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*Australasian Association
of Cancer Registries*



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to promote better health and wellbeing*

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Abbreviations

ABS	Australian Bureau of Statistics
ACD	Australian Cancer Database
ACHI	Australian Classification of Health Interventions
AIHW	Australian Institute of Health and Welfare
ALL	acute lymphoblastic leukaemia
ALOS	average length of stay
AML	acute myeloid leukaemia
ASR	age-standardised rate
DALY	disability-adjusted life year
CLL	chronic lymphocytic leukaemia
CML	chronic myelogenous leukaemia
DCIS	ductal carcinoma in situ
HPV	human papilloma virus
iFOBT	immunochemical faecal occult blood test
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
MRI	magnetic resonance imaging
NDI	National Death Index
NHL	Non-Hodgkin lymphoma
NHMD	National Hospital Morbidity Database

NMD	National Mortality Database
OLS	ordinary least squares
Pap test	Papanicolaou smear (cervical smear test)
PSA	prostate-specific antigen
YLD	years lived with disability
YLL	years of life lost

Symbols

—	nil or rounded to zero
..	not applicable
n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data

Summary

Cancer in Australia 2017 is the eighteenth in a series that provides a comprehensive national overview on cancer, including the latest available data and projections, and trends over time.

Cancer is a major cause of illness in Australia

In 2017, it is estimated that 134,174 new cases of cancer (excluding basal and squamous cell carcinoma of the skin) will be diagnosed in Australia, an average of 367 diagnoses each day. It is expected that more than half (54%) of these diagnosed cases will be for males and 71% for those aged 60 and over. The age-standardised rate of new cancer cases increased from 383 per 100,000 persons in 1982 to a peak of 504 per 100,000 in 2008, before an expected decrease to 470 per 100,000 in 2017. The decrease has mainly been observed in males and is strongly influenced by changes in the incidence rate of prostate cancer.

In 2017, breast cancer in females is expected to be the most common cancer in Australia, followed by colorectal (bowel) cancer, prostate cancer and melanoma of the skin.

Mortality rate due to cancer continues to fall

In 2014, cancer accounted for about 3 of every 10 deaths registered in Australia. In 2017, it is estimated that 47,753 people will die from cancer in Australia, an average of 131 deaths each day. It is expected that more than half (57%) of these deaths will be in males and 87% among people aged 60 and over. Males are estimated to have a higher age-standardised mortality rate than females (200 compared with 129 per 100,000). It is estimated that the age-standardised mortality rate from all cancers combined will decrease from 209 per 100,000 in 1982 to 161 per 100,000 in 2017.

In 2017, lung cancer is expected to be the leading cause of cancer death, followed by colorectal cancer, prostate cancer, breast cancer in females and pancreatic cancer.

Survival improves, but not for all cancers

Five-year relative survival from all cancers combined increased from 48% in 1984–1988 to 68% in 2009–2013. Cancers that had the largest increase in survival were prostate cancer, non-Hodgkin lymphoma, kidney cancer and multiple myeloma. Pancreatic cancer and lung cancer showed only small improvements; bladder cancer and cancer of the larynx had a decrease in survival; and lip cancer and mesothelioma had no change.

The report notes that, according to World Health Organization comparisons, people living in Australia generally had better cancer survival than those living in other countries and regions.

Cancer is the leading cause of disease burden

In 2011, cancer was the leading cause of disease burden in Australia. Australians lost 833,250 disability-adjusted life years (DALY) due to premature death from cancer or from living with cancer (19% of total DALY). Lung cancer was associated with the highest proportion of the cancer burden, followed by colorectal cancer, breast cancer, prostate cancer and pancreatic cancer.

Data at a glance

Estimated incidence of cancer in 2017

Table 1: Estimated 20 most commonly diagnosed cancers, by sex, 2017

Males			Females		
Site/type (ICD-10 codes)	Cases	ASR	Site/type (ICD-10 codes)	Cases	ASR
Prostate (C61)	16,665	115.2	Breast (C50)	17,586	124.2
Colorectal (C18–C20)	9,127	67.3	Colorectal (C18–C20)	7,555	49.4
Melanoma of the skin (C43)	8,392	62.1	Melanoma of the skin (C43)	5,549	39.0
Lung (C33–C34)	7,094	51.8	Lung (C33–C34)	5,340	34.6
Head and neck (C00–C14, C30–C32)	3,625	26.7	Uterus (C54–C55)	2,861	19.2
Lymphoma (C81–C86)	3,574	26.5	Lymphoma (C81–C86)	2,658	18.2
Leukaemia (C91–C95)	2,358	17.6	Thyroid (C73)	2,329	18.0
Bladder (C67)	2,267	16.7	Ovary (C56)	1,580	10.8
Kidney (C64)	2,256	16.6	Pancreas (C25)	1,548	9.7
Pancreas (C25)	1,722	12.6	Leukaemia (C91–C95)	1,517	10.4
Liver (C22)	1,589	11.7	Head and neck (C00–C14, C30–C32)	1,330	9.0
Stomach (C16)	1,494	10.9	Kidney (C64)	1,256	8.5
Unknown primary site (C77–C80, C96)	1,346	10.0	Unknown primary site (C77–C80, C96)	1,209	7.3
Oesophagus (C15)	1,151	8.4	Cervix (C53)	912	7.1
Brain (C71)	1,109	8.3	Stomach (C16)	800	5.2
Multiple myeloma (C90.0)	1,025	7.5	Multiple myeloma (C90.0)	791	5.1
Myelodysplastic syndromes (D46)	967	7.2	Brain (C71)	782	5.5
Thyroid (C73)	850	6.6	Bladder (C67)	728	4.5
Testis (C62)	815	6.8	Myelodysplastic syndromes (D46)	593	3.6
Mesothelioma (C45)	655	4.8	Liver (C22)	527	3.5
All cancers combined	72,169	525.9	All cancers combined	62,005	422.9

Notes

1. ICD-10 is the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision.
2. The 2017 estimates are based on 2004–2013 incidence data (see Appendix D). They are rounded to the nearest whole.
3. ASR refers to age-standardised rate. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
4. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.

Source: AIHW Australian Cancer Database 2013.

Estimated mortality from cancer in 2017

Table 2: Estimated 20 most common causes of death from cancers, by sex, 2017

Males			Females		
Site/type (ICD-10 codes)	Cases	ASR	Site/type (ICD-10 codes)	Cases	ASR
Lung (C33–C34)	5,179	38.0	Lung (C33–C34)	3,842	24.4
Prostate (C61)	3,452	25.8	Breast (C50)	3,087	19.9
Colorectal (C18–C20)	2,136	15.8	Colorectal (C18–C20)	1,978	12.2
Pancreas (C25)	1,515	11.1	Unknown primary site (C77–C80, C96)	1,461	8.7
Unknown primary site (C77–C80, C96)	1,369	10.2	Pancreas (C25)	1,400	8.7
Liver (C22)	1,332	9.8	Ovary (C56)	1,047	6.6
Melanoma of the skin (C43)	1,280	9.5	Leukaemia (C91–C95)	729	4.5
Leukaemia (C91–C95)	1,111	8.2	Other digestive organs (C26)	728	4.3
Oesophagus (C15)	1,021	7.4	Liver (C22)	647	4.1
Lymphoma (C81–C86)	863	6.4	Lymphoma (C81–C86)	618	3.7
Brain (C71)	838	6.2	Brain (C71)	567	3.9
Bladder (C67)	822	6.1	Melanoma of the skin (C43)	559	3.6
Other digestive organs (C26)	804	5.9	Uterus (C54–C55)	453	2.8
Head and neck (C00–C14, C30–C32)	777	5.7	Multiple myeloma (C90.0)	406	2.5
Kidney (C64)	681	5.0	Stomach (C16)	403	2.5
Stomach (C16)	681	5.0	Oesophagus (C15)	397	2.4
Mesothelioma (C45)	645	4.8	Kidney (C64)	368	2.2
Multiple myeloma (C90.0)	566	4.2	Bladder (C67)	350	2.0
Non-melanoma of the skin (C44)	378	2.8	Cervix (C53)	254	1.8
Myelodysplastic syndromes (D46)	287	2.2	Head and neck (C00–C14, C30–C32)	249	1.6
All cancers combined	27,076	200.1	All cancers combined	20,677	128.9

Notes

1. ICD-10 is the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision.
2. The 2017 estimates are based on extrapolation of the latest trends in mortality data up to 2013. These trends were determined by joinpoint analysis, which fits the best piecewise linear model to mortality data from 1968 to 2013 (see Appendix D). They are rounded to the nearest whole number.
3. ASR refers to age-standardised rate. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
4. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5.

Source: AIHW National Mortality Database.

1 Introduction

This report is the eighteenth in a series and provides a comprehensive overview of national statistics on cancer. Cancer 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. In this report, cancer refers to invasive cancer, unless otherwise stated.

Cancer is a major cause of illness in Australia and has a substantial social and economic impact on individuals, families and the community. In 2017, it is estimated that 134,174 people will be diagnosed with cancer and 47,753 people will die from cancer. Findings from the 2011 Australian Burden of Disease Study showed that cancer contributed to 19% of the total disease burden in Australia (AIHW 2016b). 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 2013).

1.1 Data sources

The primary data sets used to produce this report are the Australian Cancer Database (ACD) and the National Mortality Database (NMD). For these two data sets, estimates for 2017 have been presented based on projections of data available up to 2013 for incidence and mortality. A linear or log-linear ordinary least squares (OLS) linear regression model of age-specific rates has been applied to extrapolate recent trends into the short-term future (see Appendixes C and D for more details). Estimates for 2017 provide the most up-to-date statistics possible. Information is provided on all cancers combined and on cancer type (see Box 1.1 for breast cancer classification information).

Several other data sources—including the National Death Index (NDI), the National Hospital Morbidity Database (NHMD), the AIHW Medicare Benefits Schedule (MBS) database and the 2012 GLOBOCAN database—have also been used to present a broad picture of cancer in Australia. Information about each of these data sources is presented in Appendix G.

Box 1.1: 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 refer to invasive breast cancer in females, unless otherwise stated. Information on the number of males diagnosed with breast cancer can be found in Section 2.

Australian Cancer Database

The Australian Cancer Database (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) (see Box 1.2 for more information). The AIHW is responsible for compiling the ACD

through the National Cancer Statistics Clearing House – a collaboration with the Australasian Association of Cancer Registries.

This report sources data from the 2013 ACD. Actual incidence data covers the period from 1982 to 2013 – except for New South Wales, where data were available to 2012 and estimated for 2013 (see Appendix C). Note that actual data for the Australian Capital Territory do not include cases identified from death certificates.

This report also includes estimates of incidence data for 2014–2018. The 2014–2018 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) that may affect future cancer incidence rates. See Appendix D for more information on the method.

Box 1.2: 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 are collected by each state and territory cancer registry and provided to the AIHW annually 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 2016f; AIHW & CA 2008).

National Mortality Database

The National Mortality Database (NMD) is a national collection of information for all deaths in Australia since 1964 and is maintained by the AIHW. Information on the characteristics and causes of death of the deceased are provided by the Registrars of Births, Deaths and Marriages and the National Coronial Information System (managed by the Victorian Department of Justice), and are coded nationally by the Australian Bureau of Statistics (ABS).

This report sources data from the 2014 NMD. Note that deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS. Actual mortality data from 1982 to 2013 are based on the *year of occurrence* of the death, and data for 2014 are based on the *year of registration* of the death (see Appendix G).

This report also includes estimates of mortality data for 2015–2018 based on the 2013 NMD. The 2015–2018 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 (see Appendix D for more information).

What is missing from the picture?

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. Cancer Australia are currently coordinating work to enable the collection of national cancer staging data.

Primary health-care information

The Australian health system collects a large amount of clinical and administrative data. These data can yield valuable information that is useful for health policy development and evaluation. They can also lead to enhanced clinical care and health outcomes through evidence-based practice, and to safety and quality monitoring (O’Keefe & Connolly 2010). These data are often collected by individual clinicians to record the encounter with the patient; however, they are often not collected in a standardised format. Therefore, there is little information 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. For more information, see *Australia’s health 2016* (AIHW 2016c).

1.2 Risk factors for cancer

A risk factor is any factor associated with an increased likelihood of a person’s developing a health disorder or health condition, such as cancer. Understanding what causes cancer is essential in developing processes and policies 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 here. 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 these cancers:

- bladder
- cervix
- colorectal
- hypopharynx
- kidney
- larynx
- liver
- lung
- myeloid leukaemia
- nasal cavity and accessory sinuses
- nasopharynx
- oesophagus
- oral cavity
- oropharynx
- ovary
- pancreas
- pharynx
- stomach
- ureter.

Sources: IARC 2009; 2014.



Alcohol consumption

Alcohol consumption is an important risk factor for cancer. The risk of cancer increases with the amount of alcohol consumed. Cancers where alcohol consumption may be a component cause include:

- breast (females)
- colon and rectum
- larynx and hypopharynx
- liver
- lung
- oesophagus
- oral cavity
- pancreas
- pharynx
- stomach.

Source: IARC 2014.



Infections

Cancers associated with infections (such as viruses, bacteria and parasites) include:

- anogenital (anus, penis, vagina, vulva)
- bladder
- cervix
- kaposi sarcoma
- larynx
- leukaemia
- liver
- lymphoma
- nasopharynx and oropharynx
- oral cavity
- stomach
- tongue.

Source: IARC 2014.



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.

Source: IARC 2014.



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 these cancers:

- bladder
- breast
- colon and rectum
- gallbladder
- leukaemia
- lymphoma
- ovary
- pancreas
- prostate
- testis
- thyroid
- stomach.

Source: IARC 2014.



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:

- colon
- oesophagus
- stomach.

Source: IARC 2014.



Excess body fat and physical inactivity

Overweight and obesity are important causes of several types of cancer. Body fatness is usually associated with 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 these cancers:

- breast (postmenopausal women)
- colon and rectum
- endometrium
- gallbladder
- gastric cardia
- kidney
- liver
- meningioma
- multiple myeloma
- oesophagus
- ovary
- pancreas
- thyroid.

Sources: IARC 2014; 2016.



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.

Source: IARC 2014.



Occupation exposures

Occupation exposures include exposures to chemicals, dust, radiation and industrial processes. These cancers are among those that have been found to be caused by occupation exposures:

- bladder
- bone
- breast
- colon and rectum
- kidney
- larynx and hypopharynx
- leukaemia
- liver
- lung
- lymphoma
- mesothelium
- nasal cavity
- nasopharynx
- oesophagus
- oral cavity
- ovary
- skin
- stomach
- thyroid.

Source: IARC 2014.



Ionising 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 these cancers:

- bladder
- brain
- breast
- colon
- leukaemia
- lung
- non-melanoma skin cancer
- oesophagus
- oral cavity
- stomach
- thyroid.

Source: IARC 2014.



Pollution of air, water and soil

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 these cancers:

- bladder
- breast
- kidney
- larynx
- leukaemia
- liver
- lung
- lymphoma
- mesothelioma
- nasopharynx
- ovary
- skin
- stomach.

Source: IARC 2014.



Medical and pharmaceutical drugs

Medical and pharmaceutical drugs can have side effects as well as the intended effect. These cancers are among those relating to medical and pharmaceutical drugs:

- bladder
- breast
- kidney
- leukaemia
- lung
- lymphoma
- ovary
- skin.

