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Cancer in Australia

An overview 2014

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Contents

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Abbreviations

ABS	Australian Bureau of Statistics
ACD	Australian Cancer Database
ACHI	Australian Classification of Health Interventions
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ALL	acute lymphoblastic leukaemia
ALOS	average length of stay
AML	acute myeloid leukaemia
ASGC	Australian Standard Geographical Classification
ASGS	Australian Statistical Geography Standard
ASR	age-standardised rate
CA	Cancer Australia
CI	confidence interval
CLL	chronic lymphocytic leukaemia
CML	chronic myelogenous leukaemia
DCIS	ductal carcinoma in situ
DCO	death-certificate-only
FOBT	faecal occult blood test
GBD	Global Burden of Diseases
GHE	Global Health Estimates
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	International Classification of Diseases for Oncology
ICD-O-3	International Classification of Diseases for Oncology, Third Edition
IRSD	Index of Relative Socio-economic Disadvantage
MBS	Medicare Benefits Schedule
MDS	Myelodysplastic syndromes

MIR	mortality-to-incidence ratio
NCCH	National Centre for Classification in Health
NDI	National Death Index
NHL	Non-Hodgkin lymphoma
NHMD	National Hospital Morbidity Database
NMD	National Mortality Database
No.	number
NSW	New South Wales
NT	Northern Territory
OLS	ordinary least squares
Pap test	Papanicolaou smear (cervical smear test)
PSA	prostate-specific antigen
Qld	Queensland
SA	South Australia
Tas	Tasmania
Vic	Victoria
WA	Western Australia
WHO	World Health Organization

Symbols

$	Australian dollars, unless otherwise specified
%	per cent
+	and over
. .	not applicable
n.p.	not published (data cannot be released due to quality issues)

Summary

Cancer in Australia: an overview 2014 was prepared by the Australian Institute of Health and Welfare with support from state and territory members of the Australasian Association of Cancer Registries. It provides comprehensive national information and statistics on cancer, including the latest available data and projections, as well as trends over time. Information by Aboriginal and Torres Strait Islander status, state and territory, remoteness area, life stages and socioeconomic disadvantage are also presented.

Cancer is a major cause of illness in Australia

In 2014, it is estimated that 123,920 Australians will be diagnosed with cancer (excluding basal and squamous cell carcinoma of the skin, as these cancers are not notifiable diseases in Australia). More than half (55%) of the cancer cases diagnosed in Australia are expected to be for males. The most commonly reported cancers in 2014 are expected to be prostate cancer, followed by colorectal (bowel) cancer, breast cancer in females, melanoma of the skin, and lung cancer.

Between 1982 and 2014, the number of new cancer cases diagnosed more than doubled—from 47,417 to 123,920. This increase can be largely attributed to the rise in the incidence of prostate cancer, colorectal cancer, breast cancer in females and lung cancer. The increase can also be partly explained by the ageing and increasing size of the population, improved diagnoses through population health screening programs, and improvements in technologies and techniques used to identify and diagnose cancer.

Mortality rate due to cancer has fallen

In 2014, it is estimated that nearly 45,780 Australians will die from cancer. Cancer accounted for about 3 in 10 deaths in Australia. For all cancers combined, the age-standardised mortality rate is estimated to decrease by 20%, from 209 per 100,000 in 1982 to 168 per 100,000 in 2014.

Survival improved over time, but not consistent across all cancers

Five-year survival from all cancers combined increased from 46% in 1982–1986 to 67% in 2007–2011. The cancers with the largest survival gains over this time were prostate cancer, kidney cancer and non-Hodgkin lymphoma.

People living in Australia who were diagnosed with cancer generally had better survival prospects compared with people living in other countries and regions who were diagnosed with cancer.

Cancer outcomes differ across population groups

Cancer outcomes differ by Aboriginal and Torres Strait Islander status and remoteness area. In 2008–2012, for all cancers combined, Indigenous Australians experienced higher mortality rates than non-Indigenous Australians. In 2005–2009, incidence rates were highest for those living in *Inner regional* areas of Australia; in 2008–2012, mortality rates were highest for those living in *Very remote* areas.

Data at a glance

Estimated incidence of cancer in 2014

Table 1: Estimated 20 most commonly diagnosed cancers, Australia, 2014[a]

Males			Females		
Site/type (ICD-10 codes)	**Cases**	**ASR**[b]	**Site/type (ICD-10 codes)**	**Cases**	**ASR**[b]
Prostate (C61)	17,050	128.7	Breast (C50)	15,270	114.5
Colorectal (C18–C20)	9,290	73.9	Colorectal (C18–C20)	7,340	51.5
Melanoma of the skin (C43)	7,440	59.7	Melanoma of the skin (C43)	5,210	39.4
Lung (C33–C34)	6,860	54.8	Lung (C33–C34)	4,720	33.2
Head and neck (C00–C14, C30–C32)	3,260	25.9	Uterus (C54–C55)	2,490	17.9
Lymphoma (C81–C85)	3,110	25.2	Lymphoma (C81–C85)	2,430	17.9
Leukaemia (C91–C95)	2,110	17.0	Thyroid (C73)	1,890	15.4
Bladder (C67)	2,060	16.7	Leukaemia (C91–C95)	1,440	10.4
Kidney (C64)	2,000	15.9	Ovary (C56)	1,430	10.5
Pancreas (C25)	1,530	12.2	Pancreas (C25)	1,410	9.7
Stomach (C16)	1,460	11.7	Unknown primary site (C80)	1,210	7.8
Unknown primary site (C80)	1,430	11.7	Head and neck (C00–C14, C30–C32)	1,160	8.4
Liver (C22)	1,260	10.1	Kidney (C64)	1,060	7.8
Oesophagus (C15)	1,070	8.5	Cervix (C53)	865	7.0
Brain (C71)	1,060	8.6	Stomach (C16)	785	5.4
Myeloma (C90)	975	7.8	Brain (C71)	740	5.6
Myelodysplastic syndromes (D46)	910	7.5	Myeloma (C90)	700	4.9
Testis (C62)	770	6.7	Bladder (C67)	675	4.5
Mesothelioma (C45)	640	5.1	Myelodysplastic syndromes (D46)	490	3.3
Thyroid (C73)	630	5.2	Oesophagus (C15)	455	3.1
All cancers combined[c]	**68,260**	**540.4**	**All cancers combined**[c]	**55,660**	**406.2**

(a) The 2014 estimates are based on 2002–2011 incidence data (see Appendix G). The estimates are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5.

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

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

Source: AIHW Australian Cancer Database 2011.

Estimated mortality from cancer in 2014

Table 2: Estimated 20 most common causes of death from cancers, Australia, 2014[a]

Males			Females		
Site/type (ICD-10 codes)	**Deaths**	**ASR**[b]	**Site/type (ICD-10 codes)**	**Deaths**	**ASR**[b]
Lung (C33–C34)	5,150	41.5	Lung (C33–C34)	3,480	24.1
Prostate (C61)	3,390	28.2	Breast (C50)	3,000	20.9
Colorectal (C18–C20)	2,210	17.9	Colorectal (C18–C20)	1,910	12.6
Pancreas (C25)	1,360	10.9	Pancreas (C25)	1,280	8.6
Unknown primary site (C80)	1,160	9.4	Unknown primary site (C80)	1,180	7.6
Melanoma of the skin (C43)	1,120	9.1	Ovary (C56)	1,000	6.9
Liver (C22)	1,080	8.7	Leukaemia (C91–C95)	695	4.6
Leukaemia (C91–C95)	1,040	8.5	Other digestive organs (C26)	680	4.3
Oesophagus (C15)	975	7.7	Lymphoma (C81–C85)	640	4.2
Lymphoma (C81–C85)	855	7.0	Brain (C71)	540	4.0
Brain (C71)	790	6.3	Liver (C22)	535	3.7
Bladder (C67)	780	6.5	Melanoma of the skin (C43)	505	3.5
Other digestive organs (C26)	740	6.0	Stomach (C16)	415	2.8
Stomach (C16)	700	5.7	Uterus (C54–C55)	405	2.8
Kidney (C64)	625	5.0	Myeloma (C90)	405	2.7
Mesothelioma (C45)	575	4.7	Oesophagus (C15)	380	2.5
Myeloma (C90)	535	4.3	Kidney (C64)	355	2.4
Multiple primary cancers (C97)	415	3.4	Bladder (C67)	335	2.1
Non-Melanoma skin cancer (C44)	345	2.8	Cervix (C53)	245	1.8
Myelodysplastic syndromes (D46)	275	2.3	Multiple primary cancers (C97)	230	1.5
All cancers combined[c]	**26,010**	**211.5**	**All cancers combined**[c]	**19,770**	**133.7**

(a) The 2014 estimates are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5.

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

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

Source: AIHW National Mortality Database.

1 Introduction

Cancer is a major cause of illness in Australia and has a substantial social and economic impact on individuals, families and the community. In 2014, it is estimated that 123,920 people will be diagnosed with cancer and 45,780 people will die from cancer. Findings from recent global burden of disease studies (World Health Organization [WHO] Global Health Estimates [GHE] 2012 and Global Burden of Diseases [GBD] 2010) show that cancer contributed between 16% and 19% of the total disease burden in Australia (The Lancet 2012; WHO 2014). In 2008–09, it was estimated that the total health system expenditure in Australia on cancer and non-cancerous tumours (neoplasms) was $4,526 million (AIHW 2013b).

Box 1.1: Defining cancer

Cancer, also called malignancy, is a term used for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems. There are several main types of cancer:

Carcinoma—is a cancer that begins in the skin or in tissues that line or cover internal organs

Sarcoma—is a cancer that begins in bone, cartilage, fat, muscle, blood vessels or other connective or supportive tissue

Leukaemia—is a cancer that starts in blood-forming tissue, such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the blood

Lymphoma and multiple myeloma—are cancers that begin in the cells of the immune system

Central nervous system cancers—are cancers that begin in the tissues of the brain and spinal cord.

Source: National Cancer Institute 2014.

Purpose and structure of this report

Cancer in Australia: an overview 2014 is the seventeenth in a series and provides a comprehensive overview of national statistics on cancer (see Box 1.1 for a list of terminology in this report). The report presents estimates for 2014 for all cancers combined, as well as for individual cancer sites/types (location of the body in which the cancer began). Estimates for 2014 provide the most up-to-date and current statistics and information possible. Actual cancer incidence data are presented for the period 1982–2011—except for New South Wales and the Australian Capital Territory, where data were available to 2009 and estimated for 2010 and 2011. Further information on data availability is in the Data sources section (page 3) and at Appendix I.

Information and statistics are presented on national population screening programs, cancer incidence, hospitalisations, survival, prevalence and mortality. The report is targeted at a wide audience, including health professionals, policy makers, health planners, educators, researchers, consumers and the general public.

The report is structured according to the general chronological 'journey through the health system' of people diagnosed with cancer. It is acknowledged, however, that this chronological order can vary widely for individuals diagnosed with cancer.

Box 1.2 Breast cancer in females

Both males and females can develop breast cancer. However, the proportion of females who develop breast cancer is much greater than the proportion of males who do so. To present the proportion across the entire population (males and females) would not accurately reflect the burden of breast cancer in females. For this reason, breast cancer data presented in this report refers to breast cancer in females, unless otherwise stated.

Supplementary data for each chapter are available as online Excel tables at <www.aihw.gov.au>. Throughout the report, these online tables are referred to with the prefix 'D'; for example, see online Table D2.1.

Data interpretation

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

The report includes information on the number of cancer cases and deaths, as well as age-specific and age-standardised rates (ASRs).

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 (see Appendix H for further information on age-specific rates).

Age-standardised rates

The use of ASRs is important when making comparisons between and within groups over time in order to take account of differences in the age structure and size of the population. This is especially important for cancer, since the risk of many cancers increases with age. Rates have been standardised to the Australian population as at 30 June 2001 and are generally expressed per 100,000 population (see Appendix H for further information on age-standardisation).

International comparisons

International comparisons are provided for cancer incidence, mortality and survival. Take care when comparing cancer data from different countries as observed differences may be influenced not only by the underlying number of cancer cases (or number of cancer deaths when considering mortality data), but by differences in 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 histology type), coding practices and cancer registration methods, as well as the accuracy and completeness of recording of cancer cases.

Care must be exercised when interpreting differences in rates based on small counts and/or population groups as such rates may be volatile.

Data sources

The primary data sets used to produce this report are the Australian Cancer Database (ACD) and the National Mortality Database (NMD).

Australian Cancer Database

The ACD contains information on all new cases of primary invasive cancer (excluding basal cell and squamous cell carcinoma of the skin) diagnosed in Australia since 1982. Data are collected by state and territory cancer registries from a number of sources and are supplied annually to the Australian Institute of Health and Welfare (AIHW). The AIHW is responsible for compiling the ACD through the National Cancer Statistics Clearing House—a collaboration with the Australasian Association of Cancer Registries. The ACD includes actual data for the period 1982–2011—except for New South Wales and the Australian Capital Territory, where data were available to 2009 and estimated for 2010 and 2011 (see Appendix F).

National Mortality Database

The NMD is a national collection of information for all deaths in Australia from 1968 to 2012 and is maintained by the AIHW. Information on the characteristics and causes of death of the deceased is provided by the Registrars of Births, Deaths and Marriages and coded nationally by the Australian Bureau of Statistics (ABS).

In the NMD, both the *year of occurrence* of the death and the year in which the death was *registered* are provided. In this report, actual mortality data are shown based on the *year of occurrence* of the death, except for the most recent year (namely 2012) where the number of people whose death was *registered* is used. Previous investigation has shown that, due to a lag in processing of deaths, year of death information for the latest available year generally underestimates the true number of deaths, whereas the number of deaths registered in that year is closer to the true value. Note that deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

Several other data sources—including the National Death Index (NDI), the National Hospital Morbidity Database (NHMD) and the 2012 GLOBOCAN database—have also been used to present a broad picture of cancer statistics in Australia.

Additional information about each of the data sources used in this report is at Appendix I.

What is missing from the picture?

Detailed reliable data are not available on many aspects of cancer, so have not been included in this report. Reasons include difficulty in collecting some data and the associated resource implications.

Staging data

Cancer stage at diagnosis refers to the extent or spread of cancer at the time of diagnosis. The stage at cancer diagnosis and subsequent treatment outcomes are important determinants of cancer survival. They can also reflect the extent to which improvements in survival are a result of earlier detection or better treatment.

Although some cancer registries collect information on the stage of cancer at diagnosis, these data are not currently collected nationally. Further, no information is available on the treatments applied to cancers, complications with cancer treatment, or the frequency of recurrence of cancer after treatment. However, there are comprehensive national data on treatments provided through admitted patient hospitalisations—for example, surgery and non-surgical care.

Work is currently underway to enable the collection of national cancer staging data.

Primary health-care information

The primary health-care sector in Australia includes a wide range of professionals, such as general practitioners, pharmacists, ambulance officers, many different types of allied health professionals, community health workers, practice nurses, midwives, Aboriginal health workers and dentists, just to name a few.

The Australian health system collects vast amounts of clinical and administrative data that can yield valuable information that is useful for health policy development and evaluation. These data can also lead to enhanced clinical care and subsequently health outcomes through evidence-based practice, and to safety and quality monitoring (O'Keefe & Connolly 2010).

These data are often collected by individual clinicians for the purpose of recording the encounter with the patient; however, they are often not collected in a standardised format.

In effect, there is very little information publicly available on why an individual attended a primary health-care professional, what intervention the health professional provided to the individual, or the outcome of the visit. This situation causes inefficiencies for those reporting and collecting data. It also severely hampers evidence-based decision making and limits the self-improving capacity of the health system.

For more information on primary health care in Australia, see the feature article in *Australia's health 2014* at <http://www.aihw.gov.au/publication-detail/?id=60129547205>.

Burden of disease due to cancer

To ensure that a health system is aligned to a country's health challenges, policy makers must be able to compare the effects of different conditions that cause ill-health and premature death. Burden of disease analysis simultaneously compares the non-fatal burden (impact of ill-health) and fatal burden (impact of premature death) of a comprehensive list of diseases and injuries. This list, which includes cancers, quantifies the contribution of various risk factors to the total burden as well as to individual diseases and injuries.

The most recent global estimates come from the GBD 2010 and the WHO GHE for 2000–2012. The GBD 2010 covered 241 diseases and injuries and 57 risk factors for 187 countries for 1990, 2005 and 2010 (The Lancet 2012). The WHO GHE for 2000–2012 (WHO 2014) draw on many aspects of GBD 2010, but with different data and methods for some components (WHO 2013).

The last Australian national burden of disease report was published in 2007, based on 2003 data. The AIHW is updating these estimates using the GBD 2010 methodology where possible, with some enhancements to better suit the Australian contexts, and using more recent and detailed Australian data. The revised estimates are expected to be finalised in 2015.

Non-hospital palliative care

This report does not cover palliative care provided in settings other than in admitted patient care. The importance of having a comprehensive national data collection on community-based palliative care services is well recognised (AIHW 2004), but such a collection does not currently exist. Thus, the data in this report describe a subset of all palliative care services delivered in Australia. The relative balance between providing palliative care services in the admitted patient setting and in other settings is unknown, and is likely to vary across the jurisdictions. However, available data suggest that a substantial proportion of palliative care provided in Australia occurs within the admitted patient setting (PCOC 2010).

Health system expenditure on cancer

The most recent data on health system expenditure on cancer are for 2008–09. The AIHW is currently updating disease expenditure estimates to better reflect the current health system environment.

For more information on health system expenditure on cancer in Australia, see *Health system expenditure on cancer and other neoplasms in Australia 2008–09* at <http://www.aihw.gov.au/publication-detail/?id=60129545611>.

2 Risk factors, early detection and prevention

Known risk factors for cancer

A risk factor is any factor associated with an increased likelihood of a person developing a health disorder or health condition, such as cancer. Understanding what causes cancer is essential in setting processes and policies designed 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 and are outlined below. These risk factors were sourced from *World cancer report 2014* (IARC 2014) and *Food, nutrition, physical activity and the prevention of cancer: a global perspective* (WCRF & AICR 2007).

There has been increasing interest in the life course approach to reducing the incidence of chronic diseases, such as cancer. Studies suggest that exposure to risks during childhood, adolescence and early adult life influence the risk of adult incidence and mortality due to chronic disease (Uauy & Solomons 2005). Preventing death from cancer has often focused on early detection and treatment rather than on modifying long-term behaviour and exposure to risk factors.

It should be noted that exposure to a risk factor does not mean that a person will develop cancer. Many people are exposed to at least one cancer risk factor but will never get cancer.

Smoking/passive smoking, and smokeless tobacco use

Smoking is the major cause of cancer in humans. Evidence suggests that active and, for some cases, passive smoking can cause cancers of the:

- bladder
- bone marrow (myeloid leukaemia)
- cervix
- kidney
- larynx
- liver
- lung
- nasal cavity and nasal sinuses
- oral cavity (lip, mouth, tongue)
- oesophagus
- pancreas
- pharynx
- stomach.

Alcohol consumption

Alcohol consumption is an important risk factor for cancer. The risk of cancer increases with the amount of alcohol consumed. Cancers associated with alcohol consumption include those of the:

- breast (females)
- colon and rectum
- larynx
- liver
- oesophagus
- oral cavity (lip, mouth, tongue)
- pharynx.

Diet

Evidence suggests that high intake of particular foods (such as processed meat, and foods that are high in fat) may be associated with an increased risk of cancers of the:

- breast
- colon and rectum
- kidney
- oesophagus
- pancreas
- prostate
- stomach
- uterus.

Obesity and physical inactivity

Obesity is defined as abnormal or excessive fat accumulations that may impair health, and a body mass index of 30 and over.

Physical activity is an important part of a healthy lifestyle. Doing little or no physical activity increases an individual's risk of being overweight or obese, and is associated with a higher risk of developing cancer. Obesity and lack of physical activity increase the risk of cancers of the:

- breast (females)
- colon and rectum
- endometrium
- gallbladder
- kidney
- oesophagus
- ovary
- pancreas.

Chronic infections

Cancer associated with chronic infections (such as viruses, bacteria and parasites) include those of the:

- bladder
- blood or bone marrow (leukaemias)
- cervix
- gallbladder
- liver
- lung
- lymphatic system (lymphomas)
- nasopharynx and oropharynx
- oral cavity (lip, month, tongue)
- stomach.

Family history and genetic susceptibility

Some gene mutations increase the risk of cancer being passed from parent to child. Genetic inheritance increases the risk of cancers of the:

- bladder
- blood or bone marrow (leukaemias)
- breast
- colon and rectum
- gallbladder
- ovary
- pancreas
- prostate
- testis
- thyroid.

Occupational exposures

Occupational exposures include exposures to chemicals, dust, radiation and industrial processes. Cancers that have been found to be caused by occupational exposures include those of the:

- bladder
- blood or bone marrow (leukaemias)
- kidney
- liver
- lung
- lymphatic system (lymphomas)
- mesothelium
- nasal cavity
- nasopharynx
- non-melanoma of the skin
- oesophagus
- oral cavity (lip, mouth, tongue)
- pharynx
- stomach.

Sunlight

Excessive exposure to the ultraviolet rays of the sun is a risk factor for some cancers. The risk of cancer due to excessive exposure to sunlight is highest for people who have fair skin, blond or red hair, freckles, and/or a tendency to burn easily. Sunlight is a risk factor for:

- melanoma of the skin
- non-melanoma skin cancer.

Radiation

Ionising radiation from natural sources, from nuclear accidents and explosions, and from diagnostic X-rays can be risk factors for cancer. The most common source of radiation for the average person is diagnostic X-rays; however, the risk of developing a cancer after an X-ray is minimal and the benefits nearly always outweigh the risk. Ionising radiation can increase the risk of cancers of the:

- blood or bone marrow (leukaemias)
- breast
- lung
- thyroid.

Medical and iatrogenic factors

Medical and iatrogenic factors relate to the inadvertent adverse effect of, or complication resulting from, medical treatment or advice. For example, drugs or treatment used for one disease can potentially lead to the development of a secondary condition. Cancers relating to medical and iatrogenic factors include those of the:

- bladder
- colon and rectum
- kidney
- liver
- lung
- mesothelium
- oesophagus
- pancreas.

Reproductive and hormonal factors

Reproductive hormones are thought to influence the risk of developing some cancers. For women, the risk can be related to reproductive history, endogenous and exogenous hormone exposures and child-bearing. Cancers associated with reproductive and hormonal factors include those of the:

- breast
- endometrium
- ovary
- testis.

Environmental pollution

There are many pollutants in the environment that may cause cancer. People are exposed to these pollutants through the air, drinking water, food, soil, sediments, surface waters and groundwater. Pollution can contribute to cancers of the:

- bladder
- kidney
- liver
- lung
- skin
- stomach.

Early detection through organised population screening

Population-based cancer screening is an organised, systematic and integrated process of testing for signs of cancer or pre-cancerous conditions in asymptomatic populations. In Australia, there are three national population-based screening programs: for breast, cervical and bowel cancers. The three programs—BreastScreen Australia, the National Cervical Screening Program and the National Bowel Cancer Screening Program—are run through partnerships between the Australian Government and state and territory governments. These programs aim to reduce illness and death from these cancers through early detection of cancer and pre-cancerous abnormalities and through effective follow-up treatment.

The programs target specific populations and age groups where evidence shows screening is most effective at reducing cancer-related morbidity and mortality.

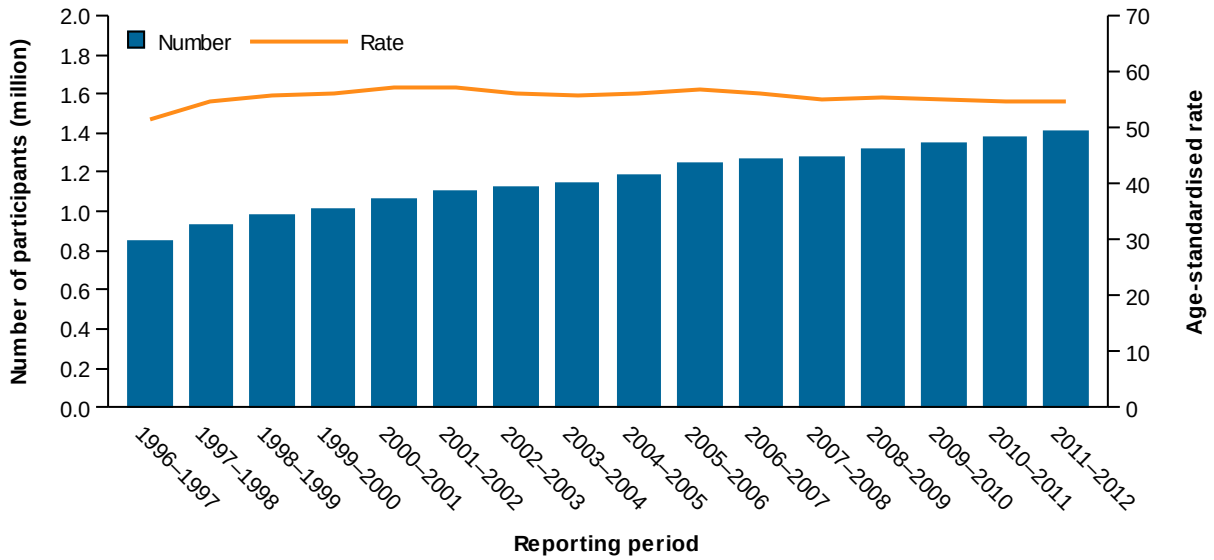
BreastScreen Australia

BreastScreen Australia, established in 1991, led to a rapid increase in the number of breast cancers diagnosed in women. This was due largely to increased detection of breast cancers that were too small to be felt. Screening led to increases in the incidence rate as a result of these cancers being diagnosed earlier than they would have been had they continued to grow until symptoms developed. The mortality rate for breast cancer decreased after BreastScreen Australia was introduced as detection of breast cancer at an earlier stage—when the tumour is often smaller—is associated with increased treatment options and improved treatment outcomes (AIHW 2013a). Additional mortality reductions are attributed to independent treatment advances, including the advent of new systemic therapies.

The program provides free 2-yearly screening mammograms to women aged 40 and over, and actively invites women aged 50–69 to participate.

Key statistics

- In the 2-year period 2011–2012, more than 1.4 million women aged 50–69 had a screening mammogram—a participation rate of 55%. Participation rates were highest for women aged 60–64 (60%) and lowest for those aged 50–54 (49%).
- Participation rates were lower among:
  - Aboriginal and Torres Strait Islander women (38%) than non-Indigenous women (54%)
  - women living in *Very remote* areas (46%) than women living in other regions
  - women who reported speaking a language other than English at home (50%) than women who spoke English at home (55%).
- The ASR of participation for women aged 50–69 was 52% in 1996–1997 when reporting began. This increased to a peak of 57% in 2001–2002 and thereafter remained steady at 55–57%, although the total number of women participating in screening increased (Figure 2.1).
- In 2012, there were 104 invasive breast cancers and 23 ductal carcinomas in situ detected for every 10,000 women screened for the first time. The detection rate was lower among women attending a subsequent screening, with 44 invasive breast cancers and 11 DCISs per 10,000.



Notes:

1. The ASR is the number of women aged 50–69 screened in each reporting period as a percentage of the ABS estimated resident population for women aged 50–69, and age-standardised to the Australian population as at 30 June 2001.
2. Data for this figure are in online Table D2.1.

Source: AIHW analysis of BreastScreen Australia data.

Figure 2.1: Participation number and age-standardised participation rate, BreastScreen Australia, Australia, 1996–1997 to 2011–2012

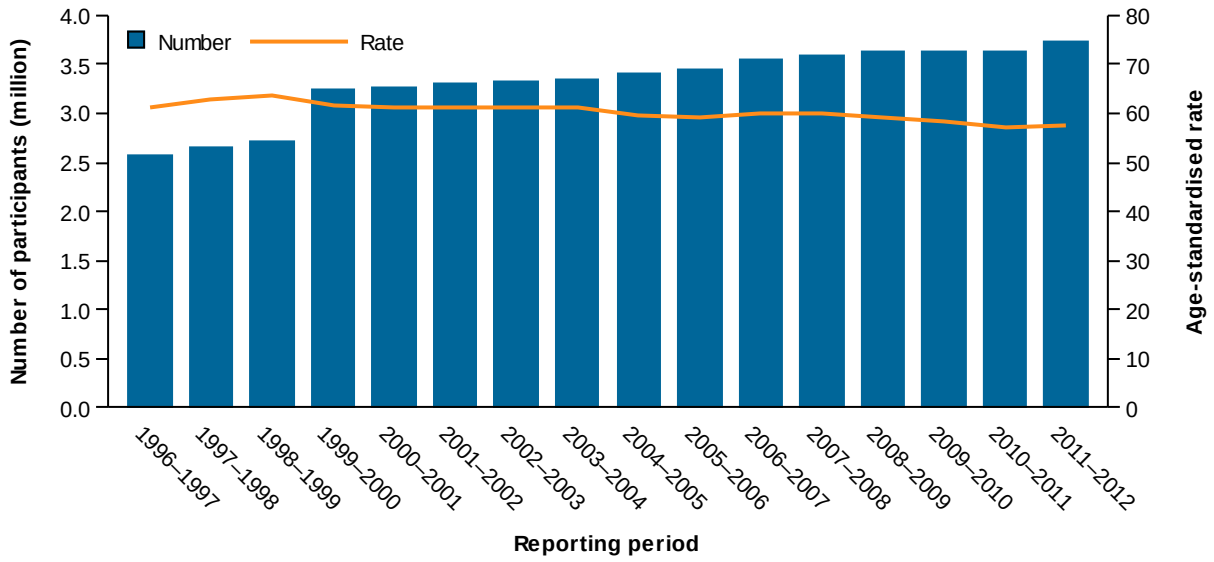
National Cervical Screening Program

The National Cervical Screening Program was established in 1991. It has led to falls in both cervical cancer incidence and mortality due to its ability to detect pre-cancerous abnormalities that may, if left, progress to cancer. With opportunistic cervical screening occurring in Australia since 1960, falls in incidence and mortality of cervical cancer were also evident before this program was introduced (in 1991).

The program targets women aged 20–69 for a 2-yearly Papanicolau (Pap) smear, or 'Pap test'.

Key statistics

- In the 2-year period 2011–2012, more than 3.7 million women aged 20–69 had a screening Pap test—a participation rate of 58% of women in the target population. Participation was highest for women aged 45–49 (64%) and lowest for those aged 20–24 (43%).
- Participation was lower among women living in *Very remote* areas than in other regions, and rose with increasing socioeconomic status—from 52% in areas of lowest socioeconomic status to 64% in areas of highest status.
- The participation rate was 58% in 2011–2012. This has remained relatively stable over time, although the total number of women participating in screening has increased (Figure 2.2).
- In 2012, a high-grade abnormality (pre-cancerous condition) was detected in 16,808 women aged 20–69, at a rate of 8 per 1,000 women screened. Detection presents an opportunity for treatment before possible progression to cancer.



Notes:

1. The ASR is the number of women aged 20–69 screened in each reporting period as a percentage of the ABS estimated resident population for women aged 20–69, adjusted to include only women with an intact cervix, and age-standardised to the Australian population as at 30 June 2001.
2. Data for this figure are in online Table D3.2.

Source: AIHW analysis of state and territory cervical cytology register data.

Figure 2.2: Participation number and age-standardised participation rate, National Cervical Screening Program, Australia, 1996–1997 to 2011–2012

National Bowel Cancer Screening Program

The National Bowel Cancer Screening Program was established in 2006. It is expected to lead to decreases in both cancer incidence and mortality as it has the ability to detect pre-cancerous abnormalities. However, it is likely to take some time for the effect of the program on incidence and mortality to become apparent. The bowel cancer screening program currently offers free screening, using a faecal occult blood test (FOBT), to people turning 50, 55, 60 and 65 years of age. The program is scheduled to be expanded from July 2015, with the phasing in of biennial screening for those aged 50 to 74 by 2020.

Key statistics

Of those people invited to participate in the National Bowel Cancer Screening Program in 2012–13:

- 321,413 returned a completed bowel cancer screening kit for analysis—a participation rate of 33.4%. Participation was higher among women (35.7%) than men (31.1%)
- 23,671 (7.5%) returned a valid screening test and had a positive screening result and 70.4% of those (16,670) had a follow-up colonoscopy recorded
- 404 participants (1 in 32) who underwent a colonoscopy were diagnosed with a confirmed or suspected bowel cancer, and 728 (1 in 17) were diagnosed with an advanced adenoma (pre-cancerous tumour).

What is missing from the picture?

National cancer data do not include whether a new case of cancer was identified through screening, or if cancers identified through screening are diagnosed at an earlier stage than for those that present naturally.

There is no national mechanism for reporting Aboriginal or Torres Strait Islander identification on pathology forms. As a result, state and territory cervical cytology (Pap test) registers are unable to report Indigenous status. Hence, the reporting of cervical screening indicators is not possible nationally for Indigenous women.

Outcome data for the National Bowel Cancer Screening Program—such as follow-up of a positive FOBT result by a primary practitioner, colonoscopy follow-up, histopathology follow-up, and bowel abnormality detected at colonoscopy—are under-reported. The Department of Health is working on a number of steps to improve reporting of outcomes.

3 Incidence of cancer

Key findings

In 2014 in Australia, it is estimated that:

- 123,920 new cases of cancer will be diagnosed
- more than half (55%) of all cancers will be diagnosed in males
- 75% of new cancer cases in males and 65% in females will be diagnosed among those aged 60 and over
- the most commonly diagnosed cancers in males will be prostate cancer (17,050 cases), colorectal cancer (9,290), melanoma of the skin (7,440), lung cancer (6,860) and head and neck cancers (3,260)
- the most commonly diagnosed cancers in females will be breast cancer (15,270 cases), colorectal cancer (7,340), melanoma of the skin (5,210), lung cancer (4,720) and uterine cancer (2,490)
- the age-standardised incidence rate will be 467 per 100,000
- the risk of being diagnosed with cancer before the age of 85 will be 1 in 2 for males and 1 in 3 for females.

About incidence

Incidence data refer to the *number of new cases* of cancers diagnosed in 1 year. It does not refer to the *number of people* newly diagnosed (because one person can be diagnosed with more than one cancer in a year), although the two numbers are likely to be similar.

Cancer incidence data come from the AIHW Australian Cancer Database (ACD) 2011, which contains information on Australians diagnosed since 1982 with primary invasive cancer (excluding basal cell and squamous cell carcinomas of the skin) (see Box 3.1 and Appendix F).

This chapter focuses on the estimated cancer incidence for 2014 and cancer trends from 1982 to 2014. Actual incidence data cover the period 1982–2011—except for New South Wales and the Australian Capital Territory, where data were available to 2009 and estimated for 2010 and 2011 (see Appendix F). Incidence data for 2012–2016 were estimated based on 2002–2011 national cancer incidence data (see Appendix G). The 2012–2016 estimates are only indicative of future trends and the actual incidence may be different from these estimates. They are not forecasts and do not attempt to allow for future changes in cancer detection methods, changes in cancer risk factors or for non-demographic factors (such as government policy changes and economic differences) that may affect future cancer incidence rates.

Summary pages for selected cancers on latest incidence data (2011) and estimates for 2014–2016 are at Appendix B. An overview of incidence statistics for all cancers is at Appendix C.

Box 3.1: Cancer registration in Australia

Registration of all cancers, excluding basal and squamous cell carcinomas of the skin, is required by law in each state and territory. Information on newly diagnosed cancers is collected by each state and territory cancer registry and provided to the AIHW annually to be compiled to form the ACD. Since basal and squamous cell carcinomas of the skin are not notifiable, data on these cancers are not included in the ACD and therefore not in this report. 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).

Estimated number of cases diagnosed

It is estimated that 123,920 new cases of cancer will be diagnosed in Australia in 2014 (excluding basal and squamous cell carcinoma of the skin, as these cancers are not notifiable diseases and hence are not reported to cancer registries). More than half (55%) of these cases are expected to be diagnosed in males (Table 3.1).

Table 3.1: Estimated incidence of all cancers combined[a], Australia, 2014[b]

	Males	Females	Persons
Number of cases	68,260	55,660	123,920
Crude rate	582.9	471.1	526.8
ASR[c]	540.4	406.2	467.3
Per cent (%) of all cancer cases	55.1	44.9	100.0

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

(b) The 2014 estimates are based on 2002–2011 incidence data (see Appendix G). The estimated numbers of cancer cases diagnosed are rounded to the nearest 10. The estimates for males and females may not add up to the estimates for persons due to rounding.

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

Source: AIHW ACD 2011.

Most commonly diagnosed cancers

In 2014 (excluding basal and squamous cell carcinoma of the skin), prostate cancer is estimated to be the most commonly diagnosed cancer in Australia (17,050 cases), followed by colorectal cancer (16,640), breast cancer (15,410), melanoma of the skin (12,640) and lung cancer (11,580). These cancers are expected to account for about 60% of all cancers estimated to be diagnosed in 2014.

Males

Prostate cancer is estimated to be the most commonly diagnosed cancer (17,050 cases), followed by colorectal cancer (9,290), melanoma of the skin (7,440), lung cancer (6,860) and head and neck cancers (3,260) (Table 3.2). Head and neck cancers incorporate cancer of the lip, tongue, mouth, salivary glands, pharynx, nasal cavity sinuses and larynx. These 5 most commonly diagnosed cancers account for around 64% of all cancers estimated to be diagnosed in males in 2014.

Females

Breast cancer is estimated to be the most commonly diagnosed cancer (15,270 cases). This is followed by colorectal cancer (7,340), melanoma of the skin (5,210), lung cancer (4,720) and uterine cancer (2,490) (Table 3.2). These 5 cancers account for around 63% of all cancers estimated to be diagnosed in females in 2014.

Table 3.2: Estimated 10 most commonly diagnosed cancers, Australia, 2014[a]

Males				Females			
Cancer site/type (ICD-10 codes)	**Cases**	**Crude rate**	**ASR**[b]	**Cancer site/type (ICD-10 codes)**	**Cases**	**Crude rate**	**ASR**[b]
Prostate (C61)	17,050	145.6	128.7	Breast (C50)	15,270	129.2	114.5
Colorectal (C18–C20)	9,290	79.4	73.9	Colorectal (C18–C20)	7,340	62.1	51.5
Melanoma of the skin (C43)	7,440	63.5	59.7	Melanoma of the skin (C43)	5,210	44.1	39.4
Lung (C33–C34)	6,860	58.5	54.8	Lung (C33–C34)	4,720	40.0	33.2
Head and neck (C00–C14, C30–C32)	3,260	27.9	25.9	Uterus (C54–C55)	2,490	21.0	17.9
Lymphoma (C81–C85)	3,110	26.6	25.2	Lymphoma (C81–C85)	2,430	20.6	17.9
Leukaemia (C91–C95)	2,110	18.0	17.0	Thyroid (C73)	1,890	16.0	15.4
Bladder (C67)	2,060	17.6	16.7	Leukaemia (C91–C95)	1,440	12.2	10.4
Kidney (C64)	2,000	17.1	15.9	Ovary (C56)	1,430	12.1	10.5
Pancreas (C25)	1,530	13.1	12.2	Pancreas (C25)	1,410	12.0	9.7
All cancers combined[c]	**68,260**	**582.9**	**540.4**	**All cancers combined**[c]	**55,660**	**471.1**	**406.2**

(a) The 2014 estimates are based on 2002–2011 incidence data (see Appendix G). The estimated numbers of cancer cases diagnosed are rounded to the nearest 10. The estimates for males and females may not add up to the estimates for persons due to rounding.

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

(c) Cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.

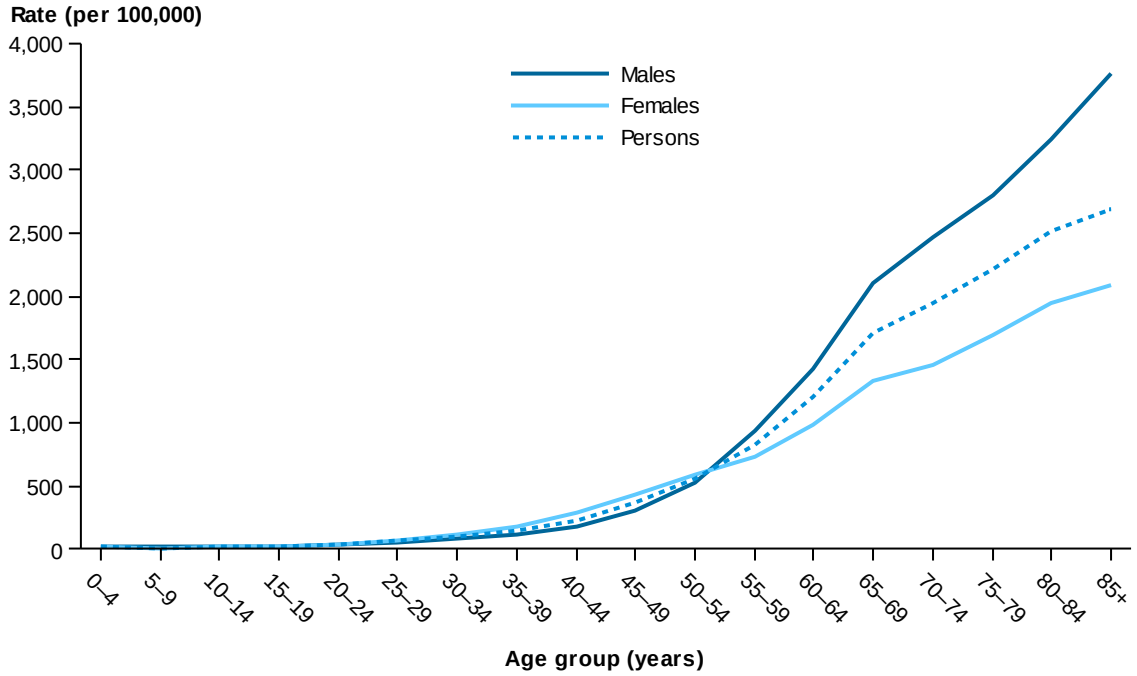
Source: AIHW ACD 2011.

Differences by age

The incidence of cancer increases with age (Figure 3.1). In 2014, it is estimated that 75% of new cancer cases diagnosed in males and 65% in females will occur in those aged 60 and over.

For those aged under 30, the estimated age-specific incidence rate is expected to be similar in males and females. For those aged 30–54, females have a higher estimated age-specific incidence rate than males.

The high incidence of cancer in females in this age group could be partly attributed to the estimated high incidence of breast cancer. After the age of 55, the age-specific incidence rate is then higher for males. Incidence of prostate cancer, colorectal cancer, melanoma of the skin and lung cancer contributes to the high incidence rate in males aged over 55.



Notes

1. The 2014 estimates are based on 2002–2011 incidence data (see Appendix G).
2. Data pertain to cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.
3. Data for this figure are in online Table D3.1.

Source: AIHW ACD 2011.

Figure 3.1: Estimated incidence rates of all cancers combined by age at diagnosis, Australia, 2014

Risk of being diagnosed with cancer

In 2014, it is estimated that 1 in 3 males and 1 in 4 females will be diagnosed with cancer by the age of 75. By the age of 85, the risk is estimated to increase to 1 in 2 for males and 1 in 3 for females (see Appendix H for an explanation of how these risks are calculated).

Table 3.3: Estimated risk of being diagnosed with cancer[(a)], by sex, Australia, 2014

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

(a) The 2014 estimates are based on 2002–2011 incidence data (see Appendix G).

Source: AIHW ACD 2011.

Males

For males, the risk of being diagnosed with cancer is estimated to be highest for prostate cancer, at 1 in 9 before the age of 75 and 1 in 6 before the age of 85. The risk is also expected to be high for colorectal cancer at 1 in 19 before the age of 75 and 1 in 10 before the age of 85. For lung cancer, the risk is expected to be at 1 in 28 before the age of 75 and 1 in 13 before the age of 85.

Females

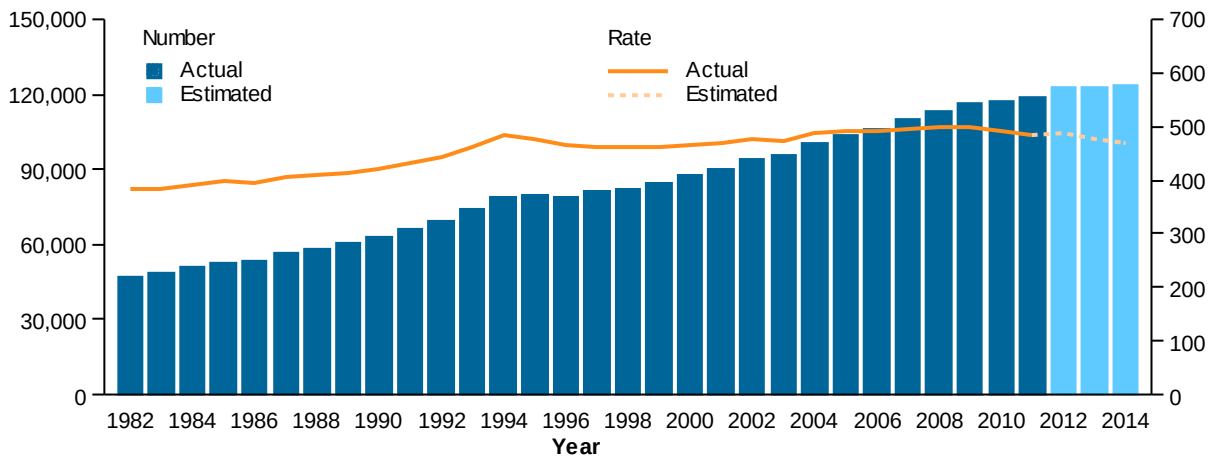
For females, the risk of being diagnosed with cancer is estimated to be highest for breast cancer with a risk of 1 in 11 before the age of 75 and 1 in 8 before the age of 85. In comparison, the risk of a female being diagnosed with colorectal cancer is estimated to be 1 in 28 before the age of 75 and 1 in 15 before the age of 85. For lung cancer, the risk is expected to be 1 in 38 before the age of 75 and 1 in 22 before the age of 85.

Change over time

In this section, trends in incidence for all cancers combined and selected cancer sites are presented for actual data for 1982–2011 and estimated data for 2012–2014.

Trends for all cancers combined

The number of new cancer cases expected to be diagnosed in 2014 is 2.6 times as high as in 1982—from 47,417 in 1982 to 123,920 in 2014. The age-standardised incidence rate of all cancers combined is expected to increase by 22%, from 383 per 100,000 in 1982 to 467 per 100,000 in 2014 (Figure 3.2). This suggests that the increase in the absolute number of cancer cases over the years can only be partly explained by the ageing and increasing size of the population. This increasing trend can be largely attributed to the rise in the number of prostate cancers, breast cancers in females and colorectal cancers diagnosed, as well as to improved diagnoses through population health screening programs and improvements in technologies and techniques used to identify and diagnose cancer.



Notes

1. The graph presents actual data for 1982–2011 and estimates for 2012–2014. Estimates for 2015 and 2016 are also available at Appendix B.
2. The 2012–2014 estimates are based on 2002–2011 incidence data (see Appendix G). Estimates are displayed on the graph as a dotted line or as bars in a lighter shade.
3. Data pertain to cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.
4. The rates were age-standardised to the Australian population as at 30 June 2001.
5. The data for this figure are in online Table D3.2.

Source: AIHW ACD 2011.

Figure 3.2: Trends in incidence of all cancers combined, Australia, 1982 to 2014

The trend in the incidence rate of all cancers combined was markedly different for males and females (online Table D3.2). For males, it increased steadily until 1994, where it peaked at 613 per 100,000. This was followed by a decline until the late 1990s when it began to increase again, reaching a rate of 612 per 100,000 in 2008. It then fell gradually to 580 per 100,000 in 2011.

It is expected to continue to fall to 540 per 100,000 in 2014. The trend in the rate for males is strongly influenced by changes in the incidence rate of prostate cancer—the most common cancer in males—as a result of initiatives such as Prostate-specific Antigen (PSA) testing.

For females, the incidence rate of all cancers combined rose steadily during the early 1990s, reaching 398 per 100,000 in 1995. Since then, it has been fairly stable, ranging from 390 to 410 per 100,000.

The incidence rate for all cancers in females is estimated to be 406 per 100,000 in 2014. The rate for females has been strongly influenced by the trend in the incidence rate of breast cancer. The development of new technologies, such as Magnetic Resonance Imaging (MRI), and the introduction of population screening programs, including BreastScreen Australia, contribute to the increased diagnosis of breast cancer.

Trends for specific cancers

Between 1982 and 2014, there were increases in the age-standardised incidence rates for some cancers, including:

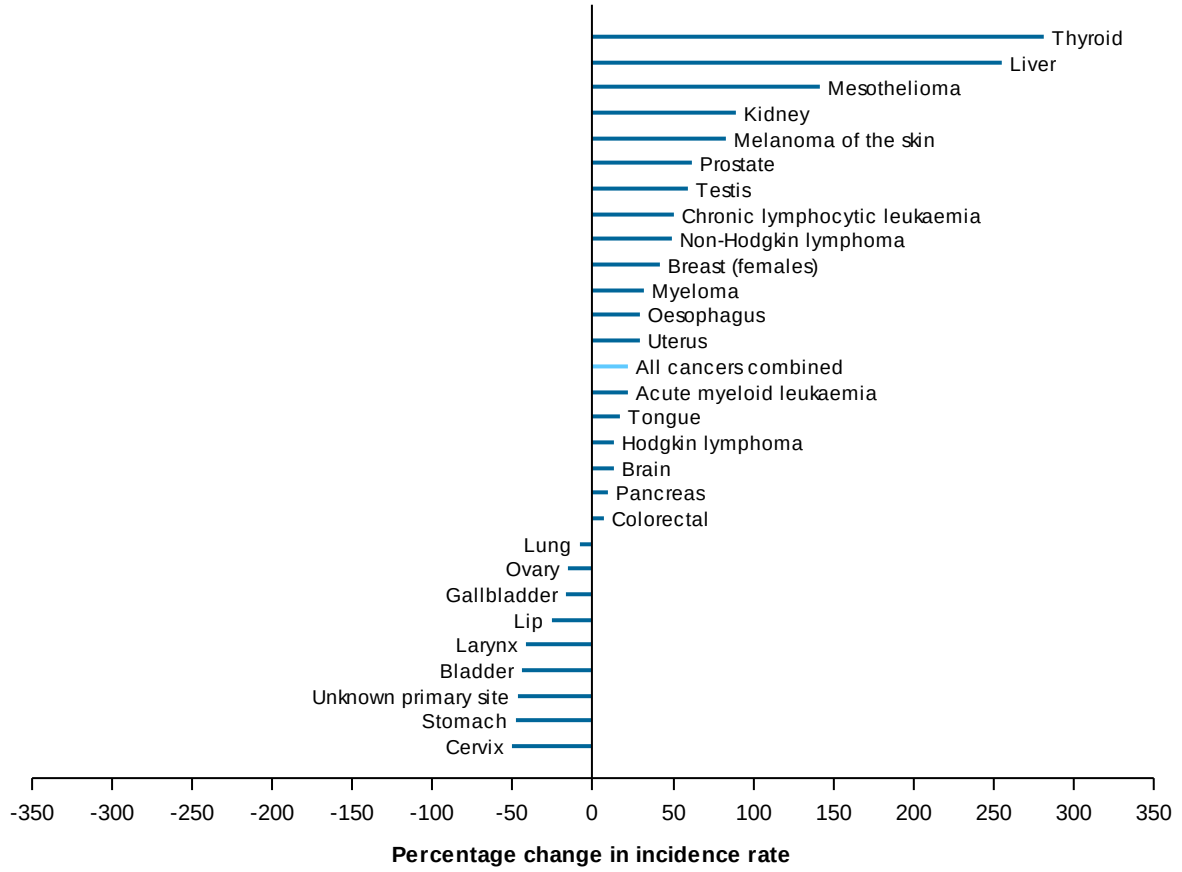
- thyroid cancer (from 2.7 to 10.3 per 100,000 persons)
- liver cancer (from 1.8 to 6.4 per 100,000)
- mesothelioma (from 1.2 to 2.9 per 100,000)
- kidney cancer (from 6.2 to 11.7 per 100,000)
- melanoma of the skin (from 26.7 to 48.8 per 100,000)
- prostate cancer (from 79.5 to 128.7 per 100,000).

Of these cancers, thyroid cancer had the greatest increase of 281% between 1982 and 2014.

The cancers that show the greatest percentage-point decreases between 1982 and 2014 are:

- cervical cancer (from 14.2 to 7.0 per 100,000)
- stomach cancer (from 15.8 to 8.3 per 100,000)
- cancer of unknown primary site (from 18.0 to 9.6 per 100,000)
- bladder cancer (from 17.8 to 10.0 per 100,000)
- larynx cancer (from 4.3 to 2.5 per 100,000) (Figure 3.3).

The incidence rate of each of these cancers decreased by at least 40 per cent.



Notes

1. The bars indicate the percentage change in incidence rates between1982 and 2014.
2. The 2014 estimates are based on 2002–2011 incidence data (see Appendix G).
3. The percentage change between 1982 and 2014 is a summary measure that allows the use of a single number to describe the change over a period of multiple years. However, it is not always reasonable to expect that a single measure can accurately describe the trend over the entire period.
4. The rates were age-standardised to the Australian population as at 30 June 2001.
5. The data for this figure are in online Table D3.3.

Source: AIHW ACD 2011.

Figure 3.3: Estimated percentage change in age-standardised incidence rates between 1982 and 2014, Australia

4 Hospitalisations and admitted patient palliative care for cancer

Key findings

In 2012–13 in Australia:

- cancer was the main reason (principal diagnosis) for 1 in 10 hospitalisations, accounting for 2.31 million bed days
- about three-quarters (76%) of cancer-related hospitalisations were for same-day care
- the average length of stay (ALOS) for all cancer-related hospitalisations was 2.5 days. When same-day hospitalisations were excluded, the ALOS was 7.3 days
- non-melanoma skin cancer was the most common cancer type recorded as principal diagnosis, with about 99,000 hospitalisations
- chemotherapy was the most common cancer-related treatment or service recorded as the principal diagnosis, with about 370,000 hospitalisations
- of all hospitalisations that involved palliative care, 56% (34,379) were cancer-related.

From 2001–02 to 2012–13:

- the number of cancer-related hospitalisations increased by 41% from 649,353 to 914,993
- the age-standardised cancer-related hospitalisation rate increased by 9%, from 337 per 10,000 to 367 per 10,000.

About hospitalisations

Hospitalisation data include information on admitted patient services provided for people with cancer in Australian hospitals.

This chapter presents the total number of cancer-related hospitalisations and provides information on cancer-related palliative care hospitalisations. The data source for this chapter was the NHMD, which contains data on admitted patient hospitalisations (Box 4.1).

Box 4.1: Interpreting cancer hospitalisations

National Hospital Morbidity Database

The NHMD 2012–13 is a comprehensive data set containing records for all episodes of admitted patient care from public and private hospitals in Australia during 2012–13. Admitted patients are those who undergo a hospital's formal admission process (AIHW 2014e).

A hospitalisation (also known as a 'separation') is an episode of care either that starts with admission and ends with discharge, transfer or death, or that is defined by a change in care type, such as from *acute care* to *rehabilitation*. Hospitalisations (or separations) refer to admitted patients only.

As the NHMD is episode based, the data presented in this chapter do not refer to individuals. An individual may be counted in the database multiple times in a reference year for each episode of care they receive as an admitted patient.

Diagnosis information recorded in the NHMD is coded according to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) (NCCH 2010).

In this report, cancer-related hospitalisations are defined as those where:

- the principal diagnosis (the diagnosis chiefly responsible for the episode of care) is cancer (ICD-10-AM codes C00-C97, D45, D46, D47.1 and D47.3)
- the principal diagnosis is related to the treatment or management of cancer
- the principal diagnosis is a non-cancer-specific treatment or service and cancer is recorded as an additional diagnosis (a diagnosis that coexists with the principal diagnosis or arises during the episode of care) for that hospitalisation.

Data of cancer-related hospitalisations include those where palliative care was provided.

Chemotherapy

Not all cancer-related chemotherapy is provided on an admitted patient basis. Some jurisdictions provide a substantial amount of chemotherapy on a non-admitted basis, and this activity is therefore not reported to the NHMD.

For more information on the NHMD, see *Australian hospital statistics* at <http://www.aihw.gov.au/publication-detail/?id=60129546922>

and

National Hospital Morbidity Database Data Quality Statement: 2012–13 at <http://meteor.aihw.gov.au/content/index.phtml/itemId/568730>.

Box 4.2 Summary of terms used in the hospitalisation chapter

A **same-day** hospitalisation occurs when a patient is admitted to and separated from the hospital on the same date. An **overnight** hospitalisation occurs when a patient is admitted to and separated from the hospital on different dates.

Additional diagnosis is a condition or complaint that either co-exists with the principal diagnosis or arises during the episode of care. An additional diagnosis is reported if the condition affects patient management.

Average length of stay is the average number of patient days for admitted patient episodes. A same-day patient is allocated a length of stay of 1 day.

Care type defines the overall nature of a clinical service provided to an admitted patient during an admitted care, or the type of service provided by the hospital for boarders or posthumous organ procurement (care other than admitted care). Admitted patient care consists of *acute care*, *rehabilitation care*, *palliative care*, *geriatric evaluation and management*, *psychogeriatric care*, *maintenance care*, *newborn care* and *other admitted patient care*.

Palliative care hospitalisations in this report are defined as those where the care type is *palliative care*, and/or *palliative care* is recorded as an additional diagnosis, for admitted patients only (ICD-10-AM code Z51.5).

Principal diagnosis is the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care.

Hospitalisations in 2012–13

In 2012–13, there were 914,993 cancer-related hospitalisations, accounting for 1 in 10 hospitalisations in Australia. Less than half (45%) of all cancer-related hospitalisations had a principal diagnosis of cancer (Table 4.1). The remainder had a principal diagnosis related to the treatment or management of cancer.

