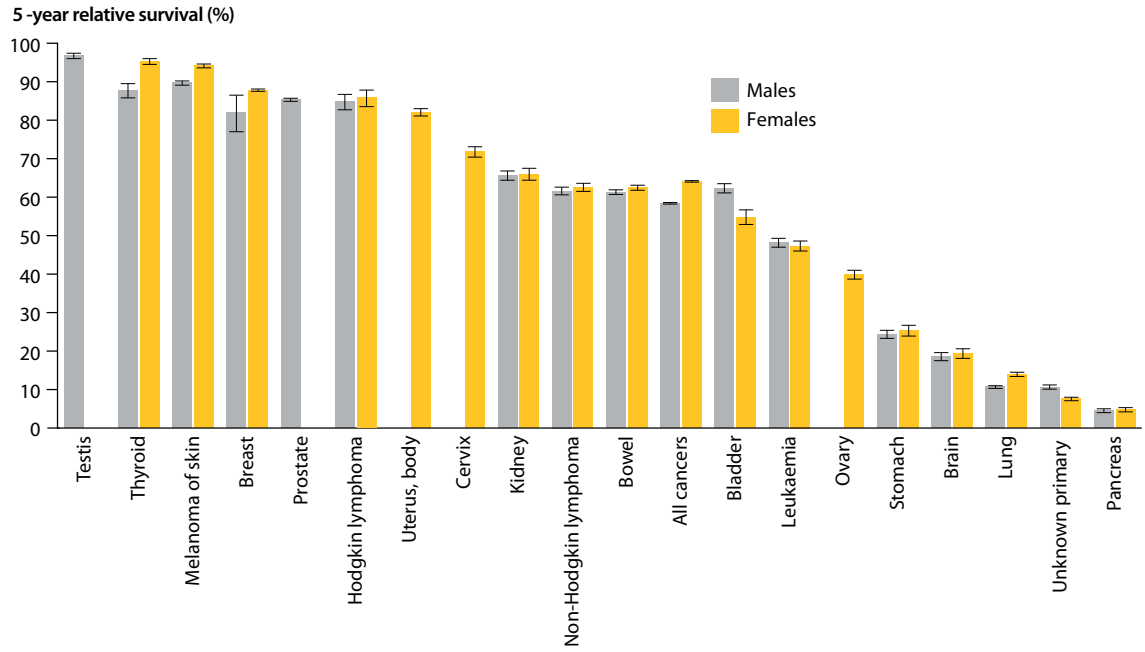
Is the prospect of survival similar for all cancer sites?

Relative survival estimates for selected cancer sites are presented in Figure 5.1. Note that some of the cancer sites (for example uterine cancer, non-Hodgkin lymphoma, leukaemia and cancer of unknown primary site) pertain to a different subset of ICD-10 codes than generally considered in this report (see Appendix F for more information).

In the 1998 to 2004 period, the highest 5-year relative survival was observed for those diagnosed with thyroid cancer (93%), melanoma of the skin (92%) and breast cancer (88%). In contrast, 5-year relative survival was lowest for those diagnosed with pancreatic cancer (5%) and cancer of unknown primary site (9%).

Variations as to which cancers had the highest 5-year relative survival in 1998 to 2004 are evident among males and females. The 5-year relative survival for males was highest for those diagnosed with testicular cancer (97%), melanoma of the skin (90%) and thyroid cancer (88%), while the highest relative survival for females was observed for those diagnosed with thyroid cancer (95%), melanoma of the skin (94%) and Hodgkin lymphoma (86%).

For both males and females the lowest 5-year relative survival was observed for those diagnosed with pancreatic cancer (5% for both sexes), cancer of unknown primary site (11% and 8%, respectively) and lung cancer (11% and 14%, respectively).



Notes

1. All cancers includes cancers coded in ICD-10 as C00–C97 (except for C44), D45, D46, D47.1 and D47.3
2. The data for this figure are shown in Appendix Table D5.1.

Source: AIHW, CA & AACR 2008; AIHW Australian Cancer Database.

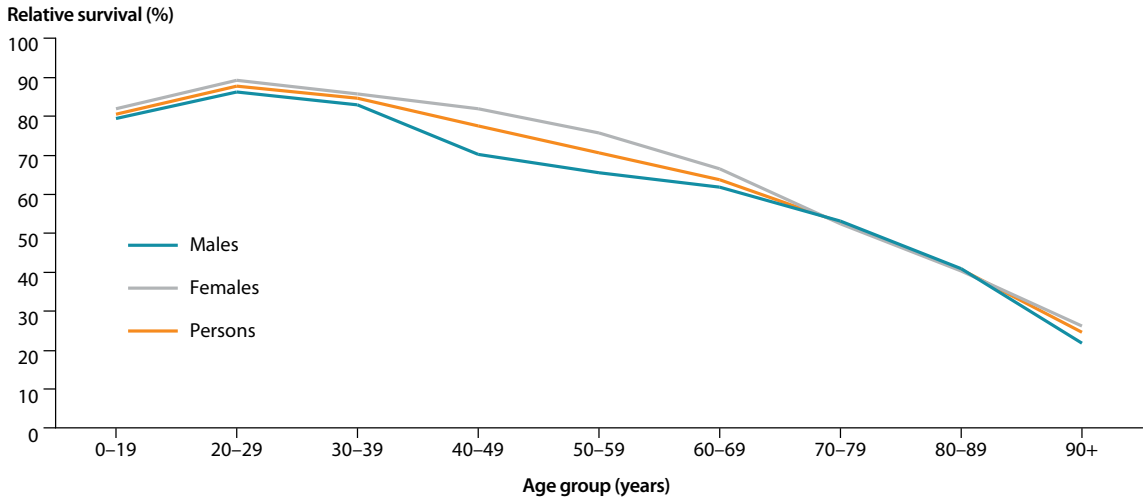
Figure 5.1: Five-year relative survival for selected cancers, Australia, 1998–2004

For most of the cancers examined, relative survival was similar for men and women during 1998 to 2004. However, men had significantly higher survival than women from bladder cancer (1.1 times women) and cancer of unknown primary site (1.4 times women), while 5-year relative survival was significantly higher for women than men for lung cancer (1.3 times men), breast cancer (1.1 times men), thyroid cancer (1.1 times men), and melanoma of the skin (1.1 times men).

Does survival differ by age?

For all reportable cancers combined, 5-year relative survival was highest for those diagnosed with cancer between the ages of 20 and 29 years (88%), with this figure being significantly higher than that observed for all other age groups, including the youngest age group (that is, people aged 0 to 19 years) (Figure 5.2). The lowest survival proportion of 25% was observed for the oldest age group—people aged 90 years and over. The difference by age in survival may be due to a number of reasons, including differences in cancer types diagnosed and the stage at diagnosis of the tumours, a greater likelihood of comorbidity among those diagnosed at an older age, and differences by age in treatment received and inclusion in clinical trials (Brenner & Arndt 2004; Ellison & Gibbons 2006; NCRI & WHC 2006).

When comparing the age-specific relative survival estimates for males and females, it is evident that women aged 20 to 69 years had a significantly better chance of survival than men in corresponding age groups. This disparity was most marked for the age group of 40–49 years, where 5-year relative survival was 82% for women but only 70% for men. For the youngest age group (those aged 0 to 19 years) and the oldest age groups (those age 70 years and over), there was no statistically significant difference in relative survival between males and females.



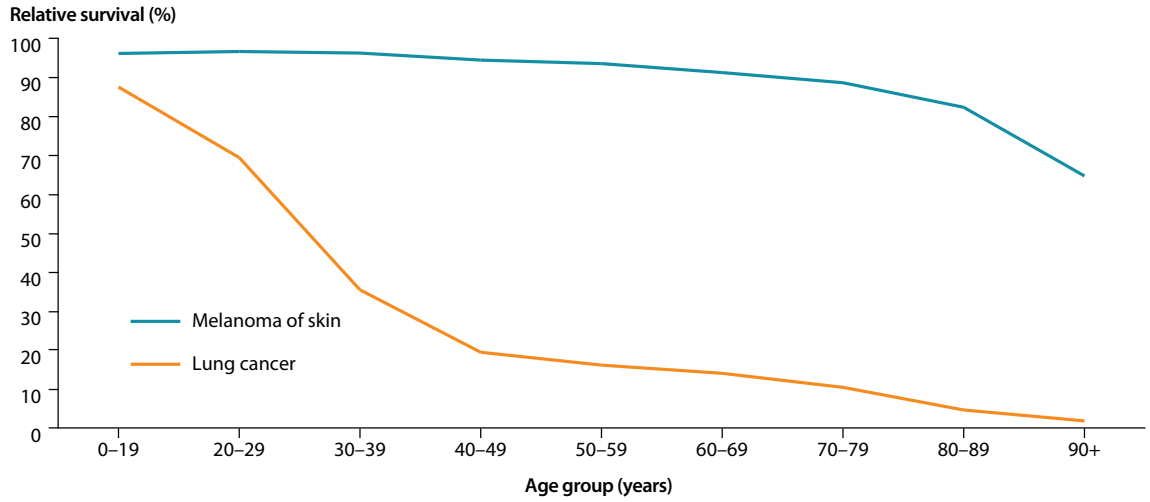
Notes

1. The data pertain to cancers coded in ICD-10 as C00–C97 (except for C44), D45, D46, D47.1 and D47.3.
2. The data for this figure are shown in Appendix Table D5.2.

Source: AIHW, CA & AACR 2008.

Figure 5.2: Five-year relative survival by age at diagnosis, all cancers combined, Australia, 1998–2004

Similar to the trend by age observed for all cancers combined, almost all of the selected cancers showed a decrease in the 5-year relative survival with increasing age. However, the size of the decline varied considerably, depending on the type of cancer diagnosed. For example, 5-year relative survival for melanoma of the skin decreased from 96% in people aged 0–19 years to 65% in people aged 90 years and over; whereas lung cancer survival declined from 87% to 2% over the same age groups (Figure 5.3).

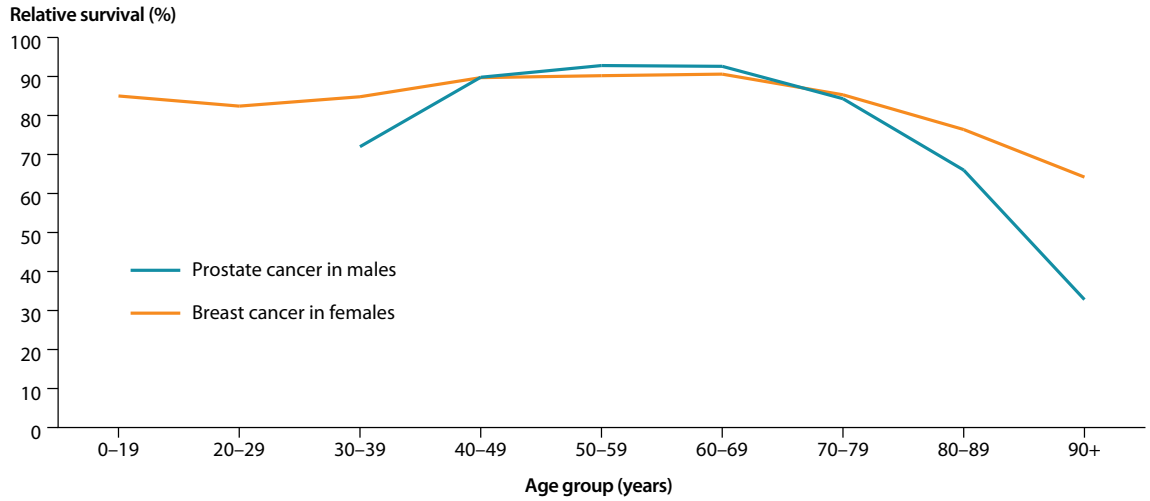


Note: The data for this figure are shown in Appendix Table D5.2.

Source: AIHW, CA & AACR 2008.

Figure 5.3: Five-year relative survival by age at diagnosis, lung cancer and melanoma of the skin, people, Australia, 1998–2004

Cancers that did not follow the general pattern of decreasing survival with increasing age at diagnosis were prostate cancer in males and breast cancer in females. For both of these cancers the highest 5-year relative survival was observed in the age groups 50–59 and 60–69 years (Figure 5.4).



Notes

1. Relative survival proportions for prostate cancer in the 0–19 and 20–29 year age group could not be calculated because this group contained few or no cases in the fifth year after diagnosis.
2. The data for this figure are shown in Appendix Table D5.2.

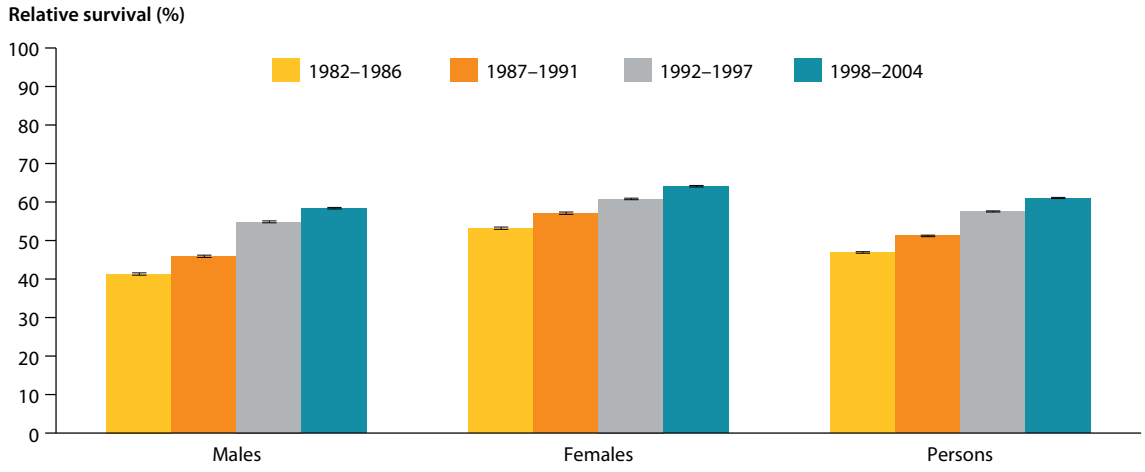
Source: AIHW, CA & AACR 2008.

Figure 5.4: Five-year relative survival by age at diagnosis, prostate cancer in males and breast cancer in females, Australia, 1998–2004

How has survival changed over time?

Survival prospects for those diagnosed with a reportable cancer have increased significantly over time. Figure 5.5 shows that the 5-year relative survival for people diagnosed with cancer (other than NMSC) increased from 47% in 1982–1986 to 61% in 1998–2004. Note that the method to calculate the relative survival proportions in this chapter does not take into account differing age structures in the population. The pattern of the trend towards increased survival is similar when calculating age-standardised relative survival proportions (AIHW et al. 2008).

Figure 5.5 also shows that the trend towards increased 5-year relative survival is evident in both sexes, although the gain in survival has been greater for males than females. In particular, the relative survival estimate for males for all cancers combined increased from 41% in 1982–1986 to 58% in 1998–2004, compared to 53% to 64% for females. These gains in survival can be explained by better diagnostic methods, earlier detection and improvements in treatment.



Notes

1. The data pertain to cancers coded in ICD-10 as C00–C97 (except for C44), D45, D46, D47.1 and D47.3.
2. The data for this figure are shown in Appendix Table D5.3.

Source: AIHW, CA & AACR 2008.

Figure 5.5: Five-year relative survival, all cancers combined, Australia, 1982–1986 to 1998–2004

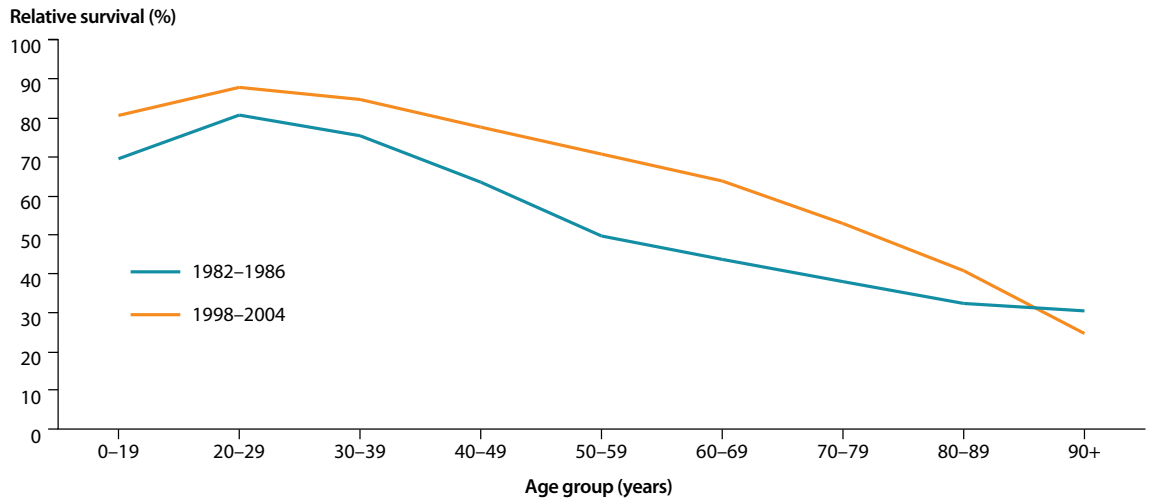
Improvements in survival were also observed for most of the selected cancer sites between 1982–1986 and 1998–2004, including for breast cancer in females and prostate cancer. The 5-year relative survival for breast cancer in females increased from 72% to 88% between 1982–1986 and 1998–2004, while the 5-year survival improved from 57% to 85% for prostate cancer over the same period.

However, gains in survival have not been consistent across all types of cancer. For example, for brain cancer and lung cancer there has been very little change and the 5-year relative survival has remained low at 19% to 21% for brain cancer and 9% to 12% for lung cancer.

Is the gain in survival over time evident in all age groups?

Five-year relative survival curves by age at diagnosis for people diagnosed with cancer between 1982–1986 and 1998–2004 are shown in Figure 5.6. The figure illustrates that increases in survival have been made in the majority of the age groups. An exception is the oldest age group (that is, those aged 90 years and older) for which the 5-year relative survival estimates declined significantly from 30% in 1982–2004 to 25% in 1998–2004.

For age groups where gains were made, the largest increases between 1982–1986 and 1998–2004 were observed in those aged 50 to 79 years. Specifically, 5-year relative survival increased from 50% to 71% in the 50–59 year age group, from 44% to 64% in 60–69 year age group, and from 38% to 53% in the 70–79 year age group. Although statistically significant gains also were made in the youngest age groups, the overall increases were smaller.



Notes

1. The data pertain to cancers coded in ICD-10 as C00–C97 (except for C44), D45, D46, D47.1 and D47.3.
2. The data for this figure are shown in Appendix Table D5.3.

Source: AIHW, CA & AACR 2008.

Figure 5.6: Five-year relative survival by age at diagnosis, all cancers combined, Australia, 1982–1986 to 1998–2004

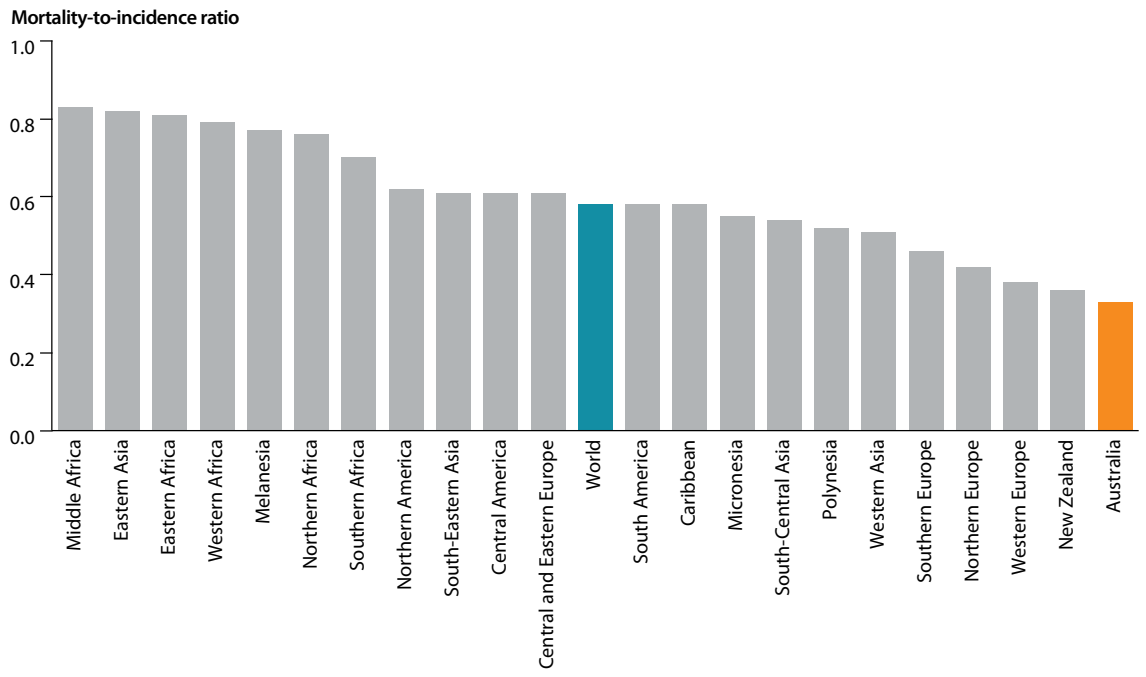
How does Australia compare internationally?

In addition to the methodological challenges associated with comparing cancer statistics from different countries (as discussed in Chapter 1), additional uncertainties arise when comparing relative survival estimates. In particular, there tends to be wide variation across countries in: the years to which the relative survival estimates apply; the length of the follow-up period considered (for example 1-, 5-, 10-year and so forth); and the methods and age groups used to calculate the relative survival estimates. For these reasons, relative survival estimates for different countries are not compared in this report.

Although more rudimentary than relative survival estimates, the mortality-to-incidence ratio (MIR) is used in this report to make international comparisons. This ratio describes how many deaths there were in a particular year due to a particular disease, relative to the number of new cases diagnosed that year (using age-standardised data). For example, an MIR of 0.30 for cancer would indicate that there were 30 deaths for every 100 new cases of cancer diagnosed in that year (though the deaths need not relate to the same people as the cases). If survival tends to be lower in a particular country relative to others, then the MIR for that country generally would be expected to be higher (that is, closer to 1.00). In contrast, if survival is higher, the ratio generally would be closer to zero. Appendix F provides further information about interpreting MIRs.

For this report, mortality-to-incidence for cancer ratios was calculated using data from GLOBOCAN (Ferlay et al. 2010). The fact that the GLOBOCAN data were estimates for 2008 should be taken into account when interpreting the results shown in Figure 5.7.

The 2008 GLOBOCAN data suggest that the MIRs for all cancers varied markedly between different countries and regions. The MIR for Australia was 0.33, indicating that the survival of people in Australia who were diagnosed with cancer was higher than that of people in other countries and regions. By comparison, the MIR for people in all of the African regions, as well as Melanesia and Eastern Asia, was 0.70 or higher, suggesting relatively poor survival.



Notes

1. The ratios are based on incidence and mortality data for 2008.
2. The mortality-to-incidence ratio equals the age-standardised mortality rate divided by the age-standardised incidence rate.
3. The data pertain to cancers coded in ICD-10 as C00–C97 with exception from code C44, which indicates non-melanoma skin cancer.
4. The data for this figure are shown in Appendix Table D5.4.

Source: Ferlay et al. 2010.

Figure 5.7: International comparison of mortality-to-incidence ratios for all cancers, 2008

6

PREVALENCE OF CANCER

Key findings

- At the end of 2004, there were 297,142 people alive who had been diagnosed with cancer at any time in the previous 5 years. This represented 1.5% of the Australian population.
- The 5-year prevalence was higher in males than in females (52% and 48% of all prevalent cases, respectively).
- Five-year prevalence for males was highest for prostate cancer (representing 34% of all prevalent cases), followed by melanoma of the skin (15%) and bowel cancer (15%).
- Five-year prevalence for females was highest for breast cancer (representing 32% of all prevalent cases), followed by bowel cancer (13%) and melanoma of the skin (13%).

6 PREVALENCE OF CANCER

Prevalence, or complete prevalence as it is sometimes called, is the number of people alive at a specified point in time who have ever been diagnosed with cancer regardless of how long ago this diagnosis was. These people may or may not be undergoing treatment or be considered 'cured'. In contrast, 'limited-duration prevalence' provides information on the number of people alive who were diagnosed with cancer within a specified time period, such as the previous 5 years. Five-year prevalence data, for example, would indicate the number of people alive on 31 December of a specified year who were diagnosed with cancer at any time within the previous 5 years.

The prevalence of a disease in a given population is influenced by the incidence of the disease, survival from the disease and the age at which people are diagnosed, because older people are more likely to die sooner due to age-related morbidity and frailty.

Along with information on incidence, mortality and survival, prevalence is another indicator of the impact of cancer in our society both at the personal/family level and societal level, particularly in terms of health-care services.

The most recent national prevalence estimates were released in the 2008 report *Cancer survival and prevalence in Australia* (AIHW et al. 2008). A summary of 5-year prevalence data, as presented in that report, is provided in this chapter. This includes prevalence estimates for selected cancers at the end of 2004 and a discussion of differences in prevalence by sex.

In this chapter, no international comparisons are made. Making such comparisons is difficult since prevalence data from other countries often differ from Australian data in the years to which they apply, the number of years considered (for example 1-, 5-, 10-year and so forth) and the analytical methods employed to calculate prevalence.

Unlike incidence data, which pertain to the number of *cases* of a cancer, the prevalence data presented in this report pertain to the number of *people* who have been diagnosed with one or more cancers and are still alive.

How prevalent was cancer in 2004?

At the end of 2004, 297,142 people were alive who had been diagnosed with cancer in the previous 5 years (Table 6.1). This represented 1.5% of the Australian population in that year. Men made up 52% of the 5-year prevalence while women made up 48%.

Table 6.1: Five-year prevalence of all cancers combined[(a)], Australia, as at the end of 2004

	Number[(b)]	Per cent of prevalent cases	Per cent of population[(c)]
Males	155,589	52	1.5
Females	141,553	48	1.4
Persons	**297,142**	**100**	**1.5**

(a) Includes cancers coded in ICD-10 as C00–C97 (except for C44), D45, D46, D47.1 and D47.3.

(b) Pertains to the number of people, not cases.

(c) Based on the number of people in the Australian population at 31 December 2004.

Source: AIHW, CA & AACR 2008.

Prevalence by selected cancer sites

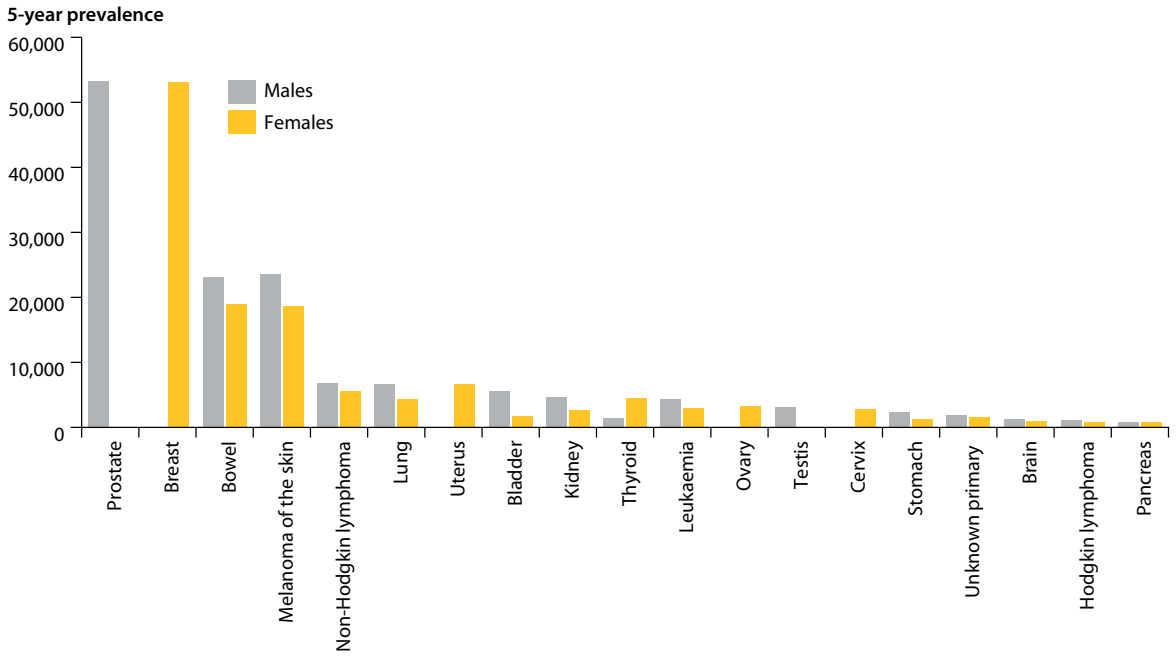
Five-year prevalence data for selected cancer sites are presented in Figure 6.1. Note that some of the cancer sites (for example uterine cancer, non-Hodgkin lymphoma, leukaemia and cancer of unknown primary site) pertain to a different subset of ICD-10 codes than generally considered in this report.

Excluding non-melanoma skin cancer, prostate cancer stood out as the most prevalent type of cancer among males, with a 5-year prevalence of 53,296 males. The second most prevalent type of cancer among males over the 5-year period was melanoma of the skin (5-year prevalence of 23,514 males), followed by bowel cancer (5-year prevalence of 23,148 males). Prostate cancer accounted for 34% of the total 5-year prevalence in males, while both melanoma of the skin and bowel cancer contributed 15%.

Excluding non-melanoma skin cancer, breast cancer was the most prevalent type of cancer in females (5-year prevalence of 53,051 females), followed by bowel cancer (5-year prevalence of 18,940 females) and melanoma of the skin (5-year prevalence of 18,697 females). Breast cancer accounted for 38% of the total 5-year prevalence in females, while both bowel cancer and melanoma of the skin contributed 13%.

Of the selected cancer sites, the lowest 5-year prevalence was observed for pancreatic cancer (5-year prevalence of 752 males and 814 females), Hodgkin lymphoma (5-year prevalence of 1,046 males and 884 females) and brain cancer (5-year prevalence of 1,274 males and 940 females).

For the majority of cancer sites, 5-year prevalence was higher in males than in females. This trend was most pronounced in bladder cancer and stomach cancer. For bladder cancer the 5-year prevalence was over three times higher in males than in females (5-year prevalence of 5,594 males and 1,715 females) and for stomach cancer it was almost two times higher in males than in females (5-year prevalence of 2,276 males and 1,252 females). In contrast the 5-year prevalence for thyroid cancer was 0.3 times higher in females than in males (5-year prevalence of 1,397 males and 4,502 females).



Notes

1. Pertains to the number of males/females, not cases.
2. The data for this figure are shown in Appendix Table D6.1.

Source: AIHW, CA & AACR 2008.

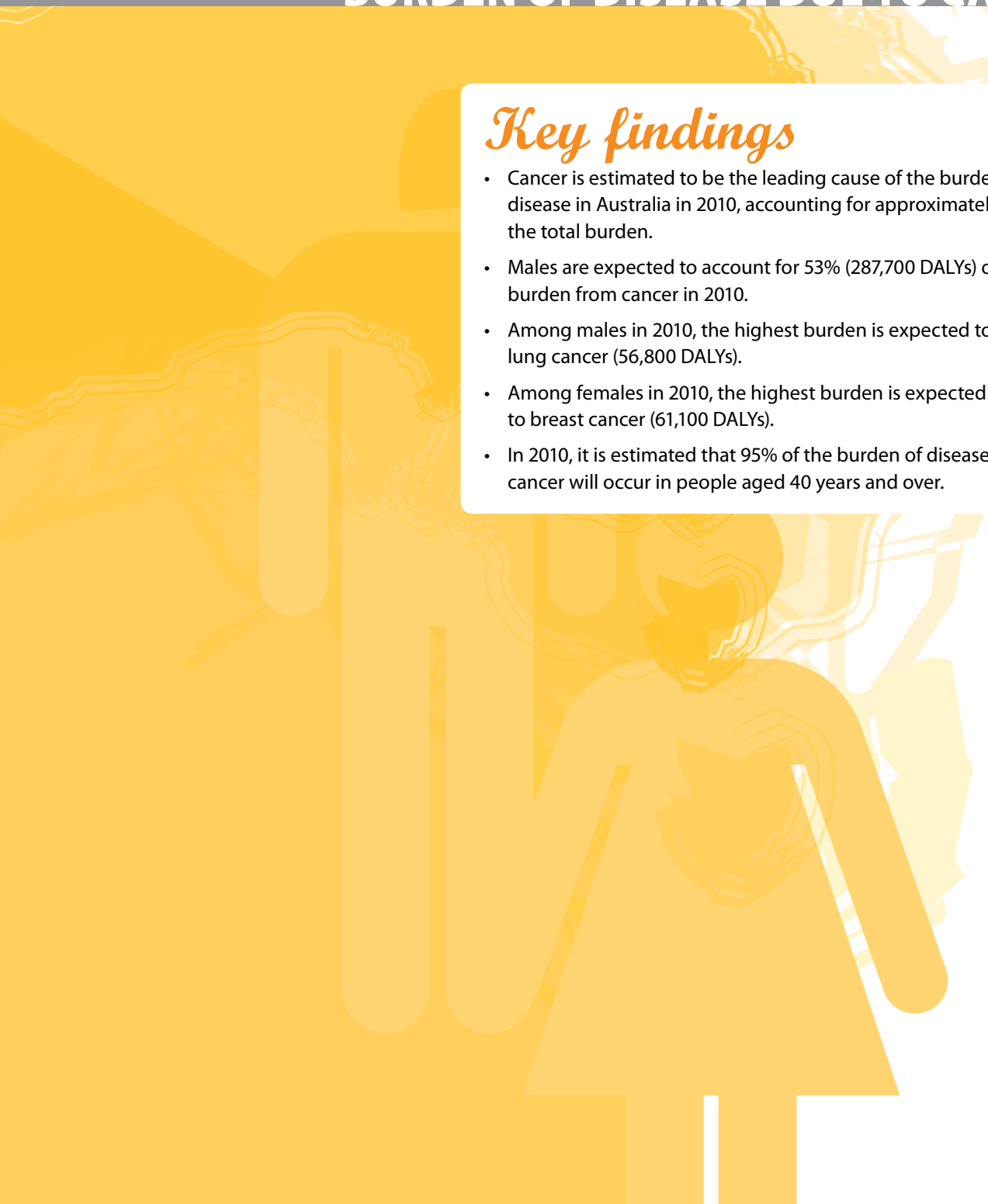
Figure 6.1: Five-year prevalence of selected cancers, Australia, as at the end of 2004

7

BURDEN OF DISEASE DUE TO CANCER

Key findings

- Cancer is estimated to be the leading cause of the burden of disease in Australia in 2010, accounting for approximately 19% of the total burden.
- Males are expected to account for 53% (287,700 DALYs) of the burden from cancer in 2010.
- Among males in 2010, the highest burden is expected to be due to lung cancer (56,800 DALYs).
- Among females in 2010, the highest burden is expected to be due to breast cancer (61,100 DALYs).
- In 2010, it is estimated that 95% of the burden of disease due to cancer will occur in people aged 40 years and over.



7 BURDEN OF DISEASE DUE TO CANCER

The effect of cancer on the health of Australians can be summarised by using a variety of different measures that combine information on both fatal and non-fatal health outcomes into a single number. Such measures can be used for a range of purposes including:

- comparing the burden associated with different cancers
- comparing the effect of a particular cancer on different population groups or over time
- setting priorities for health planning, public health programs, as well as research and development (Murray et al. 1999).

Of the available summary measures, one of the most commonly used is the 'disability-adjusted life year' (DALY), also commonly referred to as 'burden of disease'. The DALY combines information on the extent of:

- premature death—which is measured by the years of life lost (YLL) due to disease or injury, and
- non-fatal health outcomes—which are measured by years of 'healthy' life lost (YLD) due to disease, disability or injury.

In order to combine these two health measures into a summary measure, the DALY uses time as a common 'currency'. Hence, the DALY is a measure of the years of life lost due to premature death (YLL) and years of healthy life lost due to disease, disability or injury (YLD), or a combination of the two. The more DALYs associated with a particular disease, the greater the burden. Further information about DALYs can be found in Box 7.1 and in Appendix G.

In this chapter, the estimated burden of disease in 2010 due to selected cancers and all cancers combined is presented, with the data sourced from the AIHW Burden of Disease Database. Information about the methodology used to estimate the burden of disease due to cancer in 2010 can be found in the AIHW report by Begg and associates (2007) and in Appendix G of this report.

Note that in this section of the report some cancer groupings are defined differently from that used in most other sections of this report (See Appendix G for more information).

Box 7.1 What is a 'DALY'?

One disability-adjusted life year or 'DALY' is one year of 'healthy life' lost due to a disease or injury. To illustrate the basic concept, a person who has been healthy all his life but who suddenly dies of a heart attack 20 years early has lost 20 years of healthy life—20 DALYs. For a person who lives to a normal old age but has been only 'half-well' for 30 years, there are 15 DALYs. Using information about the duration and severity of diseases and injuries in individuals, and the pattern of these conditions among the community, DALYs can be added up for each problem (for example, lung cancer) and also combined to give a grand total for a specific disease group, such as cancer (AIHW 2010e).

Burden of disease due to cancer in 2010

Cancer is estimated to be the leading cause of the burden of disease in Australia in 2010. It is estimated that it will account for approximately 539,800 DALYs, which is approximately 19% of the total burden. In comparison, cardiovascular disease is expected to account for 16% of the total burden, while mental disorders and nervous system and sense disorders are both expected to account for 13%.

Males are expected to account for 53% (287,700 DALYs) of the burden from cancer and females 47% (252,100 DALYs).

Burden of disease by selected cancer sites

Among males in 2010, lung cancer is expected to be the leading cause of the burden of disease due to cancer (56,800 DALYs), followed by prostate cancer (42,500 DALYs) and bowel cancer (37,800 DALYs). Together these cancers are estimated to account for almost 50% of the total burden of disease due to cancer in males.

Among females, the highest burden is expected to be due to breast cancer (61,113 DALYs), lung cancer (41,300 DALYs) and bowel cancer (30,300 DALYs), with these cancers expected to contribute 53% of the total burden of disease due to cancer.

Apart from the sex-specific cancers (that is, breast cancer, cervical cancer and uterine cancer in females, and prostate cancer and testicular cancer in males), there were considerable differences in the experience of burden from cancer between the sexes, with males having a greater share of the burden of disease from melanoma of the skin, bowel cancer, lymphoma and lung cancer than females. The imbalance was greatest for melanoma of the skin, where the number of DALYs in males was more than twice that of females (15,200 and 7,000 DALYs, respectively).

Table 7.1: Estimated leading cancer causes of burden of disease, Australia, 2010[a]

Males				Females			
Site/type	DALYs	% of cancer burden	% of total burden	Site/type	DALYs	% of cancer burden	% of total burden
Lung	56,800	20	4	Breast	61,100	24	4
Prostate	42,500	15	3	Lung	41,300	16	3
Bowel	37,800	13	3	Bowel	30,300	12	2
Melanoma	15,200	5	1	Ovary	12,900	5	1
Lymphoma	14,200	5	1	Pancreas	12,400	5	1
Leukaemia	12,600	4	1	Lymphoma	12,000	5	1
Pancreas	12,500	4	1	Leukaemia	9,200	4	1
Brain	12,300	4	1	Brain	8,800	4	1
Oesophagus	10,500	4	1	Melanoma	7,000	3	1
All cancers[b]	**287,700**	**100**	**20**	**All cancers[a]**	**252,100**	**100**	**18**

(a) The estimates were based on burden of disease data for 1979 to 2003. See Appendix G for further details. The estimates may not sum to the total due to rounding.

(b) Includes cancers coded in ICD-10 as C00–C96.

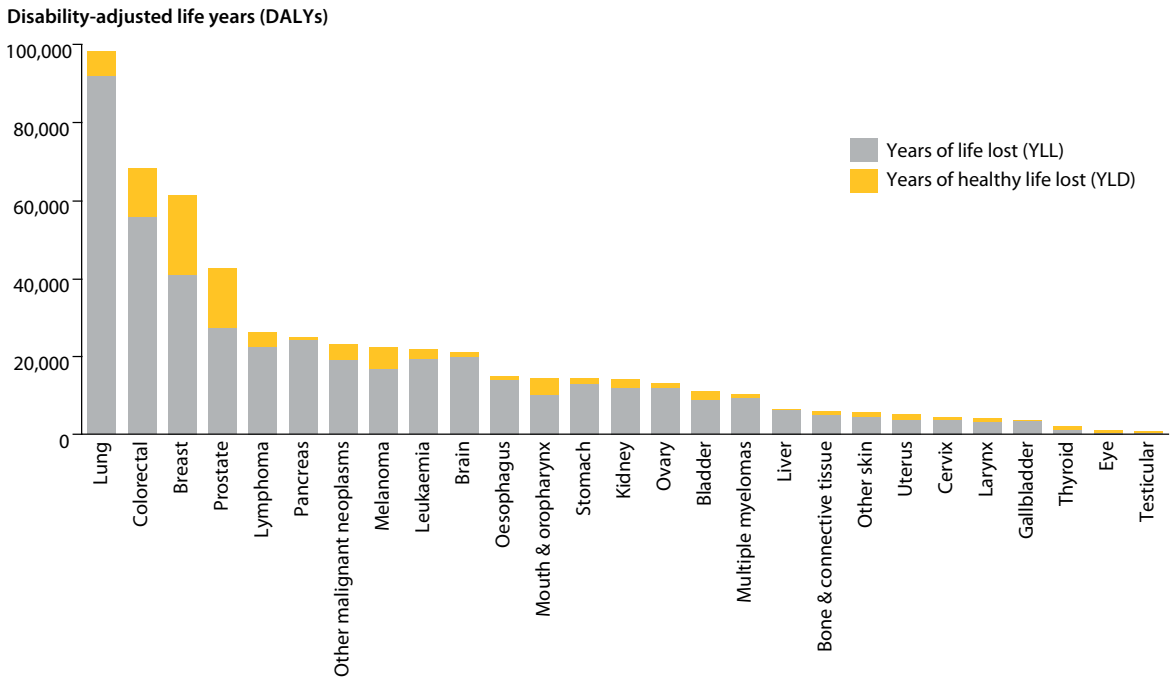
Source: AIHW Burden of Disease Database.

Burden due to years of life lost (YLL) and years of life lost to disability (YLD)

Figure 7.1 shows the extent of the estimated burden of disease due to cancer which is both due to premature death (YLL) and due to disease, disability or injury (YLD). For cancer, causes of years of healthy life lost to disability (YLD) include side effects during and after treatment (for example during and after radiotherapy or chemotherapy) and the psychosocial affects following diagnosis and treatment.

In 2010, cancer is estimated to account for 34% (447,300 YLLs) of the total years of life lost to premature death and 6% (92,500 YLDs) of the total years of healthy life lost to disease, disability or injury. Of the selected cancer sites, lung cancer (91,700 YLLs) is expected to result in the highest number of years lost to premature death, followed by bowel cancer (55,800 YLLs) and breast cancer in females (40,800 YLLs). Meanwhile, breast cancer in females (20,500 YLDs) is expected to account for the highest number of years lost to disease, disability or injury, followed by prostate cancer (15,200 YLDs) and bowel cancer (12,400 YLDs).