Source: IARC 2014.

Section one: an overview

This section presents information and statistics on national population screening programs, Medicare-subsided surveillance and treatment, cancer incidence, hospitalisations, survival, prevalence, mortality, burden of disease and by key population groups. Information 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.

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 'A'; for example, see online Table A2.1.

2 Surveillance and early detection

Key findings

In the 2-year period 2014–2015:

- 54% of women aged 50–74 participated in BreastScreen Australia
- 57% of women aged 20–69 participated in the National Cervical Screening Program
- 39% of eligible people invited participated in the National Bowel Cancer Screening Program.

In 2014:

- 579,844 women had a Medicare-subsidised breast cancer imaging test, with an average of 1.7 breast cancer imaging tests per patient
- 1,337,033 men received a Medicare-subsidised prostate-specific antigen (PSA) test, with an average of 1.2 PSA tests per patient.

2.1 Population-based cancer 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 – BreastScreen Australia, the National Cervical Screening Program and the National Bowel Cancer Screening Program. These programs are run through partnerships between the Australian Government and state and territory governments; the 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 breast cancer 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 is associated with increased treatment options (NBOCC 2009) and improved survival (AIHW & NBCC 2007). As well, treatment advances, including the advent of new systemic therapies, will have contributed to mortality reductions.

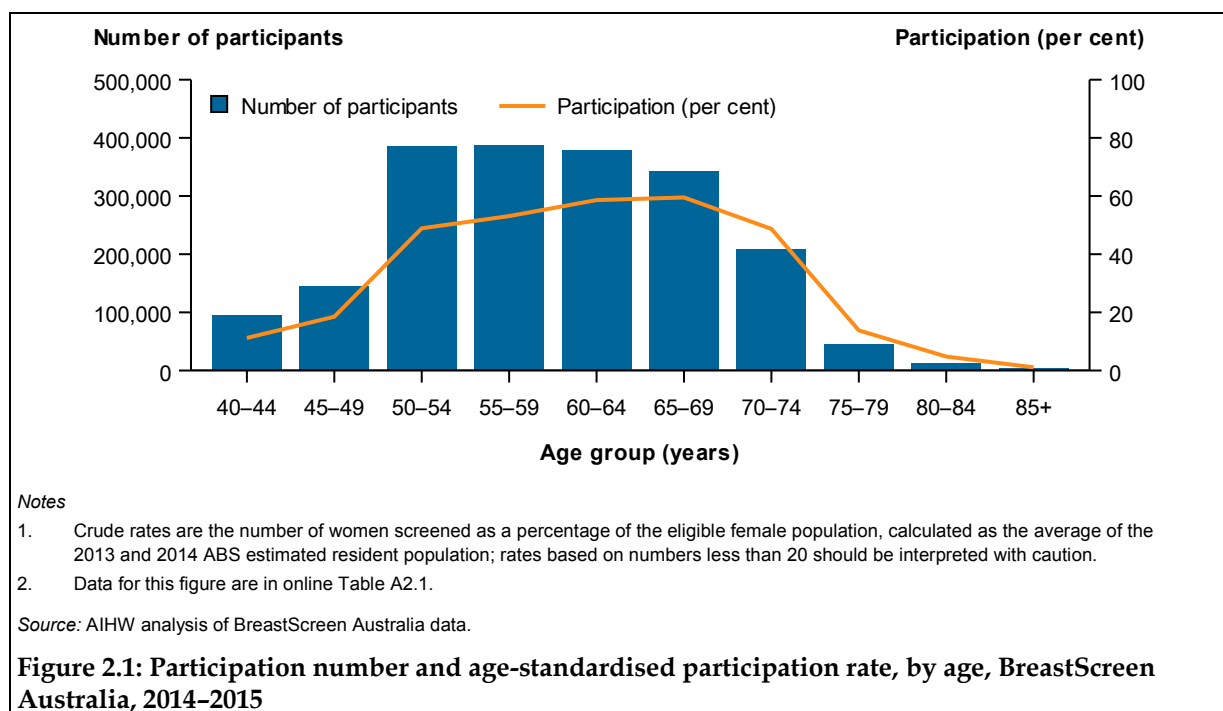
The program provides free 2-yearly screening mammograms to women aged 50–74 (women aged 40–49 and 75 and over are also eligible to attend, but are not actively targeted). However, as women aged 70–74 were only actively targeted from 1 July 2013, the trend is presented for women aged 50–69.

In the 2-year period 2014–2015, more than 1.7 million women aged 50–74 had a screening mammogram, giving a participation rate of 54%. Participation rates were highest for women

aged 60–64 (59%) and 65–69 (60%) and lowest for those aged 50–54 (49%) and 70–74 (49%) (Figure 2.1).

The age-standardised participation rate for women aged 50–69 increased from 52% in 1996–1997 to a peak of 58% in 2001–2002. Since then, it has remained steady at 54%–57%, although the total number of women participating in screening increased (online Table A2.2).

In 2014, there were 108 invasive breast cancers and 24 ductal carcinomas in situ (DCIS) detected for every 10,000 women screened for the first time. The detection rate was lower among women attending a subsequent screening, with 48 invasive breast cancers and 15 DCISs per 10,000.



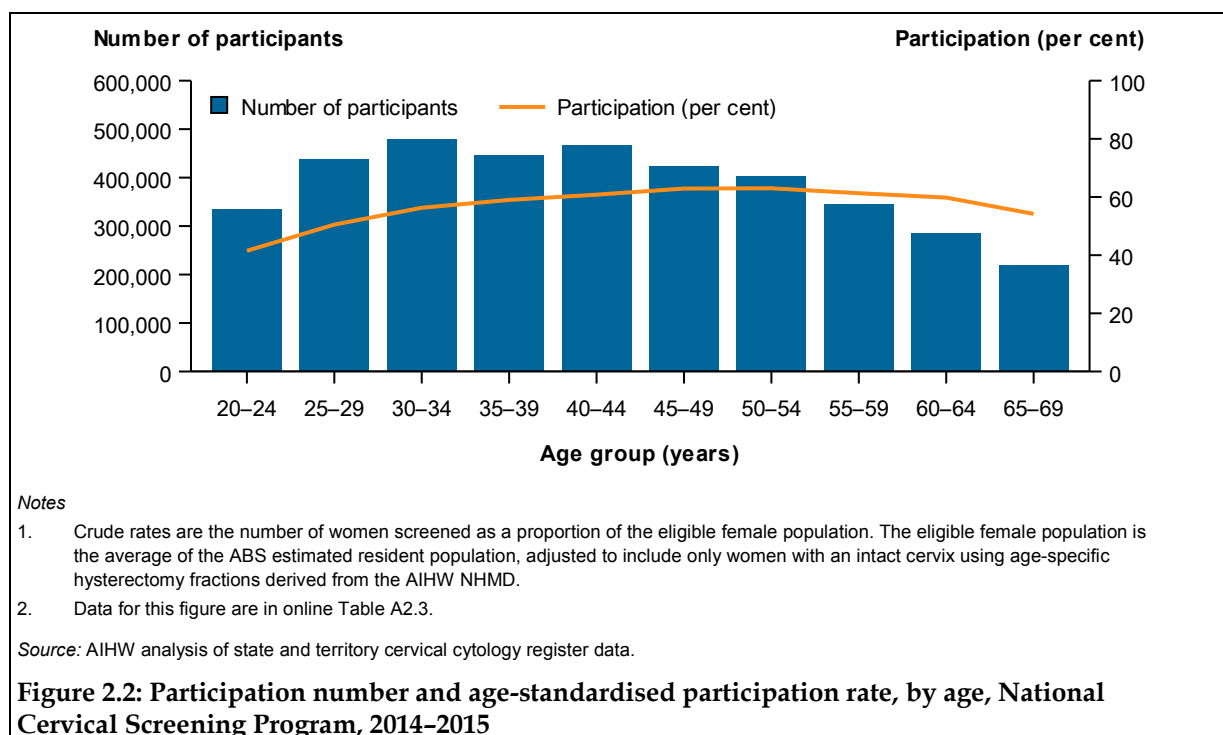
National Cervical Screening Program

The National Cervical Screening Program, established in 1991, led to falls in both cervical cancer incidence and mortality due to the program's 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 current program targets women aged 20–69 for a 2-yearly Papanicolaou (Pap) smear, or 'Pap test'. However, from 1 May 2017, the program will change to 5-yearly cervical screening, using a primary human papilloma virus (HPV) test with partial HPV genotyping and reflex liquid-based cytology triage, starting for women aged 25, followed by exit testing of women aged 70–74 (MSAC 2014).

In the 2-year period 2014–2015, more than 3.8 million women aged 20–69 had a screening Pap test, giving a participation rate of 57%. Participation was highest for women aged 50–54 (63%) and lowest for those aged 20–24 (42%) (Figure 2.2). The participation rate has remained relatively stable over time (online Table A2.4). In 2014, for every 1,000 women screened, 8 women had a high-grade abnormality (pre-cancerous condition) detected.

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



National Bowel Cancer Screening Program

The National Bowel Cancer Screening Program (NBCSP) was established in 2006. A 2014 data linkage study conducted by the AIHW found that NBCSP invitees (particularly those who participated) diagnosed with bowel cancer had less risk of dying from bowel cancer, and were more likely to have less-advanced cancers when diagnosed than non-invitees. These findings demonstrate that the NBCSP is contributing to reducing morbidity and mortality from bowel cancer in Australia (AIHW 2014a).

The NBCSP offers free screening, using an immunochemical faecal occult blood test (iFOBT), to people aged 50–74. Currently, the Australian Government is rolling out biennial screening for those in this target age group, which will be completed by 2020. Information presented here is reported against the NBCSP key performance indicators. This is different from previous *Cancer in Australia* reports and therefore the results are not directly comparable.

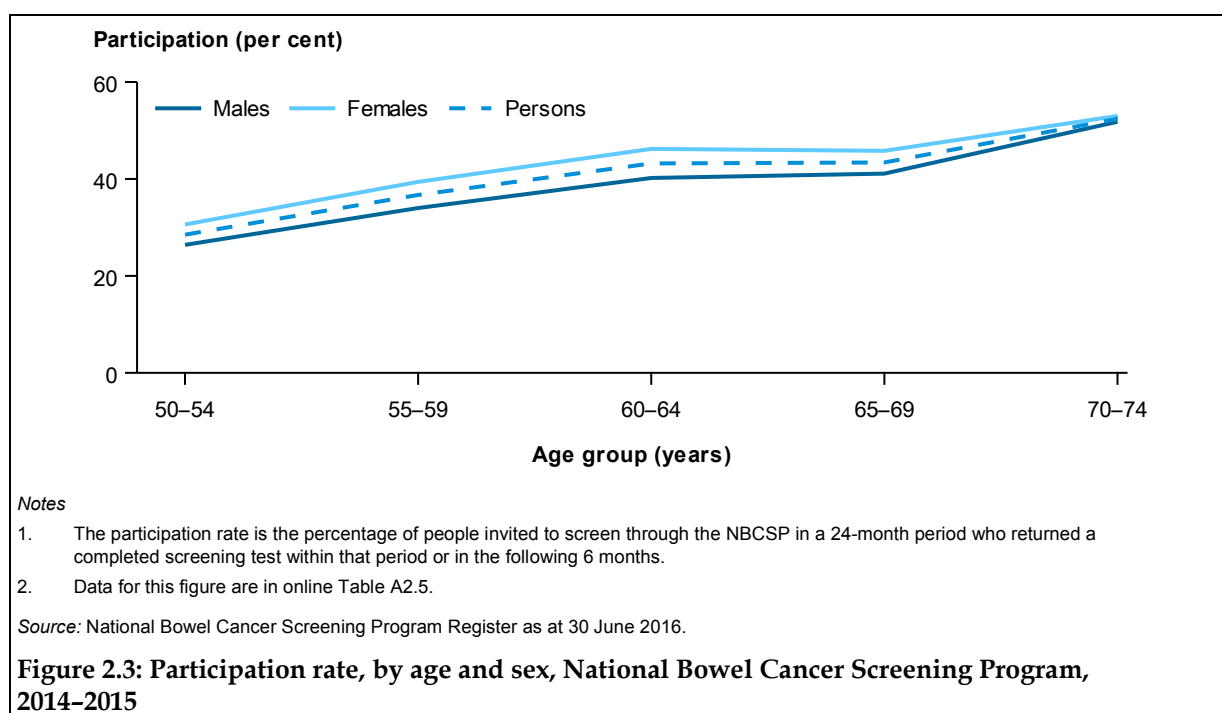
Of the eligible people invited in 2014–2015, over a million people participated in the NBCSP, giving an overall Australia-wide participation rate of 39%. Participation was higher among women (41%) than men (37%) and higher in older age groups (Figure 2.3). The participation rate was higher for people receiving their second or later (subsequent) screening invitation (42% compared with 35%). The re-participation rate for those who had participated previously and were receiving a subsequent invitation was 76%.

Using the new indicator across all program data to date, the participation rate decreased from 44% in 2007–2008 to 36% in 2012–2013. Participation is now trending upwards, increasing to 39% in 2014–2015 (online Table A2.6).

In 2014:

- about 35,000 participants returned a positive screening test, giving a 7% screening positivity rate
- of the participants who had a diagnostic assessment, 1 in 32 were diagnosed with a confirmed or suspected cancer and 1 in 7 were diagnosed with an adenoma.

Outcome data for the NBCSP – such as follow-up data from primary practitioners, colonoscopy and histopathology following a positive iFOBT result – are under-reported. The Department of Health is working on a number of steps to improve data return from these outcome sources.



2.2 Medicare-subsidised surveillance, detection and monitoring tests

Cancer surveillance and detection regularly occurs outside of screening programs and could be provided under Medicare or privately. The Medicare Benefits Schedule (MBS) lists services that are subsidised by the Australian Government under Medicare. Data for this section are sourced from the AIHW MBS claims database. Information is collected about patients, providers, the type of service provided and the amount of benefit paid for that service. The database does not include information on public patients in public hospitals or on services that are not listed on the MBS. This section focuses on tests used for the two most common sex-based cancers: breast cancer and prostate cancer.