Table 4.1: Cancer-related hospitalisations[(a)], persons, Australia, 2012–13

	Number	Per cent	ASR[(b)]
Principal diagnosis of cancer[(c)]	415,130	45.4	165.1
Principal diagnosis of a cancer-related treatment or service[(d)]	499,863	54.6	201.9
Cancer specific treatment or services	491,947	53.8	198.7
Non-cancer specific treatment or services with an additional diagnosis of cancer	7,916	0.9	3.2
All cancer-related hospitalisations	**914,993**	**100.0**	**367.0**

(a) Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 10,000 population.

(c) Hospitalisations in which the principal diagnosis is cancer (ICD-10-AM codes C00–C97, D45, D47.1 and D47.3).

(d) Hospitalisations in which the principal diagnosis is a health service or treatment that may be related to the treatment of cancer (see Appendix J).

Source: AIHW NHMD.

Length of stay

In 2012–13, cancer-related hospitalisations totalled 2.31 million bed days; 76% were same-day hospitalisations and 24% were overnight hospitalisations.

The average length of stay (ALOS) for overnight cancer-related hospitalisations was 7.3 days (Table 4.2). This is longer than the overnight ALOS for all hospitalisations (5.6 days).

More than half (52%) of hospitalisations in which the principal diagnosis was cancer were overnight, with an ALOS of 7.5 days. In contrast, the majority (99%) of hospitalisations with a principal diagnosis related to the treatment or management of cancer were same-day (Table 4.2).

Table 4.2: Average length of stay (days) for cancer-related hospitalisations[(a)], Australia, 2012–13

	Same-day		Overnight			Total	
	Number	Per cent of total	Number	Per cent of total	ALOS	Number	ALOS
Principal diagnosis of cancer[(b)]	199,837	48.1	215,293	51.9	7.5	415,130	4.3
Principal diagnosis of a cancer-related treatment or service[(c)]	494,364	98.9	5,499	1.1	2.2	499,863	1.0
Cancer specific treatment or services	486,916	99.0	5,031	1.0	2.1	491,947	1.0
Non-cancer specific treatment or services with an additional diagnosis of cancer	7,448	94.1	468	5.9	3.0	7,916	1.1
All cancer-related hospitalisations	**694,201**	**75.9**	**220,792**	**24.1**	**7.3**	**914,993**	**2.5**

(a) Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) Hospitalisations in which the principal diagnosis is cancer (ICD-10-AM codes C00–C97, D45, D47.1 and D47.3),

(c) Hospitalisations in which the principal diagnosis is a health service or treatment that may be related to the treatment of cancer (see Appendix J).

Source: AIHW NHMD.

In 2012–13, for hospitalisations where the principal diagnosis was cancer, the five cancer types with the longest ALOS (excluding same-day hospitalisations) were acute myeloid leukaemia (16.8 days), Kaposi sarcoma (13.5 days), hypopharyngeal cancer (13.0 days), anal cancer (11.5 days) and cancer of the small intestine (11.3 days).

Hospitalisations for cancers and for cancer-related treatments

Data on hospitalisations include cancer as a principal diagnosis and cancer-related treatments and services (see Appendix J for more information). Note that some treatments and services (such as Z51.0 'Radiotherapy session') included in the data are not entirely cancer specific; that is, they may be provided to a small number of non-cancer patients. However, the proportion of these over counts is less than 0.01% of the data presented in this report.

Cancer as a principal diagnosis

In 2012–13, there were 415,130 hospitalisations where the principal diagnosis was cancer. Non-melanoma skin cancer was the most common principal diagnosis in this group (24%),

followed by cancer of secondary site (10%), prostate cancer (9%), colorectal cancer (7%) and breast cancer (6%).

The 10 most common cancers as a principal diagnosis accounted for 77% of all hospitalisations with a principal diagnosis of cancer (Table 4.3).

Table 4.3: Ten most common cancers as principal diagnosis[(a)], Australia, 2012–13

Principal diagnosis (ICD-10-AM codes)	Number	Per cent
Cancer site/type		
Non-melanoma of the skin (C44)	99,300	23.9
Secondary site (C77–C79)	41,080	9.9
Prostate (C61)	35,740	8.6
Colorectal (C18–C20)	28,213	6.8
Breast (C50)	25,117	6.1
Leukaemia (C91–C95)	21,782	5.2
Lymphoma (C81–C85)	20,496	4.9
Lung (C33–C34)	18,878	4.5
Bladder (C67)	14,051	3.4
Myelodysplastic syndromes (D46)	13,829	3.3
Total 10 most common cancers as a principal diagnosis	*318,486*	*76.7*
Total hospitalisations with a principal diagnosis of cancer[(b)]	**415,130**	**100.0**

(a) Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) Hospitalisations in which the principal diagnosis is cancer (ICD-10-AM codes C00–C97, D45, D47.1 and D47.3 (see Appendix J).

Source: AIHW NHMD.

In 2012–13, non-melanoma skin cancer was the most common cancer type recorded as principal diagnosis for both males (25%) and females (23%).

The second most common cancer types recorded as principal diagnosis was prostate cancer in males (15%) and breast cancer in females (14%). These were followed by cancer of secondary site (9% males, 11% females), colorectal cancer (7% males, 7% females) and leukaemia (5% males, 5% females) (Table 4.4).

The 10 most common cancer types accounted for around 80% of all cancers recorded as principal diagnoses in both males and females.

Table 4.4: Ten most common cancers as principal diagnosis[a], by sex, Australia, 2012–13

Males		Females	
Principal diagnosis (ICD-10-AM codes)	**Number**	**Principal diagnosis (ICD-10-AM codes)**	**Number**
Cancer site/type		**Cancer site/type**	
Non-melanoma of the skin (C44)	59,119	Non-melanoma of the skin (C44)	40,180
Prostate (C61)	35,740	Breast (C50)	24,940
Secondary site (C77–C79)	21,166	Secondary site (C77–C79)	19,914
Colorectal (C18–C20)	15,617	Colorectal (C18–C20)	12,596
Leukaemia (C91–C95)	12,846	Leukaemia (C91–C95)	8,936
Lymphoma (C81–C85)	12,308	Lymphoma (C81–C85)	8,188
Lung (C33–C34)	11,089	Lung (C33–C34)	7,789
Bladder (C67)	10,794	Myelodysplastic syndromes (D46)	5,367
Myelodysplastic syndromes (D46)	8,462	Melanoma of the skin (C43)	4,608
Melanoma of the skin (C43)	6,344	Myeloma (C90)	4,391
Total 10 most common cancers as a principal diagnosis	*193,485*	*Total 10 most common cancers as a principal diagnosis*	*136,909*
Total hospitalisations with a principal diagnosis of cancer[b]	**239,518**	**Total hospitalisations with a principal diagnosis of cancer[b]**	**175,611**

(a) Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) Hospitalisations in which the principal diagnosis is cancer (ICD-10-AM codes C00–C97, D45, D47.1 and D47.3 (see Appendix J).

Source: AIHW NHMD.

Cancer-related treatments and services

In 2012–13, there were 499,863 hospitalisations where the principal diagnosis was a cancer-related treatment or service. The 5 most common principal diagnoses were:

- pharmacotherapy session for neoplasm (Z51.1 'Chemotherapy') was the most common principal diagnosis in this group (75%)
- special screening examination for neoplasm of intestinal tract (11%)
- follow-up after surgery for cancer (8%)
- adjustment and management of vascular access device (1%)
- follow-up examination after combined treatment for malignant neoplasm (1%) (Table 4.5).

These 5 most common reasons for hospitalisation when the principal diagnosis was a cancer-related treatment or service accounted for 96% of all hospitalisations with a principal diagnosis of a cancer-related treatment or service.

Table 4.5: Five most common reasons for hospitalisation[(a)], when the principal diagnosis is a cancer-related treatment or service, Australia, 2012–13

Principal diagnosis (ICD-10-AM codes)	Number	Per cent
Pharmacotherapy session for neoplasm (Chemotherapy [Z51.1])	374,824	75.0
Special screening examination for neoplasm of intestinal tract (Z12.1)	54,480	10.9
Follow-up after surgery for cancer (Z08.0)	42,110	8.4
Adjustment and management of vascular access device (Z45.2)	5,838	1.2
Follow-up examination after combined treatment for malignant neoplasm (Z08.7)	4,758	1.0
Total 5 most common reasons for hospitalisation when the principal diagnosis was a cancer-related treatment or service	*482,010*	*96.4*
Total hospitalisations with a principal diagnosis of a cancer-related treatment or service[(b)]	**499,863**	**100.0**

(a) Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) Hospitalisations in which the principal diagnosis is a health service or treatment that may be related to treatment of cancer (see Appendix J).

Source: AIHW NHMD.

In 2012–13, the most common reasons by sex for hospitalisation when the principal diagnosis was a cancer-related treatment or service were:

- pharmacotherapy session for neoplasm in both males (72%) and females (78%)
- follow-up after surgery for cancer in males (12%) and special screening examination for neoplasm of intestinal tract in females (12%) (Table 4.6).

Table 4.6: Five most common reasons for hospitalisation[(a)], when the principal diagnosis is a cancer-related treatment or service, by sex, Australia, 2012–13

Males		Females	
Principal diagnosis (ICD-10-AM codes)	**Number**	**Principal diagnosis (ICD-10-AM codes)**	**Number**
Pharmacotherapy session for neoplasm (Chemotherapy [Z51.1])	170,926	Pharmacotherapy session for neoplasm (Chemotherapy [Z51.1])	203,898
Follow-up after surgery for cancer (Z08.0)	27,738	Special screening examination for neoplasm of intestinal tract (Z12.1)	30,313
Special screening examination for neoplasm of intestinal tract (Z12.1)	24,167	Follow-up after surgery for cancer (Z08.0)	14,372
Follow-up examination after combined treatment for malignant neoplasm (Z08.7)	3,426	Adjustment and management of vascular access device (Z45.2)	3,831
Follow-up examination after unspecified treatment for malignant neoplasm (Z08.9)	2,416	Family history of malignant neoplasm of digestive organs (Z80.0)	1,436
Total 5 most common reasons for hospitalisation when the principal diagnosis was a cancer-related treatment or service	*228,673*	*Total 5 most common reasons for hospitalisation when the principal diagnosis was a cancer-related treatment or service*	*253,850*
Total hospitalisations with a principal diagnosis of a cancer-related treatment or service[(b)]	**237,285**	**Total hospitalisations with a principal diagnosis of a cancer-related treatment or service[(b)]**	**262,578**

(a) Hospitalisation for which the care type was reported as Newborn with no qualified days and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) Hospitalisations in which the principal diagnosis is a health service or treatment that may be related to treatment of cancer (see Appendix J).

Source: AIHW NHMD.

Most hospitalisations where the principal diagnosis was a cancer-related treatment or service were for same-day services (99%). The 5 leading treatments, as detailed in Table 4.6,

accounted for the majority (97%) of all same-day hospitalisations for cancer-related treatments and services in 2012–13.

Hospitalisations by age

In 2012–13, people were more likely to be hospitalised for a cancer-related condition with increasing age (Figure 4.1).

The hospitalisation rates for patients with cancer were low for those aged under 30, at 42 per 10,000 persons or below. The hospitalisation rate then increased for each age group, peaking for those aged 75–79, at 1,741 per 10,000. The hospitalisation rate then decreased to 1,352 per 10,000 for those aged 85 and over.

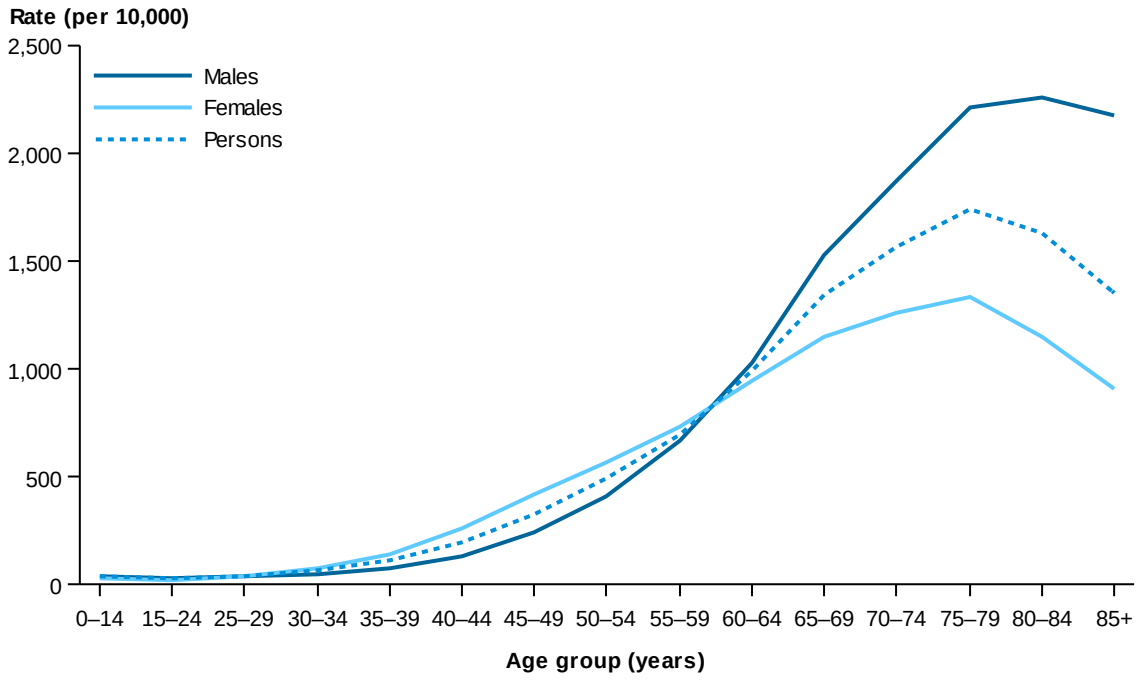
The cancer-related hospitalisation rate was similar for males and females aged under 30.

Females

Females aged 30–59 had a higher rate of hospitalisation than males of the same age. In particular, the hospitalisation rate for females aged 40–44 was 1.9 times as high as that for males (261 compared with 135, respectively, per 10,000). This may be partly attributed to the high number of breast cancer hospitalisations in females within this age group.

Males

Males aged 60 and over had a higher hospitalisation rate than females of the same age. In particular, the hospitalisation rate for males aged 85 and over was 2.4 times as high as that for females (2,177 compared with 909, respectively, per 10,000). This may be partly attributed to the high number of prostate cancer hospitalisations among males within this age group.



Notes

1. Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
2. Hospitalisations in which (i) the principal diagnosis is cancer (ICD-10-AM codes C00–C97, D45, D47.1 and D47.3) or (ii) the principal diagnosis is a health service or treatment that may be related to treatment of cancer (see Appendix J).
3. Data for this figure are in online Table D4.1.

Source: AIHW NHMD.

Figure 4.1: Age-specific rates for all cancer-related hospitalisations, Australia, 2012–13

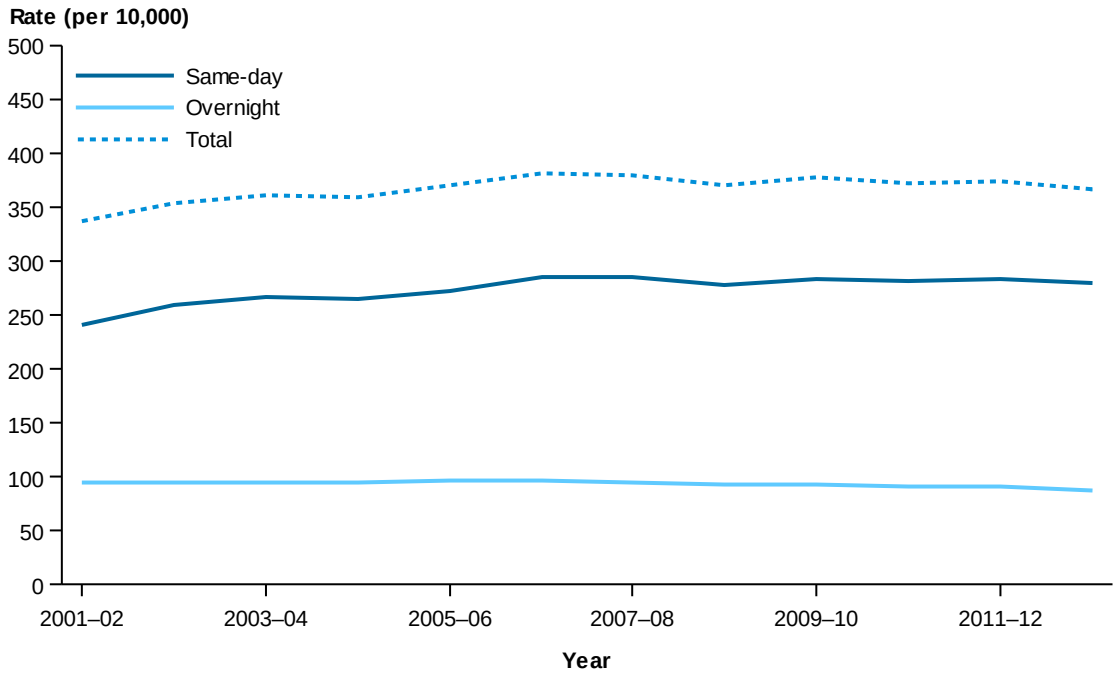
Cancer-related hospitalisations over time

Between 2001–02 and 2012–13, the total number of cancer-related hospitalisations increased by 41% from 649,353 to 914,993 hospitalisations. Much of this can be attributed to a 49% increase in the number of same-day hospitalisations, from 465,440 in 2001–02 to 694,201 in 2012–13.

In the same period, the age-standardised cancer-related hospitalisation rate increased slightly from 337 per 10,000 to 367 per 10,000.

Between 2001–02 and 2012–13, there was a slight increase in the hospitalisation rate for same-day hospitalisation, from 241 per 10,000 to 279 per 10,000. Over the same period, the hospitalisation rate for overnight hospitalisation fell from 96 per 10,000 to 88 per 10,000 (Figure 4.2).

The trend in the rate of all cancer-related hospitalisations is mostly due to changes in the rate of same-day hospitalisations, which is affected by changes in admission practices in some jurisdictions.



Notes

1. Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.
2. Hospitalisations in which (i) the principal diagnosis is cancer (ICD-10-AM codes C00–C97, D45, D47.1 and D47.3) or (ii) the principal diagnosis is a health service or treatment that may be related to treatment of cancer (see Appendix J).
3. Rates were age-standardised to the Australian population as at 30 June 2001 and expressed per 10,000 population.
4. Data for this figure are in online Table D4.2.

Source: AIHW NHMD.

Figure 4.2: All cancer-related hospitalisations by same-day and overnight status, Australia, 2001–02 to 2012–13

Palliative care for cancer in the hospital setting

Admitted hospital care commonly focuses on the treatment and care of disease. Palliative care, sometimes referred to as 'hospice' or 'end-of-life' care, is care in which the clinical intent or treatment goal is primarily quality of life for a patient with an active, progressive disease with little or no prospect of cure. It is usually evidenced by an interdisciplinary assessment and/or management of the physical, psychological, emotional and spiritual needs of the patient; and a grief and bereavement support service for the patient and their carers/family. Research has shown that cancer patients comprise the majority of those using palliative care services. This may be due to the difficulties in predicting the disease pathway and estimating prognosis of decline for non-cancer patients compared with cancer patients (AIHW 2011).

This section presents a summary of cancer-related hospitalisations where palliative care was provided within an admitted patient setting in 2012–13 (see Box 4.1).

In 2012–13, nearly 61,600 hospitalisations involved palliative care in Australia (0.7% of all hospitalisations). Of these, 56% (34,379) were cancer related. For most of these hospitalisations (74%), palliative care was the intended mode of clinical care; that is, the care type was recorded as *palliative care*. For the remaining 26%, palliative care was recorded as an additional diagnosis and provided as part of the hospitalisation where the intended care type was *acute care*, *rehabilitation care* or other modes of care.

The most common type of cancer recorded for palliative care hospitalisation was secondary site cancer, which refers to a malignant tumour that originated elsewhere in the body; this principal diagnosis was reported in 23% of all cancer-related hospitalisations where palliative care was provided in 2012–13 (Table 4.7).

Table 4.7: Ten most common cancers as principal diagnosis of the hospitalisation[(a)] where palliative care was provided, persons, Australia, 2012–13

Principal diagnosis (ICD-10-AM codes)	Number	Per cent
Cancer site/type		
Secondary site (C77–C79)	7,859	22.9
Lung (C33–C34)	5,658	16.5
Colorectal (C18–C20)	2,716	7.9
Pancreas (C25)	1,874	5.5
Prostate (C61)	1,618	4.7
Breast (C50)	1,554	4.5
Brain (C71)	1,187	3.5
Stomach (C16)	973	2.8
Liver (C22)	914	2.7
Leukaemia (C91–C95)	803	2.3
All cancer-related hospitalisations where palliative care was provided[(b)]	**34,379**	**100.0**

(a) Hospitalisation for which the care type was reported as *Newborn with no qualified days* and records for 'Hospital boarders' and 'Posthumous organ procurement' have been excluded from the analysis.

(b) Palliative care hospitalisations in which (i) the principal diagnosis is cancer (ICD-10-AM codes C00–C97, D45, D47.1 and D47.3) or (ii) the principal diagnosis is a health service or treatment that may be related to treatment of cancer (see Appendix J).

Source: AIHW NHMD.

Palliative care and deaths in hospital

In 2012–13, among those cancer-related hospitalisations that ended in death, 75% included palliative care. Around 27% of non-cancer-related hospitalisations that ended in death included palliative care. The lower proportion of non-cancer-related hospitalisations that ended in death that included palliative care may be a result of some non-cancer-related conditions not fitting the criteria for palliative care or the progression of these conditions was difficult to predict.

Over the same period, 51% (17,582) of cancer-related hospitalisations involving palliative care ended in death. Of the remaining hospitalisations, 13% (4,380) transferred to another facility and 31% (10,771) were sent to where they usually live, which could be a person's own home or welfare institution.

The proportion of cancer-related hospitalisations involving palliative care that ended in death was similar to that for all hospitalisations involving palliative care.

5 Survival after a diagnosis of cancer

Key findings

In 2007–2011 in Australia:

- 5-year relative survival was 67% for all cancers combined
- females had slightly higher survival than males (5-year relative survival of 68% and 66%, respectively)
- for males diagnosed with cancer, 5-year relative survival was highest for testicular cancer (98%), lip cancer (93%) and prostate cancer (93%)
- for females diagnosed with cancer, 5-year relative survival was highest for thyroid cancer (97%), lip cancer (94%) and melanoma of the skin (94%)
- for all cancers combined, 5-year relative survival decreased with age.

From 1982–1986 to 2007–2011:

- 5-year relative survival increased significantly from 40% to 66% for males and 52% to 68% for females for all cancers combined.

About survival

Information on survival from cancer provides an indication of cancer prognosis and the effectiveness of treatments available. A range of factors influence survival from cancer, including the demographic characteristics of the patient (such as age, sex and genetics), the nature of the tumour (such as site, stage at diagnosis and histology type) and the health-care system (such as availability of health-care services, screening, diagnostic and treatment facilities, and follow-up services) (Black et al. 1998; WCRF & AICR 2007).

Survival in this report refers to 'relative survival'; that is, all survival probabilities presented are relative to those of the general population. It refers to the probability of being alive for a given amount of time after diagnosis compared with the general population, and reflects the impact of a cancer diagnosis. For more information, see Box 5.1 and Appendix H.

This chapter focuses on 5-year survival based on the 2011 ACD (see Appendix F). Data from the National Death Index (NDI) on deaths (from any cause) that occurred up to 31 December 2011 were used to determine which people with cancer had died and when this occurred. Summary pages for selected cancers are at Appendix B.

Box 5.1: Period survival

In this report, relative survival was calculated using the period method for all reported time periods (Brenner & Gefeller 1996). This method calculates survival from a given follow-up or at-risk period. Survival estimates are based on the survival experience of people who were diagnosed before or during this period, and who were at risk of dying during this period. More information about the period method is at Appendix H.

Note that the period method is an alternative to the traditional cohort method, which focuses on a group of people diagnosed with cancer in the past time period, and follows these people over time. By its nature, the period method produces more up-to-date estimates of survival than the cohort method. In this report, all year spans presented were calculated using the period method. As the cohort method was used in previous *Cancer in Australia* reports (for example, AIHW & AACR 2010), survival estimates in this report should not be directly compared with those in earlier reports.

Five-year relative survival

In 2007–2011, 5-year survival was 67% for all cancers combined. This means that people diagnosed with cancer had a 67% chance of surviving for at least 5 years compared with their counterparts in the general population. Females had slightly higher 5-year survival than males, at 68% compared with 66% for males (Table 5.1).

Table 5.1: Five-year relative survival from all cancers combined[(a)], Australia, 2007–2011

Sex	5-year relative survival (%)	95% confidence interval
Males	66.1	65.9–66.3
Females	67.5	67.3–67.7
Persons	**66.7**	**66.5–66.8**

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

Source: AIHW ACD 2011.

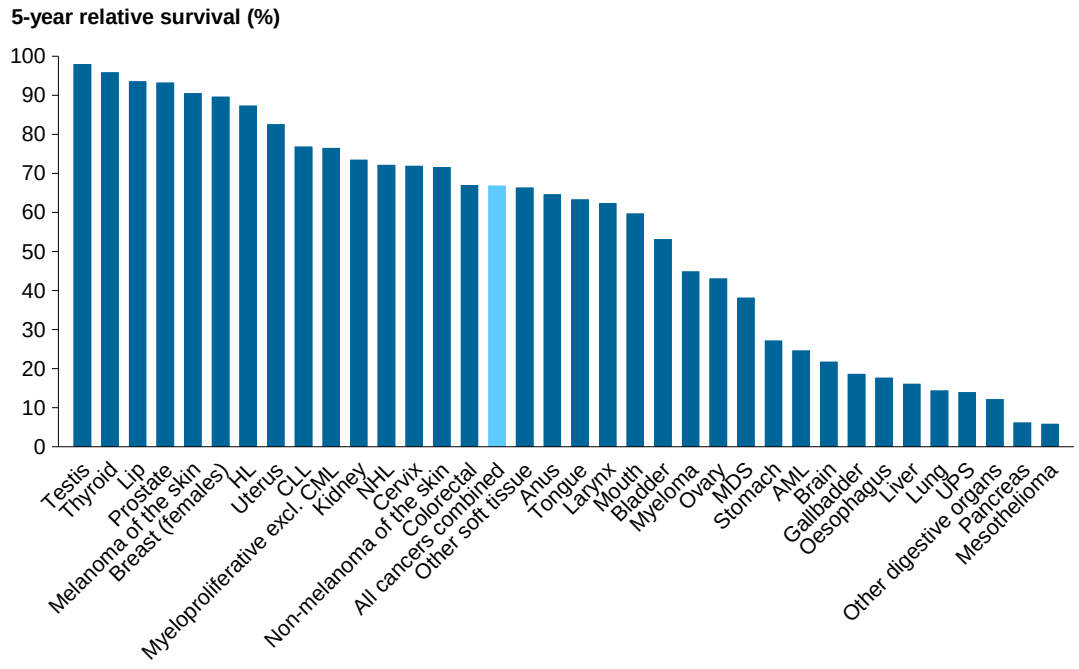
Cancer site

In 2007–2011, 5-year survival was highest for people diagnosed with testicular cancer (98%), thyroid cancer (96%), lip cancer (93%), prostate cancer (93%) and melanoma of the skin (90%) and lowest for those diagnosed with pancreatic cancer (6%) and mesothelioma (6%) (Figure 5.1).

For males, 5-year survival was highest for those diagnosed with testicular cancer (98%), lip cancer (93%) and prostate cancer (93%). For females, it was highest for those diagnosed with thyroid cancer (97%), lip cancer (94%) and melanoma of the skin (94%) (online Table D5.1).

Pancreatic cancer (males 6% and females 6%) and mesothelioma (males 5% and females 8%) accounted for the lowest survival in both males and females.

In 2007–2011, 5-year survival was significantly higher for males than for females for cancer of unknown primary site (1.5 times that for females) and bladder cancer (1.2 times). Five-year survival was significantly higher for females than for males for lung cancer (1.4 times that for males), anal cancer (1.2 times), melanoma of the skin (1.1 times), thyroid cancer (1.1 times), chronic lymphocytic leukaemia (1.1 times), myeloproliferative cancers excluding CML (1.1 times) and mouth cancer (1.1 times).



Notes

1. All cancers combined include cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin. Non-melanoma skin cancer does not include C44 codes that indicate a basal or squamous cell carcinoma of the skin.
2. HL=Hodgkin lymphoma, CLL=Chronic lymphocytic leukaemia, NHL=Non-Hodgkin lymphoma, MDS= Myelodysplastic syndromes, AML=Acute myeloid leukaemia, UPS=Cancer of unknown primary site.
3. Data for this figure are in online Table D5.1.

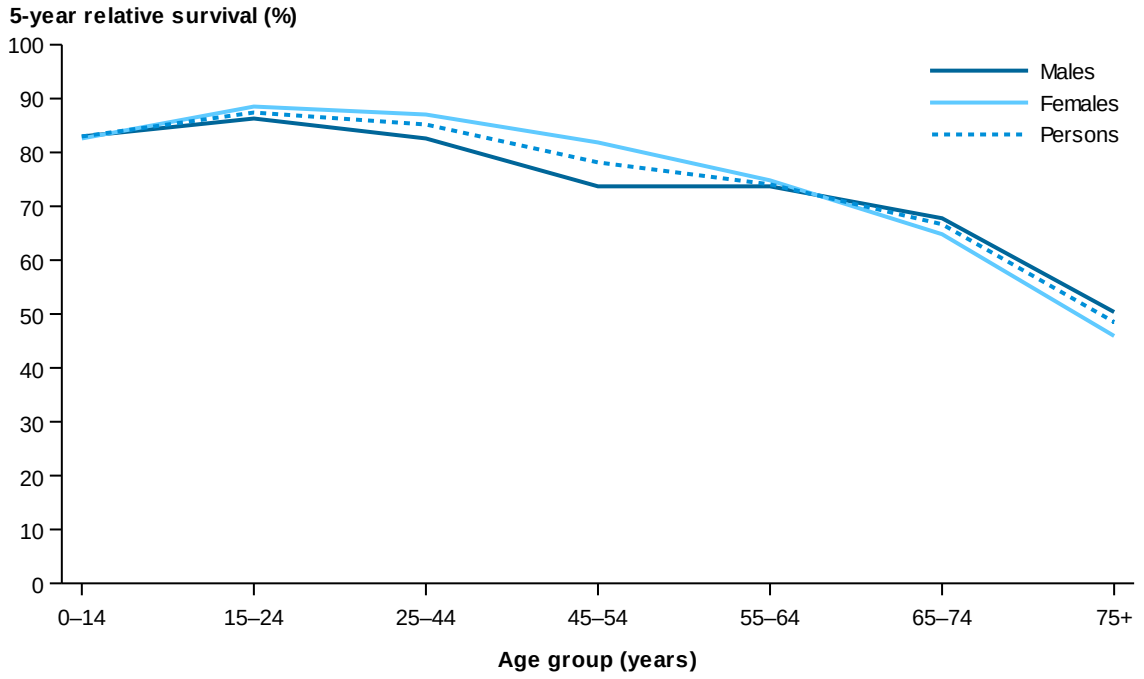
Source: AIHW ACD 2011.

Figure 5.1: Five-year relative survival from selected cancers, Australia, 2007–2011

Difference by age

In 2007–2011 for all cancers combined, 5-year survival was highest for those aged 15–24 (87%); it decreased with age and was lowest (48%) for those aged 75 and over (Figure 5.2). The difference in survival by age may be due to a number of reasons, including the stage at diagnosis of tumours, a greater likelihood of co-morbidity among those diagnosed at an older age, differences in treatments received and inclusion in clinical trials (Brenner & Arndt 2004; Ellison & Gibbons 2006; NCRI & WHC 2006).

Females had a survival advantage up to the 55–64-year age group. The difference was most noticeable for those aged 45–54, where 5-year survival was 82% for females and 74% for males. From the age of 65–74, survival was slightly but significantly higher for males (online table D5.2). The difference in the age-related pattern of survival by sex may be partly due to the age distributions and survival outcomes for prostate cancer and breast cancer.



Note: Data for this figure are in online Table D5.2.

Source: AIHW ACD 2011.

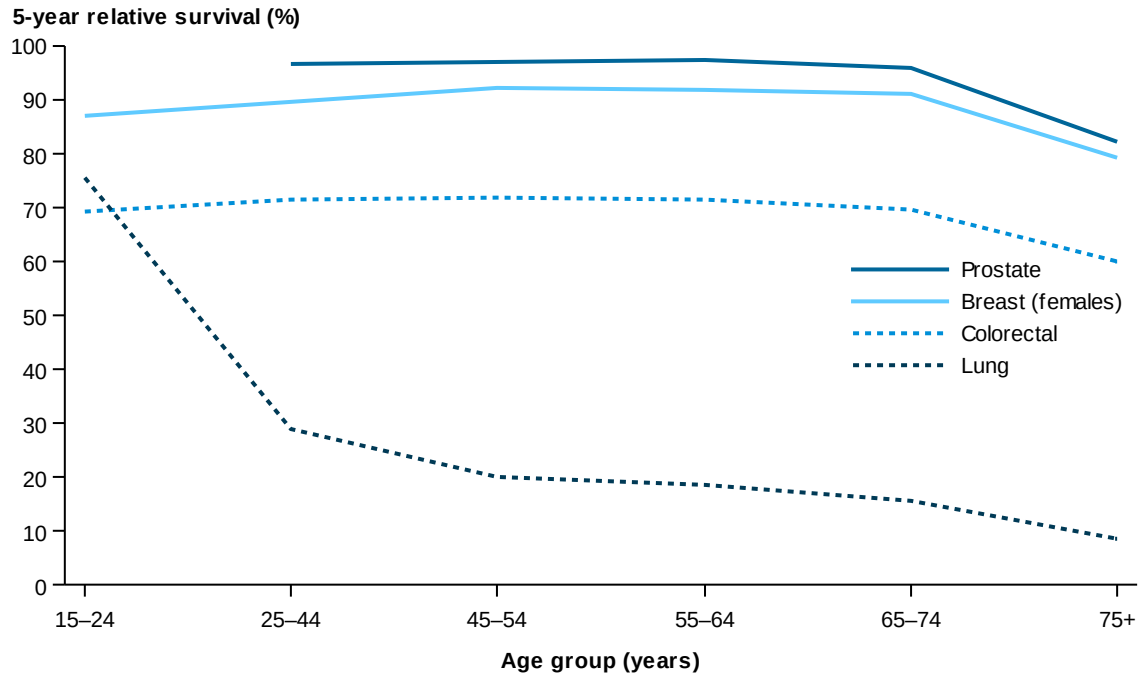
Figure 5.2: Five-year relative survival from all cancers combined by age at diagnosis, Australia, 2007–2011

The age-related pattern of survival for all cancers combined was characteristic of most individual cancer types. The reduction in survival with age was more pronounced in the second half of the lifespan; however, the pattern of decline varied across cancer types.

For example, 5-year survival for colorectal cancer did not vary considerably for those aged under 75 (69% to 72%), but it dropped significantly to 60% for those aged 75 and over. Five-year survival for prostate cancer had a similar pattern. For those aged under 75, 5-year survival was 96% to 97%; it reduced to 82% for those aged 75 and over.

For breast cancer in females, 5-year survival was highest in those aged between 45 and 74 (91% to 92%). This may be related to the population-based BreastScreen program, which targets females in the age group of 50–69.

In contrast, 5-year survival for lung cancer fell sharply, earlier than for other selected cancers. For those aged 15–24, 5-year survival was 76%; it quickly declined to 29% for those aged 25–44. A more gradual decline continued, to 8.7%, for those aged 75 and over (Figure 5.3).



Notes

1. Data on the age group 0–14 for these cancers and the age group 15–24 for prostate cancer cannot be released due to the small number of cases.
2. Data for this figure are presented in online Table D5.2.

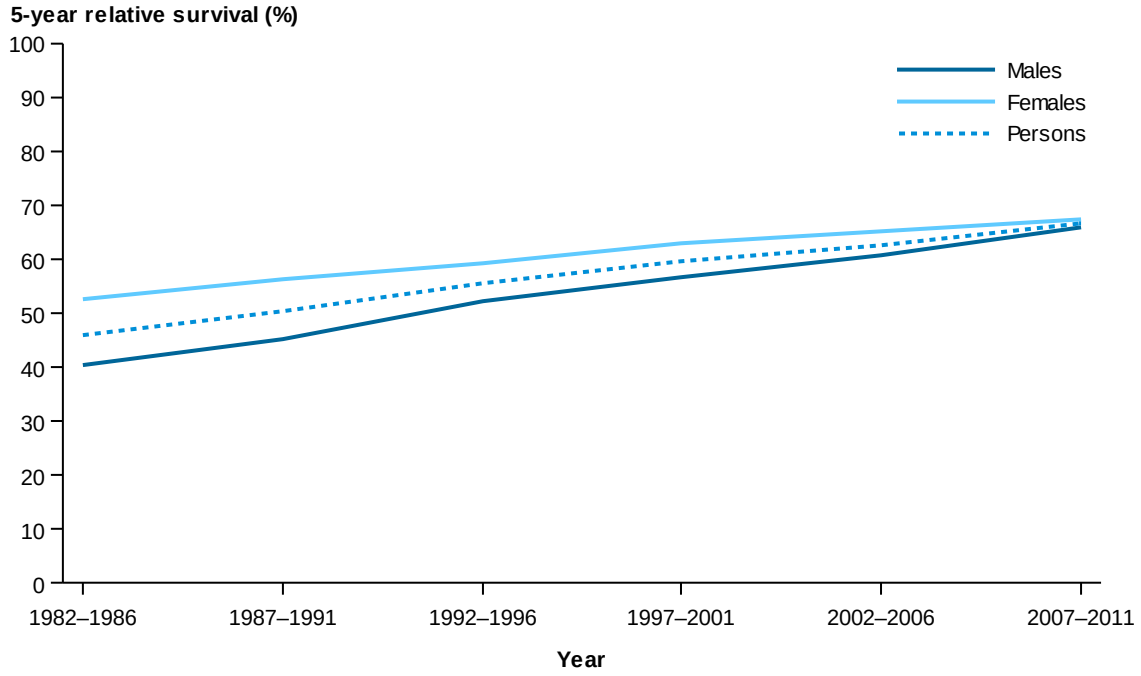
Source: AIHW ACD 2011.

Figure 5.3: Five-year relative survival from selected cancers by age at diagnosis, Australia, 2007–2011

Change over time

Five-year survival for people diagnosed with cancer increased significantly over time, from 46% in 1982–1986 to 67% in 2007–2011 (Figure 5.4).

The increase in 5-year survival over time is evident in both males and females, although the increase was greater for males. For all cancers combined, 5-year survival for males increased from 40% in 1982–1986 to 66% in 2007–2011, compared with 52% to 68% for females. These gains can be partly attributed to better diagnostic methods, earlier detection and improvements in treatment (Dickman & Adami 2006).



Note: Data for this figure are in online Table D5.3.

Source: AIHW ACD 2011.

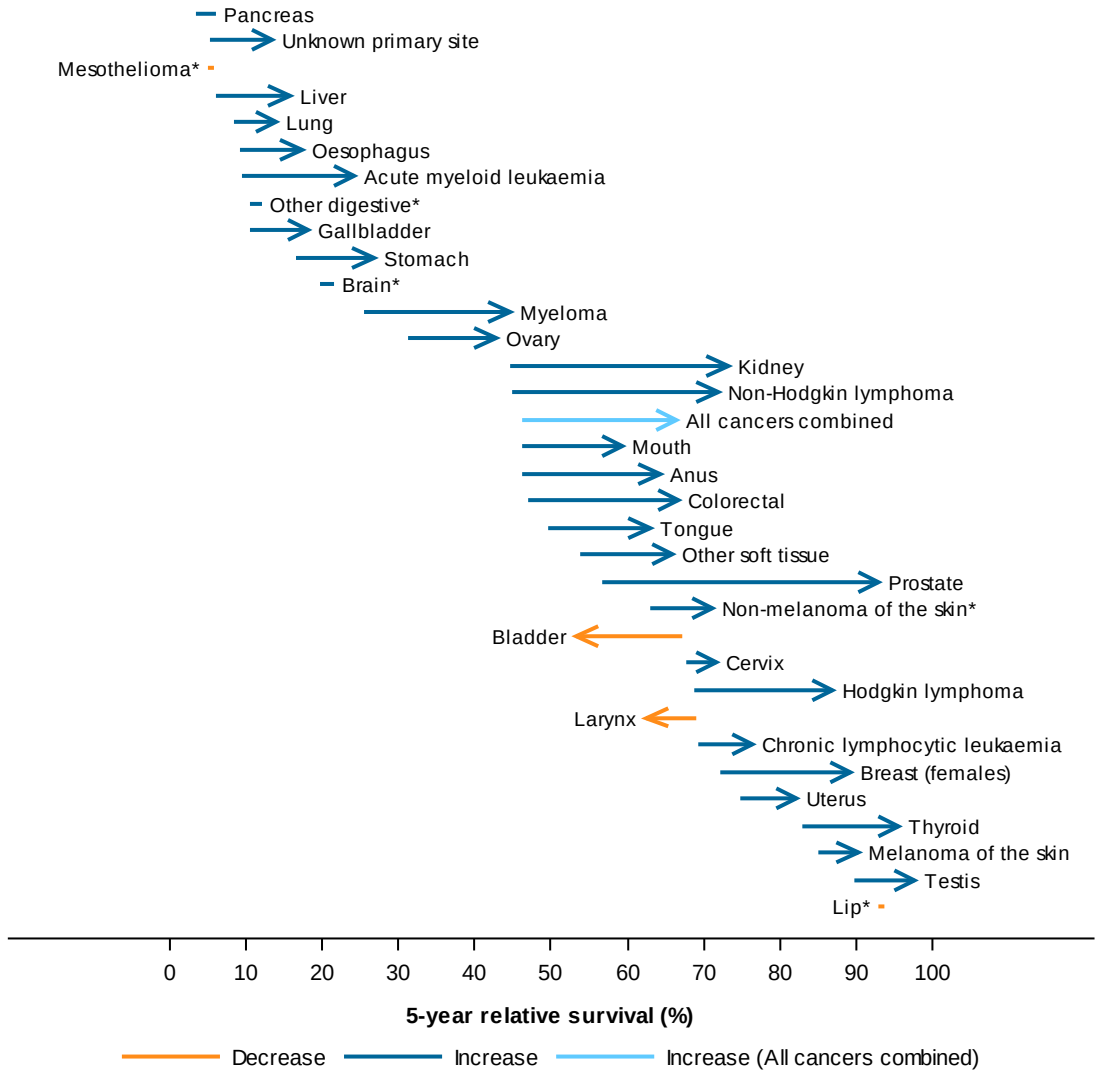
Figure 5.4: Five-year relative survival from all cancers combined, Australia, 1982–1986 to 2007–2011

Between 1982–1986 and 2007–2011, survival from most cancers improved, but the change was not uniform over time or across cancer types (Figure 5.5).

The cancers that had the largest absolute increase in survival were prostate cancer, kidney cancer, non-Hodgkin lymphoma, colorectal cancer, myeloma, Hodgkin lymphoma and anal cancer, where 5-year survival increased by 18 percentage points or more.

Many of the cancers that had low survival in 1982–1986 showed only small improvements, such as cancer of other digestive organs (from 10% to 12%), pancreatic cancer (from 4% to 6%) and lung cancer (from 9% to 14%).

Some cancers had a decrease in survival over time. Cancer of the bladder showed a statistically significant decrease in 5-year survival (67% to 53%). The negative trend in bladder cancer survival may be partly attributed to changes in coding practices and changes in the age at diagnosis over time (Duncombe et al. 2009; English et al. 2007; Luke et al. 2010).



Notes

1. Arrow positions indicate survival estimates and arrow lengths indicate the change in survival between the periods 1982–1986 and 2007–2011. Cancers labelled with an asterisk (*) indicate changes that were not statistically significant.
2. Data for 1987–1991, instead of 1982–1986, are used for liver cancer, mesothelioma and cancer of other digestive organs due to the small number of cases from the earlier time period.
3. All cancers combined include cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin. Non-melanoma skin cancer does not include C44 codes that indicate a basal or squamous cell carcinoma of the skin.
4. Data for this figure are in online Table D5.4.

Source: AIHW ACD 2011.

Figure 5.5: Survival trends for selected cancers, Australia, between 1982–1986 and 2007–2011

Conditional survival

Conditional survival estimates show the probability of surviving a given number of years provided that an individual has *already* survived a specified amount of time after diagnosis. Ordinary relative survival shows the probability of survival at diagnosis.

Note that all conditional survival estimates in this report are conditional relative survival estimates. That is, they have been derived from relative survival but are referred to simply as 'conditional survival'.

For all cancers combined, the prospect of surviving for at least 5 more years after having already survived for 1, 5, 10 or 15 years, increased markedly. At diagnosis, the probability of surviving for at least 5 years was 67%. However, by 1 year after diagnosis, individuals with cancer had an 80% chance of surviving at least 5 more years (Table 5.2). This increased further to 97% by 15 years after diagnosis, at which survival prospects were almost the same as for the general population.

Table 5.2: Summary of conditional survival from all cancers combined[(a)], Australia, 2007–2011

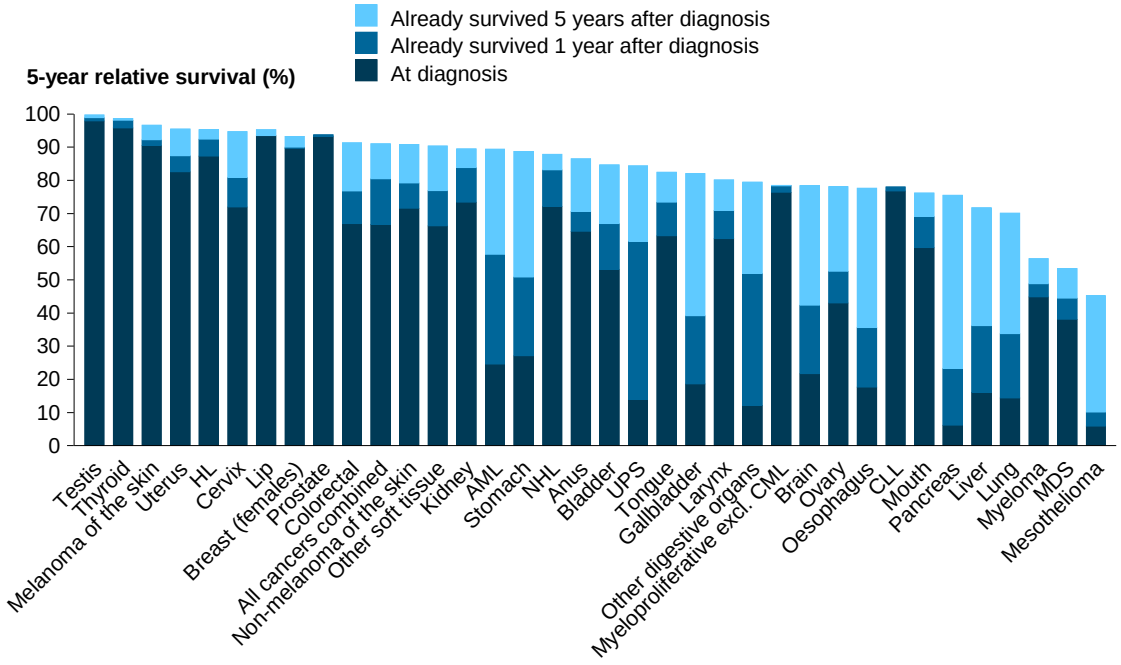
Years already survived	5-year conditional relative survival (%)	95% confidence interval
At diagnosis	66.7	66.5–66.3
Already survived 1 year after diagnosis	80.4	80.3–80.6
Already survived 5 years after diagnosis	91.0	90.8–91.2
Already survived 10 years after diagnosis	93.8	93.6–94.0
Already survived 15 years after diagnosis	96.5	96.2–96.7

(a) Cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate basal cell and squamous cell carcinoma of the skin.

Source: AIHW ACD 2011.

The relationship between conditional survival and survival at diagnosis varied for different cancer sites. Some cancers that had poor survival prospects at diagnosis were observed to have substantial increases in conditional survival with the number of additional years survived. These included stomach cancer, cancer of the gallbladder and extrahepatic bile ducts, cancer of unknown primary site and acute myeloid leukaemia. All of these had a 5-year relative survival at diagnosis of less than 30%. However, 5 years after diagnosis, survival for an additional 5 years was more than 80%.

Some cancers that had relatively high survival at diagnosis were observed to have little increase in conditional survival by 5 years after diagnosis. For example, survival from testicular cancer, thyroid cancer, melanoma of the skin, lip cancer and prostate cancer was comparatively high at diagnosis (more than 90%), with only marginal gains in conditional survival after having already survived for 1 or 5 years (Figure 5.6).



Notes

1. The three columns for each cancer are overlapping, such that the area for *Already survived 5 years after diagnosis* includes those for *Already survived 1 year after diagnosis* and *At diagnosis*.
2. All cancers combined include cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin. Non-melanoma skin cancer does not include C44 codes that indicate a basal or squamous cell carcinoma of the skin.
3. HL= Hodgkin lymphoma, AML=Acute myeloid leukaemia, NHL=Non-Hodgkin lymphoma, UPS=Cancer of unknown primary site, CLL=Chronic lymphocytic leukaemia, MDS= Myelodysplastic syndromes.
4. Data for this figure are in online Table D5.5.

Source: AIHW ACD 2011.

Figure 5.6: Five-year survival by number of years already survived, Australia, 2007–2011

6 Prevalence of cancer

Key findings

At the end of 2009 in Australia:

- 370,474 people were alive who had been diagnosed with cancer within the previous 5 years; this represented 1.7% of the Australian population
- 5-year prevalence was higher in males than in females (56% and 44% of all prevalent cases, respectively)
- among males, 5-year prevalence was highest for prostate cancer (42% of total male 5-year prevalence), followed by melanoma of the skin (13%) and colorectal cancer (13%)
- among females, 5-year prevalence was highest for breast cancer (36% of total female 5-year prevalence), followed by colorectal cancer (13%) and melanoma of the skin (13%).

About prevalence

Prevalence, or survivorship population, refers to the number of people alive who have ever been diagnosed with cancer. The combined effect of several factors—increasing incidence, decreasing mortality, improving survival, and developments in treatment—is leading to an increase in the population who have ever been diagnosed with cancer (see Box 6.1).

Prevalence is a direct product of incidence and survival. Cancers with high incidence and high survival (such as melanoma of the skin) tend to have high prevalence, whereas cancers with low incidence and low survival (such as pancreatic cancer) tend to have low prevalence. In other cases, prevalence may represent a balance between conflicting incidence and survival patterns. For example, lung cancer has high incidence but low survival and therefore has low prevalence (AIHW & CA 2011).

This chapter presents limited-duration prevalence with an index date of 31 December 2009, based on the 2011 ACD, which contains actual national cancer data from 1982 to 2009 (see Appendix F). Data from the National Death Index (NDI) on deaths (from any cause) that occurred up to 31 December 2011 were used to determine which people with cancer had died and when this occurred. Note that a person who was diagnosed with two separate cancers contributed separately to the prevalence of each cancer. However, this person would contribute only once towards prevalence of all cancers combined.

Box 6.1: Survivorship experience

Survivorship is increasingly recognised as starting at diagnosis and, in some cases, continuing long after treatment ends. It is more than simply not dying from cancer; it focuses on living with (and after) a cancer diagnosis (Jackson et al. 2013). Cancer survivors often face emotional, physical and financial challenges as a result of the detection, diagnosis and treatment of cancer. These factors—and the associated stressors and reduced quality of life for cancer survivors and their family, friends and caregivers—highlight the importance of follow-up health care and of survivorship as part of the cancer control continuum (Hawkins et al. 2010; Jackson et al. 2013).

A summary of prevalence data is provided in this chapter. Summary pages for selected cancers are at Appendix B.

Cancer prevalence

At the end of 2009, 370,474 people were alive who had been diagnosed with cancer in the previous 5 years (Table 6.1). This represented 1.7% of the Australian population. Males made up 56% of the 5-year prevalent cases. At the end of 2009, the 10-year prevalence of cancer was 581,208 and the 28-year prevalence was 861,057 (Table 6.1).

Table 6.1: Limited-duration prevalence of all cancers combined[(a)], by sex, Australia, as at end of 2009

	Number[(b)]	Per cent of prevalent cases	Per cent of population[(c)]
		5-year prevalence	
Males	206,437	55.7	1.9
Females	164,037	44.3	1.5
Persons	**370,474**	**100.0**	**1.7**
		10-year prevalence	
Males	310,625	53.4	2.9
Females	270,583	46.6	2.5
Persons	**581,208**	**100.0**	**2.7**
		28-year prevalence	
Males	429,083	49.8	3.9
Females	431,974	50.2	3.9
Persons	**861,057**	**100.0**	**3.9**

(a) Cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate basal cell and squamous cell carcinoma of the skin.

(b) Prevalence refers to number of living people previously diagnosed with cancer, not the number of cancer cases.

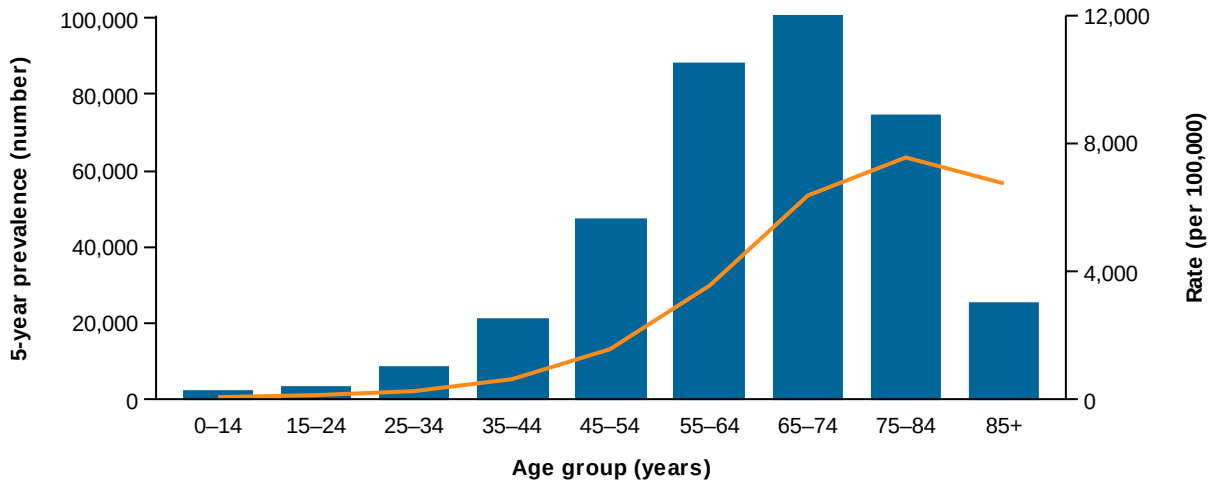
(c) Based on the Australian population at 31 December 2009.

Source: AIHW ACD 2011.

Differences by age

Five-year prevalence for all cancers combined increased with age from those aged 0–14 to those aged 65–74, before decreasing for those aged 75–84 and 85 years and older. Note that in these prevalence statistics, age refers to the age of a person on the index date of 31 December 2009. At the end of 2009, Australians aged 75 years and over accounted for 27% of 5-year prevalence cases.

Five-year prevalence was highest for those aged 65–74 (100,648) and lowest for those aged 0–14 (2,173) (Figure 6.1).



Notes

1. Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.
2. Data for this figure are in online Table D6.1.

Source: AIHW ACD 2011.

Figure 6.1: Five-year prevalence of all cancers combined by age group, Australia, as at end of 2009

Cancer sites

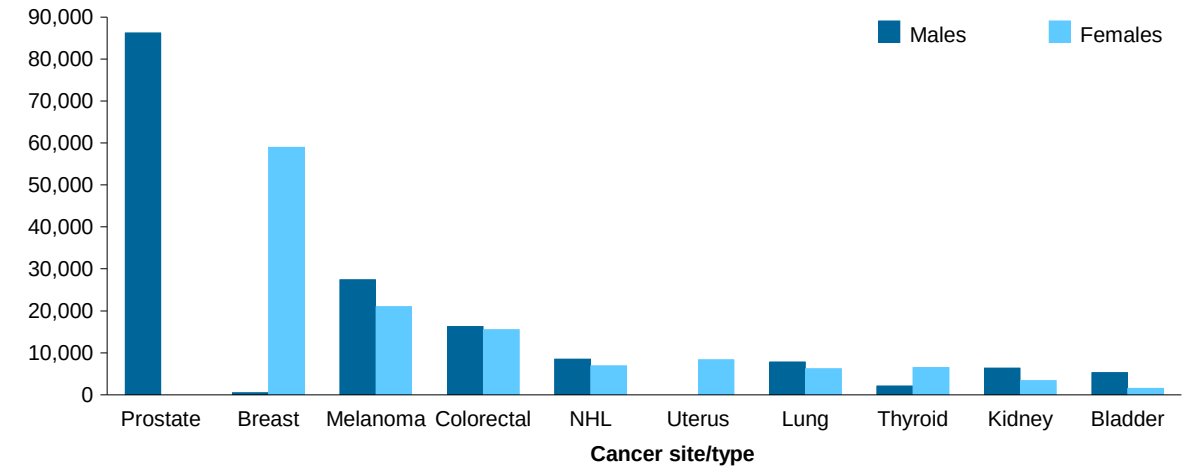
Among males, prostate cancer had the highest 5-year prevalence of 86,207 males at the end of 2009. This was followed by melanoma of the skin (27,402) and colorectal cancer (26,700). Prostate cancer accounted for 42% of the total 5-year prevalence in males, while melanoma of the skin contributed 13% and colorectal cancer contributed 13%.