Due to the relatively poor prognosis for many cancers compared with other diseases, most cancers contribute more years of life lost to premature death (YLL) than years of healthy life lost to disease, disability or injury (YLD). In 2010, this discrepancy is expected to be most marked for pancreatic cancer and liver cancer, with more than 95% of the burden from these cancers coming from years of life lost due to premature death (97% for pancreatic cancer and 98% for liver cancer). The two components are expected to be most equally balanced in eye cancer, where half (50%) of the total DALYs are due to premature death.



Notes

1. Breast cancer pertains to breast cancer in females only.
2. Liver cancer excludes hepatitis B- and C-related liver cancer.
3. The data for this figure are shown in Appendix Table D7.1.

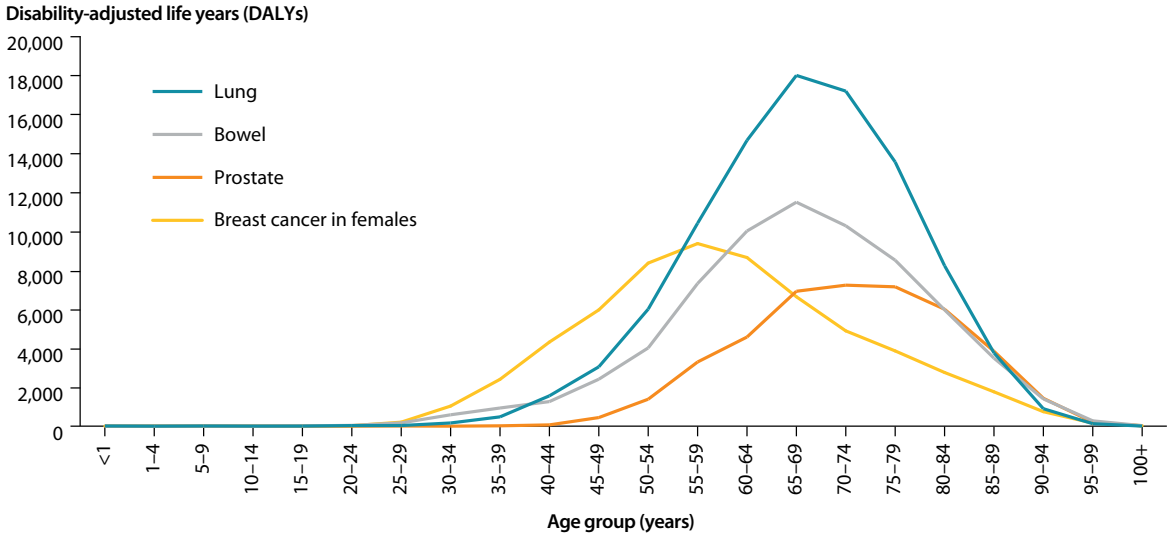
Source: AIHW Burden of Disease database.

Figure 7.1: Estimated burden of disease for cancer, by fatal and non-fatal components, Australia, 2010

Differences by age

In 2010, it is expected that 95% of the burden of disease due to cancer will be experienced by people aged 40 years and older.

Figure 7.2 shows that the burden of lung cancer and bowel cancer is concentrated in people aged 45 to 89 years, with the burden of disease from these cancers peaking in those aged 65 to 69 years. The burden of disease due to prostate cancer is characterised by a later rise in DALYs, with the burden peaking in males aged 70 to 74 years. In contrast, the burden of disease due to breast cancer in women is concentrated on younger age groups (women aged 40 to 79 years) and peaks in women aged 55 to 59 years.



Note: The data for this figure are shown in Appendix Table D7.2.

Source: AIHW Burden of Disease Database.

Figure 7.2: Estimated leading cancer causes of burden of disease by age group, Australia, 2010

8

HOSPITALISATIONS FOR CANCER

Key findings

- Cancer was responsible for one in ten of all hospitalisations in Australia in the 2007–08 and 2008–09 financial years.
- The number of cancer-related hospitalisations increased slightly from 836,340 hospitalisations for the 2007–08 financial year to 836,906 hospitalisations for the 2008–09 financial year.
- Three-quarters of cancer-related hospitalisations in the 2007–08 and 2008–09 financial years were for same-day care.
- In 2008–09, the total number of bed days occupied by cancer patients was approximately 2.27 million, an increase of just over 9,000 bed days from 2007–08.
- The average length of stay for all cancer-related hospitalisations was 2.7 days for both 2007–08 and 2008–09. When same-day hospitalisations are excluded, the average length of stay was 7.8 days in 2007–08 and 7.7 days in 2008–09—this is longer than the average length of stay for all overnight hospitalisations (6.2 and 6.0 days respectively).
- Non-melanoma skin cancer was the most common cancer type recorded as the primary reason for hospitalisation in the 2007–08 and 2008–09 financial years, responsible for approximately 85,000 hospitalisations each year.
- Chemotherapy was the most common type of other cancer-related hospitalisation in the 2007–08 and 2008–09 financial years, responsible for around 300,000 hospitalisations each year.

8 HOSPITALISATIONS FOR CANCER

The impact on health service resource use through hospitalisation is a good indication of the burden of cancer. Hospital morbidity data provide information on people requiring hospitalisation as an admitted patient for a variety of reasons including both diagnostic procedures and treatment. The number of such hospitalisations for cancer in any one year is related not only to the number of people with cancer, but also to the number of cancer-related health services requiring admission to hospital. Other factors that may influence the number of cancer-related hospitalisations in any one year include the availability of same-day health-care services, relative accessibility of hospital care, admission criteria, administrative policies and funding considerations.

In this chapter, a summary is provided on the number of admitted patient hospitalisations that are related to the care and/or treatment of people with cancer. Note that detailed statistics on hospitalisations by cancer type are provided in Appendix Tables D8.1 and D8.2.

The data source for this chapter was the National Hospital Morbidity Database (NHMD) which contains data on admitted patient hospitalisations. Note that the data from the NHMD refer to hospitalisations and not individuals. Any one person may have multiple hospitalisations during the course of a year but data on the number of people hospitalised for a particular disease are not available. The most recent data available relate to the 2008–09 financial year, with this chapter focusing on the 2007–08 and 2008–09 financial years. Further information about the NHMD can be found in Appendix G.

Data on hospitalisations include principal diagnosis—this is the reason determined to be chiefly responsible for the person's hospitalisation. The principal diagnosis recorded is usually a disease (or injury or poisoning), but can also be a specific treatment of an already diagnosed condition, such as chemotherapy for cancer. Identifying those hospitalisations that are due specifically to cancer includes those admitted patient hospitalisations in which:

- the principal diagnosis is cancer (ICD-10 AM codes C00–C97, D45, D46, D47.1 and D47.3), or
- the principal diagnosis is related to health services or treatment for cancer (such as Z51.1 Pharmacotherapy session for neoplasm) or
- the principal diagnosis is a health service or treatment that may also relate to diseases other than cancer, but the patient has an additional diagnosis of cancer (such as Z42.1 Follow-up care involving plastic surgery of the breast).

For the purposes of this report, hospitalisations with a principal diagnosis of cancer are called 'Cancer as principal diagnosis' whereas those hospitalisations with principal diagnoses related to health services or treatments of cancer (such as follow-up care or screening) are called 'Other cancer-related principal diagnosis'. See Appendix I for further details on the classification of cancer-related hospitalisations.

Hospitalisations for cancer in 2007–08 and 2008–09

Cancer was responsible for one in ten hospitalisations in Australia in both the 2007–08 and 2008–09 financial years. In almost half (47%) of all cancer-related hospitalisations, cancer was the principal diagnosis while the remaining hospitalisations were for health services related to cancer (Table 8.1).

There was a slight increase (0.1%) in the total number of cancer-related hospitalisations from 2007–08 to 2008–09. For both periods, three-quarters of the total number of hospitalisations for cancer were same-day hospitalisations.

Table 8.1: Number of hospitalisations, people, Australia, 2007–08 and 2008–09[a]

	2007–08			2008–09		
	Same-day	Overnight	Total	Same-day	Overnight	Total
All cancer-related hospitalisations[b]	626,410	209,930	836,340	625,567	211,159	836,906
Cancer as principal diagnosis	184,708	204,624	389,332	189,332	206,524	395,856
Other cancer-related hospitalisations	441,702	5,306	447,008	436,235	4,635	441,050
All hospitalisations[c]	**4,428,701**	**3,445,244**	**7,873,946**	**4,644,545**	**3,503,903**	**8,148,448**

(a) Hospitalisations are recorded for each financial year.

(b) Principal diagnosis was classified according to International Classification of Disease and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM), fifth and sixth edition. See Appendix I for ICD-10-AM codes included.

(c) ICD-10-AM codes of A00–Z89.

Source: AIHW National Hospital Morbidity Database.

How long, on average, did cancer patients stay in hospital?

Data on the total number of days that patients stayed in hospital are collected in the NHMD, with a length of stay of 1 day allocated to all same-day hospitalisations. By using those data, as well as information on the number of hospitalisations, the average length of stay (ALOS) can be derived.

Cancer patients represent 8.8% of the total length of stay for all diseases. In 2008–09, the total number of bed days occupied by cancer patients was approximately 2.27 million, an increase of just over 9,000 bed days from 2007–08.

The average length of stay for all cancer-related hospitalisations was 2.7 days for both 2007–08 and 2008–09. When same-day hospitalisations are excluded, the average length of stay was 7.8 days in 2007–08 and 7.7 days in 2008–09—this is longer than the average length of stay for all overnight hospitalisations (6.2 and 6.0 days respectively) (Table 8.2).

Table 8.2: Average length of stay (days) for cancer-related hospitalisations, Australia, 2007–08 and 2008–09[a]

	2007–08			2008–09		
	Same-day	Overnight	Total	Same-day	Overnight	Total
All cancer-related hospitalisations[b]	1.0	7.8	2.7	1.0	7.7	2.7
Cancer as principal diagnosis	1.0	8.0	4.7	1.0	7.8	4.6
Other cancer-related hospitalisations	1.0	2.1	1.0	1.0	2.1	1.0
All hospitalisations[c]	**1.0**	**6.2**	**3.3**	**1.0**	**6.0**	**3.2**

(a) Hospitalisations are recorded for each financial year.

(b) Principal diagnosis was classified according to International Classification of Disease and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM), fifth and sixth edition. See Appendix I for ICD-10-AM codes included.

(c) ICD-10-AM codes of A00–Z89.

Source: AIHW National Hospital Morbidity Database.

The cancers with the longest average length of stay varied between 2007–08 and 2008–09. Excluding same-day hospitalisations, the five cancer types with the longest average length of stay in 2007–08 were acute myeloid leukaemia (15.8 days), Kaposi sarcoma (15.2 days), brain cancer (12.8 days), cancers of the central nervous system other than brain or eye (12.6 days) and cancer of the small intestine (11.8 days).

In 2008–09, the five cancer types with the longest average length of stay (excluding same-day hospitalisations) were acute myeloid leukaemia (16.6 days), brain cancer (12.5 days), cancer of the hypopharynx (12.1 days), cancer of other sites in pharynx, etc. (11.9 days) and cancers of the central nervous system other than brain or eye (11.3 days).

Which cancers and related treatments led to the most hospitalisations?

Due to the way in which hospital morbidity data is coded, not all cancer-related hospitalisations can be classified by a specific cancer type. In many instances, those hospitalisations for health services related to cancer do not specify the type of cancer, nor multiple cancers as responsible. As such, examination of cancer types responsible for hospitalisations in Australia are confined to those hospitalisations where cancer is listed as the principal diagnosis. For other cancer-related hospitalisations, variations are examined by treatment type.

Cancer as a principal diagnosis

The ten types of cancer most commonly recorded in Australia as the primary reason for hospitalisation for 2007–08 and 2008–09 are listed in Table 8.3. In both financial years, non-melanoma skin cancer was the most common cause of hospitalisations with cancer as principal diagnosis. It accounted for 1 in 10 of all cancer-related hospitalisations. This was followed by cancer of unknown primary site, prostate, bowel and breast cancers.

Table 8.3: Ten most common hospitalisations with a principal diagnosis of cancer, 2007–08 and 2008–09[a]

	2007–08			2008–09		
Principal diagnosis (ICD-10-AM codes)[b]	Same-day	Overnight	Total	Same-day	Overnight	Total
Non-melanoma skin (C44)	69,359	14,106	83,465	70,962	14,040	85,002
Unknown primary site (C77–C80)	7,610	31,678	39,288	7,267	32,922	40,189
Prostate (C61)	14,309	16,738	31,047	16,458	17,831	34,289
Bowel (C18–C20)	9,697	21,219	30,916	9,182	21,112	30,294
Breast (C50)	5,752	18,217	23,969	6,296	18,823	25,119
Lung (C33–C34)	4,381	14,784	19,165	4,616	14,358	18,974
Non-Hodgkin lymphoma (C82–C85)	8,933	10,347	19,280	8,823	10,101	18,924
Bladder (C67)	7,285	7,693	14,978	6,814	7,541	14,355
Myelodysplastic syndromes (D46)	9,622	3,098	12,720	9,541	2,936	12,477
Myeloma (C90)	5,845	4,117	9,962	6,289	4,019	10,308
All cancer-related hospitalisations[c]	**626,410**	**209,930**	**836,340**	**625,567**	**211,159**	**836,906**

(a) Hospitalisations are recorded for each financial year.

(b) Principal diagnosis was classified according to International Classification of Disease and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM), fifth and sixth edition.

(c) See Appendix I for ICD-10-AM codes included.

Source: AIHW National Hospital Morbidity Database.

The ten most common cancer types represent two-thirds of all overnight cancer-related hospitalisations. In both periods, cancer of unknown primary site was the most common cause of overnight hospitalisations representing one in every six (16%) overnight cancer-related hospitalisations. Meanwhile, one in ten (11%) of all same-day cancer-related hospitalisations were for non-melanoma skin cancer.

From 2007–08 to 2008–09 there were small increases in the total number of hospitalisations for prostate cancer (10.4%), breast cancer (4.8%), myeloma (3.4%), cancer of unknown primary site (2.3%) and non-melanoma skin cancer (1.8%). On the other hand, slight decreases were observed for bladder cancer (4.2%), bowel cancer (2%), myelodysplastic syndromes (1.9%), non-Hodgkin lymphoma (1.8%) and lung cancer (1.0%).

Other cancer-related hospitalisations

Other cancer-related hospitalisations were dominated by chemotherapy sessions and were responsible for approximately one third of all cancer-related hospitalisations in 2007–08 and 2008–09. This was followed by special screening examination for neoplasms; follow-up after surgery for cancer; and adjustment and management of infusion pumps and vascular devices (Table 8.4).

Between 2007–08 and 2008–09, the number of hospitalisations for adjustment and management of infusion pumps and vascular devices (Z45.1 and Z45.2) more than halved, dropping from 46,835 to 20,595 episodes. A possible reason for this is the change in coding standards from the fifth edition of the ICD-10-AM applied in 2007–08 (NCCH 2006b), to the sixth edition applied in 2008–09 (NCCH 2008b). In ICD-10-AM sixth edition, Z45.1 excluded drug delivery devices used for chemotherapy; these were recorded instead under chemotherapy (Z51.1). In addition, vascular catheter without reservoir attached was excluded from Z45.2 and was included instead under code Z45.8 (adjustment and management of other implanted devices). This was evident in the 5% and 45% increases in Z51.1 and Z45.8 respectively.

Table 8.4: Five most common other cancer-related hospitalisations, 2007–08 and 2008–09[a]

	2007–08			2008–09		
Principal diagnosis (ICD-10-AM codes)[b]	Same-day	Overnight	Total	Same-day	Overnight	Total
Chemotherapy session (Z51.1)	298,817	179	298,996	313,910	163	314,073
Special screening examination (Z12)	43,686	614	44,300	48,052	460	48,512
Follow-up after surgery for cancer (Z08.0)	33,882	1,961	35,843	36,034	1,943	37,977
Adjustment and management of infusion pumps and vascular device (Z45.1, Z45.2)	46,013	822	46,835	20,117	478	20,595
Follow-up after multiple treatment (Z08.7–Z08.9)	7,298	347	7,645	7,745	376	8,121
All cancer-related hospitalisations[c]	**626,410**	**209,930**	**836,340**	**625,567**	**211,159**	**836,906**

(a) Hospitalisations are recorded for each financial year.

(b) Principal diagnosis was classified according to International Classification of Disease and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM), fifth and sixth edition.

(c) See Appendix I for ICD-10-AM codes included.

Source: AIHW National Hospital Morbidity Database.

Most other cancer-related hospitalisations are for same-day services. The five leading treatments accounted for more than 68% of all same-day cancer-related hospitalisations in both 2007–08 and 2008–09. Although the total number of overnight hospitalisations for other cancer-related hospitalisations in 2007–08 and 2008–09 was small, follow-up after surgery was the most common.

It is important to note that the number of same day services for chemotherapy does not include chemotherapy treatment on an outpatient (i.e. non-admitted patient) basis. Over the past decade, a number of hospitals (mainly in the public sector) in New South Wales, South Australia and the Australian Capital Territory changed their admissions practices so that not all patients who receive same-day chemotherapy services are admitted to hospital and instead receive treatment on an outpatient basis.

Information on outpatient chemotherapy services is included in the National Outpatient Care Database (NOCD). However, there are variations among jurisdictions in the reporting of chemotherapy services because of differences in admission practices and in the types of facilities offering these services. Note also that NOCD is limited to public hospitals, classified as either peer group A (principal referral and specialist women's and children's hospitals) or B (large hospitals). More detail about the scope of the NOCD can be found in the AIHW report titled *Australians hospital statistics 2007–08* (AIHW 2009c). In 2007–08 there were 122,052 outpatient services recorded for chemotherapy in the NOCD (AIHW 2009c) and a further 130,205 services recorded in 2008–09 (AIHW 2010f).

9

NATIONAL CANCER SCREENING PROGRAMS

Key findings

National Cervical Screening Program

- Over 3.6 million women participated in the National Cervical Screening Program in 2007–2008.
- The participation rate was 61% for women in the target age group of 20 to 69 years.
- The overall incidence rate of cervical cancer in women aged 20 to 69 years (the target age group) has fallen by approximately 50% since the introduction of the National Cervical Screening Program in 1991.

BreastScreen Australia

- Over 1.6 million women had a screening mammogram through BreastScreen Australia in 2007–2008.
- The participation rate was 55% for women in the target age group of 50 to 69 years.
- More than half of all invasive breast cancers detected by BreastScreen Australia were small (that is, less than or equal to 15mm).

National Bowel Cancer Screening Program

- Almost 280,000 people (40% of those invited) participated in the National Bowel Cancer Screening Program in 2008.
- Females were more likely to participate than males (43% and 37%, respectively).
- Four per cent of participants who had a colonoscopy to follow-up a positive faecal occult blood test were found to have suspected or confirmed cancer. In addition, 15% had adenomas detected, 32% had polyps detected and the remaining 49% were found to have no cancer or adenoma.

9 NATIONAL CANCER SCREENING PROGRAMS

In Australia there are organised national population screening programs for breast, cervical and bowel cancers. Their goals are to reduce illness and death from these cancers through early detection of cancer and pre-cancerous abnormalities and effective follow-up treatment. These programs are BreastScreen Australia, the National Cervical Screening Program and the National Bowel Cancer Screening Program. They provide screening services that are free to individuals in the target population (for breast and bowel screening) or are covered by a Medicare rebate (for cervical screening).

In this chapter, information on the performance of each of the three screening programs is presented. While the focus of this report is people who have had a screening test through one of the national programs, out-of-program screening may occur in the case of breast cancer and bowel cancer, and thus the data presented underestimate the level of breast and bowel cancer screening occurring in Australia.

Note that, except where otherwise specified, rates are expressed per 100 people (not per 100,000 people as was used for the cancer incidence and mortality chapters) and are often referred to as a percentage.

National Cervical Screening Program

The National Cervical Screening Program was introduced in Australia in 1991 and is a joint program of the Australian Government and the state and territory governments. The program is aimed at females aged 20 to 69 years. Its main objective is to reduce both the incidence of and mortality from cervical cancer by identifying treatable pre-cancerous lesions, as well as cervical cancer.

Cervical screening uses the Pap test, which involves the microscopic examination of a sample of cells taken from the uterine cervix. If abnormal cells suggestive of pre-cancerous disease or cancer are detected, diagnostic follow-up will be recommended to determine if the disease is present, and the appropriate treatment.

Early detection of pre-cancerous abnormalities allows treatment to prevent possible progression to cervical cancer, while early detection of cervical cancer improves treatment options and outcomes.

National policy currently recommends that women between 18 and 20 years should commence screening within one or two years of becoming sexually active, while Pap tests may cease at the age of 70 years for women who have had two normal results within the last 5 years (DoHA 2010). These recommendations apply to women who have received the vaccine introduced in 2007 against human papilloma virus (HPV) as well as to unvaccinated women.

In this section, data on participation in the National Cervical Screening Program are presented for women aged 20 to 69 years (the target age group), and the impact of the program on the number of new cases of cervical cancer is discussed.

The data presented are sourced from the AIHW data report *Cervical screening in Australia 2007–2008* (AIHW 2010d). The data were provided to the AIHW by the state and territory cervical cytology registries and pertain to the 2-year period of 2007–2008, with trend data available from 1996–1997. More information about the National Cervical Screening Program and the method by which estimates were derived can be found in the *Cervical screening in Australia 2007–2008* data report.

Box 9.1: Cervical cancer

The cervix is the lowest part of the uterus, and connects the body of the uterus to the vagina. Cervical cancer is a malignant tumour that starts in the cells of the cervix. There are two main types of cervical cancers, namely squamous cell carcinomas and adenocarcinomas. Squamous cell carcinomas arise from the cells covering the outer surface of the cervix, whereas adenocarcinomas arise from the mucus-producing glandular cells of the cervix. Approximately two-thirds of cervical cancer are squamous cell carcinomas and about a fifth are adenocarcinomas. Both types of cervical cancer develop when abnormal cells begin to multiply out of control and form pre-cancerous lesions. It is these pre-cancerous lesions that can be detected with a Pap test before progression to cancer occurs.

Participation

More than 3.6 million women participated in the National Cervical Screening Program in the 2-year period from 1 January 2007 to 31 December 2008 (Table 9.1). Of these women, 99% were in the target age group of 20 to 69 years. The participation rate for women aged 20 to 69 years was 61%.

Table 9.1: Participation in the National Cervical Screening Program, females aged 20 to 69 years, Australia, 2007–2008, 2006–2008 and 2004–2008

	Number of females	Rate (per cent)[a]	95% confidence interval
2-year[b]	3,599,919	61.2	61.2–61.3
3-year[b]	4,320,952	73.9	73.8–74.0
5-year[b]	4,994,420	86.3	86.2–86.4

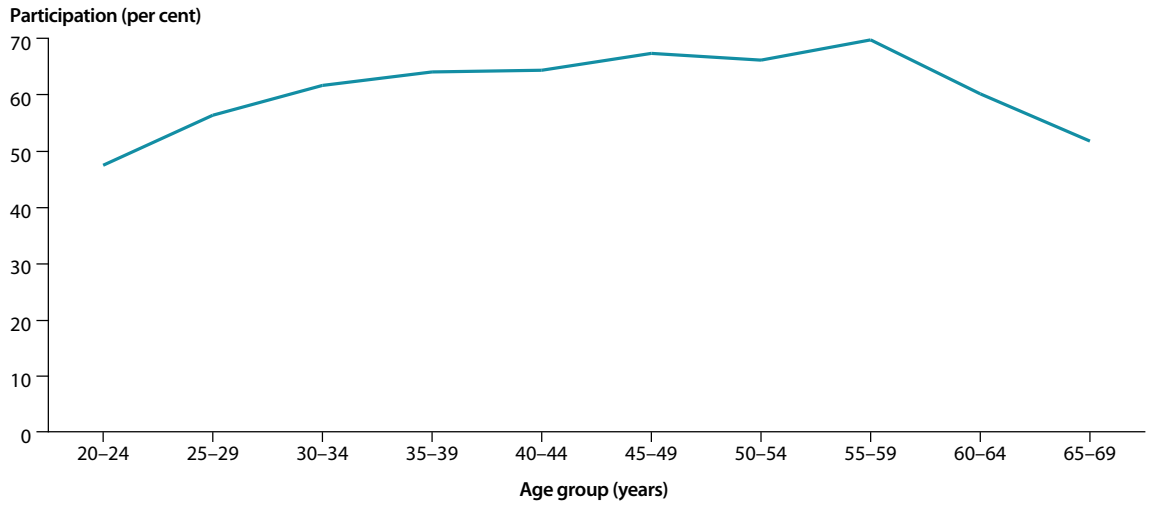
(a) Equals the number of females screened as a proportion of the average of the eligible female population, adjusted for the proportion of women who have had a hysterectomy. The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed as per 100 females (per cent).

(b) The 2-year period covers 1 January 2007 to 31 December 2008; the 3-year period covers 1 January 2006 to 31 December 2008; and the 5-year period covers 1 January 2004 to 31 December 2008.

Source: AIHW 2010d.

While 2 years is the recommended screening interval, the National Cervical Screening Program also monitors participation over 3 and 5 years. The participation rate for women aged 20–69 years was 74% in the 3-year period from 2006–2008 and 86% in the 5-year period from 2004–2008 (Table 9.1). These two rates compare favourably with rates reported for other westernised countries including England (National Health Service 2008) and New Zealand (National Cervical Screening Programme 2005).

The 2-year participation rate increased with age until the age of 55 to 59 years, where the rate peaked at 70%. The participation rate for women aged 60 to 64 years and 65 to 69 years was somewhat lower than that observed for those aged 55 to 59 years (Figure 9.1).



Notes

1. The participation rate equals the number of females screened as a proportion of the average of the 2007 and 2008 ABS estimated resident population, adjusted for the proportion of women who have had a hysterectomy.
2. The rates shown are age-specific rates.
3. Periods cover 1 January 2007 to 31 December 2008.

Source: AIHW 2010d.

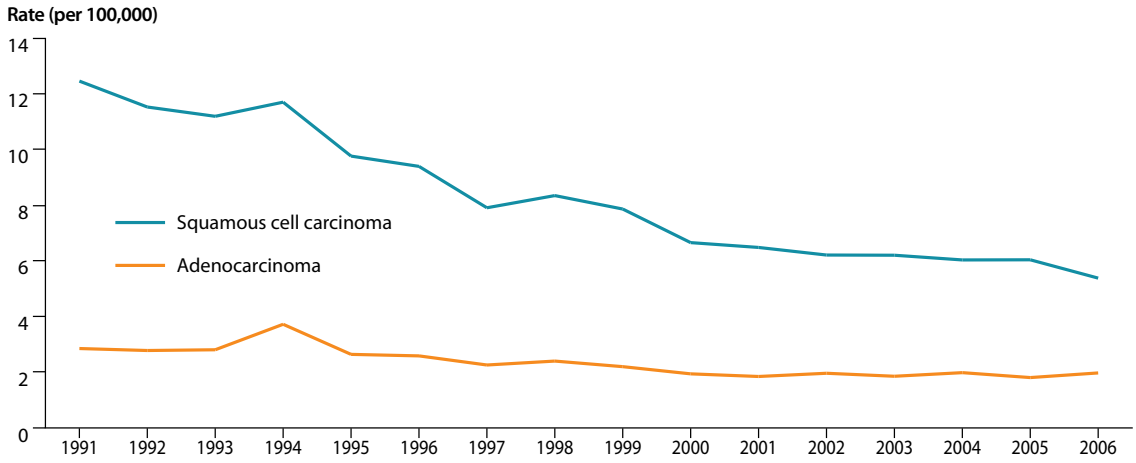
Figure 9.1: Two-year participation (age-specific) in the National Cervical Screening Program, females aged 20 to 69 years, Australia, 2007–2008

Impact of the program on the incidence of cervical cancer

Overall, the cervical cancer incidence rate of women aged 20 to 69 years decreased by approximately 50% from 1991 (the year the National Cervical Screening Program was introduced) to 2006.

However, this does not apply equally to the two main types of cervical cancer: squamous cell carcinomas and adenocarcinomas (See Box 9.1 for information about these two types of cervical cancer). As illustrated in Figure 9.2, the incidence of squamous cell carcinomas in women aged 20 to 69 years has decreased markedly from 12.4 (per 100,000 females) in 1991 to 5.4 (per 100,000 females) in 2006, a reduction of 56%. In comparison, the incidence of adenocarcinomas decreased from 2.8 (per 100,000 females) in 1991 to 2.0 (per 100,000 females) in 2006, a reduction of 29%. Note that most of the fall in the rate of adenocarcinomas occurred in the 1990s.

The less pronounced fall in the incidence of adenocarcinomas is at least partly due to difficulties in detecting glandular abnormalities, from which adenocarcinomas are thought to arise, using the Pap test (glandular cells are often located high in the cervix where they are difficult to reach) (Heley 2007). Further, the interpretation of glandular cells that are sampled is more difficult, and the progression from glandular abnormalities to adenocarcinomas is not as well understood (Wang et al. 2006).



Note: The rates were age-standardised to the Australian population as at 30 June 2001.

Source: AIHW 2010d.

Figure 9.2: Incidence of squamous cell carcinoma and adenocarcinoma, females aged 20–69 years, Australia, 1991 to 2006

Box 9.2: Cervical cancer and HPV

During the past decade much research has been aimed at identifying what causes cervical cancer. It is now recognised that cervical cancer is a rare outcome of persistent infection with human papilloma virus (HPV). Although other factors (for example oral contraceptive pill and smoking) also appear to come into play, an infection of the cervix with certain high-risk HPV types is necessary, although not sufficient, for cervical cancer to develop (Bosch et al. 2002; Walboomers et al. 1999).

An HPV vaccine against the two high-risk HPV types 16 and 18 (and two low-risk types 6 and 11 that cause genital warts) was introduced in Australia in 2007 under the National Immunisation Program. Since these two high-risk HPV types are associated with both squamous cell carcinomas and adenocarcinomas, the vaccine has the potential to reduce the incidence of both types of cervical cancers. This is especially interesting with regard to adenocarcinoma as the incidence of this cervical cancer type has remained fairly stable since the year 2000 (Figure 9.2).

BreastScreen Australia

BreastScreen Australia was established in 1991 and is a joint program of the Australian Government and the state and territory governments. The main objective of BreastScreen Australia is to reduce mortality and morbidity from breast cancer.

BreastScreen Australia provides free mammographic screening and assessment for females aged 40 years and over. However, the primary target group for BreastScreen Australia is women aged 50 to 69 years, as evidence indicates this age group has the highest risk of developing breast cancer and thus benefits most from screening. Screening mammography is also known to be effective in reducing deaths in this age group (BreastScreen Australia 2004). If mammographic screening identifies signs suspicious for breast cancer, the woman is recalled for further investigation.

In this section, data on the number of women obtaining a screening mammogram through BreastScreen Australia are presented. Since BreastScreen Australia recommends that a woman in the target age group has a screening mammogram every two years, the measure of participation used is the proportion of the target age group (50 to 69 years) who were screened though BreastScreen Australia in a 2-year period. Data on the number of breast cancers detected through the program during the period 1996 to 2008 are also presented.

Data were sourced from the AIHW report *BreastScreen Australia monitoring report 2006–2007 and 2007–2008* (AIHW 2010c). The data for this report were provided to the AIHW by the state and territory BreastScreen programs. More information about BreastScreen Australia can be found in the AIHW report *BreastScreen Australia monitoring report 2006–2007 and 2007–2008*.

Participation

Over 1.6 million women had a screening mammogram through BreastScreen Australia in the 2-year period from 1 January 2007 to 31 December 2008 (Table 9.2). Approximately 78% of these women were from the target age group (women aged 50 to 69 years). The participation rate for women aged 50 to 69 years was 55%.

Table 9.2: Participation in BreastScreen Australia, females aged 50 to 69 years, 2007–2008[(a)]

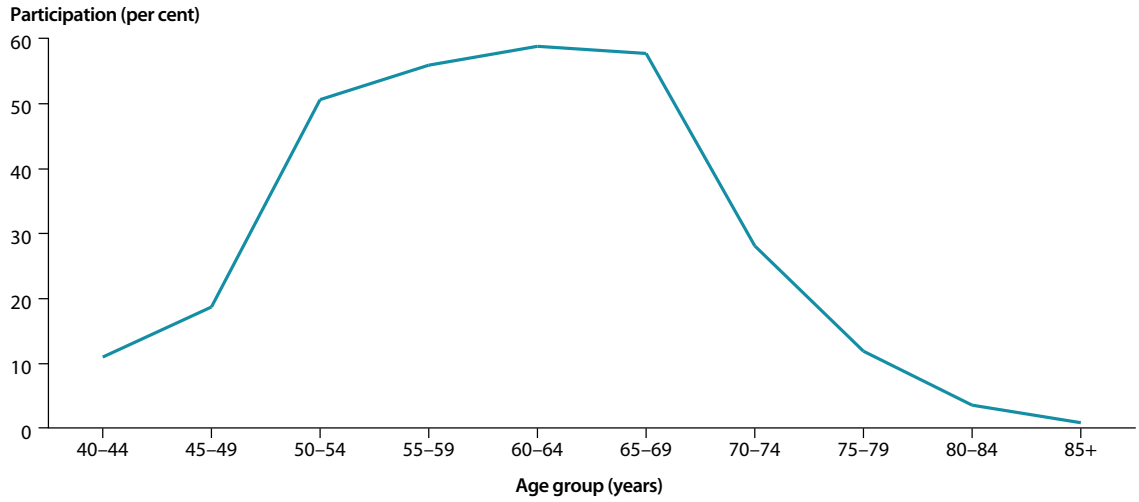
	Number of females	Rate (per cent)[(b)]	95% CI
50–69 years	**1,273,403**	**54.9**	**54.8–55.0**

(a) Period covers 1 January 2007 to 31 December 2008.

(b) Equals the number of females screened as a proportion of the average of the 2007 and 2008 ABS estimated resident population. The rates are age-standardised to the Australian population as at 30 June 2001.

Source: AIHW 2010c.

In 2007–2008 the highest participation rates were for women in the target age group of 50 to 69 years (Figure 9.3). For those women, participation ranged from 51% (for those aged 50 to 54 years) to 59% (for those aged 60 to 64 years).



Notes

1. Period covers 1 January 2007 to 31 December 2008.
2. The participation rate equals the number of females screened as a proportion of the average of the 2007 and 2008 ABS estimated resident population. The rates shown are age-specific rates.

Source: AIHW 2010c.

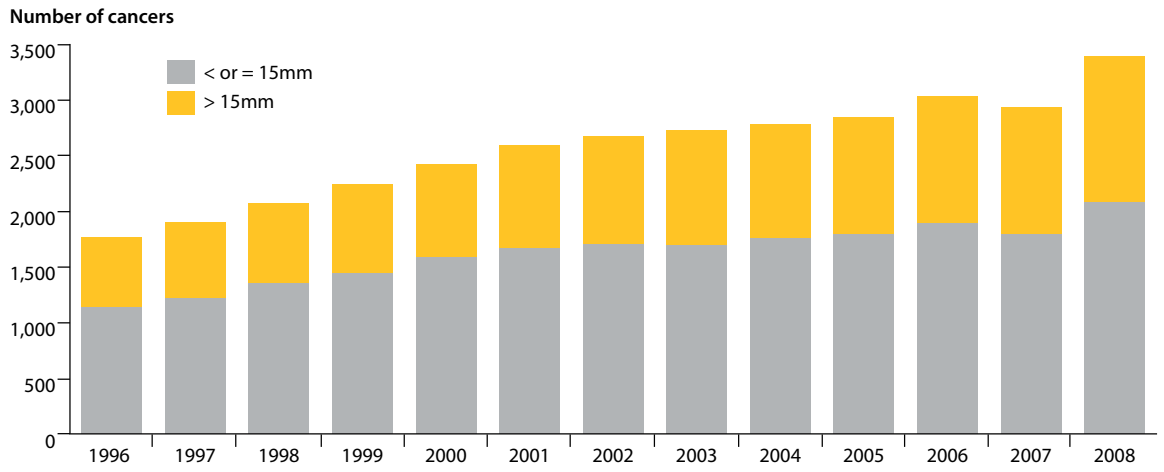
Figure 9.3: Participation in BreastScreen Australia by age group, females, 2007–2008

Detection of breast cancers

As mentioned, the objectives of BreastScreen Australia are to reduce morbidity and mortality from breast cancer. One way in which this can be achieved is by maximising the detection of breast cancers, and in particular small breast cancers, since detection of breast cancers when they are small leads to more options for treatment (NBOCC 2009) and improved survival (AIHW et al. 2007).

The overall number of women aged 50 to 69 years with invasive breast cancers detected through BreastScreen Australia increased from 1,769 in 1996 to 3,392 in 2008. This indicates an increase of 92% (Figure 9.4).

Figure 9.4 also shows that the number of *small* (that is, less than or equal to 15 mm) invasive breast cancers detected in women aged 50 to 69 years increased from 1,146 cancers in 1996 to 2,089 cancers in 2008. The proportion of all breast cancers detected that were small has remained over 60% throughout the period considered.



Source: AIHW 2010c.

Figure 9.4: Number of small (≤15 mm) invasive breast cancers to other size (>15 mm) invasive breast cancers detected in females aged 50–69 years, Australia, 1996–2008

Further analysis of the data reveals that the proportion of breast cancers detected that are small was lower for women attending a BreastScreen Australia service for the first time (56% for women screened in 2008) compared with women attending for a subsequent screen (63% for women screened in 2008). It is thought that a woman is more likely to be diagnosed with a small cancer in subsequent screens than in her first screen because a woman's first screen detects prevalent cancers that may have been present for some time, whereas subsequent screens detect incident cancers that have grown between screens (Kavanagh et al. 1999), and are more likely to be small, having had less time in which to grow.

Mortality from breast cancer

After a period of relative stability from 1982 to 1994, mortality from breast cancer in women aged 50–69 years began to decrease steadily from 1995 onwards. Mortality rates decreased from 66 deaths per 100,000 women in 1995 to 47 deaths per 100,000 women in 2007. The decrease in mortality from breast cancer in women aged 50–69 years has been attributed to the early detection of invasive breast cancer through BreastScreen Australia, along with advances in the management and treatment of invasive breast cancer (BreastScreen Australia EAC 2009).

National Bowel Cancer Screening Program

The National Bowel Cancer Screening Program began in August 2006, with screening being offered to males and females turning 55 and 65 years. In July 2008, the program was extended to also include people turning 50 years. The program is coordinated at the national level by the Australian Government Department of Health and Ageing, in partnership with the state and territory governments.

The major goals of the National Bowel Cancer Screening Program are to reduce both the incidence of and death from bowel cancer by detecting abnormalities of the colon and rectum early. Early detection of both pre- and non-cancerous abnormalities allows medical intervention to avert possible progression to bowel cancer. Where bowel cancer has already developed, early detection leads to improved treatment outcomes (DoHA 2005).

People eligible to participate in the program are identified through Medicare Australia and sent a pre-invitation letter. This is followed by an invitation package which includes a faecal occult blood test (FOBT) kit (See Box 9.3 for more information about FOBT kit). Once completed, participants use the postal kits provided to return their FOBT to the program's pathology laboratory for analysis. The results of this analysis are sent to the participant, the participant's nominated general practitioner (GP) and the National Bowel Cancer Screening Register. Participants with a positive result, meaning that blood was detected in their faeces, are advised to consult their GP to discuss further testing. In most cases this will be by colonoscopy, a procedure in which the inside of the large bowel is viewed to check for abnormalities using a special scope (colonoscope) inserted through the anus.

A change in the FOBT kit in December 2008 was found to yield unreliable results and led to the suspension of the program in May 2009. A replacement FOBT kit was subsequently listed by the Therapeutic Goods Administration on the Australian Register of Therapeutic Goods, and the program resumed in November 2009.

Information on the performance of the National Bowel Cancer Screening Program is presented in this section. The focus is on the proportion of people in the target age groups who participated in the program, as well as on FOBT outcomes and colonoscopy outcomes.

The analyses presented are based on data recorded in the National Bowel Cancer Screening Register for people invited between 1 January 2008 and 31 December 2008, and includes all program activity for these invitees until 31 January 2010. The data were provided to the AIHW by Medicare Australia (who manages the National Bowel Cancer Screening Register) and were first published in the *National Bowel Cancer Screening Program: annual monitoring report 2009 data supplement 2010* (AIHW 2010a). More information about the National Bowel Cancer Screening Program can be found in this data supplement and its parent report *National Bowel Cancer Screening Program: annual monitoring report 2009* (AIHW 2009b).

Box 9.3: Bowel cancer

Bowel cancer is a malignant tumour that begins in the large intestine (that is, the colon or rectum). The cancer often develops from a small benign growth called a polyp. Polyps are relatively common in older age groups. Some of these polyps may develop into a benign adenoma (that is, a polyp that has the potential to change into cancer) and eventually into a malignant cancer. In most people, the progression from polyp to cancer occurs relatively slowly, making early detection and removal of small cancers and polyps that may become cancerous effective in preventing morbidity or mortality from bowel cancer.

A test called a FOBT can detect small amounts of blood in the faeces that are not visible to the naked eye. Blood in the faeces can be a symptom of bowel cancer but can also be a symptom of other diseases. If a FOBT shows a positive result, the participant's doctor may refer the person for a colonoscopy to determine the cause of the bleeding.

Participation

In 2008, almost 280,000 people participated in the National Bowel Cancer Screening Program, which was 40% of all people invited. Females were significantly more likely to participate in the program than males, with the participation rate equalling 44% for females and 37% for males (Table 9.3).

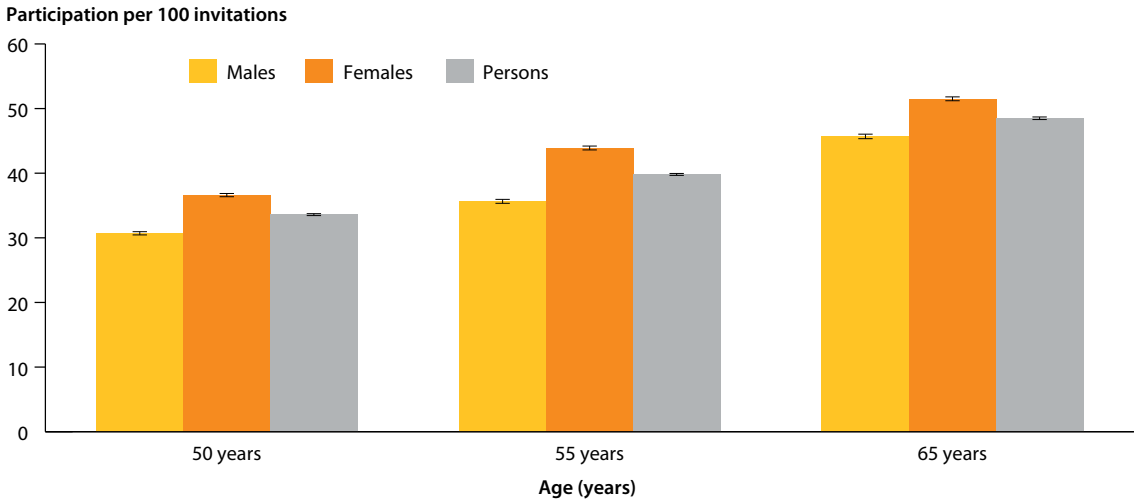
Table 9.3: Participation in the National Bowel Cancer Screening Program, 2008

	Invitations	Number	Rate (per cent)[(a)]	95% CI
Males	343,438	126,054	36.7	36.5–36.9
Females	340,566	148,069	43.5	43.3–43.6
Persons	**684,004**	**274,123**	**40.1**	**40.0–40.2**

(a) Participants in the program are defined as members of the eligible population who have been sent an invitation to screen and who returned a completed faecal occult blood test (FOBT) kit. This excludes people who suspended or opted off the program.