Breast imaging (female only)

Breast imaging can be used to investigate breast symptoms, for surveillance of women at high risk of developing breast cancer or for surveillance of women who have a personal

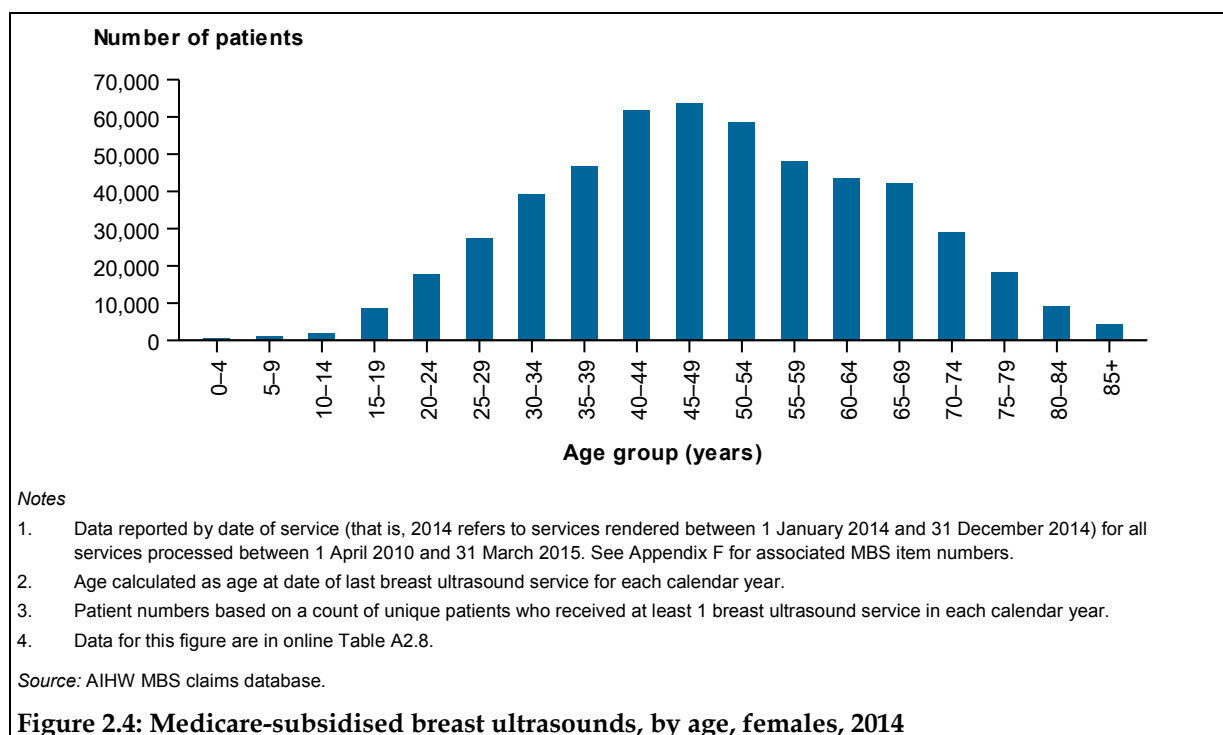
history of breast cancers. Breast imaging tests include ultrasound, mammograms and magnetic resonance imaging (MRI).

In 2014, 579,844 women had a Medicare-subsidised breast imaging test. During that year, women had an average of 1.7 breast imaging tests per patient (online Table A2.7), indicating that some women received multiple types of test (for example, a breast ultrasound and a mammogram) and that the test may have been for both screening and diagnostic purposes.

Breast ultrasounds

In 2014, 521,913 women received a Medicare-subsidised breast ultrasound. During that year, women had an average of 1.1 breast ultrasounds per patient and the Australian Government contributed on average \$108.90 per patient (online Table A2.8). The number of women who had a breast ultrasound increased with age and peaked for those aged 45–49, before decreasing in older age groups (Figure 2.4).

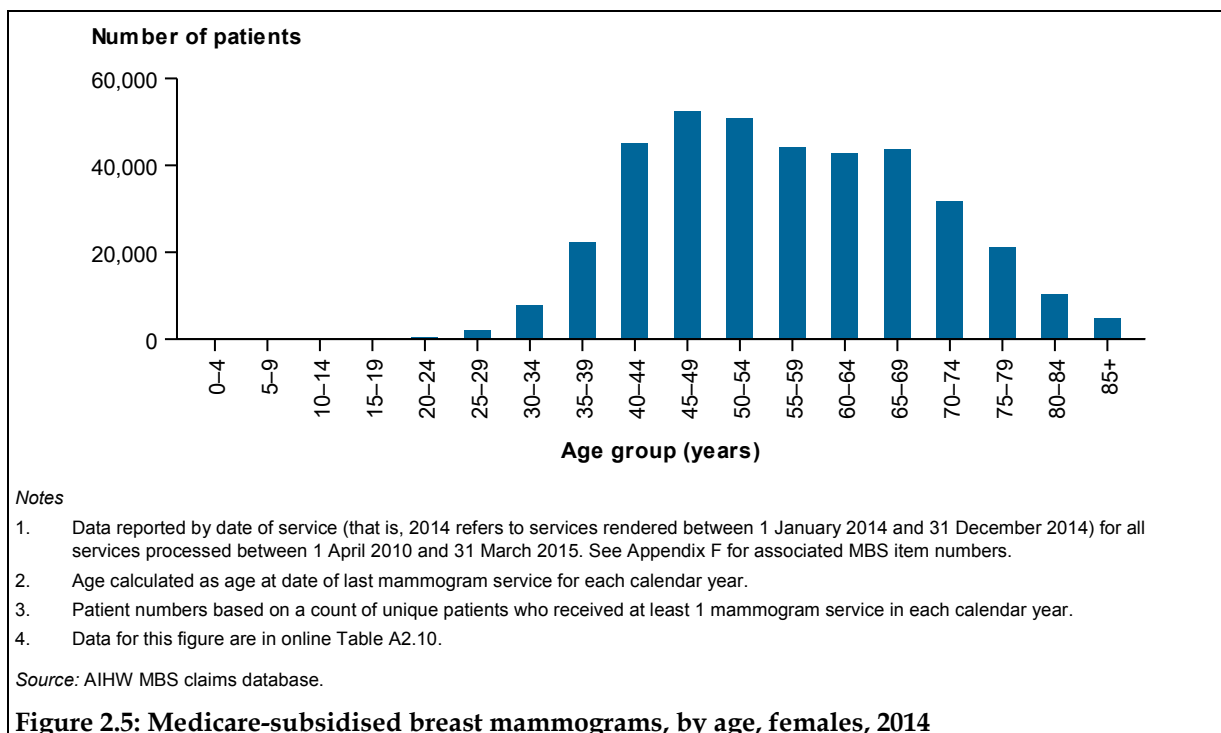
Between 2011 and 2014, the number of women undertaking a Medicare-subsidised breast ultrasound increased by 21% from 432,982 to 521,913. The number of breast ultrasound services increased at a similar rate (21%) (online Table A2.9).



Mammograms

In 2014, 379,925 women received a Medicare-subsidised mammogram. During that year, women had an average of 1 mammogram per patient and the Australian Government contributed on average \$78.40 per patient (online Table A2.10). Mammograms were relatively rare in women aged under 40 and were most common in women aged between 40 and 69 (Figure 2.5).

Between 2011 and 2014, the number of women undertaking a Medicare-subsidised mammogram increased by 10%, from 345,581 to 379,925. The number of mammogram services increased at a similar rate (10%) (online Table A2.11).

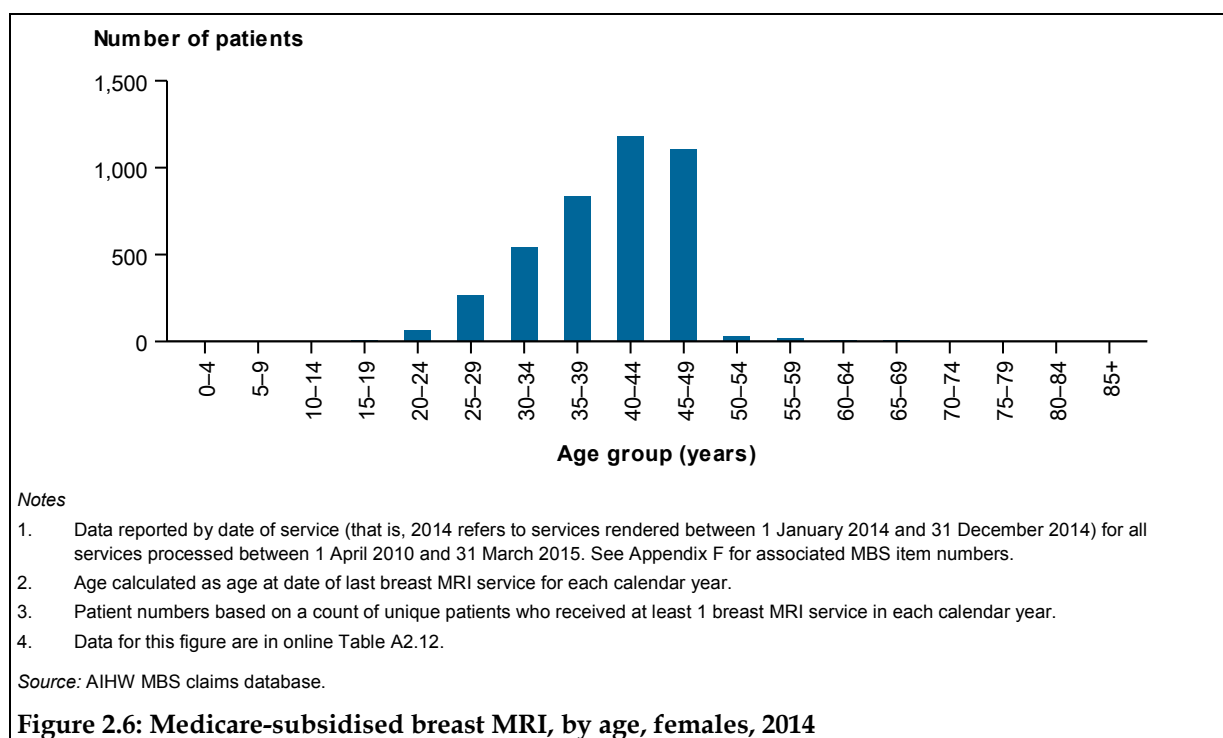


Breast magnetic resonance imaging

In 2014, 4,062 women received a Medicare-subsidised breast MRI. During that year, women had an average of 1 breast MRI per patient and the Australian Government contributed, on average, \$694 per patient (online Table A2.12). The number of women who had breast MRI increased with age and peaked for women aged 40–44, before decreasing dramatically after that (Figure 2.6).

Note that the MBS items for breast MRI are limited to women aged under 50 who are at increased risk of breast cancer due to family history or a genetic risk. This explains the large drop in services among older age groups. The MBS item also does not include women with a personal history of breast cancer, and therefore MRI conducted for this purpose are not captured in these data.

Between 2011 and 2014, the number of women undertaking Medicare-subsidised breast MRI increased by 66%, from 2,451 to 4,062. The number of breast MRI services increased at a similar rate (65%) (online Table A2.13). The Australian Government introduced this MBS item in February 2009 and therefore the increase could be related to uptake of this item.

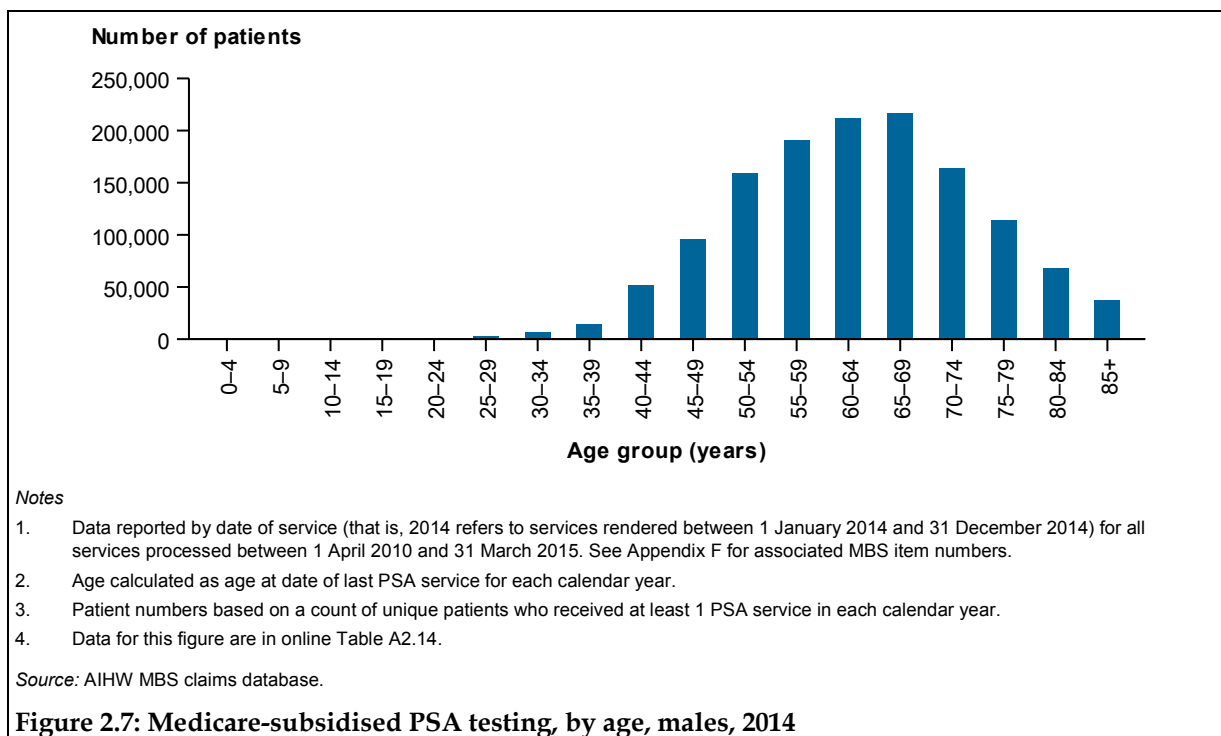


Prostate-specific antigen testing (male only)

Prostate-specific antigen (PSA) is a protein produced within the prostate and is quantifiable by a blood test (PSA test). PSA levels in the blood naturally increase with age, and a PSA level that is higher than normal for that age can be an indicator of risk of prostate cancer, or of recurrence of prostate cancer. It is important to note that not all males with prostate cancer have abnormal PSA levels and that high PSA levels are not specific to prostate cancer. Inflammation and benign enlargement of the prostate can also result in elevated or high PSA levels (American Urological Association 2007; Andrology Australia 2007).

In 2014, 1,337,033 men received a Medicare-subsidised PSA test. During that year, men had an average of 1.2 PSA tests per patient and the Australian Government contributed, on average, \$22.50 per patient (online Table A2.14). The number of men who had a PSA test increased with age and peaked for men aged 65–69, before decreasing in older age groups (Figure 2.7).

Between 2011 and 2014, the number of men undertaking a Medicare-subsidised PSA test decreased by 6%, from 1,424,346 to 1,337,033. The number of PSA test services decreased at a similar rate (4%) (online Table A2.15).



3 Number of new cases

Key findings

In 2017 in Australia, it is estimated that:

- 134,174 new cases of cancer will be diagnosed
- the age-standardised cancer incidence rate will be 470 per 100,000 persons
- more than half (54%) of all cancers will be diagnosed in males
- over two-thirds (71%) of new cancer cases will be in those aged 60 and over
- the risk of being diagnosed with cancer before the age of 85 will be 1 in 2
- prostate cancer will be the most commonly diagnosed cancer in males, followed by colorectal cancer, melanoma of the skin, lung cancer and head and neck cancer
- breast cancer will be the most commonly diagnosed cancer in females, followed by colorectal cancer, melanoma of the skin, lung cancer and uterine cancer.

Data for this section are sourced from the 2013 ACD and focus on the estimated cancer incidence for 2017 and cancer trends from 1982 to 2017 (see Chapter 1 and Appendix G for details on this data source). This chapter focuses on the *number of new cases* of cancers diagnosed in a year rather than on 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.