Among females, breast cancer had the highest 5-year prevalence (58,955 females), followed by colorectal cancer (21,896) and melanoma of the skin (20,962). Breast cancer accounted for 36% of the total 5-year prevalence in females, while colorectal cancer contributed 13% and melanoma of the skin contributed 13%.

For the majority of cancer sites, 5-year prevalence was higher in males than in females. 5-year prevalence for mesothelioma was 4 times higher in males than in females, and liver cancer and lip cancer were 2.8 times as high in males as in females.

Of the selected cancer sites, the lowest 5-year prevalence was observed for bladder cancer (Figure 6.2).

Of the selected cancers, the trend was most pronounced for bladder cancer, where 5-year prevalence was more than 3 times as high in males as in females (5,241 males and 1,498 females. 5-year prevalence for kidney cancer was nearly twice as high in males (6,291) as in females (3,336). In contrast, the 5-year prevalence for thyroid cancer was more than 3 times as high in females (6,482) as in males (2,057).



Notes

1. Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.
2. NHL=Non-Hodgkin lymphoma. Melanoma refers to melanoma of the skin.
3. Data for this figure are in Online Table D6.2.

Source: AIHW ACD 2011.

Figure 6.2: Five-year prevalence of selected cancers, Australia, as at the end of 2009

7 Mortality from cancer

Key findings

In Australia, it is estimated that in 2014:

- 45,780 people will die from cancer, an average of 125 deaths every day
- males will account for more than half of all deaths from cancer (57%)
- lung cancer will be the leading cause of cancer death among males (5,150 deaths), followed by prostate cancer (3,390), colorectal cancer (2,210), pancreatic cancer (1,360) and cancer of unknown primary site (1,160)
- the most common cancers causing death in females will be lung cancer (3,480 deaths), breast cancer (3,000), colorectal cancer (1,910), pancreatic cancer (1,280) and cancer of unknown primary site (1,180)
- the age-standardised mortality rate for all cancers combined will be 168 per 100,000, a fall of 20% from 1982 (209 per 100,000).

About mortality

In this report, mortality refers to the number of deaths for which the underlying cause was a primary 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 usually completed by a medical practitioner.

The main data source used in this chapter was the AIHW National Mortality Database (NMD), which contains information about all deaths registered in Australia (see Appendix I for more information).

This chapter focuses on the estimated deaths from cancer for 2014 and mortality trends from 1982 to 2014. It should be noted that the estimates are only indicative of the future trends, and the actual numbers may differ from these estimates. They are not forecasts and do not attempt to allow for future changes in cancer treatments. Actual mortality data from 1982 to 2011 are based on the *year of occurrence* of the death, and data for 2012 are based on the *year of registration* of the death (see Appendix I).

Summary pages for selected cancers on latest mortality data (2012) and estimates for 2014–2016 are at Appendix B. An overview of mortality statistics for all cancers is at Appendix C.

Estimated number of deaths from cancer

It is estimated that cancer will account for about 3 of every 10 deaths (30%) registered in Australia in 2014.

In 2014, it is estimated that 45,780 people will die from cancer in Australia, an average of 125 deaths every day. More males (57%) than females (43%) are expected to die from cancer in 2014, with cancer accounting for 33% of all male deaths and 27% of all female deaths.

The age-standardised mortality rate for all cancers combined is estimated to be 168 per 100,000 in 2014. The mortality rate of males (212 per 100,000) is estimated to be considerably higher than that of females (134 per 100,000) (Table 7.1).

Table 7.1: Estimated deaths from all cancers combined[(a)], Australia, 2014[(b)]

	Males	Females	Persons
Number of deaths	26,010	19,770	45,780
ASR[(c)]	211.5	133.7	167.7
Per cent of all cancer deaths (%)	56.8	43.2	100.0
Per cent of all deaths (%)	32.6	26.7	30.2

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

(b) The 2014 estimates are based on 2002–2012 mortality data (see appendixes G and I). They are rounded to the nearest 10. The estimates for males and females may not add to the estimates for persons due to rounding.

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

Source: AIHW NMD.

Most common causes of death from cancer

In 2014, it is estimated that the most common causes of death from cancer in Australia were:

- lung cancer (8,630 deaths)
- colorectal cancer (4,120)
- prostate cancer (3,390)
- breast cancer (3,030)
- pancreatic cancer (2,640).

Together, these five cancers represent just under half (48%) of the total mortality from cancer, with lung cancer alone accounting for 1 in every 5 deaths due to cancer (19%).

Males

For males, lung cancer is estimated to be the leading cause of death from cancer, with 5,150 deaths in 2014 (Table 7.2). It is estimated that prostate cancer (3,390) and colorectal cancer (2,210) will be the second and third leading cause of cancer deaths in males, respectively, followed by pancreatic cancer (1,360) and cancer of unknown primary site (1,160). These five cancers account for around 51% of all cancer deaths in males.

Females

For females, lung cancer is estimated to be the most common cause of death from cancer in 2014 (3,480 deaths) (Table 7.2). This is followed by breast cancer (3,000), colorectal cancer (1,910), pancreatic cancer (1,280) and cancer of unknown primary site (1,180). These five cancers account for around 55% of all cancer deaths in females (Table 7.2).

Table 7.2: Estimated 10 most common causes of death from cancer, Australia, 2014[(a)]

Males				Females			
Cancer site/type (ICD-10 codes)	**Deaths**	**Crude rate**	**ASR**[(b)]	**Cancer site/type (ICD-10 codes)**	**Deaths**	**Crude rate**	**ASR**[(b)]
Lung (C33–C34)	5,150	44.0	41.5	Lung (C33–C34)	3,480	29.5	24.1
Prostate (C61)	3,390	28.9	28.2	Breast (C50)	3,000	25.4	20.9
Colorectal (C18–C20)	2,210	18.9	17.9	Colorectal (C18–C20)	1,910	16.2	12.6
Pancreas (C25)	1,360	11.6	10.9	Pancreas (C25)	1,280	10.8	8.6
Unknown primary site (C80)	1,160	9.9	9.4	Unknown primary site (C80)	1,180	10.0	7.6
Melanoma of the skin (C43)	1,120	9.6	9.1	Ovary (C56)	1,000	8.5	6.9
Liver (C22)	1,080	9.2	8.7	Leukaemia (C91–C95)	695	5.9	4.6
Leukaemia (C91–C95)	1,040	8.9	8.5	Other digestive organs (C26)	680	5.8	4.3
Oesophagus (C15)	975	8.3	7.7	Lymphoma (C81–C85)	640	5.4	4.2
Lymphoma (C81–C85)	855	7.3	7.0	Brain (C71)	540	4.6	4.0
All cancers[(c)]	**26,010**	**222.1**	**211.5**	**All cancers**[(c)]	**19,770**	**167.3**	**133.7**

(a) The 2014 estimates are based on 2002–2012 mortality data (see appendixes G and I). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to nearest 5.

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

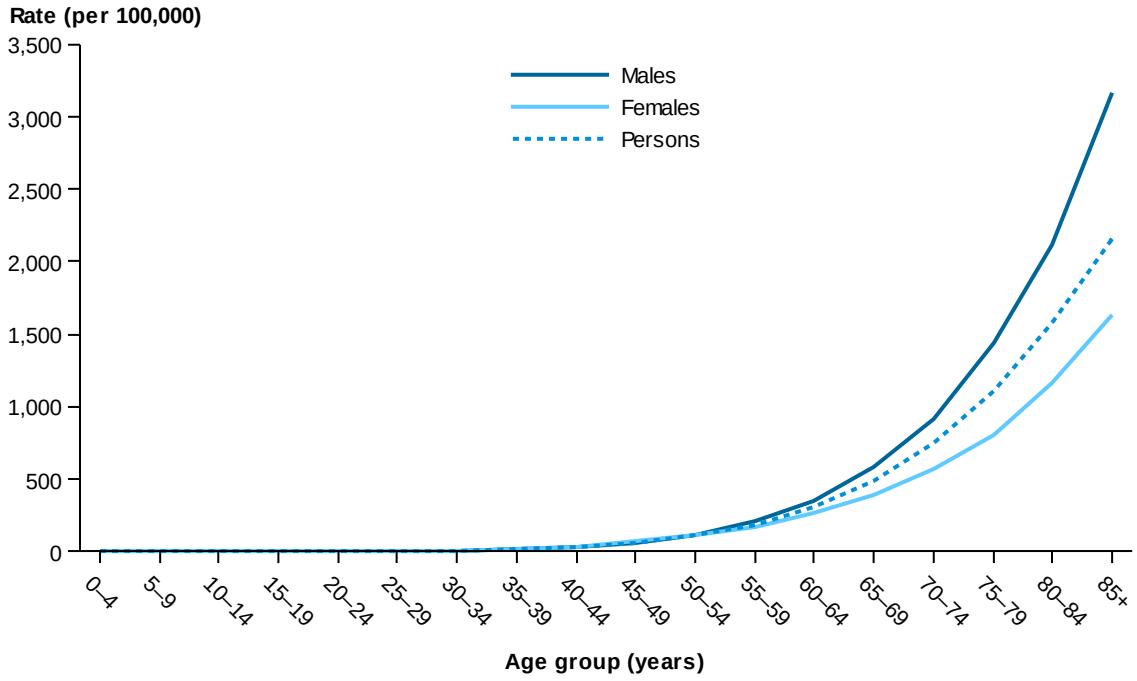
(c) Cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.

Source: AIHW NMD.

Mortality by age

The age-specific mortality rate of all cancers combined increases with age (Figure 7.1). In 2014, it is estimated that 87% of all cancer deaths in males and 84% of all cancer deaths in females occurred in people aged over 60.

For those aged under 50, the estimated age-specific mortality rate is similar for males and females. After 55, the mortality rate increased more steeply for males. Mortality from lung cancer, prostate cancer and colorectal cancer may be attributed to the high cancer mortality rate in older males.



Notes

1. The 2014 estimates are based on 2002–2012 mortality data (see appendixes G and I). The estimates for males and females may not add to the estimates for persons due to rounding.
2. Data pertain to cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.
3. Data for this figure are in online Table D7.1.

Source: AIHW NMD.

Figure 7.1: Estimated mortality from all cancers combined by age at death, Australia, 2014

Risk of death from cancer

In 2014, it is estimated that the risk of dying from cancer before the age of 75 is 1 in 9 for males and 1 in 13 for females. By the age of 85, the risk is estimated to increase to 1 in 4 for males and 1 in 6 for females (Table 7.3) (see Appendix H for an explanation of how these risks are calculated).

The risk of dying from lung cancer before the age of 75 was estimated to be 1 in 40 for males and 1 in 59 for females. By the age of 85, the risk of dying from lung cancer doubled to 1 in 17 for males and 1 in 29 for females.

Table 7.3: Estimated risk of death from all cancers combined[(a)], by sex, Australia, 2014

Sex	Risk to age 75	Risk to age 85
Males	1 in 9	1 in 4
Females	1 in 13	1 in 6
Persons	**1 in 11**	**1 in 5**

(a) The 2014 estimates are based on 2002–2012 mortality data (see appendixes G and I). Cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.

Source: AIHW NMD.

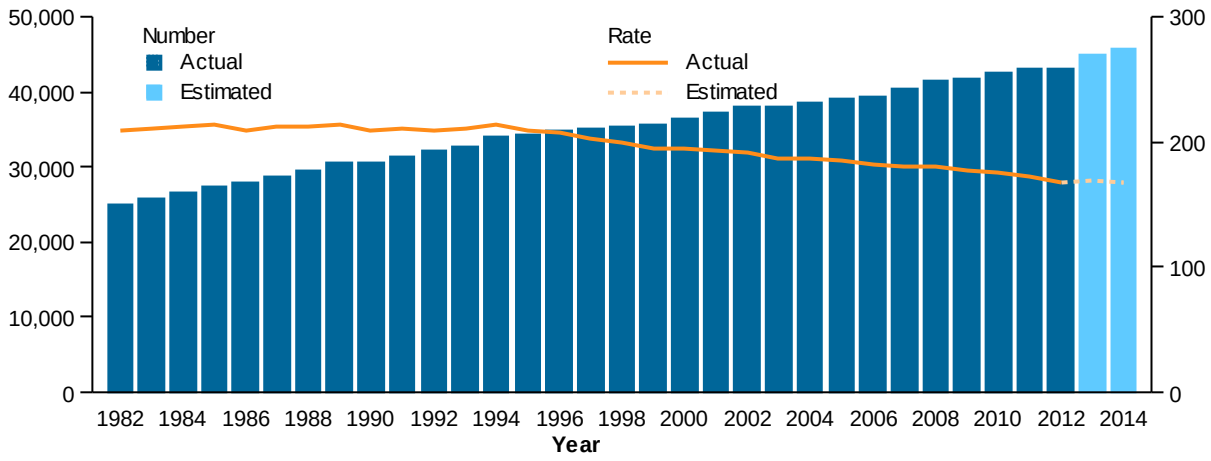
Change over time

In this section, trends in mortality from all cancers combined and selected cancer sites are presented for actual data for 1982–2012 and estimated for 2013 and 2014.

Trends for all cancers combined

The number of deaths from all cancers combined has steadily increased over time. In 2014, it is estimated that 45,780 Australians will die from cancer, compared with 24,922 in 1982, an increase of 84%. The number of deaths estimated for 2014 will be the largest number reported in any year to date.

In contrast, it is estimated that there will be a decrease in the age-standardised mortality rate for cancer between 1982 and 2014. Over this time, it is estimated that the mortality rate from cancer will fall by 20%, from 209 to 168 per 100,000 (Figure 7.2)



Notes

1. Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
2. The 2013 and 2014 estimates are based on 2002–2012 mortality data (see appendixes G and I). Estimates are displayed on the graph as a dotted line or as bars in a lighter shade.
3. Actual mortality data from 1982 to 2011 are based on the year of occurrence of the death, and data for 2012 are based on the year of registration of the death (see Appendix I).
4. The rates were age-standardised to the Australian population as at 30 June 2001.
5. Data pertain to cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.
6. Data for this figure are in online Table D7.2.

Source: AIHW NMD.

Figure 7.2: Trends in mortality from all cancers combined, Australia, 1982 to 2014

Males

For males, after the mortality rate reached a peak in 1994, it is estimated that it will fall by 26% over the period from 1994 to 2014 (from 285 to 212 per 100,000; see online Table D7.2). The trend of cancer mortality in males can be largely attributed to declines in mortality rates for lung cancer, prostate cancer and colorectal cancer, which accounted for most of the total decrease between 1994 and 2014.

Females

For females, the cancer mortality rate was consistently lower than that for males. The female mortality rate remained fairly steady before 1993 and decreased thereafter (online Table D7.2). The mortality rate among females is estimated to fall by 18% from 1993 (164 per 100,000) to 2014 (134 per 100,000). The fall could be largely attributed to declines in mortality rates of breast cancer and colorectal cancer.

Trends for specific cancers

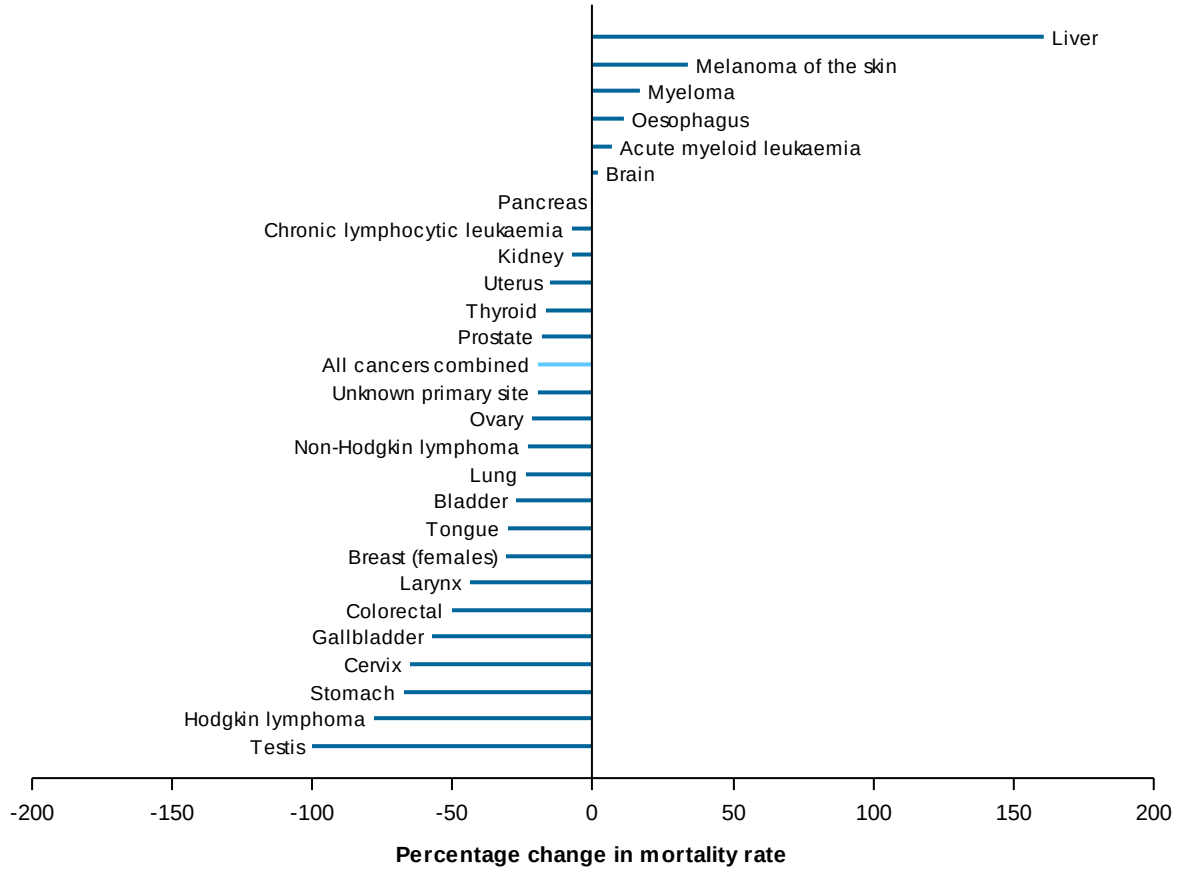
Between 1982 and 2014, the age-standardised mortality rate of many cancers decreased. Figure 7.3 summarises the estimated percentage change in age-standardised mortality rates.

Cancers that showed the greatest decrease in the age-standardised mortality rate include:

- stomach cancer (from 12.3 to 4.0 per 100,000 persons)
- cervical cancer (5.2 to 1.8 per 100,000)
- colorectal cancer (31.5 to 15.6 per 100,000)
- breast cancer in females (30.4 to 20.9 per 100,000)
- lung cancer (42.3 to 32.2 per 100,000)
- ovarian cancer (8.8 to 6.9 per 100,000)
- cancer of unknown primary site (10.1 to 8.1 per 100,000)
- prostate cancer (34.5 to 28.2 per 100,000).

Cancers that showed an increase in the age-standardised mortality rate include:

- liver cancer (from 2.3 to 6.0 per 100,000)
- melanoma of the skin (4.7 to 6.3 per 100,000)
- myeloma (3.0 to 3.5 per 100,000)
- oesophageal cancer (4.4 to 4.9 per 100,000)
- brain cancer (5.0 to 5.1 per 100,000) (Figure 7.3).



Notes

1. The 2014 estimates are based on 2002–2012 mortality data (see appendixes G and I). Estimates for 2015 and 2016 are also available at Appendix B.
2. The bars indicate the percentage change in mortality rates between1982 and 2014.
3. The percentage change between 1982 and 2014 is a summary measure that allows the use of a single number to describe the change over a period of multiple years. However, it is not always reasonable to expect that a single measure can accurately describe the trend over the entire period.
4. The rates were age-standardised to the Australian population as at 30 June 2001.
5. Data for this figure are in online Table D7.3.

Source: AIHW NMD.

Figure 7.3: Estimated percentage change in age-standardised mortality rates between 1982 and 2014, Australia

8 Focus on key population groups

Key findings

Incidence

In the 5 years from 2005 to 2009:

- the age-standardised incidence rate was higher for Indigenous than for non-Indigenous Australians for liver cancer (2.8 times as high), cervical cancer (2.3), cancer of unknown primary site (1.8), lung cancer (1.7), uterine cancer (1.6), and pancreatic cancer (1.3)
- the incidence rate for all cancers combined was highest in Tasmania (530 per 100,000) and lowest in the Northern Territory (456 per 100,000)
- people living in *Inner regional* areas of Australia had the highest incidence rate in six of the selected cancers: prostate cancer (206 per 100,000), breast cancer in females (120 per 100,000), colorectal cancer (70 per 100,000), melanoma of the skin (62 per 100,000), non-Hodgkin lymphoma (19 per 100,000) and kidney cancer (13 per 100,000).

In the 4 years from 2006 to 2009 (2005 data were not included as some data were not available):

- those living in the most disadvantaged areas of Australia accounted for the highest age-standardised incidence rate for six of the selected cancers: colorectal cancer (66 per 100,000), lung cancer (52 per 100,000), cancer of unknown primary site (14 per 100,000), bladder cancer (11 per 100,000), pancreatic cancer (11 per 100,000) and cervical cancer (8 per 100,000).

In 2014, the most common cancers diagnosed by life stage are estimated to be:

- leukaemia for people aged 0–24 (315 new cases), breast cancer for people aged 25–49 (3,300 new cases) prostate cancer for people aged 50–64 (6,090 new cases) and colorectal cancer for people aged 65 and over (11,490 new cases).

Mortality

In the 5 years from 2008 to 2012:

- the age-standardised mortality rate was higher for Indigenous than for non-Indigenous Australians for cervical cancer (3.4 times as high), liver cancer (3.0), lung cancer (1.7), uterine cancer (1.6), cancer of unknown primary site (1.5), pancreatic cancer (1.2) and breast cancer in females (1.1)
- the age-standardised mortality rate for all cancers combined was highest in the Northern Territory (217 per 100,000) followed by Tasmania (192 per 100,000); the lowest mortality rate was in the Australian Capital Territory (152 per 100,000)
- the age-standardised mortality rate for all cancers combined was 15% higher in *Remote* and *Very remote* areas than in *Major cities*.

In the 4 years from 2009 to 2012:

- those living in the most disadvantaged areas of Australia accounted for the highest age-standardised mortality rate for nine of the selected cancers: lung cancer (40 per 100,000), breast cancer in females (22 per 100,000), colorectal cancer (17 per 100,000), pancreatic cancer (11 per 100,000), cancer of unknown primary site (11 per 100,000), non-Hodgkin lymphoma (6 per 100,000), bladder cancer (5 per 100,000) kidney cancer (4 per 100,000) and cervical cancer (3 per 100,000).

Differences across population groups

Cancer incidence and mortality data in this chapter are presented according to five population groups:

- Aboriginal and Torres Strait Islander people
- State and territory
- Remoteness areas
- Socioeconomic disadvantage
- Life stages (represented by four broad age groups).

Actual incidence and mortality data are presented in this chapter, except for the 'Life stages' section of the chapter, where incidence and mortality estimates for 2014 are presented. Data are presented for all cancers combined and for selected cancers for each of the focus population groups.

The cancers discussed in the Aboriginal and Torres Strait Islander section have been selected, due to the higher diagnosis and mortality rates of certain cancers in this population group.

For Aboriginal and Torres Strait Islander people, data are presented for the following cancers: breast cancer in females, cancer of unknown primary site, cervical cancer, colorectal cancer, liver cancer, lung cancer, non-Hodgkin lymphoma uterine cancer, pancreatic cancer and prostate cancer.

For the population groups by state and territory, by remoteness area, and by socioeconomic disadvantage, data are presented for the following cancers: cervical cancer, colorectal cancer, bladder cancer, breast cancer in females, kidney cancer, lung cancer, melanoma of the skin, non-Hodgkin lymphoma, pancreatic cancer, prostate cancer, cancer of unknown primary site.

Data have been presented for multiple years to reduce random variations in rates. This is especially important for small population groups. 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.

Life stages are presented according to four broad age groups: 0–24 years, 24–49 years, 50–64 years, and 65 years and older. Data are presented as estimates for 2014 for all cancers combined and for the top five cancers for incidence and mortality. Incidence data are presented as an average over 5 years (2005 to 2009) for Indigenous, state and territory and remoteness areas sections of this report. Due to the unavailability of some data for socioeconomic disadvantage, 4 years of data (2006 to 2009) are used.Mortality data are presented as an average over 5 years (2008 to 2012) for Indigenous, state and territory, and remoteness areas sections of this report. For consistency, mortality data for socioeconomic disadvantage are also presented as the average of 4 years of data (2009 to 2012). Mortality data are based on the *year of occurrence* of the death, except for the most recent year (namely 2012), where the number of people whose death was *registered* is used (see Appendix I).

ASRs are provided for incidence and mortality to account for differences in the age structure and the size of the population groups.

Observed differences by the characteristics examined in this section may result from a number of factors, including variations 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 2011 Australian Cancer Database (ACD) and the National Mortality Database (NMD). The 5 years of incidence data from 2005 to 2009 were used for this chapter because 2009 is the latest year for which actual data were available for all states and territories (see Appendix F).

Care must be exercised when interpreting differences in rates based on small counts and/or population groups as such rates may be volatile.

Due to the differences in data sources and analysis approaches, mortality data in this chapter are not directly comparable with those published by individual state and territory cancer registries (see Box 8.1).

Box 8.1: Differences in reporting mortality data

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 those below:

- The mortality data in this chapter were derived using the place of a person's residence at the time of *death*. In contrast, some state and territory cancer registries present mortality information based on a person's place of residence at the time of *diagnosis*. In the 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 I). Information on cause of death in the NMD is coded by the ABS. This process uses an automated coding system which selects the underlying cause of death from all the information documented on the death certificate. In contrast, the state and territory cancer registries may use information from a number of different sources, including pathology reports and other notifications, to assign a cause of death.

Aboriginal and Torres Strait Islander people

Aboriginal and Torres Strait Islander people are disadvantaged across a range of health-related and socioeconomic indicators compared with other Australians. Many factors contribute to the gap between Indigenous and non-Indigenous health, including social disadvantage such as lower education and employment rates, as well as higher smoking rates, poor nutrition, physical inactivity and poor access to health services (AIHW 2014a).

Aboriginal and Torres Strait Islander people are also more likely to live in remote areas of Australia than the non-Indigenous population.

Note that rates presented in this report for Indigenous and non-Indigenous Australians are not comparable with rates presented in the previous report *Cancer in Australia: an overview 2012*. Rates presented in this report are derived from population estimates from the ABS 2011

Census of Population and Housing, while the report *Cancer in Australia: an overview 2012* derived population estimates from the 2006 Census.

Incidence by Indigenous status

Reliable national data on the diagnosis of cancer for Indigenous Australians are not available. All state and territory cancer registries collect information on Indigenous status; however, in some jurisdictions the quality of Indigenous status data is insufficient for analyses. Information in the ACD on Indigenous status is considered to be of sufficient completeness for reporting for New South Wales, Queensland, Western Australia and the Northern Territory. Data for these four jurisdictions are used to examine the incidence of cancer by Indigenous status. While the majority (83%) of Australian Indigenous people live in these four jurisdictions, the degree to which data for these jurisdictions are representative of data for all Indigenous people is unknown (ABS 2012b).

For the four jurisdictions analysed, the overall level of missing data on Indigenous status for all cancers combined that were diagnosed between 2005 and 2009 was 12%. It should be noted, however, that the level of missing data was particularly high for prostate cancer (15%).

Between 2005 and 2009, an average of 840 Indigenous Australians were diagnosed with cancer each year—this comprised 1% of all cancer cases diagnosed in that period.

Of the selected cancers, lung cancer (average of 130 cases per year) was the most commonly diagnosed cancer among Indigenous Australians, followed by breast cancer in females (95 cases per year), colorectal cancer (79 cases per year) and prostate cancer (66 cases per year).

Between 2005 and 2009, the age-standardised incidence rate of all cancers combined was slightly lower for Indigenous Australians than for their non-Indigenous counterparts (421 and 443 per 100,000, respectively). This contrasts with findings in the 2012 edition of this report, where Indigenous Australians had a higher incidence rate for all cancers combined than non-Indigenous Australians (AIHW & AACR 2012). The reason for this reversal is that the ABS has revised upwards the estimated population of Indigenous Australians. This increase in population leads to an apparent decrease in incidence rate.

The age-standardised incidence rate was significantly higher for Indigenous than for non-Indigenous Australians for:

- liver cancer (2.8 times as high)
- cervical cancer (2.3)
- cancer of unknown primary site (1.8)
- lung cancer (1.7)
- uterine cancer (1.6).

While the incidence rate of pancreatic cancer was also higher for Indigenous Australians than for non-Indigenous Australians (1.3 times as high), the difference was not significant.

The higher incidence rates of lung cancer and liver cancer are consistent with Indigenous Australians' higher rates of smoking and heavy alcohol consumption. The higher rate of cervical cancer diagnosed for Indigenous Australians may be partly attributed to lower levels of participation in cervical screening programs (Condon 2004; Condon et al. 2005) and to greater exposure to risk factors associated with cervical cancer (such as higher rates of

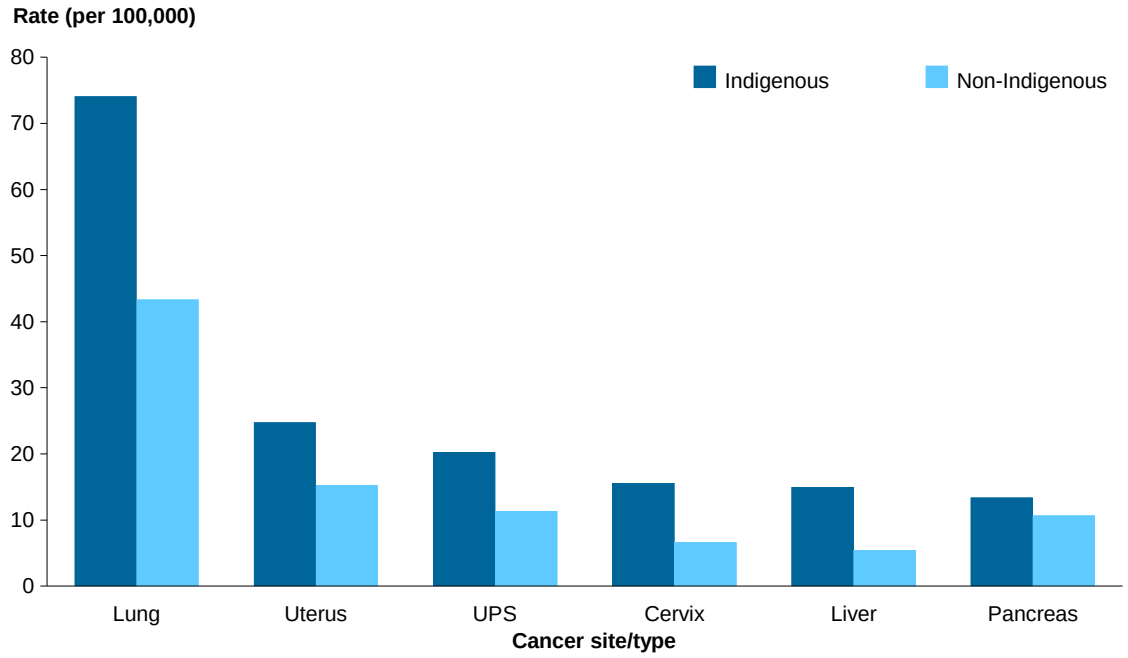
smoking and having more children) (Garland et al. 2011; Roder 2005). Indigenous Australians have poorer access to health-care services and are more likely to have cancers that are diagnosed at a later stage than non-Indigenous Australians, when the primary site is no longer apparent (Cunningham et al. 2008; Roder 2005). This contributes to an incidence rate of cancer of unknown primary site that is higher for Indigenous Australians than for non-Indigenous Australians.

There are also some cancers for which the age-standardised incidence rate was lower for Indigenous than non-Indigenous Australians, namely:

- colorectal cancer (rate ratio of 0.8)
- breast cancer in females (0.7)
- non-Hodgkin lymphoma (0.7)
- prostate cancer (0.6) (Figure 8.1).

In fact, these selected cancers with lower incidence rates for Indigenous Australians are the most commonly diagnosed cancers in non-Indigenous Australians.

The reasons for the lower incidence rate of some cancers among Indigenous Australians are not clear. Indigenous Australians are more likely to have cancers that are diagnosed at a later stage than non-Indigenous Australians, when the primary site is no longer apparent (Cunningham et al. 2008; Roder 2005). This may contribute to lower incidence rates for specific primary sites. The uptake of screening and diagnostics testing (such as breast and bowel screening and PSA testing) is lower among Indigenous people (ABS 2014c; Condon et al. 2001; Roder 2005; Stumpers & Thomson 2009; Threlfall & Thompson 2009), which may also contribute to a lower rate of diagnosis.



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001 and based on the total number of cases over the 5 years from 2005 to 2009.
2. Some states and territories use an imputation method to determine Indigenous cancers, which may lead to differences between these data and those shown in jurisdictional cancer incidence reports.
3. UPS stands for cancer of unknown primary site.
4. Data for this figure are in online tables D8.4, D8.7, D8.8, D8.11, D8.13 and D8.14.

Source: AIHW ACD 2011.

Figure 8.1: Incidence of lung cancer, uterine cancer, cancer of unknown primary site, cervical cancer, liver cancer and pancreatic cancer by Indigenous status, New South Wales, Queensland, Western Australia and the Northern Territory, 2005–2009

Mortality by Indigenous status

Information in the NMD on Indigenous status from 2008 to 2012 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 9 in 10 (89%) Indigenous people live in these jurisdictions (ABS 2012b). In the NMD, the level of missing data on Indigenous status for all cancers combined was about 2% for these five jurisdictions (online Table D8.1).

Between 2008 and 2012, Indigenous Australians accounted for an annual average of 459 cancer deaths (1.5% of all deaths due to cancer).

The age-standardised mortality rate of all cancers combined was significantly higher for Indigenous Australians than for their non-Indigenous counterparts (221 and 172 per 100,000, respectively). The higher mortality rate for Indigenous Australians may be partly 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 by being diagnosed at an advanced stage, as well as their lesser likelihood of receiving adequate treatment (AIHW 2012a; Cunningham et al. 2008).

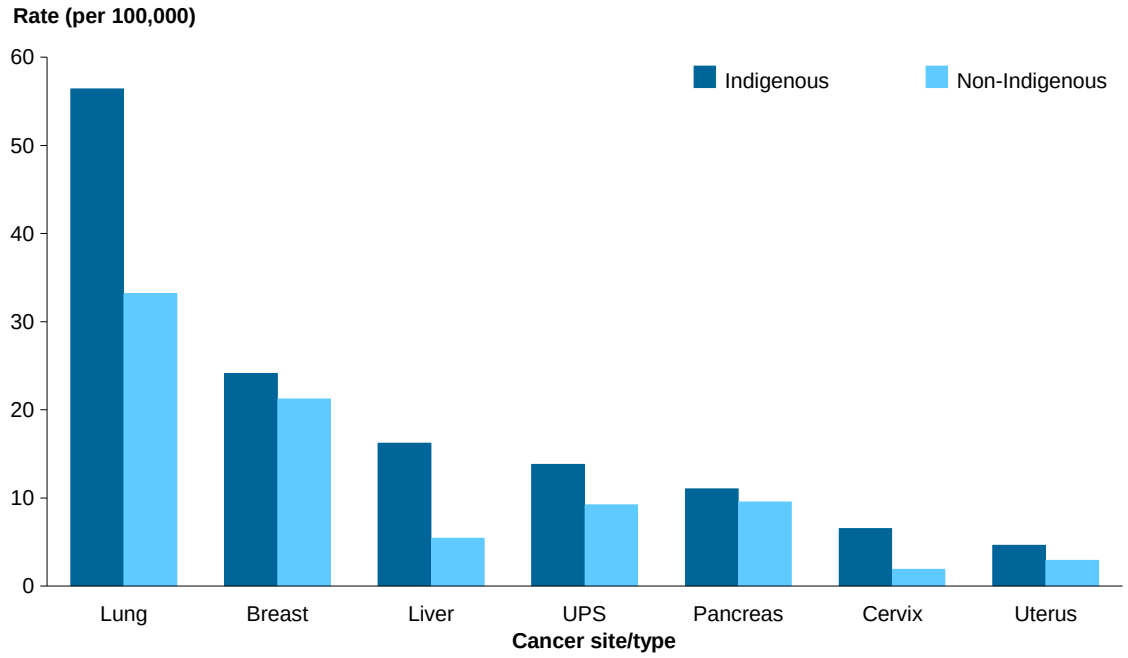
Between 2008 and 2012, lung cancer accounted for the highest average number of cancer-related deaths for Indigenous Australians, totalling 115 deaths per year (25% of all Indigenous deaths from cancer), followed by liver cancer with 34 deaths (7%), breast cancer in females with 30 deaths (6%) and cancer of unknown primary site with 27 deaths (6%).

The age-standardised mortality rate was significantly higher for Indigenous than for non-Indigenous Australians for:

- cervical cancer (3.4 times as high)
- liver cancer (3.0)
- lung cancer (1.7)
- cancer of unknown primary site (1.5).

Mortality rates for uterine cancer, pancreatic cancer and breast cancer in females were also higher for Indigenous Australians than for non-Indigenous Australians (1.6, 1.2 and 1.1 times as high, respectively), but the differences were not statistically significant (Figure 8.2).

Conversely, mortality rates were lower for Indigenous Australians than non-Indigenous Australians for non-Hodgkin lymphoma (rate ratio of 0.9), colorectal cancer (0.8) and prostate cancer (0.8), but the differences were not statistically significant.



Notes

1. The rates were age-standardised to the Australian population as at 30 June 2001 and based on the total number of deaths over the 5-year period from 2008 to 2012.
2. Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. These data have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010. For more detail, refer to Technical note 3 in *Causes of death, Australia, 2010* (ABS cat. no. 3303.0).
3. Data for this figure are in online tables D8.3, D8.4, D8.7, D8.8, D8.11, D8.13 and D8.14.
4. Breast cancer is for females only. UPS stands for cancer of unknown primary site.

Source: AIHW NMD.

Figure 8.2: Mortality from lung cancer, breast cancer in females, liver cancer, cancer of unknown primary site, pancreatic cancer, cervical cancer and uterine cancer, by Indigenous status, New South Wales, Queensland, Western Australia, South Australia and the Northern Territory, 2008–2012

State and territory

Incidence by state and territory

Between 2005 and 2009, the annual average number of cancer cases diagnosed ranged from 594 cases in the Northern Territory to 36,492 cases in New South Wales.

When the size and age structure of the population in each state and territory is taken into account, the highest incidence rates of all cancers combined were in Tasmania (530 per 100,000 persons) and Queensland (528 per 100,000). In contrast, the incidence rates were lowest in the Australian Capital Territory (458 per 100,000) and the Northern Territory (456 per 100,000) (Table 8.1).

Table 8.1: Incidence of all cancers combined[a] by state and territory, Australia, 2005–2009

State or territory	Average annual number of cases[b]	Total number of cases	Age-standardised rate[c]
New South Wales	36,492	182,462	490.6
Victoria	26,992	134,962	486.4
Queensland	22,077	110,383	528.2
Western Australia	10,182	50,912	483.6
South Australia	8,964	44,820	482.9
Tasmania	3,069	15,344	530.3
Australian Capital Territory	1,405	7,025	457.6
Northern Territory	594	2,969	456.0
Total	**109,775**	**548,877**	**495.7**

(a) Cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that 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 age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates were based on the total number of cases over the 5 years from 2005 to 2009.

Source: AIHW ACD 2011.

Between 2005 and 2009, the highest age-standardised incidence rates for selected cancers were in:

- South Australia for non-Hodgkin lymphoma (21 per 100,000)
- Queensland for melanoma of the skin (67 per 100,000)
- Tasmania for prostate cancer (212 per 100,000), colorectal cancer (75 per 100,000), bladder cancer (17 per 100,000) and kidney cancer (14 per 100,000)
- Northern Territory for lung cancer (65 per 100,000), cancer of unknown primary site (20 per 100,000) and cervical cancer (14 per 100,000)
- the Australian Capital Territory for breast cancer in females (127 per 100,000).

New South Wales, Victoria and Western Australia all accounted for the highest age-standardised incidence rate for pancreatic cancer (11 per 100,000).

Mortality by state and territory

Between 2008 and 2012, the average annual number of deaths from cancer ranged from 253 in the Northern Territory to 14,196 in New South Wales.

After taking the size and age structure of the population in each state and territory into account, the mortality rate for all cancers combined was highest in the Northern Territory (217 per 100,000) followed by Tasmania (192 per 100,000) (Table 8.2).

In contrast, the mortality rates of all cancers combined were lowest in the Australian Capital Territory (152 per 100,000), Western Australia (170 per 100,000) and Victoria (172 per 100,000) (Table 8.2).

Note that mortality data by state and territory presented in this section are not directly comparable with those data published by individual state and territory cancer registries (see Box 8.1).

Table 8.2: Mortality from all cancers combined[a] by state and territory, Australia, 2008–2012[b]

State or territory[c]	Average annual number of deaths[d]	Total number of deaths	Age-standardised rate[e]
New South Wales	14,196	70,981	172.4
Victoria	10,591	52,953	172.0
Queensland	8,163	40,816	179.8
Western Australia	3,871	19,354	169.6
South Australia	3,605	18,025	173.5
Tasmania	1,218	6,091	191.8
Australian Capital Territory	481	2,405	151.7
Northern Territory	253	1,265	217.1
Total	**42,379**	**211,896**	**173.9**

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

(b) Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. These data have not been adjusted for the additional deaths arising from outstanding registrations of deaths in Queensland in 2010. For more detail, refer to Technical note 3 in *Causes of death, Australia, 2010* (ABS cat. no. 3303.0).

(c) Mortality data may not be comparable with mortality 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 shown in some state and territory reports. Further, 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 8.1).

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

(e) The rates were age-standardised to the Australian population as at 30 June 2001 and are expressed per 100,000 population. The rates were based on the total number of deaths over the 5 years from 2008 to 2012.

Source: AIHW NMD.

Between 2008 and 2012, the highest age-standardised mortality rates for selected cancers were in:

- Northern Territory for lung cancer (51 per 100,000), cancer of unknown primary site (15 per 100,000), bladder cancer (5 per 100,000) and cervical cancer (4 per 100,000)
- Tasmania for breast cancer in females (23 per 100,000), colorectal cancer (20 per 100,000), pancreatic cancer (10 per 100,000) and kidney cancer (4 per 100,000, equal with South Australia)
- Queensland for prostate cancer (34 per 100,000) and melanoma of the skin (8 per 100,000)
- South Australia for non-Hodgkin lymphoma (6 per 100,000).

Remoteness area

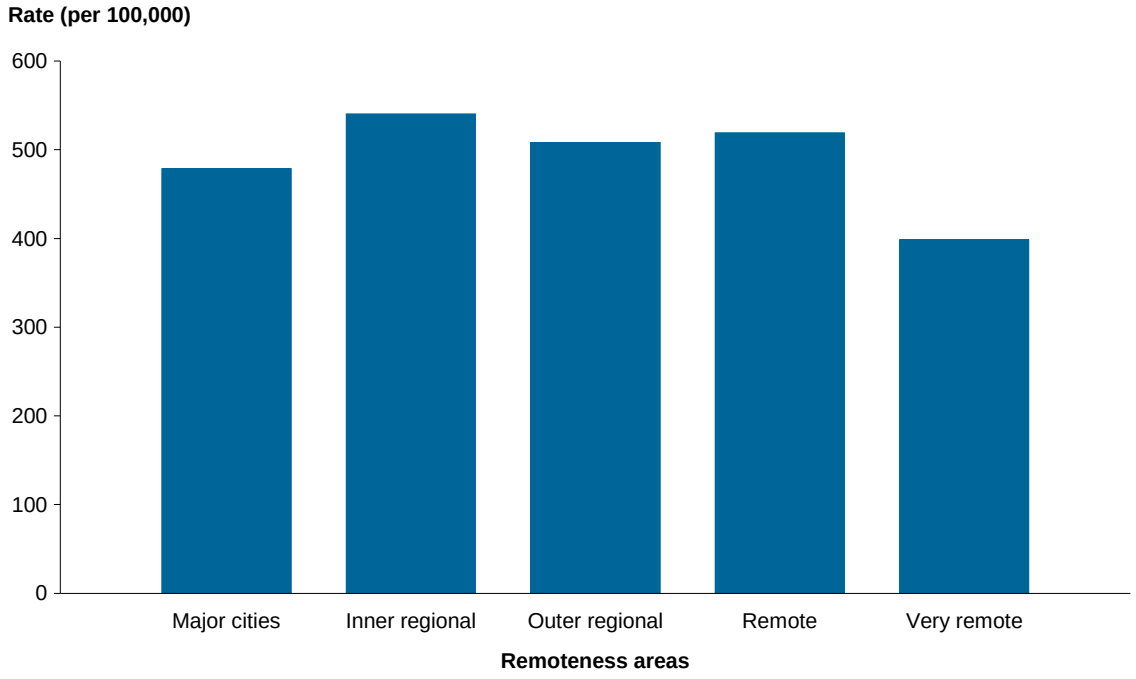
People living in remote areas of Australia are often disadvantaged in relation to access to primary health-care services, educational and employment opportunities, and income. Further, they are more likely to have higher rates of risky health behaviours, such as smoking, heavy alcohol use and poor nutrition (AIHW 2014a).

Incidence and mortality rates were calculated according to the level of remoteness area of residence at diagnosis or death. The Remoteness Areas (RAs) divide Australia into broad geographic regions that share common characteristics of remoteness for statistical purposes. The Remoteness Structure divides each state and territory into several regions on the basis of

their relative access to services. More information about the RAs classification is at Appendix E. Incidence and mortality rates are presented by five categories: *Major cities*, *Inner regional*, *Outer regional*, *Remote* and *Very remote.*

Incidence by remoteness area

Between 2005 and 2009, the age-standardised incidence rate of all cancers combined was highest in *Inner regional* areas (540 per 100,000) and lowest in *Very remote* areas (398 per 100,000) (Figure 8.3).



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 based on the total number of cases over the 5 years from 2005 to 2009.
3. Data for this figure are in online Table D8.1.

Source: AIHW ACD 2011.

Figure 8.3: Incidence of all cancers combined by remoteness area, Australia, 2005–2009

Between 2005 and 2009, *Inner regional* areas of Australia had the highest observed age-standardised incidence rate for:

- prostate cancer (206 per 100,000)
- breast cancer in females (120 per 100,000)
- colorectal cancer (70 per 100,000)
- melanoma of the skin (62 per 100,000)
- non-Hodgkin lymphoma (19 per 100,000)
- kidney cancer (13 per 100,000).

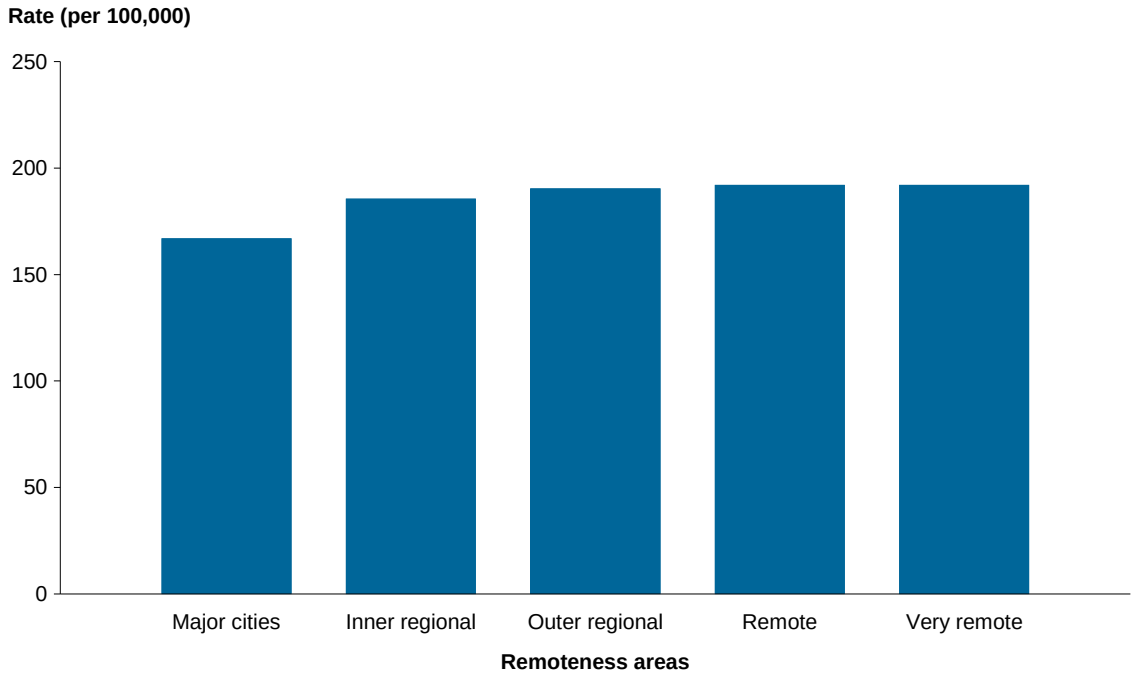
Remote areas of Australia had the highest observed age-standardised incidence rate for:

- cancer of unknown primary site (16 per 100,000)
- bladder cancer (13 per 100,000)
- pancreatic cancer (12 per 100,000)
- cervical cancer (10 per 100,000).

Very remote areas accounted for the highest age-standardised incidence rate for lung cancer (57 per 100,000).

Mortality by remoteness area

Between 2008 and 2012, the age-standardised mortality rates of all cancers combined were higher in *Very remote* and *Remote* areas (both 192 per 100,000) and lower in *Major cities* (167 per 100,000) (Figure 8.4).



Notes

1. Remoteness was classified according to the Australian Statistical Geography Standard (ASGS) Remoteness Areas (see Appendix E).
2. Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
3. The rates were age-standardised to the Australian population as at 30 June 2001 and based on the total number of deaths over the 5 years from 2008 to 2012.
4. The data for this figure are in online Table D8.1.

Source: AIHW NMD.

Figure 8.4: Mortality from all cancers combined by remoteness area, Australia, 2008–2012

Between 2008 and 2012, *Very remote* and *Inner regional* areas had the highest age-standardised mortality rate for:

Very remote

- lung cancer (43 per 100,000 persons)
- prostate cancer (35 per 100,000, equal with *Outer regional* areas)
- cancer of unknown primary site (14 per 100,000)
- bladder cancer (5 per 100,000)
- cervical cancer (5 per 100,000).

Inner regional

- colorectal cancer (17 per 100,000)
- breast cancer in females (23 per 100,000)
- melanoma of the skin (7 per 100,000)
- non-Hodgkin lymphoma (6 per 100,000).

Remote areas of Australia had the highest age-standardised mortality rate for kidney cancer (5 per 100,000), and *Major cities* and *Outer regional* areas of Australia had the highest mortality rates for pancreatic cancer (both 10 per 100,000).

Socioeconomic disadvantage

The Index of Relative Socio-economic Disadvantage (IRSD) is used to indicate socioeconomic disadvantage. 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.

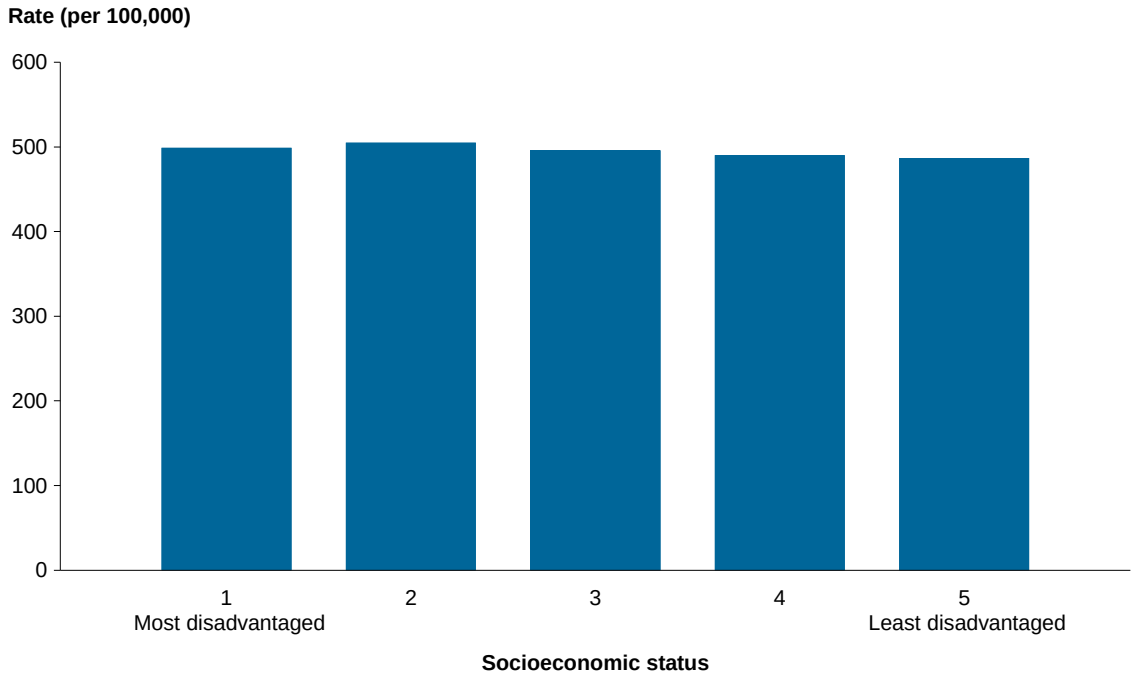
The distribution of cancer incidence (between 2006 and 2009) and mortality (between 2009 and 2012) by quintile of relative socioeconomic disadvantage reflects the population distribution, with approximately 20% of records in each quintile.

Note that the IRSD is an area-based measure of socioeconomic status rather than a person-based measure. It is used as a proxy for the socioeconomic status of people living in those areas and would not be correct for each person living in that area.

Incidence by socioeconomic disadvantage

In this report, the first socioeconomic status group (quintile 1) corresponds to geographical areas containing the 20% of the population living in the area with the most disadvantaged socioeconomic status according to the IRSD, and the fifth group (quintile 5) to the 20% of the population living in areas with the least disadvantaged socioeconomic status. More information is at Appendix E: Index of Relative Socio-economic Disadvantage.

Between 2006 and 2009, the age-standardised incidence rate for all cancers combined was slightly higher for those living in the three most disadvantaged (quintile 1, 2 and 3) areas and slightly lower for those living in the least disadvantaged (quintile 4 and 5) areas (Figure 8.5).



Notes

1. Socioeconomic status was classified using the ABS IRSD (see Appendix E).
2. The rates were age-standardised to the Australian population as at 30 June 2001 and based on the total number of cases over the 4-year period from 2006 to 2009.
3. Data for this figure are in online Table D8.1.

Source: AIHW ACD 2011.

Figure 8.5: Incidence of all cancers combined by quintile of relative socioeconomic disadvantage, Australia, 2006–2009

Of the selected cancers, those living in the most disadvantaged (quintile 1) areas accounted for the highest age-standardised incidence rate for:

- colorectal cancer (66 per 100,000 persons)
- lung cancer (52 per 100,000)
- cancer of unknown primary site (14 per 100,000)
- bladder cancer (11 per 100,000)
- pancreatic cancer (11 per 100,000, equal with quintile 2)
- cervical cancer (8 per 100,000).

Those living in the second most disadvantaged (quintile 2) areas accounted for the highest incidence rate for:

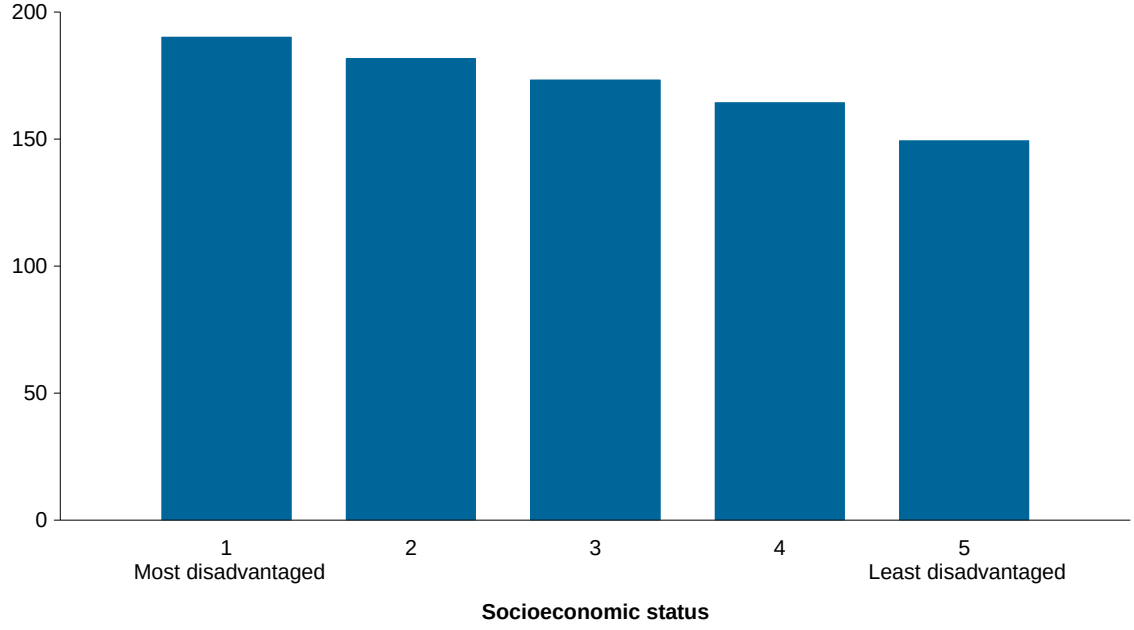
- melanoma of the skin (52 per 100,000, equal with quintile 5)
- kidney cancer (13 per 100,000)
- pancreatic cancer (11 per 100,000, equal with quintile 1).