Source: AIHW 2010a.

In 2008, participation increased with age. Overall, the participation rate was 34% for 50 year olds, 40% for 55 year olds and 49% for 65 year olds (Figure 9.5). For all three target age groups females were significantly more likely to participate than males.



Note: Participants in the program are defined as members of the eligible population who have been sent an invitation to screen and who returned a completed faecal occult blood test (FOBT) kit. This excludes people who suspended or opted off the program.

Source: AIHW 2010a.

Figure 9.5: Participation in the National Bowel Cancer Screening Program, by age, 2008

Faecal occult blood test outcomes

The FOBT positivity rate refers to the proportion of positive FOBT results (those in which blood was detected) out of all valid kits returned. For participants invited in 2008, the overall FOBT positivity rate was 6.6% (Table 9.4). Moreover, there was an increase in the positivity rate with increasing age. For each age group the positivity rate was higher among males than females.

Table 9.4: National Bowel Cancer Screening Program FOBT positivity rates, by age, 2008

	Positive results	Valid results[a]	Rate (per 100 valid results)[b]	95% CI
Males				
50 years	2,211	35,763	6.2	5.9–6.4
55 years	3,359	48,415	6.9	6.7–7.2
65 years	4,017	40,952	9.8	9.5–10.1
Total	*9,587*	*125,130*	*7.7*	*7.5–7.8*
Females				
50 years	2,116	42,625	5.0	4.8–5.2
55 years	3,079	59,269	5.2	5.0–5.4
65 years	3,209	44,824	7.2	6.9–7.4
Total	*8,404*	*146,718*	*5.7*	*5.6–5.8*
Persons				
50 years	4,327	78,388	5.5	5.4–5.7
55 years	6,438	107,684	6.0	5.8–6.1
65 years	7,226	85,776	8.4	8.2–8.6
Total	**17,991**	**271,848**	**6.6**	**6.5–6.7**

(a) A valid result is either positive or negative. Inconclusive results are excluded.

(b) Rates are the number of FOBT positive results as a percentage of the total number of valid results for people invited in 2008.

Source: AIHW 2010a.

Detection of bowel cancer

Participants with a positive FOBT kit result are encouraged to visit their primary health care practitioner who may refer them for further tests, such as colonoscopy, to determine the cause of the bleeding. Of those participants invited to participate in the program in 2008 who had a positive FOBT, 76% were recorded as having undergone a colonoscopy by 31 January 2010.

Of the people who had a colonoscopy recorded on the Register, 3.9% were found to have suspected or confirmed cancer and 15.1% had adenomas detected (Table 9.5). In addition, 32.3% of people had one or more polyps detected at their colonoscopy but these people were awaiting confirmation if these polyps were in fact cancerous. The remaining 48.7% were found to have no cancer or adenoma. Note that caution should be taken when interpreting data on the performance of the National Bowel Cancer Screening Program since numbers may be understated due to poor return of forms used to obtain information on colonoscopy and outcomes of colonoscopy.

Table 9.5: National Bowel Cancer Screening Program outcomes from colonoscopic investigation of positive FOBT, by age, 2008

	No cancer or adenoma detected[a]		Polyps[b]		Adenomas[c]		Cancer[d]		
	Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent	Total[e]
Males									
50 years	635	47.6	464	34.8	192	14.4	42	3.2	1,333
55 years	896	40.5	831	37.6	400	18.1	83	3.8	2,210
65 years	931	35.6	1,022	39.1	509	19.4	155	5.9	2,617
Total	*2,462*	*40.0*	*2,317*	*37.6*	*1,101*	*17.9*	*280*	*4.5*	*6,160*
Females									
50 years	828	64.2	330	25.6	106	8.2	26	2.0	1,290
55 years	1,262	61.3	503	24.4	241	11.7	54	2.6	2,060
65 years	1,093	52.3	595	28.5	306	14.7	94	4.5	2,088
Total	*3,183*	*58.5*	*1,428*	*26.3*	*653*	*12.0*	*174*	*3.2*	*5,438*
Persons									
50 years	1,463	55.8	794	30.3	298	11.4	68	2.6	2,623
55 years	2,158	50.5	1,334	31.2	641	15.0	137	3.2	4,270
65 years	2,024	43.0	1,617	34.4	815	17.3	249	5.3	4,705
Total	**5,645**	**48.7**	**3,745**	**32.3**	**1,754**	**15.1**	**454**	**3.9**	**11,598**

(a) Either (1) no polyps were identified at colonoscopy or (2) the polyps were confirmed as non-adenomatous by histopathology or (3) no cancers were suspected at colonoscopy or (4) the sample was confirmed as non-cancerous by histopathology.

(b) Polyps detected at colonoscopy and sent to histopathology for analysis, but histopathology results not received by Register.

(c) Adenomas confirmed by histopathology.

(d) Cancer confirmed by histopathology or cancer suspected at colonoscopy but not yet confirmed by histopathology.

(e) Total number of colonoscopies with outcome recorded in the National Bowel Cancer Screening Program Register for people invited in 2008.

Source: AIHW 2010a.

APPENDICES

APPENDIX A: CANCER CODES

Table A.1: Cancer codes

Cancer site/type	ICD-10 codes
Lip, oral cavity and pharynx	
Lip	C00
Tongue	C01–C02
Mouth	C03–C06
Salivary glands	C07–C08
Oropharynx	C09–C10
Nasopharynx	C11
Hypopharynx	C12–C13
Other sites in pharynx, etc.	C14
Digestive organs	
Oesophagus	C15
Stomach	C16
Small intestine	C17
Bowel	C18–C20
Anus	C21
Liver	C22
Gallbladder & bile ducts	C23–C24
Pancreas	C25
Other digestive organs	C26
Respiratory system and intrathoracic organs	
Nose, sinuses, etc.	C30–C31
Larynx	C32
Lung	C33–C34
Other thoracic and respiratory organs	C37–C39
Bone	C40–C41
Skin	
Melanoma of the skin	C43
Non-melanoma of the skin	C44[(a)]

Table A.1: Cancer codes (continued)

Cancer site/type	ICD-10 codes
Mesothelioma and soft tissue	
Mesothelioma	C45
Kaposi sarcoma	C46
Peritoneum	C48
Other soft tissue	C47, C49
Breast	C50
Female genital organs	
Vulva	C51
Vagina	C52
Cervix	C53
Uterus	C54–C55
Ovary	C56
Other female genital organs and placenta	C57–C58
Male genital organs	
Penis	C60
Prostate	C61
Testis	C62
Other male genital organs	C63
Urinary tract	
Kidney	C64
Bladder	C67
Other urinary organs	C65–C66, C68
Eye, brain and other parts of the central nervous system	
Eye	C69
Brain	C71
Other central nervous system	C70, C72
Thyroid and other endocrine glands	
Thyroid	C73
Other endocrine glands	C74–C75

(continued)

Table A.1: Cancer codes (continued)

Cancer site/type	ICD-10 codes
Blood and lymphatic system	
Hodgkin lymphoma	C81
Non-Hodgkin lymphoma	C82–C85
Immunoproliferative cancers	C88
Myeloma	C90
Acute lymphoblastic leukaemia	C91.0
Chronic lymphocytic leukaemia	C91.1
Other and unspecified lymphoid leukaemia	C91.2–C91.9
Total lymphoid cancers	*C81–C85, C88, C90, C91*
Chronic myelogenous leukaemia	C92.1
Other myeloproliferative cancers	C94.1, C94.3, C96.2, D45, D47.1, D47.3
Myelodysplastic syndrome	D46
Acute myeloid leukaemia	C92.0, C92.3–C92.5, C93.0, C94.0, C94.2, C94.4, C94.5
Unspecified myeloid leukaemia	C92.2, C92.7, C92.9, C93.1–C93.9, C94.7
Total myeloid cancers	*C92–C94, C96.2, D45, D46, D47.1, D47.3*
Other cancers of the blood and lymphatic system	C95, C96.0, C96.1, C96.3–C96.9
Other	
Other and ill-defined sites	C76
Unknown primary site	C80[(b)]
Multiple primary	C97[(c)]
All cancers	**C00–C96[(a, d)], D45, D46, D47.1, D47.3**

(a) For incidence data, those C44 codes that indicate basal or squamous cell carcinoma of the skin are not included.

(b) For mortality data, the applicable codes are C77–C80.

(c) Of relevance for mortality data only.

(d) Includes C97 for mortality data.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

APPENDIX B: SUMMARY PAGES FOR SELECTED CANCER SITES

All cancers (C00–C96[a, b], D45, D46, D47.1, D47.3)

Table B.1: Incidence and mortality of all cancers observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	62,019	46,349	108,368	22,562	17,322	39,884
2010 (estimated)[c]	63,200	50,500	113,700	24,400	19,100	43,600
Age-standardised rate[d]						
2007	595.1	393.9	484.6	224.9	139.1	176.1
CI (95%)	590.4–599.8	390.3–397.5	481.7–487.5	222.0–227.9	137.0–141.2	174.3–177.8
2010 (estimated)[c]	557	400	471	222	142	177
Other information for 2007						
% of all cancer	100.0	100.0	100.0	100.0	100.0	100.0
Risk to age 75 years	1 in 3	1 in 4	1 in 3	1 in 8	1 in 12	1 in 10
Risk to age 85 years	1 in 2	1 in 3	1 in 2	1 in 4	1 in 6	1 in 5
Mean age	66.7	64.2	65.6	72.0	72.2	72.1

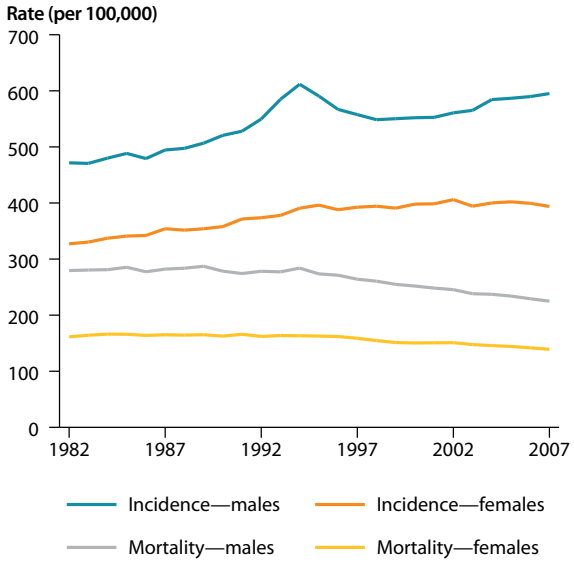


Figure B.1a: All cancer incidence and mortality rates[d], 1982–2007

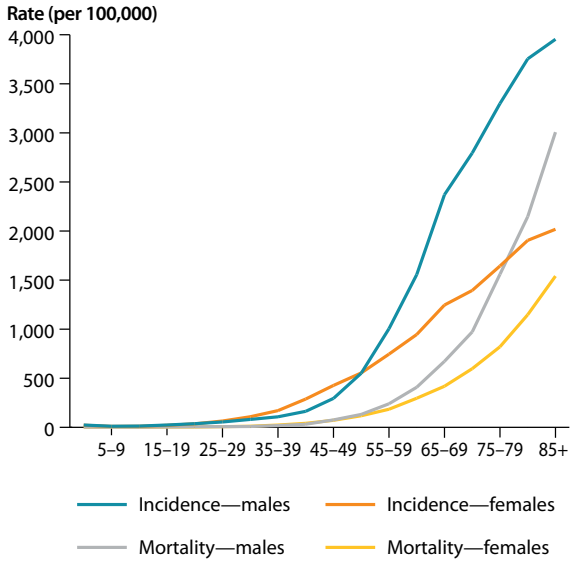


Figure B.1b: All cancer incidence and mortality rates[e] by age at diagnosis, 2007

(a) For incidence data, those C44 codes that indicate basal and squamous cell carcinoma of the skin are not included.

(b) Includes C97 for mortality data.

(c) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(d) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(e) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Acute myeloid leukaemia (C92.0, C92.3–C92.5, C93.0, C94.0, C94.2, C94.4, C94.5)

Table B.2: Incidence and mortality of acute myeloid leukaemia observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	503	346	849	443	278	721
2010 (estimated)[(a)]	540	420	960	460	330	790
Age-standardised rate[(b)]						
2007	4.9	2.9	3.8	4.3	2.3	3.2
CI (95%)	4.5–5.3	2.6–3.2	3.6–4.1	3.9–4.8	2.0–2.6	3.0–3.5
2010 (estimated)(a)	5	3	4	4	3	3
Other information for 2007						
% of all cancer	0.8	0.7	0.8	2.0	1.6	1.8
Risk to age 75 years	1 in 295	1 in 513	1 in 376	1 in 367	1 in 659	1 in 473
Risk to age 85 years	1 in 159	1 in 281	1 in 207	1 in 156	1 in 327	1 in 218
Mean age	62.2	62.5	62.3	69.3	70.3	69.7

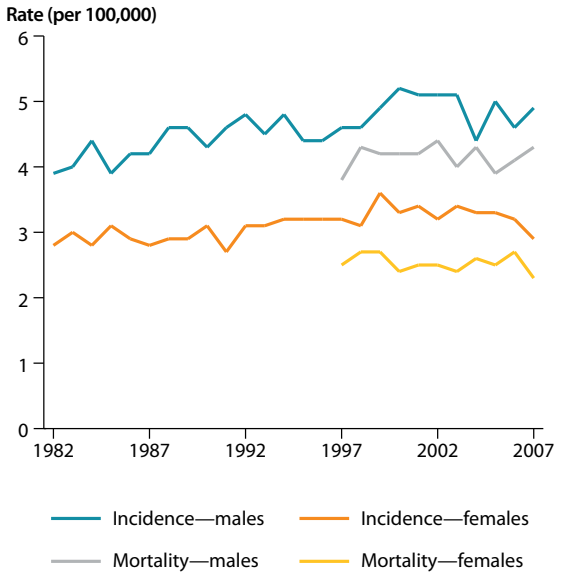


Figure B.2a: Acute myeloid leukaemia incidence and mortality rates[(b, c)], 1982–2007

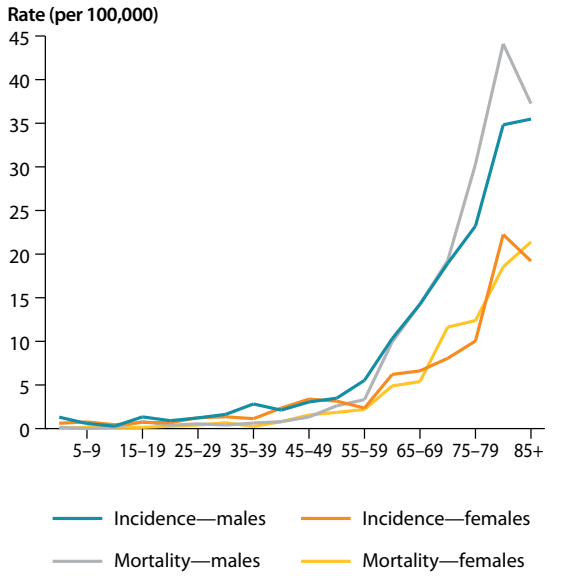


Figure B.2b: Acute myeloid leukaemia incidence and mortality rates[(d)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The first year for which national mortality data for acute myeloid leukaemia are available is 1997.

(d) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Bladder cancer (C67)

Table B.3: Incidence and mortality of bladder cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	1,644	573	2,217	630	295	925
2010 (estimated)[(a)]	1,900	640	2,500	720	330	1,000
Age-standardised rate[(b)]						
2007	16.5	4.5	9.8	6.5	2.2	4.0
CI (95%)	15.7–17.3	4.1–4.9	9.4–10.2	6.0–7.1	1.9–2.5	3.8–4.3
2010 (estimated)[(a)]	17	5	10	7	2	4
Other information for 2007						
% of all cancer	2.7	1.2	2.0	2.8	1.7	2.3
Risk to age 75 years	1 in 101	1 in 393	1 in 163	1 in 398	1 in 1,131	1 in 594
Risk to age 85 years	1 in 44	1 in 154	1 in 71	1 in 112	1 in 321	1 in 174
Mean age	72.5	75.3	73.3	76.7	80.0	77.7

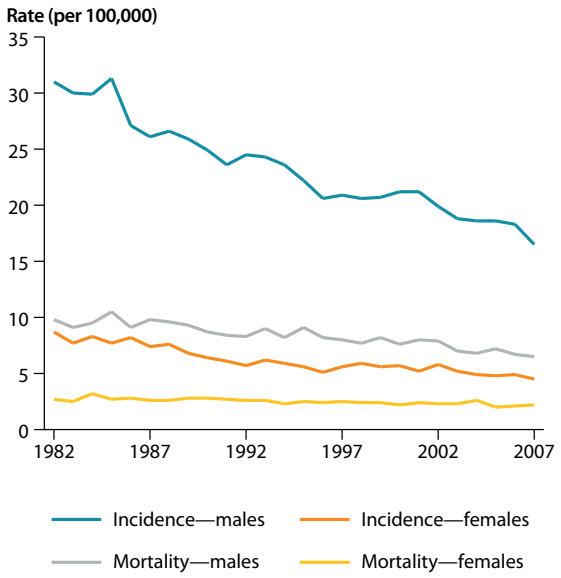


Figure B.3a: Bladder cancer incidence and mortality rates[(b)], 1982–2007

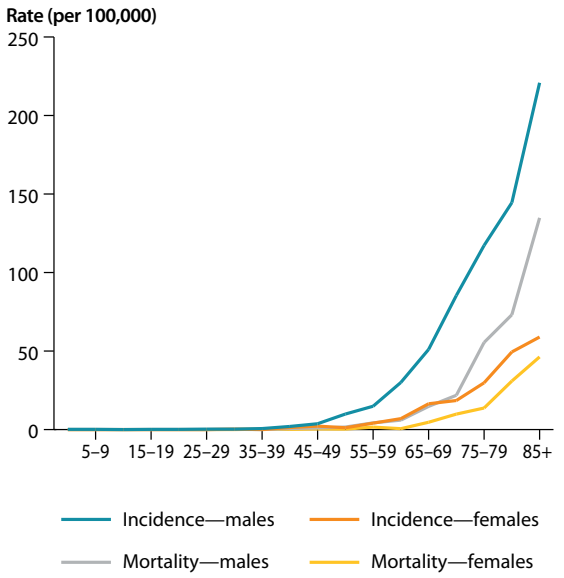


Figure B.3b: Bladder cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Bowel cancer (C18–C20)

Table B.4: Incidence and mortality of bowel cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	7,804	6,430	14,234	2,191	1,856	4,047
2010 (estimated)[a]	8,400	6,800	15,200	2,100	1,700	3,800
Age-standardised rate[b]						
2007	75.2	53.4	63.4	21.7	14.6	17.8
CI (95%)	73.5–76.9	52.1–54.7	62.4–64.5	20.8–22.6	13.9–15.3	17.3–18.4
2010 (estimated)[a]	75	52	63	19	12	15
Other information for 2007						
% of all cancer	12.6	13.9	13.1	9.7	10.7	10.1
Risk to age 75 years	1 in 18	1 in 26	1 in 21	1 in 75	1 in 117	1 in 91
Risk to age 85 years	1 in 10	1 in 14	1 in 12	1 in 33	1 in 50	1 in 41
Mean age	68.4	69.6	68.9	71.5	74.3	72.8

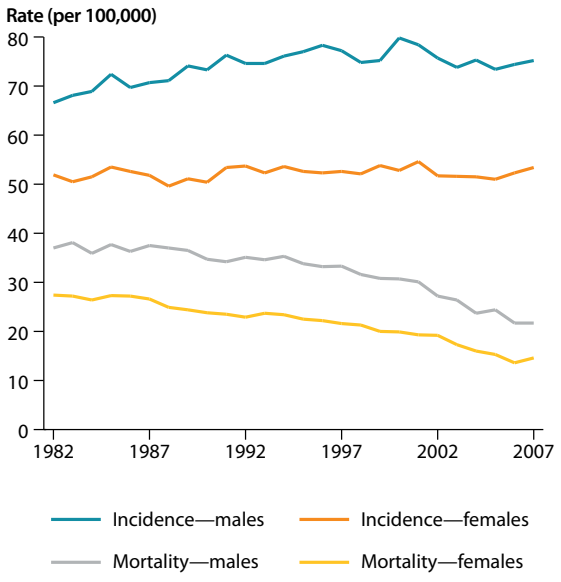


Figure B.4a: Bowel cancer incidence and mortality rates[b], 1982–2007

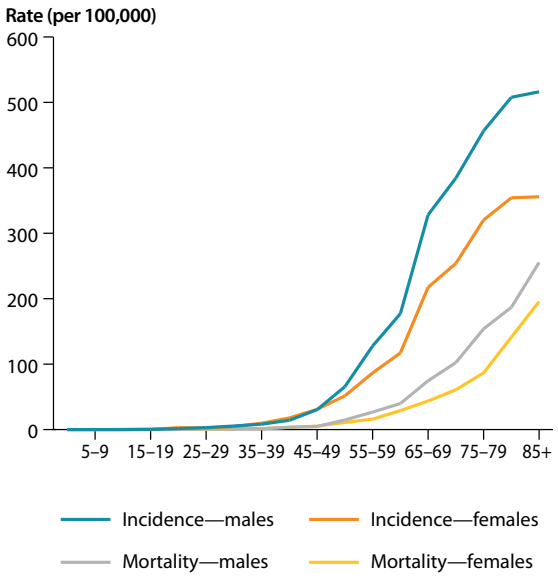


Figure B.4b: Bowel cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Brain cancer (C71)

Table B.5: Incidence and mortality of brain cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	901	571	1,472	666	457	1,123
2010 (estimated)[a]	930	660	1,600	730	530	1,300
Age-standardised rate[b]						
2007	8.6	5.0	6.7	6.3	3.9	5.1
CI (95%)	8.0–9.1	4.6–5.4	6.4–7.1	5.8–6.8	3.6–4.3	4.8–5.4
2010 (estimated)[a]	8	6	7	6	4	5
Other information for 2007						
% of all cancer	1.5	1.2	1.4	3.0	2.6	2.8
Risk to age 75 years	1 in 146	1 in 255	1 in 186	1 in 197	1 in 313	1 in 243
Risk to age 85 years	1 in 101	1 in 172	1 in 129	1 in 128	1 in 205	1 in 160
Mean age	57.0	58.0	57.4	60.9	63.5	62.0

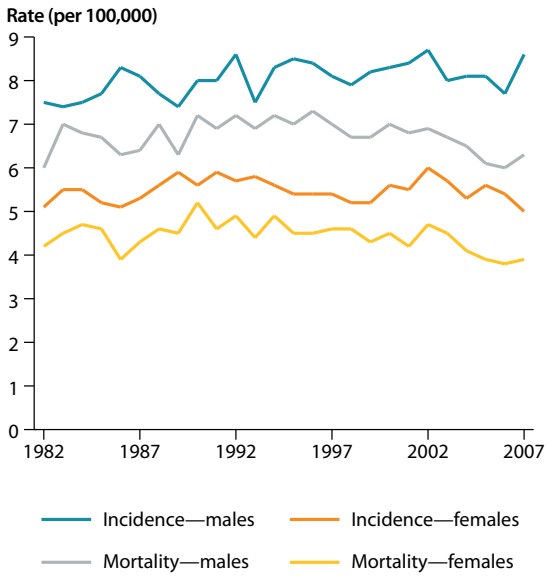


Figure B.5a: Brain cancer incidence and mortality rates[b], 1982–2007

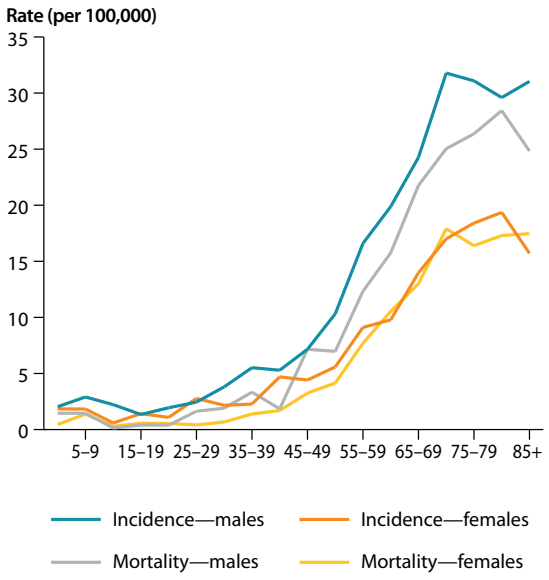


Figure B.5b: Brain cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Breast cancer (C50)

Table B.6: Incidence and mortality of breast cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	103	12,567	12,670	26	2,680	2,706
2010 (estimated)[a]	110	13,500	13,600	20	2,900	2,900
Age-standardised rate[b]						
2007	1.0	109.2	56.9	0.3	22.1	11.9
CI (95%)	0.8–1.2	107.3–111.1	55.9–57.9	0.2–0.4	21.2–22.9	11.5–12.4
2010 (estimated)[a]	1	110	57	0	22	12
Other information for 2007						
% of all cancer	0.2	27.1	11.7	0.1	15.5	6.8
Risk to age 75 years	1 in 1,456	1 in 11	1 in 22	1 in 9,630	1 in 63	1 in 123
Risk to age 85 years	1 in 730	1 in 9	1 in 16	1 in 3,227	1 in 37	1 in 69
Mean age	68.8	60.3	60.4	72.3	67.8	67.8

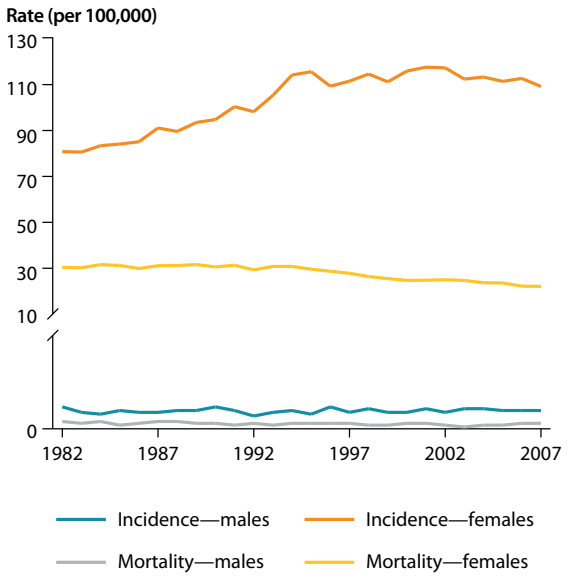


Figure B.6a: Breast cancer incidence and mortality rates[b], 1982–2007

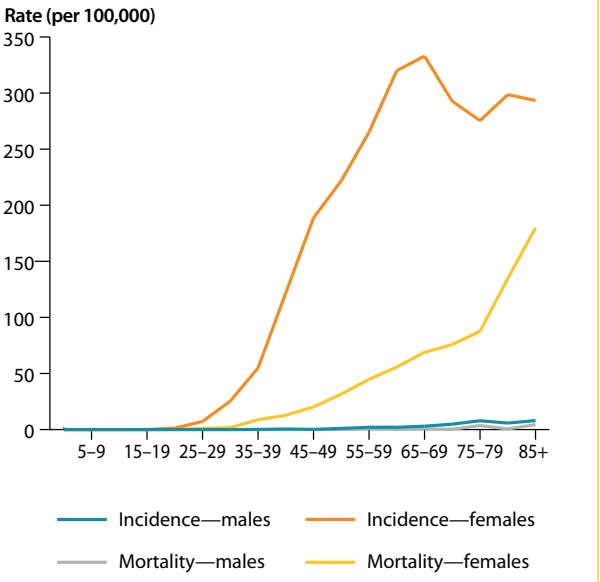


Figure B.6b: Breast cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Cervical cancer (C53)

Table B.7 Incidence and mortality of cervical cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	..	739	739	..	208	208
2010 (estimated)[(a)]	..	750	750	..	230	230
Age-standardised rate[(b)]						
2007	..	6.8	..	..	1.8	..
CI (95%)	..	6.3–7.3	..	..	1.5–2.0	..
2010 (estimated)[(a)]	..	7	..	..	2	..
Other information for 2007						
% of all cancer	..	1.6	..	..	1.2	..
Risk to age 75 years	..	1 in 197	..	..	1 in 817	..
Risk to age 85 years	..	1 in 158	..	..	1 in 502	..
Mean age	..	51.2	..	..	62.6	..

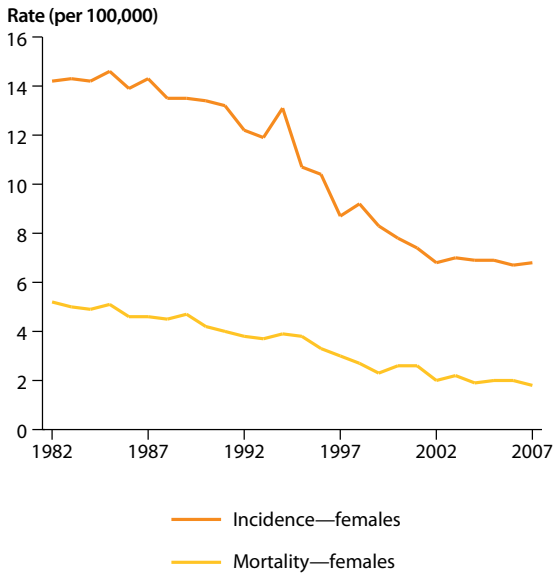


Figure B.7a: Cervical cancer incidence and mortality rates[(b)], 1982–2007

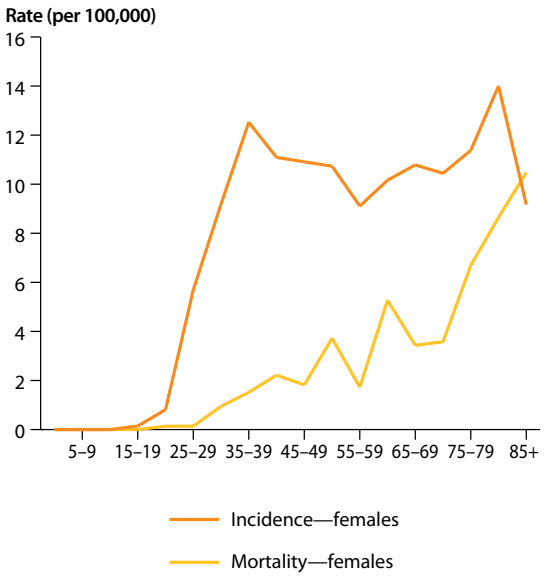


Figure B.7b: Cervical cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Chronic lymphocytic leukaemia (C91.1)

Table B.8: Incidence and mortality of chronic lymphocytic leukaemia observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	595	364	959	190	119	309
2010 (estimated)[(a)]	690	430	1,100	210	140	350
Age-standardised rate[(b)]						
2007	5.7	3.0	4.2	1.9	0.9	1.4
CI (95%)	5.3–6.2	2.7–3.3	4.0–4.5	1.7–2.2	0.7–1.1	1.2–1.5
2010 (estimated)[(a)]	6	3	5	2	1	1
Other information for 2007						
% of all cancer	1.0	0.8	0.9	0.8	0.7	0.8
Risk to age 75 years	1 in 258	1 in 444	1 in 327	1 in 1,079	1 in 2,636	1 in 1,545
Risk to age 85 years	1 in 128	1 in 257	1 in 176	1 in 343	1 in 838	1 in 507
Mean age	68.6	69.9	69.1	76.5	80.4	78.0

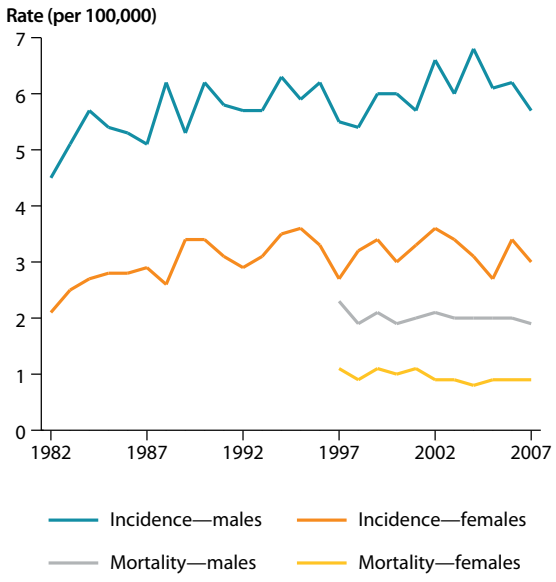


Figure B.8a: Chronic lymphocytic leukaemia incidence and mortality rates[(b)], 1982–2007

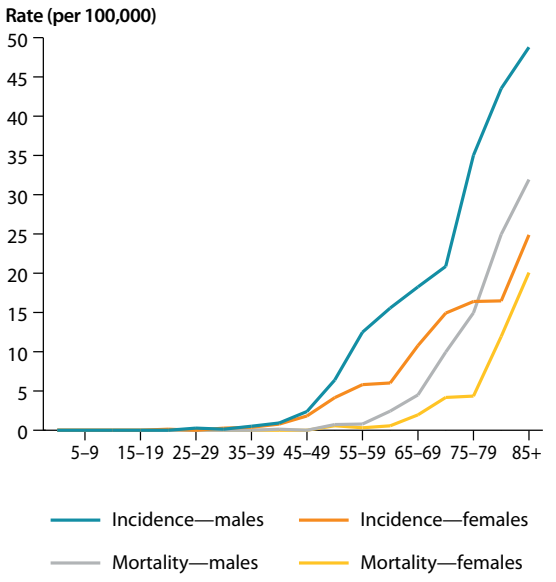


Figure B.8b: Chronic lymphocytic leukaemia incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Cancer of the gallbladder and bile ducts (C23–C24)

Table B.9: Incidence and mortality of cancer of the gallbladder and bile ducts observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	323	353	676	103	162	265
2010 (estimated)[a]	310	390	710	90	150	240
Age-standardised rate[b]						
2007	3.2	2.9	3.0	1.0	1.3	1.2
CI (95%)	2.8–3.5	2.6–3.2	2.8–3.2	0.8–1.3	1.1–1.5	1.0–1.3
2010 (estimated)[a]	3	3	3	1	1	1
Other information for 2007						
% of all cancer	0.5	0.8	0.6	0.5	0.9	0.7
Risk to age 75 years	1 in 488	1 in 551	1 in 518	1 in 1,705	1 in 1,087	1 in 1,322
Risk to age 85 years	1 in 231	1 in 245	1 in 238	1 in 737	1 in 539	1 in 616
Mean age	70.4	73.3	71.9	73.3	73.1	73.2

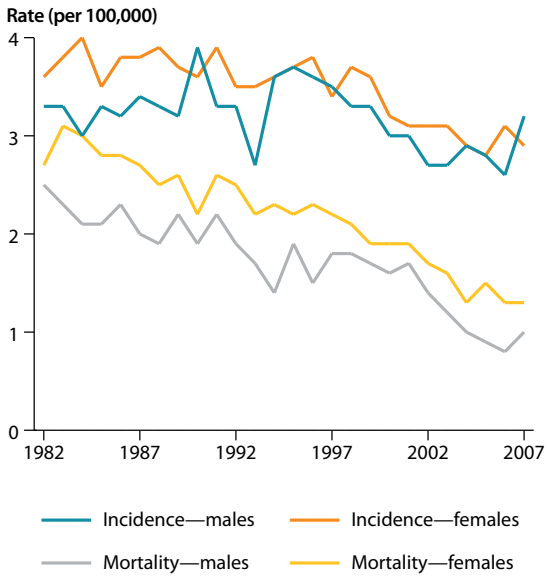


Figure B.9a: Cancer of the gallbladder and bile ducts incidence and mortality rates[b], 1982–2007

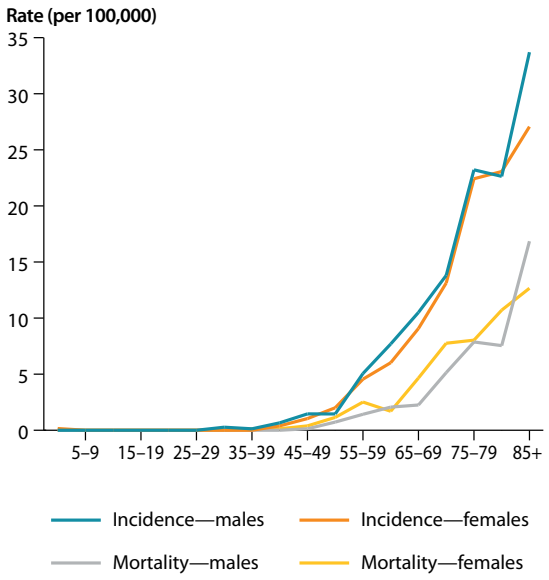


Figure B.9b: Cancer of the gallbladder and bile ducts incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database, AIHW National Mortality Database.