3.1 All cancers combined

In 2017, it is estimated that 134,174 new cases of cancer will be diagnosed in Australia (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 (54%) of these cases are expected to be diagnosed in males (Table 3.1). In 2017, 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 both males and females.

Table 3.1: Estimated incidence of all cancers combined, by sex, 2017

	Males	Females	Persons
Number of cases	72,169	62,005	134,174
Age-standardised rate	525.9	422.9	469.6
Per cent of all cancer cases	53.8	46.2	100.0
Risk to age 75	1 in 3	1 in 4	1 in 3
Risk to age 85	1 in 2	1 in 2	1 in 2

Notes

1. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal cell carcinoma or a squamous cell carcinoma.
2. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.

Source: AIHW ACD 2013.

Age

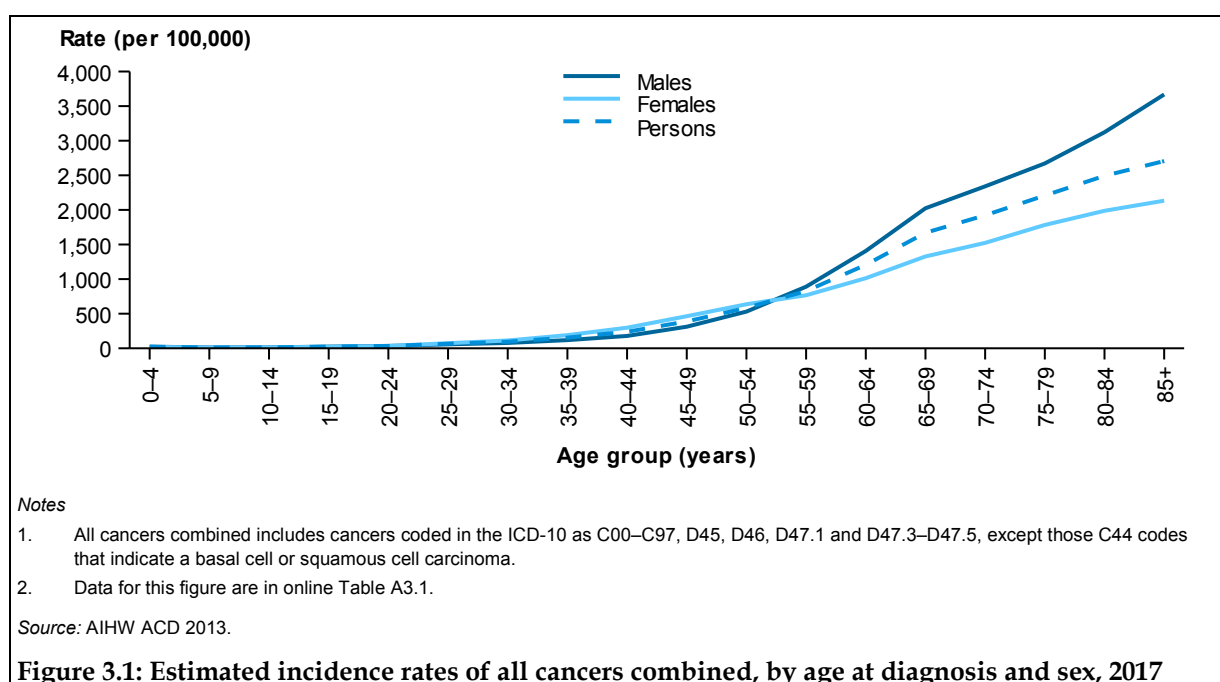
The incidence of cancer increases with age (Figure 3.1). For those aged under 30, the estimated age-specific incidence rate is expected to be similar in males and females, while the pattern varies for those aged over 30.

Males

In 2017, 75% of new cancer cases are expected to be diagnosed in males aged 60 and over. After the age of 55, the age-specific incidence rate is higher for males than females. The high incidence of prostate cancer may contribute to the high incidence rate of all cancers combined in males aged 55 and over.

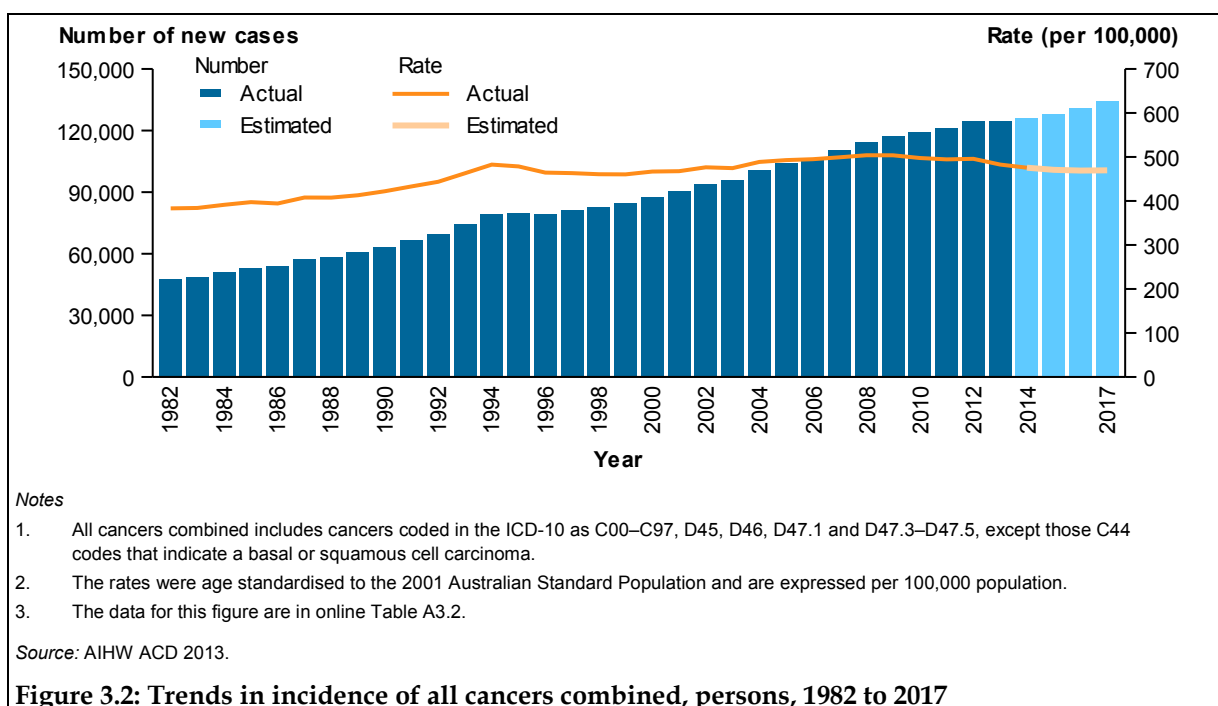
Females

In 2017, 66% of new cancer cases are expected to be diagnosed in females aged 60 and over. For those aged between 25 and 54, the age-specific incidence rate is higher for females than males. The high incidence of breast cancer may contribute to the high incidence rate of all cancers combined in this age group.



Trend

The number of new cancer cases expected to be diagnosed in 2017 is 2.8 times as high as in 1982. The age-standardised incidence rate of all cancers combined increased from 383 per 100,000 persons in 1982 to a peak of 504 per 100,000 in 2008, before an expected decrease to 470 per 100,000 in 2017 (Figure 3.2). The increase in trend in the early years can be attributed to the rise in the number of prostate cancers and breast cancers in females diagnosed, and may be due to formal and informal screening and improvements in technologies and techniques used to identify and diagnose cancer. The decrease in the last few years has mainly been observed in males and is strongly influenced by changes in the incidence rate of prostate cancer (see details in the next subsection).

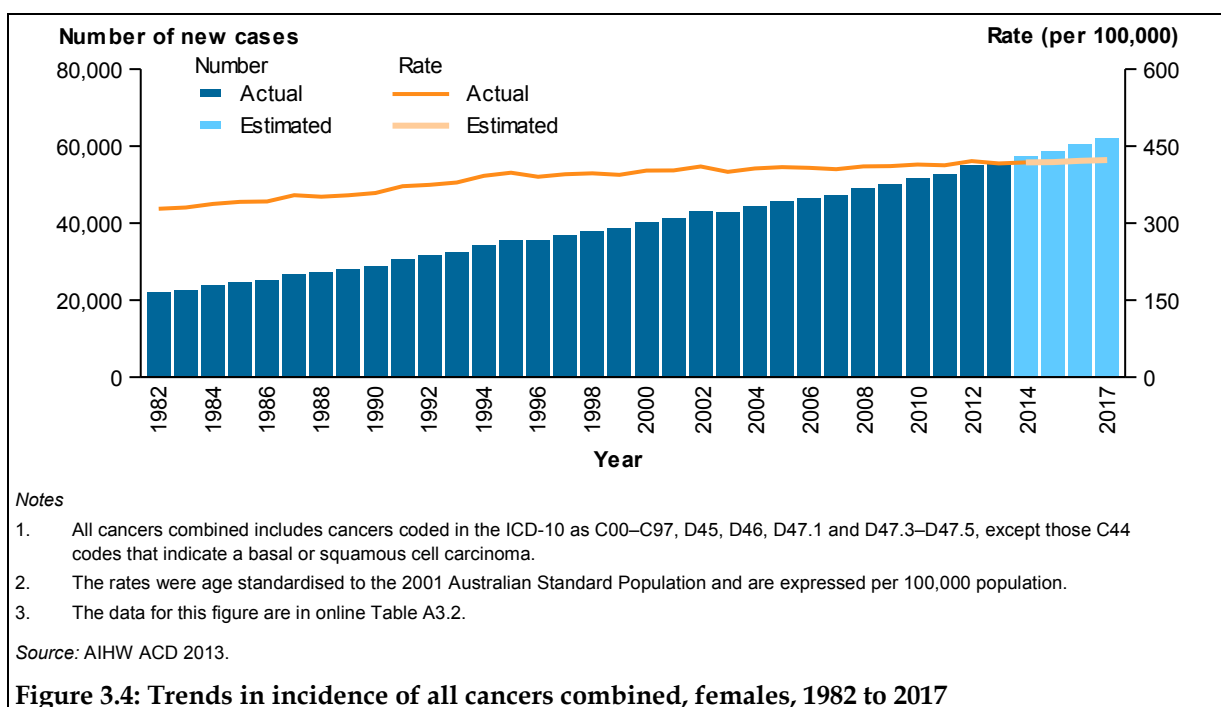
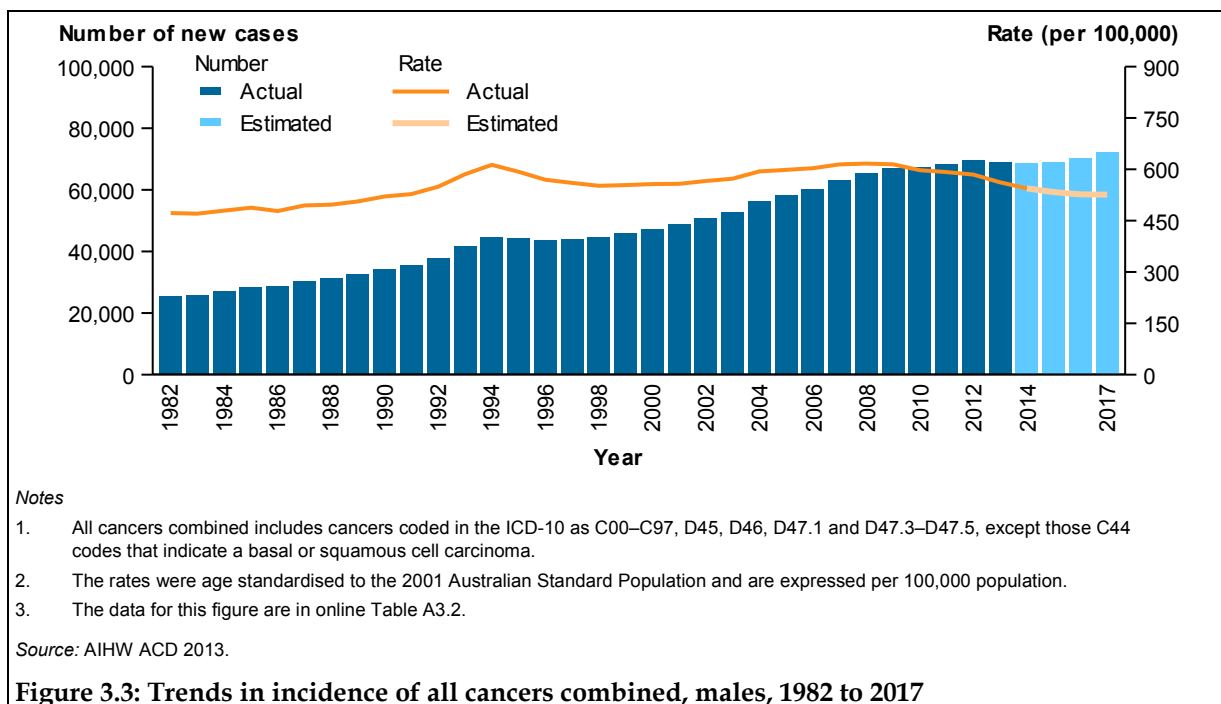


Males

For males, the age-standardised incidence rate 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 617 per 100,000 in 2008. It has then fallen steadily to a rate of 562 per 100,000 in 2013. It is expected to continue to fall to 526 per 100,000 in 2017 (Figure 3.3). 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 PSA testing (Zhou et al. 2016). The clinical practice guidelines for PSA and the early management of test-detected prostate cancer (Prostate Cancer Foundation of Australia and Cancer Council Australia 2016) were endorsed by the National Health and Medical Research Council in November 2015.

Females

For females, the age-standardised incidence rate of all cancers combined rose steadily during the early 1990s, reaching 398 per 100,000 in 1995. Since then, it has gradually increased and is expected to reach 423 cases per 100,000 in 2017 (Figure 3.4). 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 MRI, the introduction of BreastScreen Australia and an increased breast awareness may have contributed to the increased diagnosis of breast cancer (Youlden et al. 2012).



3.2 Most commonly diagnosed cancers

In 2017, breast cancer in females is estimated to be the most commonly diagnosed cancer in Australia, followed by colorectal cancer, prostate cancer, melanoma of the skin and lung cancer. The ten most commonly diagnosed cancers are estimated to account for 79% of all cancers diagnosed.

Males

In 2017, prostate cancer is estimated to be the most commonly diagnosed cancer in males (16,665 cases), with an estimated 1 in 7 risk of diagnosis before the age of 85. This is followed by colorectal cancer (9,127 cases; 1 in 11 risk of diagnosis), melanoma of the skin (8,392; 1 in 13), lung cancer (7,094; 1 in 14) and head and neck cancers (3,625; 1 in 32) (Table 3.2). Head and neck cancers incorporate cancer of the lip, tongue, mouth, salivary glands, pharynx, nasal cavity, sinuses and larynx.

Females

In 2017, breast cancer is estimated to be the most commonly diagnosed cancer in females (17,586 cases), with an estimated 1 in 8 risk of diagnosis before the age of 85. This is followed by colorectal cancer (7,555 cases; 1 in 15 risk of diagnosis), melanoma of the skin (5,549; 1 in 23), lung cancer (5,340; 1 in 21) and uterine cancer (2,861; 1 in 42) (Table 3.2).