Those living in the least disadvantaged (quintile 5) areas accounted for the highest incidence rate for:

- prostate cancer (205 per 100,000)
- breast cancer in females (124 per 100,000)
- melanoma of the skin (52 per 100,000, equal with quintile 2)
- non-Hodgkin lymphoma (20 per 100,000).

Mortality by socioeconomic disadvantage

Between 2009 and 2012, the age-standardised mortality rate for all cancers combined was highest among those living in the most disadvantaged (quintile 1) areas (190 per 100,000 persons) and lowest among those living in the least disadvantaged (quintile 5) areas (149 per 100,000) (Figure 8.6).



Notes

1. Socioeconomic status was classified using the ABS IRSD (see Appendix E).
2. Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
3. The rates were age-standardised to the Australian population as at 30 June 2001 and based on the total number of deaths over the 5 years from 2009 to 2012.
4. Data for this figure are in online Table D8.1.

Source: AIHW NMD.

Figure 8.6: Mortality from all cancers combined, by quintile of relative socioeconomic disadvantage, Australia, 2009–2012

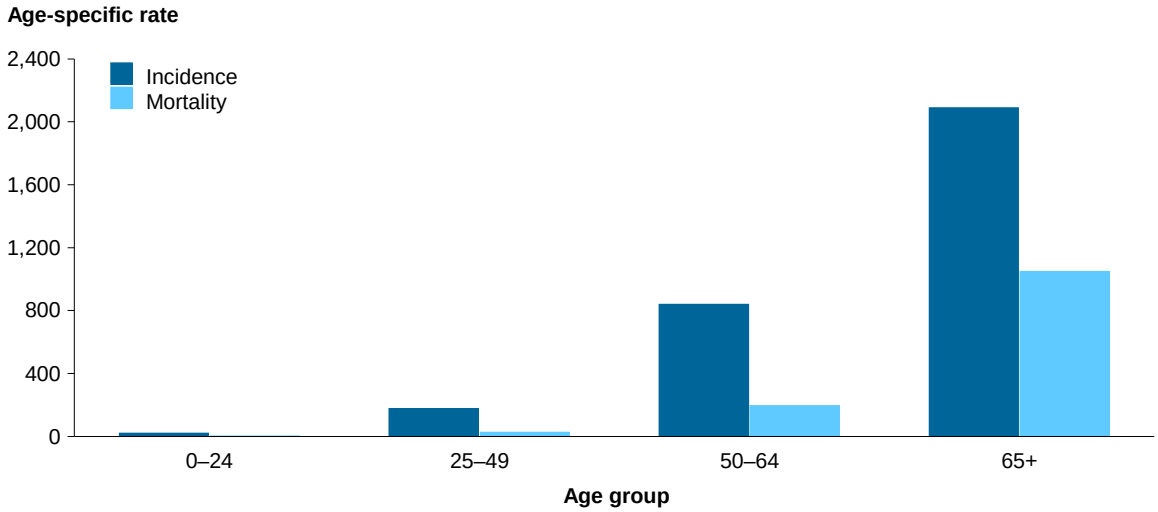
Those living in the most disadvantaged (quintile 1) areas had the highest age-standardised mortality rate for:

- lung cancer (40 per 100,000 persons)
- breast cancer in females (22 per 100,000)
- colorectal cancer (17 per 100,000)
- pancreatic cancer (11 per 100,000)
- cancer of unknown primary site (11 per 100,000)
- non-Hodgkin lymphoma (6 per 100,000, equal with quintiles 2 and 3)
- bladder cancer (5 per 100,000)
- kidney cancer (4 per 100,000, equal with quintile 2)
- cervical cancer (3 per 100,000).

Those living in the second most disadvantaged (quintile 2) areas had the highest age-standardised mortality rate for prostate cancer (32 per 100,000) and for melanoma of the skin (6 per 100,000, equal with quintile 3).

Life stages

This section focuses on the differences in cancer diagnoses and mortality according to the following four broad age groups (which are used to represent different life stages): 0–24 years, 25–49 years, 50–64 years and 65 years and over. The incidence of cancer and deaths from cancer increases with age (Figure 8.7). While cancer cases and deaths are rare among younger people, the types of cancer and treatment options differ depending on age at diagnosis.



Notes

1. The 2014 incidence estimates are based on 2002–2011 incidence data (see Appendix G). The 2014 mortality estimates are based on 2002–2012 mortality data (see Appendix G). The mortality estimates for males and females may not add to the estimates for persons due to rounding.
2. Incidence data pertain to cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.
3. Mortality data pertain to cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3.
4. Data for this figure are in online Table D8.15.

Source: AIHW ACD 2011.

Figure 8.7: Estimated incidence rates of all cancers combined by age at diagnosis and estimated mortality from all cancers combined by age at death, Australia, 2014

Incidence by life stage (broad age groups)

This section focuses on estimated cancer incidence for 2014. Estimates are based on 2002–2011 incidence data (see Appendix G). The estimated numbers of cancer cases diagnosed are rounded to the nearest 10 and the estimates for males and females may not add up to the estimates for persons due to rounding.

Aged 0–24

For people aged 0–24, it is estimated that 1,540 new cases of cancer will be diagnosed in 2014. People aged 0–24 tend to be diagnosed with different cancer types than older people. For this age group, leukaemia is estimated to be the most commonly diagnosed cancer, with 315 new

cases (21% of all cancers diagnosed in this age group). This is followed by lymphoma, with 255 cases (17%) and brain cancer with 135 cases (9%).

Males

For males, it is estimated that 840 new cases of cancer will be diagnosed in 2014 (55% of all cancers diagnosed in this age group). Leukaemia is estimated to be the most commonly diagnosed cancer, with 180 new cases (22% of all cancers diagnosed for males in this age group). This is followed by lymphoma, with 150 cases (18%), and testicular cancer, with 120 cases (14%).

Females

For females, it is estimated that 695 new cases of cancer will be diagnosed in 2014 (45% of all cancers diagnosed in this age group). Leukaemia is estimated to be the most commonly diagnosed cancer, with 135 new cases (19% of all cancers diagnosed for females in this age group). This is followed by lymphoma, with 106 cases (15%), and melanoma of the skin, with 70 cases (10%).

Aged 25–49

For people aged 25–49, it is estimated that 14,590 new cases of cancer will be diagnosed in 2014. Breast cancer is estimated to be the most commonly diagnosed cancer, with 3,300 new cases (23% of all cancers diagnosed in this age group). This is followed by melanoma of the skin, with 2,560 cases (18%), and colorectal cancer, with 1,100 cases (8%).

Males

For males, it is estimated that 5,810 new cases of cancer will be diagnosed in 2014 (40% of all cancers diagnosed in this age group). Melanoma of the skin is estimated to be the most commonly diagnosed cancer, with 1,170 new cases (20% of all cancers diagnosed for males in this age group). This is followed by colorectal cancer, with 590 cases (10%), and testicular cancer with 560 cases (10%).

Females

For females, it is estimated that 8,790 new cases of cancer will be diagnosed in 2014 (60% of all cancers diagnosed in this age group). For this age group, females represent a greater proportion of cancer diagnosis than males. This may be due to the high proportion of breast cancer diagnosis. Breast cancer is estimated to be the most commonly diagnosed cancer, with 3,300 new cases (38% of all cancers diagnosed for females in this age group). This is followed by melanoma of the skin, with 1,380 cases (16%), and thyroid cancer, with 810 cases (9%).

Aged 50–64

For people aged 50–64, it is estimated that 35,720 new cases of cancer will be diagnosed in 2014. Prostate cancer is the most commonly diagnosed cancer, with 6,090 new cases (17% of all cancers diagnosed in this age group). This is followed by breast cancer, with 5,880 cases (16%) and colorectal cancer with 4,020 cases (11%). National breast and bowel screening programs are targeted at people aged 50 and over, which could impact on the number of cancers diagnosed in this age group.

Males

For males, it is estimated that 19,480 new cases of cancer will be diagnosed in 2014 (55% of all cancers diagnosed in this age group). Prostate cancer is estimated to be the most commonly

diagnosed cancer, with 6,090 new cases (31% of all cancers diagnosed for males in this age group). This is followed by colorectal cancer, with 2,380 cases (12%), and melanoma of the skin, with 2,240 cases (11%).

Females

For females, it is estimated that 16,240 new cases of cancer will be diagnosed in 2014 (45% of all cancers diagnosed in this age group). Breast cancer is estimated to be the most commonly diagnosed cancer, with 5,840 new cases (36% of all cancers diagnosed for females in this age group). This is followed by colorectal cancer, with 1,640 cases (10%), and melanoma of the skin, with 1,570 cases (10%).

Aged 65 and over

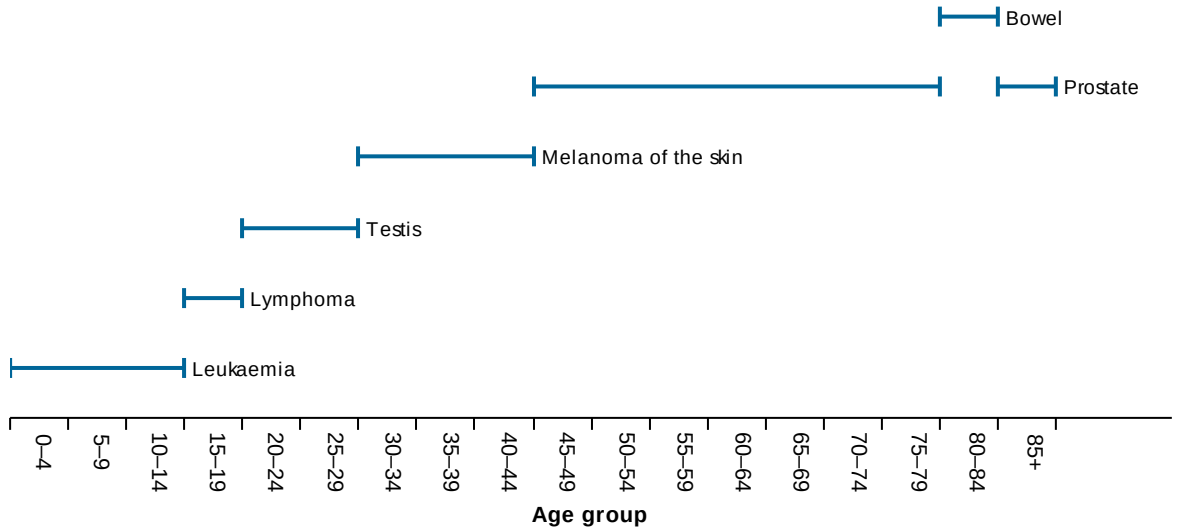
For people aged 65 years and older, it is estimated that 72,070 new cases of cancer will be diagnosed in 2014. Colorectal cancer is estimated to be the most commonly diagnosed cancer, with 11,490 new cases (16% of all cancers diagnosed in this age group). This is followed by prostate cancer, with 10,520 cases (15%), and lung cancer, with 8,440 cases (12%). Population-based screening programs are targeted at people in this age group, which could have an impact on the number of cancers diagnosed.

Males

For males, it is estimated that 42,130 new cases of cancer will be diagnosed in 2014 (58% of all cancers diagnosed in this age group). Prostate cancer is estimated to be the most commonly diagnosed cancer, with 10,520 new cases (25% of all cancers diagnosed for males in this age group). This is followed by colorectal cancer, with 6,310 cases (15%), and melanoma of the skin, with 5,120 cases (12%).

Females

For females, it is estimated that 29,940 new cases of cancer will be diagnosed in 2014 (42% of all cancers diagnosed in this age group). Breast cancer is estimated to be the most commonly diagnosed cancer, with 6,120 new cases (20% of all cancers diagnosed for females in this age group). This is followed by colorectal cancer, with 5,180 cases (17%), and lung cancer, with 3,320 cases (11%).

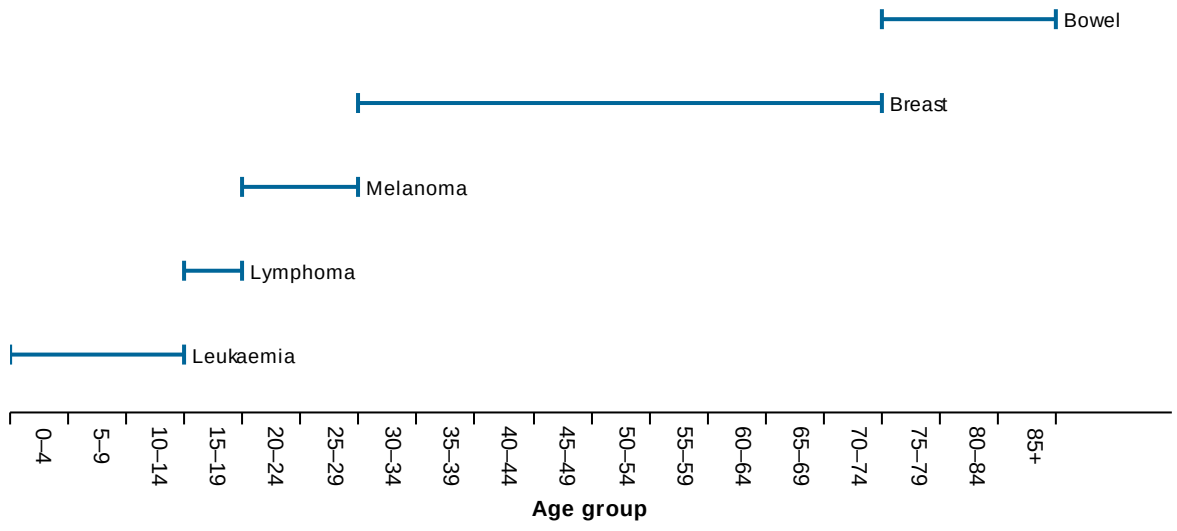


Notes

1. The 2014 incidence estimates are based on 2002–2011 incidence data (see Appendix G).
2. Data for this figure are in online Table D8.16.

Source: AIHW ACD 2011.

Figure 8.8: Estimated most commonly diagnosed cancer at each age group, male, 2014



Notes

1. The 2014 incidence estimates are based on 2002–2011 incidence data (see Appendix G).
2. Data for this figure are in online Table D8.16.

Source: AIHW ACD 2011.

Figure 8.9: The estimated most commonly diagnosed cancer at each age group, female, 2014

Mortality by life stage (broad age groups)

This section focuses on the estimated deaths from cancer for 2014. Estimates are based on 2002–2012 mortality data (see Appendix G). Estimates are rounded to the nearest 10 and the estimates for males and females may not add to the estimates for persons due to rounding.

Aged 0–24

For people aged 0–24, it is estimated that there will be 180 cancer-related deaths in 2014. While the number of cancer-related deaths is low compared with that for other age groups, cancer is the leading cause of death for people in this age group according to the most recent actual data (2012) (AIHW 2014). People aged 0–24 tend to die from different cancers types than those for older people. For this age group, brain cancer and leukaemia are estimated to be leading cause of death from cancer in 2014, both with 40 deaths (22% of all cancer deaths in this age group). This is followed by bone cancer, with 25 deaths (14%).

Males

For males, it is estimated that, in 2014, there will be 100 cancer-related deaths (56% of all cancers diagnosed in this age group) in 2014. Brain cancer and leukaemia are estimated to be the leading causes of death from cancer in 2014, both with 25 deaths (25% of all cancer deaths for males in this age group). This is followed by bone cancer, with 10 deaths (10%).

Females

For females, it is estimated that, in 2014, there will be 85 cancer-related deaths (47% of all cancers diagnosed in this age group). Brain cancer is estimated to be the leading cause of death from cancer in 2014, with 20 deaths (24% of all cancer deaths for females in this age group). This is followed by leukaemia, with 15 deaths (18%).

Aged 25–49

For people aged 25–49, it is estimated that there will be 2,140 cancer-related deaths in 2014. Breast cancer is estimated to be the leading cause of death from cancer in 2014, with 405 deaths (19% of all cancer deaths in this age group). This is followed by lung cancer, with 255 deaths (12%), and colorectal cancer, with 210 deaths (10%).

Males

For males, it is estimated that, in 2014, there will be 1,000 cancer-related deaths (47% of all cancers diagnosed in this age group). Lung cancer is estimated to be the leading cause of death from cancer in 2014, with 140 deaths (14% of all cancer deaths for males in this age group). This is followed by brain cancer, with 115 deaths (12%), and colorectal cancer, with 100 deaths (10%).

Females

For females, it is estimated that, in 2014, there will be 1,130 cancer-related deaths (53% of all cancers diagnosed in this age group). For this age group, females represent a greater proportion of cancer-related deaths than males. This may be due to the high proportion of deaths related to breast cancer. Breast cancer is estimated to be the leading cause of death from cancer in 2014, with 325 deaths (29% of all cancer deaths for females in this age group). This is followed by lung cancer, with 130 deaths (12%), and colorectal cancer, with 100 deaths (9%).

Aged 50–64

For people aged 50–64 years, it is estimated that there will be 8,290 cancer-related deaths in 2014. Lung cancer is estimated to be the leading cause of death from cancer in 2014, with 1,660 deaths (20%). This is followed by breast cancer, with 975 deaths (12%), and colorectal cancer, with 935 deaths (9%).

Males

For males, it is estimated that, in 2014, there will be 4,570 cancer-related deaths (55% of all cancers diagnosed in this age group). Lung cancer is estimated to be the leading cause of death from cancer in 2014, with 970 deaths (21%). This is followed by colorectal cancer, with 420 deaths (9%), and liver cancer, with 345 deaths (8%).

Females

For females, it is estimated that, in 2014, there will be 3,730 cancer-related deaths (45% of all cancers diagnosed in this age group). Breast cancer is estimated to be the leading cause of death from cancer in 2014, with 825 deaths (22% of all cancer deaths for females in this age group). This is followed by lung cancer, with 770 deaths (21%), and colorectal cancer, with 340 deaths (9%).

Aged 65 and over

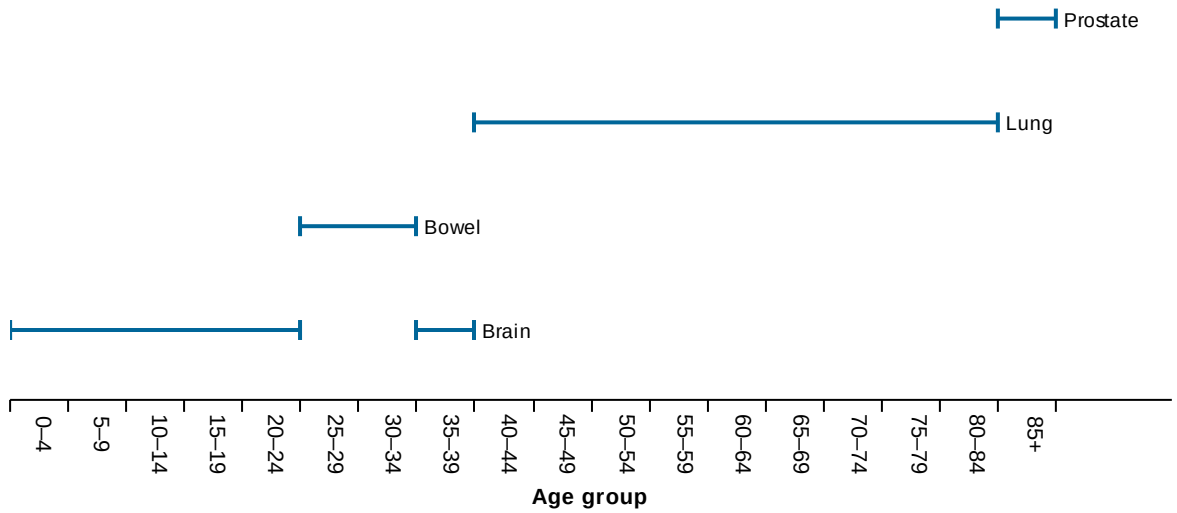
For people aged 65 and older, it is estimated that there will be 36,220 cancer-related deaths in 2014. Lung cancer is estimated to be the leading cause of death from cancer in 2014, with 6,860 deaths (19%). This is followed by prostate cancer, with 3,310 deaths (9%), and colorectal cancer, with 3,220 deaths (9%).

Males

For males, it is estimated that, in 2014, there will be 20,890 cancer-related deaths (58% of all cancers diagnosed in this age group). Lung cancer is estimated to be the leading cause of death from cancer in 2014, with 4,080 deaths (20%). This is followed by prostate cancer, with 3,310 deaths (16%), and colorectal cancer, with 1,720 deaths (8%).

Females

For females, it is estimated that, in 2014, there will be 15,310 cancer-related deaths (42% of all cancers diagnosed in this age group). Lung cancer is estimated to be the leading cause of death from cancer in 2014, with 2,680 deaths (18% of all cancer deaths for females in this age group), followed by breast cancer with 1,900 deaths (12%) and colorectal cancer with 1,430 deaths (9%).

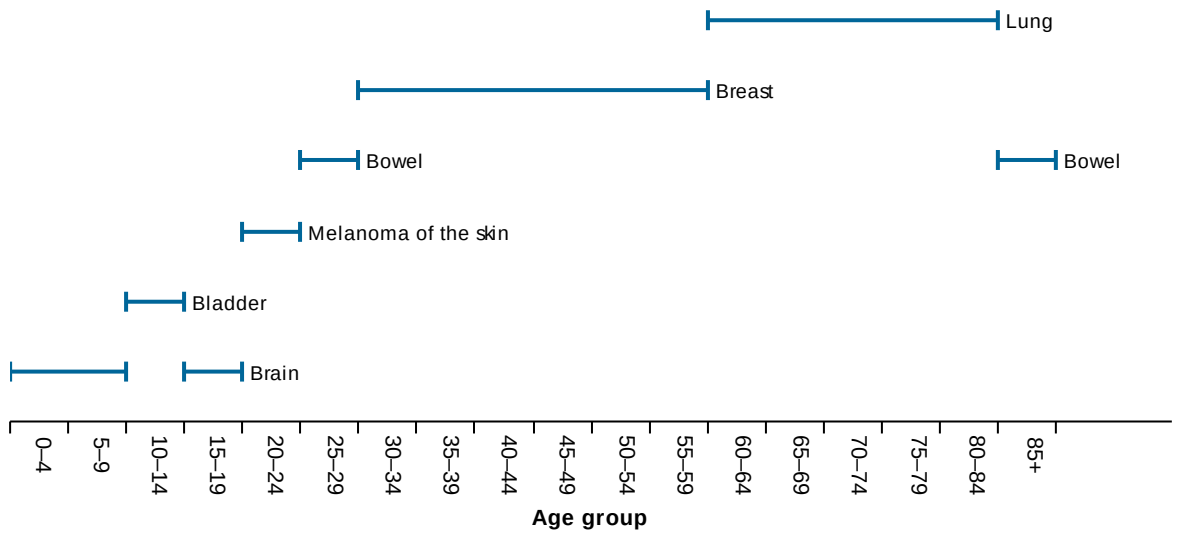


Notes

1. The 2014 mortality estimates are based on 2002–2012 mortality data (see Appendix G). The mortality estimates for males and females may not add to the estimates for persons due to rounding.
2. Data for this figure are in online Table D8.17.

Source: AIHW NMD.

Figure 8.10: Estimated leading cause of death from cancer at each age group, male, 2014



Notes

1. The 2014 mortality estimates are based on 2002–2012 mortality data (see Appendix G). The mortality estimates for males and females may not add to the estimates for persons due to rounding.
2. Data for this figure are in online Table D8.17.

Source: AIHW NMD.

Figure 8.11: Estimated leading cause of death from cancer at each age group, female, 2014

9 International comparisons

Key findings

In 2012, based on ASRs:

- the incidence rate for all cancer combined in Australia (323 per 100,000) was higher than that for all other country groups (regions)
- Australia had the world's second highest incidence rate for melanoma of the skin (35 per 100,000), which was more than 11 times the average world rate (3.0 per 100,000). New Zealand had a slightly higher incidence rate for melanoma of the skin, at 36 per 100,000
- the incidence rate of prostate cancer in Australia (115 per 100,000) was higher than that for all other regions
- Australia had a slightly lower cancer mortality rate (96 per 100,000) than the average world rate (102 per 100,000)
- cancer survival (as shown by the MIR) was higher in Australia than in all other regions.

About international comparisons

Comparing international cancer data—including for incidence, mortality and survival—is a valuable way to compare the Australian experience of cancer with that in other countries and regions.

International cancer data are available from the GLOBOCAN database, which is prepared by the International Agency for Research on Cancer (IARC) (Ferlay et al. 2013). The most recent GLOBOCAN estimates are for 2012, and are based on cancer incidence and mortality rates from about 3 to 5 years earlier. The GLOBOCAN data for all cancers combined pertain to cancers coded in the ICD-10 as C00–C97, excluding those for C44 (that is, non-melanoma skin cancer). They thus encompass a narrower range of cancers than is generally considered in this report (see Appendix I). Australian estimates used in the international context are age-standardised to the World Standard Population and are therefore not comparable with national data presented elsewhere.

For more information on international data and interpreting differences by countries and regions, see Box 9.1 and *A working guide to international comparisons of health* (AIHW 2012b).

Box 9.1: Interpreting international comparisons

Incidence and mortality

Incidence and mortality estimates for international comparisons are derived from national data and standardised to the World Standard Population. Take care when comparing cancer data from different countries as observed differences may be influenced not only by the underlying number of cancer cases (or number of cancer deaths when considering mortality data), but also by differences in:

- age distribution and composition of the populations
- underlying differences in cancer risk and population exposure to modifiable risk factors
- cancer detection and screening
- cancer coding and registration practices (Ferlay et al. 2013)
- features at diagnosis (for example, stage at diagnosis and cancer histology type)
- availability and quality of treatment (CCS & NCIC 2007)
- individual's level of co-morbidity.

In Australia, cancer is a notifiable disease and the completeness of cancer data is relatively high compared with that in a number of countries or regions (Curado et al. 2007).

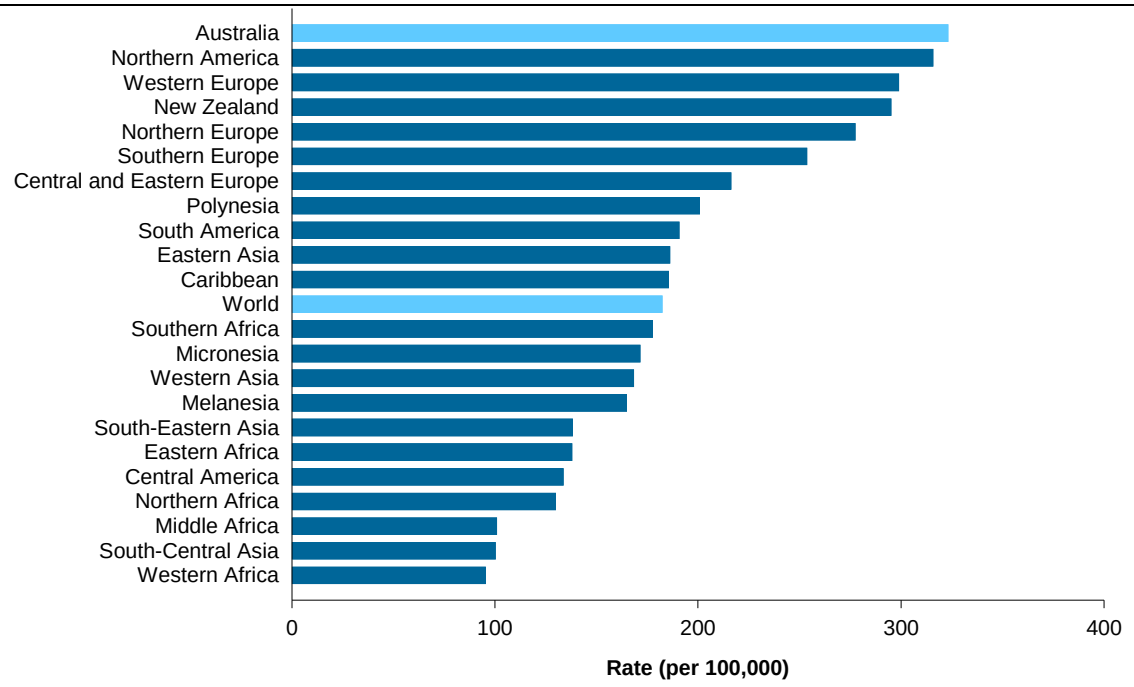
Mortality-to-incidence ratio

The mortality-to-incidence ratio (MIR) is used as a proxy measure of survival in the international context. This ratio describes the number of cancer deaths in a given year, relative to the number of new cases of cancer diagnosed in the same year, using age-standardised data. It is a number between 0 and 1, although it can exceed 1 in certain circumstances. The MIR is a measure of the fatality of the cancer in question: if no-one ever died of the cancer, the MIR would be 0; if everyone died of the cancer on the same day they were diagnosed, the MIR would be 1. Therefore, low values of the MIR indicate longer survival while high ones indicate shorter survival. Appendix H provides further information about interpreting MIRs.

Incidence

In 2012, the estimated number of new cases of cancer diagnosed around the world was 14.1 million. In the same year, it is estimated that 122,031 new cases of cancer were diagnosed in Australia, accounting for 0.9% of all cancers diagnosed worldwide.

The incidence rate for all cancers combined in Australia (323 per 100,000) was higher than that for other country groups (regions) (Figure 9.1). This could be at least partly attributable to the introduction of national population screening programs in Australia (BreastScreen Australia, the National Bowel Cancer Screening Program and the National Cervical Screening Program) and increased PSA testing, contributing to increased diagnosis of these cancers. In Australia, cancer is a notifiable disease and the completeness of cancer data is relatively high compared with that of a number of countries or regions (Curado et al. 2007). Australia also has the world's second highest rate of melanoma of the skin at 35 per 100,000, (slightly behind New Zealand at 36 per 100,000). Australia's rate of melanoma of the skin was more than 11 times the average world rate (3.0 per 100,000).



Notes

1. Cancer coded in the ICD-10 as C00–C97, excluding C44 non-melanoma skin cancer.
2. Data were estimated for 2012 by the IARC and are based on data from about 3 to 5 years earlier.
3. The ASRs were standardised by the IARC using Doll et al. 1966 World Standard Population and are expressed per 100,000 persons. Countries or regions are ordered in descending order according to the ASRs.
4. Data for this figure are in online Table D9.1.

Source: Ferlay et al. 2013.

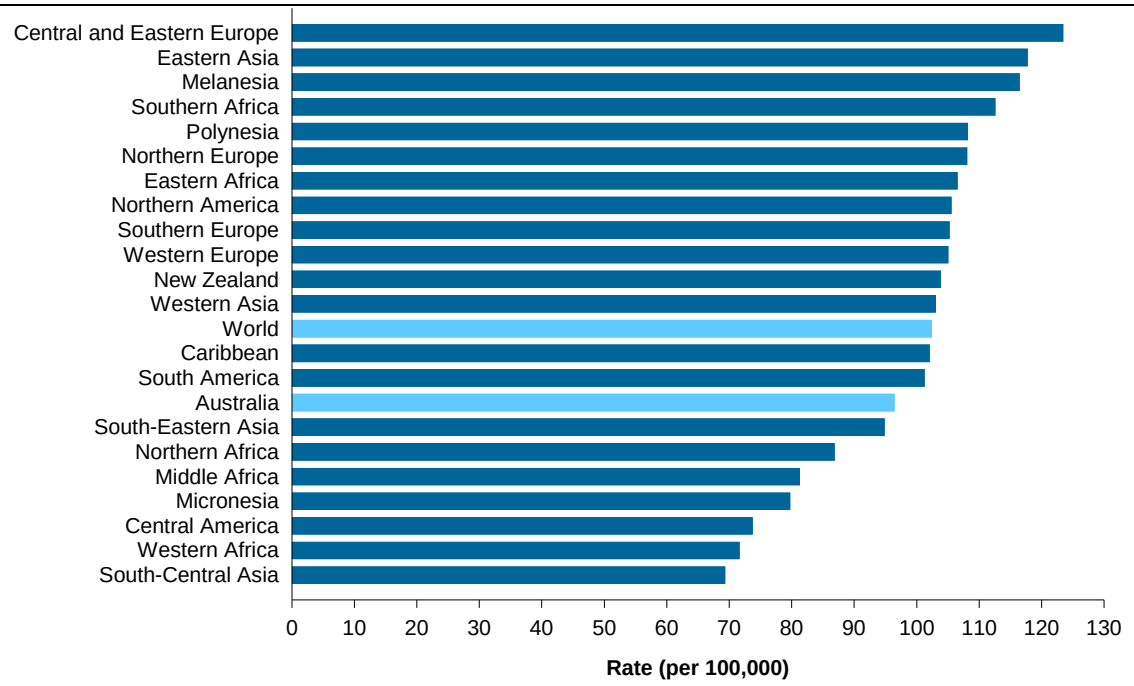
Figure 9.1: International comparison of estimated incidence for all cancers combined, persons, 2012

Mortality

In 2012, the estimated number of deaths from cancer around the world was 8.2 million.

The age-standardised mortality rate for Australia was 96 per 100,000, which was slightly lower than the average world rate (102 per 100,000) (Figure 9.2).

The age-standardised mortality rate for cancer varied considerably between countries and regions. Compared with all other regions, the rate was highest in Central and Eastern Europe (123 per 100,000), and lowest in South-Central Asia (69 per 100,000).



Notes

1. Cancer coded in the ICD-10 as C00–C97, excluding C44 non-melanoma skin cancer.
2. Data were estimated for 2012 by the IARC and are based on data from about 3 to 5 years earlier.
3. The ASRs were standardised by the IARC using the Doll et al. (1966) World Standard Population and are expressed per 100,000 persons. Countries or regions are ordered in descending order according to the ASRs.
4. Data for this figure are in online Table D9.2.

Source: Ferlay et al. 2013.

Figure 9.2: International comparison of estimated mortality for all cancers combined, persons, 2012

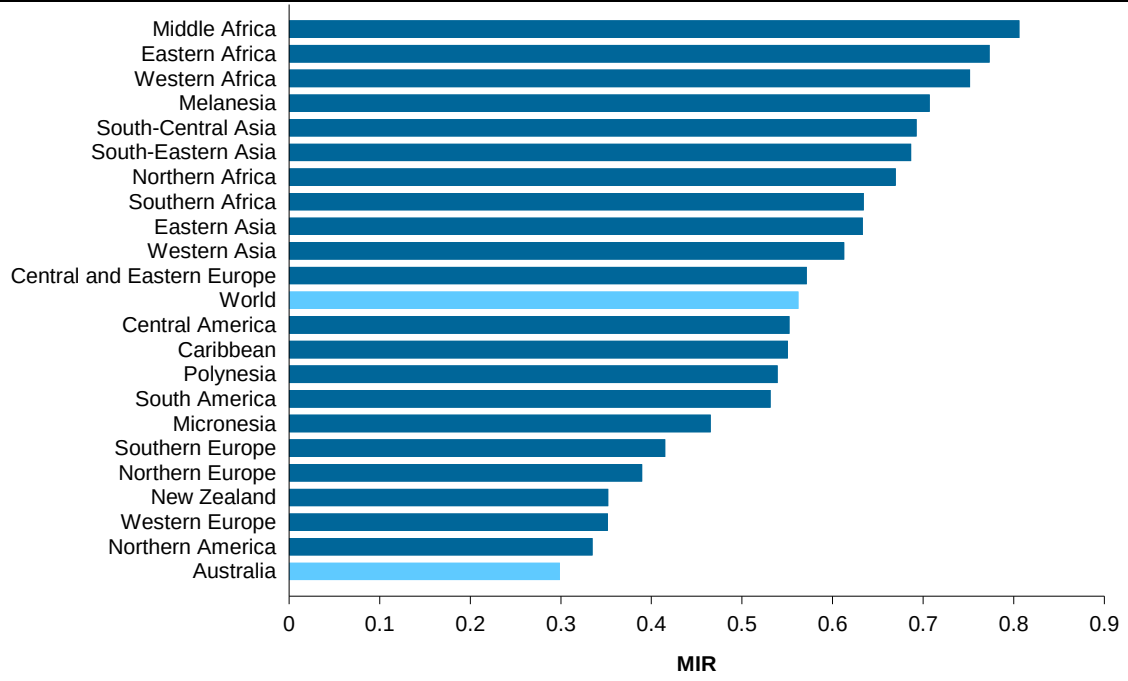
Mortality-to-incidence ratio

The MIR describes the number of cancer deaths in 2012, relative to the number of new cases of cancer diagnosed that year.

Low values of the MIR indicate longer survival while high ones indicate shorter survival. A ratio approaching 1.0 suggests that survival is low, with similar numbers of deaths and incident cases. A ratio approaching zero suggests that survival is higher (see Box 9.1 and Appendix H for more information).

The 2012 GLOBOCAN data suggest that the MIRs for all cancers varied markedly between countries and regions (Ferlay et al. 2013). The MIR for Australia was 0.3, suggesting that the survival of people in Australia who were diagnosed with cancer was higher than that of people in all other regions. By comparison, the MIR for the world was 0.6, indicating that Australia has higher survival from cancer than the world combined. The MIR for African regions and Melanesia was 0.7 or higher, suggesting relatively poorer survival (Figure 9.3).

For more information on MIRs, see Box 9.1.



Notes

1. Cancer coded in the ICD-10 as C00–C97, excluding C44 non-melanoma skin cancer.
2. The ratios are based on incidence and mortality data which were estimated for 2012 by the IARC and are based on data from about 3 to 5 years earlier.
3. The MIR equals the age-standardised mortality rate divided by the age-standardised incidence rate. The ASRs were standardised by the IARC using the Doll et al. (1966) World Standard Population. Countries or regions are ordered in descending order according to the MIR.
4. Data for this figure are in online Table D9.3.

Source: Ferlay et al. 2013.

Figure 9.3: International comparison of MIRs for all cancers combined, persons, 2012

Appendix A: Cancer codes

Table A1: 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
Colorectal	C18–C20
Anus	C21
Liver	C22
Gallbladder and extrahepatic 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)]
Mesothelial and soft tissue	
Mesothelioma	C45
Kaposi sarcoma	C46
Peritoneum	C48
Other soft tissue	C47, C49
Breast	C50

(continued)

Table A1 (continued): Cancer codes

Cancer site/type	ICD-10 codes
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
Blood and lymphatic system	
Hodgkin lymphoma	C81
Non-Hodgkin lymphoma	C82–C85
Immunoproliferative cancers	C88
Myeloma	C90
Acute lymphoblastic leukaemia (ALL)	C91.0
Chronic lymphocytic leukaemia (CLL)	C91.1
Other and unspecified lymphoid leukaemia	C91.2–C91.9
Acute myeloid leukaemia (AML)	C92.0, C92.3–C92.5, C93.0, C94.0, C94.2, C94.4, C94.5
Chronic myelogenous leukaemia (CML)	C92.1
Other and unspecified myeloid leukaemia	C92.2, C92.7, C92.9, C93.1–C93.9, C94.7
Myeloproliferative cancers excluding CML	C94.1, C94.3, C96.2, D45, D47.1, D47.3
Myelodysplastic syndromes	D46

(continued)

Table A1 (continued): Cancer codes

Cancer site/type	ICD-10 codes
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 combined	**C00–C97[(a,c)], 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 before 2008, the applicable codes are C77–C80.

(c) C97 is of relevance for mortality data only.

Appendix B: Summary pages for selected cancers

This appendix provides summary pages on the incidence, mortality, survival and prevalence statistics for selected cancers that were commonly diagnosed or were common causes of cancer deaths.

Actual cancer incidence data for 1982–2011 and estimates for 2012–2016 (based on 2002–2011 incidence data) are presented. Actual cancer mortality data for 1982–2012 and estimates for 2013–2016 (based on 2002–2012 mortality data) are presented (see Appendix G).

Data for the figures presented in this appendix are in online supplementary tables.

All cancers combined (C00–C97, D45, D46, D47.1, D47.3)

Risk factors[a]**:**

Table B1(a): Incidence and mortality of all cancers combined

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[b]						
Number	67,117	51,594	118,711	24,341	18,698	43,039
Crude rate	603.7	459.8	531.4	215.2	163.8	189.4
ASR	579.7	403.6	484.1	210.6	133.0	166.8
Risk to age 75	1 in 3	1 in 4	1 in 3	1 in 9	1 in 13	1 in 11
Risk to age 85	1 in 2	1 in 3	1 in 2	1 in 4	1 in 6	1 in 5
Mean age	67.0	65.0	66.1	73.1	73.1	73.1
Estimated number for 2014, 2015 and 2016[c]						
2014	68,260	55,660	123,920	26,010	19,770	45,780
2015	69,790	57,010	126,800	26,470	20,100	46,570
2016	72,050	58,420	130,470	26,950	20,430	47,380

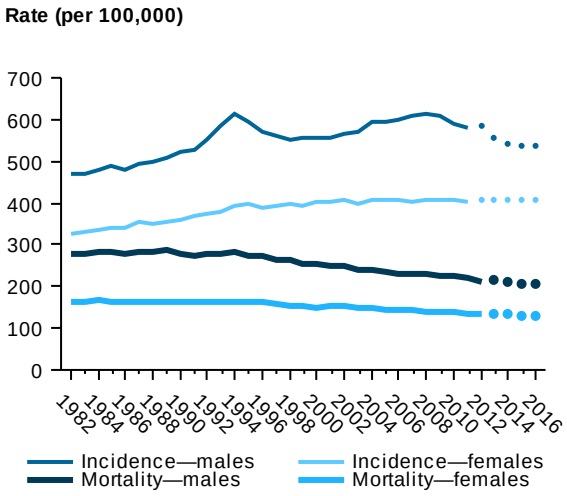


Figure B1(a): Incidence and mortality ASRs[b,c] **of all cancers combined, 1982–2016**

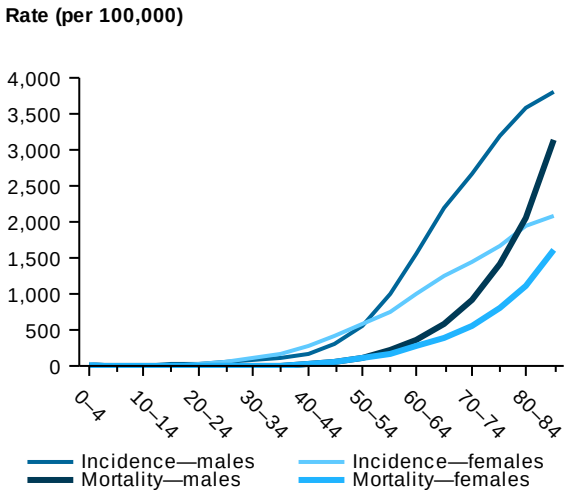


Figure B1(b): Incidence (2011) and mortality (2012) rates of all cancers combined, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) For incidence data, ICD-10 C44 codes that indicate a basal or squamous cell carcinoma of the skin are not included. The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B1(b): Survival and prevalence of all cancers combined[a]

	Males	Females	Persons
Prevalence as at the end of 2009[b]			
1-year prevalence	57,171	42,121	98,292
5-year prevalence	206,437	164,037	370,474
Relative survival in 2007–2011[c]			
1-year relative survival at diagnosis (%)	80.6	81.6	81.0
95% confidence interval	80.4–80.7	81.5–81.8	80.9–81.2
5-year relative survival at diagnosis (%)	66.1	67.5	66.7
95% confidence interval	65.9–66.3	67.3–67.7	66.5–66.8
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	80.0	80.9	80.4
95% confidence interval	79.8–80.3	80.7–81.2	80.3–80.6
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	89.9	92.1	91.0
95% confidence interval	89.7–90.2	91.8–92.3	90.8–91.2

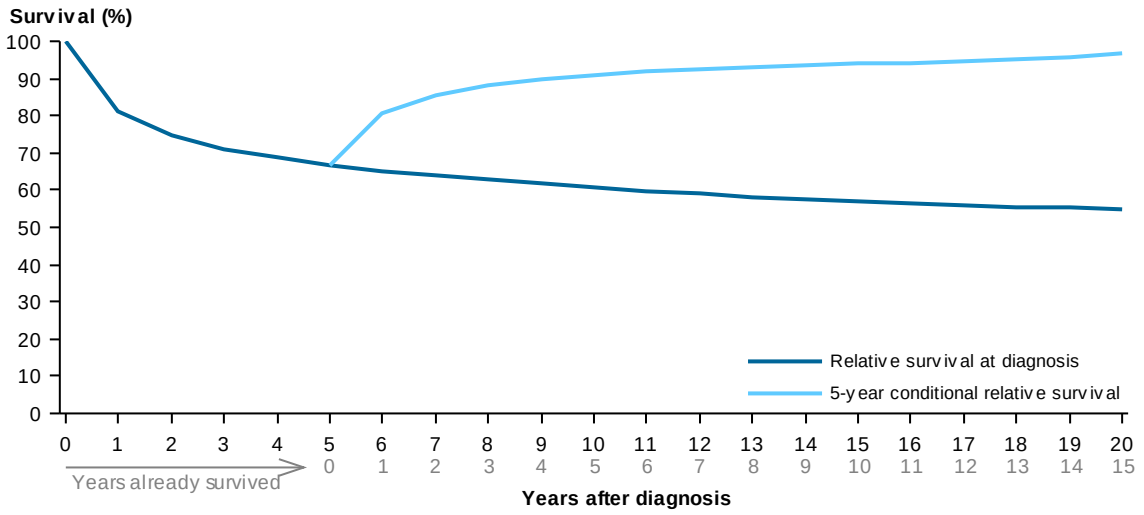


Figure B1(c): Relative survival at diagnosis and 5-year conditional survival from all cancers combined, Australia, 2007–2011

(a) For survival and prevalence data, those ICD-10 C44 codes that indicate a basal or squamous cell carcinoma of the skin are not included.

(b) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(c) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

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

Risk factor[a]: 

Table B2(a): Incidence and mortality of acute myeloid leukaemia

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	527	386	913	465	348	813
Crude rate	4.7	3.4	4.1	4.1	3.0	3.6
ASR	4.7	3.0	3.8	4.0	2.6	3.2
Risk to age 75	1 in 328	1 in 478	1 in 390	1 in 444	1 in 608	1 in 514
Risk to age 85	1 in 174	1 in 264	1 in 212	1 in 174	1 in 272	1 in 216
Mean age	63.3	65.4	64.2	72.1	71.5	71.9
Estimated number for 2014, 2015 and 2016[c]						
2014	580	440	1,020	545	375	920
2015	595	450	1,050	565	385	950
2016	610	460	1,070	585	395	980

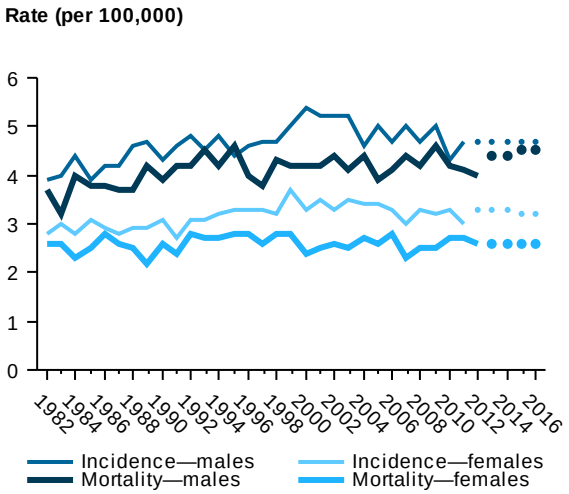


Figure B2(a): Incidence and mortality ASRs[b,c] of acute myeloid leukaemia, 1982–2016

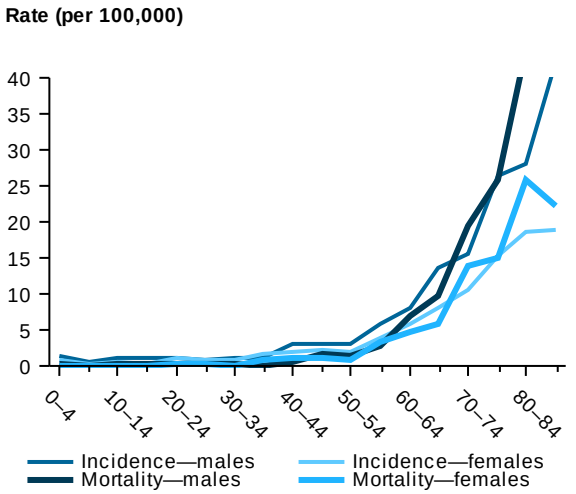


Figure B2(b): Incidence (2011) and mortality (2012) rates of acute myeloid leukaemia, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B2(b): Survival and prevalence of acute myeloid leukaemia

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	310	245	555
5-year prevalence	860	700	1,560
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	40.1	42.0	40.9
95% confidence interval	37.9–42.2	39.5–44.4	39.3–42.5
5-year relative survival at diagnosis (%)	23.4	26.1	24.5
95% confidence interval	21.6–25.2	24.0–28.2	23.2–25.9
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	55.7	60.1	57.7
95% confidence interval	50.8–60.6	55.2–65.0	54.2–61.2
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	87.6	91.1	89.3
95% confidence interval	84.2–91.0	88.3–93.9	87.1–91.5

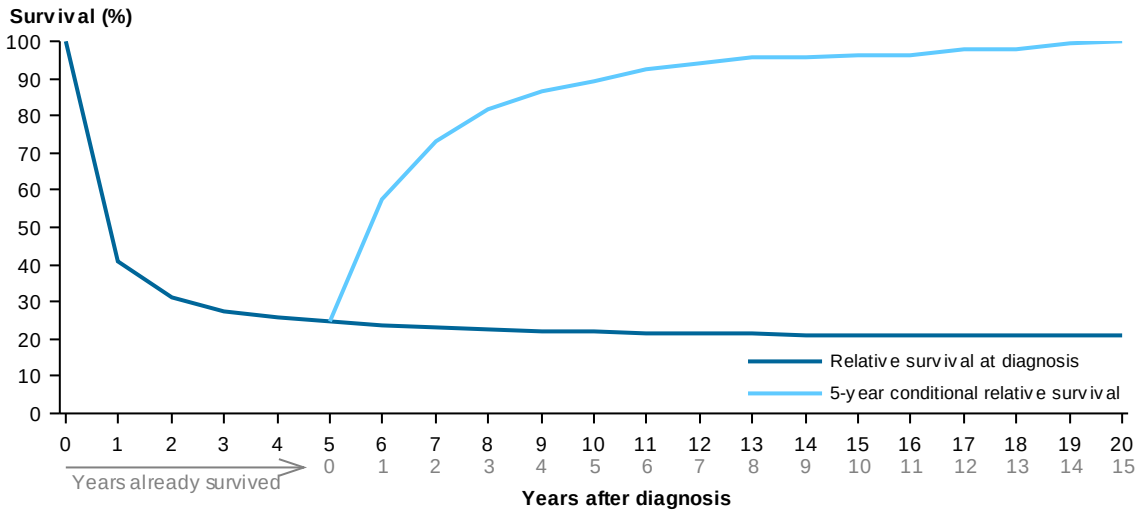


Figure B2(c): Relative survival at diagnosis and 5-year conditional survival from acute myeloid leukaemia, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Anal cancer (C21)

Table B3(a): Incidence and mortality of anal cancer

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[a]						
Number	151	218	369	32	39	71
Crude rate	1.4	1.9	1.7	0.3	0.3	0.3
ASR	1.3	1.7	1.5	0.3	0.3	0.3
Risk to age 75	1 in 961	1 in 693	1 in 804	1 in 4,842	1 in 4,000	1 in 4,375
Risk to age 85	1 in 618	1 in 479	1 in 538	1 in 3,465	1 in 3,071	1 in 3,243
Mean age	64.7	64.7	64.7	66.1	63.8	64.8
Estimated number for 2014, 2015 and 2016[b]						
2014	155	230	385	40	40	80
2015	160	235	395	40	40	80
2016	165	245	405	45	40	85

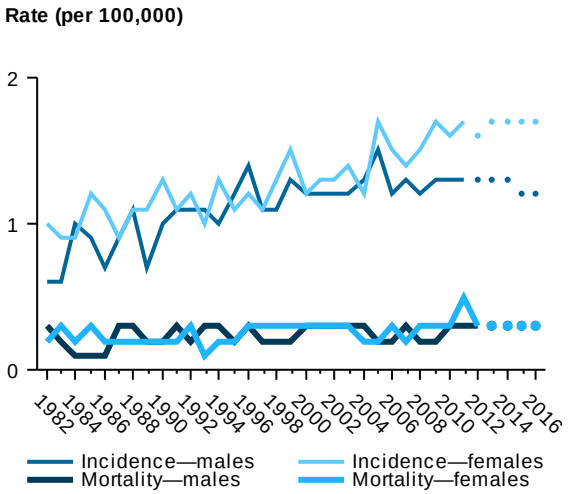


Figure B3(a): Incidence and mortality ASRs[a,b] of anal cancer, 1982–2016

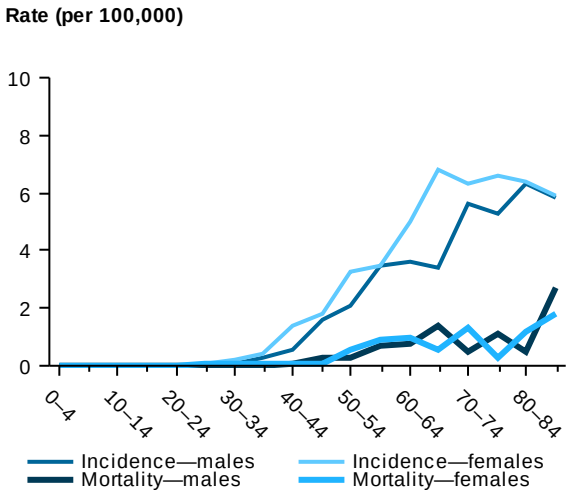


Figure B3(b): Incidence (2011) and mortality (2012) rates of anal cancer, by age group

(a) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B3(b): Survival and prevalence of anal cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	133	195	328
5-year prevalence	474	694	1,168
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	86.4	89.6	88.3
95% confidence interval	83.2–89.1	87.2–91.6	86.4–89.9
5-year relative survival at diagnosis (%)	58.9	68.6	64.5
95% confidence interval	54.4–63.2	65.0–72.1	61.7–67.3
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	65.1	74.4	70.6
95% confidence interval	59.0–71.2	70.2–78.5	67.1–74.0
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	82.9	88.8	86.5
95% confidence interval	77.0–88.8	84.7–93.0	83.0–89.9

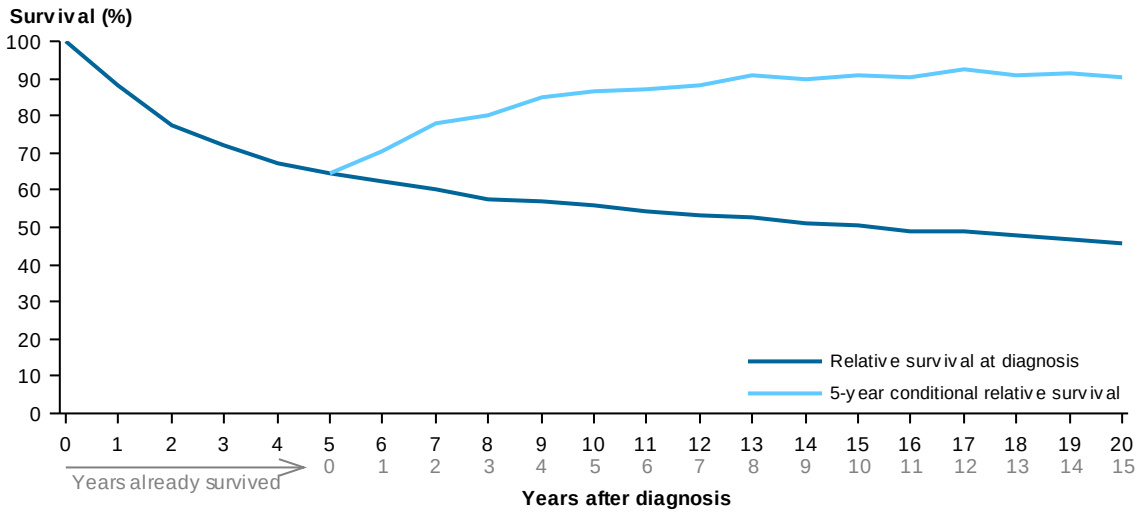


Figure B3(c): Relative survival at diagnosis and 5-year conditional survival from anal cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Bladder cancer (C67)

Risk factors[a]**:**

Table B4(a): Incidence and mortality of bladder cancer

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[b]						
Number	1,806	598	2,404	707	331	1,038
Crude rate	16.2	5.3	10.8	6.3	2.9	4.6
ASR	16.2	4.3	9.6	6.3	2.1	3.9
Risk to age 75	1 in 115	1 in 410	1 in 180	1 in 386	1 in 1,120	1 in 578
Risk to age 85	1 in 43	1 in 166	1 in 71	1 in 125	1 in 347	1 in 191
Mean age	74.4	76.1	74.8	77.9	80.3	78.6
Estimated number for 2014, 2015 and 2016[c]						
2014	2,060	675	2,730	780	335	1,115
2015	2,110	690	2,800	800	340	1,140
2016	2,170	705	2,880	815	350	1,165