Hodgkin lymphoma (C81)

Table B.10: Incidence and mortality of Hodgkin lymphoma observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	289	249	538	43	27	70
2010 (estimated)[(a)]	300	250	550	40	30	70
Age-standardised rate[(b)]						
2007	2.7	2.3	2.5	0.4	0.2	0.3
CI (95%)	2.4–3.1	2.0–2.6	2.3–2.8	0.3–0.6	0.1–0.3	0.2–0.4
2010 (estimated)[(a)]	3	2	3	0	0	0
Other information for 2007						
% of all cancer	0.5	0.5	0.5	0.2	0.2	0.2
Risk to age 75 years	1 in 481	1 in 575	1 in 525	1 in 3,805	1 in 7,446	1 in 5,052
Risk to age 85 years	1 in 425	1 in 480	1 in 451	1 in 1,556	1 in 3,694	1 in 2,263
Mean age	41.1	40.5	40.8	64.5	67.1	65.5

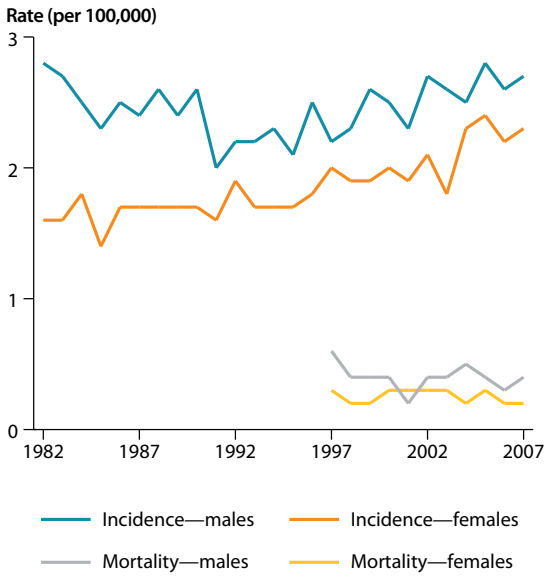


Figure B.10a: Hodgkin lymphoma incidence and mortality rates[(b)], 1982–2007

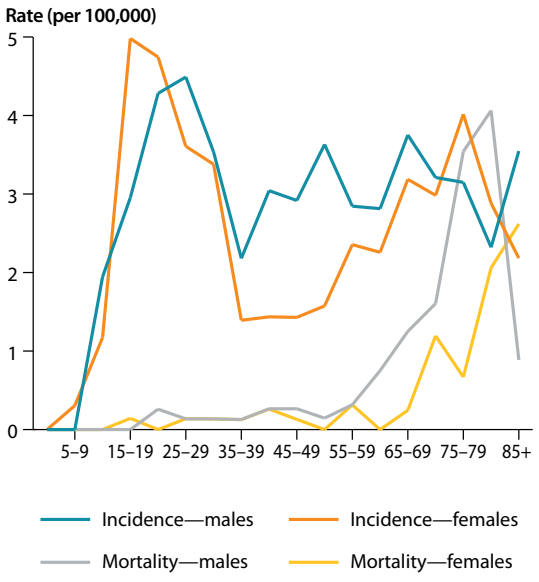


Figure B.10b: Hodgkin lymphoma incidence and mortality rates[(d)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Kidney cancer (C64)

Table B.11: Incidence and mortality of kidney cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	1,716	864	2,580	539	316	855
2010 (estimated)[a]	1,800	940	2,700	600	370	970
Age-standardised rate[b]						
2007	16.3	7.4	11.6	5.3	2.5	3.8
CI (95%)	15.5–17.1	6.9–7.9	11.2–12.1	4.9–5.8	2.2–2.8	3.5–4.0
2010 (estimated)[a]	16	7	11	5	3	4
Other information for 2007						
% of all cancer	2.8	1.9	2.4	2.4	1.8	2.1
Risk to age 75 years	1 in 77	1 in 173	1 in 107	1 in 305	1 in 656	1 in 418
Risk to age 85 years	1 in 49	1 in 110	1 in 69	1 in 139	1 in 273	1 in 189
Mean age	63.3	63.7	63.5	70.7	75.1	72.3

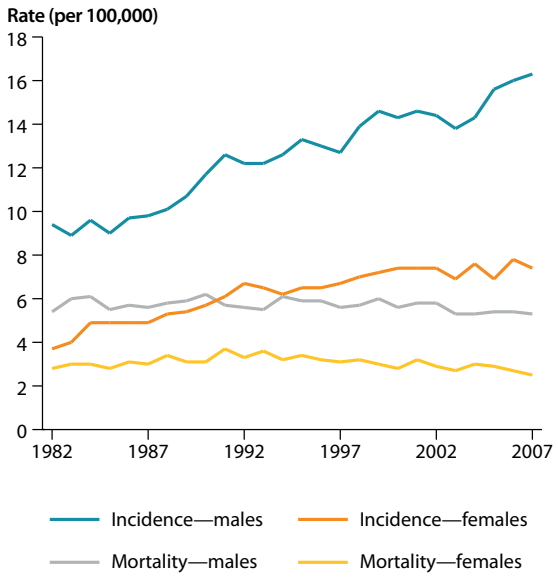


Figure B.11a: Kidney cancer incidence and mortality rates[b], 1982–2007

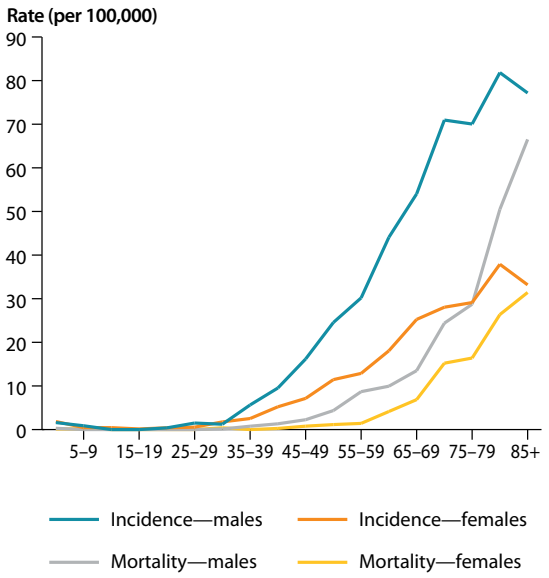


Figure B.11b: Kidney cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Laryngeal cancer (C32)

Table B.12: Incidence and mortality of laryngeal cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	526	55	581	192	22	214
2010 (estimated)[(a)]	580	70	650	230	40	270
Age-standardised rate[(b)]						
2007	5.0	0.5	2.6	1.9	0.2	0.9
CI (95%)	4.6–5.4	0.3–0.6	2.4–2.8	1.6–2.2	0.1–0.3	0.8–1.1
2010 (estimated)[(a)]	5	1	3	2	0	1
Other information for 2007						
% of all cancer	0.8	0.1	0.5	0.9	0.1	0.5
Risk to age 75 years	1 in 246	1 in 2,659	1 in 455	1 in 792	1 in 9,055	1 in 1,478
Risk to age 85 years	1 in 145	1 in 1,390	1 in 275	1 in 384	1 in 4,182	1 in 750
Mean age	67.2	70.3	67.5	71.2	70.5	71.2

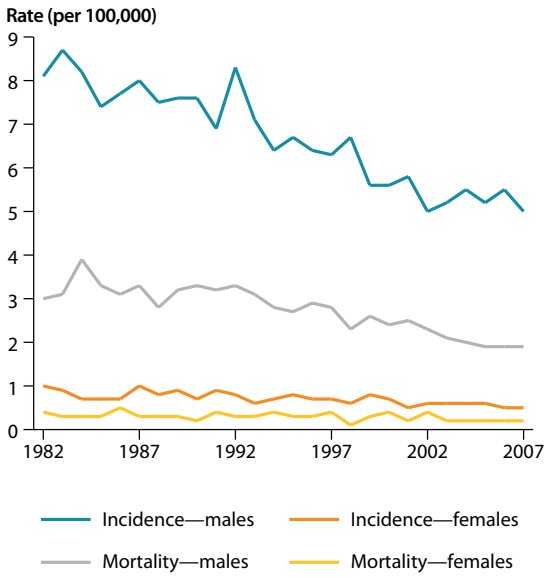


Figure B.12a: Laryngeal cancer incidence and mortality rates[(b)], 1982–2007

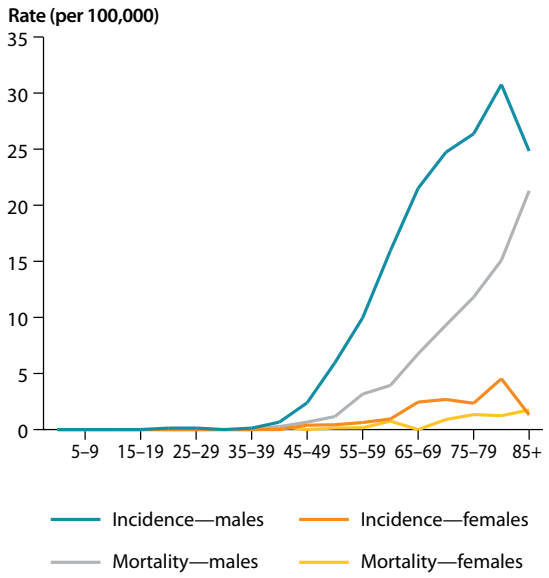


Figure B.12b: Laryngeal cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Lip cancer (C00)

Table B.13: Incidence and mortality of lip cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	654	243	897	n.p.	n.p.	15
2010 (estimated)[a]	650	250	900	10	10	20
Age-standardised rate[b]						
2007	6.3	2.0	4.0	n.p.	n.p.	0.1
CI (95%)	5.8–6.8	1.8–2.3	3.8–4.3	n.p.	n.p.	0.0–0.1
2010 (estimated)[a]	6	2	4	0	0	0
Other information for 2007						
% of all cancer	1.1	0.5	0.8	n.p.	n.p.	0.0
Risk to age 75 years	1 in 216	1 in 752	1 in 337	1 in 13,450	1 in 139,741	1 in 24,797
Risk to age 85 years	1 in 135	1 in 378	1 in 203	1 in 7,007	1 in 36,035	1 in 12,121
Mean age	60.6	69.5	63.0	70.9	74.7	71.7

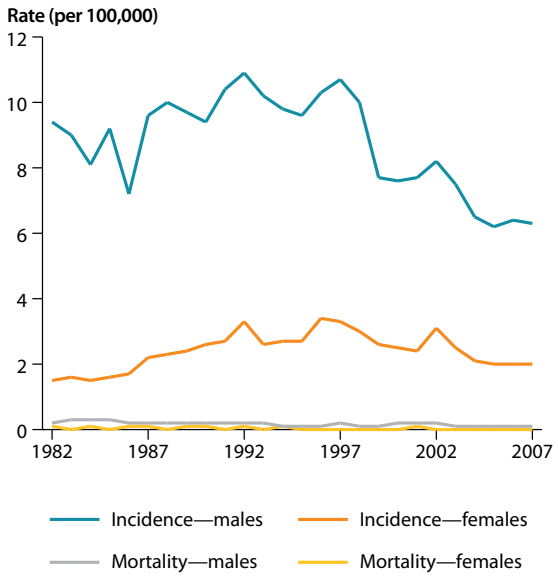


Figure B.13a: Lip cancer incidence and mortality rates[b], 1982–2007

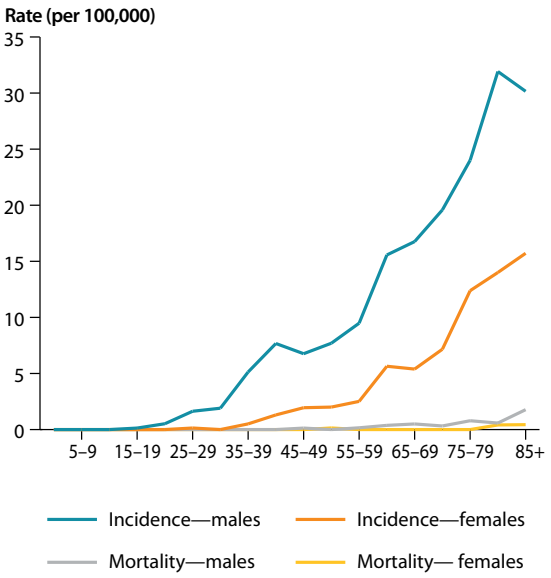


Figure B.13b: Lip cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Liver cancer (C22)

Table B.14: Incidence and mortality of liver cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	835	334	1,169	717	392	1,109
2010 (estimated)[a]	980	440	1,400	800	450	1,300
Age-standardised rate[b]						
2007	8.0	2.7	5.2	6.9	3.2	4.9
CI (95%)	7.4–8.5	2.4–3.0	4.9–5.5	6.4–7.5	2.8–3.5	4.6–5.2
2010 (estimated)[a]	9	3	6	7	3	5
Other information for 2007						
% of all cancer	1.3	0.7	1.1	3.2	2.3	2.8
Risk to age 75 years	1 in 164	1 in 528	1 in 251	1 in 208	1 in 482	1 in 292
Risk to age 85 years	1 in 96	1 in 256	1 in 143	1 in 106	1 in 223	1 in 147
Mean age	65.3	71.0	67.0	67.6	73.3	69.6

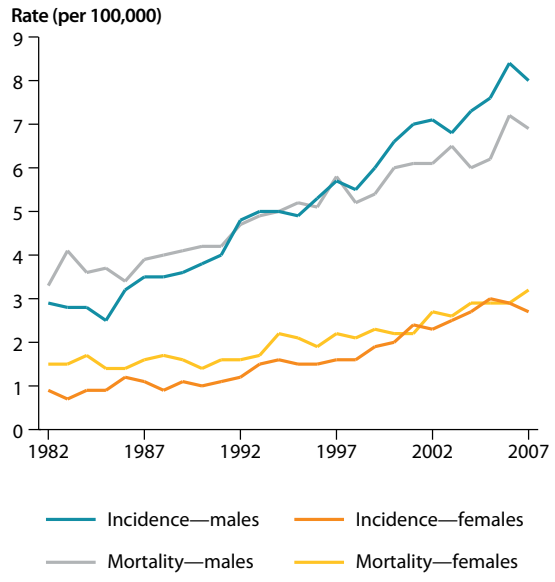


Figure B.14a: Liver cancer incidence and mortality rates[b], 1982–2007

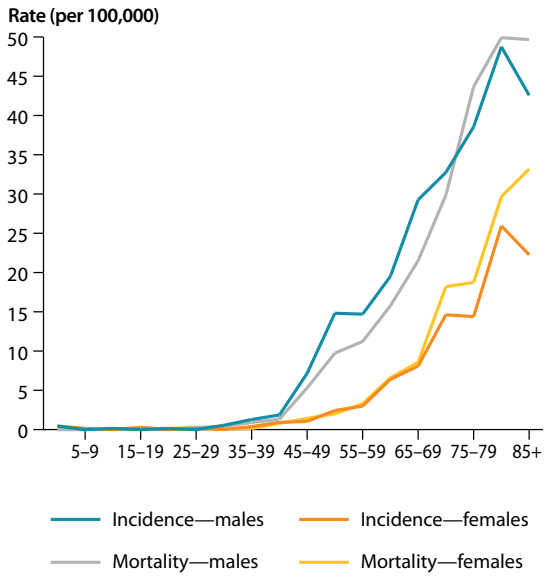


Figure B.14b: Liver cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Lung cancer (C33–C34)

Table B.15: Incidence and mortality of lung cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	5,948	3,755	9,703	4,715	2,911	7,626
2010 (estimated)[a]	6,300	4,200	10,500	4,800	3,300	8,100
Age-standardised rate[b]						
2007	57.9	31.3	43.3	46.3	24.0	34.0
CI (95%)	56.5–59.4	30.3–32.4	42.4–44.2	45.0–47.6	23.1–24.9	33.2–34.7
2010 (estimated)[a]	57	32	43	43	25	33
Other information for 2007						
% of all cancer	9.6	8.1	9.0	20.9	16.8	19.1
Risk to age 75 years	1 in 25	1 in 42	1 in 31	1 in 33	1 in 59	1 in 43
Risk to age 85 years	1 in 12	1 in 23	1 in 16	1 in 15	1 in 29	1 in 20
Mean age	70.5	69.8	70.3	71.5	71.4	71.5

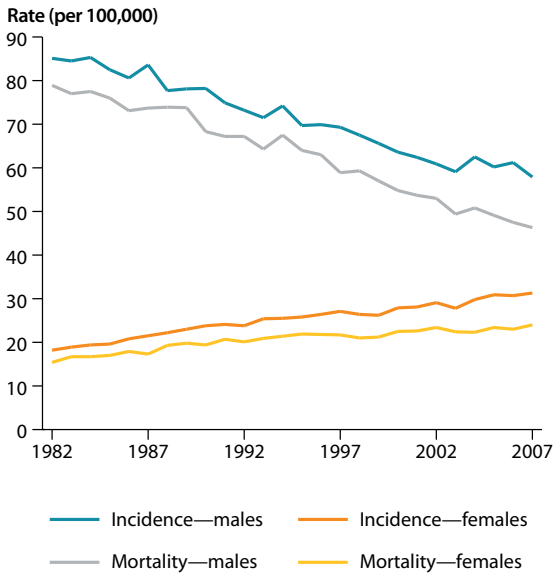


Figure B.15a: Lung cancer incidence and mortality rates[b], 1982–2007

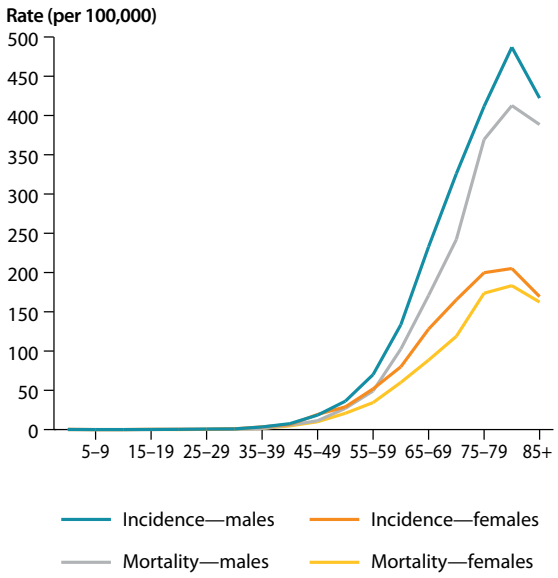


Figure B.15b: Lung cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Melanoma of the skin (C43)

Table B.16: Incidence and mortality of melanoma of the skin observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	5,980	4,362	10,342	864	415	1,279
2010 (estimated)[(a)]	7,000	4,900	11,900	1,000	470	1,500
Age-standardised rate[(b)]						
2007	57.2	38.2	46.7	8.5	3.4	5.7
CI (95%)	55.7–58.7	37.1–39.4	45.8–47.7	7.9–9.1	3.1–3.8	5.4–6.0
2010 (estimated)[(a)]	62	41	50	9	4	6
Other information for 2007						
% of all cancer	9.6	9.4	9.5	3.8	2.4	3.2
Risk to age 75 years	1 in 24	1 in 35	1 in 28	1 in 197	1 in 450	1 in 276
Risk to age 85 years	1 in 15	1 in 24	1 in 19	1 in 90	1 in 248	1 in 137
Mean age	62.9	58.4	61.0	68.7	67.9	68.4

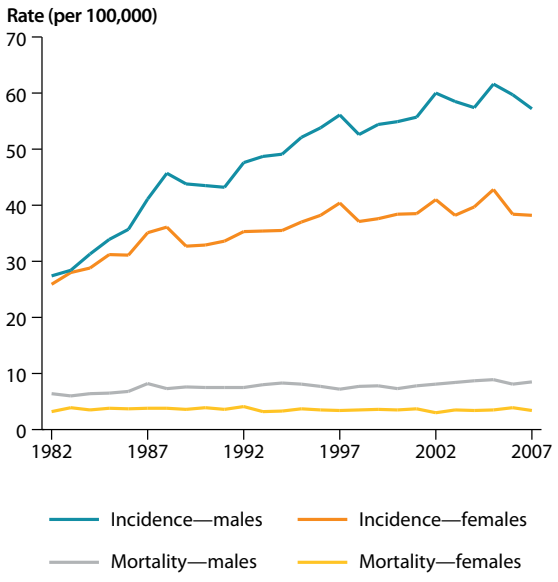


Figure B.16a: Melanoma of the skin incidence and mortality rates[(b)], 1982–2007

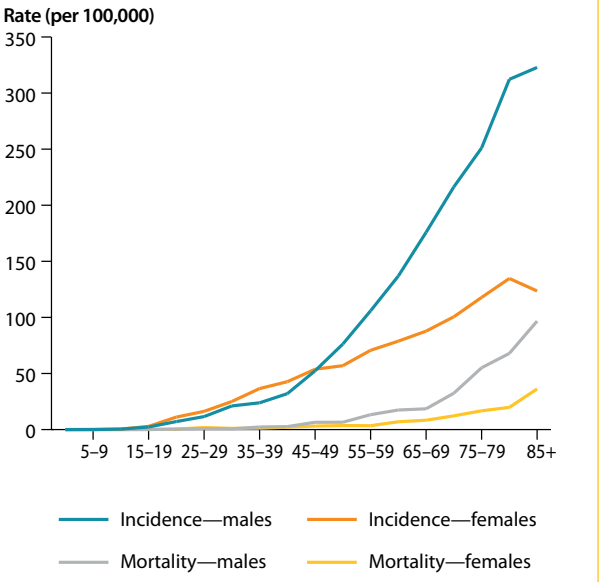


Figure B.16b: Melanoma of the skin incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Mesothelioma (C45)

Table B.17: Incidence and mortality of mesothelioma observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	554	106	660	464	87	551
2010 (estimated)[a]	610	110	720	500	110	620
Age-standardised rate[b]						
2007	5.4	0.9	3.0	4.5	0.7	2.4
CI (95%)	5.0–5.9	0.7–1.1	2.7–3.2	4.1–5.0	0.6–0.9	2.2–2.7
2010 (estimated)[a]	6	1	3	5	1	3
Other information for 2007						
% of all cancer	0.9	0.2	0.6	2.1	0.5	1.4
Risk to age 75 years	1 in 272	1 in 1,399	1 in 461	1 in 350	1 in 1,832	1 in 595
Risk to age 85 years	1 in 116	1 in 814	1 in 217	1 in 140	1 in 999	1 in 263
Mean age	72.0	68.3	71.4	71.7	72.3	71.8

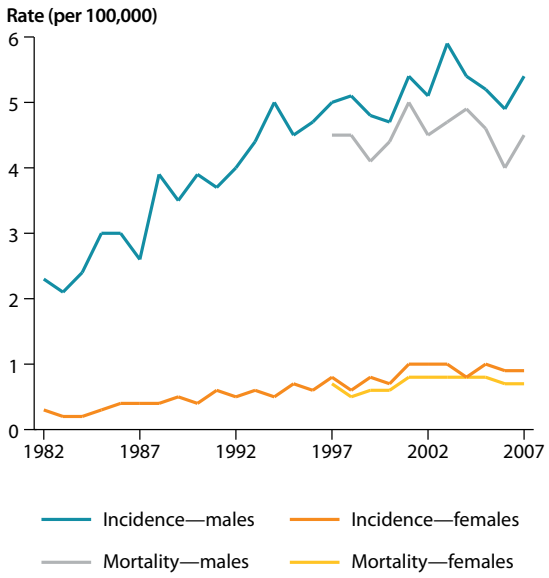


Figure B.17a: Mesothelioma cancer incidence and mortality rates[b, c], 1982–2007

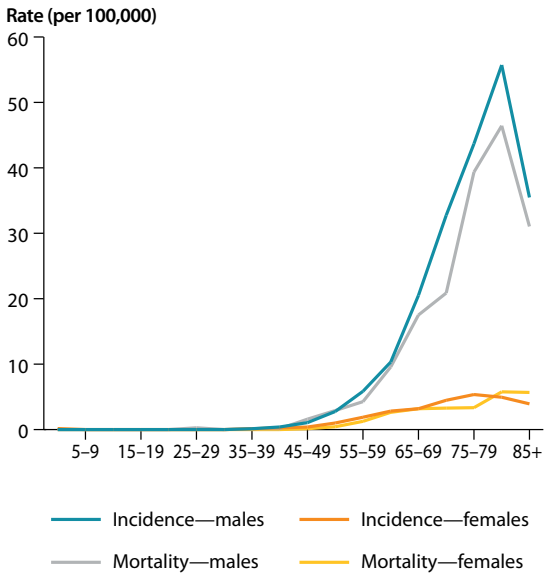


Figure B.17b: Mesothelioma incidence and mortality rates[d] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The first year for which national mortality data for mesothelioma are available is 1997.

(d) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Multiple primary cancers (C97)

Table B.18: Mortality of multiple primary cancers observed for 2007, and estimated for 2010

	Incidence[a]			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	..	..	..	318	206	524
2010 (estimated)[b]	..	..	..	320	190	510
Age-standardised rate[c]						
2007	..	..	..	3.3	1.7	2.3
CI (95%)	..	..	..	2.9–3.6	1.4–1.9	2.1–2.5
2010 (estimated)[b]	..	..	..	3	1	2
Other information for 2007						
% of all cancer	..	..	..	1.4	1.2	1.3
Risk to age 75 years	..	..	..	1 in 678	1 in 964	1 in 800
Risk to age 85 years	..	..	..	1 in 220	1 in 443	1 in 306
Mean age	..	..	..	74.9	72.7	74.0

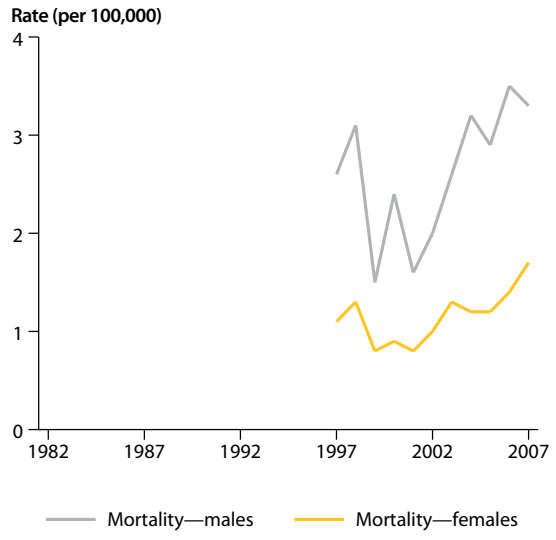


Figure B.18a: Multiple primary cancers incidence and mortality rates[c, d], 1982–2007

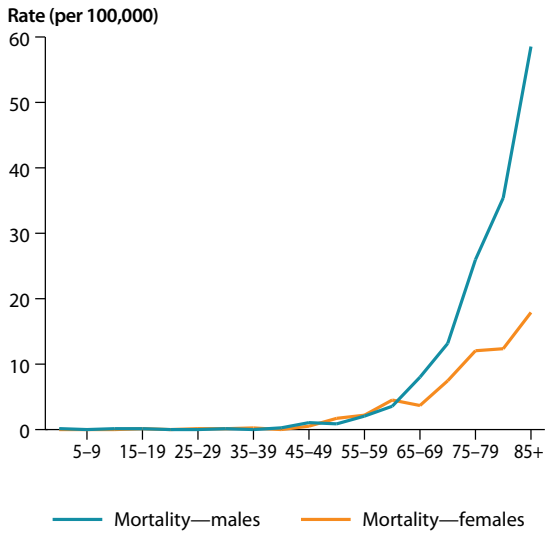


Figure B.18b: Multiple primary cancers incidence and mortality rates[e] by age at diagnosis, 2007

(a) Of relevance for mortality data only.

(b) The estimates were based on mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(c) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(d) The first year for which national mortality data for multiple primary cancers are available is 1997.

(e) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Myelodysplastic syndrome (D46)

Table B.19: Incidence and mortality of myelodysplastic syndrome observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	686	413	1,099	233	159	392
2010 (estimated)[a]	780	540	1,300	260	170	430
Age-standardised rate[b]						
2007	7.0	3.2	4.8	2.5	1.1	1.7
CI (95%)	6.5–7.6	2.9–3.6	4.5–5.1	2.2–2.9	1.0–1.3	1.5–1.8
2010 (estimated)[a]	7	4	5	3	1	2
Other information for 2007						
% of all cancer	1.1	0.9	1.0	1.0	0.9	1.0
Risk to age 75 years	1 in 294	1 in 557	1 in 388	1 in 2,042	1 in 3,302	1 in 2,538
Risk to age 85 years	1 in 99	1 in 230	1 in 145	1 in 299	1 in 739	1 in 452
Mean age	75.5	75.6	75.5	81.1	83.0	81.9

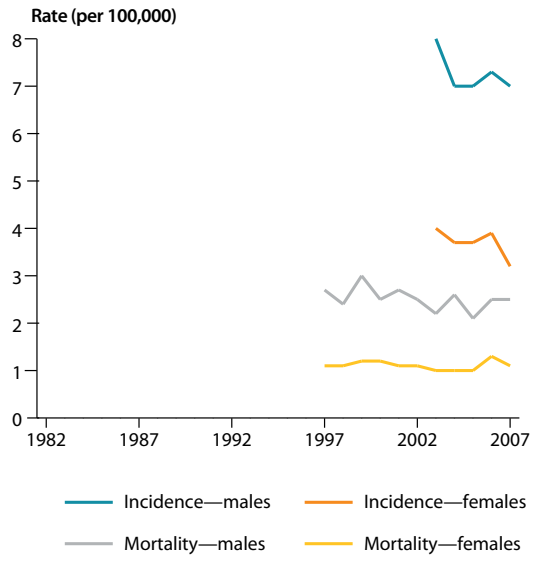


Figure B.19a: Myelodysplastic syndrome incidence and mortality rates[b, c], 1982–2007

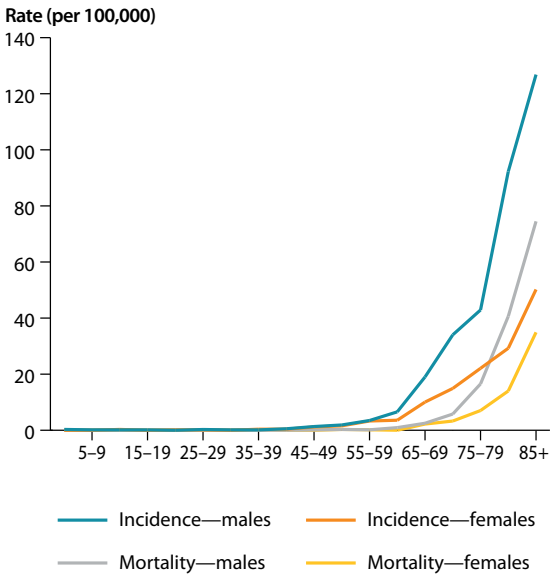


Figure B.19b: Myelodysplastic syndrome incidence and mortality rates[d] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 2003 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The first year for which national incidence data for myelodysplastic syndrome are available is 2003. The first year for which national mortality data for myelodysplastic syndromes are available is 1997.

(d) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Myeloma (C90)

Table B.20: Incidence and mortality of myeloma observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	721	534	1,255	369	329	698
2010 (estimated)[a]	810	620	1,400	470	380	860
Age-standardised rate[b]						
2007	7.0	4.4	5.6	3.6	2.6	3.1
CI (95%)	6.5–7.5	4.0–4.8	5.3–5.9	3.3–4.0	2.3–2.9	2.8–3.3
2010 (estimated)[a]	7	5	6	4	3	4
Other information for 2007						
% of all cancer	1.2	1.2	1.2	1.6	1.9	1.8
Risk to age 75 years	1 in 201	1 in 299	1 in 241	1 in 452	1 in 718	1 in 557
Risk to age 85 years	1 in 102	1 in 164	1 in 129	1 in 184	1 in 277	1 in 225
Mean age	69.2	70.3	69.7	72.6	75.3	73.8

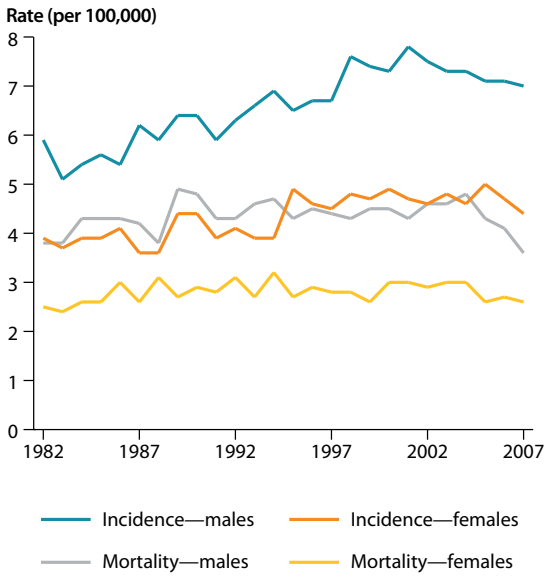


Figure B.20a: Myeloma incidence and mortality rates[b], 1982–2007

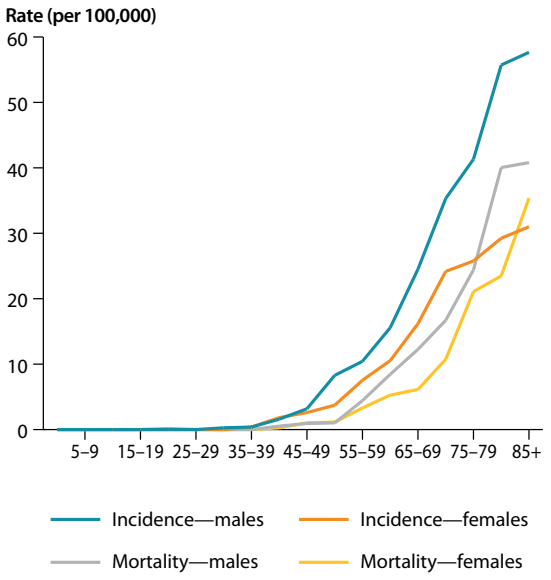


Figure B.20b: Myeloma incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Non-Hodgkin lymphoma (C82–C85)

Table B.21: Incidence and mortality of Non-Hodgkin lymphoma observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	2,194	1,831	4,025	733	586	1,319
2010 (estimated)[a]	2,400	2,000	4,400	810	630	1,400
Age-standardised rate[b]						
2007	21.1	15.4	18.0	7.3	4.6	5.8
CI (95%)	20.2–22.0	14.7–16.1	17.5–18.6	6.8–7.8	4.2–4.9	5.5–6.1
2010 (estimated)[a]	22	15	18	7	5	6
Other information for 2007						
% of all cancer	3.5	4.0	3.7	3.2	3.4	3.3
Risk to age 75 years	1 in 65	1 in 88	1 in 75	1 in 239	1 in 420	1 in 306
Risk to age 85 years	1 in 36	1 in 51	1 in 43	1 in 99	1 in 150	1 in 121
Mean age	63.9	66.1	64.9	71.8	75.8	73.6

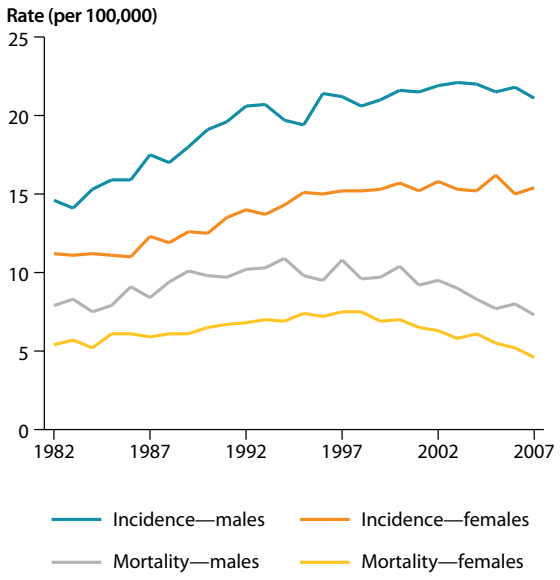


Figure B.21a Non-Hodgkin lymphoma incidence and mortality rates[b], 1982–2007

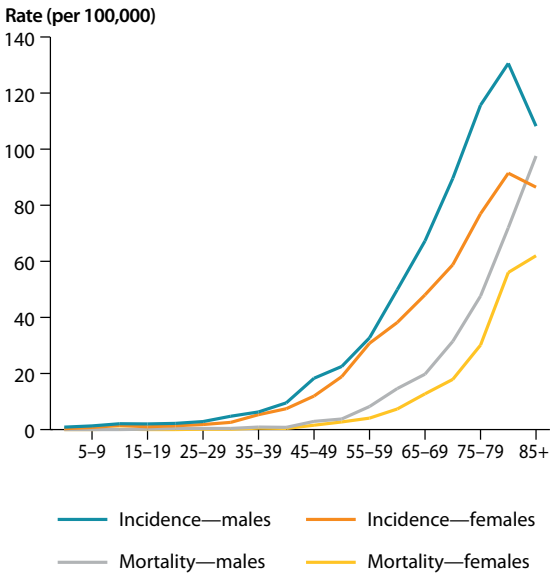


Figure B.21b: Non-Hodgkin lymphoma incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Non-melanoma skin cancer (C44)[a]

Table B.22: Incidence and mortality of non-melanoma skin cancer observed for 2007, and estimated for 2010

	Incidence[a]			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	438	281	719	305	143	448
2010 (estimated)[b]	460	290	760	340	160	490
Age-standardised rate[c]						
2007	4.4	2.3	3.2	3.1	1.0	1.9
CI (95%)	4.0–4.8	2.0–2.6	3.0–3.4	2.8–3.5	0.9–1.2	1.8–2.1
2010 (estimated)[b]	4	2	3	3	1	2
Other information for 2007						
% of all cancer	0.7	0.6	0.7	1.4	0.8	1.1
Risk to age 75 years	1 in 435	1 in 760	1 in 555	1 in 748	1 in 2,701	1 in 1,183
Risk to age 85 years	1 in 178	1 in 373	1 in 250	1 in 238	1 in 894	1 in 399
Mean age	69.3	69.7	69.5	76.1	80.5	77.5

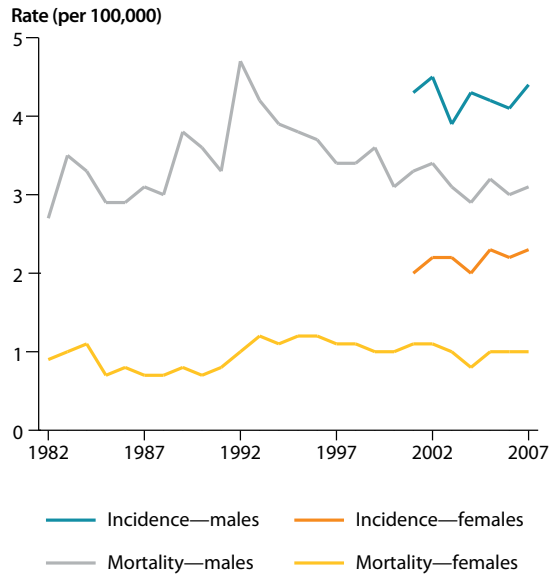


Figure B.22a: Non-melanoma skin cancer incidence and mortality rates[c, d], 1982–2007

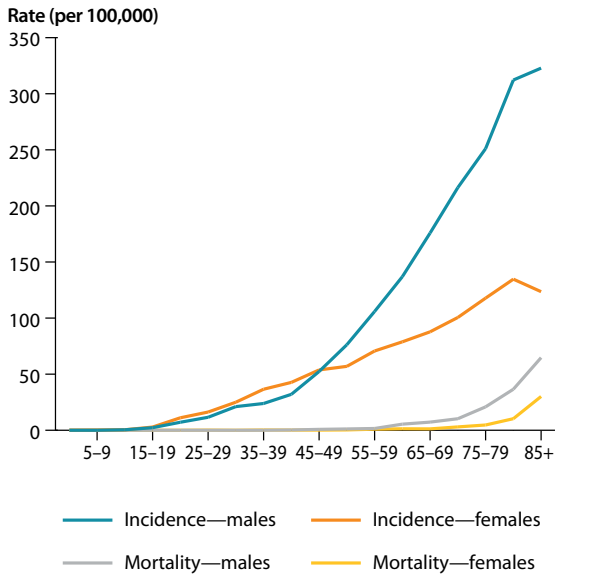


Figure B.22b: Non-melanoma skin cancer incidence and mortality rates[e] by age at diagnosis, 2007

(a) For incidence data, those C44 codes that indicate basal or squamous cell carcinoma of the skin are not included.

(b) The estimates were based on data for 2001 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(c) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(d) The first year for which national incidence data for non-melanoma skin cancer are available is 2001.

(e) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Oesophageal cancer (C15)

Table B.23: Incidence and mortality of oesophageal cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	865	399	1,264	790	308	1,098
2010 (estimated)[(a)]	960	430	1,400	890	400	1,300
Age-standardised rate[(b)]						
2007	8.4	3.1	5.6	7.7	2.4	4.9
CI (95%)	7.8–8.9	2.8–3.5	5.3–5.9	7.1–8.2	2.1–2.7	4.6–5.2
2010 (estimated)[(a)]	9	3	6	8	3	5
Other information for 2007						
% of all cancer	1.4	0.9	1.2	3.5	1.8	2.8
Risk to age 75 years	1 in 168	1 in 561	1 in 260	1 in 189	1 in 935	1 in 318
Risk to age 85 years	1 in 86	1 in 219	1 in 127	1 in 95	1 in 282	1 in 146
Mean age	68.3	75.4	70.6	68.8	76.2	70.9

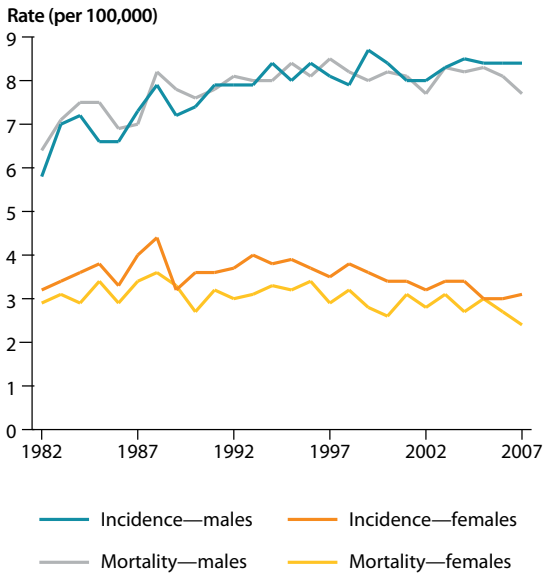


Figure B.23a: Oesophageal cancer incidence and mortality rates[(b)], 1982–2007

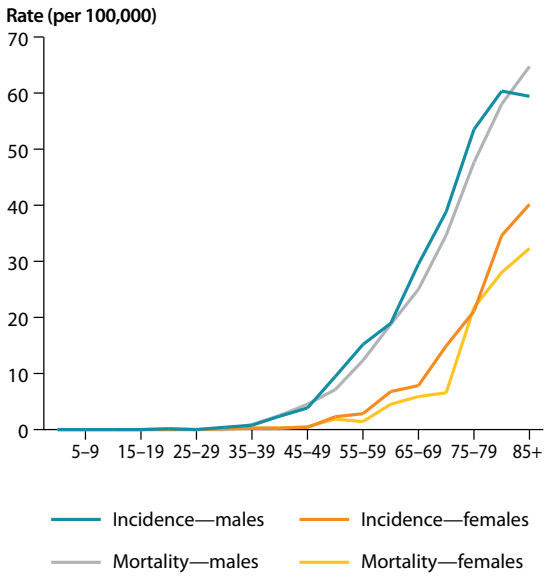


Figure B.23b: Oesophageal cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Cancer of other digestive organs (C26)

Table B.24: Incidence and mortality of cancer of other digestive organs observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	62	87	149	509	441	950
2010 (estimated)[(a)]	80	100	180	820	740	1,600
Age-standardised rate[(b)]						
2007	0.6	0.6	0.6	5.1	3.4	4.2
CI (95%)	0.5–0.8	0.5–0.8	0.5–0.7	4.6–5.5	3.1–3.7	3.9–4.4
2010 (estimated)[(a)]	1	1	1	7	5	6
Other information for 2007						
% of all cancer	0.1	0.2	0.1	2.3	2.5	2.4
Risk to age 75 years	1 in 3,567	1 in 4,249	1 in 3,877	1 in 329	1 in 569	1 in 419
Risk to age 85 years	1 in 1,517	1 in 1,281	1 in 1,363	1 in 139	1 in 228	1 in 176
Mean age	76.4	79.8	78.4	73.1	76.7	74.7

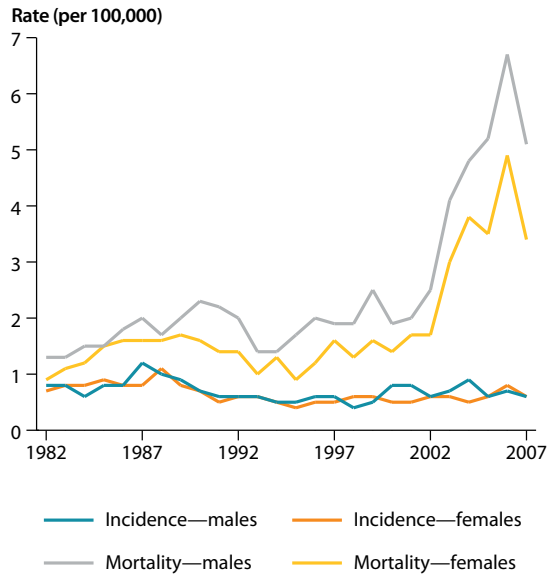


Figure B.24a: Cancer of other digestive organs incidence and mortality rates[(b)], 1982–2007

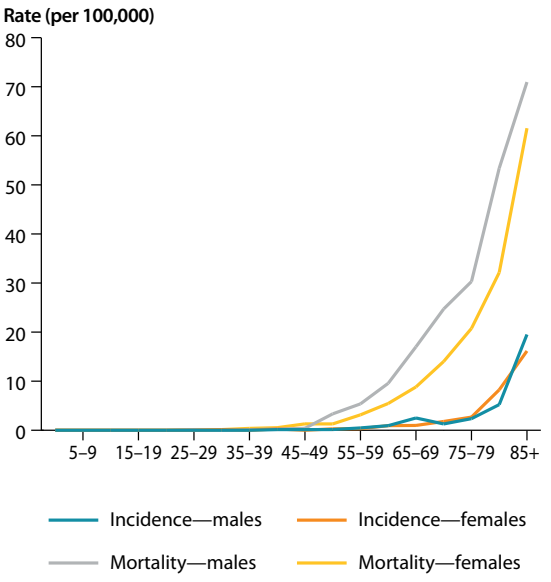


Figure B.24b: Cancer of other digestive organs incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Other myeloproliferative cancers (C94.1, C94.3, C96.2, D45, D47.1, D47.3)

Table B.25: Incidence and mortality of other myeloproliferative cancers observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	357	285	642	83	88	171
2010 (estimated)[a]	450	350	800	90	90	180
Age standardised rate[b]						
2007	3.5	2.4	2.9	0.8	0.7	0.7
CI (95%)	3.1–3.9	2.1–2.7	2.7–3.1	0.7–1.0	0.5–0.8	0.6–0.9
2010 (estimated)[a]	4	3	3	1	1	1
Other information for 2007						
% of all cancer	0.6	0.6	0.6	0.4	0.5	0.4
Risk to age 75 years	1 in 393	1 in 605	1 in 479	1 in 2,410	1 in 3,398	1 in 2,822
Risk to age 85 years	1 in 225	1 in 334	1 in 272	1 in 800	1 in 1,195	1 in 981
Mean age	64.9	66.8	65.7	74.6	80.6	77.7

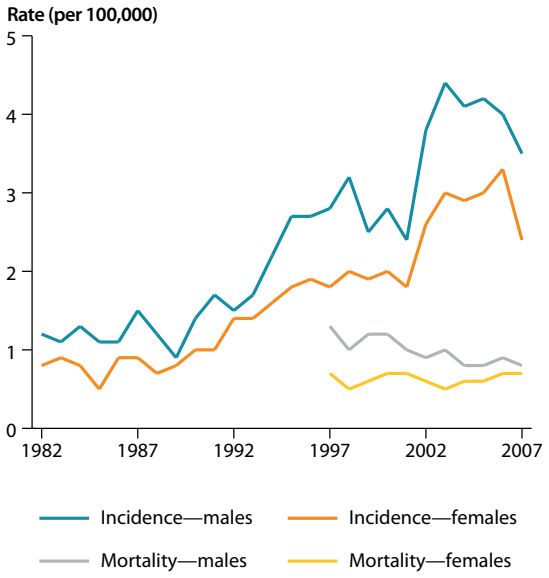


Figure B.25a: Other myeloproliferative cancers incidence and mortality rates[b–d], 1982–2007

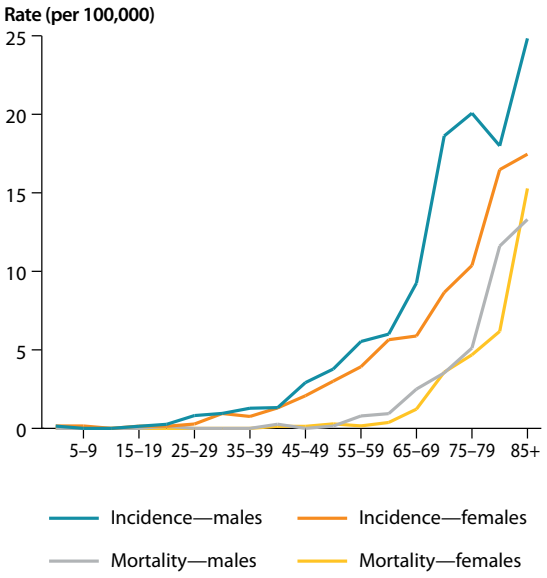


Figure B.25b: Other myeloproliferative cancers incidence and mortality rates[e] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 2003 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The first year for which national mortality data for other myeloproliferative cancers are available is 1997.