Table 3.2: Estimated 10 most commonly diagnosed cancers, by sex, 2017

Males				Females			
Cancer site/type (ICD-10 codes)	Cases	ASR	Risk to age 85	Cancer site/type (ICD-10 codes)	Cases	ASR	Risk to age 85
Prostate (C61)	16,665	115.2	1 in 7	Breast (C50)	17,586	124.2	1 in 8
Colorectal (C18–C20)	9,127	67.3	1 in 11	Colorectal (C18–C20)	7,555	49.4	1 in 15
Melanoma of the skin (C43)	8,392	62.1	1 in 13	Melanoma of the skin (C43)	5,549	39.0	1 in 23
Lung (C33–C34)	7,094	51.8	1 in 14	Lung (C33–C34)	5,340	34.6	1 in 21
Head and neck (C00–C14, C30–C32)	3,625	26.7	1 in 32	Uterine (C54–C55)	2,861	19.2	1 in 42
Lymphoma (C81–C86)	3,574	26.5	1 in 30	Lymphoma (C81–C86)	2,658	18.2	1 in 45
Leukaemia (C91–C95)	2,358	17.6	1 in 46	Thyroid (C73)	2,329	18.0	1 in 62
Bladder (C67)	2,267	16.7	1 in 42	Ovary (C56)	1,580	10.8	1 in 77
Kidney (C64)	2,256	16.6	1 in 49	Pancreas (C25)	1,548	9.7	1 in 73
Pancreas (C25)	1,722	12.6	1 in 57	Leukaemia (C91–C95)	1,517	10.4	1 in 79
All cancers combined	72,169	525.9	1 in 2	All cancers combined	62,005	422.9	1 in 2

Notes

1. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
2. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma.

Source: AIHW ACD 2013.

Age

Aged 0–24

In 2017, an estimated 1,630 new cases of cancer will be diagnosed in people aged 0–24. People aged 0–24 tend to be diagnosed with different cancer types than older people. For this age group, leukaemia (338 cases) is estimated to be the most commonly diagnosed cancer, followed by lymphoma (258) and brain cancer (144).

For males, leukaemia (193 cases) is estimated to be the most commonly diagnosed cancer, followed by lymphoma (145) and testicular cancer (124) (Figure 3.5). For females, leukaemia

(145 cases) is estimated to be the most commonly diagnosed cancer, followed by lymphoma (112) and melanoma of the skin (77) (Figure 3.6).

Aged 25–49

In 2017, an estimated 15,989 new cases of cancer will be diagnosed in people aged 25–49. Breast cancer in females (3,700 cases) is estimated to be the most commonly diagnosed cancer, followed by melanoma of the skin (2,500) and colorectal cancer (1,332).

For males, melanoma of the skin (1,208 cases) is estimated to be the most commonly diagnosed cancer, followed by colorectal cancer (697) and testicular cancer (594) (Figure 3.5). For females, breast cancer (3,700 cases) is estimated to be the most commonly diagnosed cancer, followed by melanoma of the skin (1,292) and thyroid cancer (1,025) (Figure 3.6). For this age group, females represent a greater proportion of cancer diagnoses than males. This is due to the relatively high rate of breast cancer diagnosis for this age group.

Aged 50–64

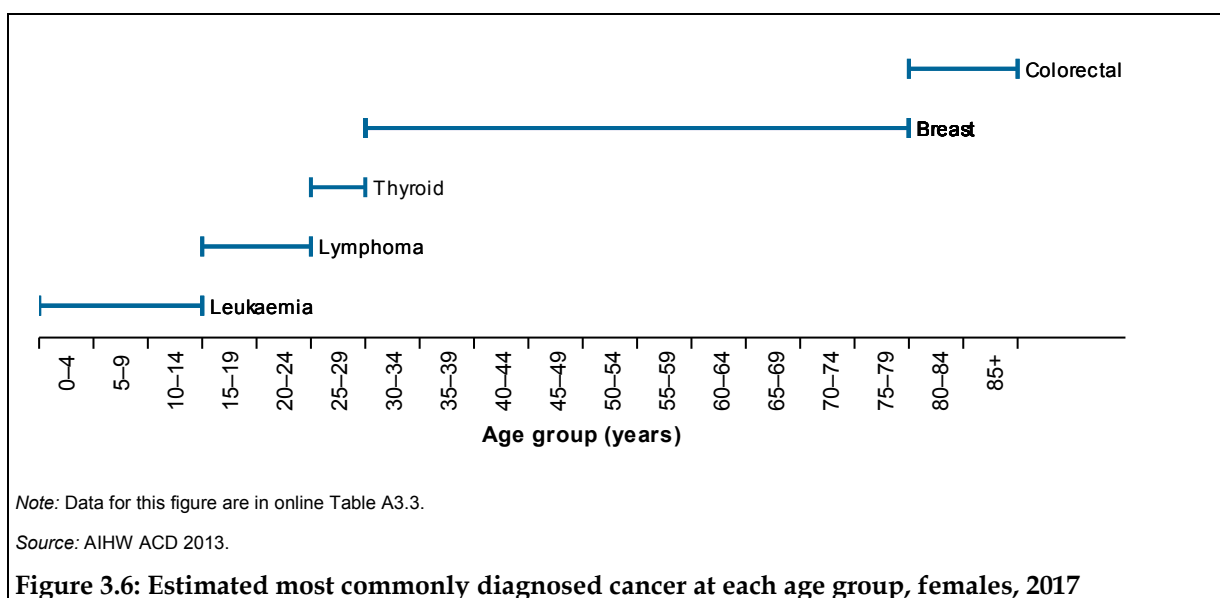
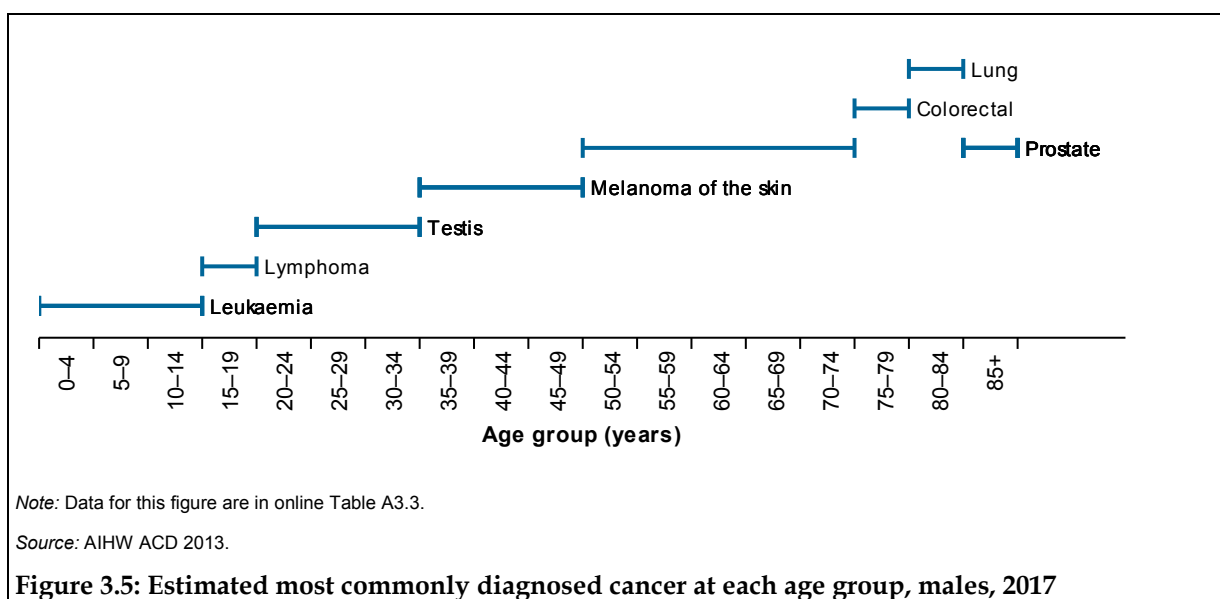
In 2017, an estimated 37,867 new cases of cancer will be diagnosed in people aged 50–64. Breast cancer in females (6,482 cases) is estimated to be the most commonly diagnosed cancer, followed by prostate cancer (5,816) and colorectal cancer (3,863). National breast and bowel screening programs are targeted at people aged 50 and over, which could affect the number of cancers diagnosed in this age group.

For males, prostate cancer (5,816) is estimated to be the most commonly diagnosed cancer, followed by melanoma of the skin (2,408) and colorectal cancer (2,201) (Figure 3.5). For females, breast cancer (6,482 cases) is estimated to be the most commonly diagnosed cancer, followed by colorectal cancer (1,662) and melanoma of the skin (1,635) (Figure 3.6).

Aged 65 and over

In 2017, an estimated 78,688 new cases of cancer will be diagnosed in people aged 65 and older. Colorectal cancer (11,424 cases) is estimated to be the most commonly diagnosed cancer, followed by prostate cancer (10,377) and lung cancer (9,196). Population-based screening programs target people in this age group, which could contribute to the number of cancers diagnosed.

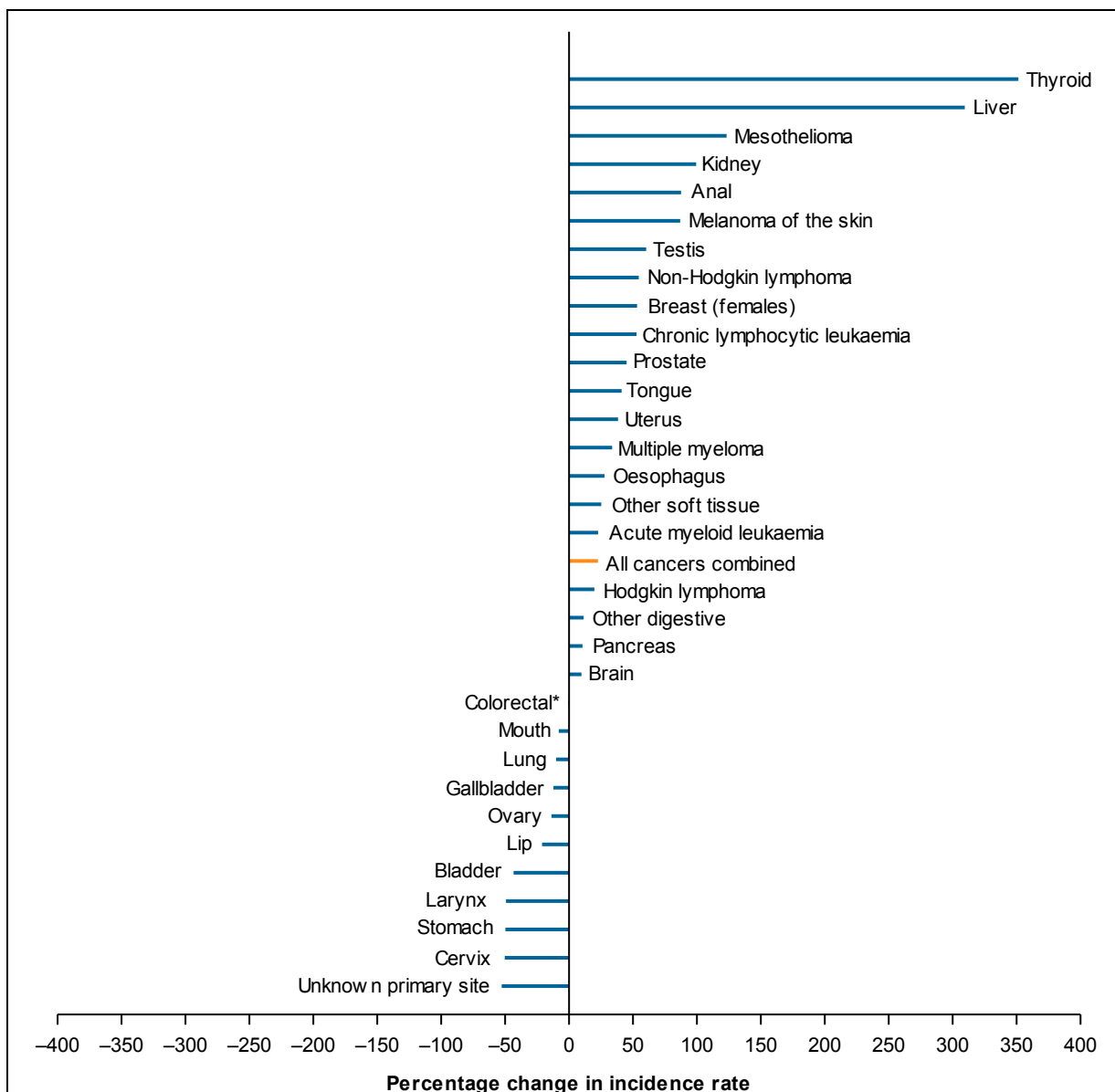
For males, prostate cancer (10,377 cases) is estimated to be the most commonly diagnosed cancer, followed by colorectal cancer (6,202) and lung cancer (5,396) (Figure 3.5). For females, breast cancer (7,398 cases) is estimated to be the most commonly diagnosed cancer, followed by colorectal cancer (5,222) and lung cancer (3,800) (Figure 3.6).



Trend

Between 1982 and 2017, thyroid cancer had the greatest percentage increase in the age-standardised incidence rate of 351% (from 2.7 to 12 per 100,000 persons). The increase in thyroid cancer may be due to an increase in medical surveillance and the introduction of new diagnostic techniques, such as neck ultrasonography (Vaccarella et al. 2016). There were also estimated increases in the age-standardised incidence rates for liver cancer (1.8 to 7.5 per 100,000), mesothelioma (1.2 to 2.7 per 100,000), kidney cancer (6.2 to 12 per 100,000), melanoma of the skin (27 to 50 per 100,000), breast cancer in females (81 to 124 per 100,000) and prostate cancer (80 to 115 per 100,000).

Between 1982 and 2017, the cancers that show the greatest estimated percentage decrease are cancer of unknown primary site (from 18 to 8.5 per 100,000), cervical cancer (14 to 7.1 per 100,000), stomach cancer (16 to 7.9 per 100,000), laryngeal cancer (4.3 to 2.2 per 100,000) and bladder cancer (18 to 10 per 100,000) (Figure 3.7).



* The incidence rate of colorectal cancer decreased by 0.5%.

Notes

1. The bars indicate the estimated percentage change in incidence rates between 1982 and 2017. The percentage change between 1982 and 2017 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.
2. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
3. The data for this figure are in online Table A3.5.

Source: AIHW ACD 2013.

Figure 3.7: Estimated percentage change in age-standardised incidence rates for selected cancers between 1982 and 2017

3.3 In situ tumours

This section presents information on in situ tumours. In situ tumours are tumours that are 'in the original place' but are not invasive or malignant. This group is coded differently from

invasive cancer and is in addition to the numbers presented in the previous section (which are invasive or malignant neoplasms).

In situ data are sourced from the ACD 2013. Actual in situ data are available to 2013—except for New South Wales, where data were available to 2012 (see Appendix C). Therefore, the latest national in situ data are for 2012.