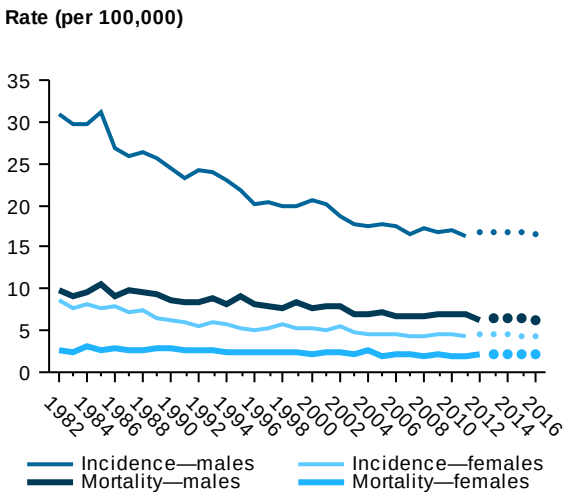


Figure B4(a): Incidence and mortality ASRs[b,c] of bladder cancer, 1982–2016

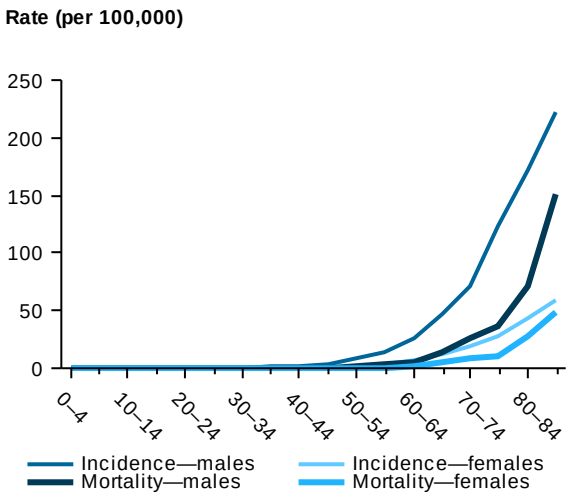


Figure B4(b): Incidence (2011) and mortality (2012) rates of bladder cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B4(b): Survival and prevalence of bladder cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	1,498	468	1,966
5-year prevalence	5,241	1,498	6,739
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	78.8	68.9	76.4
95% confidence interval	77.8–79.8	66.9–70.8	75.5–77.3
5-year relative survival at diagnosis (%)	55.2	46.8	53.1
95% confidence interval	53.8–56.5	44.5–49.0	51.9–54.3
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	66.9	66.6	66.8
95% confidence interval	64.9–68.8	63.1–70.1	65.1–68.5
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	84.0	86.7	84.7
95% confidence interval	82.1–86.0	83.6–89.9	83.0–86.3

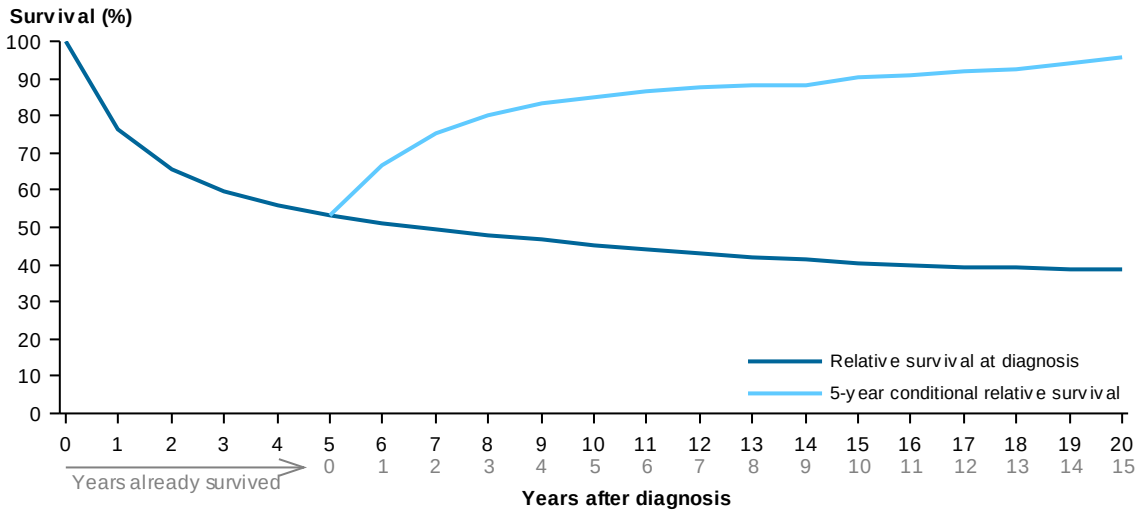


Figure B4(c): Relative survival at diagnosis and 5-year conditional survival from bladder cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Brain cancer (C71)

Table B5(a): Incidence and mortality of brain cancer

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[a]						
Number	1,010	714	1,724	737	504	1,241
Crude rate	9.1	6.4	7.7	6.5	4.4	5.5
ASR	8.8	5.8	7.3	6.2	3.9	5.0
Risk to age 75	1 in 145	1 in 220	1 in 175	1 in 201	1 in 327	1 in 249
Risk to age 85	1 in 96	1 in 149	1 in 118	1 in 127	1 in 206	1 in 159
Mean age	58.7	58.7	58.7	62.3	64.3	63.1
Estimated number for 2014, 2015 and 2016[b]						
2014	1,060	740	1,800	790	540	1,330
2015	1,090	755	1,850	805	550	1,355
2016	1,120	775	1,900	825	560	1,385

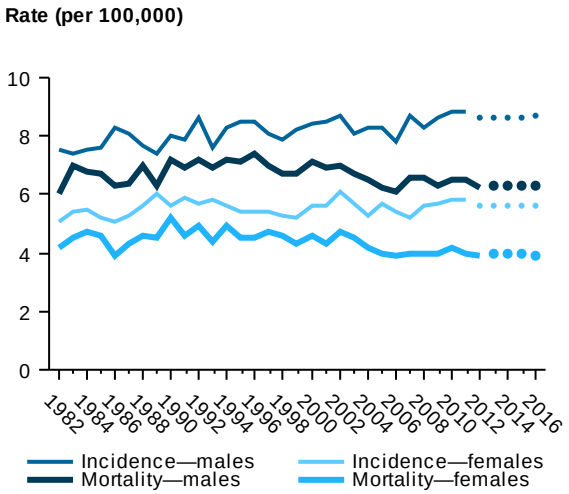


Figure B5(a): Incidence and mortality ASRs[b,c] of brain cancer, 1982–2016

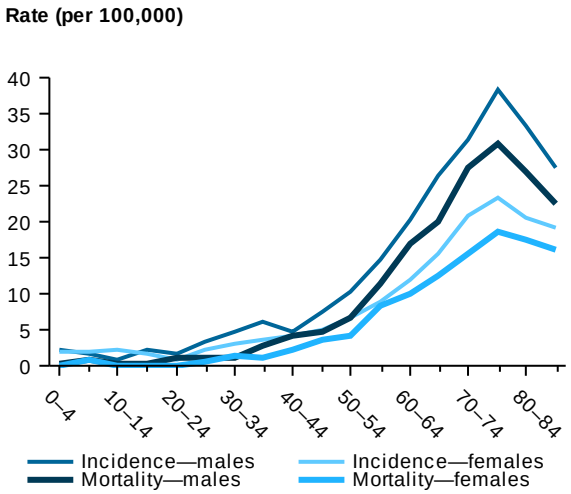


Figure B5(b): Incidence (2011) and mortality (2012) rates of brain cancer, by age group

(a) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B5(b): Survival and prevalence of brain cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	677	459	1,136
5-year prevalence	1,591	1,165	2,756
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	49.4	47.8	48.7
95% confidence interval	47.8–50.9	45.9–49.7	47.5–49.9
5-year relative survival at diagnosis (%)	20.5	23.2	21.6
95% confidence interval	19.2–21.7	21.7–24.8	20.7–22.6
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	38.7	47.4	42.3
95% confidence interval	34.0–43.4	42.7–52.1	38.9–45.6
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	74.6	83.1	78.4
95% confidence interval	70.9–78.3	79.8–86.4	75.9–80.9

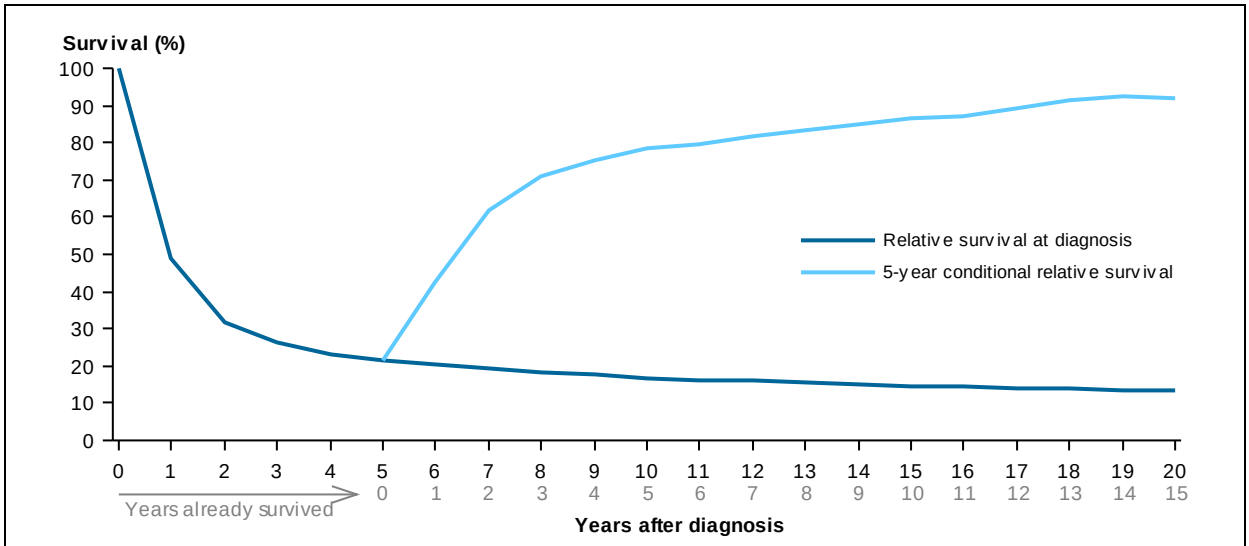


Figure B5(c): Relative survival at diagnosis and 5-year conditional survival from brain cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Breast cancer (C50)

Risk factors[a]**:**

Table B6(a): Incidence and mortality of breast cancer

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[b]						
Number	103	14,465	14,568	24	2,795	2,819
Crude rate	0.9	128.9	65.2	0.2	24.5	12.4
ASR	0.9	116.0	60.2	0.2	20.6	11.0
Risk to age 75	1 in 1,477	1 in 11	1 in 21	1 in 9,098	1 in 67	1 in 131
Risk to age 85	1 in 917	1 in 8	1 in 15	1 in 3,255	1 in 40	1 in 75
Mean age	66.4	61.3	61.3	71.8	68.8	68.8
Estimated number for 2014, 2015 and 2016[c]						
2014	140	15,270	15,410	25	3,000	3,025
2015	145	15,600	15,740	25	3,040	3,065
2016	150	15,930	16,080	25	3,080	3,105

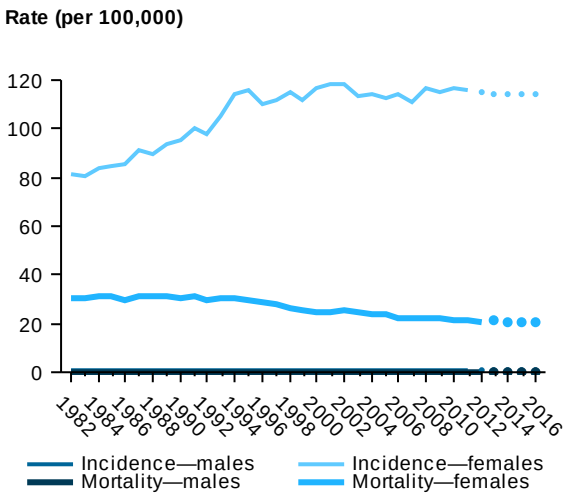


Figure B6(a): Incidence and mortality ASRs[b,c] of breast cancer, 1982–2016

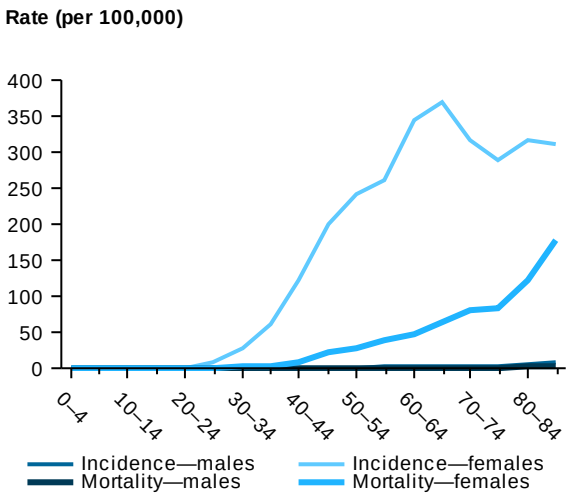


Figure B6(b): Incidence (2011) and mortality (2012) rates of breast cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B6(b): Survival and prevalence of breast cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	107	13,428	13,535
5-year prevalence	445	58,955	59,400
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	99.4	97.9	97.9
95% confidence interval	97.1–100.8	97.7–98.0	97.7–98.0
5-year relative survival at diagnosis (%)	86.4	89.6	89.6
95% confidence interval	81.5–90.8	89.3–89.9	89.2–89.9
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	85.5	90.0	89.9
95% confidence interval	80.7–90.3	89.7–90.3	89.6–90.2
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	90.0	93.2	93.2
95% confidence interval	84.3–95.6	92.9–93.5	92.9–93.5

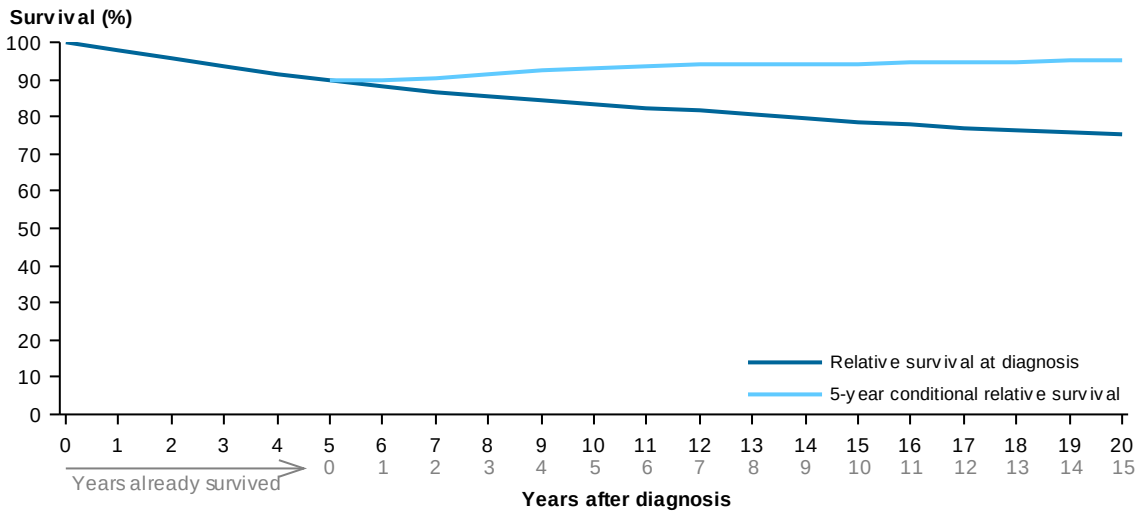


Figure B6(c): Relative survival at diagnosis and 5-year conditional survival from breast cancer in females, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Cervical cancer (C53)

Risk factors[a]**:** 

Table B7(a): Incidence and mortality of cervical cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	. .	801	801	. .	226	226
Crude rate	. .	7.1	. .	. .	2.0	. .
ASR	. .	6.9	. .	. .	1.8	. .
Risk to age 75	. .	1 in 193	. .	. .	1 in 828	. .
Risk to age 85	. .	1 in 162	. .	. .	1 in 496	. .
Mean age	. .	48.7	. .	. .	63.0	. .
Estimated number for 2014, 2015 and 2016[c]						
2014	. .	865	865	. .	245	245
2015	. .	885	885	. .	250	250
2016	. .	905	905	. .	255	255

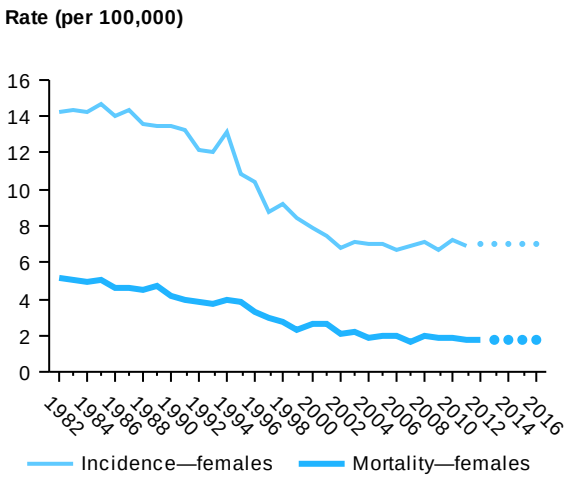


Figure B7(a): Incidence and mortality ASRs[b,c] of cervical cancer, 1982–2016

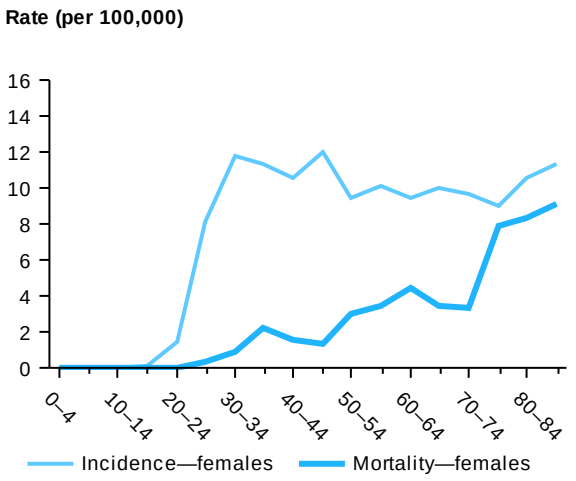


Figure B7(b): Incidence (2011) and mortality (2012) rates of cervical cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B7(b): Survival and prevalence of cervical cancer

	Males	Females	Persons
Prevalence as at the end of 2009[a]			
1-year prevalence	. .	684	684
5-year prevalence	. .	2,903	2,903
Relative survival in 2007–2011[b]			
1-year relative survival at diagnosis (%)	. .	87.4	87.4
95% confidence interval	. .	86.2–88.5	86.2–88.5
5-year relative survival at diagnosis (%)	. .	71.9	71.9
95% confidence interval	. .	70.2–73.4	70.2–73.4
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	. .	80.8	80.8
95% confidence interval	. .	79.2–82.3	79.2–82.3
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	. .	94.6	94.6
95% confidence interval	. .	93.6–95.7	93.6–95.7

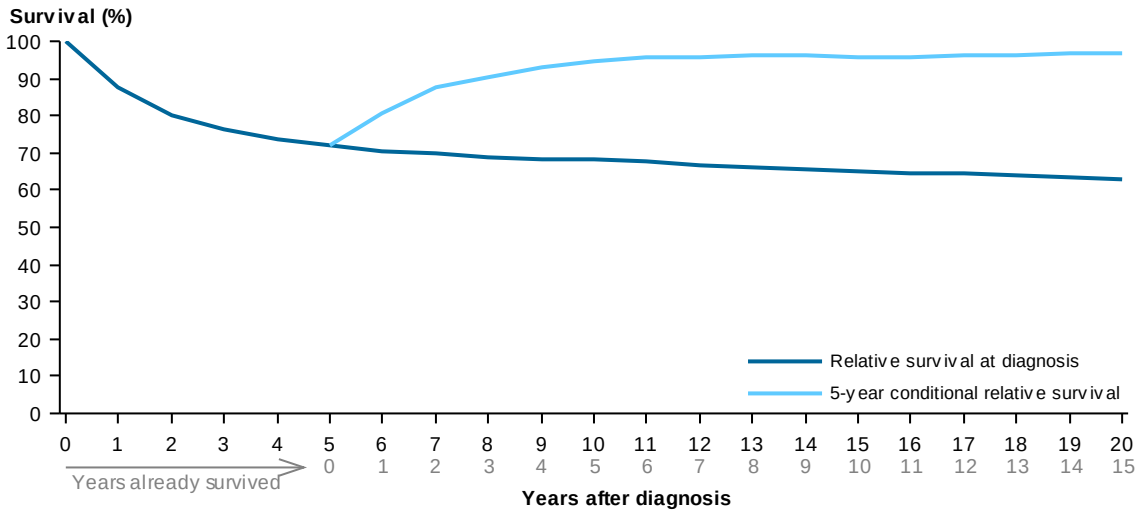


Figure B7(c): Relative survival at diagnosis and 5-year conditional survival from cervical cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Chronic lymphocytic leukaemia (C91.1)

Risk factors[a]**:**

Table B8(a): Incidence and mortality (2012) of chronic lymphocytic leukaemia

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	722	452	1,174	203	139	342
Crude rate	6.5	4.0	5.3	1.8	1.2	1.5
ASR	6.2	3.4	4.7	1.8	0.9	1.3
Risk to age 75	1 in 211	1 in 386	1 in 273	1 in 1,461	1 in 3,843	1 in 2,128
Risk to age 85	1 in 117	1 in 212	1 in 153	1 in 413	1 in 895	1 in 581
Mean age	68.6	72.1	70.0	78.5	82.0	79.9
Estimated number for 2014, 2015 and 2016[c]						
2014	790	510	1,300	230	145	375
2015	805	520	1,330	240	145	385
2016	825	535	1,360	245	150	395

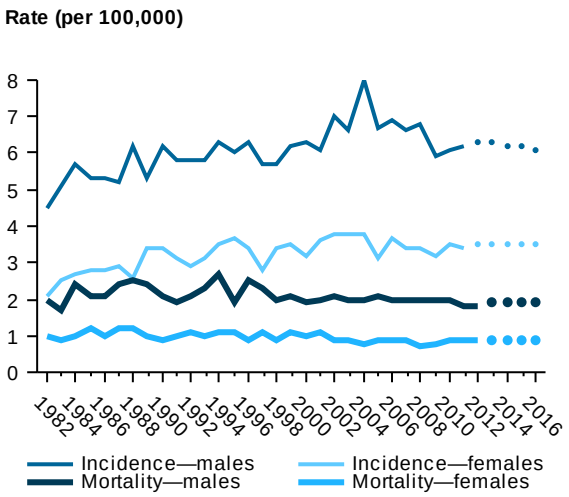


Figure B8(a): Incidence and mortality ASRs[b,c] of chronic lymphocytic leukaemia, 1982–2016

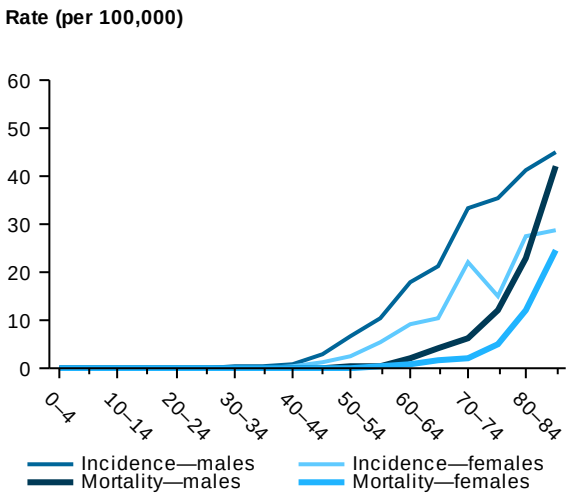


Figure B8(b): Incidence (2011) and mortality (2012) rates of chronic lymphocytic leukaemia, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B8(b): Survival and prevalence of chronic lymphocytic leukaemia

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	579	371	950
5-year prevalence	2,559	1,587	4,146
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	93.1	93.7	93.3
95% confidence interval	92.0–94.2	92.2–94.9	92.4–94.2
5-year relative survival at diagnosis (%)	74.8	79.8	76.7
95% confidence interval	72.8–76.8	77.3–82.2	75.1–78.2
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	75.8	81.6	78.0
95% confidence interval	73.5–78.1	79.0–84.2	76.3–79.7
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	73.0	81.8	76.6
95% confidence interval	69.8–76.2	78.5–85.1	74.3–78.9

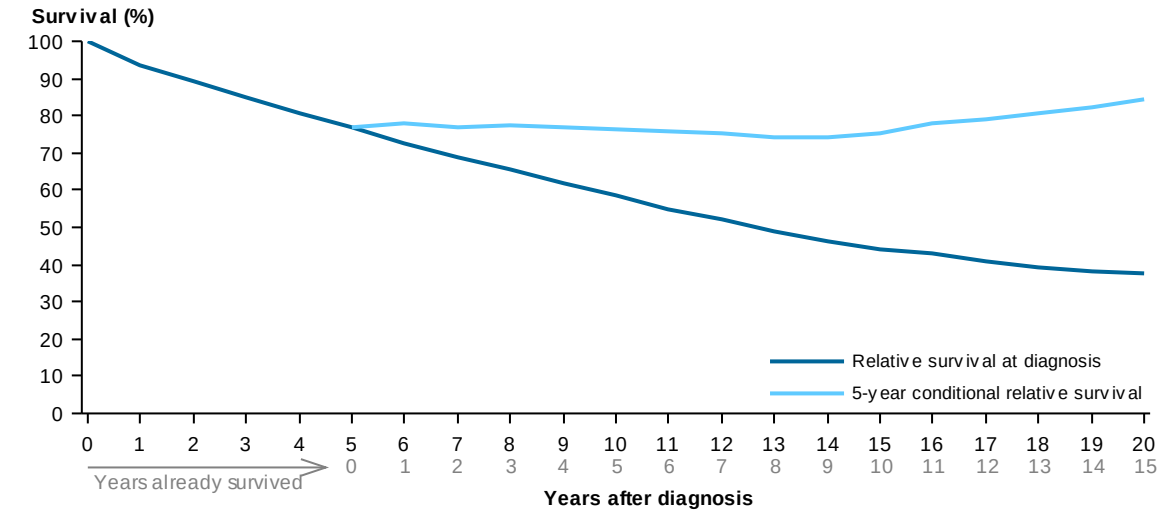


Figure B8(c): Relative survival at diagnosis and 5-year conditional survival from chronic lymphocytic leukaemia, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Colorectal cancer (C18–C20)

Risk factors[a]**:**

Table B9(a): Incidence and mortality of colorectal cancer

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[b]						
Number	8,351	6,800	15,151	2,208	1,772	3,980
Crude rate	75.1	60.6	67.8	19.5	15.5	17.5
ASR	72.8	51.5	61.5	19.1	12.4	15.4
Risk to age 75	1 in 19	1 in 28	1 in 23	1 in 91	1 in 145	1 in 112
Risk to age 85	1 in 10	1 in 15	1 in 12	1 in 38	1 in 61	1 in 48
Mean age	69.1	70.6	69.8	72.3	74.6	73.3
Estimated number for 2014, 2015 and 2016[c]						
2014	9,290	7,340	16,640	2,210	1,910	4,120
2015	9,550	7,520	17,070	2,190	1,930	4,120
2016	9,810	7,710	17,520	2,170	1,950	4,120

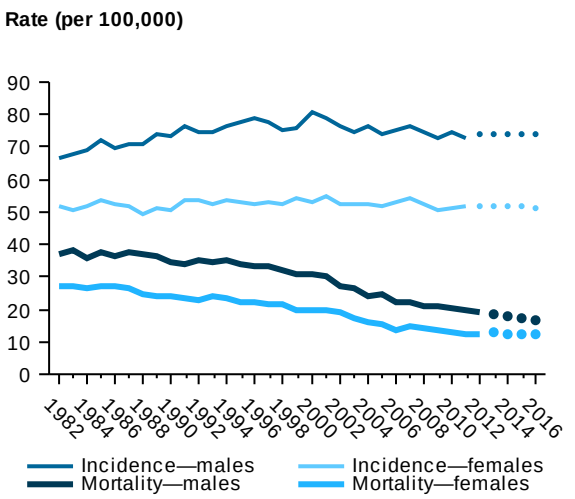


Figure B9(a): Incidence and mortality ASRs[b,c] of colorectal cancer, 1982–2016

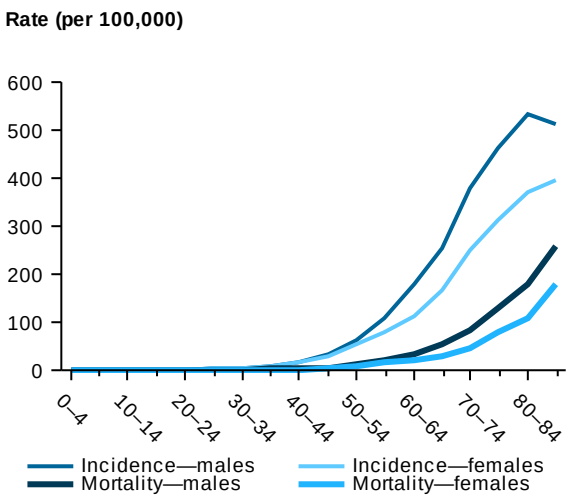


Figure B9(b): Incidence (2011) and mortality (2012) rates of colorectal cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD2011; AIHW NMD.

Table B9(b): Survival and prevalence of colorectal cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	6,835	5,495	12,330
5-year prevalence	26,700	21,896	48,596
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	85.7	84.1	85.0
95% confidence interval	85.3–86.1	83.6–84.6	84.7–85.3
5-year relative survival at diagnosis (%)	66.4	67.4	66.9
95% confidence interval	65.8–67.0	66.7–68.1	66.4–67.3
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	75.3	78.5	76.7
95% confidence interval	74.6–76.0	77.8–79.3	76.2–77.3
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	90.1	92.7	91.3
95% confidence interval	89.4–90.9	91.9–93.4	90.8–91.8

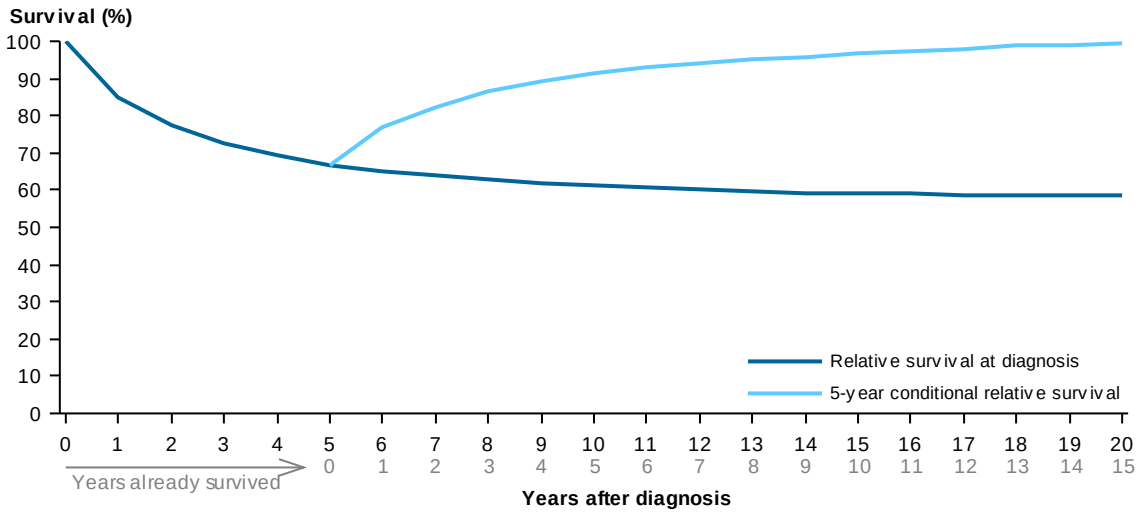


Figure B9(c): Relative survival at diagnosis and 5-year conditional survival from colorectal cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

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

Risk factors[a]**:**

Table B10(a): Incidence and mortality of cancer of the gallbladder and extrahepatic bile ducts

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	335	436	771	99	155	254
Crude rate	3.0	3.9	3.5	0.9	1.4	1.1
ASR	3.0	3.2	3.1	0.9	1.1	1.0
Risk to age 75	1 in 523	1 in 499	1 in 511	1 in 2,654	1 in 1,755	1 in 2,107
Risk to age 85	1 in 243	1 in 215	1 in 227	1 in 823	1 in 649	719
Mean age	72.5	73.0	72.8	75.5	1 in 76.7	1 in 76.3
Estimated number for 2014, 2015 and 2016[c]						
2014	355	440	795	110	150	260
2015	365	450	815	115	145	260
2016	380	460	840	120	145	265

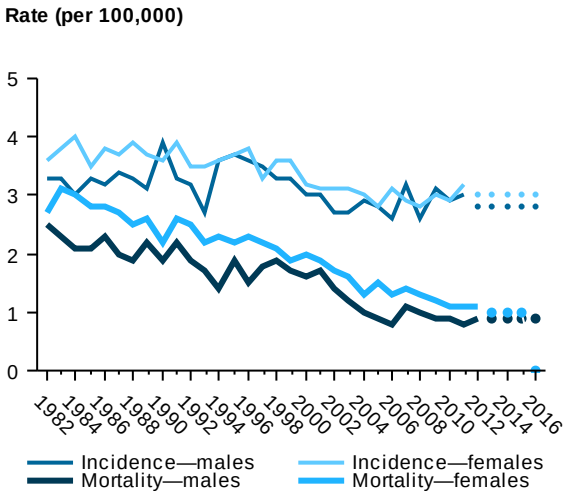


Figure B10(a): Incidence and mortality ASRs[b,c] **of cancer of gallbladder and extrahepatic bile ducts, 1982–2016**

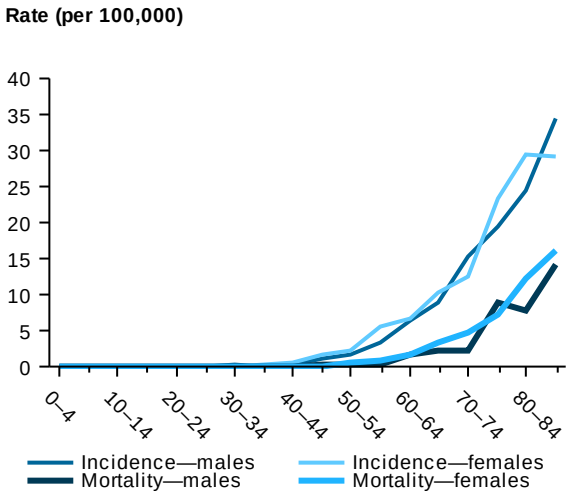


Figure B10(b): Incidence (2011) and mortality (2012) rates of cancer of gallbladder and extrahepatic bile ducts, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011 and AIHW NMD.

Table B10(b): Survival and prevalence of cancer of the gallbladder and extrahepatic bile ducts

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	220	224	444
5-year prevalence	533	535	1,068
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	49.5	39.3	43.9
95% confidence interval	46.8–52.2	36.9–41.7	42.1–45.8
5-year relative survival at diagnosis (%)	20.3	17.0	18.5
95% confidence interval	18.1–22.7	15.2–19.0	17.1–20.1
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	37.7	40.4	39.1
95% confidence interval	28.6–46.9	31.9–48.9	32.9–45.3
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	81.0	82.9	82.0
95% confidence interval	73.4–88.6	76.3–89.5	77.1–87.0

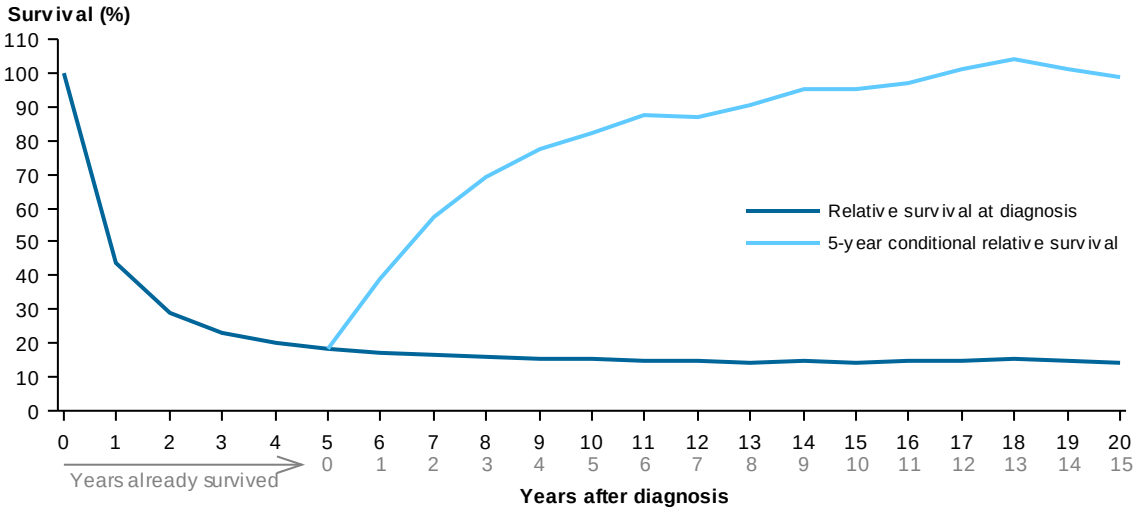


Figure B10(c): Relative survival at diagnosis and 5-year conditional survival from cancer of the gallbladder and extrahepatic bile ducts, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Hodgkin lymphoma (C81)

Risk factors[a]**:** 

Table B11(a): Incidence and mortality of Hodgkin lymphoma

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	338	268	606	55	23	78
Crude rate	3.0	2.4	2.7	0.5	0.2	0.3
ASR	3.0	2.3	2.7	0.5	0.2	0.3
Risk to age 75	1 in 437	1 in 596	1 in 505	1 in 3,791	1 in 11,785	1 in 5,784
Risk to age 85	1 in 361	1 in 479	1 in 412	1 in 1,546	1 in 5,655	1 in 2,533
Mean age	43.4	42.4	43.0	71.3	64.8	69.4
Estimated number for 2014, 2015 and 2016[c]						
2014	335	265	605	15	15	30
2015	345	270	615	15	15	30
2016	350	275	630	15	15	30

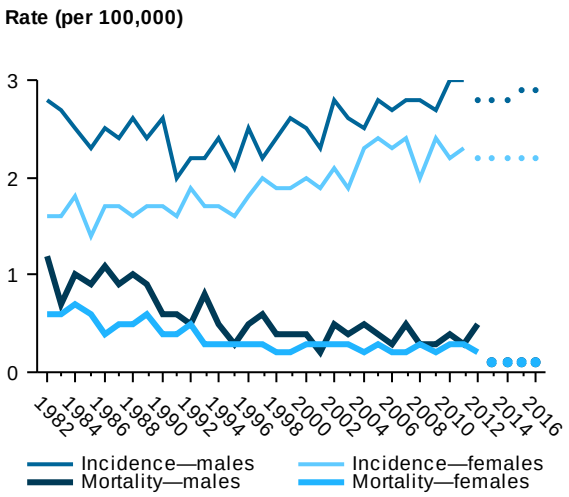


Figure B11(a): Incidence and mortality ASRs[b,c] **of Hodgkin lymphoma, 1982–2016**

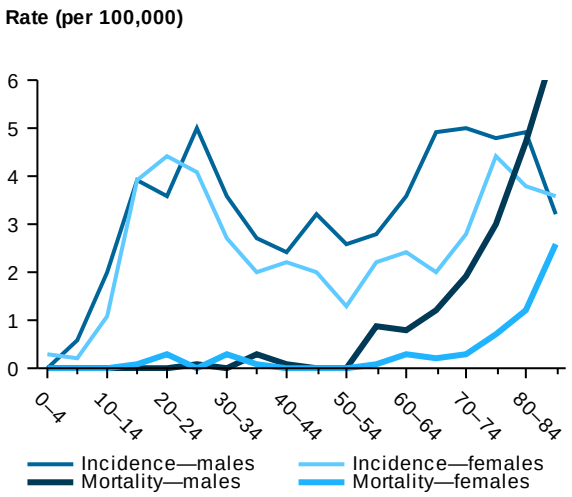


Figure B11(b): Incidence (2011) and mortality (2012) rates of Hodgkin lymphoma, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B11(b): Survival and prevalence of Hodgkin lymphoma

	Males	Females	Persons
Prevalence as at the end of 2009[a]			
1-year prevalence	281	251	532
5-year prevalence	1,281	1,087	2,368
Relative survival in 2007–2011[b]			
1-year relative survival at diagnosis (%)	93.8	92.9	93.4
95% confidence interval	92.3–95.1	91.2–94.4	92.3–94.4
5-year relative survival at diagnosis (%)	87.3	87.1	87.2
95% confidence interval	85.1–89.2	84.8–89.1	85.7–88.6
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	91.9	92.9	92.4
95% confidence interval	90.3–93.6	91.3–94.5	91.2–93.5
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	94.9	95.7	95.3
95% confidence interval	93.4–96.4	94.2–97.1	94.2–96.3

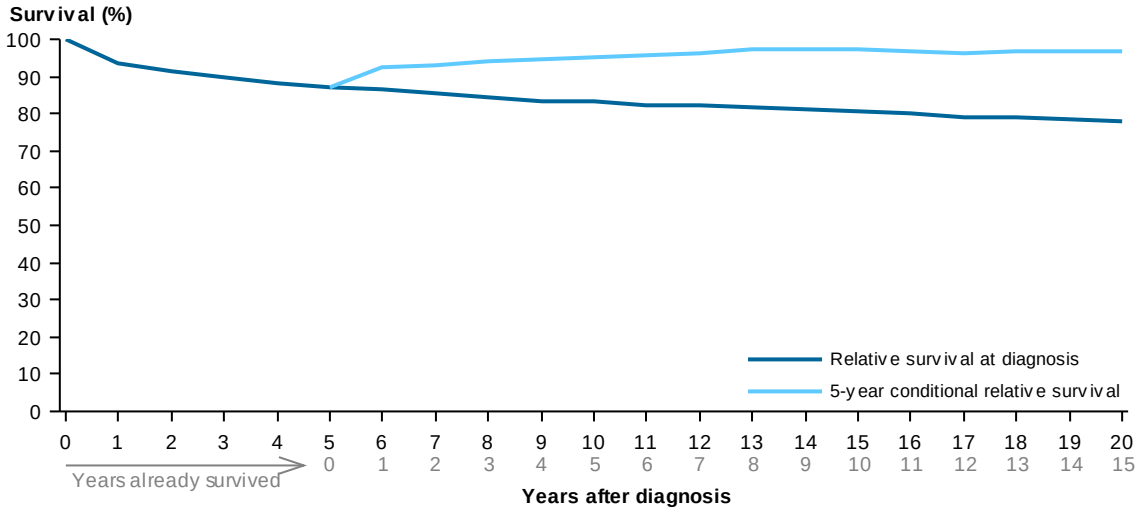


Figure B11(c): Relative survival at diagnosis and 5-year conditional survival from Hodgkin lymphoma, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Kidney cancer (C64)

Risk factors[a]**:**

Table B12(a): Incidence and mortality of kidney cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	1,861	985	2,847	574	333	907
Crude rate	16.7	8.8	12.7	5.1	2.9	4.0
ASR	16.0	7.7	11.7	4.9	2.3	3.5
Risk to age 75	1 in 78	1 in 159	1 in 105	1 in 318	1 in 855	1 in 466
Risk to age 85	1 in 51	1 in 104	1 in 69	1 in 156	1 in 314	1 in 212
Mean age	63.5	64.7	63.9	70.5	76.2	72.6
Estimated number for 2014, 2015 and 2016[c]						
2014	2,000	1,060	3,060	625	355	980
2015	2,060	1,080	3,150	635	360	995
2016	2,120	1,110	3,230	650	365	1,015

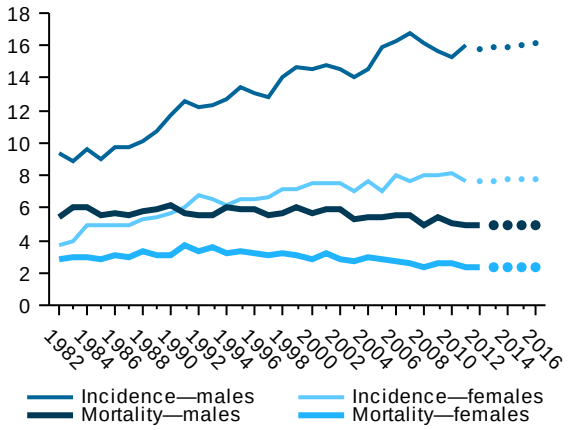


Figure B12(a): Incidence and mortality ASRs[b,c] **of kidney cancer, 1982–2016**

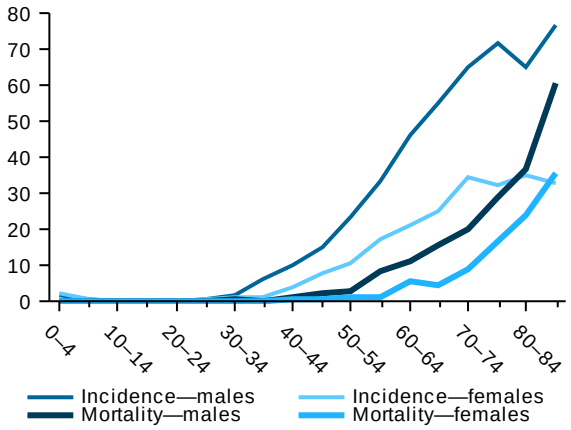


Figure B12(b): Incidence (2011) and mortality (2012) rates of kidney cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B12(b): Survival and prevalence of kidney cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	1,528	844	2,372
5-year prevalence	6,291	3,336	9,627
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	86.0	85.1	85.7
95% confidence interval	85.1–86.8	83.9–86.2	85.0–86.3
5-year relative survival at diagnosis (%)	72.9	74.2	73.4
95% confidence interval	71.7–74.1	72.6–75.7	72.4–74.3
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	82.8	85.6	83.8
95% confidence interval	81.6–84.1	84.1–87.1	82.8–84.8
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	88.3	91.3	89.4
95% confidence interval	86.8–89.7	89.7–92.9	88.3–90.5

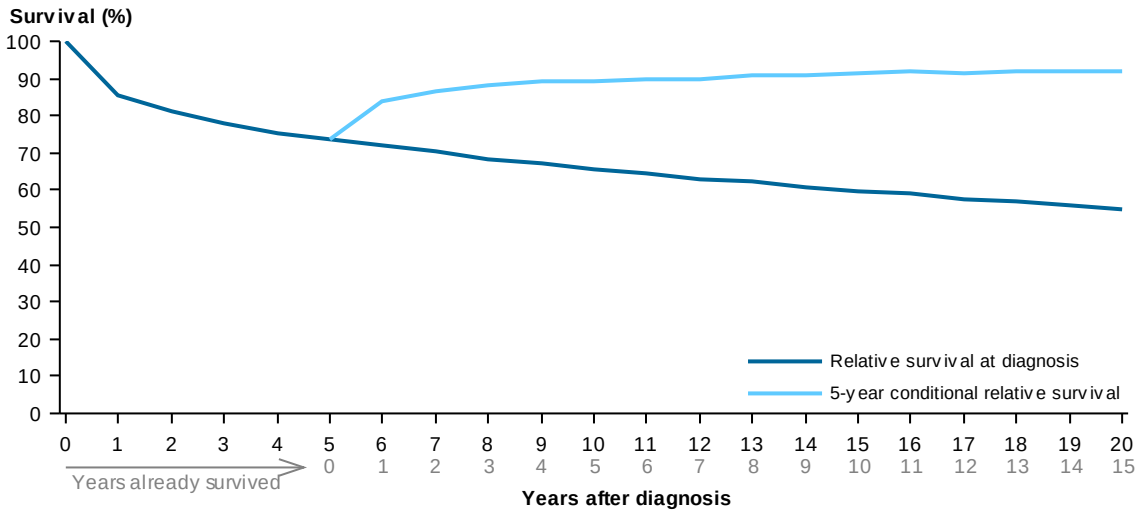


Figure B12(c): Relative survival at diagnosis and 5-year conditional survival from kidney cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Laryngeal cancer (C32)

Risk factors[a]**:** 

Table B13(a): Incidence and mortality of laryngeal cancer

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[b]						
Number	526	64	590	184	24	208
Crude rate	4.7	0.6	2.6	1.6	0.2	0.9
ASR	4.5	0.5	2.4	1.6	0.2	0.8
Risk to age 75	1 in 276	1 in 2,420	1 in 499	1 in 988	1 in 7,008	1 in 1,747
Risk to age 85	1 in 166	1 in 1,482	1 in 310	1 in 419	1 in 3,984	1 in 802
Mean age	67.2	67.6	67.2	71.5	72.9	71.6
Estimated number for 2014, 2015 and 2016[c]						
2014	585	80	665	200	40	240
2015	595	80	675	205	40	245
2016	605	85	690	205	40	245

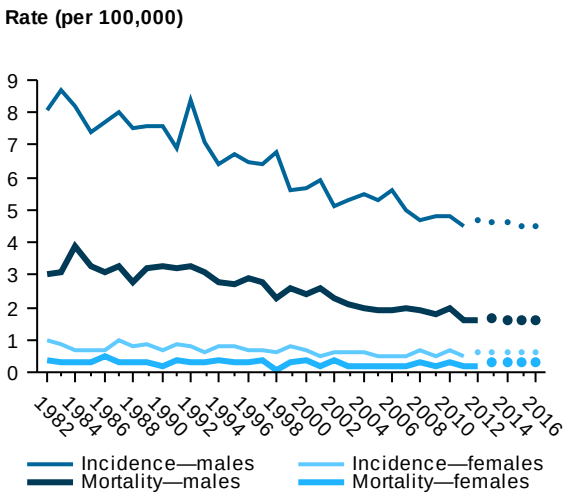


Figure B13(a): Incidence and mortality ASRs[b,c] **of laryngeal cancer, 1982–2016**

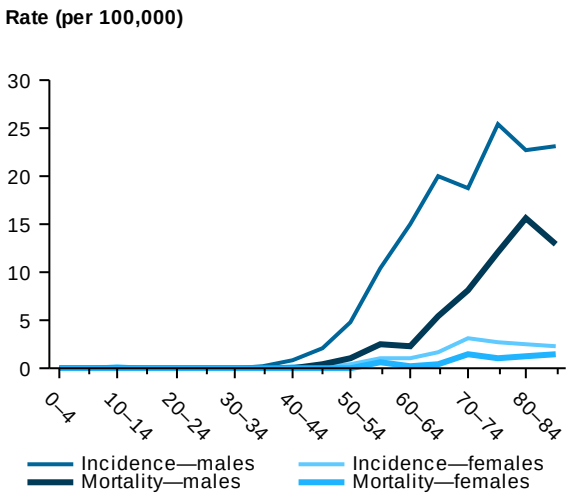


Figure B13(b): Incidence (2011) and mortality (2012) rates of laryngeal cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B13(b): Survival and prevalence of laryngeal cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	482	56	538
5-year prevalence	1,891	220	2,111
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	84.7	81.9	84.4
95% confidence interval	83.1–86.3	76.8–86.1	82.9–85.9
5-year relative survival at diagnosis (%)	62.7	59.4	62.3
95% confidence interval	60.4–64.9	53.1–65.4	60.2–64.4
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	71.0	69.7	70.8
95% confidence interval	68.2–73.7	61.8–77.6	68.2–73.4
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	80.4	77.8	80.1
95% confidence interval	77.4–83.3	69.3–86.3	77.3–82.9

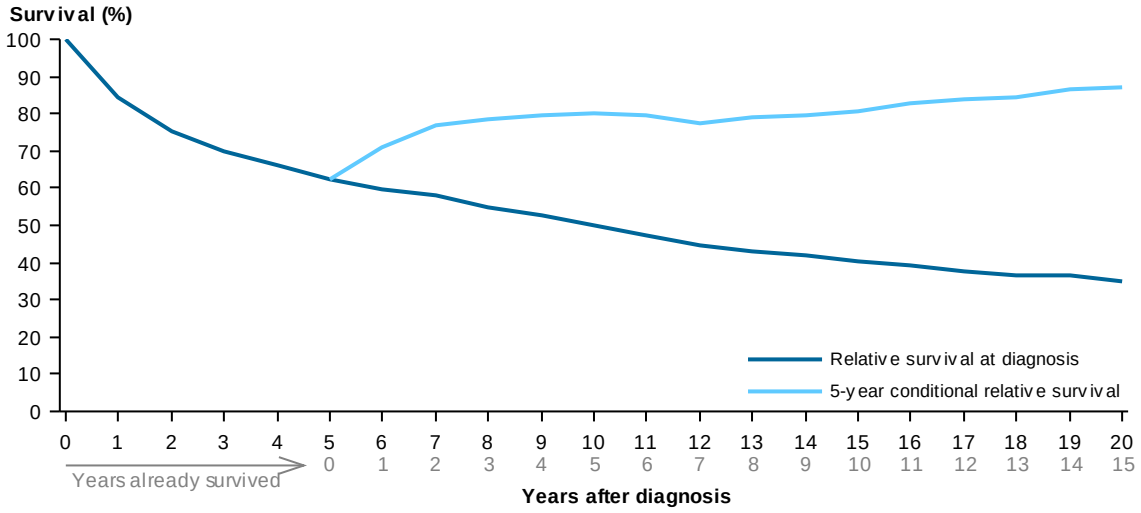


Figure B13(c): Relative survival at diagnosis and 5-year conditional survival from laryngeal cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Lip cancer (C00)

Risk factors[a]**:** 

Table B14(a): Incidence and mortality of lip cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 Incidence/2012 mortality[b]						
Number	677	235	912	11	1	12
Crude rate	6.1	2.1	4.1	0.1	0.0	0.1
ASR	5.9	1.8	3.8	0.1	0.0	0.1
Risk to age 75	1 in 220	1 in 839	1 in 350	1 in 20,589	. .	1 in 41,555
Risk to age 85	1 in 149	1 in 450	1 in 227	1 in 7,252	1 in 61,118	1 in 13,758
Mean age	60.8	69.0	62.8	61.3	77.0	62.6
Estimated number for 2014, 2015 and 2016[c]						
2014	740	265	1,010	10	5	15
2015	750	270	1,020	10	5	15
2016	760	270	1,030	10	5	15

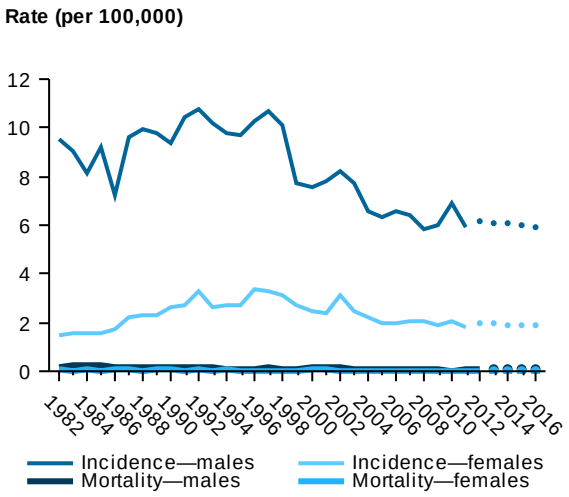


Figure B14(a): Incidence and mortality ASRs[b,c] **of lip cancer, 1982–2016**

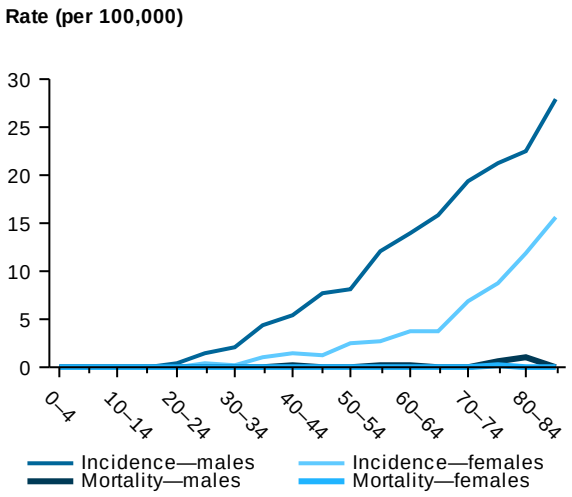


Figure B14(b): Incidence (2011) and mortality (2012) rates of lip cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: ABS 2014b; AIHW ACD 2011; AIHW NMD.