(d) Incidence data for D45, D47.1 and D47.3 are incomplete prior to 2003

(e) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Other soft tissue cancers (C47, C49)

Table B.26: Incidence and mortality of other soft tissue cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	257	260	517	109	110	219
2010 (estimated)[a]	330	270	600	130	110	240
Age-standardised rate[b]						
2007	2.5	2.3	2.4	1.1	0.9	1.0
CI (95%)	2.2–2.8	2.0–2.6	2.2–2.6	0.9–1.3	0.8–1.1	0.9–1.1
2010 (estimated)[a]	3	2	3	1	1	1
Other information for 2007						
% of all cancer	0.4	0.6	0.5	0.5	0.6	0.5
Risk to age 75 years	1 in 556	1 in 551	1 in 554	1 in 1,484	1 in 1,779	1 in 1,622
Risk to age 85 years	1 in 325	1 in 392	1 in 359	1 in 718	1 in 853	1 in 788
Mean age	57.4	55.5	56.5	62.1	67.7	65.0

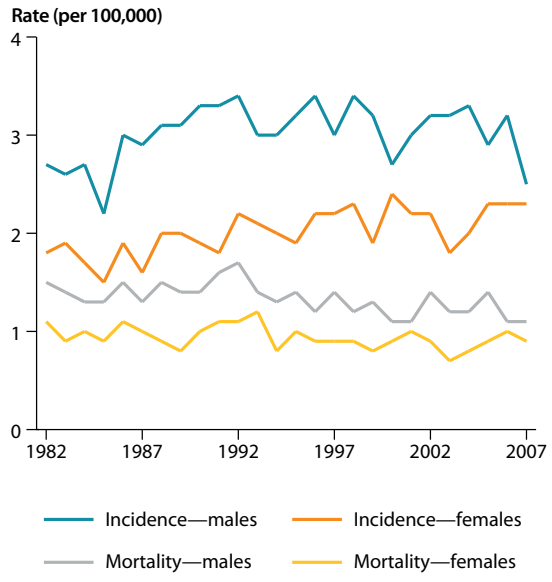


Figure B.26a: Other soft tissue cancers incidence and mortality rates[b], 1982–2007

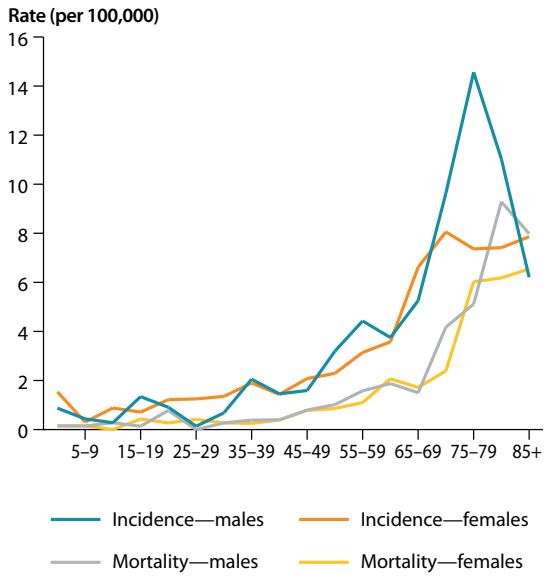


Figure B.26b: Other soft tissue cancers incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Ovarian cancer (C56)

Table B.27: Incidence and mortality of ovarian cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	..	1,266	1,266	..	848	848
2010 (estimated)[(a)]	..	1,300	1,300	..	950	950
Age-standardised rate[(b)]						
2007	..	10.8	..	..	7.0	..
CI (95%)	..	10.2–11.4	..	..	6.5–7.5	..
2010 (estimated)[(a)]	..	11	..	..	7	..
Other information for 2007						
% of all cancer	..	2.7	..	..	4.9	..
Risk to age 75 years	..	1 in 121	..	..	1 in 195	..
Risk to age 85 years	..	1 in 78	..	..	1 in 106	..
Mean age	..	62.9	..	..	69.4	..

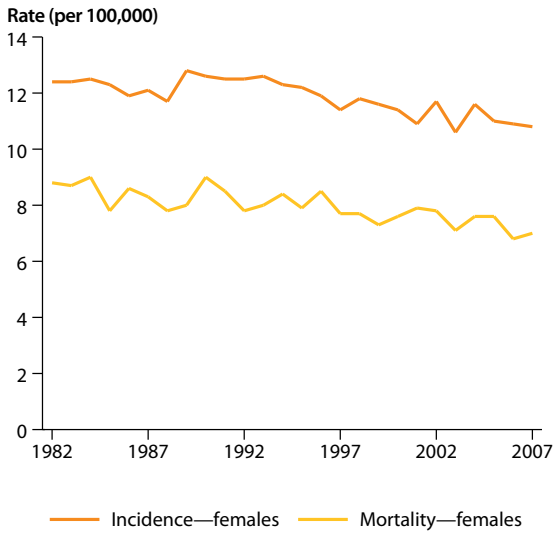


Figure B.27a: Ovarian cancer incidence and mortality rates[(b)], 1982–2007

Figure B.27b: Ovarian cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Pancreatic cancer (C25)

Table B.28: Incidence and mortality of pancreatic cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	1,352	1,173	2,525	1,233	1,015	2,248
2010 (estimated)[(a)]	1,300	1,200	2,600	1,200	1,100	2,300
Age-standardised rate[(b)]						
2007	13.1	9.4	11.1	12.1	8.0	9.9
CI (95%)	12.4–13.8	8.8–9.9	10.7–11.6	11.4–12.8	7.6–8.6	9.5–10.3
2010 (estimated)[(a)]	12	9	10	11	8	10
Other information for 2007						
% of all cancer	2.2	2.5	2.3	5.5	5.9	5.6
Risk to age 75 years	1 in 112	1 in 172	1 in 136	1 in 123	1 in 195	1 in 151
Risk to age 85 years	1 in 55	1 in 77	1 in 65	1 in 61	1 in 89	1 in 73
Mean age	69.7	73.8	71.6	70.2	75.0	72.3

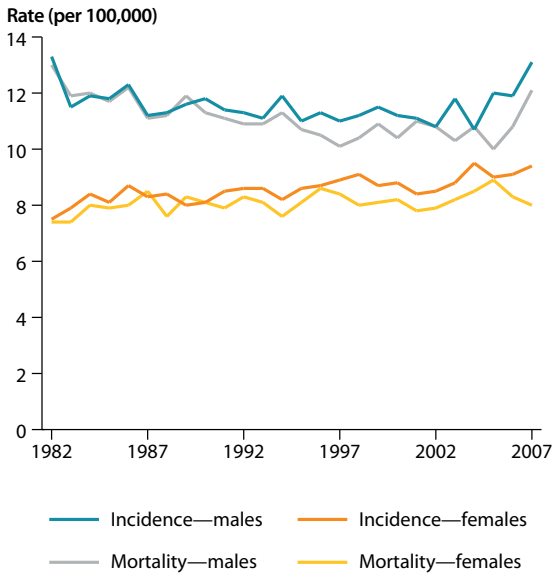


Figure B.28a: Pancreatic cancer incidence and mortality rates[(b)], 1982–2007

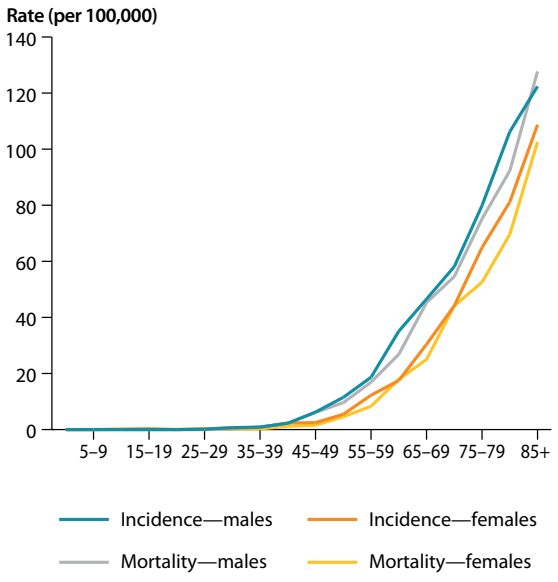


Figure B.28b: Pancreatic cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Prostate cancer (C61)

Table B.29: Incidence and mortality of prostate cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	19,403	..	19,403	2,938	..	2,938
2010 (estimated)[(a)]	16,800	..	16,800	3,300	..	3,300
Age-standardised rate[(b)]						
2007	182.9	..	..	31.0	..	..
CI (95%)	180.3–185.5	..	..	29.9–32.2	..	..
2010 (estimated)[(a)]	143	..	..	31	..	..
Other information for 2007						
% of all cancer	31.3	..	..	13.0	..	..
Risk to age 75 years	1 in 7	..	..	1 in 104	..	..
Risk to age 85 years	1 in 4	..	..	1 in 25	..	..
Mean age	68.4	..	..	79.3	..	..

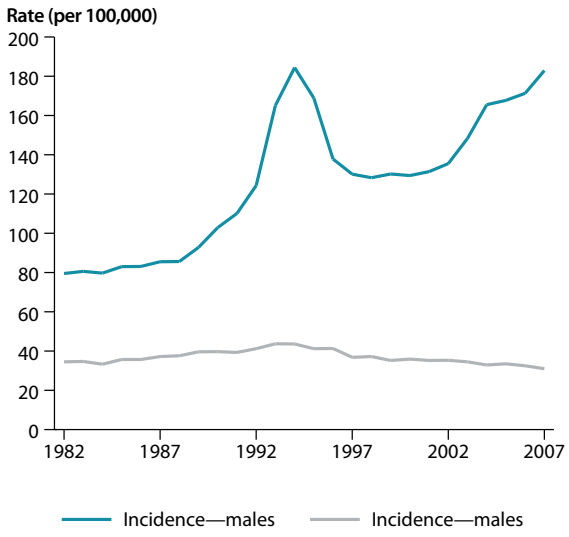


Figure B.29a: Prostate cancer incidence and mortality rates[(b)], 1982–2007

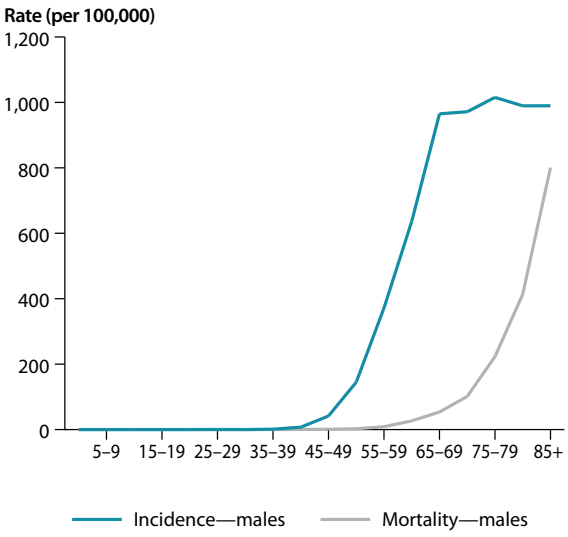


Figure B.29b: Prostate cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on methodology that differs from the other cancer types (more details in Appendix J).

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Stomach cancer (C16)

Table B.30: Incidence and mortality of stomach cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	1,212	685	1,897	704	425	1,129
2010 (estimated)[(a)]	1,300	700	2,000	670	460	1,100
Age-standardised rate[(b)]						
2007	11.8	5.6	8.4	7.0	3.4	5.0
CI (95%)	11.2–12.5	5.1–6.0	8.0–8.8	6.5–7.5	3.1–3.8	4.7–5.3
2010 (estimated)[(a)]	12	5	8	6	3	5
Other information for 2007						
% of all cancer	2.0	1.5	1.8	3.1	2.5	2.8
Risk to age 75 years	1 in 130	1 in 270	1 in 176	1 in 243	1 in 456	1 in 318
Risk to age 85 years	1 in 62	1 in 137	1 in 88	1 in 104	1 in 226	1 in 147
Mean age	69.2	70.2	69.5	71.1	71.4	71.2

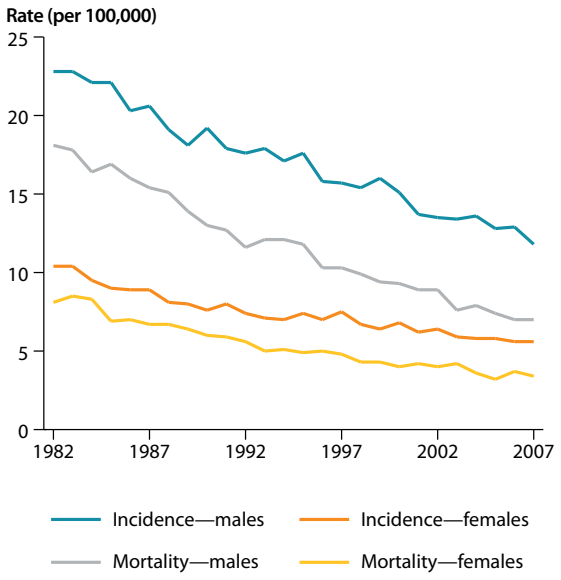


Figure B.30a: Stomach cancer incidence and mortality rates[(b)], 1982–2007

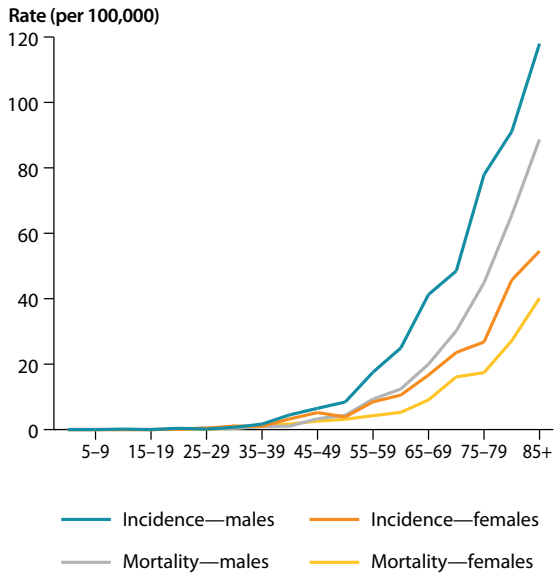


Figure B.30b: Stomach cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Testicular cancer (C62)

Table B.31: Incidence and mortality of testicular cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	698	..	698	26	..	26
2010 (estimated)[(a)]	680	..	680	30	..	30
Age-standardised rate[(b)]						
2007	6.8	..	..	0.3	..	..
CI (95%)	6.3–7.3	..	..	0.2–0.4	..	..
2010 (estimated)[(a)]	6	..	..	0	..	..
Other information for 2007						
% of all cancer	1.1	..	..	0.1	..	..
Risk to age 75 years	1 in 213	..	..	1 in 6,563	..	..
Risk to age 85 years	1 in 207	..	..	1 in 3,712	..	..
Mean age	35.3	..	..	48.1	..	..

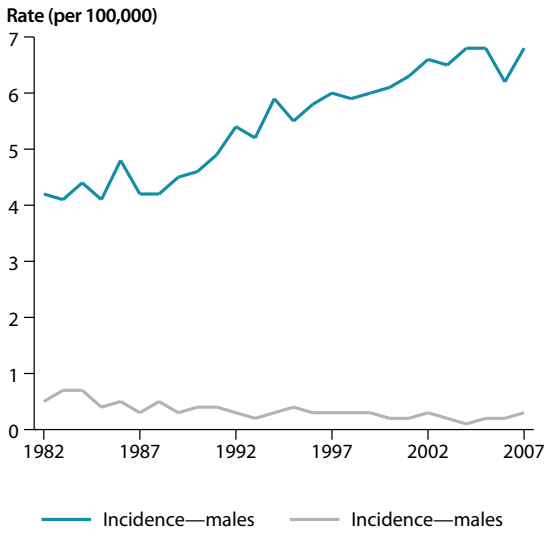


Figure B.31a: Testicular cancer incidence and mortality rates[(b)], 1982–2007

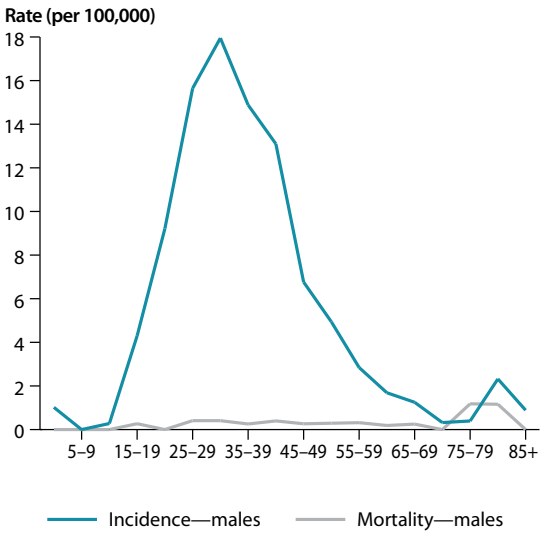


Figure B.31b: Testicular cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Thyroid cancer (C73)

Table B.32: Incidence and mortality of thyroid cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	456	1,331	1,787	41	64	105
2010 (estimated)[(a)]	490	1,600	2,100	50	70	120
Age-standardised rate[(b)]						
2007	4.3	12.2	8.3	0.4	0.5	0.5
CI (95%)	3.9–4.7	11.6–12.9	7.9–8.7	0.3–0.6	0.4–0.7	0.4–0.6
2010 (estimated)[(a)]	4	14	9	0	1	1
Other information for 2007						
% of all cancer	0.7	2.9	1.6	0.2	0.4	0.3
Risk to age 75 years	1 in 290	1 in 103	1 in 152	1 in 3,792	1 in 3,561	1 in 3,674
Risk to age 85 years	1 in 228	1 in 91	1 in 130	1 in 1,899	1 in 1,447	1 in 1,617
Mean age	53.9	49.4	50.6	73.0	73.8	73.5

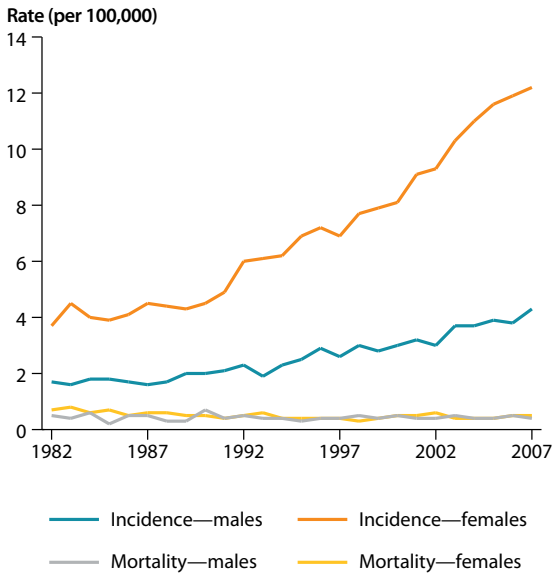


Figure B.32a: Thyroid cancer incidence and mortality rates[(b)], 1982–2007

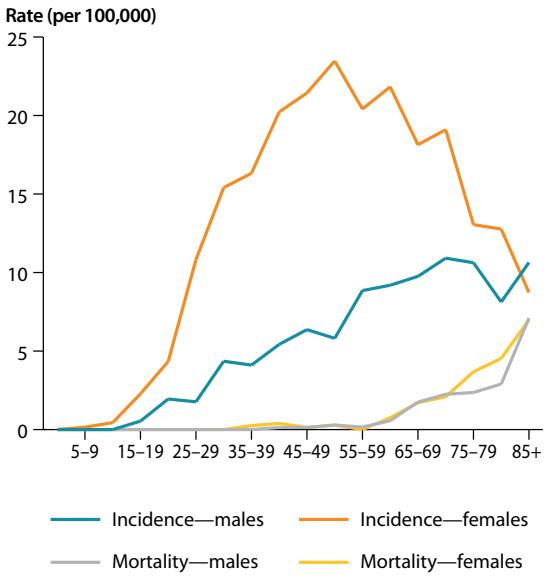


Figure B.32b: Thyroid cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Tongue cancer (C01–C02)

Table B.33: Incidence and mortality of tongue cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	402	198	600	134	51	185
2010 (estimated)[(a)]	410	190	600	130	60	190
Age-standardised rate[(b)]						
2007	3.7	1.7	2.7	1.3	0.4	0.8
CI (95%)	3.4–4.1	1.5–1.9	2.5–2.9	1.1–1.5	0.3–0.5	0.7–0.9
2010 (estimated)[(a)]	4	2	3	1	1	1
Other information for 2007						
% of all cancer	0.6	0.4	0.6	0.6	0.3	0.5
Risk to age 75 years	1 in 302	1 in 756	1 in 434	1 in 998	1 in 3,659	1 in 1,578
Risk to age 85 years	1 in 242	1 in 490	1 in 325	1 in 618	1 in 2,012	1 in 967
Mean age	60.7	63.8	61.7	65.8	74.0	68.1

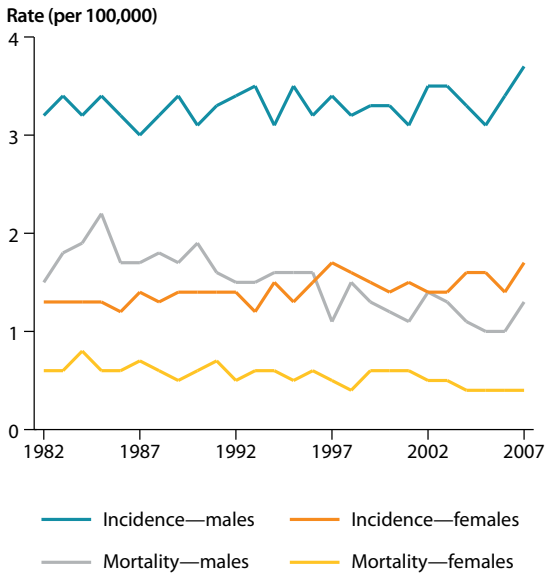


Figure B.33a: Tongue cancer incidence and mortality rates[(b)], 1982–2007

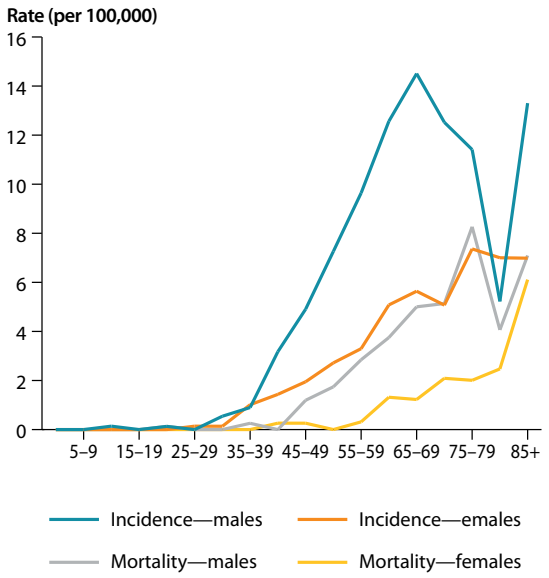


Figure B.33b: Tongue cancer incidence and mortality rates[(c)] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Total lymphoid cancers (C81–C85, C88, C90, C91)

Table B.34: Incidence and mortality of total lymphoid cancers observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	4,116	3,160	7,276	1,423	1,129	2,552
2010 (estimated)[a]	4,600	3,500	8,100	1,700	1,300	2,900
Age-standardised rate[b]						
2007	39.6	26.8	32.8	14.2	8.8	11.2
CI (95%)	38.4–40.8	25.9–27.8	32.0–33.5	13.4–14.9	8.3–9.3	10.8–11.7
2010 (estimated)[a]	41	28	34	15	9	12
Other information for 2007						
% of all cancer	6.6	6.8	6.7	6.3	6.5	6.4
Risk to age 75 years	1 in 35	1 in 50	1 in 42	1 in 125	1 in 217	1 in 160
Risk to age 85 years	1 in 20	1 in 30	1 in 25	1 in 50	1 in 81	1 in 63
Mean age	62.2	63.3	62.6	71.7	75.1	73.2

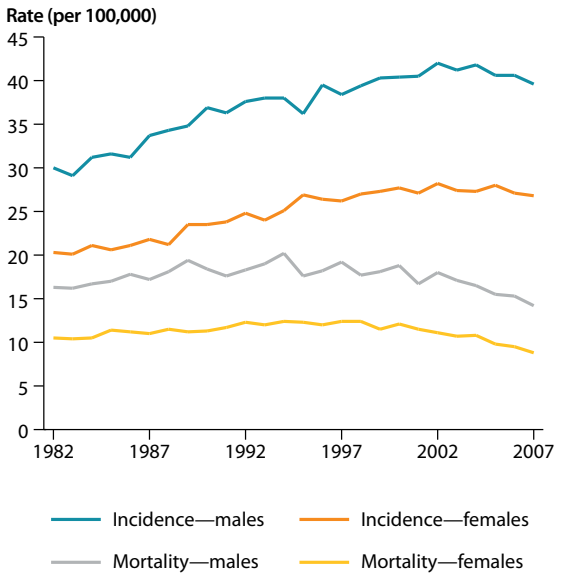


Figure B.34a: Total lymphoid cancers incidence and mortality rates[b], 1982–2007

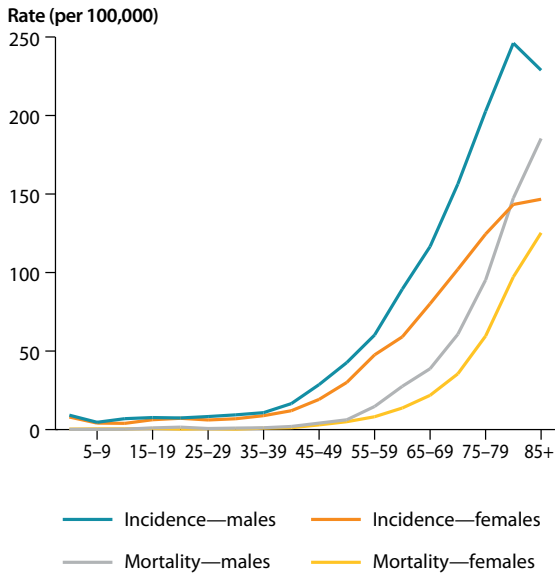


Figure B.34b: Total lymphoid cancers incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Total myeloid cancers (C92–C94, C96.2, D45, D46, D47.1, D47.3)

Table B.35: Incidence and mortality of total myeloid cancers observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	1,859	1,232	3,091	867	592	1,459
2010 (estimated)[(a)]	2,100	1,500	3,600	970	700	1,700
Age-standardised rate[(b)]						
2007	18.5	10.1	13.8	8.8	4.6	6.4
CI (95%)	17.7–19.4	9.5–10.7	13.3–14.3	8.2–9.4	4.2–5.0	6.1–6.7
2010 (estimated)[(a)]	19	12	15	9	5	7
Other information for 2007						
% of all cancer	3.0	2.7	2.9	3.8	3.4	3.7
Risk to age 75 years	1 in 90	1 in 158	1 in 115	1 in 241	1 in 433	1 in 311
Risk to age 85 years	1 in 40	1 in 78	1 in 55	1 in 80	1 in 166	1 in 112
Mean age	68.0	68.7	68.3	73.7	76.0	74.6

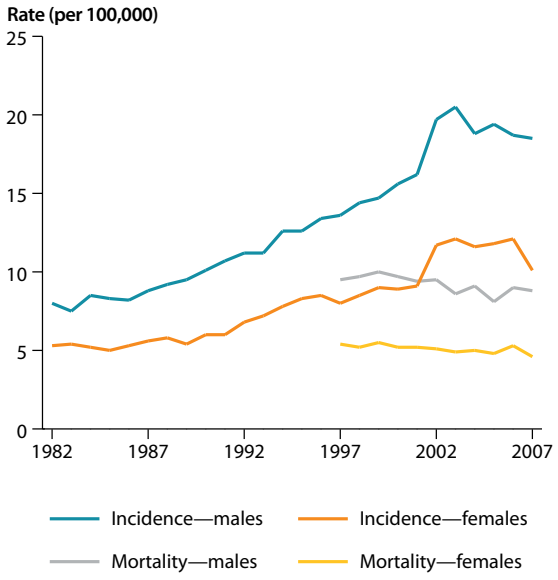


Figure B.35a: Total myeloid cancers incidence and mortality rates[(b–d)], 1982–2007

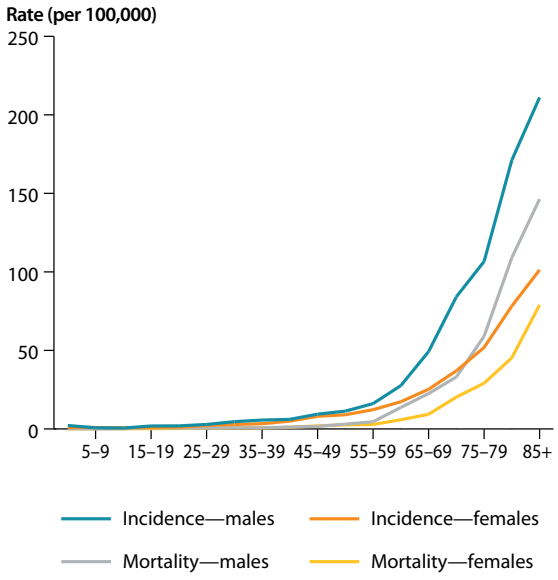


Figure B.35b: Total myeloid cancers incidence and mortality rates[(e)] by age at diagnosis, 2007

(a) The estimates were based on data for 2003 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The first year for which national mortality data for total myeloid cancers are available is 1997.

(d) Incidence data for D45, D47.1 and D47.3 are incomplete prior to 2003.

(e) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Unknown primary site (C80)[a]

Table B.36: Incidence and mortality of cancer of unknown primary site observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	1,496	1,401	2,897	1,247	1,097	2,344
2010 (estimated)[b]	1,600	1,500	3,100	1,500	1,300	2,700
Age-standardised rate[c]						
2007	14.9	11.0	12.8	12.5	8.5	10.3
CI (95%)	14.2–15.7	10.4–11.6	12.3–13.2	11.8–13.2	8.0–9.1	9.9–10.7
2010 (estimated)[b]	15	11	12	13	9	11
Other information for 2007						
% of all cancer	2.4	3.0	2.7	5.5	6.3	5.9
Risk to age 75 years	1 in 118	1 in 161	1 in 137	1 in 144	1 in 209	1 in 171
Risk to age 85 years	1 in 49	1 in 69	1 in 58	1 in 58	1 in 86	1 in 70
Mean age	72.0	74.6	73.2	73.2	75.5	74.3

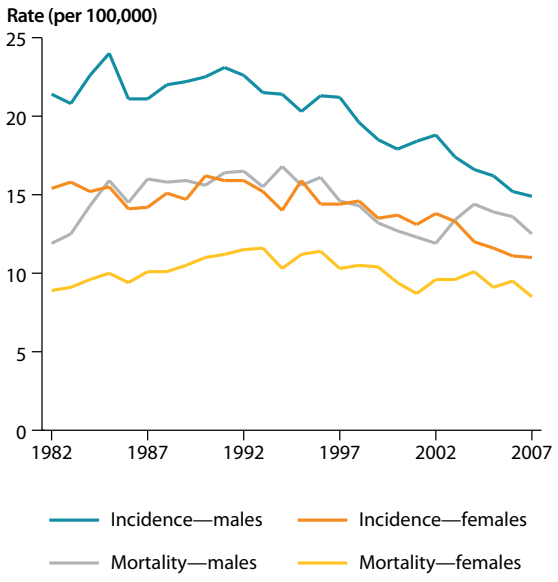


Figure B.36a: Cancer of unknown primary site incidence and mortality rates[c], 1982–2007

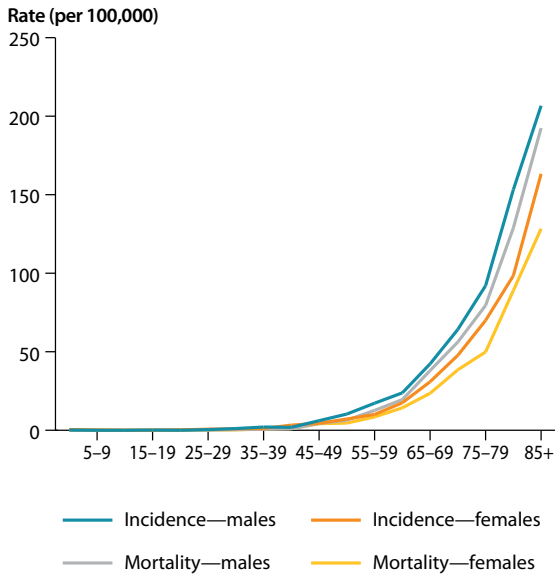


Figure B.36b: Cancer of unknown primary site incidence and mortality rates[d] by age at diagnosis, 2007

(a) For mortality data, the applicable codes are C77–C80.

(b) The estimates were based on data for 1998 to 2007. See Appendix F for further details on the methodology used. The estimates for males and females may not add to the estimates for persons due to rounding.

(c) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(d) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Uterine cancer (C54–C55)

Table B.37: Incidence and mortality of uterine cancer observed for 2007, and estimated for 2010

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
Number						
2007	..	1,942	1,942	..	338	338
2010 (estimated)[a]	..	2,100	2,100	..	370	370
Age-standardised rate[b]						
2007	..	16.5	..	..	2.7	..
CI (95%)	..	15.8–17.3	..	..	2.4–3.0	..
2010 (estimated)[a]	..	17	..	..	3	..
Other information for 2007						
% of all cancer	..	4.2	..	..	2.0	..
Risk to age 75 years	..	1 in 69	..	..	1 in 556	..
Risk to age 85 years	..	1 in 50	..	..	1 in 275	..
Mean age	..	64.4	..	..	73.3	..

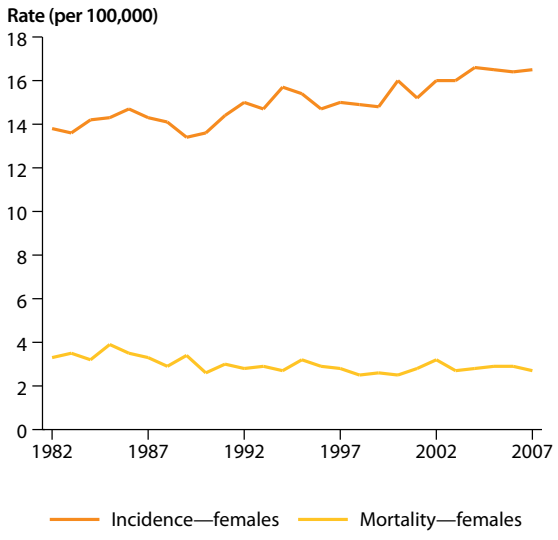


Figure B.37a: Uterine cancer incidence and mortality rates[b], 1982–2007

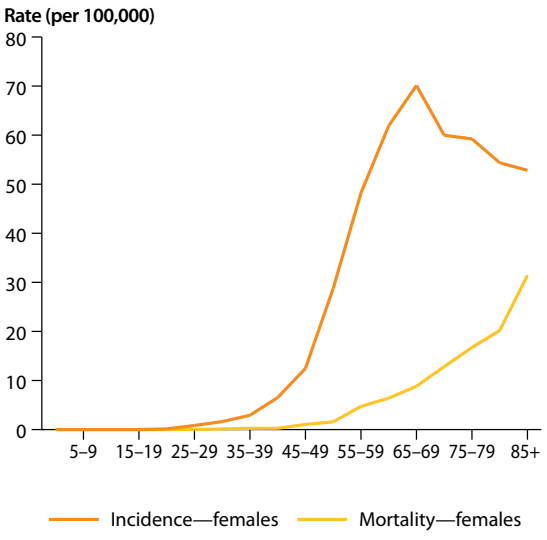


Figure B.37b: Uterine cancer incidence and mortality rates[c] by age at diagnosis, 2007

(a) The estimates were based on incidence/mortality data for 1998 to 2007. See Appendix F for further details on the methodology used.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

(c) The rates shown are age-specific rates.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

APPENDIX C: CANCER INCIDENCE AND MORTALITY FOR ALL CANCER GROUPINGS

Table C.1: Number of new cases and deaths by cancer type, persons, Australia, 2007

Cancer site/type	Incidence			Mortality		
	Number	ASR[(a)]	95% CI	Number	ASR[(a)]	95% CI
Lip, oral cavity and pharynx						
Lip (C00)	897	4.0	3.8–4.3	15	0.1	0.0–0.1
Tongue (C01, C02)	600	2.7	2.5–2.9	185	0.8	0.7–0.9
Mouth (C03–C06)	499	2.2	2.0–2.4	128	0.6	0.5–0.7
Salivary glands (C07, C08)	284	1.3	1.1–1.4	68	0.3	0.2–0.4
Oropharynx (C09, C10)	375	1.7	1.5–1.9	111	0.5	0.4–0.6
Nasopharynx (C11)	124	0.6	0.5–0.7	44	0.2	0.1–0.3
Hypopharynx (C12, C13)	141	0.6	0.5–0.7	49	0.2	0.2–0.3
Other sites in pharynx, etc. (C14)	79	0.4	0.3–0.4	76	0.3	0.3–0.4
Digestive organs						
Oesophagus (C15)	1,264	5.6	5.3–5.9	1,098	4.9	4.6–5.2
Stomach (C16)	1,897	8.4	8.0–8.8	1,129	5.0	4.7–5.3
Small intestine (C17)	387	1.7	1.6–1.9	104	0.5	0.4–0.6
Bowel (C18–C20)	14,234	63.4	62.4–64.5	4,047	17.8	17.3–18.4
Anus (C21)	300	1.3	1.2–1.5	60	0.3	0.2–0.3
Liver (C22)	1,169	5.2	4.9–5.5	1,109	4.9	4.6–5.2
Gallbladder & bile ducts (C23, C24)	676	3.0	2.8–3.2	265	1.2	1.0–1.3
Pancreas (C25)	2,525	11.1	10.7–11.6	2,248	9.9	9.5–10.3
Other digestive organs (C26)	149	0.6	0.5–0.7	950	4.2	3.9–4.4
Respiratory system and intrathoracic organs						
Nose, sinuses, etc. (C30, C31)	154	0.7	0.6–0.8	23	0.1	0.1–0.2
Larynx (C32)	581	2.6	2.4–2.8	214	0.9	0.8–1.1
Lung (C33, C34)	9,703	43.3	42.4–44.2	7,626	34.0	33.2–34.7
Other thoracic and respiratory organs (C37–C39)	91	0.4	0.3–0.5	59	0.2	0.2–0.3
Bone (C40, C41)	195	0.9	0.8–1.1	118	0.5	0.4–0.6
Skin						

Table C.1: Number of new cases and deaths by cancer type, persons, Australia, 2007 (continued)

Cancer site/type	Incidence			Mortality		
	Number	ASR[a]	95% CI	Number	ASR[a]	95% CI
Melanoma of skin (C43)	10,342	46.7	45.8–47.7	1,279	5.7	5.4–6.0
Non-melanoma of the skin (C44)[b]	719	3.2	3.0–3.4	448	1.9	1.8–2.1
Mesothelioma and soft tissue						
Mesothelioma (C45)	660	3.0	2.7–3.2	551	2.4	2.2–2.7
Kaposi sarcoma (C46)	69	0.3	0.2–0.4	8	n.p.	n.p.
Peritoneum (C48)	226	1.0	0.9–1.2	82	0.4	0.3–0.5
Other soft tissue (C47, C49)	517	2.4	2.2–2.6	219	1.0	0.9–1.1
Breast (C50)	12,670	56.9	55.9–57.9	2,706	11.9	11.5–12.4
Female genital organs						
Vulva (C51)	276	..	..	65	..	..
Vagina (C52)	69	..	..	26	..	..
Cervix (C53)	739	..	..	208	..	..
Uterus (C54, C55)	1,942	..	..	338	..	..
Ovary (C56)	1,266	..	..	848	..	..
Other female genital organs and placenta (C57–C58)	97	..	..	17	..	..
Male genital organs						
Penis(C60)	81	..	..	12	..	..
Prostate (C61)	19,403	..	..	2,938	..	..
Testis (C62)	698	..	..	26	..	..
Other male genital organs (C63)	19	..	..	5	..	..
Urinary tract						
Kidney (C64)	2,580	11.6	11.2–12.1	855	3.8	3.5–4.0
Bladder (C67)	2,217	9.8	9.4–10.2	925	4.0	3.8–4.3
Other urinary organs (C65, C66, C68)	399	1.8	1.6–2.0	70	0.3	0.2–0.4
Eye, brain and other parts of the central nervous system						
Eye (C69)	237	1.1	0.9–1.2	20	0.1	0.1–0.1
Brain (C71)	1,472	6.7	6.4–7.1	1,123	5.1	4.8–5.4
Other central nervous system (C70, C72)	78	0.4	0.3–0.4	18	0.1	0.0–0.1
Thyroid and other endocrine glands						

(continued)

Table C.1: Number of new cases and deaths by cancer type, persons, Australia, 2007 (continued)

Cancer site/type	Incidence			Mortality		
	Number	ASR[(a)]	95% CI	Number	ASR[(a)]	95% CI
Thyroid (C73)	1,787	8.3	7.9–8.7	105	0.5	0.4–0.6
Other endocrine glands (C74, C75)	103	0.5	0.4–0.6	49	0.2	0.2–0.3
Blood and lymphatic system						
Hodgkin lymphoma (C81)	538	2.5	2.3–2.8	70	0.3	0.2–0.4
Non–Hodgkin lymphoma (C82–C85)	4,025	18.0	17.5–18.6	1,319	5.8	5.5–6.1
Immunoproliferative cancers (C88)	76	0.3	0.3–0.4	41	0.2	0.1–0.2
Myeloma (C90)	1,255	5.6	5.3–5.9	698	3.1	2.8–3.3
Acute lymphoblastic leukaemia (C91.0)	314	1.5	1.4–1.7	89	0.4	0.3–0.5
Chronic lymphocytic leukaemia (C91.1)	959	4.2	4.0–4.5	309	1.4	1.2–1.5
Other and unspecified lymphoid leukaemia (C91.2–C91.9)	109	0.5	0.4–0.6	26	0.1	0.1–0.2
Total lymphoid cancers (C81–C85, C88, C90, C91)	*7,276*	*32.8*	*32.0–33.5*	*2,552*	*11.2*	*10.8–11.7*
Chronic myelogenous leukaemia (C92.1)	263	1.2	1.1–1.4	91	0.4	0.3–0.5
Other myeloproliferative cancer (C94.1, C94.3, C96.2, D45, D47.1, D47.3)	642	2.9	2.7–3.1	171	0.7	0.6–0.9
Myelodysplastic syndrome (D46)	1,099	4.8	4.5–5.1	392	1.7	1.5–1.8
Acute myeloid leukaemia (C92.0, C92.3–C92.5, C93.0, C94.0, C94.2, C94.4, C94.5)	849	3.8	3.6–4.1	721	3.2	3.0–3.5
Unspecified myeloid leukaemia (C92.2, C92.7, C92.9, C93.1–C93.9, C94.7)	238	1.1	0.9–1.2	84	0.4	0.3–0.5
Total myeloid cancers (C92–C94, C96.2, D45, D46, D47.1, D47.3)	*3,091*	*13.8*	*13.3–14.3*	*1,459*	*6.4*	*6.1–6.7*
Other cancers of blood and lymphatic system (C95, C96.0, C96.3, C96.3–C96.9)	75	0.3	0.3–0.4	153	0.7	0.6–0.8
Other						
Other and ill-defined sites (C76)	39	0.2	0.1–0.2	185	0.8	0.7–0.9

Table C.1: Number of new cases and deaths by cancer type, persons, Australia, 2007 (continued)

Cancer site/type	Incidence			Mortality		
	Number	ASR[a]	95% CI	Number	ASR[a]	95% CI
Unknown primary site (C80)[c]	2,897	12.8	12.3–13.2	2,344	10.3	9.9–10.7
Multiple primary cancers (C97)[d]	..	..	..	524	2.3	2.1–2.5
All cancers (C00–C96[b, e], D45, D46, D47.1, D47.3)	**108,368**	**484.6**	**481.7–487.5**	**39,884**	**176.1**	**174.3–177.8**

(a) The rates were age–standardised to the Australian population as at 30 June 2001 and expressed by 100,000 population.