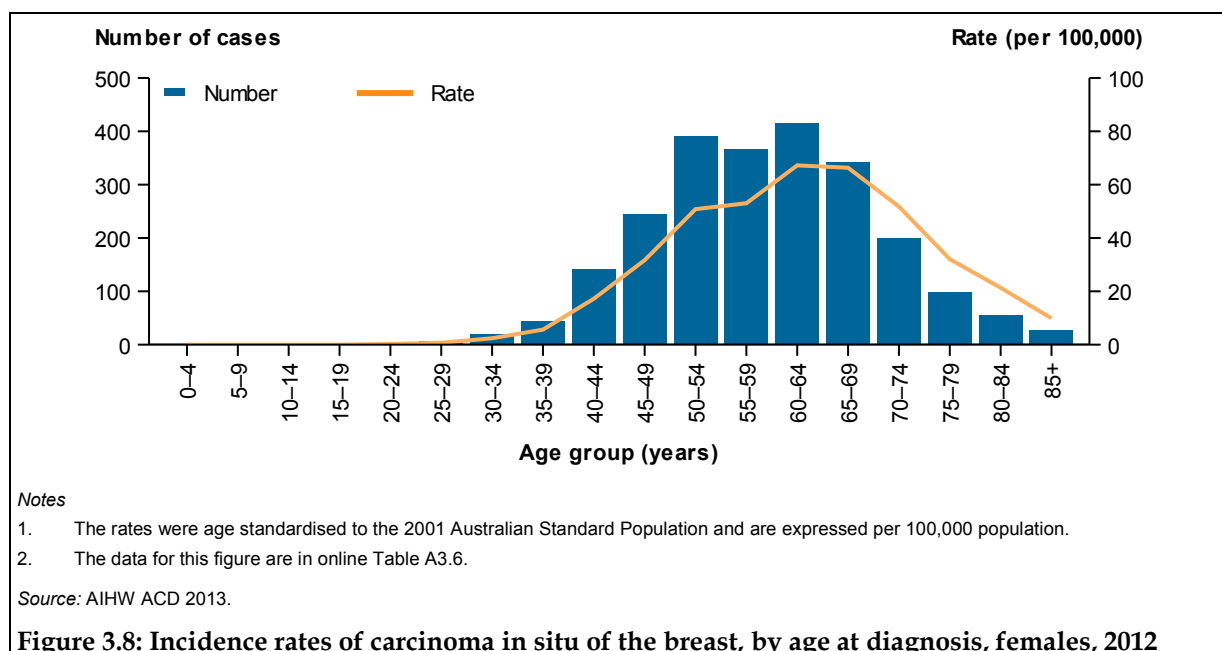
State and territory cancer registries have been collecting complete data on carcinoma in situ of the breast since 1996, and on melanoma in situ of the skin since 2004. Data on melanoma in situ of the skin were provided for inclusion in the 2013 ACD by all states and territories except South Australia, so the numbers and rates presented on melanoma in situ of the skin exclude those for South Australia.

Carcinoma in situ of the breast (female only)

In 2012, there were 2,349 new cases of carcinoma in situ of the breast (online Table A3.6). The age-standardised incidence rate for females was 19 cases per 100,000.

Age

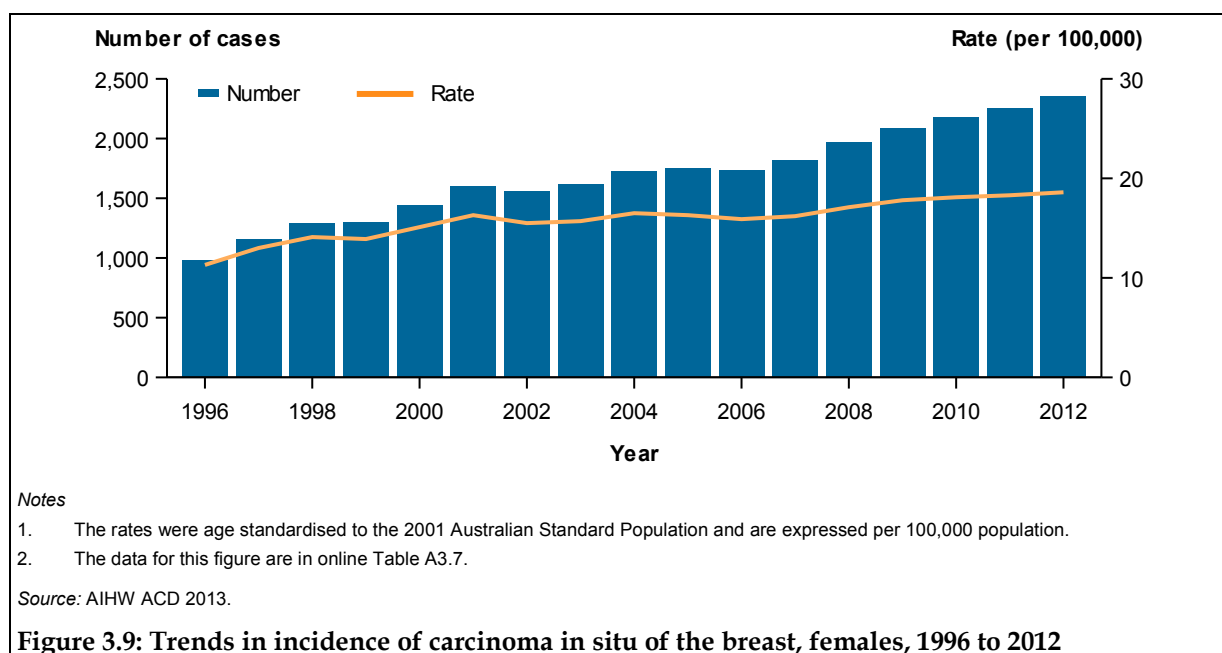
In 2012, the number of new cases of carcinoma in situ of the breast increased with age, peaking at 414 cases for women aged 60–64 (Figure 3.8). The age-specific incidence rate of carcinoma in situ of the breast was low for women aged under 40. The rate increased from 17 cases per 100,000 for females aged 40–45 to 67 cases per 100,000 for females aged 60–64 (Figure 3.8). The rate then decreased to 10 cases per 100,000 for females aged 85+. This may be related to BreastScreen Australia targeting women aged 50–69 for breast cancer screening (AIHW 2016d).



Trend

The age-standardised incidence rate of carcinoma in situ of the breast increased by 65%, from 11 per 100,000 in 1996 to 19 per 100,000 in 2012 (Figure 3.9). The increase in carcinoma in situ of the breast likely reflects the establishment of population-based screening. Carcinoma in

situ of the breast was rarely detected before breast screening was introduced. Its incidence has increased since the introduction of screening mammography, including that performed through BreastScreen Australia (AIHW 2016d).



Melanoma in situ of the skin

In 2012, there were 12,679 new cases of melanoma in situ of the skin (Table 3.3). Approximately 57% of these cases were diagnosed in males. The age-standardised incidence rate for males was 66 cases per 100,000. This compares with 46 new cases per 100,000 females and 56 new cases per 100,000 persons.

Table 3.3: Incidence rate for melanoma in situ of the skin, by sex, Australia (excluding South Australia), 2012

Sex	Number	Age-standardised rate
Males	7,282	66.4
Females	5,397	46.3
Persons	12,679	55.5

Note: The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.

Source: AIHW ACD 2013.

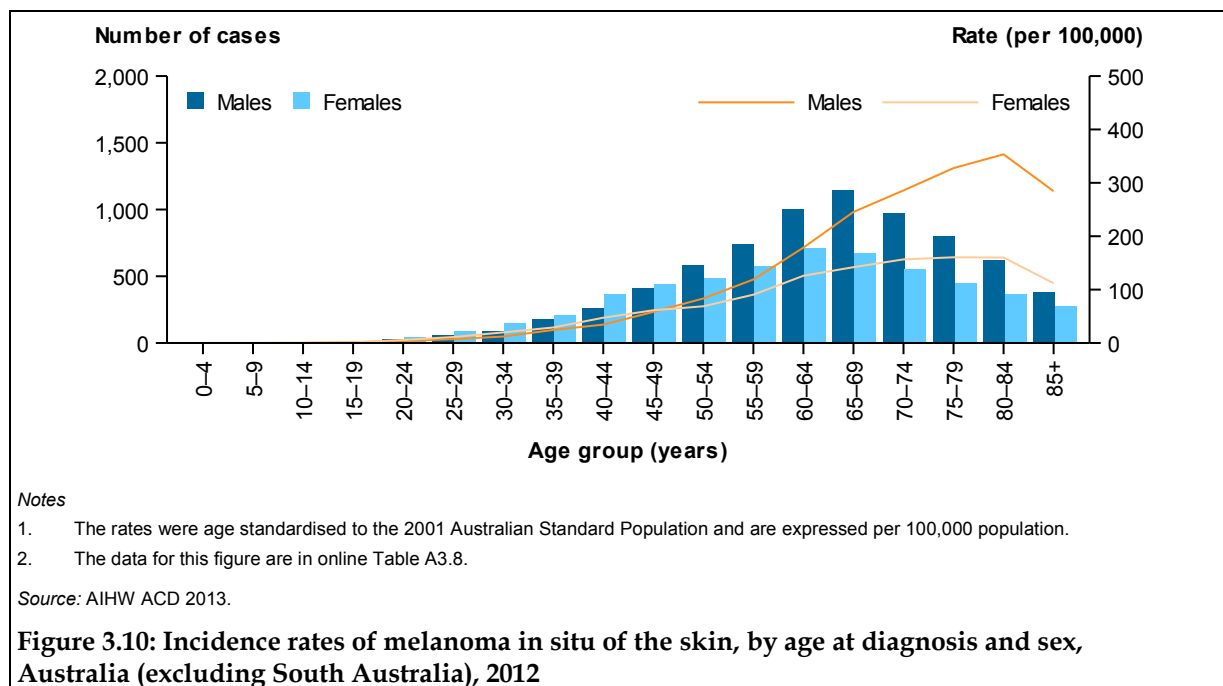
Age

Males

In 2012, the number of new cases of melanoma in situ of the skin increased with increasing age until 65–69, where it peaked at 1,148 new cases. The age-specific incidence rate of melanoma in situ of the skin increased with increasing age, peaking at 353 cases per 100,000 males aged 80–84, before decreasing to 284 cases per 100,000 males aged 85 and over (Figure 3.10). Males aged 50 and over had higher rates of melanoma in situ of the skin than females.

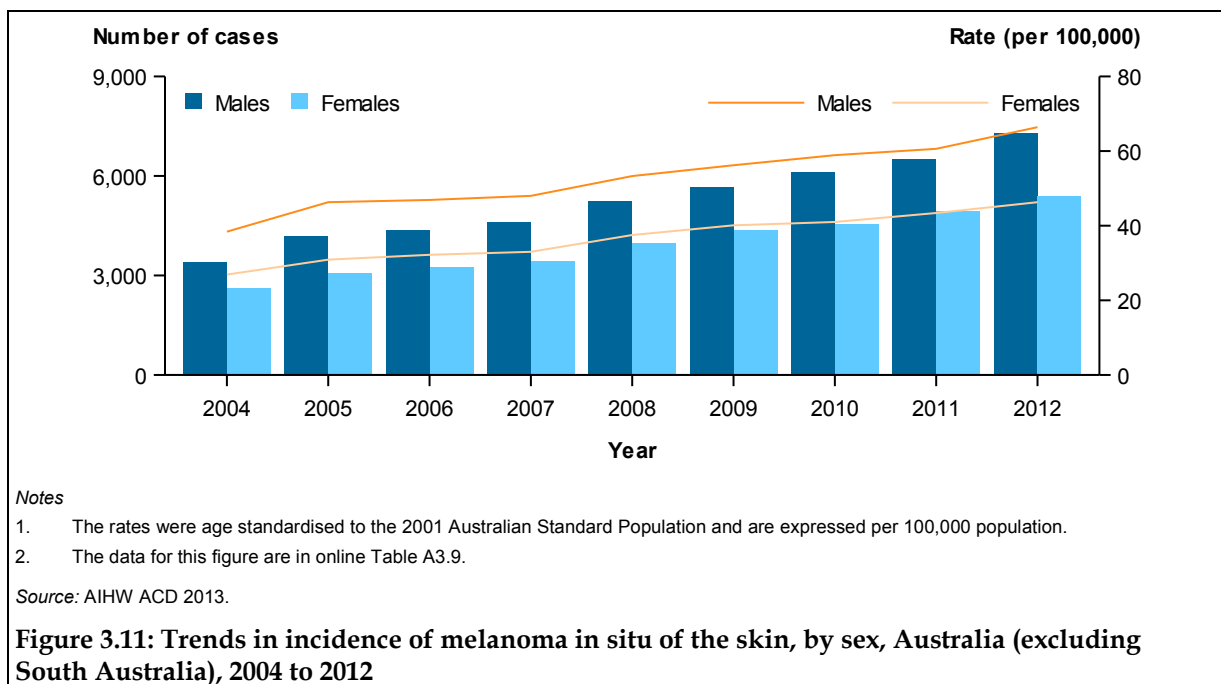
Females

In 2012, the number of new cases of melanoma in situ of the skin increased with age until 60–64, where it peaked at 713 new cases. The age-specific incidence rate of melanoma in situ of the skin increased with age, peaking at 161 cases per 100,000 females aged 75–79, before decreasing to 112 cases per 100,000 females aged 85 and over (Figure 3.10).



Trend

Between 2004 and 2012, the number of new cases of melanoma in situ of the skin increased by 73%, from 32 per 100,000 in 2004 to 56 per 100,000 in 2012. A similar pattern was observed for both males and females (Figure 3.11). The increase may be related to an increase in ultraviolet exposure, improvements in detection tools, an increased awareness of skin cancer, an increase in specialist skin clinics, and the reclassification of tumours over time (Leest et al. 2015; Toender et al. 2014).



4 Treatment

Key findings

In 2014–15:

- there were 1,090,513 cancer-related hospitalisations, accounting for 1 in 10 hospitalisations
- about three-quarters (70%) of cancer-related hospitalisations were for same-day care
- the average length of stay for overnight cancer-related hospitalisation was 7.8 days
- non-melanoma skin cancer was the most common cancer recorded as a principal diagnosis
- chemotherapy was the most common treatment recorded as a principal diagnosis. For these hospitalisations, breast cancer was the most common additional diagnosis
- there were 37,825 cancer-related hospitalisations where palliative care was provided. For these, cancer of a secondary site was the most common principal diagnosis.

From 2001–02 to 2014–15, the age-standardised cancer-related hospitalisation rate increased by 11% from 357 per 10,000 to 401 per 10,000.

In 2014, 60,398 people received a Medicare-subsidised radiotherapy session and had, on average, 30 radiotherapy services.

Data for this chapter are mainly sourced from the National Hospital Morbidity Database (NHMD) which is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals. For more information on the NHMD, see Appendix G and *Admitted patient care 2013–14: Australian hospital statistics* (AIHW 2015a). In this report, cancer-related hospitalisations are defined as those where at least one of the following apply:

- the principal diagnosis (the diagnosis chiefly responsible for the episode of care) is cancer (ICD-10-AM codes C00–C97, D45, D46, D47.1, D47.3–D47.5)
- the additional diagnosis (a diagnosis that coexists with the principal diagnosis or arises during the episode of care and affects the care) is cancer (ICD-10-AM codes C00–C97, D45, D46, D47.1, D47.3–D47.5)
- the principal diagnosis is a cancer-related treatment (and cancer is not an additional diagnosis) (ICD-10-AM codes Z08, Z40.00, Z400.01, Z51.0, Z51.1, Z54.1, Z54.2).