Table B14(b): Survival and prevalence of lip cancer

	Males	Females	Persons
Prevalence as at the end of 2009[a]			
1-year prevalence	642	233	875
5-year prevalence	2,924	1,057	3,981
Relative survival in 2007–2011[b]			
1-year relative survival at diagnosis (%)	99.3	98.5	99.1
95% confidence interval	98.6–99.8	97.0–99.6	98.5–99.6
5-year relative survival at diagnosis (%)	93.3	93.8	93.4
95% confidence interval	91.8–94.7	91.0–96.4	92.1–94.7
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	92.6	93.4	92.8
95% confidence interval	91.2–93.9	90.9–95.8	91.6–94.0
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	94.8	93.9	94.6
95% confidence interval	93.5–96.2	91.4–96.4	93.4–95.8

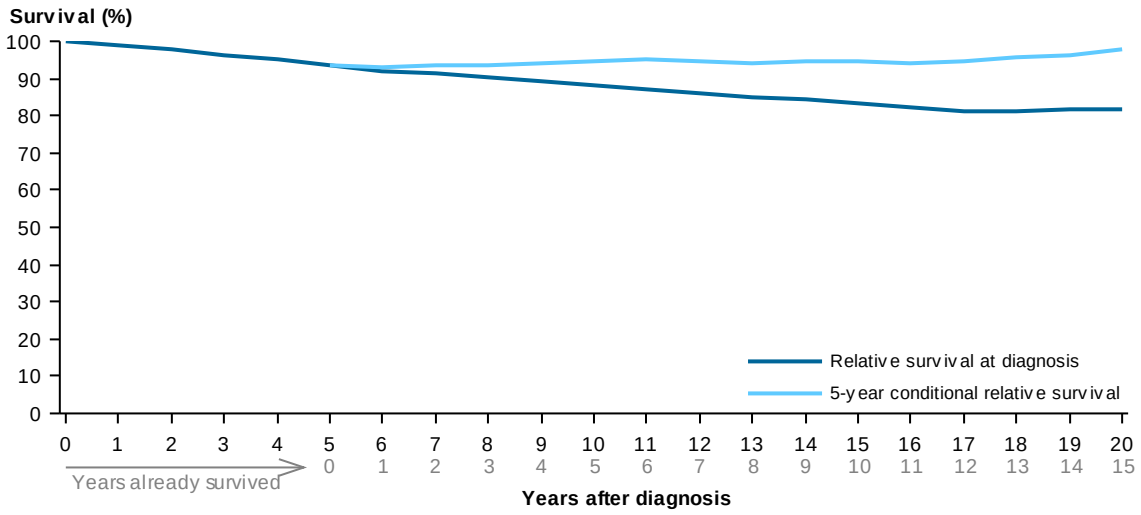


Figure B14(c): Relative survival at diagnosis and 5-year conditional survival from lip cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Liver cancer (C22)

Risk factors[a]**:**

Table B15(a): Incidence and mortality of liver cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	1,041	406	1,446	976	514	1,490
Crude rate	9.4	3.6	6.5	8.6	4.5	6.6
ASR	9.0	3.1	5.9	8.3	3.7	5.9
Risk to age 75	1 in 150	1 in 451	1 in 226	1 in 171	1 in 417	1 in 244
Risk to age 85	1 in 84	1 in 242	1 in 127	1 in 87	1 in 196	1 in 123
Mean age	66.7	69.0	67.4	69.1	72.1	70.1
Estimated number for 2014, 2015 and 2016[c]						
2014	1,260	430	1,690	1,080	535	1,615
2015	1,320	445	1,760	1,150	565	1,715
2016	1,380	460	1,840	1,210	595	1,805

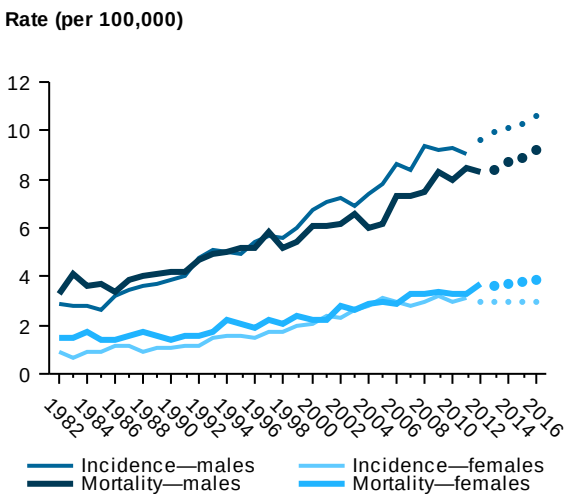


Figure B15(a): Incidence and mortality ASRs[b,c] **of liver cancer, 1982–2016**

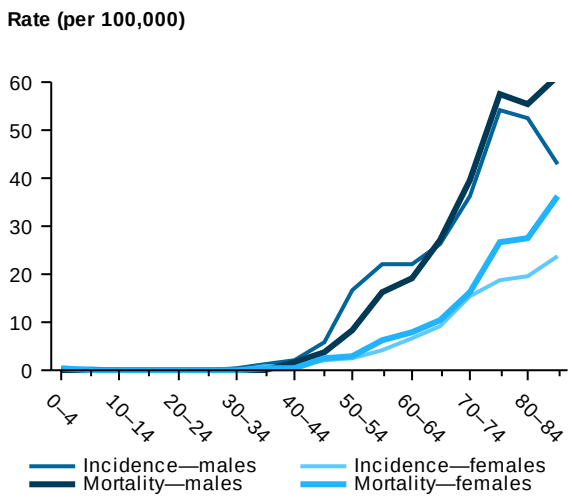


Figure B15(b): Incidence (2011) and mortality (2012) rates of liver cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B15(b): Survival and prevalence of liver cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	579	214	793
5-year prevalence	1,408	512	1,920
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	41.0	37.4	40.0
95% confidence interval	39.5–42.6	35.0–39.9	38.8–41.3
5-year relative survival at diagnosis (%)	16.3	15.1	16.0
95% confidence interval	15.2–17.6	13.4–17.0	15.0–17.0
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	35.6	37.5	36.1
95% confidence interval	29.7–41.6	28.0–46.9	31.1–41.2
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	70.6	74.6	71.7
95% confidence interval	64.6–76.6	65.5–83.6	66.7–76.7

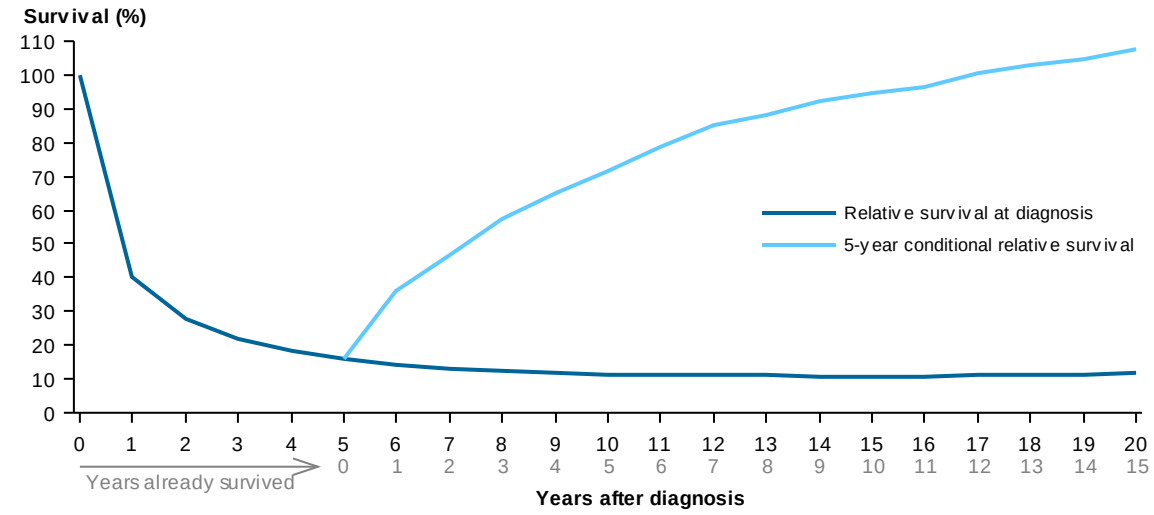


Figure B15(c): Relative survival at diagnosis and 5-year conditional survival from liver cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Lung cancer (C33–C34)

Risk factors[a]**:** 

Table B16(a): Incidence and mortality of lung cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	6,409	4,102	10,511	4,882	3,255	8,137
Crude rate	57.6	36.6	47.1	43.2	28.5	35.8
ASR	56.2	31.4	42.5	41.8	23.7	31.8
Risk to age 75	1 in 26	1 in 41	1 in 32	1 in 38	1 in 58	1 in 46
Risk to age 85	1 in 13	1 in 23	1 in 17	1 in 17	1 in 29	1 in 22
Mean age	71.5	70.2	71.0	72.4	72.2	72.3
Estimated number for 2014, 2015 and 2016[c]						
2014	6,860	4,720	11,580	5,150	3,480	8,630
2015	6,990	4,890	11,880	5,190	3,600	8,790
2016	7,130	5,070	12,200	5,240	3,720	8,960

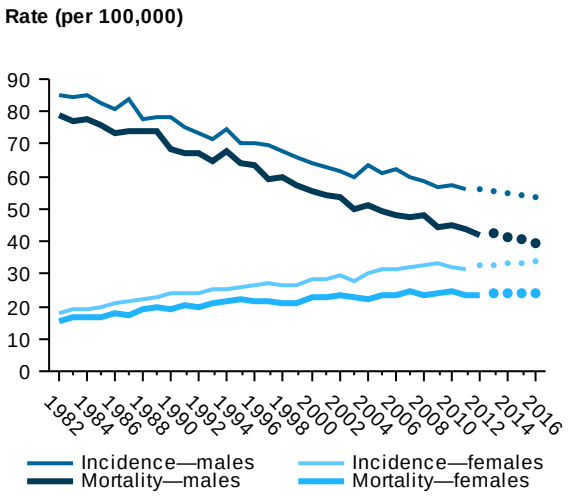


Figure B16(a): Incidence and mortality ASRs[b,c] **of lung cancer, 1982–2016**

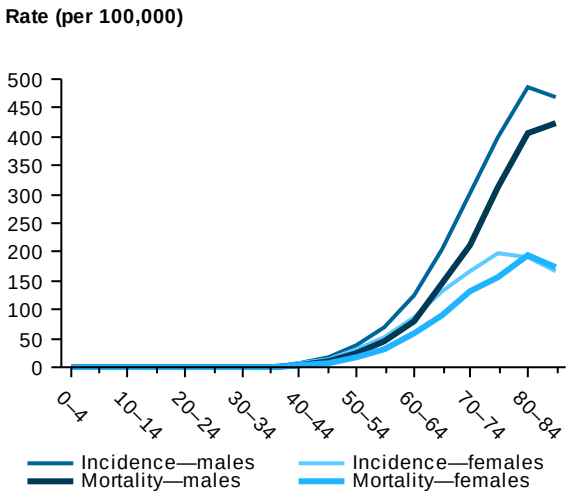


Figure B16(b): Incidence (2011) and mortality (2012) rates of lung cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B16(b): Survival and prevalence of lung cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	3,512	2,715	6,227
5-year prevalence	7,782	6,136	13,918
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	36.0	43.6	39.0
95% confidence interval	35.5–36.6	42.9–44.4	38.6–39.5
5-year relative survival at diagnosis (%)	12.5	17.1	14.3
95% confidence interval	12.1–13.0	16.5–17.7	14.0–14.7
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	31.6	36.4	33.6
95% confidence interval	29.0–34.2	33.7–39.1	31.7–35.6
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	67.6	73.2	70.0
95% confidence interval	64.9–70.3	70.6–75.8	68.1–71.9

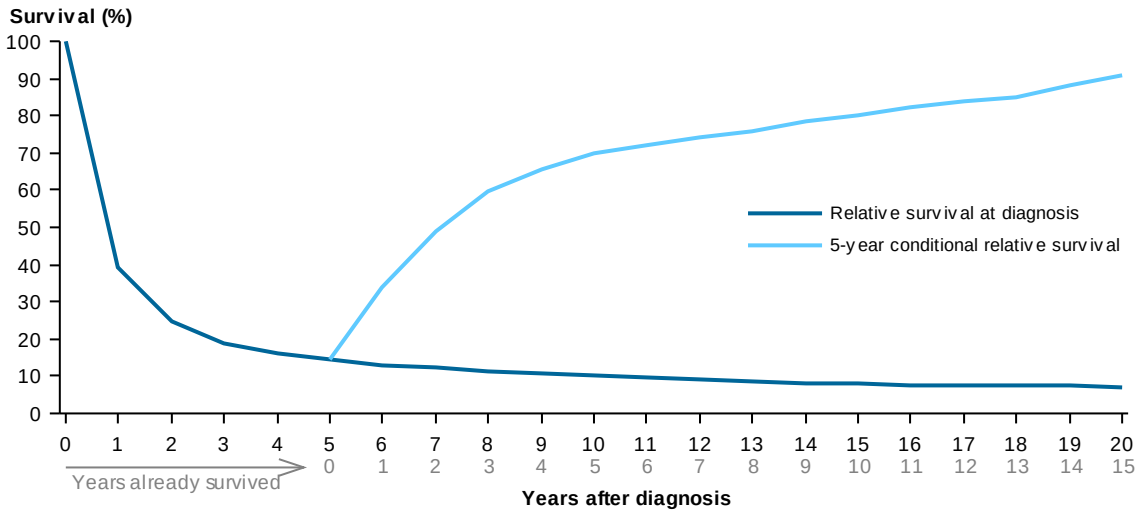


Figure B16(c): Relative survival at diagnosis and 5-year conditional survival from lung cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Melanoma of the skin (C43)

Risk factors[a]**:**

Table B17(a): Incidence and mortality of melanoma of the skin

	Incidence			Mortality		
	Males	**Females**	**Persons**	**Males**	**Females**	**Persons**
2011 incidence/2012 mortality[b]						
Number	6,734	4,835	11,570	1,039	476	1,515
Crude rate	60.6	43.1	51.8	9.2	4.2	6.7
ASR	58.5	39.0	48.0	9.0	3.4	5.9
Risk to age 75	1 in 23	1 in 33	1 in 27	1 in 187	1 in 456	1 in 266
Risk to age 85	1 in 14	1 in 24	1 in 18	1 in 84	1 in 240	1 in 129
Mean age	63.2	60.4	62.0	70.9	70.6	70.8
Estimated number for 2014, 2015 and 2016[c]						
2014	7,440	5,210	12,640	1,120	505	1,625
2015	7,640	5,320	12,960	1,160	515	1,675
2016	7,850	5,440	13,280	1,210	530	1,740

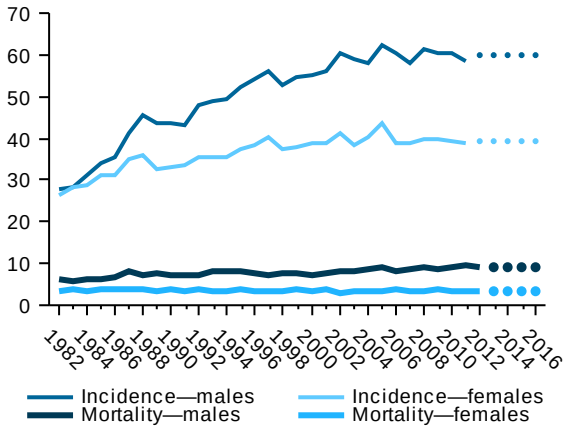


Figure B17(a): Incidence and mortality ASRs[b,c] **of melanoma of the skin, 1982–2016**

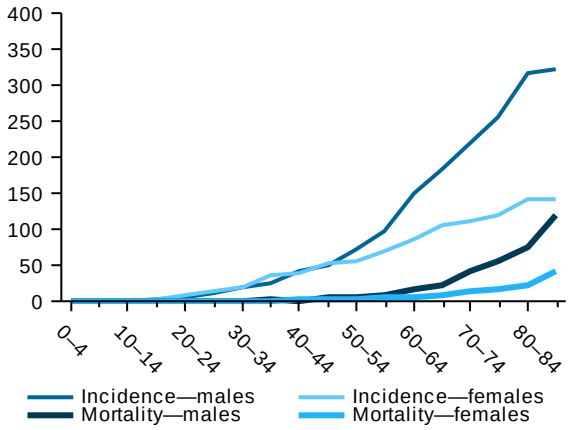


Figure B17(b): Incidence (2011) and mortality (2012) rates for melanoma of the skin, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B17(b): Survival and prevalence of melanoma of the skin

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	6,383	4,606	10,989
5-year prevalence	27,402	20,962	48,364
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	96.3	98.3	97.1
95% confidence interval	96.0–96.6	98.0–98.5	96.9–97.3
5-year relative survival at diagnosis (%)	88.2	93.5	90.4
95% confidence interval	87.6–88.7	92.9–94.0	90.0–90.8
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	90.4	94.5	92.2
95% confidence interval	89.9–90.9	94.0–94.9	91.8–92.5
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	95.8	97.6	96.6
95% confidence interval	95.3–96.3	97.2–98.1	96.3–97.0

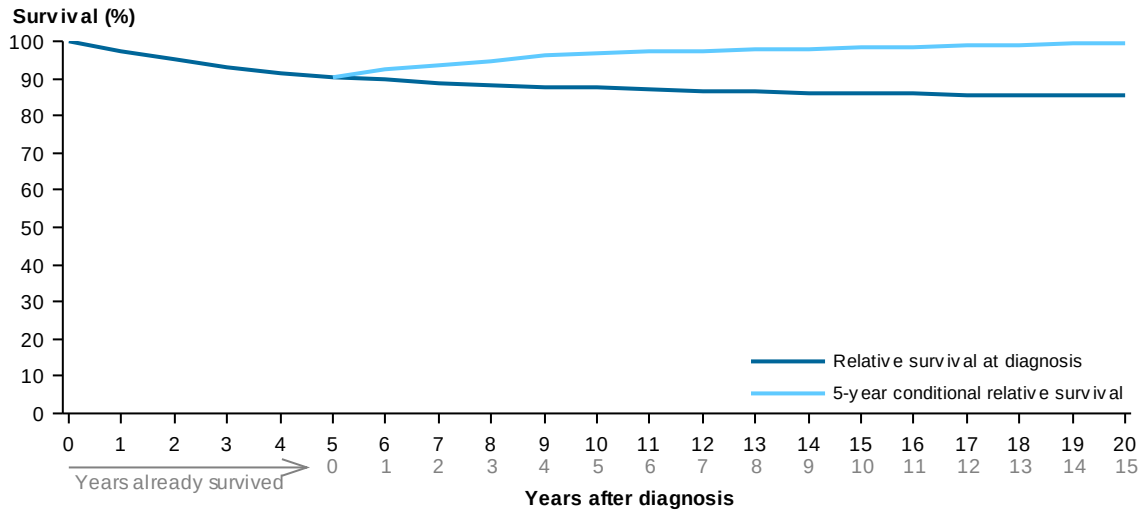


Figure B17(c): Relative survival at diagnosis and 5-year conditional survival from melanoma of the skin, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Mesothelioma (C45)

Risk factors[a]**:**

Table B18(a): Incidence and mortality of mesothelioma

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	573	117	690	538	100	638
Crude rate	5.2	1.0	3.1	4.8	0.9	2.8
ASR	5.1	0.9	2.8	4.6	0.7	2.5
Risk to age 75	1 in 302	1 in 1,505	1 in 507	1 in 382	1 in 2,057	1 in 650
Risk to age 85	1 in 130	1 in 842	1 in 238	1 in 140	1 in 970	1 in 259
Mean age	73.3	73.3	73.3	74.4	74.0	74.3
Estimated number for 2014, 2015 and 2016[c]						
2014	640	145	780	575	125	700
2015	655	150	805	595	130	725
2016	675	155	830	620	135	755

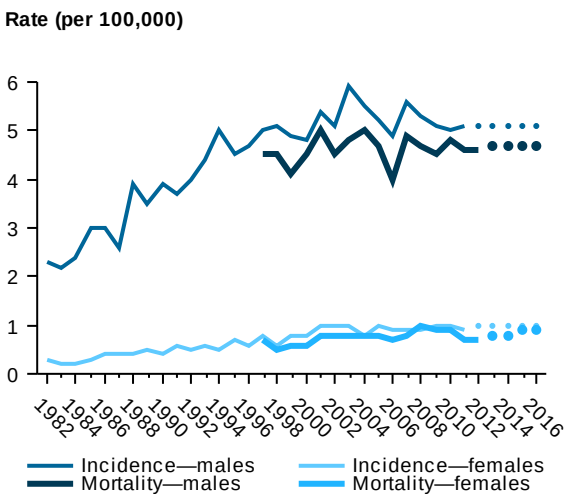


Figure B18(a): Incidence and mortality ASRs[b,c] of mesothelioma, 1982–2016

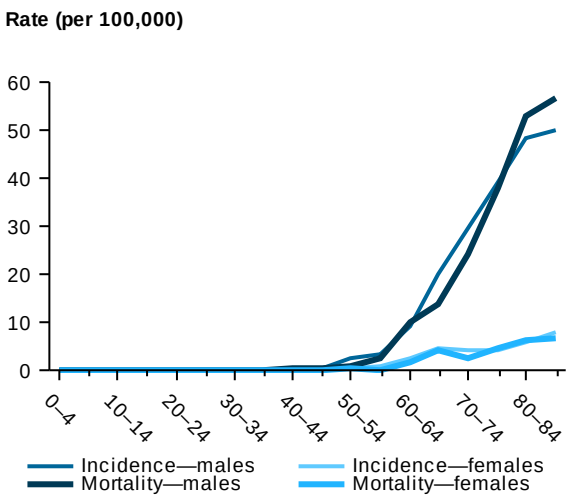


Figure B18(b): Incidence (2011) and mortality (2012) rates of mesothelioma, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B18(b): Survival and prevalence of mesothelioma

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	357	86	443
5-year prevalence	647	162	809
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	43.1	47.7	43.9
95% confidence interval	41.1–45.1	43.3–51.9	42.1–45.7
5-year relative survival at diagnosis (%)	5.2	8.4	5.8
95% confidence interval	4.4–6.2	6.2–11.0	4.9–6.7
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	n.p.[(c)]	n.p.[(c)]	n.p.[(c)]
95% confidence interval	n.p.[(c)]	n.p.[(c)]	n.p.[(c)]
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	44.8	41.7	45.1
95% confidence interval	21.5–68.2	10.5–72.9	27.4–62.8

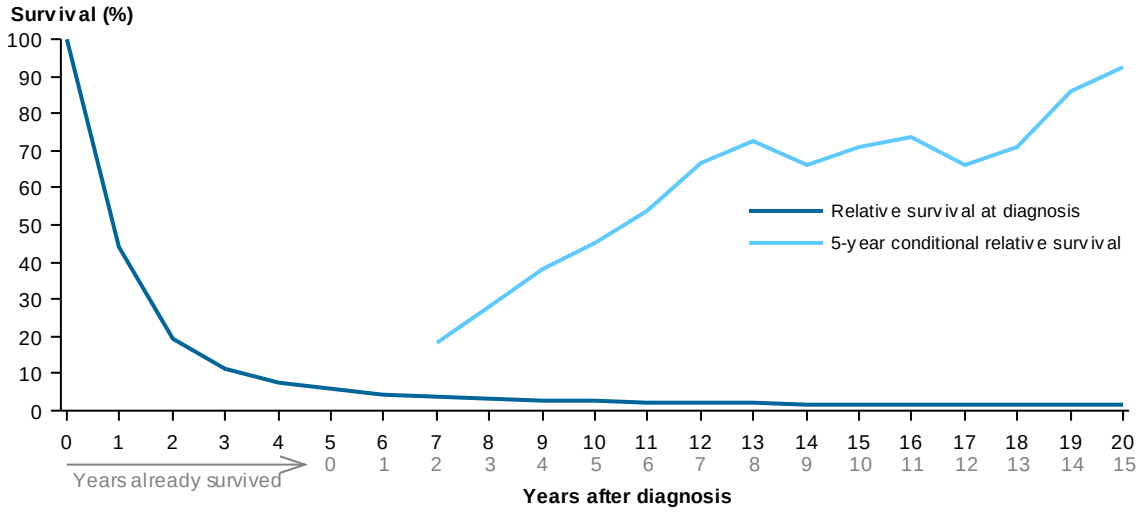


Figure B18(c): Relative survival at diagnosis and 5-year conditional survival from mesothelioma, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

(c) Survival estimates and confidence interval are not presented due to the high standard error.

Source: AIHW ACD 2011.

Mouth cancer (C03–C06)

Risk factors[a]**:** 

Table B19(a): Incidence and mortality of mouth cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	356	215	571	76	43	119
Crude rate	3.2	1.9	2.6	0.7	0.4	0.5
ASR	3.0	1.6	2.3	0.6	0.3	0.5
Risk to age 75	1 in 392	1 in 760	1 in 518	1 in 1,714	1 in 6,239	1 in 2,707
Risk to age 85	1 in 272	1 in 483	1 in 350	1 in 1,293	1 in 3,819	1 in 1,960
Mean age	64.3	68.3	65.8	68.0	77.4	71.4
Estimated number for 2014, 2015 and 2016[c]						
2014	360	230	595	75	55	130
2015	370	235	605	75	55	130
2016	380	245	620	75	55	130

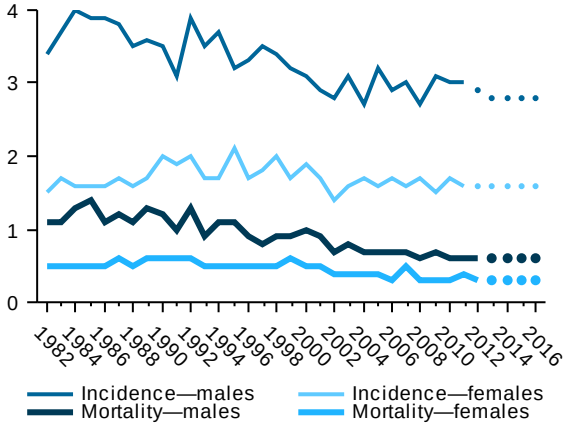


Figure B19(a): Incidence and mortality ASRs[b,c] **of mouth cancer, 1982–2016**

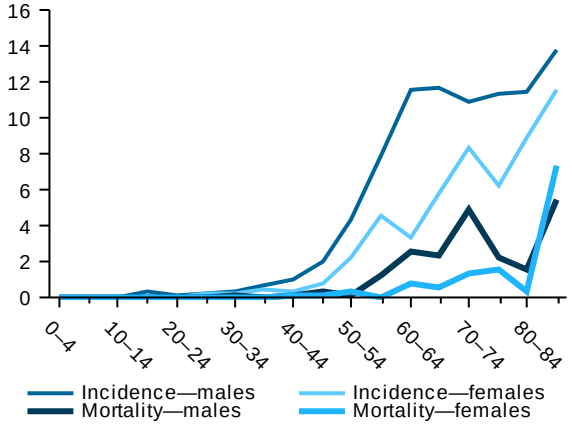


Figure B19(b): Incidence (2011) and mortality (2012) rates of mouth cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B19(b): Survival and prevalence of mouth cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	312	167	479
5-year prevalence	1,057	670	1,727
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	82.0	83.6	82.6
95% confidence interval	79.8–84.0	80.8–86.1	80.9–84.2
5-year relative survival at diagnosis (%)	57.0	63.7	59.6
95% confidence interval	54.2–59.8	60.0–67.3	57.3–61.8
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	65.8	74.0	69.0
95% confidence interval	61.8–69.8	69.7–78.3	66.0–71.9
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	72.1	81.8	76.1
95% confidence interval	67.4–76.8	77.1–86.5	72.8–79.5

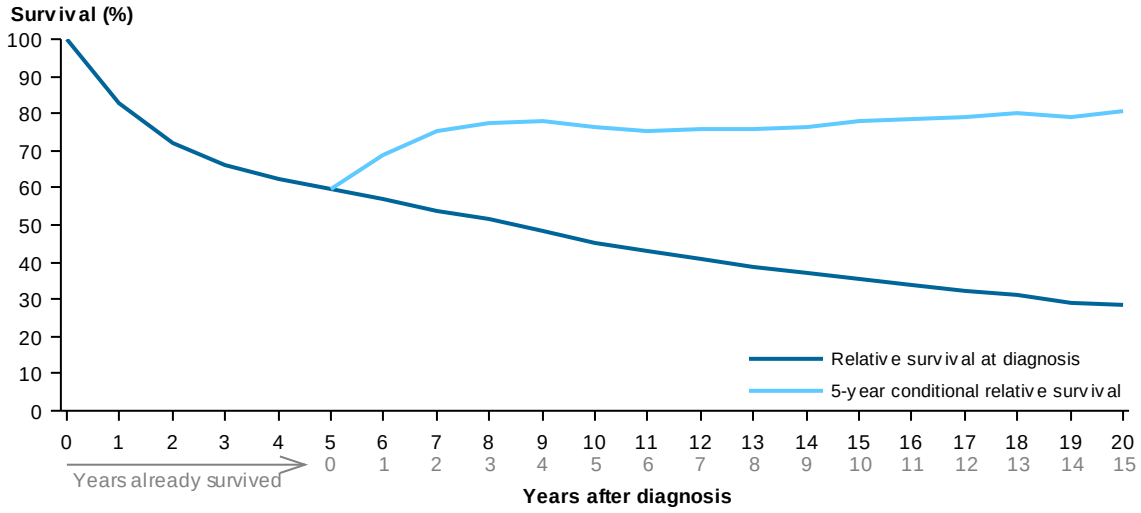


Figure B19(c): Relative survival at diagnosis and 5-year conditional survival from mouth cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Multiple primary cancers (C97)

Table B20(a): Mortality of multiple primary cancers

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2012 mortality[(a)]						
Number	. .	. .	. .	312	194	506
Crude rate	. .	. .	. .	2.8	1.7	2.2
ASR	. .	. .	. .	2.8	1.3	1.9
Risk to age 75	. .	. .	. .	1 in 990	1 in 1,259	1 in 1,110
Risk to age 85	. .	. .	. .	1 in 259	1 in 589	1 in 376
Mean age	. .	. .	. .	78.1	75.9	77.2
Estimated number for 2014, 2015 and 2016[(b)]						
2014	. .	. .	. .	415	230	645
2015	. .	. .	. .	430	240	670
2016	. .	. .	. .	445	245	690

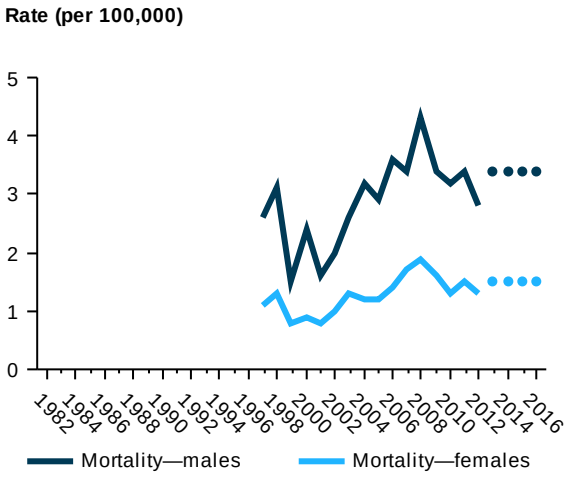


Figure B20(a): Mortality ASRs[(a,b)] of multiple primary cancers, 1982–2016

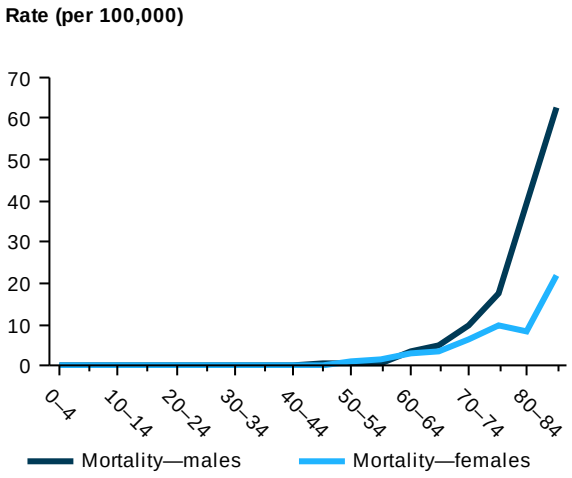


Figure B20(b): Mortality (2012) rates of multiple primary cancers, by age group

(a) Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Although a person can have more than one primary cancer, a diagnosis of 'multiple primary cancers' (ICD-10 code C97) is not used by cancer registries; rather, each of the person's cancers is coded separately. C97 only occurs in mortality data in cases when the certifying doctor cannot determine which of the cancers was the underlying cause of death. Because C97 is not a diagnosis used by cancer registries, prevalence and survival have not been calculated.

Myelodysplastic syndromes (D46)

Table B21(a): Incidence and mortality of myelodysplastic syndromes

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[a]						
Number	829	480	1,309	268	156	424
Crude rate	7.5	4.3	5.9	2.4	1.4	1.9
ASR	7.6	3.4	5.2	2.4	1.0	1.6
Risk to age 75	1 in 304	1 in 532	1 in 388	1 in 1,889	1 in 3,296	1 in 2,407
Risk to age 85	1 in 95	1 in 203	1 in 134	1 in 323	1 in 942	1 in 506
Mean age	76.8	76.5	76.7	81.3	83.5	82.1
Estimated number for 2014, 2015 and 2016[b]						
2014	910	490	1,400	275	165	440
2015	945	495	1,440	280	170	450
2016	975	500	1,480	290	175	465

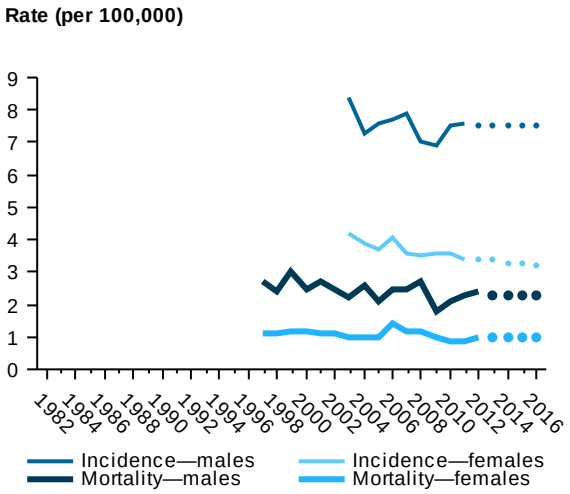


Figure B21(a): Incidence and mortality ASRs[a,b] of myelodysplastic syndromes, 1982–2016

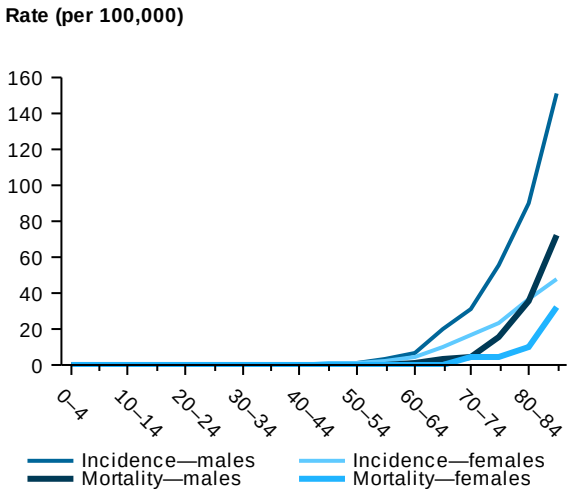


Figure B21(b): Incidence (2011) and mortality (2012) rates of myelodysplastic syndromes, by age group

(a) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2003–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B21(b): Survival and prevalence of myelodysplastic syndromes

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	549	353	902
5-year prevalence	1,742	1,175	2,917
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	72.5	74.6	73.3
95% confidence interval	70.7–74.2	72.4–76.6	71.9–74.6
5-year relative survival at diagnosis (%)	36.5	40.3	38.0
95% confidence interval	34.5–38.6	37.8–42.8	36.4–39.6
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	43.4	45.9	44.4
95% confidence interval	38.2–48.5	40.3–51.6	40.6–48.2
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	49.7	57.6	53.4
95% confidence interval	40.8–58.6	49.5–65.6	47.4–59.4

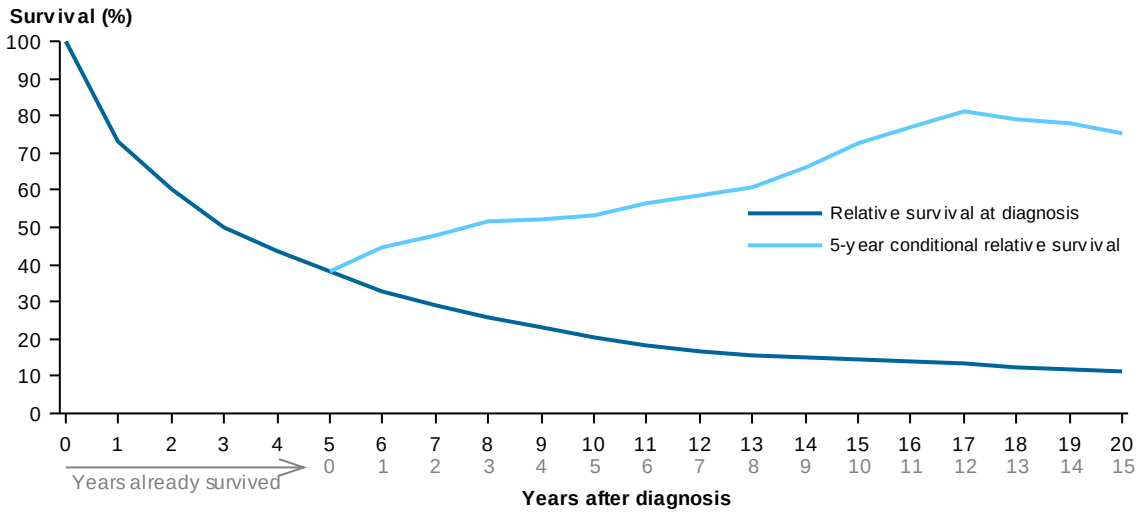


Figure B21(c): Relative survival at diagnosis and 5-year conditional survival from myelodysplastic syndromes, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Myeloma (C90)

Table B22(a): Incidence and mortality of myeloma

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[a]						
Number	886	647	1,533	470	364	834
Crude rate	8.0	5.8	6.9	4.2	3.2	3.7
ASR	7.7	4.9	6.2	4.1	2.5	3.2
Risk to age 75	1 in 191	1 in 268	1 in 223	1 in 469	1 in 742	1 in 576
Risk to age 85	1 in 96	1 in 149	1 in 118	1 in 162	1 in 275	1 in 209
Mean age	70.1	71.3	70.6	74.3	77.5	75.7
Estimated number for 2014, 2015 and 2016[b]						
2014	975	700	1,680	535	405	940
2015	1,010	715	1,730	550	415	965
2016	1,050	735	1,780	570	425	995

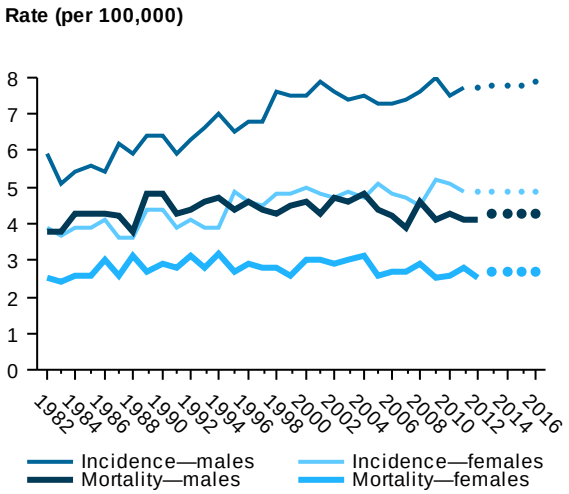


Figure B22(a): Incidence and mortality ASRs[a,b] of myeloma, 1982–2016

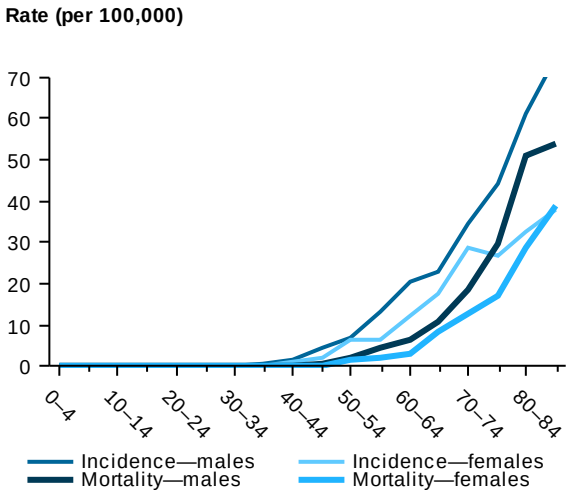


Figure B22(b): Incidence (2011) and mortality (2012) rates of myeloma, by age group

(a) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B22(b): Survival and prevalence of myeloma

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	721	557	1,278
5-year prevalence	2,346	1,739	4,085
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	80.5	78.5	79.6
95% confidence interval	79.0–81.9	76.7–80.1	78.5–80.7
5-year relative survival at diagnosis (%)	45.4	43.9	44.8
95% confidence interval	43.5–47.3	41.8–46.0	43.4–46.2
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	48.9	48.5	48.8
95% confidence interval	45.1–52.7	44.3–52.7	46.0–51.6
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	55.7	57.2	56.4
95% confidence interval	50.5–61.0	51.6–62.8	52.6–60.2

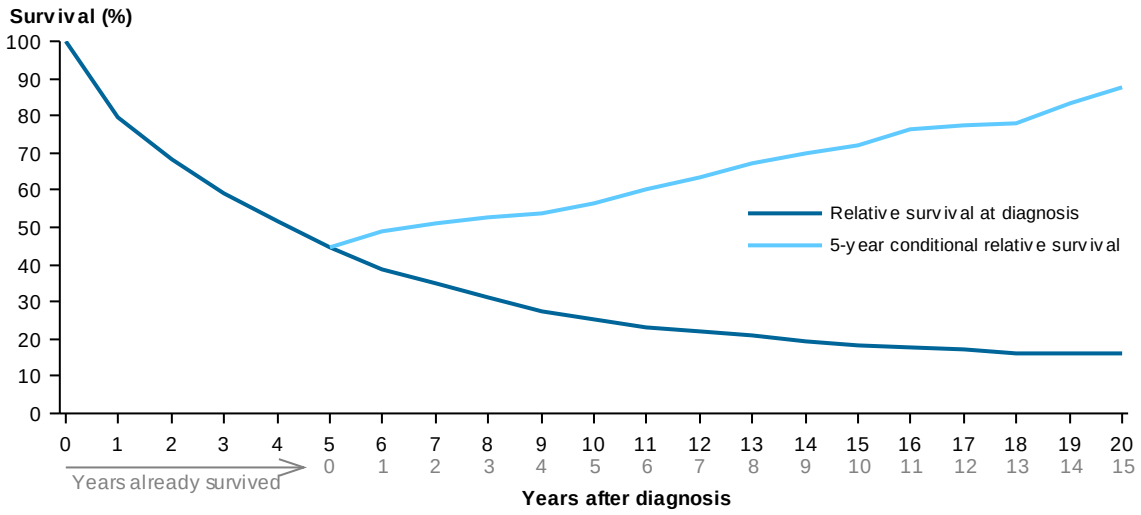


Figure B22(c): Relative survival at diagnosis and 5-year conditional survival from myeloma, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Myeloproliferative cancers excluding CML (C94.1, C94.3, C96.2, D45, D47.1, D47.3)

Table B23(a): Incidence and mortality of myeloproliferative cancers excluding CML

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[a]						
Number	359	293	651	80	81	161
Crude rate	3.2	2.6	2.9	0.7	0.7	0.7
ASR	3.2	2.3	2.7	0.7	0.5	0.6
Risk to age 75	1 in 471	1 in 628	1 in 539	1 in 3,781	1 in 4,495	1 in 4,109
Risk to age 85	1 in 246	1 in 352	1 in 293	1 in 1,158	1 in 1,658	1 in 1,385
Mean age	65.1	65.6	65.3	77.4	82.4	79.9
Estimated number for 2014, 2015 and 2016[b]						
2014	320	300	625	95	95	190
2015	315	300	615	100	95	195
2016	310	300	610	100	100	200

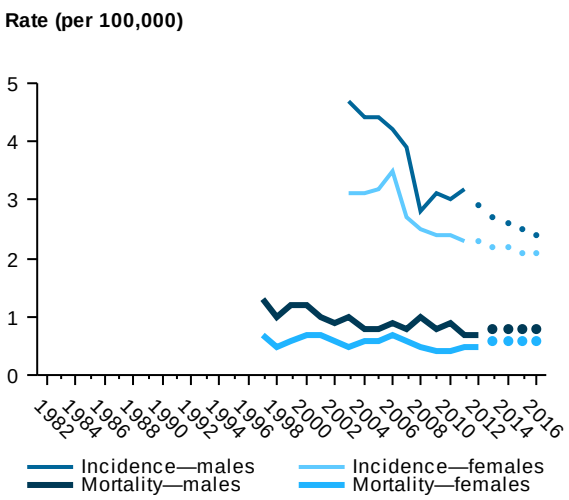


Figure B23(a): Incidence and mortality ASRs[a,b] of myeloproliferative cancers excluding CML, 1982–2016

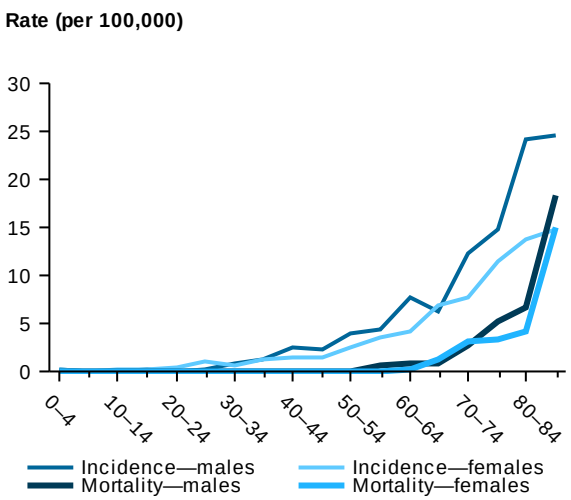


Figure B23(b): Incidence (2011) and mortality (2012) rates of other myeloproliferative cancers excluding CML, by age group

(a) 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2003–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B23(b): Survival and prevalence of myeloproliferative cancers excluding CML

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	301	264	565
5-year prevalence	1,392	1,327	2,719
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	91.5	93.7	92.5
95% confidence interval	89.7–93.0	92.1–95.1	91.3–93.6
5-year relative survival at diagnosis (%)	71.8	81.7	76.4
95% confidence interval	69.2–74.3	79.0–84.1	74.5–78.2
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	74.6	82.7	78.4
95% confidence interval	71.6–77.6	80.0–85.4	76.4–80.4
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	77.1	80.1	78.5
95% confidence interval	73.2–80.9	76.3–83.8	75.8–81.2

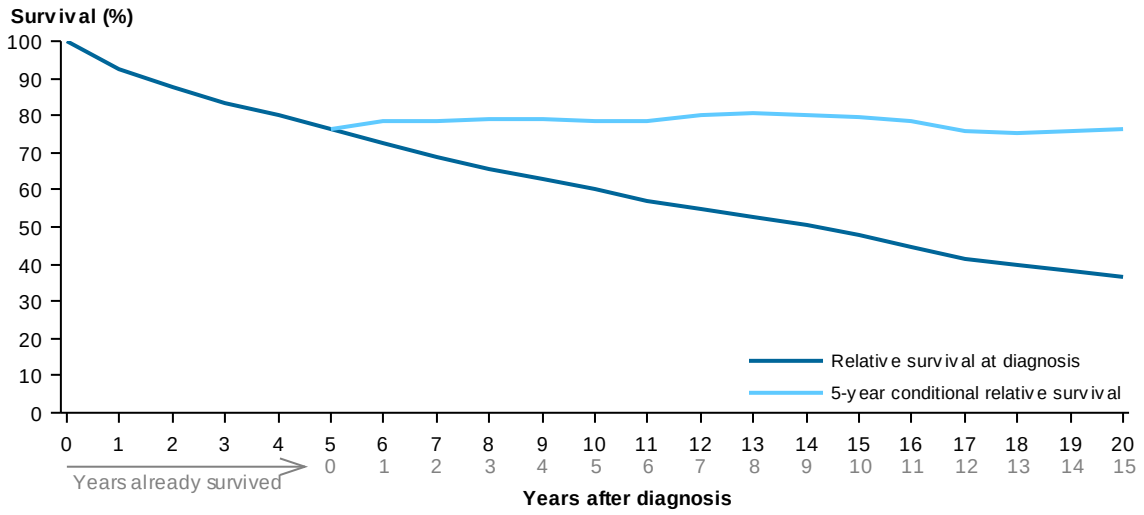


Figure B23(c): Relative survival at diagnosis and 5-year conditional survival from myeloproliferative cancers excluding CML, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Non-Hodgkin lymphoma (C82–C85)

Risk factor[a]**:** 

Table B24(a): Incidence and mortality of non–Hodgkin lymphoma

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	2,639	1,992	4,631	820	582	1,402
Crude rate	23.7	17.8	20.7	7.2	5.1	6.2
ASR	23.1	15.5	19.1	7.1	4.0	5.4
Risk to age 75	1 in 59	1 in 88	1 in 71	1 in 262	1 in 514	1 in 348
Risk to age 85	1 in 34	1 in 50	1 in 41	1 in 99	1 in 174	1 in 128
Mean age	64.3	66.8	65.4	73.7	76.3	74.7
Estimated number for 2014, 2015 and 2016[c]						
2014	2,780	2,170	4,940	830	605	1,435
2015	2,850	2,220	5,070	840	600	1,440
2016	2,930	2,270	5,200	850	595	1,445

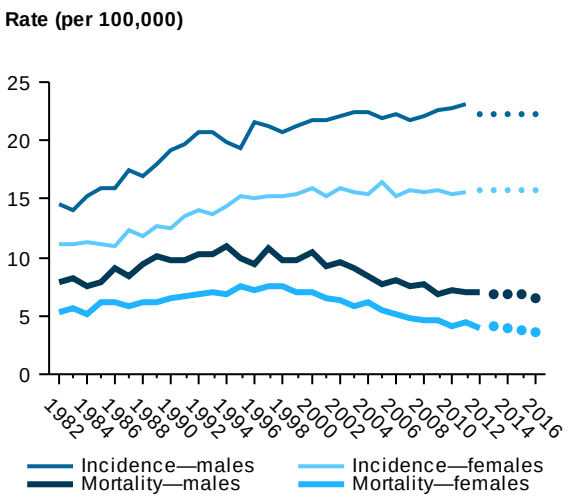


Figure B24(a): Incidence and mortality ASRs[b,c] **of non-Hodgkin lymphoma, 1982–2016**

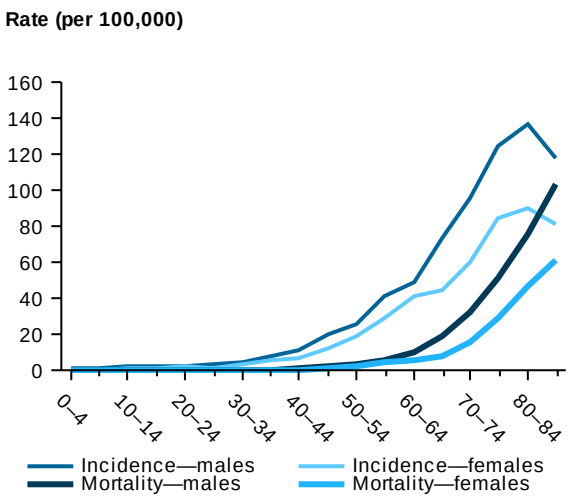


Figure B24(b): Incidence (2011) and mortality (2012) rates of non-Hodgkin lymphoma, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B24(b): Survival and prevalence of non–Hodgkin lymphoma

	Males	Females	Persons
Prevalence as at the end of 2009[(b)]			
1-year prevalence	2,191	1,671	3,862
5-year prevalence	8,440	6,851	15,291
Relative survival in 2007–2011[(c)]			
1-year relative survival at diagnosis (%)	84.3	83.9	84.1
95% confidence interval	83.6–85.1	83.0–84.7	83.6–84.7
5-year relative survival at diagnosis (%)	71.4	72.9	72.1
95% confidence interval	70.3–72.4	71.8–74.0	71.3–72.8
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	81.7	84.8	83.1
95% confidence interval	80.6–82.8	83.7–85.9	82.3–83.9
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	86.9	89.0	87.9
95% confidence interval	85.7–88.1	87.7–90.2	87.0–88.7

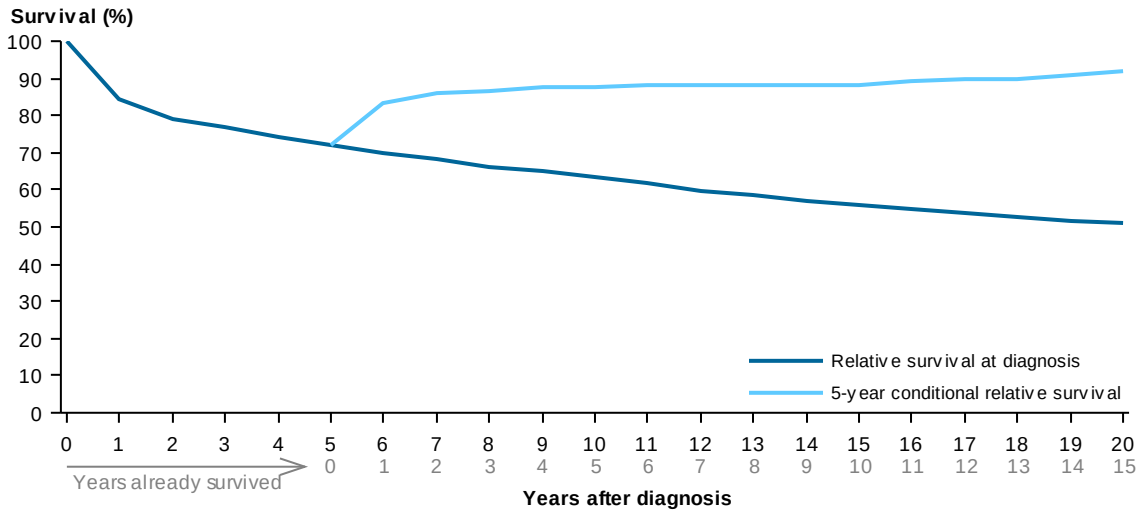


Figure B24(c): Relative survival at diagnosis and 5-year conditional survival from non–Hodgkin lymphoma, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Non-melanoma skin cancer (C44)

Risk factors[a]**:** 

Table B25(a): Incidence and mortality of non-melanoma skin cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	487	282	769	362	159	521
Crude rate	4.4	2.5	3.4	3.2	1.4	2.3
ASR	4.4	2.1	3.1	3.2	1.0	1.9
Risk to age 75	1 in 421	1 in 763	1 in 544	1 in 715	1 in 3,521	1 in 1,197
Risk to age 85	1 in 170	1 in 368	1 in 239	1 in 265	1 in 889	1 in 424
Mean age	70.7	70.8	70.8	76.3	84.0	78.7
Estimated number for 2014, 2015 and 2016[c]						
2014	530	315	845	345	175	520
2015	545	325	870	355	180	535
2016	565	330	895	360	185	545

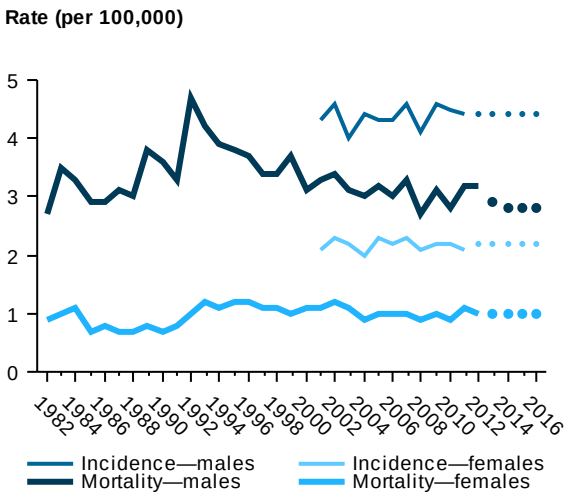


Figure B25(a): Incidence and mortality ASRs[b,c] **of non-melanoma skin cancer, 1982–2016**

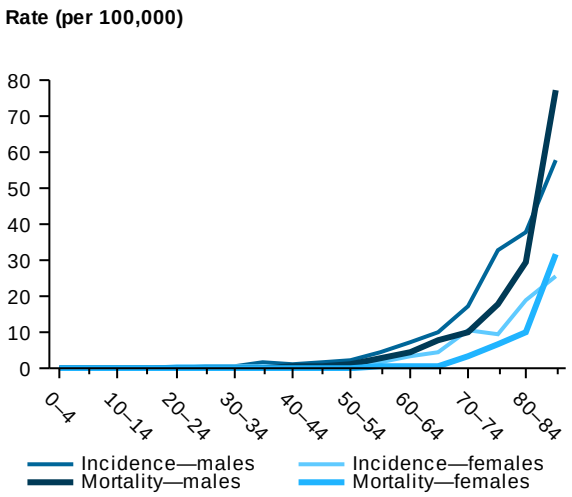


Figure B25(b): Incidence (2011) and mortality (2012) rates of non-melanoma skin cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) For incidence data, ICD-10 C44 codes that indicate a basal or squamous cell carcinoma of the skin are not included. The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B25(b): Survival and prevalence of non-melanoma skin cancer[a]

	Males	Females	Persons
Prevalence as at the end of 2009[b]			
1-year prevalence	437	255	692
5-year prevalence	1,557	993	2,550
Relative survival in 2007–2011[c]			
1-year relative survival at diagnosis (%)	89.3	88.2	88.9
95% confidence interval	87.6–90.9	85.9–90.2	87.5–90.1
5-year relative survival at diagnosis (%)	70.0	73.7	71.5
95% confidence interval	67.2–72.7	70.4–76.9	69.4–73.5
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	77.5	81.7	79.2
95% confidence interval	74.4–80.6	78.3–85.1	76.9–81.5
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	89.7	92.2	90.8
95% confidence interval	86.5–92.8	89.0–95.4	88.6–93.1

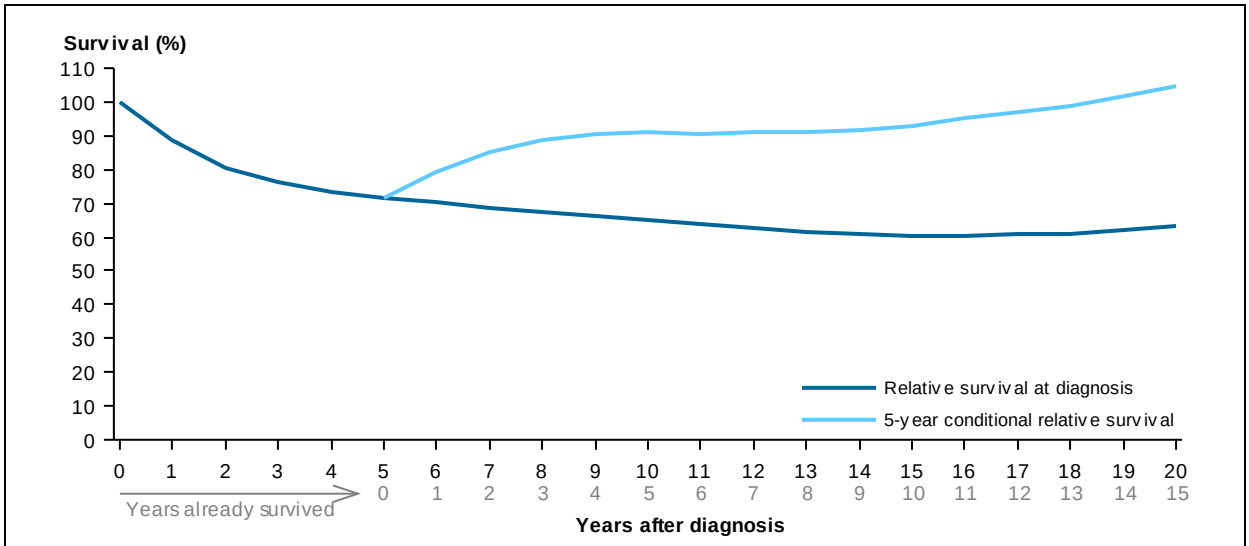


Figure B25(c): Relative survival at diagnosis and 5-year conditional survival from non-melanoma skin cancer, Australia, 2007–2011

(a) For survival and prevalence data, those ICD-10 C44 codes that indicate a basal or squamous cell carcinoma of the skin are not included.