(b) For incidence data, those C44 codes that indicate basal or squamous cell carcinoma of the skin are not included.

(c) For mortality data, the applicable codes are C77–C80.

(d) Of relevance for mortality data only.

(e) Includes C97 for mortality data.

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

APPENDIX D: ADDITIONAL TABLES

Additional table for Chapter 2: Incidence of cancer

Table D2.1: International comparison of estimated incidence of all cancers[a], 2008[b]

Country or region	Number of cases	Age-standardised rate[c]	95% confidence interval[d]
Australia	*106,878*	*314.1*	*312.2–316.0*
New Zealand	20,146	309.2	304.9–313.5
Northern America	1,603,870	299.9	299.4–300.4
Western Europe	1,034,310	287.7	287.1–288.3
Northern Europe	480,198	271.2	270.4–272.0
Southern Europe	713,858	245.0	244.4–245.6
Central and Eastern Europe	985,156	210.6	210.2–211.0
Polynesia	1,143	209.8	197.6–222.0
Southern Africa	79,179	189.6	188.3–190.9
Eastern Asia	3,720,658	188.4	188.2–188.6
World	*12,667,470*	*181.8*	*181.7–181.9*
Caribbean	79,347	172.6	171.4–173.8
South America	650,097	171.8	171.4–172.2
Micronesia	671	157.5	145.6–169.4
South-Eastern Asia	725,577	141.5	141.2–141.8
Melanesia	7,028	138.5	135.3–141.7
Central America	176,564	134.4	133.8–135.0
Western Asia	223,256	133.8	133.2–134.4
Eastern Africa	221,076	122.8	122.3–123.3
Western Africa	184,071	107.6	107.1–108.1
South-Central Asia	1,423,144	104.6	104.4–104.8
Northern Africa	164,350	103.2	102.7–103.7
Middle Africa	66,895	91.8	91.1–92.5

(a) The data pertain to cancers coded in ICD-10 as C00 to C97 (excep for code C44).

(b) The data were estimated for 2008 by the International Agency for Research on Cancer (IARC) based on data from approximately 3 to 5 years earlier.

(c) The rates were age-standardised by IARC using the Doll et al. (1966) World Standard Population and are expressed per 100,000 people. Countries or regions are ordered in descending order according to the age-standardised rate.

(d) The confidence intervals are approximations and were calculated by the AIHW (see Appendix F).

Source: Ferlay et al. 2010.

Additional table for Chapter 3: Mortality from cancer

Table D3.1: International comparison of estimated mortality, all cancers[a], 2008[b]

Country or region	Number of deaths	Age-standardised rate[c]	95% confidence interval[d]
Southern Africa	54,818	133.2	132.1–134.3
Central and Eastern Europe	634,819	128.1	127.8–128.4
Eastern Asia	2,440,351	120.1	119.9–120.3
Northern Europe	242,659	114.5	114.0–115.0
Southern Europe	380,536	111.7	111.3–112.1
New Zealand	8,169	110.7	108.3–113.1
Polynesia	580	109.1	100.2–118.0
Western Europe	463,814	108.0	107.7–108.3
Melanesia	5,077	106.8	103.9–109.7
World	*7,571,501*	*106.2*	*106.1–106.3*
Northern America	638,328	105.1	104.8–105.4
Australia	*40,889*	*102.8*	*101.8–103.8*
South America	385,881	100.3	100.0–100.6
Eastern Africa	173,676	99.9	99.4–100.4
Caribbean	47,842	99.9	99.0–100.8
South-Eastern Asia	501,023	99.5	99.2–99.8
Western Asia	151,154	92.2	91.7–92.7
Micronesia	357	86.1	77.2–95.0
Western Africa	139,255	85.4	85.0–85.8
Central America	108,328	82.0	81.5–82.5
Northern Africa	120,801	78.0	77.6–78.4
Middle Africa	53,229	76.4	75.8–77.0
South-Central Asia	979,915	74.5	74.4–74.6

(a) The data pertain to cancers coded in ICD-10 as C00 to C97 (excep for code C44).

(b) The data were estimated for 2008 by the International Agency for Research on Cancer (IARC).

(c) The rates were age-standardised by the IARC using the Doll et al. (1966) World Standard Population and are expressed per 100,000 people. Countries or regions are ordered in descending order according to the age-standardised rate.

(d) The confidence intervals are approximations and were calculated by the AIHW (see Appendix F).

Source: Ferlay et al. 2010.

Additional tables for Chapter 4: Differences across population groups

Table D4.1: All cancers, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	2,291	385.1	366.9–403.9	1,813	229.7	217.7–242.2
Non-Indigenous	168,554	432.8	430.7–434.8	134,303	178.3	177.3–179.2
Not stated	22,053	..	..	1,179	..	..
Total	**192,898**	**487.9**	**485.7–490.1**	**137,295**	**180.6**	**179.7–181.6**
State and territory[d, e]						
NSW	174,599	484.4	482.1–486.6	66,410	181.2	179.8–182.6
Vic	124,107	464.1	461.5–466.6	49,454	182.1	180.5–183.7
Qld	100,958	504.8	501.7–508.0	35,346	178.8	177.0–180.7
WA	47,077	474.3	470.0–478.7	17,521	180.4	177.7–183.1
SA	42,195	467.8	463.3–472.3	16,973	180.9	178.2–183.7
Tas	13,666	495.1	486.8–503.5	5,807	206.4	201.1–211.8
ACT	6,609	458.3	447.1–469.7	2,244	167.1	160.2–174.3
NT	2,668	430.4	411.1–450.3	1,045	213.9	198.8–229.7
Total	**511,879**	**480.6**	**479.3–481.9**	**194,800**	**181.5**	**180.7–182.3**
Remoteness area[f]						
Major cities	336,376	473.7	472.1–475.3	123,432	172.2	171.2–173.1
Inner regional	114,690	495.2	492.3–498.1	46,164	195.5	193.7–197.3
Outer regional	51,098	488.8	484.6–493.1	21,375	207.1	204.3–209.9
Remote & very remote	8,926	476.9	466.7–487.3	3,490	206.3	199.2–213.5
Not stated	789	..	..	346	..	..
Total	**511,879**	**480.6**	**479.3–481.9**	**194,800**	**181.5**	**180.7–182.3**

Table D4.1: All cancers, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	104,661	484.1	481.2–487.1	41,352	189.3	187.5–191.1
2	109,561	484.2	481.3–487.1	46,287	200.2	198.4–202.0
3	100,848	483.4	480.4–486.4	37,544	179.6	177.8–181.4
4	92,849	460.5	457.6–463.5	33,552	167.7	165.9–169.5
5 (highest)	102,426	482.4	479.5–485.4	34,984	162.7	161.0–164.4
Not stated	1,534	..	..	1,082	..	..
Total	**511,879**	**480.6**	**479.3–481.9**	**194,800**	**181.5**	**180.7–182.3**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.2: Bowel cancer, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	187	35.1	29.5–41.4	108	14.5	11.5–18.0
Non-Indigenous	22,921	59.0	58.2–59.7	13,745	18.2	17.9–18.5
Not stated	1,397	..	..	129	..	..
Total	**24,505**	**62.3**	**61.5–63.0**	**13,982**	**18.4**	**18.1–18.7**
State and territory[d, e]						
NSW	22,419	61.7	60.9–62.5	6,599	18.0	17.6–18.4
Vic	16,995	63.2	62.2–64.1	5,588	20.5	20.0–21.1
Qld	12,825	64.7	63.6–65.8	3,763	19.1	18.5–19.7
WA	5,551	56.5	55.0–58.0	1,752	18.1	17.2–18.9
SA	5,833	63.5	61.9–65.2	1,765	18.9	18.0–19.8
Tas	1,837	65.6	62.6–68.7	648	22.9	21.2–24.8
ACT	828	59.1	55.1–63.4	247	18.4	16.2–20.9
NT	296	54.1	47.0–61.8	103	21.5	16.8–26.9
Total	**66,584**	**62.3**	**61.9–62.8**	**20,465**	**19.1**	**18.8–19.3**
Remoteness area[f]						
Major cities	43,248	60.9	60.3–61.5	13,054	18.2	17.9–18.5
Inner regional	15,388	65.3	64.2–66.3	4,864	20.5	20.0–21.1
Outer regional	6,813	65.0	63.4–66.6	2,225	21.5	20.6–22.4
Remote & very remote	1,066	60.4	56.7–64.3	295	17.9	15.8–20.1
Not stated	69	..	..	28	..	..
Total	**66,584**	**62.3**	**61.9–62.8**	**20,465**	**19.1**	**18.8–19.3**

Table D4.2: Bowel cancer, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	14,007	64.2	63.1–65.2	4,235	19.4	18.8–19.9
2	14,454	62.9	61.9–63.9	4,702	20.3	19.7–20.9
3	13,088	62.7	61.7–63.8	3,969	19.0	18.4–19.6
4	11,981	60.0	59.0–61.1	3,702	18.5	17.9–19.1
5 (highest)	12,900	61.1	60.0–62.1	3,738	17.5	16.9–18.1
Not stated	154	..	..	119	..	..
Total	**66,584**	**62.3**	**61.9–62.8**	**20,465**	**19.1**	**18.8–19.3**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.3: Breast cancer in females, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	245	68.0	58.9–78.0	113	23.7	19.0–29.0
Non-Indigenous	20,675	102.5	101.1–104.0	9,203	22.8	22.3–23.3
Not stated	2,173	..	..	84	..	..
Total	**23,093**	**112.4**	**110.9–113.8**	**9,400**	**23.0**	**22.6–23.5**
State and territory[d, e]						
NSW	20,604	111.7	110.2–113.3	4,577	23.4	22.8–24.1
Vic	15,240	110.5	108.7–112.3	3,467	23.8	23.0–24.7
Qld	11,792	113.5	111.5–115.6	2,367	22.2	21.3–23.1
WA	5,816	111.4	108.5–114.3	1,182	22.2	21.0–23.6
SA	5,183	112.9	109.9–116.1	1,216	24.4	23.0–25.8
Tas	1,540	108.8	103.4–114.4	339	22.6	20.2–25.1
ACT	1,020	126.2	118.5–134.3	183	23.3	20.0–27.0
NT	302	81.5	71.3–92.6	58	19.0	13.7–25.5
Total	**61,497**	**111.8**	**110.9–112.7**	**13,389**	**23.2**	**22.8–23.6**
Remoteness area[f]						
Major cities	42,051	113.2	112.1–114.3	8,798	22.5	22.1–23.0
Inner regional	12,941	110.8	108.8–112.7	3,049	24.7	23.9–25.6
Outer regional	5,533	105.5	102.8–108.4	1,325	24.7	23.4–26.1
Remote & very remote	906	93.0	86.9–99.4	199	22.7	19.6–26.2
Not stated	66	..	..	19	..	..
Total	**61,497**	**111.8**	**110.9–112.7**	**13,389**	**23.2**	**22.8–23.6**

Table D4.3: Breast cancer in females, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	11,532	106.0	104.1–108.0	2,521	21.8	21.0–22.7
2	12,376	108.6	106.7–110.6	3,058	25.3	24.4–26.2
3	11,938	111.0	109.0–113.0	2,534	22.6	21.8–23.5
4	11,695	109.9	107.9–111.9	2,377	21.8	20.9–22.7
5 (highest)	13,795	121.7	119.7–123.8	2,848	24.0	23.1–24.9
Not stated	162	..	..	52	..	..
Total	**61,497**	**111.8**	**110.9–112.7**	**13,389**	**23.2**	**22.8–23.6**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.4: Cervical cancer, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	80	18.3	13.9–23.6	56	9.9	7.1–13.3
Non-Indigenous	1,274	6.6	6.2–7.0	764	1.9	1.8–2.1
Not stated	124	..	..	7	..	..
Total	**1,478**	**7.5**	**7.1–7.9**	**827**	**2.1**	**1.9–2.2**
State and territory[d, e]						
NSW	1,219	6.8	6.5–7.2	391	2.0	1.8–2.3
Vic	799	6.0	5.6–6.4	225	1.6	1.4–1.8
Qld	806	8.0	7.4–8.5	217	2.1	1.8–2.4
WA	392	7.7	7.0–8.5	121	2.3	1.9–2.7
SA	236	5.7	5.0–6.5	87	1.8	1.5–2.3
Tas	98	7.6	6.2–9.3	41	2.9	2.1–4.0
ACT	55	6.6	4.9–8.6	12	1.4	0.7–2.5
NT	44	11.3	7.6–15.9	11	4.0	1.6–7.7
Total	**3,649**	**6.9**	**6.6–7.1**	**1,105**	**2.0**	**1.8–2.1**
Remoteness area[f]						
Major cities	2,503	6.8	6.5–7.1	710	1.8	1.7–2.0
Inner regional	682	6.5	6.0–7.0	212	1.8	1.6–2.1
Outer regional	346	7.1	6.4–7.9	145	2.8	2.3–3.2
Remote & very remote	102	10.1	8.2–12.4	37	4.0	2.8–5.5
Not stated	16	..	..	2	..	..
Total	**3,649**	**6.9**	**6.6–7.1**	**1,105**	**2.0**	**1.8–2.1**

Table D4.4: Cervical cancer, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	795	7.7	7.2–8.3	274	2.5	2.2–2.8
2	756	7.2	6.7–7.7	249	2.1	1.9–2.4
3	726	6.9	6.4–7.4	221	2.0	1.8–2.3
4	708	6.6	6.1–7.1	204	1.9	1.6–2.1
5 (highest)	642	5.8	5.4–6.3	149	1.3	1.1–1.5
Not stated	22	..	..	9	..	..
Total	**3,649**	**6.9**	**6.6–7.1**	**1,105**	**2.0**	**1.8–2.1**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.5: Lung cancer, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	356	69.9	62.0–78.4	456	58.2	52.3–64.4
Non-Indigenous	16,790	43.3	42.6–43.9	25,355	33.8	33.4–34.2
Not stated	358	..	..	205	..	..
Total	**17,504**	**44.6**	**43.9–45.2**	**26,016**	**34.4**	**34.0–34.8**
State and territory[d, e]						
NSW	15,448	42.5	41.9–43.2	12,256	33.6	33.0–34.2
Vic	11,642	43.3	42.5–44.1	9,163	33.9	33.2–34.6
Qld	8,953	45.1	44.2–46.1	6,953	35.2	34.3–36.0
WA	4,399	45.4	44.1–46.8	3,482	36.0	34.8–37.3
SA	3,855	41.8	40.5–43.1	3,085	33.2	32.0–34.4
Tas	1,399	50.1	47.5–52.8	1,165	41.6	39.2–44.1
ACT	464	34.4	31.3–37.7	362	27.3	24.5–30.3
NT	297	54.0	47.1–61.6	240	45.8	39.3–52.9
Total	**46,457**	**43.6**	**43.2–44.0**	**36,706**	**34.4**	**34.0–34.7**
Remoteness area[f]						
Major cities	30,109	42.6	42.1–43.0	22,978	32.4	32.0–32.8
Inner regional	10,378	43.8	42.9–44.6	8,726	36.8	36.0–37.5
Outer regional	4,913	46.7	45.4–48.0	4,197	40.2	39.0–41.4
Remote & very remote	965	53.8	50.4–57.4	747	42.9	39.8–46.2
Not stated	93	..	..	59	..	..
Total	**46,457**	**43.6**	**43.2–44.0**	**36,706**	**34.4**	**34.0–34.7**

Table D4.5: Lung cancer, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	10,916	49.8	48.8–50.7	8,533	38.8	38.0–39.7
2	10,819	46.8	46.0–47.7	9,102	39.2	38.4–40.1
3	9,217	44.2	43.3–45.1	7,114	34.1	33.3–34.9
4	7,945	40.1	39.3–41.0	6,127	30.9	30.2–31.7
5 (highest)	7,401	35.2	34.4–36.1	5,628	26.7	26.0–27.4
Not stated	158	..	..	202	..	..
Total	**46,457**	**43.6**	**43.2–44.0**	**36,706**	**34.4**	**34.0–34.7**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.6: Lymphoid cancers, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	129	19.0	15.0–23.5	87	11.0	8.4–14.0
Non-Indigenous	11,753	30.3	29.8–30.9	9,210	12.2	12.0–12.5
Not stated	1,088	..	..	65	..	..
Total	**12,970**	**32.9**	**32.3–33.4**	**9,362**	**12.3**	**12.1–12.6**
State and territory[d, e]						
NSW	11,962	33.4	32.8–34.0	4,600	12.5	12.2–12.9
Vic	9,179	34.5	33.8–35.2	3,443	12.6	12.2–13.1
Qld	6,256	31.2	30.5–32.0	2,146	10.9	10.5–11.4
WA	3,193	32.3	31.2–33.4	1,223	12.7	12.0–13.4
SA	3,345	37.6	36.3–38.9	1,332	14.2	13.4–14.9
Tas	975	35.6	33.4–38.0	397	14.2	12.8–15.6
ACT	477	33.2	30.2–36.4	161	12.3	10.4–14.3
NT	176	30.5	25.2–36.3	61	13.7	10.0–18.2
Total	**35,563**	**33.5**	**33.2–33.9**	**13,363**	**12.5**	**12.2–12.7**
Remoteness area[f]						
Major cities	24,044	33.9	33.5–34.3	8,635	12.0	11.8–12.3
Inner regional	7,733	33.7	33.0–34.5	3,200	13.6	13.1–14.0
Outer regional	3,204	30.9	29.9–32.0	1,308	12.7	12.1–13.5
Remote & very remote	516	27.8	25.3–30.4	180	11.0	9.4–12.8
Not stated	66	..	..	41	..	..
Total	**35,563**	**33.5**	**33.2–33.9**	**13,363**	**12.5**	**12.2–12.7**

Table D4.6: Lymphoid cancers, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	6,961	32.4	31.7–33.2	2,598	11.9	11.5–12.4
2	7,341	32.8	32.0–33.5	3,087	13.3	12.9–13.8
3	7,023	33.7	32.9–34.5	2,534	12.1	11.6–12.6
4	6,569	32.6	31.8–33.4	2,412	12.1	11.6–12.6
5 (highest)	7,541	35.6	34.8–36.4	2,653	12.3	11.9–12.8
Not stated	128	..	..	78	..	..
Total	**35,563**	**33.5**	**33.2–33.9**	**13,363**	**12.5**	**12.2–12.7**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.7: Melanoma of the skin, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	25	3.7	2.1–5.8	13	2.1	1.0–3.7
Non-Indigenous	13,821	35.6	35.1–36.2	4,563	6.1	5.9–6.3
Not stated	7,457	..	..	55	..	..
Total	**21,303**	**53.9**	**53.2–54.7**	**4,631**	**6.1**	**5.9–6.3**
State and territory[d, e]						
NSW	17,371	48.8	48.0–49.5	2,227	6.1	5.9–6.4
Vic	10,361	39.2	38.4–39.9	1,284	4.8	4.5–5.0
Qld	12,619	63.0	61.9–64.1	1,383	7.0	6.6–7.3
WA	5,130	51.1	49.7–52.5	611	6.2	5.7–6.7
SA	3,304	38.1	36.8–39.4	390	4.3	3.8–4.7
Tas	1,200	45.6	43.0–48.3	137	4.9	4.1–5.8
ACT	658	43.7	40.3–47.2	95	6.8	5.5–8.3
NT	250	30.3	26.1–35.0	20	3.0	1.6–4.9
Total	**50,893**	**48.2**	**47.7–48.6**	**6,147**	**5.8**	**5.6–5.9**
Remoteness area[f]						
Major cities	32,068	45.1	44.6–45.6	3,893	5.4	5.3–5.6
Inner regional	12,495	56.4	55.4–57.4	1,474	6.4	6.1–6.7
Outer regional	5,403	52.8	51.4–54.2	683	6.6	6.1–7.1
Remote & very remote	878	43.2	40.3–46.3	88	4.9	3.9–6.0
Not stated	50	..	..	10	..	..
Total	**50,893**	**48.2**	**47.7–48.6**	**6,147**	**5.8**	**5.6–5.9**

Table D4.7: Melanoma of the skin, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	8,858	42.0	41.1–42.9	1,130	5.2	4.9–5.6
2	11,072	50.5	49.5–51.4	1,451	6.4	6.1–6.7
3	10,176	48.9	48.0–49.9	1,179	5.7	5.3–6.0
4	9,577	46.8	45.9–47.8	1,054	5.2	4.9–5.5
5 (highest)	11,085	52.0	51.1–53.0	1,296	6.0	5.7–6.4
Not stated	125	..	..	37	..	..
Total	**50,893**	**48.2**	**47.7–48.6**	**6,147**	**5.8**	**5.6–5.9**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.8: Pancreatic cancer, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	66	12.7	9.4–16.5	92	11.9	9.3–15.0
Non-Indigenous	3,926	10.0	9.7–10.4	7,106	9.4	9.2–9.6
Not stated	57	..	..	57	..	..
Total	**4,049**	**10.2**	**9.9–10.6**	**7,255**	**9.5**	**9.3–9.8**
State and territory[d, e]						
NSW	3,921	10.7	10.4–11.0	3,632	9.9	9.6–10.2
Vic	2,885	10.6	10.3–11.0	2,623	9.7	9.3–10.0
Qld	1,987	10.0	9.5–10.4	1,768	8.9	8.5–9.3
WA	1,042	10.7	10.0–11.3	959	9.8	9.2–10.5
SA	979	10.5	9.9–11.2	856	9.1	8.5–9.8
Tas	288	10.2	9.1–11.5	261	9.2	8.1–10.4
ACT	119	9.1	7.5–10.9	102	8.0	6.5–9.7
NT	41	8.6	5.8–12.1	40	9.6	6.5–13.5
Total	**11,262**	**10.5**	**10.3–10.7**	**10,241**	**9.5**	**9.3–9.7**
Remoteness area[f]						
Major cities	7,558	10.6	10.3–10.8	6,688	9.3	9.1–9.6
Inner regional	2,408	10.1	9.7–10.6	2,346	9.9	9.5–10.3
Outer regional	1,084	10.4	9.8–11.1	1,037	10.0	9.4–10.6
Remote & very remote	186	10.8	9.3–12.6	156	9.4	7.9–11.0
Not stated	26	..	..	16	..	..
Total	**11,262**	**10.5**	**10.3–10.7**	**10,241**	**9.5**	**9.3–9.7**

Table D4.8: Pancreatic cancer, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	2,366	10.8	10.4–11.2	2,054	9.3	8.9–9.8
2	2,445	10.6	10.2–11.0	2,464	10.6	10.2–11.1
3	2,220	10.6	10.2–11.1	1,900	9.1	8.7–9.5
4	1,926	9.6	9.2–10.1	1,754	8.8	8.4–9.3
5 (highest)	2,269	10.6	10.2–11.1	2,013	9.4	9.0–9.8
Not stated	36	..	..	56	..	..
Total	**11,262**	**10.5**	**10.3–10.7**	**10,241**	**9.5**	**9.3–9.7**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) T Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.9: Prostate cancer, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	114	61.1	49.0–74.9	49	23.7	16.8–32.3
Non-Indigenous	25,105	136.5	134.8–138.2	9,961	32.0	31.4–32.6
Not stated	5,361	..	..	94	..	..
Total	**30,580**	**164.0**	**162.1–165.8**	**10,104**	**32.3**	**31.6–32.9**
State and territory[d, e]						
NSW	29,036	172.3	170.3–174.3	4,844	32.0	31.1–32.9
Vic	20,232	164.1	161.8–166.4	3,808	34.1	33.0–35.2
Qld	15,513	162.4	159.9–165.0	2,829	34.5	33.3–35.9
WA	7,714	164.5	160.8–168.3	1,140	29.4	27.7–31.2
SA	7,037	168.3	164.4–172.3	1,242	31.5	29.7–33.3
Tas	2,453	187.7	180.3–195.3	424	36.5	33.1–40.2
ACT	1,088	167.9	157.7–178.5	153	30.7	25.9–36.1
NT	316	119.1	103.5–136.1	49	33.1	23.1–45.6
Total	**83,389**	**167.5**	**166.3–168.6**	**14,489**	**32.8**	**32.3–33.4**
Remoteness area[f]						
Major cities	53,232	164.7	163.3–166.1	8,760	30.1	29.5–30.7
Inner regional	19,846	176.0	173.5–178.5	3,748	37.5	36.3–38.8
Outer regional	8,841	169.1	165.6–172.8	1,741	40.0	38.1–42.0
Remote & very remote	1,357	145.7	137.6–154.2	229	33.0	28.7–37.8
Not stated	113	..	..	12	..	..
Total	**83,389**	**167.5**	**166.3–168.6**	**14,489**	**32.8**	**32.3–33.4**

Table D4.9: Prostate cancer, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	16,506	159.5	157.0–161.9	2,938	32.1	31.0–33.4
2	17,730	163.7	161.3–166.1	3,569	36.5	35.3–37.7
3	16,209	166.0	163.4–168.6	2,778	32.2	31.0–33.4
4	14,931	161.4	158.8–164.0	2,498	31.0	29.8–32.3
5 (highest)	17,759	184.6	181.9–187.4	2,632	30.7	29.5–31.9
Not stated	254	..	..	73	..	..
Total	**83,389**	**167.5**	**166.3–168.6**	**14,489**	**32.8**	**32.3–33.4**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Table D4.10: Cancer of unknown primary site, incidence and mortality by selected population groups, 2003–2007

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Indigenous status[c]						
Indigenous	117	24.5	19.7–30.0	96	13.9	10.9–17.4
Non-Indigenous	4,842	12.4	12.1–12.8	7,917	10.5	10.2–10.7
Not stated	247	..	..	69	..	..
Total	**5,206**	**13.2**	**12.9–13.6**	**8,082**	**10.6**	**10.4–10.8**
State and territory[d, e]						
NSW	5,748	15.6	15.2–16.0	4,139	11.2	10.9–11.6
Vic	3,177	11.6	11.2–12.0	2,590	9.5	9.1–9.8
Qld	2,527	12.8	12.3–13.3	1,917	9.7	9.3–10.2
WA	1,211	12.5	11.8–13.2	833	8.6	8.0–9.2
SA	1,357	14.3	13.6–15.1	1,133	11.9	11.2–12.6
Tas	437	15.5	14.0–17.0	304	10.7	9.6–12.0
ACT	168	12.5	10.6–14.5	106	8.0	6.5–9.7
NT	111	22.5	17.8–28.0	60	13.4	9.7–17.9
Total	**14,736**	**13.7**	**13.5–13.9**	**11,082**	**10.3**	**10.1–10.5**
Remoteness area[f]						
Major cities	9,439	13.1	12.8–13.3	7,062	9.8	9.6–10.0
Inner regional	3,397	14.4	13.9–14.8	2,542	10.7	10.3–11.1
Outer regional	1,537	14.9	14.2–15.7	1,232	12.0	11.4–12.7
Remote & very remote	323	18.6	16.6–20.9	225	13.7	11.9–15.7
Not stated	40	..	..	21	..	..
Total	**14,736**	**13.7**	**13.5–13.9**	**11,082**	**10.3**	**10.1–10.5**

Table D4.10: Cancer of unknown primary site, incidence and mortality by selected population groups, 2003–2007 (continued)

	Incidence			Mortality		
	Number[a]	ASR[b]	95% CI	Number[a]	ASR[b]	95% CI
Socioeconomic status[g]						
1 (lowest)	3,370	15.4	14.9–16.0	2,441	11.2	10.7–11.6
2	3,343	14.4	13.9–14.9	2,761	11.9	11.4–12.3
3	2,882	13.8	13.3–14.3	2,089	10.0	9.5–10.4
4	2,527	12.6	12.1–13.1	1,869	9.3	8.9–9.8
5 (highest)	2,559	11.7	11.3–12.2	1,867	8.5	8.2–8.9
Not stated	54	..	..	55	..	..
Total	**14,736**	**13.7**	**13.5–13.9**	**11,082**	**10.3**	**10.1–10.5**

(a) The total number of cases or deaths over the 5-year period from 2003 to 2007.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates are based on the total number of cases over the 5-year period from 2003–2007.

(c) Data from Queensland, Western Australia, South Australia and the Northern Territory were used to examine the incidence of cancer by Indigenous status, whereas data from New South Wales, Queensland, Western Australia, South Australia and the Northern Territory were used to examine the mortality from cancer by Indigenous status.

(d) Relates to the state or territory of usual residence.

(e) The mortality data by state and territory may not be comparable with data published in state and territory cancer reports. See Box 4.1 in Chapter 4 for more detail.

(f) Remoteness was classified according to the Australian Standard Geographical Classification (ASGC) Remoteness Areas (see Appendix E). Mortality cells may not sum to the total due to non-concordance of some remoteness categories.

(g) Socioeconomic status was classified using the ABS Index of Relative Socio-Economic Disadvantage (See Appendix E).

Source: AIHW Australian Cancer Database; AIHW National Mortality Database.

Additional tables for Chapter 5: Survival after a diagnosis of cancer

Table D5.1: Five-year relative survival, selected cancers, Australia, 1998–2004

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Testis (C62)	96.8	96.0–97.4	..	..	..	..
Thyroid (C73)	87.7	85.8–89.5	95.3	94.5–96.0	93.4	92.7–94.1
Melanoma of skin (C43)	89.7	89.1–90.2	94.1	93.6–94.6	91.6	91.3–92.0
Breast (C50)	82.0	77.0–86.5	87.8	87.5–88.1	87.7	87.4–88.0
Prostate (C61)	85.3	84.9–85.7	..	..	..	..
Hodgkin lymphoma (C81)	84.8	82.7–86.7	85.8	83.5–87.8	85.2	83.7–86.6
Uterus, body (C54)[a]	..	..	82.1	81.1–83.0	..	..
Cervix (C53)	..	..	71.8	70.4–73.1	..	..
Kidney (C64)	65.6	64.4–66.8	66.0	64.4–67.5	65.8	64.8–66.7
Non-Hodgkin lymphoma (C82–C85, C96)[a]	61.6	60.6–62.6	62.6	61.5–63.6	62.1	61.3–62.8
Bowel (C18–C20)	61.3	60.7–61.9	62.4	61.8–63.1	61.8	61.4–62.3
Bladder (C67)	62.3	61.1–63.5	54.8	52.9–56.7	60.4	59.4–61.4
Leukaemia (C91–C95)(a)	48.2	47.0–49.3	47.3	46.0–48.6	47.8	47.0–48.7
Ovary (C56)	..	..	39.8	38.6–41.0	..	..
Stomach (C16)	24.4	23.3–25.4	25.3	23.9–26.7	24.7	23.9–25.6
Brain (C71)	18.5	17.5–19.6	19.4	18.1–20.6	18.9	18.1–19.7
Lung (C33–C34)	10.7	10.3–11.0	14.0	13.4–14.5	11.8	11.5–12.1
Unknown primary site (C26, C39, C76, C80)[a]	10.6	10.1–11.2	7.6	7.1–8.0	9.1	8.8–9.5
Pancreas (C25)	4.5	4.0–5.0	4.7	4.2–5.3	4.6	4.2–5.0
All cancers (C00–C96[b], D45, D46, D47.1, D47.3)	**58.4**	**58.2–58.6**	**64.1**	**63.9–64.3**	**61.0**	**60.9–61.2**

(a) Defined differently from what is generally considered in this report (See Appendix F for further details).

(b) Excluding non-melanoma skin cancer (C44).

Source: AIHW, CA & AACR 2008; AIHW Australian Cancer Database.

Table D5.2: Five-year relative survival by age at diagnosis and sex, selected cancers, Australia, 1998–2004

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Bowel (C18–C20)						
0–19 years	85.1	65.4–94.2	88.9	73.2–95.7	87.3	76.3–93.5
20–29 years	67.2	58.5–74.5	70.9	61.4–78.5	68.9	62.6–74.3
30–39 years	68.1	64.0–71.9	67.9	63.9–71.5	68.0	65.2–70.7
40–49 years	65.5	63.3–67.5	67.8	65.7–69.8	66.6	65.1–68.0
50–59 years	64.5	63.3–65.7	69.0	67.6–70.4	66.4	65.4–67.3
60–69 years	64.8	63.8–65.8	67.7	66.6–68.8	66.0	65.2–66.7
70–79 years	60.4	59.4–61.5	61.7	60.6–62.8	61.0	60.3–61.8
80–89 years	51.6	49.5–53.7	54.3	52.6–56.0	53.2	51.9–54.5
90+ years	27.5	20.5–35.7	38.1	33.0–43.7	35.1	30.9–39.7
All ages	61.3	60.7–61.9	62.4	61.8–63.1	61.8	61.4–62.3
Lung (C33–C34)						
0–19 years	85.8	54.4–96.4	89.7	48.7–98.5	87.4	66.3–95.8
20–29 years	58.7	38.8–74.2	83.6	61.6–93.7	69.3	54.6–80.0
30–39 years	32.8	26.3–39.4	38.4	31.0–45.6	35.4	30.5–40.3
40–49 years	16.6	14.5–18.8	22.7	20.1–25.3	19.4	17.7–21.1
50–59 years	14.3	13.3–15.3	19.1	17.6–20.6	16.1	15.3–17.0
60–69 years	12.5	11.8–13.2	17.3	16.2–18.5	14.0	13.4–14.6
70–79 years	9.7	9.1–10.2	11.8	10.9–12.6	10.4	9.9–10.8
80–89 years	4.7	4.0–5.4	4.6	3.8–5.5	4.6	4.1–5.2
90+ years	1.8	0.6–4.4	1.7	0.5–4.8	1.8	0.8–3.5
All ages	10.7	10.3–11.0	14.0	13.4–14.5	11.8	11.5–12.1
Melanoma of skin (C43)						
0–19 years	94.2	90.3–96.6	97.7	95.0–99.0	96.0	93.9–97.5
20–29 years	95.0	93.6–96.2	97.6	96.7–98.3	96.5	95.7–97.1
30–39 years	94.7	93.7–95.6	97.1	96.4–97.7	96.1	95.5–96.6
40–49 years	92.5	91.6–93.3	96.2	95.5–96.8	94.3	93.8–94.9
50–59 years	91.9	91.1–92.7	95.6	94.8–96.3	93.4	92.9–94.0
60–69 years	88.9	87.8–89.9	94.7	93.6–95.6	91.1	90.3–91.8
70–79 years	87.4	85.9–88.7	90.5	89.0–92.0	88.5	87.5–89.6
80–89 years	79.1	75.6–82.5	86.1	82.7–89.5	82.2	79.8–84.7
90+ years	66.0	50.3–83.5	63.9	50.8–78.1	64.6	54.4–75.5
All ages	89.7	89.1–90.2	94.1	93.6–94.6	91.6	91.3–92.0

(continued)

Table D5.2: Five-year relative survival by age at diagnosis and sex, selected cancers, Australia, 1998–2004 (continued)

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Breast (C50)						
0–19 years	..	..	85.0	35.5–97.6	85.0	35.5–97.6
20–29 years	100.5	..	82.4	77.9–86.1	82.6	78.2–86.3
30–39 years	82.2	52.7–94.5	84.8	83.5–85.9	84.8	83.5–85.9
40–49 years	71.2	52.8–83.6	89.7	89.2–90.3	89.7	89.1–90.2
50–59 years	83.3	73.0–90.4	90.2	89.8–90.7	90.2	89.7–90.7
60–69 years	89.7	81.6–95.5	90.6	90.0–91.2	90.6	90.0–91.2
70–79 years	83.0	73.1–91.5	85.3	84.4–86.2	85.3	84.4–86.2
80–89 years	67.9	47.9–87.8	76.4	74.4–78.5	76.3	74.3–78.4
90+ years	..	..	64.2	56.1–72.7	64.2	56.1–72.6
All ages	82.0	77.0–86.5	87.8	87.5–88.1	87.7	87.4–88.0
Uterus, body (C54)[(a)]						
0–19 years	..	..	..	..	..	..
20–29 years	..	..	89.8	71.4–96.7	..	..
30–39 years	..	..	91.8	86.8–95.0	..	..
40–49 years	..	..	87.0	84.5–89.1	..	..
50–59 years	..	..	89.3	87.9–90.5	..	..
60–69 years	..	..	84.0	82.3–85.5	..	..
70–79 years	..	..	76.6	74.3–78.9	..	..
80–89 years	..	..	66.7	61.8–71.4	..	..
90+ years	..	..	43.4	27.1–63.5	..	..
All ages	..	..	82.1	81.1–83.0	..	..
Prostate (C61)						
0–19 years	70.6	3.2–96.7	..	..	..	..
20–29 years	..	..	..	..	..	..
30–39 years	72.0	41.1–88.8	..	..	..	..
40–49 years	89.8	87.3–91.9	..	..	..	..
50–59 years	92.8	92.1–93.4	..	..	..	..
60–69 years	92.6	92.0–93.1	..	..	..	..
70–79 years	84.3	83.6–85.1	..	..	..	..
80–89 years	66.0	64.3–67.7	..	..	..	..
90+ years	32.8	27.1–39.1	..	..	..	..
All ages	85.3	84.9–85.7	..	..	..	..

Table D5.2: Five-year relative survival by age at diagnosis and sex, selected cancers, Australia, 1998–2004 (continued)

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Non-Hodgkin lymphoma (C82–C85, C96)[(a)]						
0–19 years	86.9	82.3–90.3	78.5	70.1–84.8	84.4	80.5–87.6
20–29 years	78.3	73.2–82.5	84.5	78.1–89.2	80.5	76.6–83.8
30–39 years	77.1	73.6–80.2	84.1	80.2–87.3	79.9	77.3–82.2
40–49 years	79.4	77.1–81.6	82.7	80.0–85.0	80.8	79.0–82.4
50–59 years	72.3	70.1–74.3	77.3	75.1–79.4	74.5	72.9–75.9
60–69 years	63.0	60.9–65.0	69.4	67.2–71.5	65.8	64.3–67.3
70–79 years	49.2	47.0–51.4	53.6	51.5–55.8	51.3	49.8–52.9
80–89 years	36.9	33.3–40.7	37.6	34.5–40.7	37.3	34.9–39.7
90+ years	19.6	8.8–36.7	20.1	13.0–29.3	20.6	14.2–28.6
All ages	61.6	60.6–62.6	62.6	61.5–63.6	62.1	61.3–62.8
Unknown primary site (C26, C39, C76, C80)[(a)]						
0–19	78.4	55.6–90.5	65.3	45.6–79.4	71.2	57.0–81.5
20–29	48.1	32.9–61.8	27.1	14.7–41.0	38.2	28.0–48.3
30–39	28.0	21.7–34.7	36.2	28.4–43.9	31.7	26.7–36.8
40–49	28.8	24.9–32.7	22.5	19.0–26.2	25.6	23.0–28.3
50–59	19.4	17.3–21.5	17.8	15.5–20.3	18.7	17.2–20.3
60–69	13.3	12.0–14.6	12.4	11.0–14.0	13.0	12.0–13.9
70–79	7.2	6.5–7.9	5.9	5.2–6.7	6.6	6.1–7.1
80–89	4.4	3.6–5.3	2.2	1.8–2.7	3.1	2.7–3.5
90+ years	. .	. .	0.5	0.2–1.0	0.5	0.2–1.1
All ages	10.6	10.1–11.2	7.6	7.1–8.0	9.1	8.8–9.5

(continued)

Table D5.2: Five-year relative survival by age at diagnosis and sex, selected cancers, Australia, 1998–2004 (continued)

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
All cancers (C00–C96[b], D45, D46, D47.1, D47.3)						
0–19	79.3	77.8–80.7	81.8	80.2–83.2	80.4	79.4–81.4
20–29	86.1	85.0–87.1	89.1	88.1–90.0	87.6	86.9–88.3
30–39	82.8	81.9–83.5	85.6	85.0–86.2	84.5	84.0–84.9
40–49	70.1	69.5–70.8	81.8	81.4–82.2	77.4	77.0–77.7
50–59	65.4	65.0–65.8	75.6	75.2–76.0	70.5	70.2–70.8
60–69	61.7	61.3–62.1	66.4	66.0–66.9	63.6	63.3–63.9
70–79	53.0	52.6–53.4	52.3	51.8–52.7	52.7	52.4–53.0
80–89	40.8	40.1–41.6	40.2	39.5–40.9	40.6	40.1–41.1
90+ years	21.7	19.3–24.3	26.1	24.1–28.1	24.5	23.0–26.1
All ages	58.4	58.2–58.6	64.1	63.9–64.3	61.0	60.9–61.2

(a) Defined differently from what is generally considered in this report (See Appendix F for further details).

(b) Excluding non-melanoma skin cancer (C44).

Note: Relative survival proportions could not be calculated for some of the age groups because these groups contained no cases in the fifth year after diagnosis.

Source: AIHW, CA & AACR 2008; AIHW Australian Cancer Database.