Note that the definition used in this report is different from that used in previous *Cancer in Australia* reports and therefore the results are not directly comparable. For more information on the definition of cancer-related hospitalisations see Appendix E.

4.1 Hospitalisations for all cancers combined

In 2014–15, there were 1,090,513 cancer-related hospitalisations, accounting for about 1 in 10 hospitalisations in Australia. Less than half (40%) of all cancer-related hospitalisations had a principal diagnosis of cancer (Table 4.1). The remainder had an additional diagnosis of cancer (54%) or a principal diagnosis related to treatment of cancer (and cancer was not an additional diagnosis) (7%).

Table 4.1: Cancer-related hospitalisations, persons, 2014–15

	Number	%	ASR
Principal diagnosis of cancer	431,983	39.6	159.2
Additional diagnosis of cancer	587,327	53.9	219.5
Principal diagnosis of cancer-related service (and cancer is not an additional diagnosis)	71,203	6.5	26.3
All cancer-related hospitalisations	1,090,513	100.0	405.0

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. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 10,000 population.

Source: AIHW NHMD.

Length of stay

In 2014–15, 70% of cancer-related hospitalisations were same-day hospitalisations and 30% were overnight hospitalisations. The average length of stay (ALOS) for overnight cancer-related hospitalisations was 7.8 days (Table 4.2).

For hospitalisations relating to a principal diagnosis of cancer, 51% were overnight, with an ALOS of 7.2 days. In contrast, 18% of hospitalisations with an additional diagnosis of cancer were overnight (Table 4.2).

Table 4.2: Length of stay for cancer-related hospitalisations, 2014–15

	Same-day		Overnight		ALOS (days)
	Number	%	Number	%	
Principal diagnosis of cancer	213,785	49.5	218,198	50.5	7.2
Additional diagnosis of cancer	480,769	81.9	106,558	18.1	9.3
Principal diagnosis of cancer-related service (and cancer is not an additional diagnosis)	66,168	92.9	5,035	7.1	2.3
All cancer-related hospitalisations	760,722	69.8	329,791	30.2	7.8

Note: 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.

Source: AIHW NHMD.

Age

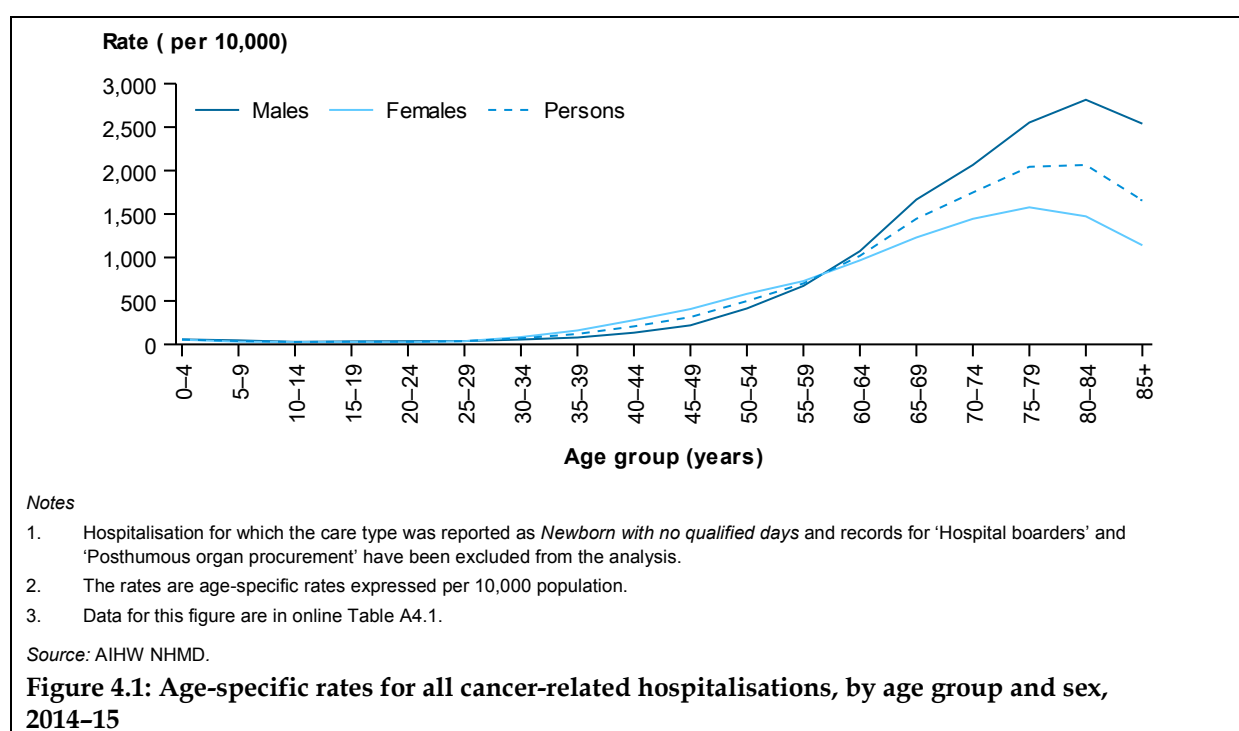
In 2014–15, cancer-related hospitalisations were more common among older age groups (Figure 4.1). The rate of hospitalisations for patients with cancer was relatively low in younger age groups and started to increase after the age of 30. The hospitalisation rate peaked at 2,065 per 10,000 for those aged 80–84, before decreasing in older age groups.

Males

The cancer-related hospitalisation rate was low for males aged under 50. The rate of hospitalisations increased steeply after the age of 60 and was higher than the female rate thereafter (Figure 4.1). In particular, the hospitalisation rate for males aged 85 and over was 2.2 times as high as that for females. This is partly attributed to the high number of prostate cancer hospitalisations among males within this age group (online Table A4.3).

Females

The cancer-related hospitalisation rate was higher for females aged 30–59 than for males (Figure 4.1). In particular, the hospitalisation rate for females aged 40–44 was 2.1 times as high as that for males. This is partly due to the relatively high number of breast cancer hospitalisations in females within this age group (online Table A4.3).

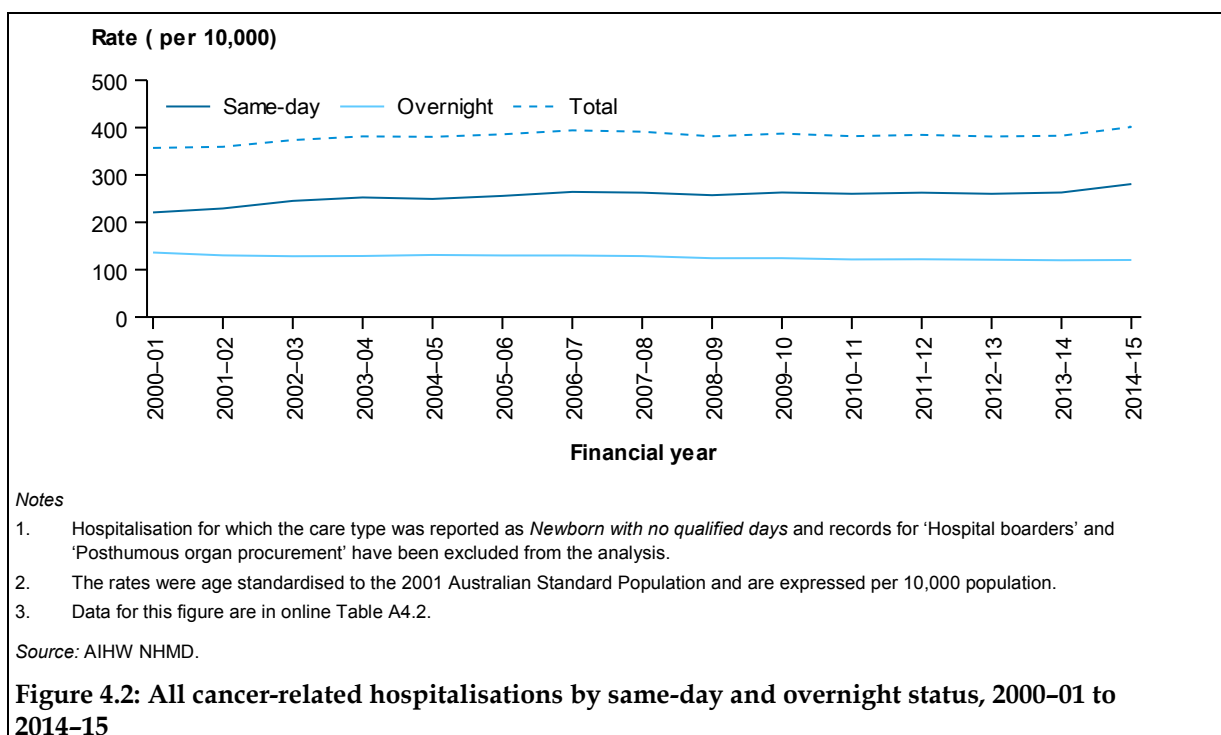


Trend

Trends in hospitalisations are presented from 2001–02 to 2014–15. Changes in hospital admission procedures and coding may affect trends over time.

Between 2001–02 and 2014–15, the number of cancer-related hospitalisations increased by 57%, from 695,763 to 1,090,513 hospitalisations. Much of this can be attributed to a substantial increase (43%) in the number of same-day hospitalisations.

In the same period, the age-standardised cancer-related hospitalisation rate increased by 11%, from 357 per 10,000 people to 401 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 partly affected by changes in admission practices in some jurisdictions. During this period, there was a decrease in the overnight hospitalisation rate (from 136 per 10,000 to 121 per 10,000) and an increase in the same-day hospitalisation rate.



4.2 Hospitalisations for principal diagnosis of cancer

Non-melanoma skin cancer was the most common cancer recorded as a principal diagnosis (25%), followed by cancer of secondary site (10%) and prostate cancer (8%). The ten most common cancers accounted for 76% of all hospitalisations with a principal diagnosis of cancer (Table 4.3). For overnight hospitalisations, hypopharyngeal cancer (13.3) had the longest ALOS, followed by leukaemia (12.4) and laryngeal cancer (11.2) (online Table A4.4).

Males

Non-melanoma skin cancer was the most common cancer type recorded as a principal diagnosis (26%), followed by prostate cancer (14%) and cancer of secondary site (9%). The ten most common cancers as a principal diagnosis accounted for 80% of all hospitalisations with a principal diagnosis of cancer (Table 4.4).

Females

Non-melanoma skin cancer was the most common cancer type recorded as a principal diagnosis (24%), followed by breast cancer (14%) and cancer of secondary site (11%). The ten most common cancers as a principal diagnosis accounted for 78% of all hospitalisations with a principal diagnosis of cancer (Table 4.4).

Table 4.3: Ten most common cancers recorded as a principal diagnosis, 2014–15

Principal diagnosis (ICD-10-AM codes)	Number	%
Non-melanoma skin cancer (C44)	109,060	25.2
Secondary site (C77–C79)	42,111	9.7
Prostate cancer (C61)	33,846	7.8
Colorectal cancer (C18–C20)	28,540	6.6
Breast cancer (C50)	25,167	5.8
Leukaemia (C91–C95)	21,991	5.1
Lymphoma (C81–C86)	20,900	4.8
Lung cancer (C33–C34)	18,791	4.3
Myelodysplastic syndromes (D46)	14,850	3.4
Bladder cancer (C67)	13,312	3.1
Total hospitalisations with a principal diagnosis of cancer	431,983	100.0

Note: 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.

Source: AIHW NHMD.

Table 4.4: Ten most common cancers recorded as a principal diagnosis, by sex, 2014–15

Males			Females		
Principal diagnosis (ICD-10-AM codes)	Number	%	Principal diagnosis (ICD-10-AM codes)	Number	%
Non-melanoma skin cancer (C44)	65,804	26.4	Non-melanoma skin cancer (C44)	43,256	23.7
Prostate cancer (C61)	33,846	13.6	Breast cancer (C50)	24,985	13.7
Secondary site (C77–C79)	21,549	8.6	Secondary site (C77–C79)	20,562	11.3
Colorectal cancer (C18–C20)	15,585	6.2	Colorectal cancer (C18–C20)	12,955	7.1
Leukaemia (C91–C95)	13,304	5.3	Leukaemia (C91–C95)	8,754	4.8
Lymphoma (C81–C86)	12,146	4.9	Lymphoma (C81–C86)	8,686	4.8
Lung cancer (C33–C34)	10,721	4.3	Lung cancer (C33–C34)	8,070	4.4
Bladder cancer (C67)	10,261	4.1	Myelodysplastic syndromes (D46)	5,701	3.1
Myelodysplastic syndromes (D46)	9,148	3.7	Melanoma of the skin (C43)	4,775	2.6
Melanoma of the skin (C43)	6,724	2.7	Uterine cancer (C54–C55)	4,426	2.4
Total hospitalisations with a principal diagnosis of cancer	249,378	100.0	Total hospitalisations with a principal diagnosis of cancer	182,601	100.0

Notes

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

Source: AIHW NHMD.

4.3 Hospitalisations for chemotherapy

This section explores the number of admitted-patient hospitalisations for chemotherapy. The principal diagnosis recorded is usually a disease, but can also be a specific treatment of an already diagnosed condition, such as chemotherapy for cancer. The number and rate of hospitalisations for chemotherapy may be an under-count as the NHMD does not include chemotherapy provided to non-admitted patients in public hospitals.

In 2014–15, there were 658,530 hospitalisations where the additional diagnosis was cancer or the principal diagnosis was a cancer-related treatment (and cancer was not an additional diagnosis). For these hospitalisations, pharmacotherapy (chemotherapy) was the most common principal diagnosis (67%) (online Table A4.5).

In 2014–15, there were 440,561 pharmacotherapy (chemotherapy) hospitalisations. For these hospitalisations, breast cancer (20%) was the most common additional diagnosis, followed by colorectal cancer (15%) and cancer of a secondary site (10%). The ten most common additional diagnoses accounted for 80% of these types of hospitalisations (Table 4.5).

Table 4.5: Ten most common additional diagnoses for chemotherapy hospitalisation, 2014–15

Additional diagnosis (ICD-10-AM codes)	Number	%
Breast cancer (C50)	89,406	20.3
Colorectal cancer (C18–C20)	66,351	15.1
Secondary site (C77–C79)	42,281	9.6
Multiple myeloma (C90.0)	32,601	7.4
Lymphoma (C81–C86)	31,458	7.1
Lung cancer (C33–C34)	29,392	6.7
Leukaemia (C91–C95)	20,357	4.6
Pancreatic cancer (C25)	15,932	3.6
Prostate cancer (C61)	13,030	3.0
Ovarian cancer (C56)	13,015	3.0
Total hospitalisations with a principal diagnosis of chemotherapy	440,561	100.0

Note: 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.

Source: AIHW NHMD.

Males

For hospitalisations where the principal diagnosis was chemotherapy, colorectal cancer (20%) was the most common additional diagnosis, followed by multiple myeloma (9%) and cancer of a secondary site (9%). The ten most common additional diagnoses accounted for 80% of these types of hospitalisations (Table 4.6).