(b) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(c) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Oesophageal cancer (C15)

Risk factors[a]**:** 

Table B26(a): Incidence and mortality of oesophageal cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	991	404	1,395	879	324	1,203
Crude rate	8.9	3.6	6.2	7.8	2.8	5.3
ASR	8.6	3.0	5.6	7.4	2.2	4.7
Risk to age 75	1 in 159	1 in 559	1 in 249	1 in 201	1 in 876	1 in 329
Risk to age 85	1 in 85	1 in 230	1 in 127	1 in 97	1 in 339	1 in 155
Mean age	69.5	74.8	71.0	70.5	76.4	72.1
Estimated number for 2014, 2015 and 2016[c]						
2014	1,070	455	1,530	975	380	1,355
2015	1,110	465	1,570	1,000	385	1,385
2016	1,140	475	1,610	1,020	395	1,415

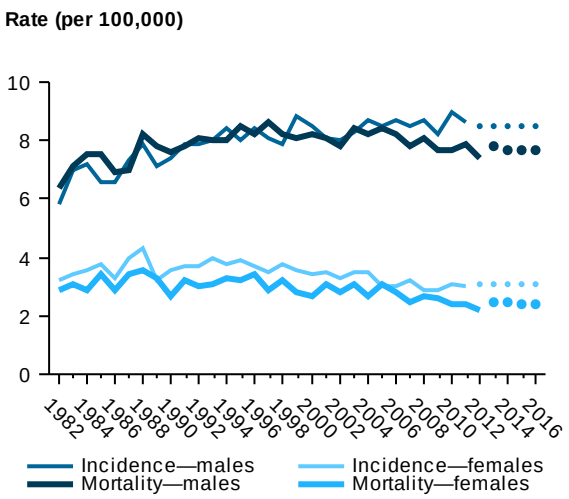


Figure B26(a): Incidence and mortality ASRs[b,c] **of oesophageal cancer, 1982–2016**

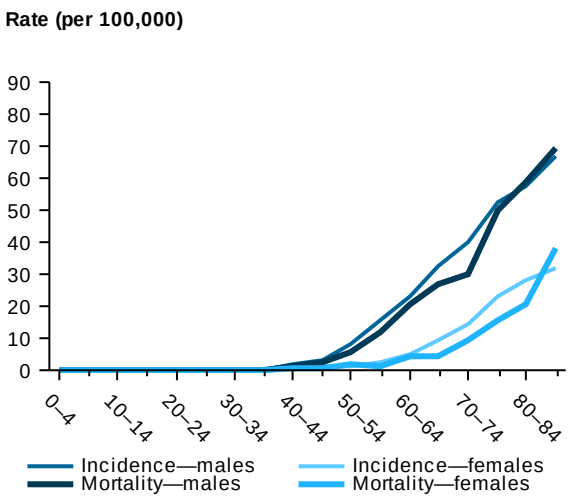


Figure B26(b): Incidence (2011) and mortality (2012) rates of oesophageal cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B26(b): Survival and prevalence of oesophageal cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	644	255	899
5-year prevalence	1,414	567	1,981
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	47.3	44.9	46.6
95% confidence interval	45.8–48.9	42.4–47.3	45.3–47.9
5-year relative survival at diagnosis (%)	17.3	18.0	17.5
95% confidence interval	16.1–18.6	16.1–20.0	16.5–18.6
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	34.3	38.4	35.6
95% confidence interval	28.4–40.2	30.2–46.7	30.7–40.4
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	77.6	77.6	77.5
95% confidence interval	72.4–82.7	70.8–84.5	73.4–81.7

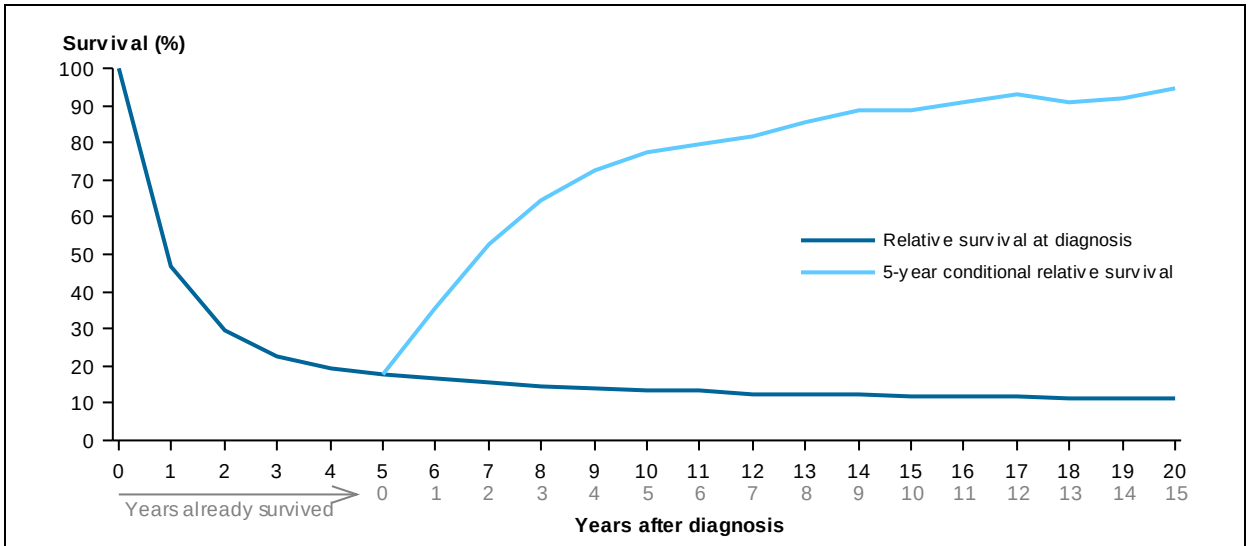


Figure B26(c): Relative survival at diagnosis and 5-year conditional survival from oesophageal cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Cancer of other digestive organs (C26)

Table B27(a): Incidence and mortality of cancer of other digestive organs

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[a]						
Number	81	104	185	646	594	1,240
Crude rate	0.7	0.9	0.8	5.7	5.2	5.5
ASR	0.7	0.7	0.7	5.7	4.0	4.7
Risk to age 75	1 in 2,917	1 in 4,390	1 in 3,514	1 in 375	1 in 569	1 in 453
Risk to age 85	1 in 1,132	1 in 1,310	1 in 1,210	1 in 136	1 in 199	1 in 164
Mean age	74.5	80.8	78.1	74.8	78.4	76.5
Estimated number for 2014, 2015 and 2016[b]						
2014	85	110	195	740	680	1,420
2015	90	110	200	765	695	1,460
2016	95	115	205	790	715	1,505

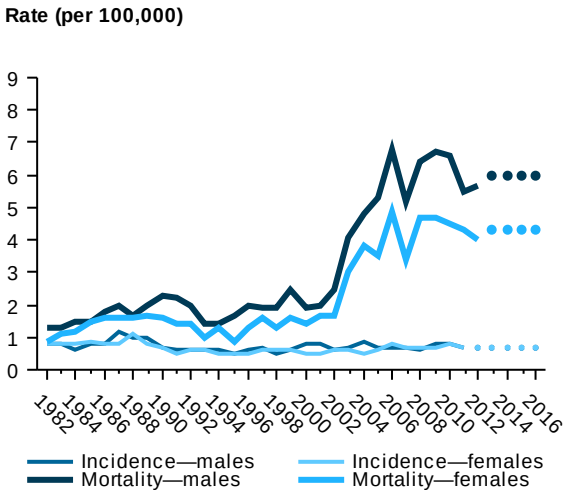


Figure B27(a): Incidence and mortality ASRs[a,b] of cancer of other digestive organs, 1982–2016

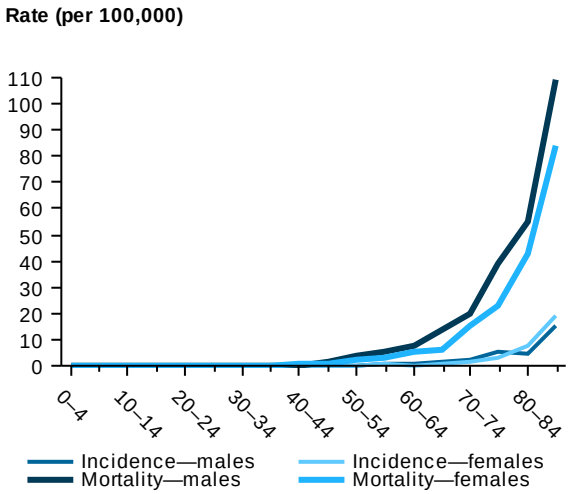


Figure B27(b): Incidence (2011) and mortality (2012) rates of cancer of other digestive organs, by age group

(a) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B27(b): Survival and prevalence of other digestive organs

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	32	31	63
5-year prevalence	76	70	146
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	21.3	19.4	20.3
95% confidence interval	16.4–26.7	15.1–24.3	17.0–23.8
5-year relative survival at diagnosis (%)	12.9	11.3	12.1
95% confidence interval	9.1–17.5	7.8–15.5	9.4–15.1
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	54.4	49.0	51.9
95% confidence interval	32.3–76.5	24.2–73.8	35.3–68.4
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	68.8	90.5	79.4
95% confidence interval	45.0–92.5	74.7–106.3	65.2–93.6

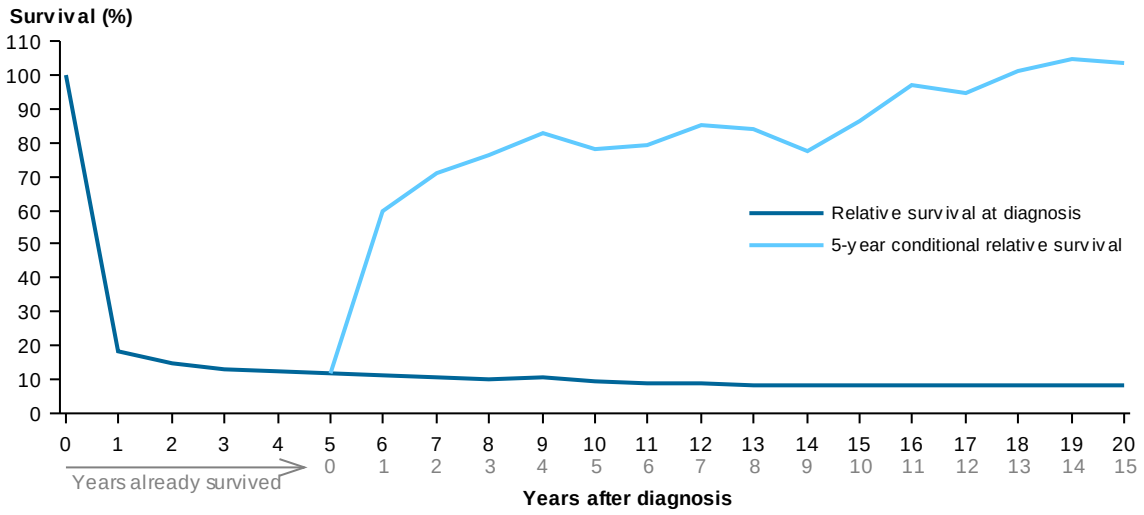


Figure B27(c): Relative survival at diagnosis and 5-year conditional survival from other digestive organs, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Other soft tissue cancers (C47, C49)

Table B28(a): Incidence and mortality of other soft tissue cancers

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[a]						
Number	372	270	641	133	132	265
Crude rate	3.3	2.4	2.9	1.2	1.2	1.2
ASR	3.3	2.2	2.7	1.2	1.0	1.1
Risk to age 75	1 in 449	1 in 625	1 in 523	1 in 1,785	1 in 1,483	1 in 1,617
Risk to age 85	1 in 270	1 in 412	1 in 330	1 in 578	1 in 784	1 in 682
Mean age	58.8	60.5	59.5	66.6	68.2	67.4
Estimated number for 2014, 2015 and 2016[b]						
2014	370	280	650	155	130	285
2015	380	285	665	155	135	290
2016	390	290	685	160	135	295

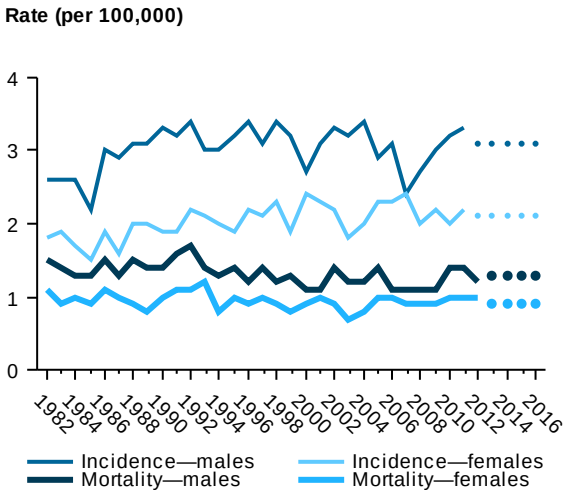


Figure B28(a): Incidence and mortality ASRs[a,b] of other soft tissue cancers, 1982–2016

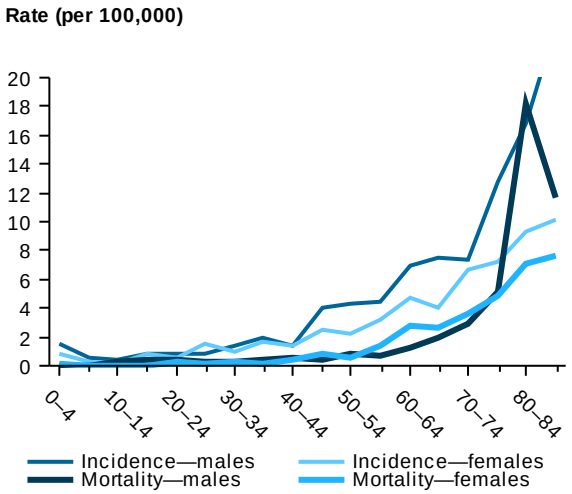


Figure B28(b): Incidence (2011) and mortality (2012) rates of other soft tissue cancers, by age group

(a) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(b) The 2012–2016 estimates for incidence are based on 2003–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B28(b): Survival and prevalence of other soft tissue cancers

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	283	241	524
5-year prevalence	1,038	944	1,982
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	83.0	84.9	83.9
95% confidence interval	80.8–85.0	82.6–87.0	82.3–85.4
5-year relative survival at diagnosis (%)	65.0	67.7	66.2
95% confidence interval	62.1–67.8	64.6–70.7	64.1–68.3
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	76.8	76.7	76.8
95% confidence interval	73.6–80.0	73.3–80.1	74.5–79.1
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	90.5	90.2	90.4
95% confidence interval	87.7–93.2	87.3–93.0	88.4–92.4

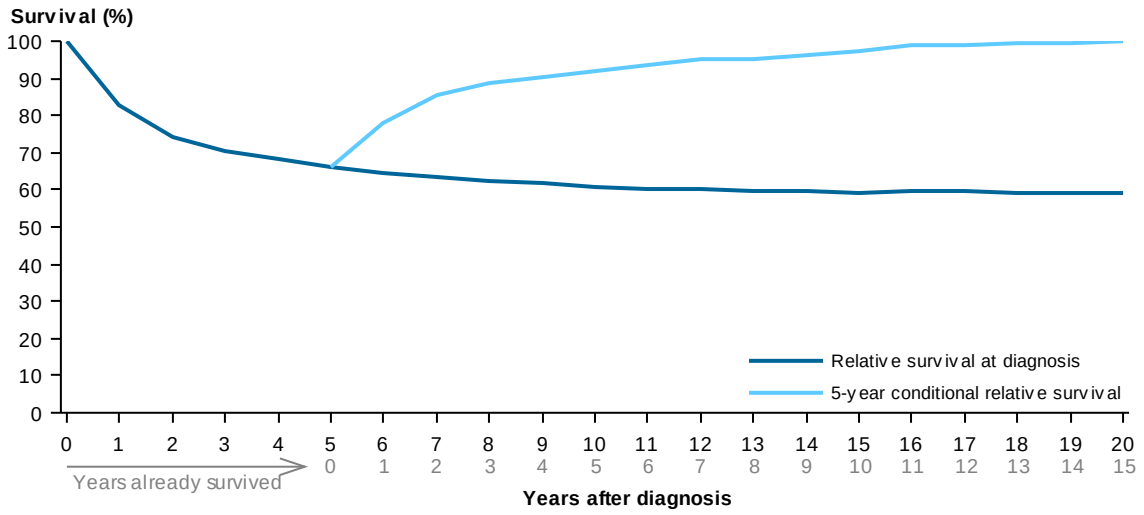


Figure B28(c): Relative survival at diagnosis and 5-year conditional survival from other soft tissue cancers, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Ovarian cancer (C56)

Risk factors[a]**:** 

Table B29(a): Incidence and mortality of ovarian cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	. .	1,330	1,330	. .	933	933
Crude rate	. .	11.9	. .	. .	8.2	. .
ASR	. .	10.4	. .	. .	6.7	. .
Risk to age 75	. .	1 in 125	. .	. .	1 in 208	. .
Risk to age 85	. .	1 in 81	. .	. .	1 in 111	. .
Mean age	. .	64.5	. .	. .	71.5	. .
Estimated number for 2014, 2015 and 2016[c]						
2014	. .	1,430	1,430	. .	1,000	1,000
2015	. .	1,460	1,460	. .	1,020	1,020
2016	. .	1,480	1,480	. .	1,040	1,040

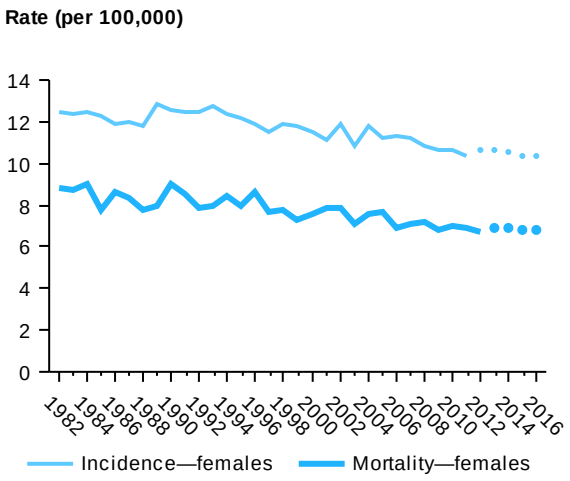


Figure B29(a): Incidence and mortality ASRs[b,c] **of ovarian cancer, 1982–2016**

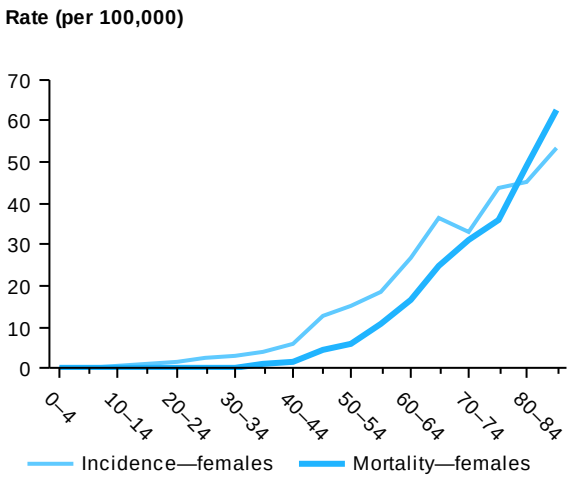


Figure B29(b): Incidence (2011) and mortality (2012) rates of ovarian cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B29(b): Survival and prevalence of ovarian cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	. .	1,054	1,054
5-year prevalence	. .	3,806	3,806
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	. .	76.0	76.0
95% confidence interval	. .	74.8–77.1	74.8–77.1
5-year relative survival at diagnosis (%)	. .	43.0	43.0
95% confidence interval	. .	41.7–44.3	41.7–44.3
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	. .	52.5	52.5
95% confidence interval	. .	50.0–55.0	50.0–55.0
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	. .	78.1	78.1
95% confidence interval	. .	76.0–80.2	76.0–80.2

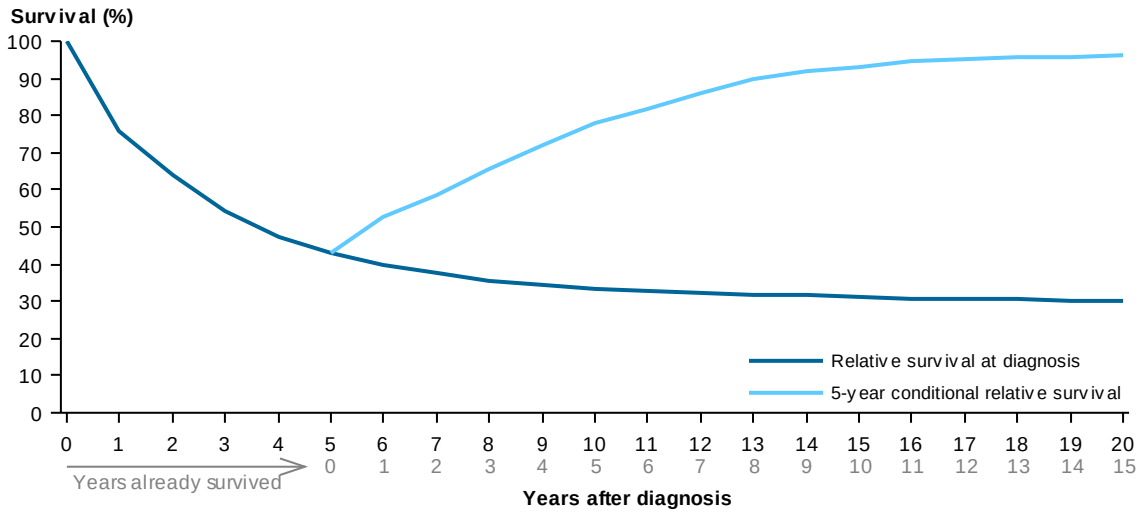


Figure B29(c): Relative survival at diagnosis and 5-year conditional survival from ovarian cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Pancreatic cancer (C25)

Risk factors[a]**:** 

Table B30(a): Incidence and mortality of pancreatic cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	1,425	1,322	2,748	1,331	1,193	2,524
Crude rate	12.8	11.8	12.3	11.8	10.5	11.1
ASR	12.5	9.8	11.0	11.3	8.4	9.8
Risk to age 75	1 in 116	1 in 158	1 in 134	1 in 135	1 in 202	1 in 162
Risk to age 85	1 in 56	1 in 71	1 in 63	1 in 63	1 in 83	1 in 72
Mean age	70.6	73.5	72.0	71.6	74.9	73.2
Estimated number for 2014, 2015 and 2016[c]						
2014	1,530	1,410	2,940	1,360	1,280	2,640
2015	1,570	1,460	3,030	1,400	1,310	2,710
2016	1,620	1,500	3,120	1,450	1,350	2,800

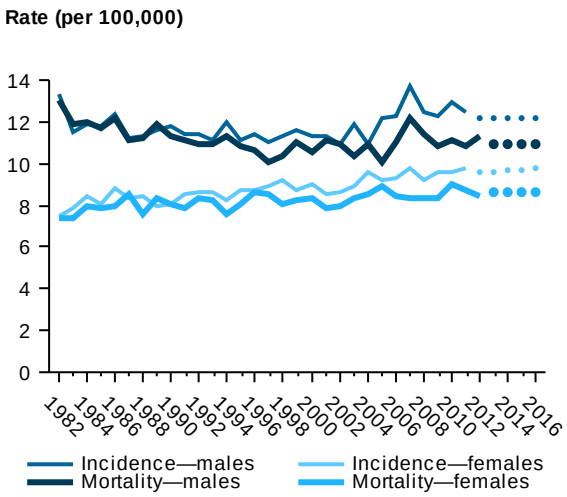


Figure B30(a): Incidence and mortality ASRs[b,c] **of pancreatic cancer, 1982–2016**

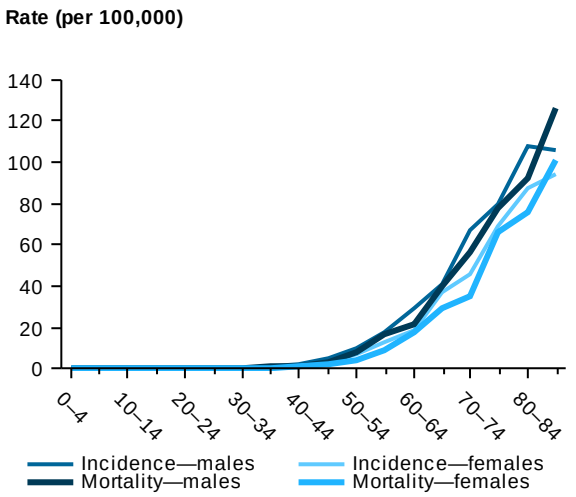


Figure B30(b): Incidence (2011) and mortality (2012) rates of pancreatic cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B30(b): Survival and prevalence of pancreatic cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	657	613	1,270
5-year prevalence	1,157	1,048	2,205
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	24.8	23.7	24.2
95% confidence interval	23.7–25.8	22.6–24.8	23.5–25.0
5-year relative survival at diagnosis (%)	6.0	6.2	6.1
95% confidence interval	5.3–6.6	5.5–6.9	5.6–6.6
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	22.7	23.7	23.2
95% confidence interval	14.1–31.3	15.0–32.5	17.0–29.3
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	75.6	75.4	75.5
95% confidence interval	67.7–83.5	67.8–83.0	70.0–81.0

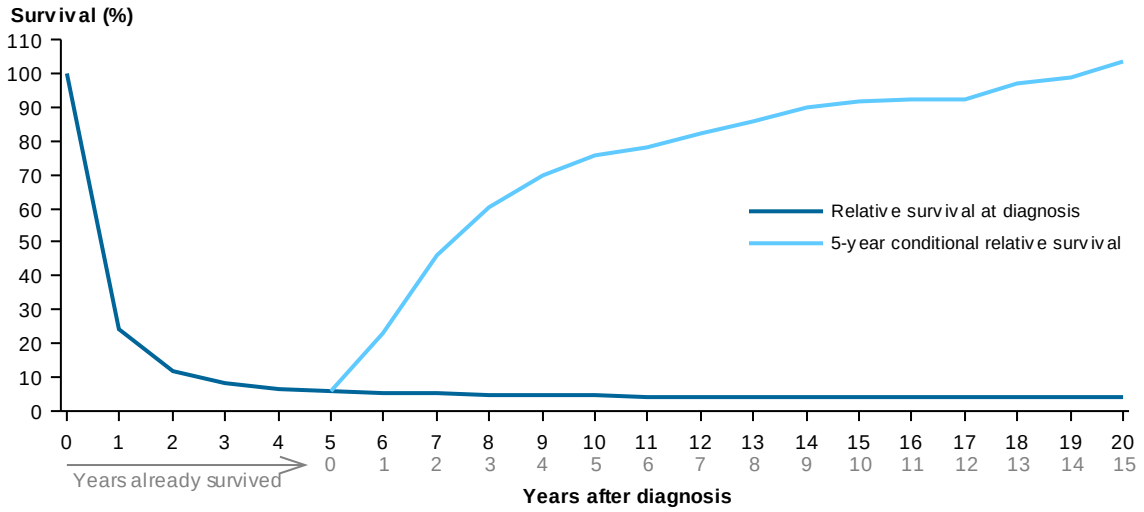


Figure B30(c): Relative survival at diagnosis and 5-year conditional survival from pancreatic cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Prostate cancer (C61)

Risk factors[a]**:**

Table B31(a): Incidence and mortality of prostate cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	19,993	. .	19,993	3,079	. .	3,079
Crude rate	179.8	. .	. .	27.2	. .	. .
ASR	167.3	. .	. .	27.6	. .	. .
Risk to age 75	1 in 7	. .	. .	1 in 119	. .	. .
Risk to age 85	1 in 5	. .	. .	1 in 28	. .	. .
Mean age	68.2	. .	. .	80.2	. .	. .
Estimated number for 2014, 2015 and 2016[c]						
2014	17,050	. .	17,050	3,390	. .	3,390
2015	17,250	. .	17,250	3,440	. .	3,440
2016	18,140	. .	18,140	3,500	. .	3,500

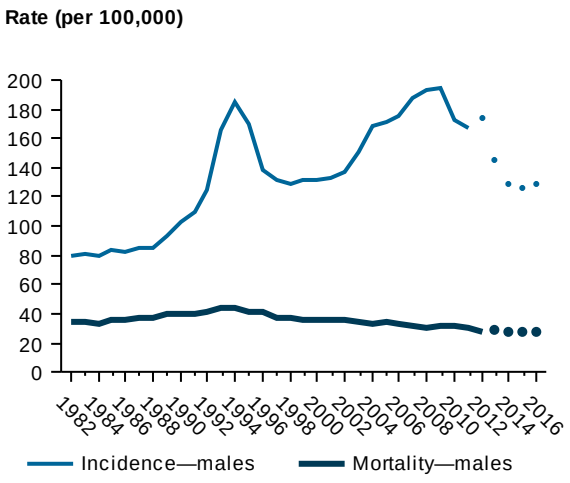


Figure B31(a): Incidence and mortality ASRs[b,c] **of prostate cancer, 1982–2016**

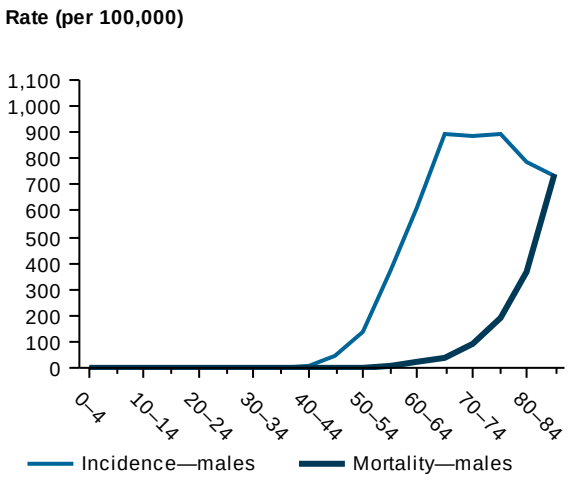


Figure B31(b): Incidence (2011) and mortality (2012) rates of prostate cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B31(b): Survival and prevalence of prostate cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	21,266	. .	21,266
5-year prevalence	86,207	. .	86,207
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	98.3	. .	98.3
95% confidence interval	98.1–98.4	. .	98.1–98.4
5-year relative survival at diagnosis (%)	93.2	. .	93.2
95% confidence interval	92.8–93.5	. .	92.8–93.5
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	93.6	. .	93.6
95% confidence interval	93.4–93.9	. .	93.4–93.9
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	92.6	. .	92.6
95% confidence interval	92.2–93.1	. .	92.2–93.1

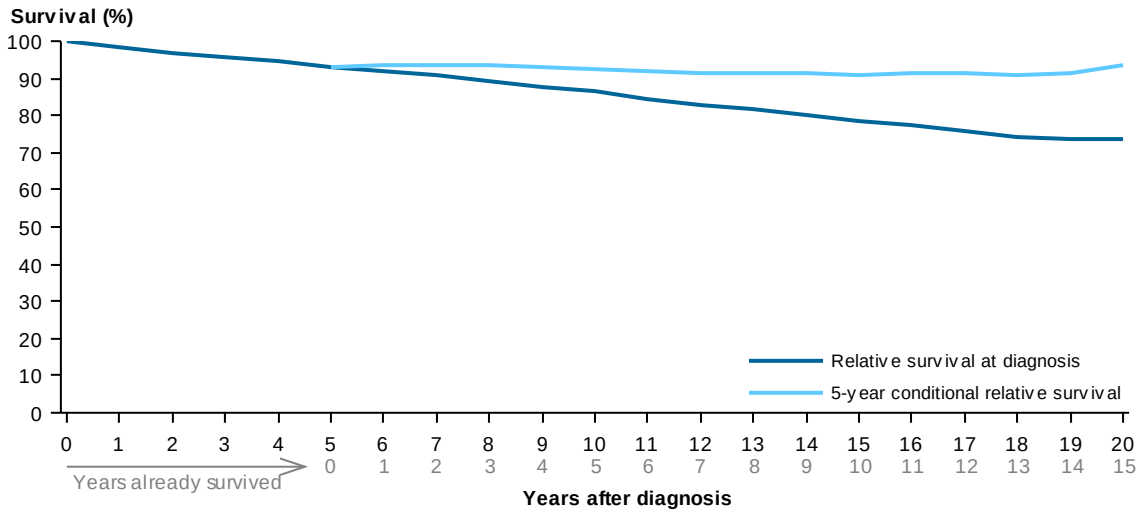


Figure B31(c): Relative survival at diagnosis and 5-year conditional survival from prostate cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Stomach cancer (C16)

Risk factors[a]**:** 

Table B32(a): Incidence and mortality of stomach cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	1,357	736	2,093	707	436	1,143
Crude rate	12.2	6.6	9.4	6.3	3.8	5.0
ASR	11.9	5.5	8.5	6.1	3.1	4.5
Risk to age 75	1 in 125	1 in 268	1 in 171	1 in 261	1 in 610	1 in 367
Risk to age 85	1 in 60	1 in 138	1 in 86	1 in 123	1 in 248	1 in 168
Mean age	69.9	71.6	70.5	70.9	74.8	72.4
Estimated number for 2014, 2015 and 2016[c]						
2014	1,460	785	2,240	700	415	1,115
2015	1,480	800	2,280	695	415	1,110
2016	1,510	815	2,330	690	410	1,100

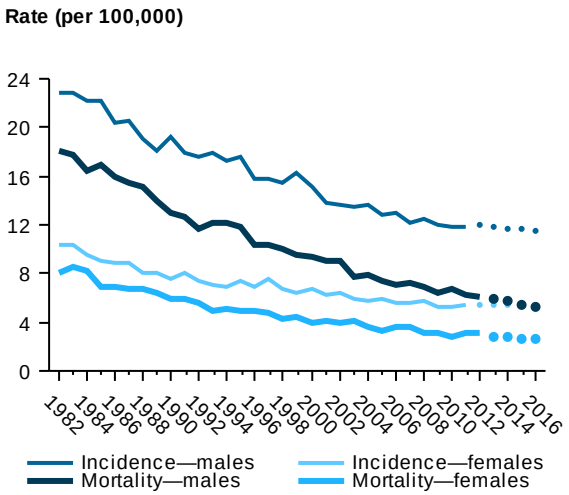


Figure B32(a): Incidence and mortality ASRs[b,c] **of stomach cancer, 1982–2016**

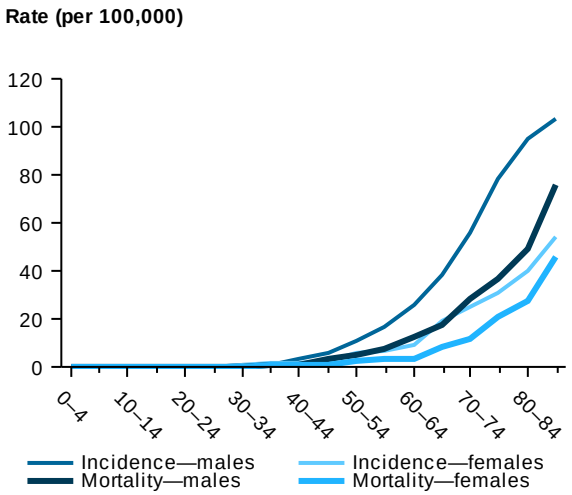


Figure B32(b): Incidence (2011) and mortality (2012) rates of stomach cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B32(b): Survival and prevalence of stomach cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	906	441	1,347
5-year prevalence	2,471	1,287	3,758
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	51.8	51.4	51.6
95% confidence interval	50.4–53.1	49.5–53.3	50.6–52.7
5-year relative survival at diagnosis (%)	26.4	28.3	27.0
95% confidence interval	25.1–27.6	26.6–30.1	26.0–28.0
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	49.2	53.7	50.7
95% confidence interval	45.7–52.7	49.3–58.0	48.0–53.5
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	87.4	90.7	88.6
95% confidence interval	84.6–90.3	87.5–93.9	86.5–90.8

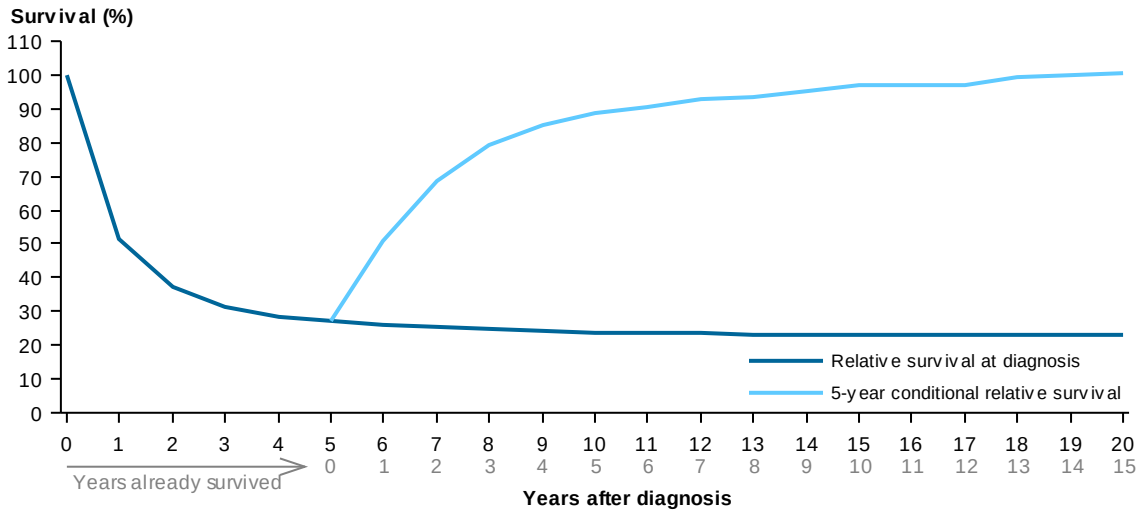


Figure B32(c): Relative survival at diagnosis and 5-year conditional survival from stomach cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Testicular cancer (C62)

Risk factor[a]**:** 

Table B33(a): Incidence and mortality of testicular cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	732	. .	732	25	. .	25
Crude rate	6.6	. .	. .	0.2	. .	. .
ASR	6.7	. .	. .	0.2	. .	. .
Risk to age 75	1 in 215	. .	. .	1 in 6,334	. .	. .
Risk to age 85	1 in 208	. .	. .	1 in 5,440	. .	. .
Mean age	36.2	. .	. .	41.2	. .	. .
Estimated number for 2014, 2015 and 2016[c]						
2014	770	. .	770	5	. .	5
2015	780	. .	780	5	. .	5
2016	795	. .	795	5	. .	5

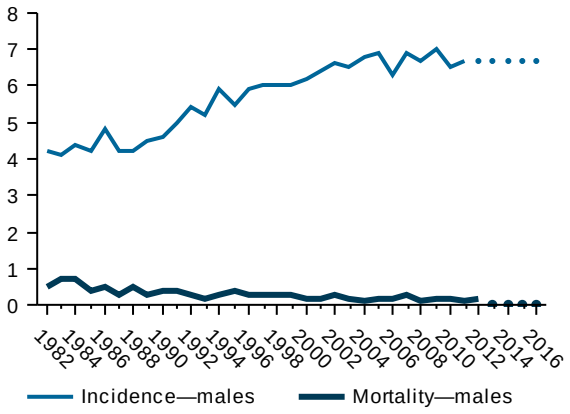


Figure B33(a): Incidence and mortality ASRs[b,c] **of testicular cancer, 1982–2016**

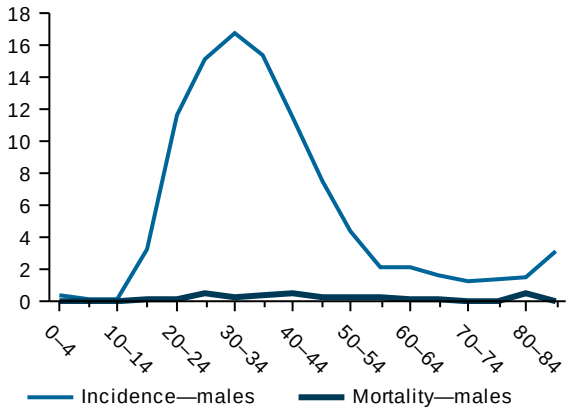


Figure B33(b): Incidence (2011) and mortality (2012) rates of testicular cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B33(b): Survival and prevalence of testicular cancer

	Males	Females	Persons
Prevalence as at the end of 2009[a]			
1-year prevalence	742		742
5-year prevalence	3,380		3,380
Relative survival in 2007–2011[b]			
1-year relative survival at diagnosis (%)	99.1	. .	99.1
95% confidence interval	98.6–99.4	. .	98.6–99.4
5-year relative survival at diagnosis (%)	97.9	. .	97.9
95% confidence interval	97.2–98.4	. .	97.2–98.4
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	98.8	. .	98.8
95% confidence interval	98.3–99.2	. .	98.3–99.2
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	99.7	. .	99.7
95% confidence interval	99.3–100.1	. .	99.3–100.1

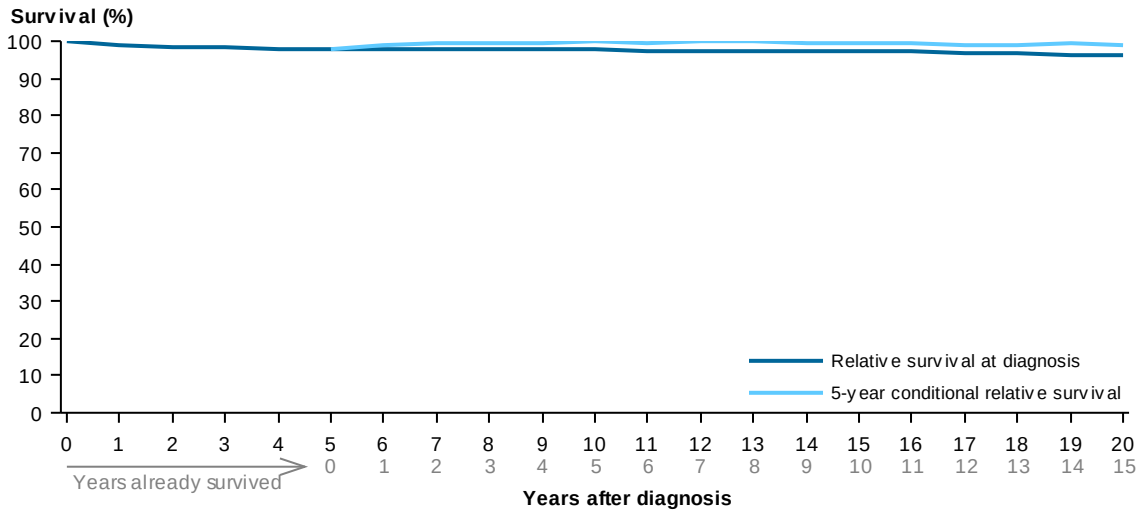


Figure B33(c): Relative survival at diagnosis and 5-year conditional survival from testicular cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Thyroid cancer (C73)

Risk factors[a]**:** 

Table B34(a): Incidence and mortality of thyroid cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	580	1,518	2,098	67	59	126
Crude rate	5.2	13.5	9.4	0.6	0.5	0.6
ASR	5.1	13.1	9.1	0.6	0.4	0.5
Risk to age 75	1 in 246	1 in 97	1 in 139	1 in 3,311	1 in 4,750	1 in 3,909
Risk to age 85	1 in 190	1 in 85	1 in 117	1 in 1,215	1 in 1,801	1 in 1,469
Mean age	54.4	50.9	51.9	71.7	77.1	74.3
Estimated number for 2014, 2015 and 2016[c]						
2014	630	1,890	2,520	55	70	125
2015	660	1,980	2,640	55	70	125
2016	690	2,070	2,760	60	75	135

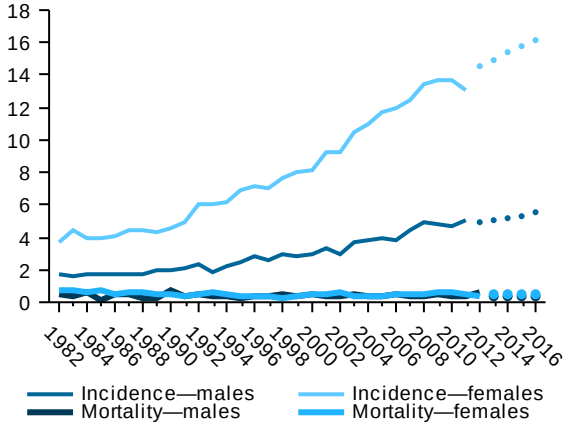


Figure B34(a): Incidence and mortality ASRs[b,c] **of thyroid cancer, 1982–2016**

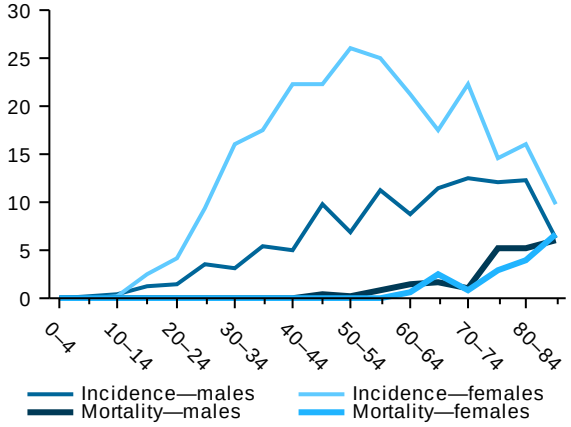


Figure B34(b): Incidence (2011) and mortality (2012) rates of thyroid cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B34(b): Survival and prevalence of thyroid cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	504	1,482	1,986
5-year prevalence	2,057	6,482	8,539
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	95.8	97.9	97.3
95% confidence interval	94.8–96.7	97.4–98.2	96.9–97.7
5-year relative survival at diagnosis (%)	92.1	97.0	95.8
95% confidence interval	90.5–93.6	96.3–97.5	95.2–96.3
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	95.1	98.9	98.0
95% confidence interval	93.8–96.4	98.5–99.4	97.6–98.5
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	96.0	99.4	98.6
95% confidence interval	94.5–97.6	98.8–99.9	98.1–99.1

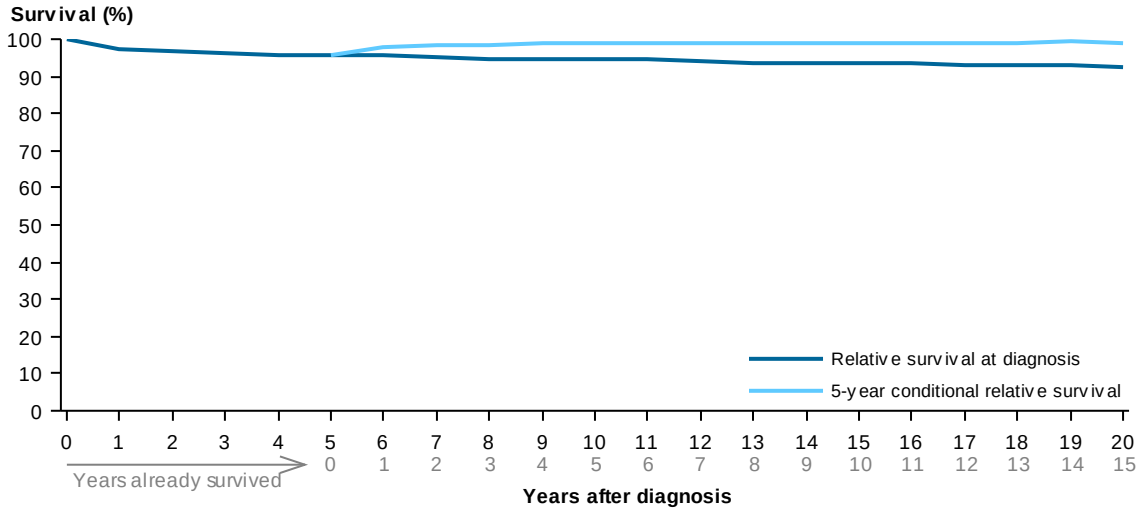


Figure B34(c): Relative survival at diagnosis and 5-year conditional survival from thyroid cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Tongue cancer (C01–C02)

Risk factors[a]**:** 

Table B35(a): Incidence and mortality of tongue cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	474	215	689	128	82	210
Crude rate	4.3	1.9	3.1	1.1	0.7	0.9
ASR	4.0	1.7	2.8	1.1	0.6	0.8
Risk to age 75	1 in 288	1 in 859	1 in 433	1 in 1,201	1 in 2,405	1 in 1,608
Risk to age 85	1 in 210	1 in 474	1 in 293	1 in 646	1 in 1,201	1 in 850
Mean age	62.2	65.4	63.1	68.9	71.2	69.8
Estimated number for 2014, 2015 and 2016[c]						
2014	480	220	695	130	70	200
2015	490	225	715	135	75	210
2016	505	230	735	135	75	210

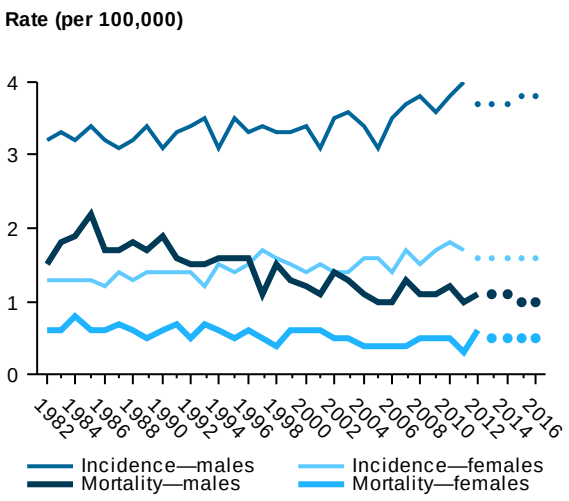


Figure B35(a): Incidence and mortality ASRs[b,c] **of tongue cancer, 1982–2016**

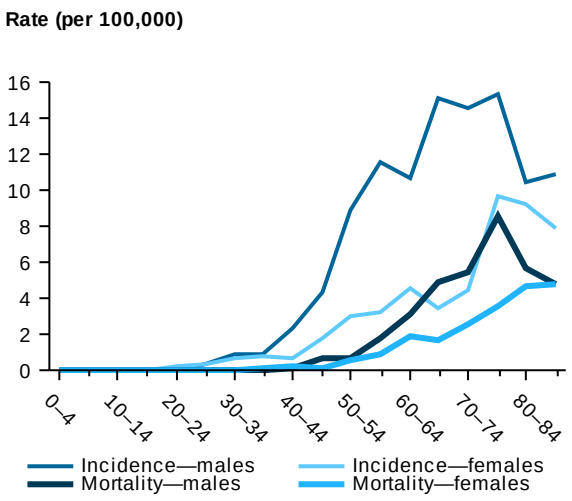


Figure B35(b): Incidence (2011) and mortality (2012) rates of tongue cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (see Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B35(b): Survival and prevalence of tongue cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	372	183	555
5-year prevalence	1,361	639	2,000
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	82.0	84.3	82.8
95% confidence interval	80.1–83.8	81.6–86.7	81.2–84.2
5-year relative survival at diagnosis (%)	61.9	66.0	63.2
95% confidence interval	59.4–64.4	62.3–69.5	61.2–65.2
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	72.8	74.6	73.4
95% confidence interval	69.6–75.9	70.3–78.9	70.8–75.9
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	80.8	85.4	82.4
95% confidence interval	77.2–84.5	80.9–89.8	79.6–85.2

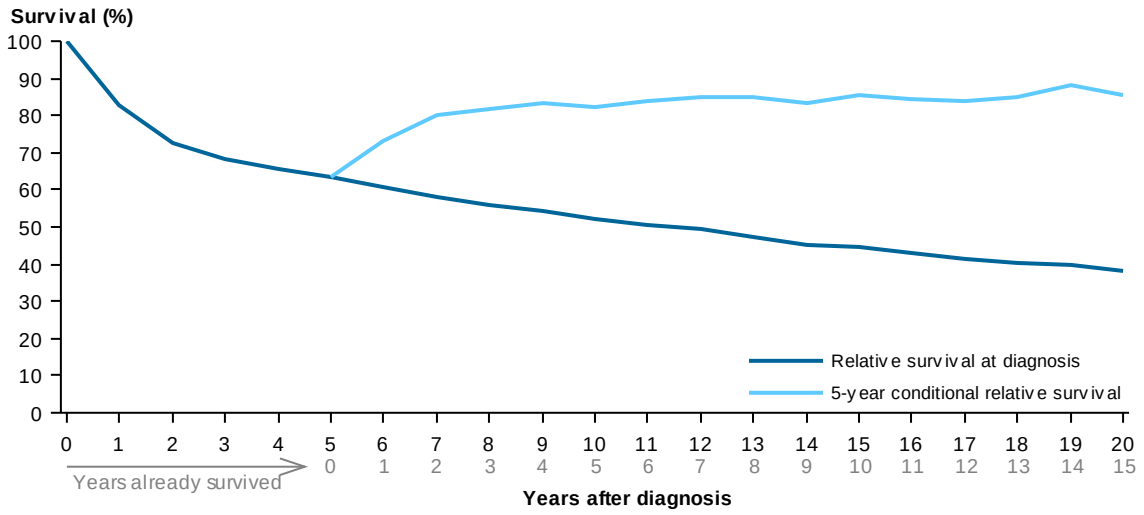


Figure B35(c): Relative survival at diagnosis and 5-year conditional survival from tongue cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Cancer of unknown primary site (C80)[a]

Table B36(a): Incidence and mortality of cancer of unknown primary site

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 incidence/2012 mortality[b]						
Number	1,495	1,307	2,802	1,089	1,044	2,133
Crude rate	13.4	11.6	12.5	9.6	9.1	9.4
ASR	13.4	9.2	11.1	9.4	7.0	8.1
Risk to age 75	1 in 142	1 in 216	1 in 172	1 in 221	1 in 311	1 in 259
Risk to age 85	1 in 57	1 in 82	1 in 68	1 in 79	1 in 112	1 in 94
Mean age	74.1	76.2	75.1	75.2	77.9	76.5
Estimated number for 2014, 2015 and 2016[c]						
2014	1,430	1,210	2,640	1,160	1,180	2,340
2015	1,430	1,190	2,620	1,140	1,190	2,330
2016	1,430	1,180	2,610	1,130	1,200	2,330

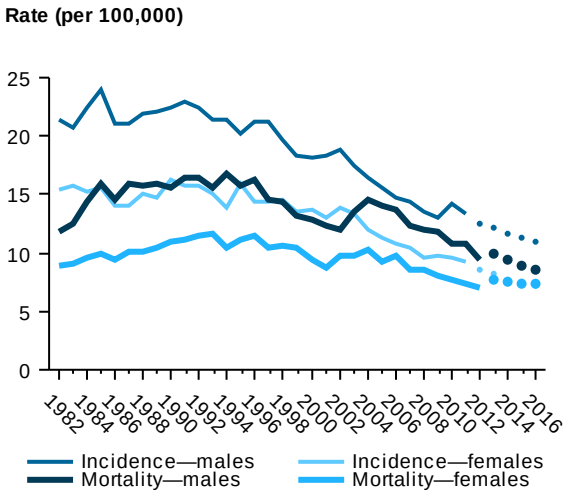


Figure B36(a): Incidence and mortality ASRs[b,c] of cancer of unknown primary site, 1982–2016

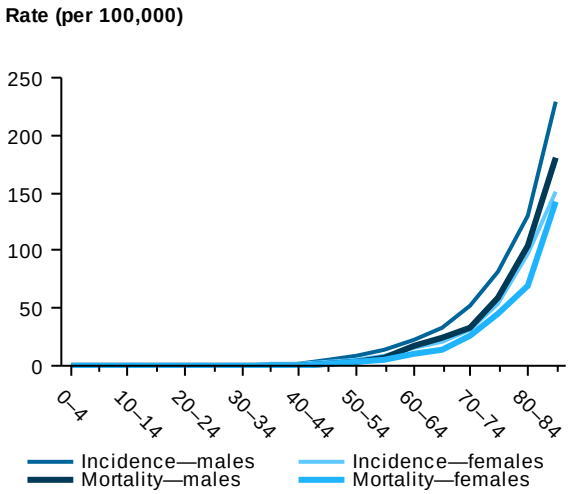


Figure B36(b): Incidence (2011) and mortality (2012) rates for cancer of unknown primary site, by age group

(a) For mortality data before 2008, the applicable codes are C77–C80.