Table D5.3: Five-year relative survival by period of diagnosis, selected cancers, Australia, 1982–1986 to 1998–2004

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Stomach (C16)						
1982–1986	16.2	15.2–17.3	18.2	15.2–17.3	16.9	16.1–17.8
1987–1991	18.9	17.9–20.0	18.9	17.9–20.0	18.9	18.1–19.8
1992–1997	20.5	19.5–21.5	22.3	19.5–21.5	21.2	20.3–22.0
1998–2004	24.4	23.3–25.4	25.3	23.3–25.4	24.7	23.9–25.6
Bowel (C18–C20)						
1982–1986	47.7	46.9–48.6	49.7	48.9–50.6	48.7	48.1–49.3
1987–1991	52.0	51.2–52.8	53.2	52.4–54.0	52.6	52.0–53.1
1992–1997	56.8	56.2–57.4	57.4	56.7–58.1	57.1	56.6–57.5
1998–2004	61.3	60.7–61.9	62.4	61.8–63.1	61.8	61.4–62.3
Pancreas (C25)						
1982–1986	2.8	2.3–3.3	2.8	2.3–3.4	2.8	2.4–3.2
1987–1991	3.0	2.5–3.5	4.0	3.4–4.7	3.5	3.1–3.9
1992–1997	4.2	3.7–4.8	3.5	3.0–4.0	3.8	3.5–4.2
1998–2004	4.5	4.0–5.0	4.7	4.2–5.3	4.6	4.2–5.0
Lung (C33–C34)						
1982–1986	7.9	7.5–8.2	10.5	9.8–11.3	8.5	8.2–8.8
1987–1991	9.1	8.7–9.4	10.8	10.2–11.5	9.5	9.2–9.8
1992–1997	9.7	9.3–10.0	12.6	12.0–13.2	10.6	10.3–10.9
1998–2004	10.7	10.3–11.0	14.0	13.4–14.5	11.8	11.5–12.1
Melanoma of skin (C43)						
1982–1986	82.2	81.3–83.2	90.5	89.7–91.2	86.5	85.8–87.1
1987–1991	86.3	85.6–87.1	92.8	92.2–93.4	89.4	88.9–89.9
1992–1997	89.3	88.7–89.8	93.9	93.4–94.4	91.4	91.0–91.8
1998–2004	89.7	89.1–90.2	94.1	93.6–94.6	91.6	91.3–92.0
Breast (C50)						
1982–1986	81.3	73.7–88.0	71.8	71.1–72.4	71.9	71.2–72.5
1987–1991	75.5	68.7–81.8	77.5	77.0–78.0	77.5	76.9–78.0
1992–1997	82.4	76.5–87.7	83.7	83.3–84.1	83.7	83.3–84.1
1998–2004	82.0	77.0–86.5	87.8	87.5–88.1	87.7	87.4–88.0

(continued)

Table D5.3: Five-year relative survival by period of diagnosis, selected cancers, Australia, 1982–1986 to 1998–2004 (continued)

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Cervix (C53)						
1982–1986	..	..	68.3	66.9–69.7	..	..
1987–1991	..	..	71.2	69.9–72.5	..	..
1992–1997	..	..	73.6	72.4–74.8	..	..
1998–2004	..	..	71.8	70.4–73.1	..	..
Uterus, body (C54)[(a)]						
1982–1986	..	..	75.6	74.1–77.1	..	..
1987–1991	..	..	78.0	76.6–79.4	..	..
1992–1997	..	..	80.2	79.1–81.3	..	..
1998–2004	..	..	82.1	81.1–83.0	..	..
Ovary (C56)						
1982–1986	..	..	32.7	31.3–34.2	..	..
1987–1991	..	..	35.7	34.3–37.1	..	..
1992–1997	..	..	37.9	36.6–39.1	..	..
1998–2004	..	..	39.8	38.6–41.0	..	..
Prostate (C61)						
1982–1986	57.4	56.4–58.4	..	..	..	..
1987–1991	63.2	62.4–64.0	..	..	..	..
1992–1997	81.7	81.2–82.1	..	..	..	..
1998–2004	85.3	84.9–85.7	..	..	..	..
Testis (C62)						
1982–1986	90.8	89.2–92.2	..	..	..	..
1987–1991	95.0	93.8–96.1	..	..	..	..
1992–1997	95.3	94.4–96.1	..	..	..	..
1998–2004	96.8	96.0–97.4	..	..	..	..
Kidney (C64)						
1982–1986	45.2	43.1–47.2	48.8	46.2–51.5	46.5	44.9–48.2
1987–1991	49.8	48.0–51.7	52.5	50.2–54.8	50.8	49.4–52.3
1992–1997	58.6	57.1–60.0	58.7	56.8–60.5	58.6	57.5–59.8
1998–2004	65.6	64.4–66.8	66.0	64.4–67.5	65.8	64.8–66.7

Table D5.3: Five-year relative survival by period of diagnosis, selected cancers, Australia, 1982–1986 to 1998–2004 (continued)

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Bladder (C67)						
1982–1986	69.1	67.7–70.4	65.0	62.8–67.1	68.0	66.8–69.2
1987–1991	69.1	67.7–70.5	61.9	59.7–64.1	67.3	66.1–68.4
1992–1997	65.2	63.9–66.4	55.8	53.7–57.9	62.9	61.8–63.9
1998–2004	62.3	61.1–63.5	54.8	52.9–56.7	60.4	59.4–61.4
Brain (C71)						
1982–1986	20.8	19.3–22.4	19.9	18.2–21.6	20.4	19.3–21.6
1987–1991	19.7	18.3–21.2	20.4	18.8–22.0	20.0	19.0–21.1
1992–1997	18.7	17.5–19.9	18.3	17.0–19.7	18.6	17.7–19.5
1998–2004	18.5	17.5–19.6	19.4	18.1–20.6	18.9	18.1–19.7
Thyroid (C73)						
1982–1986	79.1	74.9–82.8	85.3	83.1–87.2	83.6	81.7–85.4
1987–1991	78.3	74.5–81.7	89.9	88.2–91.5	86.8	85.2–88.3
1992–1997	85.3	82.7–87.6	94.3	93.3–95.3	92.1	91.1–93.0
1998–2004	87.7	85.8–89.5	95.3	94.5–96.0	93.4	92.7–94.1
Hodgkin lymphoma (C81)						
1982–1986	72.0	68.8–75.0	71.3	67.5–74.8	71.7	69.3–74.0
1987–1991	76.8	73.8–79.6	77.5	74.1–80.6	77.1	74.9–79.2
1992–1997	81.5	79.0–83.8	83.6	81.0–86.0	82.5	80.7–84.2
1998–2004	84.8	82.7–86.7	85.8	83.5–87.8	85.2	83.7–86.6
Non-Hodgkin lymphoma (C82–C85, C96)[(a)]						
1982–1986	46.3	44.7–47.9	47.6	45.9–49.3	46.9	45.7–48.1
1987–1991	48.2	46.8–49.6	52.4	50.9–54.0	50.1	49.1–51.2
1992–1997	52.3	51.2–53.5	54.0	52.7–55.2	53.1	52.2–53.9
1998–2004	61.6	60.6–62.6	62.6	61.5–63.6	62.1	61.3–62.8

(continued)

Table D5.3: Five-year relative survival by period of diagnosis, selected cancers, Australia, 1982–1986 to 1998–2004 (continued)

Cancer site/type (ICD-10)	Males		Females		Persons	
	RS (%)	95% CI	RS (%)	95% CI	RS (%)	95% CI
Leukaemia (C91–C95)[a]						
1982–1986	37.9	36.4–39.5	37.2	35.4–39.0	37.6	36.4–38.8
1987–1991	42.6	41.1–44.1	42.9	41.2–44.6	42.7	41.6–43.8
1992–1997	43	41.7–44.2	42.8	41.4–44.3	42.9	42.0–43.9
1998–2004	48.2	47.0–49.3	47.3	46.0–48.6	47.8	47.0–48.7
Unknown primary site (C26, C39, C76, C80)[a]						
1982–1986	6.4	5.9–7.0	5.6	5.1–6.2	6.0	5.7–6.4
1987–1991	6.9	6.4–7.5	5.9	5.4–6.4	6.5	6.1–6.8
1992–1997	6.7	6.3–7.1	5.5	5.1–6.0	6.1	5.8–6.4
1998–2004	10.6	10.1–11.2	7.6	7.1–8.0	9.1	8.8–9.5
All cancers (C00–C96[b], D45, D46, D47.1, D47.3)						
1982–1986	41.3	41.0–41.6	53.2	52.9–53.5	46.9	46.7–47.1
1987–1991	45.9	45.6–46.2	57.1	56.8–57.4	51.2	51.0–51.4
1992–1997	54.8	54.6–55.1	60.8	60.6–61.0	57.5	57.4–57.7
1998–2004	58.4	58.2–58.6	64.1	63.9–64.3	61.0	60.9–61.2

(a) Defined differently from what is generally considered in this report (See Appendix F for further details).

(b) Excluding non-melanoma skin cancer (C44).

Source: AIHW, CA & AACR 2008.

Table D5.4: International comparison of mortality-to-incidence ratios for all cancers, 2008

Region or country	Mortality: ASR	Incidence: ASR	Mortality-to-incidence ratio
Middle Africa	76.4	91.8	0.83
Eastern Asia	155.4	188.4	0.82
Eastern Africa	99.9	122.8	0.81
Western Africa	85.4	107.6	0.79
Melanesia	106.8	138.5	0.77
Northern Africa	78.0	103.2	0.76
Southern Africa	133.2	189.6	0.70
Northern America	185.0	299.9	0.62
South-Eastern Asia	87.0	141.5	0.61
Central America	82.0	134.4	0.61
Central and Eastern Europe	128.1	210.6	0.61
World	*106.2*	*181.8*	*0.58*
South America	100.3	171.9	0.58
Caribbean	99.9	172.6	0.58
Micronesia	86.1	157.5	0.55
South-Central Asia	56.7	104.6	0.54
Polynesia	109.1	209.5	0.52
Western Asia	67.7	133.8	0.51
Southern Europe	111.7	245.0	0.46
Northern Europe	114.5	271.2	0.42
Western Europe	108.0	287.7	0.38
New Zealand	110.7	309.2	0.36
Australia	*102.8*	*314.1*	*0.33*

Notes

1. The data pertain to cancers coded in ICD-10 as C00 to C97 (except for code C44).
2. The mortality and incidence rates were derived from estimates of the number of new cancer cases and deaths for 2008.
3. The age-standardised rates were standardised by the IARC using the Doll et al. (1966) World Standard Population and are expressed per 100,000 persons.
4. The mortality-to-incidence ratio equals the age-standardised mortality rate divided by the age-standardised incidence rate.

Source: Ferlay et al. 2010.

Additional table for Chapter 6: Prevalence of cancer

Table D6.1: Five-year prevalence of selected cancers, Australia, as at end of 2004

Cancer site/type (ICD-10)	Males		Females		Persons	
	Number	Per cent of all prevalent cases	Number	Per cent of all prevalent cases	Number	Per cent of all prevalent cases
Prostate (C61)	53,296	34.3	..	..	53,296	18.0
Breast (C50)	..	..	53,051	37.5	53,051	17.9
Melanoma of the skin (C43)	23,514	15.1	18,697	13.2	42,211	14.2
Bowel (C18–C20)	23,148	14.9	18,940	13.4	42,088	14.2
Non-Hodgkin lymphoma (C82–C85, C96)[a]	6,834	4.4	5,632	4.0	12,466	4.2
Lung (C33–34)	6,642	4.3	4,413	3.1	11,055	3.7
Leukaemia (C91–C95)[a]	4,357	2.8	3,007	2.1	7,364	2.5
Kidney (C64)	4,639	3.0	2,677	1.9	7,316	2.5
Bladder (C67)	5,594	3.6	1,715	1.2	7,309	2.5
Uterus, body (C54)[a]	..	..	6,665	4.7	..	..
Thyroid (C73)	1,397	0.9	4,502	3.2	5,899	2.0
Stomach (C16)	2,276	1.5	1,252	0.9	3,528	1.2
Unknown primary site (C26, C39, C76, C80)[a]	1,861	1.2	1,511	1.1	3,372	1.1
Ovary (C56)	..	..	3,288	2.3	3,288	1.1
Testis (C62)	3,049	2.0	..	..	3,049	1.0
Cervix (C53)	..	..	2,810	2.0	2,810	0.9
Brain (C71)	1,274	0.8	940	0.7	2,214	0.7
Hodgkin lymphoma (C81)	1,046	0.7	884	0.6	1,930	0.6
Pancreas (C25)	752	0.5	814	0.6	1,566	0.5
All cancers (C00–C96[b], D45, D46, D47.1, D47.3)	**155,589**	**100.0**	**141,553**	**100.0**	**297,142**	**100.0**

(a) Defined differently from that generally considered in this report (See Appendix F for further details).

(b) Excluding non-melanoma skin cancer (C44).

Note: Refers to the number of persons, not cases.

Source: AIHW, CA & AACR 2008.

Additional tables for Chapter 7: Burden of disease due to cancer

Table D7.1: Estimated causes of cancer burden of disease, by fatal (YLL) and non-fatal (YLD) components, persons, Australia, 2010[a]

Cancer site/type (ICD-10 codes)	Fatal component			Non-fatal component			Total		
	YLL	% of total YLL	Rank	YLD	% of total YLD	Rank	DALYs	% of DALYs due to YLL	% of DALYs due to YLD
Lung	91,700	7	2	6,400	<1	49	98,100	94	7
Bowel	55,800	4	4	12,400	1	31	68,100	82	18
Breast[b]	40,800	3	7	20,500	1	18	61,300	67	33
Prostate	27,300	2	12	15,200	1	21	42,500	64	36
Lymphoma	22,400	2	15	3,800	<1	70	26,100	86	14
Pancreas	24,200	2	14	640	<1	127	24,800	97	3
Other malignant neoplasms	19,100	1	19	3,900	<1	68	23,100	83	17
Melanoma	16,800	1	21	5,400	<1	55	22,300	76	25
Leukaemia	19,200	1	18	2,500	<1	82	21,800	88	12
Brain	19,900	2	17	1,300	<1	103	21,100	94	6
Oesophagus	13,900	1	22	1000	<1	109	14,900	93	7
Mouth & oropharynx	10,100	1	33	4,200	<1	65	14,200	71	29
Stomach	12,900	1	26	1,300	<1	100	14,200	91	9
Kidney	11,800	1	31	2,100	<1	90	13,900	85	15
Ovary	11,900	1	30	1,100	<1	108	12,900	92	8
Bladder	8,700	1	38	2,200	<1	86	10,900	80	20
Multiple myeloma	9,300	1	35	970	<1	112	10,300	91	10
Liver[c]	6,200	1	48	120	<1	153	6,300	98	2
Bone & connective tissue	5,000	<1	55	890	<1	116	5,900	85	15
Non-melanoma skin cancer	4,300	<1	60	1,200	<1	103	5,600	78	23
Uterus	3,600	<1	65	1,500	<1	96	5,200	70	30

(continued)

Table D7.1: Estimated causes of cancer burden of disease, by fatal (YLL) and non-fatal (YLD) components, persons, Australia, 2010[a] (continued)

Cancer site/type (ICD-10 codes)	Fatal component			Non-fatal component			Total		
	YLL	% of total YLL	Rank	YLD	% of total YLD	Rank	DALYs	% of DALYs due to YLL	% of DALYs due to YLD
Cervix	3,600	<1	64	730	<1	123	4,400	83	17
Larynx	3,300	<1	69	970	<1	113	4,200	77	23
Gallbladder	3,500	<1	67	190	<1	147	3,700	95	5
Thyroid	1,100	<1	91	880	<1	118	2,000	56	44
Eye	520	<1	99	510	<1	132	1,000	50	50
Testis	430	<1	103	490	<1	134	920	47	53
All cancers[d]	**447,300**	**34**	**..**	**92,500**	**6**	**..**		**83**	**17**

(a) The estimates were based on burden of disease data for 1979 to 2003. See Appendix G for further details. The estimates may not add up due to rounding.

(b) Pertains to breast cancer in females only.

(c) Excluding hepatitis B and C related.

(d) Includes cancers coded in ICD-10 as C00–C97.

Source: AIHW Burden of Disease Database.

Table D7.2: Estimated burden of disease (DALYs) due to selected cancers and all cancers, by age, persons, Australia, 2010

Age group (years)	Lung	Bowel	Lymphoma	Breast[a]	Prostate	All cancers[b]
<1	10	0	0	0	0	170
1–4	0	0	10	0	0	1,000
5–9	10	0	60	0	0	1,200
10–14	0	0	100	0	0	1,100
15–19	0	10	240	0	0	1,800
20–24	30	40	290	20	0	2,400
25–29	30	170	520	210	10	3,900
30–34	160	580	580	1,000	0	7,000
35–39	480	930	590	2,400	20	10,000
40–44	1,600	1,300	770	4,300	70	16,400
45–49	3,000	2,400	1,000	6,000	440	24,800
50–54	6,000	4,000	1,700	8,400	1,400	39,500
55–59	10,400	7,300	2,600	9,400	3,300	57,800
60–64	14,700	10,000	3,200	8,600	4,600	70,800
65–69	18,000	11,500	3,600	6,600	6,900	81,500
70–74	17,200	10,300	3,500	4,900	7,200	74,500
75–79	13,500	8,500	2,900	3,900	7,100	63,700
80–84	8,200	6,000	2,400	2,800	6,000	45,200
85–89	3,800	3,500	1,500	1,800	3,800	26,400
90–94	890	1,400	470	740	1,400	9,100
95–99	130	270	40	160	210	1,500
100+	0	30	0	30	10	120
All ages[c]	98,100	68,100	26,100	61,100	42,500	539,800

(a) Pertains to breast cancer in females only.

(b) Includes cancers coded in ICD-10 as C00–C97.

(c) Values may not sum to the total due to rounding.

Source: AIHW Burden of Disease Database.

Additional tables for Chapter 8: Hospitalisations for cancer

Table D8.1: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2007–08[(a)]

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Lip, oral cavity and pharynx					
Lip (C00)	528	144	672	5.2	1.9
Tongue (C01, C02)	418	1,116	1,534	8.4	6.4
Mouth (C03–C06)	285	893	1,178	10.8	8.4
Salivary glands (C07,C08)	67	523	590	6.4	5.8
Oropharynx (C09, C10)	269	829	1,098	7.0	5.5
Nasopharynx (C11)	121	352	473	6.5	5.1
Hypopharynx (C12, C13)	107	323	430	9.9	7.7
Other sites in pharynx, etc. (C14)	51	167	218	10.0	7.9
Digestive organs					
Oesophagus (C15)	1,736	3,137	4,873	9.4	6.4
Stomach (C16)	1,771	4,110	5,881	9.5	6.9
Small intestine (C17)	208	550	758	11.8	8.9
Bowel (C18–C20)	9,697	21,219	30,916	10.4	7.5
Anus (C21)	242	474	716	10.2	7.1
Liver (C22)	573	2,798	3,371	7.8	6.7
Gallbladder and bile ducts (C23, C24)	237	1,087	1,324	11.3	9.5
Pancreas (C25)	1,055	4,199	5,254	10.6	8.7
Other digestive organs (C26)	63	247	310	7.9	6.5
Respiratory system and intrathoracic organs					
Nose, sinuses, etc. (C30, C31)	138	279	417	8.6	6.1
Larynx (C32)	533	1,021	1,554	10.7	7.3
Lung (C33, C34)	4,381	14,784	19,165	10.0	7.9
Other thoracic organs (C37–C39)	116	380	496	7.3	5.8
Bone (C40, C41)	388	1,480	1,868	7.2	5.9

Table D8.1: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2007–08[a] (continued)

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Skin					
Melanoma of skin (C43)	6,209	3,343	9,552	4.6	2.3
Non-melanoma of skin (C44)[b]	69,359	14,106	83,465	4.2	1.5
Mesothelioma and soft tissue					
Mesothelioma (C45)	397	1,760	2,157	8.2	6.9
Kaposi sarcoma (C46)	14	20	34	15.2	9.4
Peritoneum (C48)	228	731	959	8.9	7.0
Other soft tissue (C47, C49)	496	1,159	1,655	7.5	5.6
Breast (C50)	5,752	18,217	23,969	4.1	3.4
Female genital organs					
Vulva (C51)	184	549	733	9.6	7.5
Vagina (C52)	67	118	185	8.9	6.0
Cervix (C53)	728	1,044	1,772	7.0	4.5
Uterus (C54, C55)	1,155	2,662	3,817	6.2	4.6
Ovary (C56)	836	2,938	3,774	7.7	6.2
Other female genital organs and placenta (C57–C58)	41	151	192	5.6	4.6
Male genital organs					
Penis (C60)	52	106	158	6.5	4.7
Prostate (C61)	14,309	16,738	31,047	5.7	3.5
Testis (C62)	238	987	1,225	3.5	3.0
Other male genital organs (C63)	26	32	58	5.7	3.6
Urinary tract					
Kidney (C64)	497	3,483	3,980	8.2	7.3
Bladder (C67)	7,285	7,693	14,978	5.2	3.2
Other urinary organs (C65, C66, C68)	212	693	905	7.4	5.9
Eye, brain and other parts of the central nervous system					
Eye (C69)	302	337	639	4.5	2.9
Brain (C71)	675	4,278	4,953	12.8	11.2
Other central nervous system (C70, C72)	105	232	337	12.6	9.0

(continued)

Table D8.1: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2007–08[(a)] (continued)

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Thyroid and other endocrine glands					
Thyroid (C73)	96	3,557	3,653	3.0	2.9
Other endocrine glands (C74, C75)	172	354	526	8.2	5.8
Blood and lymphatic system					
Hodgkin lymphoma (C81)	936	992	1,928	6.9	4.0
Non-Hodgkin lymphoma (C82–C85)	8,933	10,347	19,280	8.9	5.3
Immunoproliferative cancers (C88)	521	178	699	8.0	2.8
Myeloma (C90)	5,845	4,117	9,962	10.9	5.1
Acute lymphoblastic leukaemia (C91.0)	2,062	2,078	4,140	10.2	5.6
Chronic lymphocytic leukaemia (C91.1)	3,535	1,288	4,823	7.2	2.7
Other and unspecified lymphoid leukaemia (C91.2–C91.9)	312	165	477	10.7	4.4
Total lymphoid cancers (C81–C85, C88, C90, C91)	*22,144*	*19,165*	*41,309*	*9.3*	*4.8*
Chronic myelogenous leukaemia (C92.1)	1,264	323	1,587	7.2	2.3
Other myeloproliferative cancers (C94.1, C94.3, C96.2, D45, D47.1, D47.3)	5,061	660	5,721	5.5	1.5
Myelodysplastic syndrome (D46)	9,622	3,098	12,720	4.4	1.8
Acute myeloid leukaemia (C92.0, C92.3–C92.5, C93.0, C94.0, C94.2, C94.4, C94.5)	5,304	3,315	8,619	15.8	6.7
Unspecified myeloid leukaemia (C92.2, C92.7, C92.9, C93.1–C93.9, C94.7)	595	334	929	7.1	3.2
Total myeloid cancers (C92–C94, C96.2, D45, D46, D47.1, D47.3)	*21,846*	*7,730*	*29,576*	*9.6*	*3.3*
Other cancers of the blood and lymphatic system (C95, C96.0, C96.1, C96.3–C96.9)	393	238	631	8.3	3.7
Other					
Other and ill-defined sites (C76)	296	413	709	10.0	6.3
Unknown primary site (C77–C80)	7,610	31,678	39,288	9.5	7.8
All cancers (C00–C96, D45, D46, D47.1, D47.3)	184,708	204,624	389,332	8.0	4.7

Table D8.1: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2007–08[a] (continued)

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Other cancer-related hospitalisations[c]					
Personal and family history (Z80, Z85[d])	8,542	118	8,660	3.0	1.0
Observation for suspected cancer (Z03.1)	216	24	240	3.1	1.2
Special screening examination (Z12)	43,686	614	44,300	1.5	1.0
Prophylactic surgery, immunotherapy and other chemotherapy (Z40, Z29.1, Z29.2)[e]	822	703	1,525	2.9	1.9
Radiotherapy session (Z51.0)	1,337	14[f]	1,351	2.7	1.0
Chemotherapy session (Z51.1)	298,817	179[f]	298,996	5.3	1.0
Follow-up after radiotherapy (Z54.1, Z08.1)	328	104	432	6.6	2.3
Follow-up after chemotherapy (Z54.2, Z08.2)	692	201	893	2.6	1.4
Follow-up after surgery for cancer (Z08.0)	33,882	1,961	35,843	1.6	1.0
Follow-up after multiple treatment (Z08.7–Z08.9)	7,298	347	7,645	1.7	1.0
Follow-up care involving plastic surgery of head and neck (Z42.0)[e]	43	34	77	3.2	2.0
Follow-up care involving plastic surgery of breast (Z42.1)[e]	26	185	211	3.7	3.4
Adjustment and management of infusion pumps and vascular device (Z45.1, Z45.2)[e]	46,013	822	46,835	1.6	1.0
All other cancer-related hospitalisations	441,702	5,306	447,008	2.1	1.0
All cancer-related hospitalisations	**626,410**	**209,930**	**836,340**	**7.8**	**2.7**

(a) Principal diagnosis classified according to International classification of Disease and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM), fifth edition.

(b) Includes those C44 codes that indicate basal or squamous cell carcinoma.

(c) Principal diagnosis can also be a specific treatment of an already diagnosed condition. Other cancer-related hospitalisations include those hospitalisations where the principal diagnosis is for another reason that is primarily related to cancer.

(d) The Australian Coding Standard (NCCH 2006a) requires Z85 to be assigned as an additional diagnosis to the current episode of care but 136 hospitalisations were recorded with Z85 as principal diagnosis rather than as additional diagnosis in 2007–08.

(e) Hospitalisations having principal diagnosis of Z29.1, Z29.2, Z42.0, Z42.1, Z45.1 or Z45.2 are limited to those with cancer as an additional diagnosis.

(f) Excludes overnight radiotherapy/chemotherapy sessions that have cancer as the principal diagnosis. The ACS requires overnight radiotherapy/chemotherapy sessions to have the neoplasm being treated be recorded as the principal diagnosis; however, 14 hospitalisations and 179 hospitalisations were recorded as overnight radiotherapy and chemotherapy sessions in 2007–08, respectively.

Source: AIHW National Hospital Morbidity Database.

Table D8.2: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2008–09[a]

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Lip, oral cavity and pharynx					
Lip (C00)	325	81	406	4.6	1.1
Tongue (C01, C02)	455	1,184	1,639	8.6	7.0
Mouth (C03–C06)	309	814	1,123	10.8	8.6
Salivary glands (C07,C08)	75	512	587	6.9	6.9
Oropharynx (C09, C10)	267	791	1,058	7.1	6.1
Nasopharynx (C11)	135	283	418	7.8	5.9
Hypopharynx (C12, C13)	101	319	420	12.1	9.9
Other sites in pharynx, etc. (C14)	60	163	223	11.9	9.4
Digestive organs					
Oesophagus (C15)	1,466	3,295	4,761	9.0	6.9
Stomach (C16)	1,688	4,027	5,715	9.6	7.5
Small intestine (C17)	250	567	817	10.9	8.3
Bowel (C18–C20)	9,182	21,112	30,294	10.0	7.7
Anus (C21)	254	506	760	11.1	8.1
Liver (C22)	619	2,848	3,467	7.8	7.2
Gallbladder and bile ducts (C23, C24)	189	1,041	1,230	10.6	9.8
Pancreas (C25)	1,034	3,995	5,029	10.3	9.0
Other digestive organs (C26)	104	277	381	10.9	8.7
Respiratory system and intrathoracic organs					
Nose, sinuses, etc. (C30, C31)	104	261	365	9.8	7.7
Larynx (C32)	492	973	1,465	10.7	7.8
Lung (C33, C34)	4,616	14,358	18,974	9.8	8.2
Other thoracic and respiratory organs (C37–C39)	152	443	595	7.5	5.8
Bone (C40, C41)	282	1,328	1,610	6.9	6.5
Skin					
Melanoma of skin (C43)	6,627	3,295	9,922	4.8	1.9
Non-melanoma of skin (C44)[b]	70,962	14,040	85,002	4.2	0.9

Table D8.2: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2008–09[(a)] (continued)

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Mesothelioma and soft tissue					
Mesothelioma (C45)	342	1,673	2,015	8.5	7.9
Kaposi sarcoma (C46)	22	23	45	10.6	5.9
Peritoneum (C48)	258	739	997	8.8	7.3
Other soft tissue (C47, C49)	584	1,287	1,871	7.1	5.6
Breast (C50)	6,296	18,823	25,119	4.2	3.9
Female genital organs					
Vulva (C51)	151	573	724	8.1	7.2
Vagina (C52)	57	88	145	10.1	6.8
Cervix (C53)	760	1,140	1,900	6.7	4.6
Uterus (C54, C55)	1,145	2,605	3,750	6.0	4.8
Ovary (C56)	914	2,869	3,783	8.0	6.8
Other female genital organs and placenta (C57–C58)	39	260	299	5.9	5.2
Male genital organs					
Penis (C60)	52	125	177	6.1	5.0
Prostate (C61)	16,458	17,831	34,289	5.4	3.4
Testis (C62)	251	960	1,211	3.5	3.6
Other male genital organs (C63)	27	36	63	5.1	3.5
Urinary tract					
Kidney (C64)	689	3,648	4,337	7.7	7.3
Bladder (C67)	6,814	7,541	14,355	5.3	3.3
Other urinary organs (C65, C66, C68)	216	802	1,018	6.8	6.2
Eye, brain and other parts of the central nervous system					
Eye (C69)	315	356	671	3.6	2.5
Brain (C71)	583	4,454	5,037	12.5	11.9
Other central nervous system (C70, C72)	90	187	277	11.3	8.3
Thyroid and other endocrine glands					
Thyroid (C73)	91	3,718	3,809	2.9	3.8
Other endocrine glands (C74, C75)	169	371	540	9.2	7.0

(continued)

Table D8.2: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2008–09[(a)] (continued)

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Blood and lymphatic system					
Hodgkin lymphoma (C81)	925	1,020	1,945	6.8	4.1
Non-Hodgkin lymphoma (C82–C85)	8,823	10,101	18,924	8.7	5.2
Immunoproliferative cancers (C88)	612	180	792	6.0	1.6
Myeloma (C90)	6,289	4,019	10,308	10.3	4.4
Acute lymphoblastic leukaemia (C91.0)	2,124	2,001	4,125	10.3	5.5
Chronic lymphocytic leukaemia (C91.1)	4,256	1,368	5,624	7.5	2.1
Other and unspecified lymphoid leukaemia (C91.2–C91.9)	345	179	524	9.4	3.6
Total lymphoid cancers (C81–C85, C88, C90, C91)	*23,374*	*18,868*	*42,242*	*9.0*	*4.5*
Chronic myelogenous leukaemia (C92.1)	1,054	351	1,405	7.8	2.2
Other myeloproliferative cancer (C94.1, C94.3, C96.2, D45, D47.1, D47.3)	4,963	583	5,546	5.7	0.7
Myelodysplastic syndrome (D46)	9,541	2,936	12,477	4.4	1.3
Acute myeloid leukaemia (C92.0, C92.3–C92.5, C93.0, C94.0, C94.2, C94.4, C94.5)	5,668	3,311	8,979	16.6	6.5
Unspecified myeloid leukaemia (C92.2, C92.7, C92.9, C93.1–C93.9, C94.7)	758	321	1,079	9.1	3.0
Total myeloid cancers (C92–C94, C96.2, D45, D46, D47.1, D47.3)	*21,984*	*7,502*	*29,486*	*10.3*	*2.9*
Other cancers of the blood and lymphatic system (C95, C96.0, C96.1, C96.3–C96.9)	269	216	485	10.9	5.3
Other					
Other and ill-defined sites (C76)	367	394	761	8.9	5.1
Unknown primary site (C77–C80)	7,267	32,922	40,189	9.2	8.3
All cancers (C00–C96, D45, D46, D47.1, D47.3)	189,332	206,524	395,856	7.8	4.6

Table D8.2: Number of hospitalisations and average length of stay (ALOS) for cancer-related hospitalisations, persons, Australia, 2008–09[a] (continued)

Principal diagnosis (ICD-10-AM codes)	Number of hospitalisations			ALOS (days)	
	Same-day	Overnight	Total	Overnight	Total
Other cancer-related hospitalisations[c]					
Personal and family history (Z80, Z85(d))	6,098	156	6,254	2.8	1.0
Observation for suspected cancer (Z03.1)	299	31	330	2.9	1.2
Special screening examination (Z12)	48,052	460	48,512	1.6	1.0
Prophylactic surgery, immunotherapy and other chemotherapy (Z40, Z29.1, Z29.2)[e]	1,052	807	1,859	2.9	1.8
Radiotherapy session (Z51.0)	1,314	17(f)	1,331	2.1	1.0
Chemotherapy session (Z51.1)	313,910	163(f)	314,073	2.2	1.0
Follow-up after radiotherapy (Z54.1, Z08.1)	360	73	433	7.5	2.1
Follow-up after chemotherapy (Z54.2, Z08.2)	1,196	155	1,351	3.7	1.3
Follow-up after surgery for cancer (Z08.0)	36,034	1,943	37,977	1.6	1.0
Follow-up after multiple treatment (Z08.7–Z08.9)	7,745	376	8,121	1.7	1.0
Follow-up care involving plastic surgery of head and neck (Z42.0)[e]	31	27	58	2.0	1.4
Follow-up care involving plastic surgery of breast (Z42.1)[e]	27	129	156	3.7	3.3
Adjustment and management of infusion pumps and vascular device (Z45.1, Z45.2)[e]	20,117	478	20,595	1.6	1.0
All other cancer-related hospitalisations	436,235	4,635	441,050	2.1	1.0
All cancer-related hospitalisations	**625,567**	**211,159**	**836,906**	**7.7**	**2.7**

(a) Principal diagnosis classified according to International classification of Disease and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM), sixth edition.

(b) Includes those C44 codes that indicate basal or squamous cell carcinoma.

(c) Principal diagnosis can also be a specific treatment of an already diagnosed condition. Other cancer-related hospitalisations include those hospitalisations where the principal diagnosis is for another reason that is primarily related to cancer.

(d) The Australian Coding Standard (NCCH 2008a) requires Z85 to be assigned as an additional diagnosis to the current episode of care but 136 hospitalisations were recorded with Z85 as principal diagnosis rather than as additional diagnosis in 2008–09.

(e) Hospitalisations having principal diagnosis of Z29.1, Z29.2, Z42.0, Z42.1, Z45.1 or Z45.2 are limited to those with cancer as an additional diagnosis.

(f) Excludes overnight radiotherapy/chemotherapy sessions that have cancer as the principal diagnosis. The ACS requires overnight radiotherapy/chemotherapy sessions to have the neoplasm being treated be recorded as the principal diagnosis; however, 17 hospitalisations and 163 hospitalisations were recorded as overnight radiotherapy and chemotherapy sessions in 2008–09, respectively.

Source: AIHW National Hospital Morbidity Database.

APPENDIX E: CLASSIFICATIONS

Australian Standard Geographical Classification Remoteness Areas

The Australian Standard Geographical Classification (ASGC) Remoteness Areas was used to assign areas across Australia to a remoteness category (ABS 2001). This classification divides all areas of Australia into five categories—namely, Major cities, Inner regional, Outer regional, Remote and very remote (AIHW 2004). For the purposes of this report, the categories of Remote and very remote were collapsed due to the small number of cases in these two subgroups.

Index of Relative Socio-economic Disadvantage

The Index of Relative Socio-economic Disadvantage (IRSD) is one of four Socio-Economic Indexes for Areas (SEIFAs) developed by the Australian Bureau of Statistics (ABS 2008b). This index is based on factors such as average household income, education levels and unemployment rates. Rather than being a person-based measure, the IRSD is an area-based measure of socioeconomic status in which small areas of Australia are classified on a continuum from disadvantaged to affluent. This information is used as a proxy for the socioeconomic status of people living in those areas and may not be correct for each person living in that area. In this report, the first socioeconomic status group (labelled '1') corresponds to geographical areas containing the 20% of the population with the lowest socioeconomic status according to the IRSD and the fifth group (labelled '5') corresponds to the 20% of the population with the highest socioeconomic status.

International Classification of Diseases for Oncology

Cancers were originally classified solely under the ICD classification system, based on topographic site and behaviour. However, during the creation of the ninth revision of ICD in the late 1960s, working parties suggested the creation of a separate classification for cancers that included improved morphological information. The first edition of the International Classification of Diseases for Oncology (ICD-O) was subsequently released in 1976 and, in this classification, cancers were coded by both morphology (histology type and behaviour) and topography (site).

Since the first edition of the ICD-O, a number of revisions have been made, mainly in the area of lymphomas and leukaemias. The current edition, the third edition, was released in 2000 (Fritz et al. 2000) and is currently used by most state and territory cancer registries in Australia, as well as by the AIHW in regard to the Australian Cancer Database.

International Statistical Classification of Diseases and Related Health Problems

The International Statistical Classification of Diseases and Related Health Problems (ICD) is used to classify diseases and other health problems (including symptoms and injuries) in clinical and administrative records. The use of a standard classification system enables the storage and retrieval of diagnostic information for clinical and epidemiological purposes that is comparable between different service providers, across countries and over time.

In 1903, Australia adopted the ICD to classify causes of death and it was fully phased in by 1906. Since 1906, the ICD has been revised nine times in response to the recognition of new diseases (for example, Acquired Immunodeficiency Syndrome (AIDS)), increased knowledge of diseases, and changing terminology in the description of diseases. The version currently in use, ICD-10 (WHO 1992), was endorsed by the 43rd World Health Assembly in May 1990 and officially came into use in World Health Organization (WHO) member states from 1994.

International Statistical Classification of Diseases and Related Health Problems, Australian modification

The Australian modification of ICD-10, which is referred to as the ICD-10-AM (NCCH 2008b), is based on ICD-10. ICD-10 was modified for the Australian setting by the National Centre for Classification in Health (NCCH) with assistance from clinicians and clinical coders. Despite the modifications, compatibility with ICD-10 at the higher levels (that is, up to 4 character codes) of the classification has been maintained. ICD-10-AM has been used for classifying diagnoses in hospital records in all states and territories since 1999–00 (AIHW 2000).

APPENDIX F: STATISTICAL METHODS AND TECHNICAL NOTES

2010 estimated incidence and mortality

To calculate the estimated 2010 incidence in Chapter 2, with the exception of prostate cancer (detailed below), site-specific cancer incidence data for males and females for the 10-year period from 1998 to 2007 were divided into 18 series—one for each 5-year age group. The incidence numbers were divided by the age-specific mid-year populations to obtain the age-specific incidence rates. Least squares linear regression was used to find the straight line of best fit through the 1998 to 2007 rates. A 5% level of significance was used to test the hypothesis that the slope of the line was different from zero. If the slope was not found to be different from zero, the mean of the rates was used as the estimate of the 2010 rate. If the slope was found to be positive, the straight line of best fit was extrapolated to obtain the estimate of the 2010 rate. Finally, if the slope was negative, the historical data series was fitted with the exponentially decaying line of best fit and the estimated rate for 2010 was based on extrapolating this line. The projected incidence rates for 2010 were then multiplied by the estimated resident population for 2010 to obtain the projected incidence numbers. The populations used were the Australian Bureau of Statistics (ABS) projected populations from Series 29(B) (ABS 2008a).

Estimates of mortality in 2010 were calculated in a similar manner to incidence using mortality data for the 10-year period 1998–2007.

In the projections work described above, historical data series that contained a rate of zero were always fitted with the mean value of the series, irrespective of the outcome of the significance test. This was done to ensure that fitted lines never crossed the x-axis no matter how far forward or backward they were extrapolated.

Finally, there were three series that did not have a history of 10 years of incidence data. These were non-melanoma skin cancer (ICD-10 code C44; series begins at 2001), myelodysplastic syndromes (D46; series begins at 2003) and other myeloproliferative cancers (C94.1, C94.3, C96.2, D45, D47.1 & D47.3; series begins at 2003). The significance test was altered accordingly for these series.

Prostate cancer 2010 estimated incidence

Due to the effect of prostate-specific antigen (PSA) testing, prostate cancer incidence rates have fluctuated dramatically in the 10-year period from 1998–2007 making the above methodology unsuitable for estimating the incidence of prostate cancer in 2010. Instead, the relationship between prostate cancer incidence and PSA testing were used in conjunction with Medicare Benefits Schedule data from 2008 to 2010 on PSA tests to estimate the incidence of prostate cancer in 2010. Further details of this model are provided in Appendix J.

Age-specific rates

Age-specific rates provide information on the incidence of a particular event in an age group relative to the total number of people at risk of that event in the same age group. It is calculated by dividing the number of events occurring in each specified age group by the corresponding 'at risk' population in the same age group and then multiplying the result by a constant (for example 100,000) to derive the rate. Age-specific rates are often expressed per 100,000 population.

Age-standardised rates

A crude rate provides information on the number of, for example, new cases of cancer or deaths from cancer by the population at risk in a specified period. No age adjustments are made when calculating a crude rate. Since the risk of cancer is heavily dependent on age, crude rates are not suitable for looking at trends or making comparisons across groups in cancer incidence and mortality.

More meaningful comparisons can be made by the use of age-standardised rates, with such rates adjusted for age in order to facilitate comparisons between populations that have different age structures, for example, between Indigenous peoples and other Australians. This standardisation process effectively removes the influence of age structure on the summary rate.

There are two methods commonly used to adjust for age: direct and indirect standardisation. In this report, the direct standardisation approach presented by Jensen and colleagues (1991) is used. To calculate age-standardised rates, the first step is to calculate population numbers and numbers of cases (or deaths) in age ranges—typically 5-year age ranges. The next step is to multiply the age-specific population numbers for the reference population (that is, the Australian population as at 30 June 2001) by the age-specific incidence rates (or death rates) for the population of interest (such as those who lived in *Major cities* or in a certain socioeconomic status group). This is then used to derive a standardised incidence rate (or death rate) for the population of interest.

Confidence intervals

An observed value of a rate may vary due to chance, even where there is no variation in the underlying value of the rate. A confidence interval provides a range of values that has a specified probability of containing the true rate or trend. The 95% (p-value = 0.05) confidence interval is used in this report; thus, there is a 95% likelihood that the true value of the rate is somewhere within the stated range. Confidence intervals can be used as a guide to whether or not differences are consistent with chance variation. In cases where no values within the confidence intervals overlap, the difference between rates is greater than that which could be explained by chance and is regarded as statistically significant. Note, however, that overlapping confidence intervals do not necessarily mean that the difference between two rates is definitely due to chance. Instead, an overlapping confidence interval represents a difference in rates which is too small to allow differentiation between a real difference and one which is due to chance variation. It can, therefore, only be stated that no statistically significant differences were found, and not that no differences exist. The approximate comparisons presented might understate the statistical significance of some differences, but they are sufficiently accurate for the purposes of this report.

As with all statistical comparisons, care should be exercised in interpreting the results of the comparison of rates. If two rates are statistically significantly different from each other, this means that the difference is unlikely to have arisen by chance. Judgement should, however, be exercised in deciding whether or not the difference is of any practical significance.

With one exception, the confidence intervals presented in this report were calculated using a method developed by Dobson and colleagues (1991). This method calculates approximate confidence intervals for a weighted sum of Poisson parameters.