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B36(b): Survival and prevalence of unknown primary site

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	564	504	1,068
5-year prevalence	1,682	1,329	3,011
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	24.6	18.8	21.8
95% confidence interval	23.5–25.7	17.7–19.8	21.1–22.6
5-year relative survival at diagnosis (%)	16.3	11.2	13.8
95% confidence interval	15.4–17.3	10.4–12.0	13.2–14.5
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	64.8	57.4	61.6
95% confidence interval	61.3–68.2	53.0–61.7	58.9–64.2
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	84.8	83.7	84.3
95% confidence interval	81.3–88.3	79.6–87.7	81.7–87.0

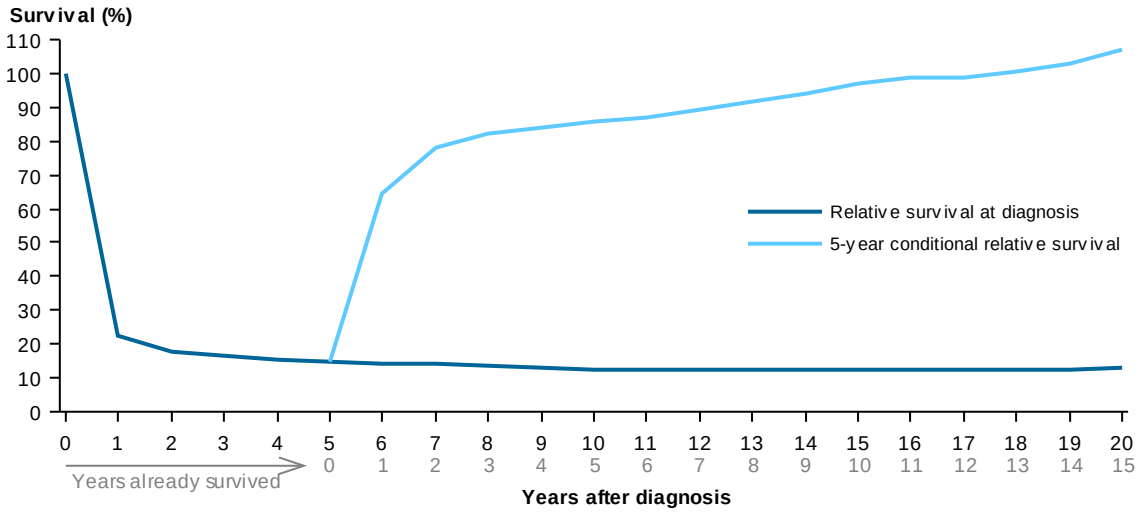


Figure B36(c): Relative survival at diagnosis and 5-year conditional survival from unknown primary site, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Uterine cancer (C54–C55)

Risk factor[a]**:**

Table B37(a): Incidence and mortality of uterine cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2011 Incidence/2012 mortality[b]						
Number	. .	2,238	2,238	. .	421	421
Crude rate	. .	19.9	. .	. .	3.7	. .
ASR	. .	17.4	. .	. .	3.1	. .
Risk to age 75	. .	1 in 65	. .	. .	1 in 495	. .
Risk to age 85	. .	1 in 47	. .	. .	1 in 232	. .
Mean age	. .	65.0	. .	. .	72.4	. .
Estimated number for 2014, 2015 and 2016[c]						
2014	. .	2,490	2,490	. .	405	405
2015	. .	2,570	2,570	. .	415	415
2016	. .	2,650	2,650	. .	425	425

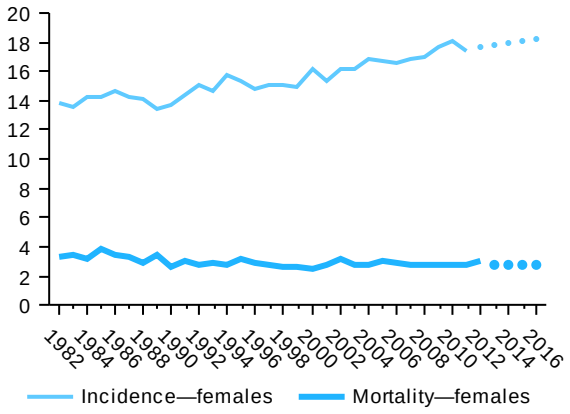


Figure B37(a): Incidence and mortality ASRs[b,c] **of uterine cancer, 1982–2016**

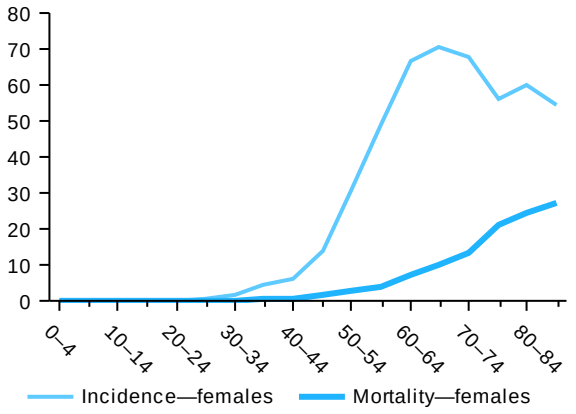


Figure B37(b): Incidence (2011) and mortality (2012) rates of uterine cancer, by age group

(a) Based on IARC (2014) and WCRF & AICR (2007) (See Chapter 2).

(b) The 2011 incidence data include estimates for NSW and the ACT. Mean age for 2011 incidence was calculated excluding NSW and the ACT (see Appendix F). Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. ASRs were directly standardised to the Australian population as at 30 June 2001. Rates are expressed per 100,000 population.

(c) The 2012–2016 estimates for incidence are based on 2002–2011 incidence data. The 2013–2016 estimates for mortality are based on 2002–2012 mortality data (see Appendix G). They are rounded to the nearest 10. Estimates less than 1,000 are rounded to the nearest 5. The estimates for males and females may not add to estimates for persons due to rounding.

Sources: AIHW ACD 2011; AIHW NMD.

Table B37(b): Survival and prevalence of uterine cancer

	Males	Females	Persons
Prevalence as at the end of 2009[(a)]			
1-year prevalence	. .	2,040	2,040
5-year prevalence	. .	8,296	8,296
Relative survival in 2007–2011[(b)]			
1-year relative survival at diagnosis (%)	. .	93.6	93.6
95% confidence interval	. .	93.0–94.1	93.0–94.1
5-year relative survival at diagnosis (%)	. .	82.5	82.5
95% confidence interval	. .	81.5–83.4	81.5–83.4
5-year conditional relative survival for those already survived 1 year after diagnosis (%)	. .	87.3	87.3
95% confidence interval	. .	86.4–88.2	86.4–88.2
5-year conditional relative survival for those already survived 5 years after diagnosis (%)	. .	95.4	95.4
95% confidence interval	. .	94.6–96.3	94.6–96.3

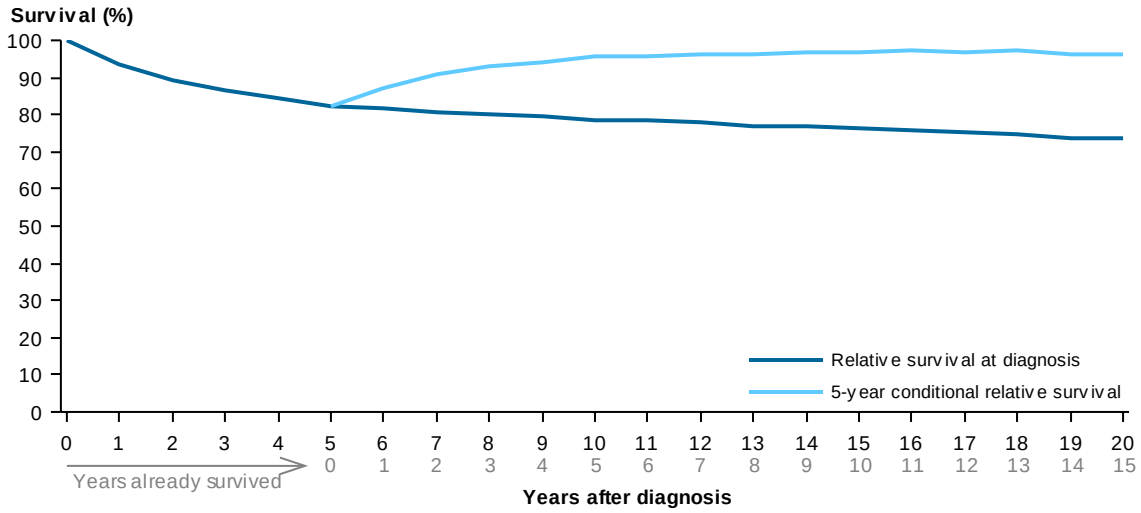


Figure B37(c): Relative survival at diagnosis and 5-year conditional survival from uterine cancer, Australia, 2007–2011

(a) Prevalence refers to the number of living people previously diagnosed with cancer, not the number of cancer cases.

(b) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

Source: AIHW ACD 2011.

Appendix C: Cancer incidence, mortality and survival for all cancer groupings

Table C1: Incidence (2011), mortality (2012) and 5-year relative survival (2007–2011) by cancer type, persons, Australia

	Incidence[a,b]		Mortality[c]		Survival[b,d]	
Cancer site/type (ICD-10 codes)	**Number**	**ASR[e]**	**Number**	**ASR[e]**	**RS (%)[f]**	**95% CI[g]**
Lip, oral cavity and pharynx						
Lip (C00)	912	3.8	12	0.1	93.4	92.1–94.7
Tongue (C01–C02)	689	2.8	210	0.8	63.2	61.2–65.2
Mouth (C03–C06)	571	2.3	119	0.5	59.6	57.3–61.8
Salivary glands (C07–C08)	287	1.2	89	0.3	71.5	68.4–74.4
Oropharynx (C09–C10)	456	1.9	144	0.6	61.3	58.9–63.6
Nasopharynx (C11)	120	0.5	43	0.2	70.0	65.8–73.8
Hypopharynx (C12–C13)	147	0.6	45	0.2	29.2	25.6–32.9
Other sites in pharynx, etc. (C14)	83	0.3	85	0.3	33.1	27.8–38.6
Digestive organs						
Oesophagus (C15)	1,395	5.6	1,203	4.7	17.5	16.5–18.6
Stomach (C16)	2,093	8.5	1,143	4.5	27.0	26.0–28.0
Small intestines (C17)	442	1.8	127	0.5	58.4	55.8–60.9
Colorectal (C18–C20)	15,151	61.5	3,980	15.4	66.9	66.4–67.3
Anus (C21)	369	1.5	71	0.3	64.5	61.7–67.3
Liver (C22)	1,446	5.9	1,490	5.9	16.0	15.0–17.0
Gallbladder and extrahepatic bile ducts (C23–C24)	771	3.1	254	1.0	18.5	17.1–20.1
Pancreas (C25)	2,748	11.0	2,524	9.8	6.1	5.6–6.6
Other digestive organs (C26)	185	0.7	1,240	4.7	12.1	9.4–15.1
Respiratory system and intrathoracic organs						
Nose, sinuses, etc. (C30–C31)	177	0.7	30	0.1	56.5	52.5–60.4
Larynx (C32)	590	2.4	208	0.8	62.3	60.2–64.4
Lung (C33–C34)	10,511	42.5	8,137	31.8	14.3	14.0–14.7
Other thoracic and respiratory organs (C37–C39)	102	0.4	58	0.2	52.8	47.6–57.8
Bone (C40–C41)	**229**	**1.0**	**112**	**0.5**	**66.9**	**63.6–70.1**
Skin						
Melanoma of the skin (C43)	11,570	48.0	1,515	5.9	90.4	90.0–90.8
Non-melanoma of the skin (C44)[b]	769	3.1	521	1.9	71.5	69.4–73.5
Mesothelial and soft tissue						
Mesothelioma (C45)	690	2.8	638	2.5	5.8	4.9–6.7
Kaposi sarcoma (C46)	69	0.3	2	0.0	85.3	78.9–90.8
Peritoneum (C48)	203	0.8	96	0.4	39.7	36.4–43.0

(continued)

Cancer site/type (ICD-10 codes)	Incidence[a,b]		Mortality[c]		Survival[b,d]	
	Number	ASR[e]	Number	ASR[e]	RS (%)[f]	95% CI[g]
Other soft tissue (C47, C49)	641	2.7	265	1.1	66.2	64.1–68.3
Breast in females (C50)	**14,465**	**116.0**	**2,795**	**20.6**	**89.6**	**89.3–89.9**
Female genital organs						
Vulva (C51)	318	1.3	90	0.3	74.2	71.1–77.2
Vagina (C52)	77	0.3	20	0.1	46.7	40.6–52.7
Cervix (C53)	801	3.5	226	0.9	71.9	70.2–73.4
Uterus (C54–C55)	2,238	9.0	421	1.6	82.5	81.5–83.4
Ovary (C56)	1,330	5.4	933	3.6	43.0	41.7–44.3
Other female genital organs and placenta (C57–C58)	155	0.6	44	0.2	58.0	53.1–62.7
Male genital organs						
Penis (C60)	108	0.4	14	0.1	70.6	64.4–76.2
Prostate (C61)	19,993	79.7	3,079	11.6	93.2	92.8–93.5
Testis (C62)	732	3.3	25	0.1	97.9	97.2–98.4
Other male genital organs (C63)	28	0.1	2	0.0	82.6	71.6–91.4
Urinary tract						
Kidney (C64)	2,847	11.7	907	3.5	73.4	72.4–74.3
Bladder (C67)	2,404	9.6	1,038	3.9	53.1	51.9–54.3
Other urinary organs (C65–C66, C68)	455	1.8	195	0.8	42.6	40.1–45.2
Eye, brain and other parts of the central nervous system						
Eye (C69)	266	1.1	30	0.1	79.1	76.3–81.8
Brain (C71)	1,724	7.3	1,241	5.0	21.6	20.7–22.6
Other central nervous system (C70, C72)	90	0.4	14	0.1	67.1	61.6–72.2
Thyroid and other endocrine glands						
Thyroid (C73)	2,098	9.1	126	0.5	95.8	95.2–96.3
Other endocrine glands (C74–C75)	99	0.4	51	0.2	60.1	55.4–64.5
Blood and lymphatic system						
Hodgkin lymphoma (C81)	606	2.7	78	0.3	87.2	85.7–88.6
Non-Hodgkin lymphoma (C82–C85)	4,631	19.1	1,402	5.4	72.1	71.3–72.8
Immunoproliferative cancers (C88)	89	0.4	33	0.1	74.0	68.1–79.5
Myeloma (C90)	1,533	6.2	834	3.2	44.8	43.4–46.2
Acute lymphoblastic leukaemia (ALL)(C91.0)	353	1.6	111	0.5	71.0	68.6–73.3
Chronic lymphocytic leukaemia (CLL)(C91.1)	1,174	4.7	342	1.3	76.7	75.1–78.2
Other and unspecified lymphoid leukaemia (C91.2–C91.9)	126	0.5	45	0.2	82.3	77.6–86.5
Acute myeloid leukaemia (AML)(C92.0, C92.3–C92.5, C93.0, C94.0, C94.2, C94.4, C94.5)	913	3.8	813	3.2	24.5	23.2–25.9
Chronic myelogenous leukaemia (CML)(C92.1)	334	1.4	102	0.4	76.1	73.2–78.8
Other and unspecified myeloid leukaemia (C92.2, C92.7, C92.9, C93.1–C93.9, C94.7)	315	1.3	95	0.4	35.9	32.7–39.2

(continued)

Cancer site/type (ICD-10 codes)	Incidence[a,b] Number	Incidence[a,b] ASR[e]	Mortality[c] Number	Mortality[c] ASR[e]	Survival[b,d] RS (%)[f]	Survival[b,d] 95% CI[g]
Myeloproliferative cancers excluding CML (C94.1, C94.3, C96.2, D45, D47.1, D47.3)	651	2.7	161	0.6	76.4	74.5–78.2
Myelodysplastic syndromes (D46)	1,309	5.2	424	1.6	38.0	36.4–39.6
Other cancers of blood and lymphatic system (C95, C96.0, C96.1, C96.3–C96.9)	90	0.4	143	0.5	30.5	25.1–36.2
Other						
Other and ill-defined sites (C76)	35	0.1	181	0.7	39.7	31.1–48.5
Unknown primary site (C80)[h]	2,802	11.1	2,133	8.1	13.8	13.2–14.5
Multiple primary (C97)[i]	. .	. .	506	1.9	. .	. .
All cancers combined (C00–C97[b, i], D45, D46, D47.1, D47.3)	**118,711**	**484.1**	**43,039**	**166.8**	**66.7**	**66.5–66.8**

(a) The 2011 incidence data include estimates for NSW and the ACT. See Appendix F for more details.

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

(c) Deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

(d) Relative survival was calculated with the period method, using the period 2007–2011 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2010–2011 for NSW or the ACT (see Appendix F).

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

(f) RS = relative survival.

(g) CI = confidence interval.

(h) For mortality data before 2008, the applicable codes are C77–C80.

(i) C97 is of relevance for mortality data only.

Sources: ABS 2014b; AIHW ACD 2011; AIHW NMD.

Appendix D: Guide to online supplementary tables

Additional tables are available as online Excel tables at <www.aihw.gov.au>. These tables contain detailed statistics, some of which are presented in summary form in the body of the report. Throughout the report, online additional tables are referred to with a prefix 'D'; for example, 'See online Table D3.1'.

There are 9 Excel files, each representing a chapter (or appendix) from the report:

- Chapter 2—Risk factors, early detection and prevention
- Chapter 3—Incidence of cancer
- Chapter 4—Hospitalisations and palliative care for cancer
- Chapter 5—Survival after a diagnosis of cancer
- Chapter 6—Prevalence of cancer
- Chapter 7—Mortality from cancer
- Chapter 8—Focus on key population groups
- Chapter 9—International comparisons
- Appendix B—Summary pages for selected cancers

Appendix E: Classifications

Remoteness Areas

The Remoteness Areas (RAs) divide Australia into broad geographic regions that share common characteristics of remoteness for statistical purposes. The Remoteness Structure divides each state and territory into several regions on the basis of their relative access to services. There are six classes of RA in the Remoteness Structure: *Major cities*, *Inner regional*, *Outer regional*, *Remote Australia*, *Very remote* and *Migratory*. The category *Major cities* includes Australia's capital cities, except for Hobart and Darwin, which are classified as Inner regional. RAs are based on the Accessibility and Remoteness Index of Australia (ARIA) produced by the Australian Population and Migration Research Centre at the University of Adelaide (ABS 2014a).

Each unit record in the ACD contains the 2006 Statistical Local Area (SLA) and 2011 Statistical Area Level 2 (SA2) but not the RA. In order to calculate the cancer incidence rates by RA discussed in Chapter 8, a correspondence was used to map the 2006 SLA to the 2006 RA (ABS 2011a). Similarly, the cancer mortality rates by RA in Chapter 8 were calculated by applying a correspondence from the 2011 SA2 to the 2011 RA (ABS 2012a).

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 ABS (ABS 2011b). This index is based on factors such as average household income, education levels and unemployment rates. The IRSD is not a person-based measure; rather, it is an area-based measure of socioeconomic disadvantage 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 disadvantage of people living in those areas and may not be correct for each person in that area.

Socioeconomic disadvantage quintiles were assigned to cancer cases according to the IRSD of the Statistical Local Area of residence at the time of diagnosis, and to deaths according to the Statistical Area Level 2 (SA2) of residence at the time of death.

In this report, the first socioeconomic status group (quintile 1) corresponds to geographical areas containing the 20% of the population with the greatest socioeconomic disadvantage according to the IRSD, and the fifth group (quintile 5) corresponds to the 20% of the population with the least socioeconomic disadvantage.

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 the ICD in the late 1960s, working parties suggested creating a separate classification for cancers that included improved morphological information. The first edition of the 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 (ICD-O-3), was released in 2000 and is used by most state and territory cancer registries in Australia, as well as by the AIHW in regard to the ACD.

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, or AIDS), increased knowledge of diseases, and changing terminology in the description of diseases. The version currently in use, the ICD-10 (WHO 1992), was endorsed by the 43rd World Health Assembly in May 1990 and officially came into use in WHO member states from 1994.

International Statistical Classification of Diseases and Related Health Problems, Australian Modification

The Australian modification of the ICD-10, referred to as the ICD-10-AM (NCCH 2010), is based on the ICD-10. The ICD-10 was modified for the Australian setting by the National Centre for Classification in Health, with assistance from clinicians and clinical coders. Despite the modifications, compatibility with the ICD-10 at the higher levels of the classification (that is, up to 4 character codes) has been maintained. The ICD-10-AM has been used to classify diagnoses in hospital records in all states and territories since 1999–00 (AIHW 2000).

Australian Classification of Health Interventions

The current version of the ICD does not incorporate a classification system for coding health interventions (that is, procedures). In Australia, a health intervention classification system was designed to be implemented at the same time as the ICD-10-AM in July 1998. The system was based on the Medicare Benefits Schedule (MBS) coding system and originally called MBS-Extended. The name was changed to the Australian Classification of Health Interventions (ACHI) with the release of the Third Revision of the ICD-10-AM in July 2002 (NCCH 2010). The ACHI and the ICD-10-AM are used together to classify morbidity, surgical procedures and other health interventions in Australian hospital records.

Appendix F: How estimated data in the 2011 Australian Cancer Database were calculated

The 2010 and 2011 incidence data for NSW and the ACT were not available for inclusion in the 2011 version of the ACD. The development of the new NSW Cancer Registries system has resulted in a delay in processing incidence data for 2010 onwards and therefore the most recent NSW data available for inclusion in the ACD are for 2009. Full details about this situation are given on the following web page: <http://www.cancerinstitute.org.au/data-and-statistics/accessing-our-data/availability-of-nsw-central-cancer-registry-data>.

As the coding of ACT cancer notifications is contracted to the NSW Cancer Registry, the most recent data available for the ACT are also for 2009. The 2010 and 2011 incidence data for NSW and the ACT were estimated by the AIHW (see below for detail of procedure). These estimates were combined with the actual data supplied by the other six state and territory cancer registries to form the 2011 ACD.

Estimating 2010 and 2011 cancer incidence for NSW and the ACT, excluding prostate cancer

To estimate 2010 and 2011 cancer incidence for NSW and the ACT, except for prostate cancer (detailed below), the most recent 10 years of incidence count data, from 2000 to 2009, were divided into time series, stratified as follows:

- jurisdiction: NSW, ACT
- sex: male, female
- age group: 5-year age groups, 0–4, …, 80–84, and 85+
- 4-character ICD-O-3 topography code: C00.0, …, C80.9
- 4-digit ICD-O-3 histology code: 8000, …, 9989.

For each series, the following steps were undertaken to estimate cancer incidence:

- The incidence numbers were divided by the sex- and age-specific mid-year populations to obtain the age-specific incidence rates from 2000 to 2009.
- If any of the rates in the series was zero (0), the mean of the 10 rates was used as the estimate of the 2010 and 2011 rates.
- If none of the rates were zero (0), least squares linear regression was used to find the straight line of best fit through the time series.
- A 5% level of significance was used to test the hypothesis that the slope of the line was different from zero (0).
- If the slope was not found to be significantly different from zero (0), the mean of the 10 rates was used as the estimate of the 2010 and 2011 rates.
- If the slope was found to be positive, the straight line of best fit was extrapolated to obtain the estimates of the 2010 and 2011 rates.

- If the slope was negative, the time series was fitted with a log-linear model (that is, the logs of the rates were fitted with a straight line) and the estimated rates for 2010 and 2011 were found by extrapolating this line.
- The estimated incidence rates for 2010 and 2011 were then multiplied by the Estimated Resident Populations for 2010 and 2011 to obtain the estimated incidence numbers.

There were a small number of series that did not have a history of 10 years of incidence data. These were the non-melanoma skin cancers, for which the series begin at 2001, and the myelodysplastic and/or myeloproliferative cancers (histology codes 9950, 9960–9962 and 9980–9989), for which the series begin at 2003.

Estimating 2010 and 2011 prostate cancer incidence for NSW and the ACT

Due to the effect of PSA testing, prostate cancer incidence rates have fluctuated considerably over time, making the above methodology unreliable for estimating the incidence of prostate cancer. Instead, the estimates of 2010 and 2011 prostate cancer incidence for NSW and the ACT were based on the actual data for 2010 and 2011 for the other six states and territories combined.

Prostate cancer in those aged under 35 is very rare (just 12 cases in Australia in the period 2000–2009). Therefore, the number of cases estimated for 2010 and 2011 for NSW and the ACT was zero (0). For those aged 35 and over, the time series for 2000–2009 of prostate cancer incidence counts were stratified as follows:

- jurisdiction: NSW, ACT, SIX, where 'SIX' stands for the other six jurisdictions combined. Note that the series for SIX extends to 2011
- age group: 5-year age groups, 35–39, …, 80–84, and 85+.

The general procedure for calculating the estimates is illustrated by the following example for NSW and any fixed age group:

- Convert the count data to age-specific incidence rates, using the relevant age- and jurisdiction-specific populations.
- For each year from 2000 to 2009, divide the age-specific incidence rate for NSW by the corresponding age-specific incidence rate for SIX.
- Calculate the average of the 10 ratios computed in the previous step.
- Multiply the average ratio calculated in the previous step by the age-specific incidence rate for SIX in 2010, and likewise for 2011. This gives the estimated age-specific incidence rates for NSW for 2010 and 2011.
- Convert these incidence rates to incidence counts by multiplying by the relevant populations.

Estimating 2009 provisional death-certificate-only cases for NSW and the ACT

The 2009 incidence data for NSW and the ACT provided to the AIHW excluded the provisional death-certificate-only cases. The reason the provisional death-certificate-only (DCO) cases were not available is explained on the following web page: <http://www.cancerinstitute.org.au/data-and-statistics/accessing-our-data/availability-of-

nsw-central-cancer-registry-data>. The AIHW has estimated the number of provisional DCO cases in 2009 for each cancer, sex and age group based on the numbers observed for 2004–2008. Overall, about 1.7% of NSW cases and 1.9% of ACT cases in 2009 are estimated provisional DCO cases.

The procedure for estimating the number of provisional DCO cases for NSW and the ACT in 2009 was as follows:

- For each jurisdiction separately, divide the total number of provisional DCO cases in 2004–2008 (years combined) by the total number of cases in 2004–2008 that were not provisional DCO.
- Multiply the ratio computed in the previous step by the total number of cases in 2009 that were not provisional DCO (which is simply the total number of cases supplied for 2009). This gives the estimated total number of provisional DCO cases in 2009.
- Allocate the estimated total computed in the previous step to each combination of sex, age group, topography code and histology code according to the same distribution as was observed in 2004–2008.

Appendix G: Methodology for cancer projections

Incidence projections, excluding prostate cancer

Estimates of incidence in 2012–2016 were calculated using the same approach as used to estimate 2010 and 2011 incidence for NSW and the ACT (Appendix F). Note the following:

- Estimates were made for Australia as a whole, not for individual jurisdictions.
- Instead of using the topography and histology codes to define the cancer groups, the 'Cancer in Australia' reporting groups were used; that is, lip, tongue, mouth, and so on (see Appendix C).
- The incidence estimates already made for 2009–2011 for NSW and the ACT were treated as real data for the purposes of estimating Australian incidence for 2012–2016.
- The 10 years of incidence data used as the baseline were 2002–2011, except for the myelodysplastic and/or myeloproliferative cancers (histology codes 9950, 9960–9962 and 9980–9989) for which there was only a 9-year series, 2003–2011.
- For populations, the ABS preliminary Estimated Resident Populations were used for 2012–2013, and the ABS population projection series 29(B) for 2014–2016 (ABS 2013).

Estimating the incidence of prostate cancer

As explained in Appendix F, MBS item 66655 (PSA test) enables testing activity for prostate cancer to be quantified. At the time this analysis was undertaken, the number of services of item 66655 was available up to and including June 2014. The total number of services for 2014 was estimated using the following data:

- year of test: 2004, …, 2013
- MBS age group: 0–4, then 10-year age groups 5–14, …, 75–84, and 85+
- total number of services of item 66655 from January to June inclusive
- total number of services of item 66655 from January to December inclusive.

The ratio 'January to June total' divided by 'January to December total' was computed for each unit record in the above data set to form a time series from 2004 to 2013. The same approach as is described in Appendix F was used to estimate the ratios for 2014. Applying these ratios to the known 'January to June' totals for 2014 produced the estimated number of services for the whole of 2014. This number is used below.

It has been noted previously that there is a positive correlation between the number of services of item 66655 and the incidence of prostate cancer (AIHW & AACR 2012). During the present analysis, it was noticed that this correlation is stronger when the reference year for the MBS data is 1 year behind that for the incidence data. This relationship is employed in the following explanation of how the estimates of prostate cancer incidence for 2012–2015 were derived. The data used were:

- year: 2003, …, 2011. Note that a 10-year time series would be preferable but 2002 cannot be used because the PSA data are incomplete for 2001
- MBS age group: 0–4, then 10-year age groups 5–14, …, 75–84, and 85+

- prostate cancer incidence: number of cases of prostate cancer in that year
- PSA tests: number of services of item 66655 for the *previous* year, downloaded from <www.medicareaustralia.gov.au/statistics/mbs_item.shtml>. Thus, the years used for the PSA data were 2002–2010.

The ratio 'number of cases' divided by 'number of tests' was computed for each stratum in the above data set to form a time series of ratios from 2003 to 2011. For each of these time series, the method explained in Appendix F was used to estimate the ratios for 2012–2015. The estimated incidence counts for 2012–2015 were then obtained by multiplying the estimated ratios for 2012–2015 by the number of services of item 66655 for 2011–2014, respectively. (Note that the method for estimating the number of services for 2014 is explained above.)

The final step was to convert the estimated incidence counts for the 10-year MBS age groups to 5-year age groups, consistent with incidence data. The data used in this step were as follows:

- year of diagnosis: 2002, …, 2011
- MBS age group: 10-year age groups 5–14, …, 75–84 (0–4 and 85+ not required)
- 5-year age group within the 10-year age group. For example, in the MBS age group 5–14 there would be the 'younger' age group 5–9 and the 'older' age group 10–14
- prostate cancer incidence: number of cases of prostate cancer in each 5-year age group.

The 'younger ratio' is defined to be 'number of cases of prostate cancer in younger age group' divided by 'number of cases of prostate cancer in corresponding 10-year age group', and the 'older ratio' is the analogous ratio. Note that the older ratio can also be defined as 1 minus the younger ratio. The following steps were then undertaken:

- The younger ratios were computed for each stratum in the above data set to form a time series of ratios from 2002 to 2011.
- If any of the ratios in the series was zero (0), the mean of the 10 ratios was used as the estimates of the 2012–2015 younger ratios.
- If none of the ratios were zero (0), least squares linear regression was used to find the straight line of best fit through the time series.
- A 5% level of significance was used to test the hypothesis that the slope of the line was different from zero (0).
- If the slope was not found to be significantly different from zero (0), the mean of the ratios was used as the estimates of the 2012–2015 younger ratios.
- If the slope was found to be significantly different from zero (0), note that the slope of the younger ratio time series will be equal in magnitude but of opposite sign to the slope of the older ratio time series. Therefore, one will have a negative slope and the other a positive slope.
- The series with negative slope was fitted with a log-linear model and the estimated ratios for 2012–2015 were found by extrapolating this line.
- For each 2012–2015 ratio that was determined above (by either the mean or a log-linear model), the other ratios for 2012–2015 were computed to be 1 minus the ratio determined. There is now a complete set of estimated younger and older ratios for 2012–2015.

- The estimated number of cases for each 5-year age group for 2012–2015 were then obtained by multiplying the estimated number of cases for the corresponding 10-year age group by the appropriate ratio (that is, younger or older) for 2012–2015.

At this point there are incidence estimates for each 5-year age group for each year from 2012 to 2015. The estimates for 2016 cannot be obtained by the same method because there are no PSA data for 2015 yet. The 2016 prostate cancer incidence estimates were obtained by using the method explained in Appendix F on the 2006–2015 time series (treating the 2012–2015 data as real).

Mortality projections model

Simple linear or log-linear ordinary least squares linear regression models of age-specific rates generally provide a good fit to the data while giving reasonably accurate predictions over a short to medium time span The accepted (conservative) approach among statisticians preparing projections of this nature is to assume a linear model for increasing rates, and a log-linear model for decreasing rates to prevent projecting incidence rates below zero (0). Where there is no significant trend, the mean rate over the most recent trend is used.

Following this approach, a national model was developed for each cancer (by sex) using the following 4-step method:

1. assess the historical trend in annual mortality for 1968 to 2012
2. test the significance of the historical trend
3. extrapolate that trend to predict annual rates for the years 2013 to 2024
4. apply those rates to projected populations to derive projected mortality counts.

These steps are described in more detail below.

Step 1—assess the historical trend in annual mortality for 1968 to 2012

Joinpoint analysis was used to assess the significance of the historical trend in annual cancer mortality for each cancer by sex and 5-year age group using national cancer mortality data.

The most recent significant trend was used as the observation window from which to extrapolate the future trend (Step 2). The cancer- and sex-specific observation windows are presented in Table G1.

Table G1: Cancer- and sex-specific observation windows

	Observation window (start year)		
Cancer site/type	**Males**	**Females**	**Persons**
Acute myeloid leukaemia (AML)	1968	1993	1995
Bladder	1985	1968	1985
Brain	1996	1990	1994
Breast	1968	1999	1968
Cervix	2013	2004	2013
Chronic lymphocytic leukaemia (CLL)	1994	1988	1994
Chronic myelogenous leukaemia (CML)	1993	1992	1992
Colorectal	1997	2006	2006
Hodgkin lymphoma	1968	1968	1968
Kidney	1999	1993	1995
Liver	2004	1993	2004
Lung	1994	1999	1989
Melanoma of the skin	1987	1986	1998
Mesothelioma	1997	1997	1997
Non-Hodgkin lymphoma	1994	1998	2000
Non-melanoma of the skin	1992	1994	1992
Oesophagus	1998	1995	1997
Ovary	2013	1994	2013
Pancreas	1997	1968	1998
Prostate	1993	2013	2013
Stomach	1985	1993	1968
Uterus	2013	1992	2013
Anus	1968	1980	1982
Gallbladder and extrahepatic bile ducts	2005	1997	2004
Larynx	1991	1968	1991
Lip	1979	1968	1984
Mouth	1979	1991	1991
Myeloma	1986	1988	1988
Tongue	1987	1968	1988
Unknown primary site	2005	1993	2006
Leukaemias	1985	1992	1993
Lymphomas	1997	1998	1997
Bone	1968	1968	2000

Step 2—test the significance of the historical trend

An ordinary least squares (OLS) linear regression model was developed for each 5-year age-sex group using national mortality rates from the most recent trend, as defined by the observation window derived in Step 1. The significance of each age-sex trend for each

cancer was tested, with one of three possible outcomes: significant increase, significant decrease, no significant trend.

Step 3—extrapolate the trend to predict annual mortality rates for 2013 to 2016

The historical trend within the observation window was extrapolated using one of three methods (see below), as determined by the outcome of the significance testing in Step 2:

1. An OLS linear regression model was applied to significant increasing trends, so as not to overstate future mortality.
2. An OLS linear regression model with log transformation (log-linear) was applied to significant decreasing trends, so as not to project mortality below zero (0).
3. An intercept-only model (mean) was applied to non-significant trends.

Step 4—derive projected mortality counts for 2013 to 2016

The projected rates derived from Step 3 were applied to projected population data to estimate the future number of deaths for each cancer by age and sex. These projected counts were then summed to obtain the total number of deaths (and total ASR) for each cancer type.

Assumptions

It should be noted that there is a fundamental assumption in this approach that the factors that affect cancer mortality (for example, risk factors, cancer detection, and treatment) evolve in an approximately linear or log-linear way with time for each age group. This assumption should hold as long as there are no major quantitative changes in trends, as might occur, for example, from increased risk factors, or from treatment or screening breakthroughs.

These assumptions are as follows:

- Trends in age-sex-cancer specific mortality rates are the same across Australia.
- The most recent trend will continue into the future.
- The trend for the 5-year age group is representative of the trends of each single year of age within that group.
- An appropriate model is chosen to describe both the historical data and expected future trend.
- Projected populations, based on current trends in fertility, life expectancy at birth and net overseas migration, are indicative of future populations.

Appendix H: Statistical methods and technical notes

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 ASRs, with such rates adjusted for age in order to facilitate comparisons between populations that have different age structures—for example, between Indigenous people 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 age-standardise using the direct method, the first step is to obtain 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 standard population (in this case, 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 in a certain socioeconomic status group or those who lived in *Major cities*). The next step is to sum across the age groups and divide this sum by the total of the standard population to give an ASR for the population of interest. Finally, this is expressed per 1,000 or 100,000 as appropriate.

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, they do not have the same comparability and interpretation problems associated with them when trying to make international comparisons (see Chapter 9). Thus, the MIR is considered to be a better measure when comparing survival between countries.

The MIR is the number of deaths in a given year divided by the number of new cases in the same year. It is a number between 0 and 1 although it can exceed 1 in certain circumstances.

The MIR is a measure of the fatality of the cancer in question: if no-one ever died of the cancer, the MIR would be 0; if everyone died on the same day they were diagnosed, the MIR would be 1. Low values of the MIR indicate longer survival while high values indicate shorter survival. In general, if the MIR is decreasing over time, we can conclude that survival is improving over time.

The MIR gives a valid measure of the survival experience in a population only 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 9 were extracted from the 2012 GLOBOCAN database (Ferlay et al. 2013).

Prevalence

Limited-duration prevalence is expressed as *N-year prevalence* throughout this report. *N-year prevalence* on a given index date (31 December 2009)—where *N* is any number 1, 2, 3 and so on—is defined as the number of people alive at the end of that day who had been diagnosed with cancer in the past *N* years. For example:

- 1-year prevalence is the number of living people who were diagnosed in the past year to 31 December 2009
- 5-year prevalence is the number of living people who were diagnosed in the past 5 years to 31 December 2009. This includes the people defined by 1-year prevalence.

Note that prevalence is measured by the number of people diagnosed with cancer, not the number of cancer cases. An individual who was diagnosed with two separate cancers will contribute separately to the prevalence of each cancer. However, this individual will contribute only once to prevalence of all cancers combined. For this reason, the sum of prevalence for individual cancers will not equal the prevalence of all cancers combined.

Prevalence can be expressed as a proportion of the total population as at the index date. In this report, the prevalence proportion is expressed per 10,000 population due to the relative size of the numerator and denominator. These are crude rates and have not been standardised.

Differences in limited-duration prevalence are presented according to age in the report. Note that while age for survival and incidence statistics refers to the age at diagnosis, prevalence age refers to the age at the point in time from which prevalence was calculated, or 31 December 2009 in this report. Therefore, a person diagnosed with cancer in 1982 when they turned 50 that year would be counted as age 75 in the prevalence statistics (as at the end of 2009).

Relative survival

Relative survival is a measure of the survival of people with cancer compared with that of the general population. It is the standard approach used by cancer registries to produce population-level survival statistics and is commonly used as it does not require information on cause of death. Instead, relative survival reflects the net survival (or excess mortality)

associated with cancer by adjusting the survival experience of those with cancer for the underlying mortality that they would have experienced in the general population.

Relative survival is calculated by dividing observed survival by expected survival, where the numerator and denominator have been matched for age, sex and calendar year.

Observed survival refers to the proportion of people alive for a given amount of time after a diagnosis of cancer; it is calculated from population-based cancer data. Expected survival refers to the proportion of people in the general population alive for a given amount of time and is calculated from life tables of the entire Australian population, assumed to be cancer free.

A simplified example of how relative survival is interpreted is shown in Figure H1. Given that 6 in 10 people with cancer are alive 5 years after their diagnosis (observed survival of 0.6) and that 9 in 10 people from the general population are alive after the same 5 years (expected survival of 0.9), the relative survival of people with cancer would be calculated as 0.6 divided by 0.9, or 0.67. This means that individuals with cancer are 67% as likely to be alive for at least 5 years after their diagnosis compared with their counterparts in the general population.

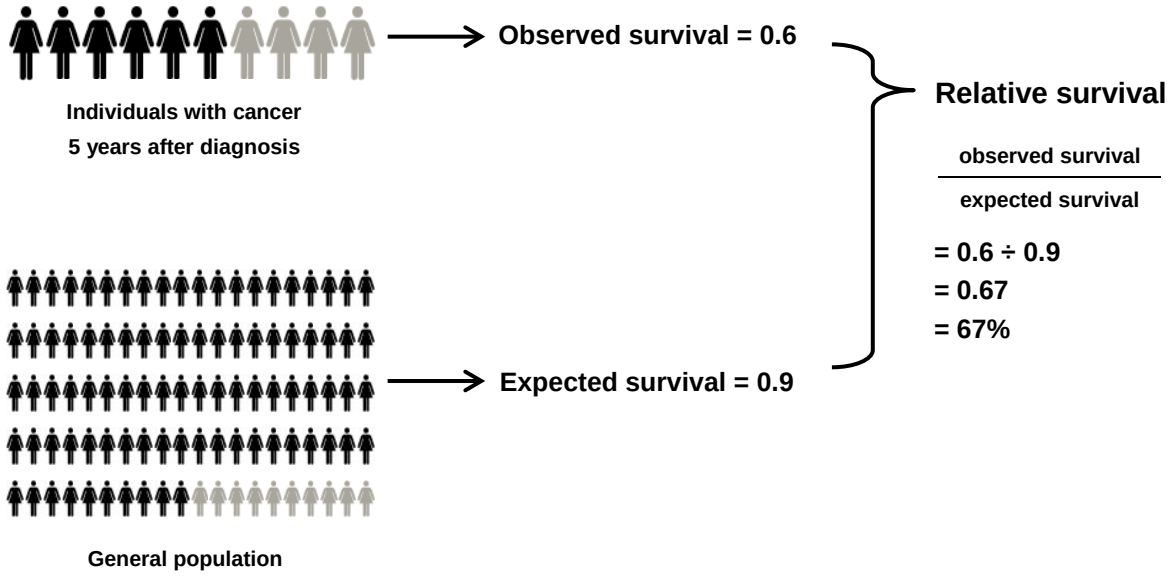


Figure H1: Simplified example of how relative survival is calculated

All observed survival was calculated from data in the ACD. Expected survival was calculated from the life tables of the entire Australian population, as well as the Australian population stratified by remoteness area and socioeconomic status quintile. The Ederer II method was used to determine how long people in the general population are considered 'at risk'. It is the default approach, whereby matched people in the general population are considered to be at risk until the corresponding cancer patient dies or is censored (Ederer & Heise 1959).

The survival analysis was based on records of primary and invasive cancers diagnosed between 1982 and 2011. At the time of analysis, these cases had been followed for deaths (from any cause) to the end of 2011. Therefore, the censor date selected for survival analysis was 31 December 2011.

The period method was used to calculate the survival estimates in this report (Brenner & Gefeller 1996), in which estimates are based on the survival experience during a given at-risk or follow-up period. Time at risk is left truncated at the start of the period and right censored at the end so that anyone who is diagnosed before this period and whose survival experience overlaps with this period would be included in the analysis.

The main follow-up period in this report was for the 5-year period 2007–2011, which was used for the most up-to-date estimates of survival by age, histological subtype, remoteness and socioeconomic status.

Trends are also analysed by six periods of follow-up: 1982–1986, 1987–1991, 1992–1996, 1997–2001, 2002–2006 and 2007–2011. In each period, 5 or 6 years of follow-up have been combined to draw upon a greater number of cases to produce more precise estimates.

All survival statistics in this report were produced using SAS statistical software and calculated using software written by Dickman (2004).

Calculation of conditional relative survival

Conditional survival is the probability of surviving *j* more days, given that an individual has already survived *i* days. It was calculated using the formula

$$S(j|i) = \frac{S(i+j)}{S(i)}$$

where

- $S(j|i)$ indicates the probability of surviving at least *j* more days given survival of at least *i* days
- $S(i+j)$ indicates the probability of surviving at least *i*+*j* days
- $S(i)$ indicates the probability of surviving at least *i* days.

Confidence intervals for conditional survival were calculated using a variation of Greenwood's (1926) formula for variance (Skuladottir & Olsen 2003):

$$\mathrm{Var}[S(j|i)] = \sum_{k=i+1}^{i+j} \frac{d_k}{r_k(r_k - d_k)}$$

where

- d_k is the number of deaths
- r_k is the number at risk during the *k*th interval.

The 95% confidence intervals were constructed assuming that conditional survival estimates follow a normal distribution.

Risk to age 75 or 85

The calculations of risk shown in this report are measures that approximate the risk of developing (or dying from) cancer before the age of 75 or 85, 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:

$$n = \frac{1}{\left(1 - e^{-rate/100}\right)}$$

For example, if *n* equals 3, the risk of a person in the general population being diagnosed with cancer before the age of 75 (or 85) 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 I: 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.

AIHW Australian Cancer Database

All forms of cancer, except basal and squamous cell carcinomas of the skin, are notifiable diseases in each Australian state and territory. This means there is legislation in each jurisdiction that requires hospitals, pathology laboratories and various other institutions to report all cases of cancer to their central cancer registry. An agreed subset of the data collected by these cancer registries is supplied annually to the AIHW, where it is compiled into the ACD. The ACD currently contains data on all cases of cancer diagnosed from 1982 to 2009 for all states and territories, and for 2010 and 2011 for all except NSW and the ACT (see Appendix F).

Cancer reporting and registration is a dynamic process, and records in the state and territory cancer registries may be modified if new information is received. As a result, the number of cancer cases reported by the AIHW for any particular year may change slightly over time and may not always align with state and territory reporting for that same year.

The Data Quality Statement for the ACD 2011 can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/586979 >.

AIHW National Mortality Database

The AIHW National Mortality Database (NMD) contains information provided by the Registries of Births, Deaths and Marriages and the National Coronial Information System—and coded by the ABS—for deaths from 1964 to 2012. Registration of deaths is the responsibility of the state and territory Registrars of Births, Deaths and Marriages. These data are then collated and coded by the ABS and are maintained at the AIHW in the NMD.

In the NMD, both the year of occurrence of the death and the year in which the death was registered are provided. For the purposes of this report, actual mortality data are shown based on the year of occurrence of the death, except for the most recent year (namely 2012) 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 not be registered until the following year. Thus, year of death information for the latest available year is generally an underestimate of the actual number of deaths that occurred in that year.

In this report, deaths registered in 2010 and earlier are based on the final version of cause of death data; deaths registered in 2011 and 2012 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

A statement on data quality relating to the AIHW NMD is available at the following ABS website: Quality declaration summary, *Causes of death, 2012*, ABS cat. no. 3303.0 <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3303.0Quality%20Declaration02012?opendocument&tabname=Notes&prodno=3303.0&issue=2012&num=&view=>.

AIHW National Hospital Morbidity Database

The AIHW National Hospital Morbidity Database (NHMD) is compiled from data supplied by the state and territory health authorities. It is a collection of electronic confidentialised summary records for episodes of admitted patient care (separations or hospitalisations) in essentially all public and private hospitals in Australia. The data include demographic, administrative and clinical information, including patient diagnoses and other procedures.

For more information on the specific use of the NHMD in cancer reporting, see Appendix J.

The Data Quality Statement for the AIHW NHMD 2012–13 can be found at the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/568730>.

National Death Index

The National Death Index (NDI) is a database, housed at the AIHW, that contains records of all deaths occurring in Australia since 1980. The data are obtained from the Registrars of Births, Deaths and Marriages in each state and territory. The NDI is designed to facilitate the conduct of epidemiological studies and its use is strictly confined to medical research.

Cancer incidence records from the ACD were linked to the NDI and used to calculate the survival and prevalence data presented in this report.

The Data Quality Statement for the NDI can be found at the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/480010>.

AIHW Disease Expenditure Database

The AIHW Disease Expenditure Database contains estimates of expenditure by disease category, age group and sex for each of the following areas of expenditure: admitted patient hospital services, out-of-hospital medical services, prescription pharmaceuticals, optometrical and dental services, community mental health services and public health cancer screening.

For more information on the AIHW Disease Expenditure Database, see *Health system expenditures on cancer and other neoplasms in Australia: 2008–09* (AIHW 2013b).

The Data Quality Statement for the Disease Expenditure Database can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/512599>.

BreastScreen Australia Program data

Data from BreastScreen Australia were used in Chapter 2 to indicate the number of women who had had a screening mammogram and the number of women with invasive breast cancer and DCIS (detected through BreastScreen Australia). These data are supplied annually to the AIHW by state and territory BreastScreen programs for monitoring purposes. They are compiled by the AIHW and reports are produced annually (AIHW 2014b).

The latest Data Quality Statement for the BreastScreen Australia data can be found at the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/560075>.

National Bowel Cancer Screening Program data

Data from the National Bowel Cancer Screening Register were used in Chapter 2 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 the Department of Human Services (formerly Medicare Australia) for monitoring purposes. They are compiled by the AIHW and reports are produced annually (AIHW 2014c).

The latest Data Quality Statement for the National Bowel Cancer Screening Program data can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/569056>.

National Cervical Screening Program data

Data from the National Cervical Screening Program were used in Chapter 2 to indicate the number of women who participated in the program, and the number of women with a high-grade cervical abnormality detected through the program. These data are supplied annually to the AIHW by state and territory cervical screening programs for monitoring purposes. They are compiled by the AIHW and reports are produced annually (AIHW 2014b).

The latest Data Quality Statement for the National Cervical Screening Program data can be found on the AIHW website at <http://meteor.aihw.gov.au/content/index.phtml/itemId/539449>.

GLOBOCAN

The GLOBOCAN database, prepared by the IARC, contains cancer incidence and mortality data from cancer registries around the world (Ferlay et al. 2013). The IARC uses these data to produce estimates for a 'common year'. The most recent GLOBOCAN estimates are for 2012 and are based on incidence data from 3 to 5 years earlier.

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 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.
- 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 at <www.abs.gov.au>.

For the Indigenous comparisons in this report (Chapter 8), the most recently released Indigenous experimental estimated resident populations as released by the ABS were used (ABS 2014c). Those estimates were based on the 2011 Census of Population and Housing.

Appendix J: 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 health-related condition), 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 the ICD-10-AM Chapter 21 'Factors influencing health status and contact with health services' (NCCH 2010).

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.

Some cancer-related interventions recorded as a principal diagnosis (such as Z08 'Follow-up examination after treatment for malignant neoplasms) are specific only to the investigation for, or treatment of, cancer. However, some (such as Z51.0 'Radiotherapy session') are not entirely cancer specific; that is, they may be provided to a small number of non-cancer patients, although the majority of these interventions are cancer related. Some (such as Z45.1 'Adjustment and management of infusion pump' and Z45.2 'Adjustment and management of vascular access device') apply to a number of disease types.

For some cancer-related interventions (such as same-day chemotherapy), the Australian Coding Standards (NCCH 2010) 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 interventions that may be cancer related. Thus, for the purposes of examining the number of admitted patient hospitalisations that arose due to invasive cancer, or that were directly related to the investigation, treatment or 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:
  - Z08 Follow-up examination after treatment for malignant neoplasms
  - Z12 Special screening examination for neoplasm
  - Z40.0 Prophylactic surgery for risk-factors related to malignant neoplasms
  - 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.

Note that, based on the definition of cancer-related hospitalisations, data presented in this report may have included a small number of some treatments and services provided to non-cancer patients. However, the proportion of these over counts is less than 0.01% of the data presented in this report.

Identifying palliative care separations

Information on the provision of palliative care is captured by two NHMD data items: 'Care type' and 'Diagnoses'. If either (or both) has a code of *Palliative care*, that separation is included as being in scope.

A 'Care type' is assigned for each admitted patient separation, with any one separation equal to either a total hospital stay (from admission to discharge, transfer or death) or to a portion of a hospital stay starting or ending in a change of care type (for example, from a 'Care type' of *acute care* to a 'Care type' of *palliative care*).

In addition, information on palliative care is also recorded in the NHMD under the 'Diagnosis' data items. While diagnosis codes usually describe a disease, injury or poisoning, they can also be used in certain instances to indicate the specific care or service provided for a current condition or other reasons for hospitalisation. This is the case when *Palliative care* is recorded as a diagnosis code 'Z51.5'.

For the purpose of this report, a palliative care separation is defined as a separation for which palliation was a substantial component of the care provided, and those in which the principal clinical intent of the care was palliation during part or all of the separation, as evidenced by a code of *Palliative care* for the 'Care type' and/or diagnosis data items in the NHMD. Further information on this can be found in the AIHW report *Palliative care services in Australia 2014* (AIHW 2014d).

Glossary

Aboriginal or Torres Strait Islander: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also *Indigenous*.

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.

Asymptomatic: Without symptoms.

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: Term that describes non-cancerous tumours that may grow larger but do not spread to other parts of the body.

Body Mass Index: The most commonly used method of assessing whether a person is normal weight, underweight, overweight or obese. It is calculated by dividing the person's weight (in kilograms) by their height (in metres) squared; that is, kg/m^2. For both men and women, underweight is a BMI below 18.5, acceptable weight is from 18.5 to less than 25, overweight is 25 and above (includes obese), and obese is 30 and over.

Burden of disease and injury: Term referring to the quantified impact of a disease or injury on an individual or population, using the *disability-adjusted life year* measure.

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 ovaries.

Chemotherapy: The use of drugs (chemicals) to prevent or treat disease, with the term being applied for treatment of cancer rather than for other uses.

Cohort method: A method of calculating *survival* that is based on a cohort of people diagnosed with cancer in a previous time period and followed over time.

Colonoscopy: A procedure to examine the bowel using a special scope (colonoscope) usually carried out in a hospital or day clinic.

Colorectal (bowel) cancer: Comprises cancer of the colon, cancer of the rectosigmoid junction and cancer of the rectum (ICD-10 codes C18–C20), collectively known as colorectal cancer.

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.

Death due to cancer: A death where the underlying cause is indicated as cancer.

Ductal carcinoma in situ (DCIS): A non-invasive tumour of the mammary gland (breast) arising from cells lining the ducts.

Expected survival: A measure of *survival* that reflects the proportion of people in the general population alive for a given amount of time. Expected survival estimates are crude estimates calculated from *life tables* of the general population by age, sex and calendar year.

FOBT (faecal occult blood test): A test used to detect tiny traces of blood in a person's faeces that may be a sign of bowel cancer. The immunochemical FOBT is a central part of Australia's National Bowel Cancer Screening Program.

Heath system expenditure: Includes expenditure on health goods and services (for example, medications, aids and appliances, medical treatment, public health, research, collectively termed current expenditure) and on health-related investment (often referred to as capital expenditure).

Histology: The microscopic characteristics of cellular structure and composition of tissue.

Hospitalisation: See *Separation*.

Incidence: The number of new cases (of an illness or event, and so on) in a given period.

Indigenous: A person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander. See also *Aboriginal or Torres Strait Islander*.

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. The ICD-10-AM is the Australian modification of the 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.

Life tables: Tables of annual probabilities of death in the general population.

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. See *Invasive*.

Mammogram: A radiographic depiction of the breast.

Metastasis: See *Secondary cancer*.

Mortality due to cancer: The number of deaths that 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.

Neoplasm: An abnormal ('neo' = new) growth of tissue. Can be *benign* (not a cancer) or *malignant* (a cancer) (see also *Invasive*). Also known as a tumour.

New cancer case: See *Incidence*.

Non-Indigenous: People who have declared that they are not of *Aboriginal or Torres Strait Islander* descent.

Observed survival: A measure of *survival* that reflects the proportion of people alive for a given amount of time after a diagnosis of cancer. Observed survival estimates are crude estimates calculated from population-based cancer data.

Other Australians: Includes people who have declared that they are not of *Aboriginal or Torres Strait Islander* descent as well as those who have not stated their Indigenous status.

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).

Palliative care hospitalisations: For the purposes of this report, those *hospitalisations* for which palliative care was a substantial component of the care provided. Such separations were identified as those for which the principal clinical intent of the care was palliation during part or all of the separation, as evidenced by a code of *palliative care* for the 'Care type' and/or 'Diagnosis' data items in the National Hospital Morbidity Database.

Pap smear (Pap test): Papanicolaou smear, 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 1 patient day.

Period method: A method of calculating *survival* that is based on the survival experience during a recent *at-risk* or *follow-up* time period.

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 (see also *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.

Projection: Longer-term extrapolation of recent trend data using unknown parameters such as expected future populations.

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 site 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*.

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.

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 20 times or less often (see Appendix B for more information about statistical significance).

Survival: A general term indicating the probability of being alive for a given amount time after a particular event, such as a diagnosis of cancer.

Symptom: Any indication of a disorder that is apparent to the person affected.

Tumour: An abnormal growth of tissue. Can be *benign* (not a cancer) or *malignant* (a cancer).

Underlying cause of death: The disease or injury that initiated the sequence of events leading directly to death.

Valid FOBT test result: Faecal occult blood test result that is either positive or negative. Inconclusive results are excluded from analysis.

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List of tables

List of figures

List of boxes

Cancer in Australia: an overview 2014 presents the latest available information on national population screening programs, cancer incidence, hospitalisations, survival, prevalence and mortality. It is estimated that the most commonly diagnosed cancers in 2014 will be prostate cancer, colorectal cancer and breast cancer (excluding basal and squamous cell carcinoma of the skin, as these cancers are not notifiable diseases in Australia). For all cancers combined, the incidence rate is expected to increase by 22% from 1982 to 2014, but the mortality rate is estimated to decrease by 20%. Cancer survival has improved over time. Cancer outcomes differ by Aboriginal and Torres Strait Islander status and remoteness area.