The one exception applies to the confidence intervals that were calculated for the international comparisons of incidence and mortality data using GLOBOCAN data. For those data, the lack of the required data meant

that the Dobson method could not be used and the AIHW approximated the confidence intervals using the following formula:

$$95\%\ \text{CI approximation} = \text{AS rate} \pm 1.96 \times \frac{\text{AS rate}}{\sqrt{\text{Number of cases}}}$$

Since the GLOBOCAN data are based on the estimates of the number of new cases and deaths from cancer, the associated confidence intervals indicate the range of random variation that might be expected, should those estimates be 100% accurate.

Note that statistical independence of observations is assumed in the calculations of the confidence intervals for this report. This assumption may not always be valid for episode-based data (such as data from the National Hospital Morbidity Database).

Mortality-to-incidence ratio

Both mortality-to-incidence ratios (MIRs) and relative survival ratios can be used to estimate survival from a particular disease, such as cancer, for a population. Although MIRs are the cruder of the two ratios, MIRs do not have the same comparability and interpretation problems associated with them when attempting to make international comparisons (see Chapter 4). Thus, the MIR is considered to be a better measure when comparing survival between countries.

The MIR is defined as the age-standardised mortality rate divided by the age-standardised incidence rate. For example, an MIR of 0.42 in a given year for all types of cancers means that for every 100 new cancer cases diagnosed that year, there were 42 deaths due to cancer in the same year (though the deaths need not be of the same people as the cases). If people tend to die relatively soon after diagnosis from a particular cancer (that is, the death rate is nearly as high as the incidence rate for that cancer), then the MIR will be close to 1.00. In contrast, if people tend to survive a long time after being diagnosed, then the MIR will be close to zero.

The MIR only gives a valid measure of the survival experience in a population if:

- cancer registration and death registration are complete or nearly so, and
- the incidence rate, mortality rate and survival proportion are not undergoing rapid change.

The incidence and mortality data used to calculate the MIRs in Chapter 4 were extracted from the 2008 GLOBOCAN database (Ferlay et al. 2010).

Relative survival analysis

Relative survival estimates compare the survival of persons diagnosed with a cancer (that is, the observed survival) with the survival of the entire Australian population of the same sex and age in the same calendar year as the cancer cohort (that is, the expected survival). Note that the actual cause of death (whether it is from cancer or another cause) is not of importance in these analyses. Thus, relative survival is defined as follows:

$$\text{relative survival} = \frac{\text{observed survival for cancer cohort}}{\text{expected survival for 'matched' general population}}$$

The resulting value is usually given as a proportion. For example, if the observed 5-year survival of a particular cohort diagnosed with a particular type of cancer was 0.60 (that is, 60% of them were still alive 5 years after diagnosis) and their expected survival, based on Australian life-tables, was 0.90 (that is, 90% of people with the

same age- and sex-profile as the cohort would be expected to be alive 5 years later), then the 5-year relative survival would be 0.6/0.9 = 0.67 or 67%. One way to interpret this figure is that the 'average' person in that particular cancer cohort has a 67% chance of being alive 5 years after diagnosis *relative to others of the same sex and age*.

In order for the relative survival estimate to be a valid approximation of the probability that a person will not die of their diagnosed cancer within the given time interval, the presence of the cancer is assumed to be the only factor that distinguishes the cancer cohort from the general population (Reis et al. 2008). The degree to which this is true is not known.

The relative survival proportions presented in this report have been calculated using the 'cohort method'. In the cohort method, a cohort of people diagnosed with cancer is followed over time to estimate the proportion surviving for a selected time frame (for example 5 years). An alternative approach to calculating relative survival is the period method which was developed by Brenner and Gefeller (1996). This method examines the survival experience of people who were alive at the beginning of a particular recent calendar period and who were diagnosed with cancer before this period. Therefore, the period method might provide more up-to-date estimates of survival, especially in the presence of temporal trends affected by improvements in cancer detection and treatment. However, the cohort method generally includes more cancer cases and thus provides more precise estimates (that is, estimates with narrower confidence intervals).

The survival analyses were based on records of cancer cases diagnosed between 1982 and 2004. Data from the National Death Index on deaths (from any cause) that occurred up to 31 December 2006 were used to determine which person with cancer had died and when this occurred (see Appendix G for more information on these data sources). In order to calculate the expected survival belonging to the age-, sex- and calendar-year matched population, life tables for the population under study were used. These life tables were constructed from the National Mortality Database.

The software used to calculate the relative survival proportions was written by Dickman (2004). It uses the Ederer II method of calculating the interval-specific expected survivals. Further details on the approach used to calculate the relative survival estimates, including rules which were applied during data preparation, can be found in the 2008 report prepared by the AIHW on cancer survival and prevalence (AIHW et al. 2008).

In this survival study, survival statistics were presented for all cancers combined (excluding non-melanoma skin cancers) and selected cancers, with these being the most common invasive cancers diagnosed in Australia in 2004 and the National Health Priority Area cancers. Note that in the survival report, cancer of unknown primary site pertains to the ICD-codes of C26, C39, C76 and C80; uterus cancer pertains to the ICD-10 code of C54; non-Hodgkin lymphomas pertain to the ICD-10 codes of C82–C85 and C96; and leukaemias pertain to C91–C95. Thus, these cancer sites are defined differently from what is generally considered in this report.

Risk to age 75 and 85 years

The calculations of risk shown in this report are measures that approximate the risk of developing (or dying from) cancer before a given age, assuming that the risks at the time of estimation remained throughout life. It is based on a mathematical relationship with the cumulative rate.

The cumulative rate is calculated by summing the age-specific rates for all specific age groups:

$$\text{Cumulative rate} = \frac{5 \times (\text{Sum of the age-specific rates}) \times 100}{100{,}000}$$

The factor of 5 is used to indicate the 5 years of life in each age group and the factor of 100 is used to present the result as a percentage. As age-specific rates are presented per 100,000 population, the result is divided by 100,000 to return the age-specific rates to a division of cases by population. Cumulative risk is related to cumulative rate by the expression:

$$\text{Cumulative risk} = 1 - e^{-rate/100}$$

Where the rate is expressed as a percentage.

The risk is expressed as a '1 in n' proportion by taking the inverse of the above formula:

$$n = \frac{1}{(1 - e^{-rate/100})}$$

For example, if n equals 3, then the risk of a person in the general population being diagnosed with cancer before the age of 75 years (or 85 years) is 1 in 3. Note that these figures are average risks for the total Australian population. An individual person's risk may be higher or lower than the estimated figures, depending on their particular risk factors.

APPENDIX G: DATA SOURCES

To provide a comprehensive picture of national cancer statistics in this report, a range of data sources were used, including AIHW and external data sources. These data sources are described in this appendix.

Australian Cancer Database

The Australian Cancer Database (ACD) is a database that holds information about 1.8 million cancer cases of Australians who were diagnosed with cancer (other than basal cell and squamous cell carcinomas of the skin) between 1982 and 2007. Data from this source are used in chapters 2, 4 and 5.

The AIHW compiles and maintains the ACD, in partnership with the Australasian Association of Cancer Registries (AACR), whose member registries provide data to the AIHW on an annual basis. Each Australian state and territory has legislation that makes the reporting of all cancers (excluding basal cell and squamous cell carcinomas of the skin) mandatory. Pathology laboratories and Registrars of Births, Deaths and Marriages across Australia must report on cancer cases, as do hospitals, radiation oncology units and nursing homes in some (but not all) jurisdictions.

The data provided to the AIHW by the state and territory cancer registries include, at a minimum, an agreed set of items that provide information about the individual with the cancer and the characteristics of the cancer (see Table G.1). In addition to the agreed set of items, registries often provide other data which are also included in the ACD. For example, data on ductal carcinoma in situ (DCIS) are not part of the agreed ACD data set but are regularly provided by the state and territory registries.

Once the data are received from the state and territory cancer registries, the AIHW assembles the data into the ACD. Internal linking checks are undertaken to identify those who had tumours diagnosed in more than one state or territory; this process reduces the degree of duplication within the ACD to a negligible rate. The ACD is also linked with information on deaths (from the National Death Index) in order to add information on which people with cancer have died (from any cause). Any conflicting information and other issues with the cancer data are resolved through consultation with the relevant state or territory cancer registry.

The registration of cases of cancer is a dynamic process such that records in the state and territory cancer registries may be modified if new information is received. Thus, records in the cancer registries are always open and they are updated as required. In order for these changes to be incorporated into the ACD, a new complete file for all years of cancer data is provided by each of the jurisdictions annually. As a result, the number of cancer cases reported by the AIHW for any particular year may change slightly over time and, in addition, data published by a cancer registry at a certain point in time may differ to some extent from what is published by the AIHW (AIHW 2009d).

The data in the ACD are protected both physically with built-in computer security systems and legislative under the *Australian Institute of Health and Welfare Act 1987* as well as under agreements with the state and territory cancer registries. More information about physical security and legislative protection of the ACD can be found in the National Cancer Statistics Clearing House protocol (AIHW 2009d).

Table G.1: Agreed set of items to be provided by the states and territories to the AIHW for inclusion in the Australian Cancer Database

Person-level attributes	Tumour-level attributes
Person identification number (assigned by the state/territory)	Tumour identification number (assigned by the state/territory)
Surname	Date of diagnosis
First given name	Date of diagnosis flag
Second given name	Age at diagnosis
Third given name	ICD-O-3[(a)] topography code
Sex	ICD-O-3[(a)] morphology code
Date of birth	ICD-10[(b)] disease code
Date of birth flag	Most valid basis of diagnosis
Indigenous status	Statistical local area at diagnosis
Country of birth	Postcode at diagnosis
Date of death	Melanoma thickness (mm)
Age at death	
Cause of death	

(a) International Classification of Diseases for Oncology, 3rd edition.

(b) International Statistical Classification of Diseases and Related Health Problems, 10th revision.

Source: AIHW 2009d.

Non-melanoma skin cancers

Data on all types of cancer, other than two types of non-melanoma skin cancer (NMSC), are reportable and collected by the state and territory registries. The two most common types of NMSC—namely, basal cell carcinoma (BCC) and squamous cell carcinoma (SCC)—are not reportable and are thus not generally recorded in cancer registries in Australia. These two types of skin cancers are by far the most frequently diagnosed cancers in Australia for both males and females (AIHW & CA 2008). A number of other, rarer types of cancer also fall within the NMSC category (for example Merkel cell lesions) and these are reportable cancers.

In the past, the agreed approach was to exclude all NMSC cases from the cancer incidence data produced by the AIHW. However, for the first time this year, a new approach was used whereby all cases that pertained to reportable forms of NMSC were included in the incidence data.

BreastScreen Australia Program data

Data from the BreastScreen Australia Program were used in Chapter 9 to indicate the number of women who had a screening mammogram through the BreastScreen Australia Program as well as indicating the number of cancers detected thought the program. These data are supplied annually to the AIHW by individual state and territory BreastScreen Australia programs for monitoring purposes. They are compiled by the AIHW and reports are produced annually (AIHW 2010c). Mortality data came from the AIHW's National Mortality Database.

Burden of disease data

Information on the burden of disease from selected cancer sites and all cancers combined is shown in Chapter 7 of this report.

The first study that provided an overview of disease and injury burden in Australia was published in 1999 (AIHW: Mathers et al. 1999). The second and most recent such study was published in 2007, and it provides burden of disease information in relation to 2003 as well as projections to 2023 (Begg et al. 2007).

The summary measure used in that study is the disability-adjusted life year or DALY, with this term used interchangeably with 'burden of disease'. The DALY quantifies the gap between a population's actual health status and some 'ideal' or reference status, with time (either lived in health states or lost through premature death and illness) being the unifying 'currency' for combining the impact of mortality and non-fatal health outcomes.

A DALY for a disease or health condition is calculated as the sum of the years of life lost due to premature mortality (YLL) in the population and the equivalent 'healthy' years lost due to disability (YLD) for incident cases of the health condition such that:

$$DALY = YLL + YLD$$

where YLL = number of deaths x standard life expectancy at age of death, and

YLD = incidence x duration x severity weight.

Further information about how the DALY was derived, as well as further information on interpretation of burden of disease data, can be found in Begg and associates (2007).

This report presents the projected burden of disease due to cancer for 2010. These data were estimated by Begg and associates using data on the burden of cancer over the period from 1979 to 2003. More information about how these projection estimates were derived can be found in the report by Begg and associates (Begg et al. 2007).

In the burden of disease study, some cancer groupings are defined differently from that used in most other sections of this report. Table G.2 summarises the cancer groupings used in the report by Begg and associates and their respective ICD-10 codes.

Table G.2: Cancer groupings and ICD-10 codes used for calculation of burden of disease

Cancer site	ICD-10 codes
Mouth and oropharynx cancers	C00–C14
Oesophagus cancer	C15
Stomach cancer	C16
Colorectal cancer	C18–C21
Liver cancer[a]	C22
Gallbladder cancer	C23–C24
Pancreas cancer	C25
Larynx cancer	C32
Lung cancer	C33–C34
Bone and connective tissue cancer	C40–C41, C49
Melanoma of the skin	C43
Non-melanoma skin cancers	C44
Breast cancer[b]	C50
Cervix cancer	C53
Corpus uteri cancer	C54
Ovary cancer	C56, C57.0–C57.4
Prostate cancer	C61
Testicular cancer	C62
Kidney cancer	C64–C66, C68
Bladder cancer	C67
Eye cancer	C69
Brain cancer	C71
Thyroid cancer	C73
Lymphoma	C81–C85, C96
Multiple myeloma	C88–C90
Leukaemia	C91–C95
Other malignant neoplasms	C17, C26–C31, C37–C39, C45–C48, C51–C52, C57.7–C57.9, C58–C60, C36, C70, C72, C74–C75
All cancers	**C00–C96**

(a) Excluding hepatitis B- and C-related liver cancer.

(b) Pertains to breast cancer in females only.

Source: Begg et al. 2007.

GLOBOCAN

One of the main sources of internationally comparable data on cancer is the GLOBOCAN database which is prepared by the International Agency for Research on Cancer (IARC) (Ferlay et al. 2010). The IARC collates cancer incidence and mortality data from cancer registries around the world and uses those data to produce estimates for a 'common year'. The most recent GLOBOCAN estimates for which data could be obtained are for 2008. GLOBOCAN data are shown in Chapters 2, 3 and 5 of this report for all cancers combined.

For the GLOBOCAN data, all cancers combined were defined as those cancers that were coded as 'C00 to C97' in ICD-10 with exception of code C44 which indicates non-melanoma skin cancer. Thus the definition used in those data is different from that used in most other sections of this report.

In the GLOBOCAN database, age-standardised incidence and mortality rates are provided, with the data standardised to the 1966 WHO World Standard Population.

The database does not include confidence intervals. In order to provide some guidance with regards to whether the differences were statistically significant, the AIHW calculated 'approximate' confidence intervals (with the methodology for doing so explained in Appendix F).

National Bowel Cancer Screening Program data

Data from the National Bowel Cancer Screening Register were used in Chapter 9 to indicate the number of persons who participated in the National Bowel Cancer Screening Program as well as to indicate the number of bowel cancers detected through the program. These data are supplied twice a year to the AIHW by Medicare for monitoring purposes. They are compiled by the AIHW and reports are produced annually (AIHW 2010a).

National Cervical Screening Program data

Data from the National Cervical Screening Program were used in Chapter 9 to indicate the number of women who participated in the screening program. Participation data are supplied to the AIHW by state and territory cervical cytology registers and include all women screened in each jurisdiction, not just those women resident in each jurisdiction (AIHW 2010d). The two exceptions to this are Victoria, which only supplies data on women resident in Victoria, and the Australian Capital Territory, which only registers women resident in the Australian Capital Territory. Incidence data came from the Australian Cancer Database.

National Death Index

Cancer incidence data were linked to the National Death Index (NDI) in order to provide survival and prevalence information (Chapters 5 and 6). The NDI is a database that is maintained by the AIHW; it contains information on all deaths that have occurred in Australia since 1980.

The NDI database comprises the following variables for each deceased person: name; alternative names (including maiden names); date of birth (or estimated year of birth); age at death; sex; date of death; marital status; Indigenous status; state or territory of registration; and registration number. Cause of death information in a coded form is also available. For records to 1996, only the code for underlying cause of death is available. For records from 1997, the codes for the underlying cause of death and all other causes of death mentioned on the death certificate are available.

This database exists solely for research linkage purposes, such as to gain epidemiological mortality information on individuals in a particular cohort, or with a known disease state. Ethics approval is required for the NDI to be utilised for any particular research project.

National Hospital Morbidity Database

Data from the National Hospital Morbidity Database (NHMD) are used in Chapter 8 of this report to examine the number of cancer-related hospitalisations. The NHMD contains demographic, diagnostic, procedural and duration of stay information on episodes of care for patients admitted to hospital. This annual collection is compiled and maintained by the AIHW, using data supplied by state and territory health authorities. Information from almost all hospitals in Australia is included in the database: public acute and public psychiatric hospitals; private acute and private psychiatric hospitals; and private free-standing day hospital facilities. The database is episode-based and it is not possible to count patients individually.

Data are held in the NHMD for the years from 1993–94 to 2008–09. In this report data on cancer-related hospitalisations are presented for 2007–2008 and 2008–2009.

The hospitalisations data presented in this report exclude those hospitalisations for which the care type was reported as *Newborn with no qualified days, Hospital boarder* or *Posthumous organ procurement*. Thus, it includes all other admitted care hospitalisations including those with a care type of *Acute care, Rehabilitation care* and *Palliative care*.

Comprehensive hospital statistics from this database are released by the AIHW on an annual basis (AIHW 2010f). Further information about this data source is available in those reports.

National Mortality Database

Data from the National Mortality Database are used in Chapter 3 and 4 to provide statistical information on mortality in Australia due to cancer.

The registration of deaths has been compulsory since the mid-1850s and this information is registered with the relevant state and territory Registrar of Births, Deaths and Marriages. Since 1906, the Commonwealth Statistician has compiled the information collected by the Registrars and published national death information.

The National Mortality Database, which is maintained by the AIHW, currently contains information for all deaths in Australia registered from 1964 to 2007. In this report data is presented for the 26-year period 1982 to 2007.

The information on deaths from the Registrars is coded nationally by the Australian Bureau of Statistics (ABS) according to rules set forward in various versions of the ICD. Deaths are coded to reflect the underlying cause of death. As well, since 1997, multiple causes of death have been added to the mortality data.

Over time, changes have been made to the coding and processing of mortality data that affect comparability of the data. For instance, data holdings on cause of death for 1987 to 1996 were manually coded using the ninth revision of the ICD, while the corresponding data for 1997 onwards were coded using ICD-10, using an automated system with slightly different coding rules. The change to the coding and processing of mortality data introduced a break in the time series.

In the National Mortality Database, mortality data are provided in two different ways: one variable is based on the year in which people *died* and the other is based on the year in which the death was *registered*. For the purposes of this report, mortality data are shown based on the year of *death*, except for the most recent

year (namely, 2007) where the number of people whose death was *registered* is used. Previous investigation has shown that the year of death and its registration coincide for the most part. However, in some instances, deaths at the end of each calendar year may be held over until the following year, as are deaths whose cause requires further examination by a coroner (for example possible suicides). Thus, year of death information for the latest available year generally underestimates the true number of deaths, with the number of deaths registered in that year being closer to the true value.

Population data

Throughout this report, population data were used to derive rates of, for example, cancer incidence and mortality. The population data were sourced from the ABS Demography section using the most up-to-date estimates available at the time of analysis.

To derive their estimates of the resident populations, the ABS uses the 5-yearly Census of Population and Housing data and adjusts it as follows:

- all respondents in the Census are placed in their state or territory, statistical local area and postcode of usual residence; overseas visitors are excluded
- an adjustment is made for persons missed in the Census (approximately 2%)
- Australians temporarily overseas on Census night are added to the usual residence Census count.

Estimated resident populations are then updated each year from the census data using indicators of population change, such as births, deaths and net migration. More information is available from the ABS website <www.abs.gov.au>.

For the Indigenous comparisons presented in this report (Chapter 4), the most recently released Indigenous experimental estimated resident populations as released by the ABS were used (ABS 2009). Those estimates were based on the 2006 Census of Population and Housing.

APPENDIX H: INCIDENCE OF CANCERS OF THE BLOOD AND LYMPHATIC SYSTEM

Since the ICD-10 classification scheme for cancers of the blood, bone marrow and lymphatic system is considered to be out of date, *incidence* data for such cancers based on a modern classification scheme are presented below. The classification scheme is based on those given by Swerdlow et al. (2008) and Turner et al. (2010), and on consultation with the AACR and the Australian Blood Cancer Registry (ABCR). In this scheme cancers of the blood and lymphatic systems are grouped into broader categories according to their lineage. The main categories are: *lymphoid cancers, myeloid cancers* and *histiocytic cancers*. Within each main category, distinct diseases are defined according to a number of factors, including morphology and genetic features. Table H.1 shows the classification scheme used in this report and Table H.2 shows incidence statistics for 2007 based on this scheme.

Table H.1: Classification of cancers of the blood and lymphatic system

Group name	Morphology codes (all malignant)
Myeloid cancers	
Myeloproliferative cancers	
Chronic myelogenous leukaemia	9863, 9875
Other & unspecified myeloproliferative cancers	9740–42, 9950, 9960–64
Mixed myelodysplastic / myeloproliferative cancers	9876, 9945–46
Myelodysplastic syndromes	9980, 9982–87, 9989
Acute myeloid leukaemias & related precursor cancers	9840, 9861, 9866–67, 9870–74, 9891, 9895–97, 9910, 9920, 9930–31
Acute leukaemias of ambiguous lineage	9805
Unclassifiable myeloid cancers	9860
Lymphoid cancers	
Precursor cell lymphoblastic leukaemia / lymphoma	9727–29, 9835–37
Mature B-cell cancers	
Chronic lymphocytic leukaemia/small lymphocytic lymphoma	9670, 9823
Plasma cell cancers	9731–34
Follicular lymphoma	9690–91, 9695, 9698
Diffuse large B-cell lymphoma	9680
Other mature B-cell cancers	9596, 9671, 9673, 9678–79, 9687, 9689, 9699, 9760–62, 9764, 9766, 9826, 9833, 9940
Mature T-cell and NK-cell cancers	9700–02, 9705, 9708–09, 9714, 9716–19, 9827, 9831, 9834, 9948
Hodgkin lymphomas	9650–55, 9659, 9661–65, 9667
Unclassifiable lymphoid cancers	9590, 9591, 9675, 9684, 9820, 9832
Unclassifiable myeloid or lymphoid cancers	9800–01
Histiocytic and dendritic cell cancers	9750, 9754–58

Table H.2: Incidence of cancers of the blood and lymphatic systems, 2007

	Males			Females			Persons		
	Number	ASR[(a)]	95% CI	Number	ASR[(a)]	95% CI	Number	ASR[(a)]	95% CI
Myeloid cancers	1,865	18.6	17.7–19.4	1,230	10.0	9.5–10.6	3,095	13.8	13.3–14.3
Myeloproliferative cancers	531	5.2	4.7–5.6	390	3.3	3.0–3.6	921	4.2	3.9–4.4
Chronic myelogenous leukaemia	167	1.6	1.4–1.9	96	0.8	0.7–1.0	263	1.2	1.1–1.4
Other & unspecified myeloproliferative cancers	364	3.6	3.2–3.9	294	2.4	2.2–2.7	658	3.0	2.7–3.2
Mixed myelodysplastic/myeloproliferative cancers	127	1.3	1.1–1.6	77	0.6	0.5–0.7	204	0.9	0.8–1.0
Myelodysplastic syndromes	686	7.0	6.5–7.6	413	3.2	2.9–3.6	1,099	4.8	4.5–5.1
Acute myeloid leukaemias & related precursor cancers	503	4.9	4.5–5.3	346	2.9	2.6–3.2	849	3.8	3.6–4.1
Acute leukaemias of ambiguous lineage	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	6	n.p.	n.p.
Unclassifiable myeloid cancers	12	0.1	0.1–0.2	4	n.p.	n.p.	16	0.1	0.0–0.1
Lymphoid cancers	4,116	39.6	38.4–40.8	3,162	26.9	25.9–27.8	7,278	32.8	32.0–33.5
Precursor cell lymphoblastic leukaemia/lymphoma	190	1.8	1.6–2.1	141	1.4	1.2–1.6	331	1.6	1.4–1.8
Mature B-cell cancers	3,085	29.7	28.6–30.7	2,277	19.1	18.3–19.9	5,362	24.0	23.3–24.6
Chronic lymphocytic leukaemia/small lymphocytic lymphoma	684	6.6	6.1–7.1	423	3.5	3.2–3.9	1,107	4.9	4.6–5.2
Plasma cell cancers	721	7.0	6.5–7.5	534	4.4	4.0–4.8	1,255	5.6	5.3–5.9
Follicular lymphoma	461	4.3	3.9–4.7	452	3.9	3.5–4.3	913	4.1	3.8–4.4
Diffuse large B-cell lymphoma	777	7.5	7.0–8.1	597	5.0	4.6–5.4	1,374	6.2	5.8–6.5
Other mature B-cell cancers	442	4.3	3.9–4.7	271	2.3	2.1–2.6	713	3.2	3.0–3.5
Mature T-cell and NK-cell cancers	159	1.5	1.3–1.7	137	1.2	1.0–1.4	296	1.3	1.2–1.5
Hodgkin lymphomas	289	2.7	2.4–3.1	249	2.3	2.0–2.6	538	2.5	2.3–2.8
Unclassifiable lymphoid cancers	393	3.9	3.5–4.3	358	2.9	2.6–3.2	751	3.3	3.1–3.6

Table H.2: Incidence of cancers of the blood and lymphatic systems, 2007 (continued)

	Males			Females			Persons		
	Number	ASR[(a)]	95% CI	Number	ASR[(a)]	95% CI	Number	ASR[(a)]	95% CI
Unclassifiable myeloid or lymphoid cancers	35	0.4	0.3–0.5	27	0.2	0.1–0.3	62	0.3	0.2–0.3
Histiocytic and dendritic cell cancers	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	7	n.p.	n.p.
Total cancers of the blood and lymphatic system	**6,018**	**58.6**	**57.1–60.1**	**4,424**	**37.2**	**36.1–38.3**	**10,442**	**46.9**	**46.0–47.8**

(a) The rates were age–standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population.

Source: AIHW Australian Cancer Database.

APPENDIX I: DEFINITION OF CANCER-RELATED HOSPITALISATIONS

Data on hospitalisations include principal diagnosis—this is the reason determined to be chiefly responsible for the person's hospitalisation. The principal diagnosis recorded is usually a disease (or injury or poisoning), but can also be a specific treatment of an already diagnosed condition, such as chemotherapy for cancer. These treatments are usually coded using Z-codes defined in ICD-10-AM Chapter 21 'Factors influencing health status and contact with health services'.

Due to the method in which the principal diagnosis for hospitalisations of cancer patients is coded, it is insufficient to simply select those hospitalisations for which cancer was recorded as the principal diagnosis—it must also include those hospitalisations where a treatment relating to cancer was recorded as the principal diagnosis.

Many cancer-related health services recorded as a principal diagnosis (such as Z51.1 Chemotherapy or Z12 Special screening examination for neoplasm) are specific only to cancer. However, some (Z45.1 and Z45.2 Adjustment and management of infusion pumps or vascular devices) apply to a number of disease types.

For some cancer-related health services (such as same-day chemotherapy), the Australian Coding Standards (NCCH 2008a) stipulate that the principal diagnosis is to be coded to reflect the treatment with the type(s) of cancer listed as an additional diagnosis. This standard does not apply, however, to all cancer-related health services.

Thus, for the purposes of examining the number of admitted patient hospitalisations that arose specifically due to invasive cancer and were directly related to treatment/care for cancer, 'cancer–related hospitalisations' were identified in this report as those hospitalisations in which:

- the principal diagnosis was cancer (ICD-10 AM codes C00–C97, D45, D46, D47.1 and D47.3)

or

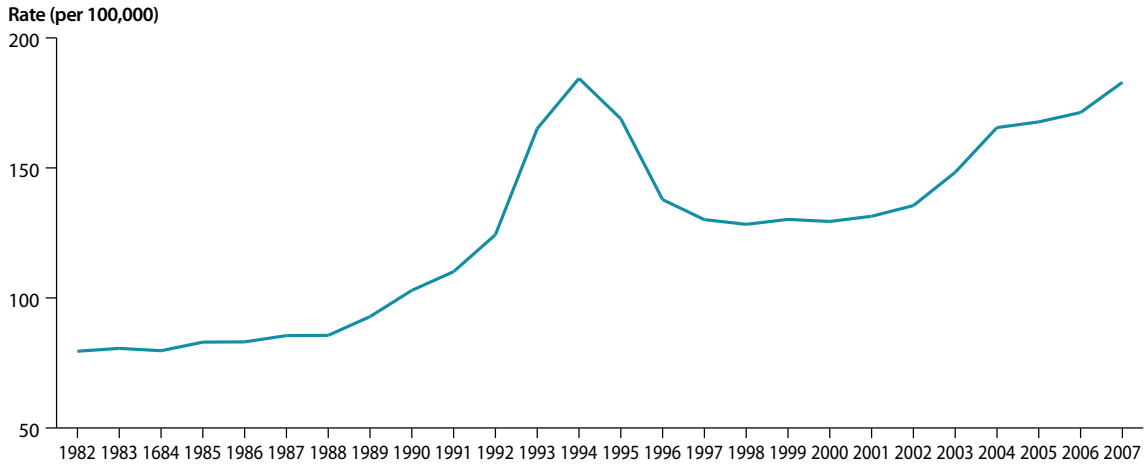
- the principal diagnosis was related to health services or treatment for cancer. This includes a principal diagnosis of one of the following cancer-specific ICD-10-AM Z codes:
  - Z03.1 Observation for suspected malignant neoplasm
  - Z08 Follow-up examination after treatment for malignant neoplasms
  - Z12 Special screening examination for neoplasm
  - Z40 Prophylactic surgery
  - Z51.0 Radiotherapy session
  - Z51.1 Pharmacotherapy session for neoplasm
  - Z54.1 Convalescence following radiotherapy
  - Z54.2 Convalescence following chemotherapy
  - Z80 Family history of malignant neoplasm
  - Z85 Personal history of malignant neoplasm

or

- a principal diagnosis of one of the following non-cancer specific ICD-10-AM Z codes with an additional diagnosis of cancer (ICD-10 AM codes C00–C97, D45, D46, D47.1 and D47.3):
  - Z29.1 Prophylactic immunotherapy
  - Z29.2 Other prophylactic chemotherapy
  - Z42.0 Follow-up care involving plastic surgery of head and neck
  - Z42.1 Follow-up care involving plastic surgery of breast
  - Z45.1 Adjustment and management of infusion pump
  - Z45.2 Adjustment and management of vascular access device.

APPENDIX J: ESTIMATING PROSTATE CANCER INCIDENCE IN 2010

Age-standardised incidence rates of prostate cancer in Australia have undergone a number of fluctuations since 1982. Sharp increases in the age-standardised incidence rate of prostate cancer began to appear in the early 1990s with the introduction of PSA testing, peaking in 1994 but levelling out by about 1998. Since 2002 there has been a further rapid increase in the number of new cases diagnosed, with rates climbing to a similar peak in 2007 (Figure J.1). This volatile fluctuation of age-standardised incidence rates makes it difficult to predict future trends. As a result of this uncertainty, estimates for prostate cancer incidence in 2010 have been modelled separately to all other cancers.



Note: The rates were age-standardised to the Australian population as at 30 June 2001.

Source: AIHW Australian Cancer Database.

Figure J.1: Trends in age-standardised incidence rates for prostate cancer (ICD-10 C61), Australia, 1982–2007

Prostate cancer and the effects of PSA testing

Underpinning the increase in prostate cancer diagnoses is the increasing use of PSA tests. The introduction of PSA testing in Australia in the late 1980s was responsible for the detection of a large number of previously undiagnosed prostate cancers in the early-mid-1990s. Following the peak in incidence in 1994, incidence rates returned to trends similar to before the introduction of PSA testing; however, incidence data for 2002–2007 show a second significant increase in the detection of prostate cancer. It is unclear whether this trend will continue or whether incidence rates will return to similar trends as they did in the late 1990s.

Two items for PSA tests were listed on the Medicare Benefits Schedule (MBS) in 1993 (item numbers 66357 and 66359); however, these covered both screening and monitoring. In May 2001, a single item (66655) which covered one PSA test for screening in a 12-month period was listed, enabling screening activity for prostate cancer to be quantified. Examination of this last item (66655) shows a relationship between the level of PSA testing for screening purposes and prostate cancer incidence and may provide some insight into future trends.

MBS data to June 2010 (<https://www.medicareaustralia.gov.au/statistics/mbs_item.shtml>) show that PSA tests for screening (item number 66655) increased from 490,611 tests in 2002 (the first full year for which data is available) to a peak of 946,893 tests in 2008, but fell to 845,403 tests in 2009 (the last full year for which data is available). Pro-rata data to June 2010 (381,789 tests) suggests that this downward turn will continue.

Analysis of national PSA tests and incidence by 10-year age groups from 2002 to 2007 indicate a constant relationship over time for each 10-year age group (Table J.1). The one exception to this relationship was for males aged between 75 and 84 years where there was a significant, but decreasing, relationship over time. The reasons for this are unclear, but could be a result of the disease being diagnosed earlier in the younger age groups in the preceding years.

Assuming these age-specific relationships between PSA testing and incidence will continue from 2008 to 2010, the number of new cases of prostate cancer diagnosed in each 10-year age group was estimated by applying the estimated incidence: PSA test ratio to the number of PSA tests for 2008 to 2010. For most age groups the estimated ratio was the mean of the incidence: PSA test ratio for 2002–2007; the exception to this was for the 75–84 year age group where the incidence: PSA test ratio was estimated using an exponential decay function. This method estimates a peak of 20,860 new cases of prostate cancer in 2008 falling to 18,345 new cases in 2009 and 16,764 new cases in 2010.

Table J.1: Ratio of PSA tests for screening and prostate cancer incidence, by age group, 2002–2010

Age group		2002	2003	2004	2005	2006	2007	2008	2009	2010
0–34 years	PSA tests	5,205	5,607	6,459	7,641	8,523	10,265	12,104	11,314	9,158
	Incidence	<3	<3	<3	<3	<3	<3	<3	<3	<3
	Ratio	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
35–44 years	PSA tests	30,794	32,424	38,151	46,237	50,482	62,231	77,993	72,462	62,366
	Incidence	<30	<40	<50	<40	<70	<70	<80	<80	<70
	Ratio	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
45–54 years	PSA tests	120,403	127,161	147,141	169,863	184,529	224,387	254,525	226,613	198,026
	Incidence	688	689	943	1,052	1,131	1,309	1,514	1,348	1,178
	Ratio	0.006	0.005	0.006	0.006	0.006	0.006	0.006	0.006	0.006
55–64 years	PSA tests	160,268	177,833	202,406	226,968	247,388	283,252	306,046	268,768	242,808
	Incidence	2,888	3,510	4,269	4,682	5,192	5,743	6,159	5,408	4,888
	Ratio	0.018	0.020	0.021	0.021	0.021	0.020	0.020	0.020	0.020
65–74 years	PSA tests	121,988	132,470	141,723	151,082	165,372	187,069	197,170	177,332	168,366
	Incidence	4,459	4,951	5,846	5,901	6,184	6,884	7,507	6,751	6,410
	Ratio	0.037	0.037	0.041	0.039	0.037	0.037	0.038	0.038	0.038
75–84 years	PSA tests	44,334	51,643	57,449	62,862	72,487	82,985	88,120	78,986	73,300
	Incidence	3,232	3,664	3,912	3,956	4,002	4,285	4,307	3,589	3,096
	Ratio	0.073	0.071	0.068	0.063	0.055	0.052	0.049	0.045	0.042
85+ years	PSA tests	7,619	7,916	7,711	7,886	9,097	10,515	10,935	9,928	9,554
	Incidence	924	951	940	1,030	1,001	1,116	1,294	1,175	1,130
	Ratio	0.121	0.120	0.122	0.131	0.110	0.106	0.118	0.118	0.118
All ages	PSA tests	490,611	535,054	601,040	672,539	737,878	860,704	946,893	845,403	763,578
	Incidence	12,214	13,800	15,955	16,656	17,575	19,403	20,860	18,345	16,764

Notes

1. The total number of PSA tests for 2010 is estimated by doubling the number of PSA tests between 1 January 2010 and 30 June 2010.
2. Incidence: PSA test ratios for 2002–2007 are calculated as the number of new cases of prostate cancer diagnosed divided by the number of PSA tests for each calendar year.
3. Incidence: PSA test ratios for 2008, 2009 and 2010 are inferred from the incidence: PSA test ratios for 2002–2007.
4. Incidence counts for 2008, 2009 and 2010 are estimated by applying the inferred incidence: PSA test ratio to the number of PSA tests.

Source: Medicare Australia statistics: Medicare Benefits Schedule Item 66655; AIHW Australian Cancer Database.

GLOSSARY

This section provides a general description of the terms used in this report. The terms have been defined in the context of this report; some terms may have other meanings in other contexts.

Additional diagnosis: a condition or complaint either coexisting with the principal diagnosis or arising during the episode of care.

Administrative databases: observations about events that are routinely recorded or required by law to be recorded. Such events include births, deaths, hospital separations and cancer incidence. Administrative databases include the Australian Cancer Database, the National Mortality Database and the National Hospital Morbidity Database.

Admitted patient: a person who undergoes a hospital's formal admission process to receive treatment and/or care. Such treatment or care can occur in hospital and/or in the person's home (as a 'hospital-in-home' patient).

Age-specific rate: a rate for a specific age group. The numerator and denominator relate to the same age group.

Age-standardisation: a method of removing the influence of age when comparing populations with different age structures. This is usually necessary because the rates of many diseases vary strongly (usually increasing) with age. The age structures of the different populations are converted to the same 'standard' structure; then the disease rates that would have occurred with that structure are calculated and compared.

Associated cause of death: any other condition or event that was not related to the underlying cause of death but was still considered to contribute to the individual's death.

Average length of stay: the average (mean) number of patient days for admitted patient episodes. Patients admitted and separated on the same date are allocated a length of stay of 1 day.

Benign: non-cancerous tumours that may grow larger but do not spread to other parts of the body.

Cancer (malignant neoplasm): a large range of diseases in which some of the body's cells become defective, begin to multiply out of control, can invade and damage the area around them, and can also spread to other parts of the body to cause further damage.

Carcinoma: a cancer that begins in the lining layer (epithelial cells) of organs, such as the ovary.

Confidence interval (CI): a statistical term describing a range (interval) of values within which we can be 'confident' that the true value lies, usually because it has a 95% or higher chance of doing so.

Crude rate: the number of events in a given period divided by the size of the population at risk in a specified time period.

Crude survival: the proportion of people alive at a specified point in time subsequent to the diagnosis of cancer.

DALYs (disability-adjusted life years): a year of healthy life lost, either through premature death or equivalently through living with disability due to illness or injury. It is the basis unit used in burden of disease and injury estimates.

Death due to cancer: a death where the underlying cause is indicated as cancer.

Heath expenditure: includes expenditure on health goods and services (for example medications, aids and appliances, medical treatment, public health, research) which collectively are termed current expenditure; and on health-related investment which is often referred to as capital expenditure.

Hospitalisation: see Separation.

Incidence: the number of new cases (of an illness or event, and so on) occurring during a given period.

International Statistical Classification of Diseases and Related Health Problems: the World Health Organization's internationally accepted classification of death and disease. The tenth revision (ICD-10) is currently in use. ICD-10-AM is the Australian modification of ICD-10; it is used for diagnoses and procedures recorded for patients admitted to hospitals (see Appendix E).

Invasive: see Malignant.

Length of stay: duration of hospital stay, calculated by subtracting the date the patient was admitted from the day of separation. All leave days, including the day the patient went on leave, are excluded. A same-day patient is allocated a length of stay of 1 day.

Limited-duration prevalence: the number of people alive at a specific time who have been diagnosed with cancer over a specified period (such as the previous 5 or 25 years).

Malignant: a tumour with the capacity to spread to surrounding tissue or to other sites in the body.

Metastasis: see Secondary cancer.

Mortality due to cancer: the number of deaths which occurred during a specified period (usually a year) for which the underlying cause of death was recorded as cancer.

Mortality-to-incidence ratio: the ratio of the age-standardised mortality rate for cancer to the age-standardised incidence rate for cancer.

New cancer case: see Incidence.

Neoplasm: an abnormal ('neo', new) growth of tissue. Can be 'benign' (not a cancer) or 'malignant' (a cancer). Also known as a tumour.

Overnight patient: an admitted patient who receives hospital treatment for a minimum of 1 night (that is, is admitted to, and separates from, hospital on different dates).

Pap test: Papanicolaou test, a procedure to detect cancer and pre-cancerous conditions of the female genital tract.

Patient days: the number of full or partial days of stay for patients who were admitted for an episode of care and who underwent separation during the reporting period. A patient who is admitted and separated on the same day is allocated one patient day.

Population estimates: official population numbers compiled by the Australian Bureau of Statistics at both state and territory and statistical local area levels by age and sex, as at 30 June each year. These estimates allow comparisons to be made between geographical areas of differing population sizes and age structures (see Appendix E).

Prevalence (or complete prevalence): the total number of people alive at a specific date who have ever been diagnosed with a particular disease such as cancer.

Primary cancer: a tumour that is at the site where it first formed (also see Secondary cancer).

Principal diagnosis: the diagnosis listed in hospital records to describe the problem that was chiefly responsible for the patient's episode of care in hospital.

Procedure: a clinical intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, requires specialised training and/or requires special facilities or equipment available only in the acute-care setting.

Relative survival: the ratio of observed survival of a group of persons diagnosed with cancer to expected survival of those in the corresponding general population after a specified interval following diagnosis (such as 5 or 10 years).

Risk factor: any factor that represents a greater risk of a health disorder or other unwanted condition or event. Some risk factors are regarded as causes of disease, others are not necessarily so. Along with their opposites, namely protective factors, risk factors are known as 'determinants'.

Same-day patient: a patient who is admitted to, and separates from, hospital on the same date.

Secondary cancer: a tumour that originated from a cancer elsewhere in the body. Also referred to as a metastasis.

Separation: An episode of care for an admitted patient which may include a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay that begins or ends in a change of type of care (for example from acute to rehabilitation). In this report, separations are also referred to as hospitalisations.

Statistical significance: an indication from a statistical test that an observed difference or association may be significant or 'real' because it is unlikely to be due just to chance. A statistical result is usually said to be 'significant' if it would occur by chance only once in twenty times or less often (see Appendix F for more information about statistical significance).

Stage: the extent of a cancer in the body. Staging is usually based on the size of the tumour, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body.

Symptom: any indication of a disorder that is apparent to the person affected.

Underlying cause of death: the disease or injury that initiated the sequence of events leading directly to death.

YLD (years of healthy life lost due to disability): for each new case of cancer, YLD equals the average duration of the cancer (to remission or death) multiplied by a severity weight for cancer (which depends upon its disabling effect over the disease duration).

YLL (years of life lost): for each new case, YLL equals the number of years between premature death and the standard life expectancy for the individual.

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