Females

For hospitalisations where the principal diagnosis was chemotherapy, breast cancer (37%) was the most common additional diagnosis, followed by colorectal cancer (11%) and cancer of a secondary site (10%). The ten most common additional diagnoses accounted for 87% of these types of hospitalisations (Table 4.6).

Table 4.6: Ten most common additional diagnoses for a chemotherapy hospitalisation, by sex, 2014-15

Males			Females		
Additional diagnosis (ICD-10-AM codes)	Number	%	Additional diagnosis (ICD-10-AM codes)	Number	%
Colorectal cancer (C18–C20)	39,432	19.8	Breast cancer (C50)	88,894	36.8
Multiple myeloma (C90.0)	18,783	9.4	Colorectal cancer (C18–C20)	26,919	11.1
Secondary site (C77–C79)	18,509	9.3	Secondary site (C77–C79)	23,772	9.8
Lymphoma (C81–C86)	17,821	9.0	Multiple myeloma (C90.0)	13,818	5.7
Lung cancer (C33–C34)	16,552	8.3	Lymphoma (C81–C86)	13,637	5.6
Leukaemia (C91–C95)	13,075	6.6	Ovarian cancer (C56)	13,015	5.4
Prostate cancer (C61)	13,030	6.5	Lung cancer (C33–C34)	12,840	5.3
Pancreatic cancer (C25)	8,837	4.4	Leukaemia (C91–C95)	7,282	3.0
Bladder cancer (C67)	8,356	4.2	Pancreatic cancer (C25)	7,095	2.9
Stomach cancer (C16)	4,708	2.4	Uterine cancer (C54–C55)	2,990	1.2
Total hospitalisations with a principal diagnosis of chemotherapy	198,946	100.0	Total hospitalisations with a principal diagnosis of chemotherapy	241,615	100.0

Note: 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.

Source: AIHW NHMD.

4.4 Radiotherapy for cancer

Radiotherapy is an important part of cancer treatment. Australian research indicates that 48% of cancer patients should receive external beam radiotherapy at least once during their treatment (Barton et al. 2014). Radiotherapy is often provided on a non-admitted basis so limited information is available in the NHMD. Therefore, radiotherapy numbers based on the NHMD are not presented. An alternative data source is the AIHW MBS claims database and the National Radiotherapy Waiting Times Database (NRWTD).

Medicare-subsidised radiotherapy services

The AIHW MBS claims database contains information on Medicare-subsidised radiotherapy services. Information is collected about patients, providers, the type of service provided and the amount of benefit paid for that service. The database includes information on each radiotherapy service, rather than a course (for example, one person may receive multiple radiotherapy services as part of one course). The database does not include information on public patients in public hospitals or on services that are not listed on the MBS. Also, the database does not include information on the cancer type and thus it is not possible to undertake analysis for the different types of cancer using this data source.

In 2014, 60,398 people received about 1.8 million Medicare-subsidised radiotherapy services. During that year, patients had, on average, 30 radiotherapy services and the Australian Government contributed, on average, \$5,322 per patient. While a similar number of males and females received radiotherapy services, males had a higher average number of services per patient than females (33 radiotherapy services per patient per year compared with 28) (Table 4.7).

Table 4.7: Medicare-subsidised radiotherapy services, by sex, 2014

Sex	Patients	Services		Benefit paid (\$)	
	Number	Number	Services per patient	Amount	Benefit per patient
Males	30,122	991,836	33	168,958,038	5,609
Females	30,276	841,495	28	152,476,328	5,036
Persons	60,398	1,833,331	30	321,434,366	5,322

Notes

1. Data reported by date of service (that is, 2014 refers to services rendered between 1 January 2014 and 31 December 2014) for all services processed between 1 April 2010 and 31 March 2015. See Appendix F for associated MBS item numbers.
2. Patient numbers based on a count of unique patients who received at least 1 radiotherapy service in each calendar year.

Source: AIHW MBS claims database.

Age

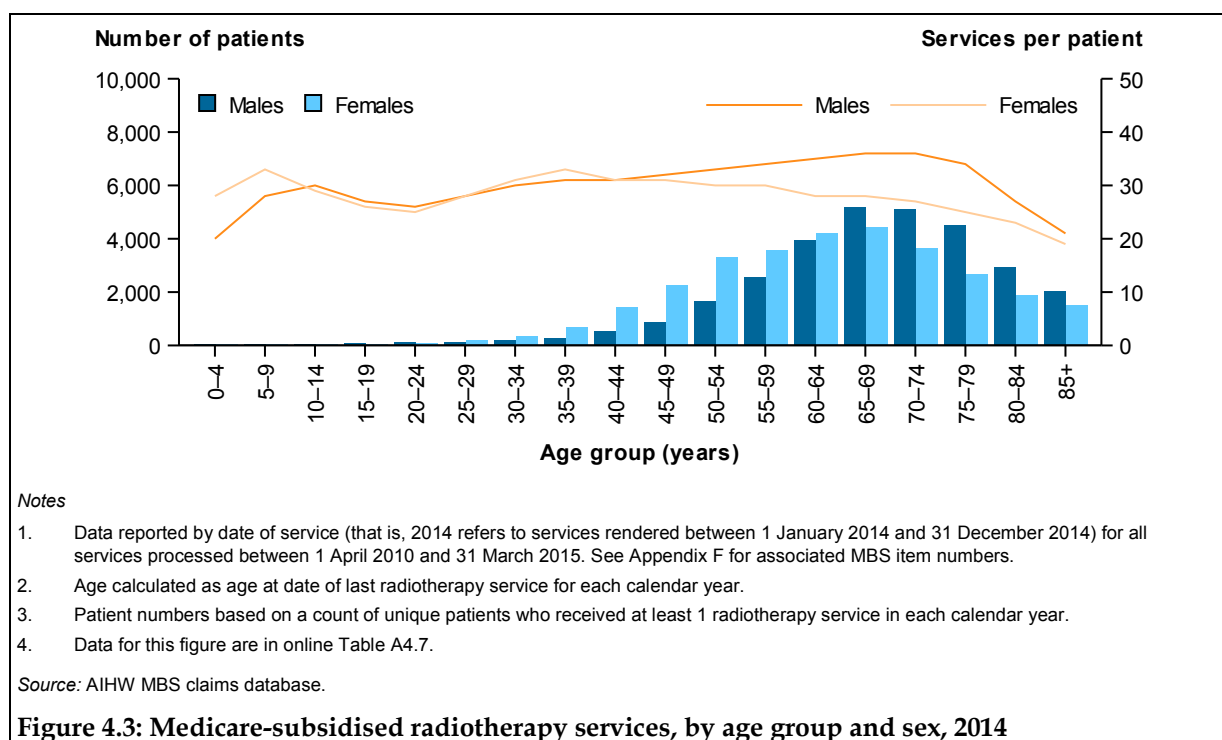
In 2014, Medicare-subsidised radiotherapy was more common in older age groups. The number of people who received a Medicare-subsidised radiotherapy service was relatively low in the younger age groups and started to increase after the age of 30; it peaked for people aged 65–69, before decreasing in the older age groups. The average number of services per patient was stable, at about 31–32 for people aged 30–79 (online Table A4.7).

Males

Medicare-subsidised radiotherapy services were less common for males aged under 50 than for males aged over 50. The number of males who received a radiotherapy service increased more steeply after the age of 50, peaking for males aged 65–69, before decreasing in the older age groups. After the age of 65, the number of males receiving a radiotherapy service was higher than the female number (Figure 4.3). This may be partly attributed to the high prostate cancer incidence rate among males within this age group.

Females

Medicare-subsidised radiotherapy services were less common for females aged under 40 than for females aged over 40. The number of females who received a radiotherapy service increased more steeply after the age of 40, peaking for females aged 65–69, before decreasing in the older age group. Between the ages of 25 and 64, the number of females receiving a radiotherapy service was higher than the male number (Figure 4.3). This may be partly attributed to the high breast cancer incidence rate among females within this age group.



Courses of radiotherapy

The NRWTD provides information on the number of courses of radiotherapy that began in the reporting period, key characteristics of the patients who undertook a course of treatment and information on the waiting times associated with these courses. In the 2014–15 collection, which was undertaken as a pilot collection of data, all 40 public radiotherapy providers participated, and 26 (76%) private sites reported data, representing an overall participation rate of 89% of radiotherapy sites. This source contains information on the number of courses, rather than on the number of services, and therefore is not comparable to the AIHW MBS database.

The NRWTD contains data on the courses of radiotherapy based on the principal diagnosis. The principal diagnosis is the diagnosis established after study to be chiefly responsible for causing a patient's need for the current course of treatment. In the case of radiotherapy treatment, it is most typically a type of cancer.

Data reported for principal diagnosis may not reflect the incidence of certain cancers in the Australian population. The differences in principal diagnosis activity in this report may indicate data quality issues; for example, where some providers may be reporting the primary site of the cancer, rather than the diagnosis code associated with the health condition being treated in the specific course of radiotherapy. For this reason, comparisons should be made with caution. See *Radiotherapy in Australia: report on the second year of a pilot collection 2014–15* (AIHW 2016e) for further details.

In 2014–15, participating service providers reported almost 56,400 courses of radiotherapy to the NRWTD. Of these one-quarter of radiotherapy courses for males were for prostate cancer (26%) and almost one-half of all radiotherapy courses for females were for breast cancer (46%). For both males and females, lung cancer was the second most common reason for a radiotherapy course (Table 4.8).

Table 4.8: Five most common cancers for which a radiotherapy course was provided, by sex, 2014–15

Males			Females		
Cancer site/type (ICD-10 codes)	Number	%	Cancer site/type (ICD-10 codes)	Number	%
Prostate cancer (C61)	7,319	25.5	Breast cancer (C50)	12,716	45.9
Lung cancer (C33–C34)	3,921	13.7	Lung cancer (C33–C34)	2,839	10.2
Head and neck cancer (C00–C14, C30–C32)	2,152	7.5	Colorectal cancer (C18–C20)	953	3.4
Colorectal cancer (C18–C20)	1,628	5.7	Uterine cancer (C54–C55)	654	2.4
Lymphoma (C81–C86)	951	3.3	Lymphoma (C81–C86)	690	2.5
Other cancer	11,761	41.1	Other cancer	8,885	32.0
Non cancer	41	0.1	Non cancer	47	0.2
Not stated	876	3.1	Not stated	940	3.4
Total	28,649	100.0	Total	27,724	100.0

Notes

1. Totals may not equal the sum of individual cells due to rounding.
2. Information is presented based on principal diagnosis. Data reported for principal diagnosis may not reflect the incidence of certain cancers in the Australian population. See *Radiotherapy in Australia: report on the second year of a pilot collection 2014–15* (AIHW 2016e) for further details.

Source: NRWTD.

4.5 Hospitalisations for palliative care for cancer

Admitted hospital care commonly focuses on the treatment and care of disease. Palliative care – sometimes referred to as ‘hospice’, ‘end-of-life care’ and ‘specialist palliative care’ – is an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual (WHO 2002). Research has indicated that cancer is the most frequently recorded principal diagnosis for palliative care-related separations (AIHW 2014c).

This report covers palliative care provided in settings of admitted patient care. While palliative care is provided in settings other than admitted patient care (for example, community-based palliative care services), comprehensive national information on palliative care provided in these settings does not currently exist. Available data suggest that just over half of palliative care episodes in Australia occur in admitted patient care settings (Connolly et al. 2016); this indicates that, while not complete, data presented in this report cover a substantial proportion of palliative care provided in Australia.

This section presents a summary of cancer-related hospitalisations where palliative care was provided within an admitted patient setting. Cancer-related hospitalisations where palliative care was provided are defined as those where:

- the care type is palliative care (care type code of 3.0), or
- the additional diagnosis (a diagnosis that coexists with the principal diagnosis or arises during the episode of care) is palliative care (ICD-10-AM code Z51.5).

In 2014–15, 64,939 hospitalisations involved palliative care in Australia (0.6% of all hospitalisations). Of these, 58% were cancer related. For most of these hospitalisations, the care type was recorded as palliative care (77%). For the remaining, palliative care was recorded as an additional diagnosis and provided as part of the hospitalisation where the intended care type was acute care or other modes of care.

The most common type of cancer recorded for palliative care hospitalisation was secondary site cancer (20%), followed by lung cancer (14%) and colorectal cancer (7%) (Table 4.9).

In 2014–15, 54% of cancer-related hospitalisations involving palliative care ended in death, 12% were transferred to another facility and 30% were discharged to where they usually live, which could be a person's own home or welfare institution.

Table 4.9: Ten most common principal diagnoses for cancer-related hospitalisations where palliative care was provided, 2014–15

Principal diagnosis (ICD-10-AM codes)	Number	%
Secondary site (C77–C79)	7,454	19.7
Lung cancer (C33–C34)	5,284	14.0
Colorectal cancer (C18–C20)	2,661	7.0
Pancreatic cancer (C25)	1,903	5.0
Prostate cancer (C61)	1,449	3.8
Breast cancer (C50)	1,377	3.6
Brain cancer (C71)	1,234	3.3
Liver cancer (C22)	1,081	2.9
Stomach cancer (C16)	832	2.2
Lymphoma (C81–C86)	822	2.2
Total cancer-related hospitalisations where palliative care was provided	37,825	100.0

Note: 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.

Source: AIHW NHMD.

5 Survival and survivorship after a cancer diagnosis

Key findings

In 2009–2013 in Australia:

- 5-year relative survival was 68% for all cancers combined
- for males, 5-year relative survival was highest for those diagnosed with testicular cancer and prostate cancer and lowest for those diagnosed with mesothelioma and pancreatic cancer
- for females, 5-year relative survival was highest for those diagnosed with thyroid cancer and lip cancer and lowest for those diagnosed with mesothelioma and pancreatic cancer.

Between 1984–1988 and 2009–2013, 5-year relative survival for all cancers combined increased from 48% to 68%.

At the end of 2012:

- 410,530 people were alive who had been diagnosed with cancer in the previous 5 years
- for males, 5-year prevalence was highest for prostate cancer, followed by melanoma of the skin and colorectal cancer
- for females, 5-year prevalence was highest for breast cancer, followed by colorectal cancer and melanoma of the skin.

5.1 Survival

Data for this section are sourced from the 2013 ACD and focus on 5-year relative survival (see Chapter 1 and Appendix G for details on this data source). Data from the National Death Index (NDI) on deaths (from any cause) that occurred up to 31 December 2013 were used to determine which people with cancer had died and when this occurred.

Relative survival refers to the probability of being alive for a given amount of time after diagnosis compared with the general population. A 5-year relative survival figure of 100% means that the cancer has no impact on the person's chance of still being alive 5 years after diagnosis, whereas a figure of 50% means that the cancer has halved that chance. For more information, see Box 5.1 and Appendix I.

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 the availability of health-care services, screening, diagnostic and treatment facilities, and follow-up services) (Black et al. 1998; WCRF & AICR 2007).

Box 5.1: Relative survival calculation method

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. See Appendix I for more information about the period method.

Note that the period method is an alternative to the traditional cohort method, which focuses on a group of people diagnosed with cancer in a 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.

All cancers combined

In 2009–2013, 5-year relative survival was 68% for all cancers combined. This means that people diagnosed with cancer had a 68% chance of surviving for at least 5 years compared with their counterparts in the general population. Males and females had similar 5-year survival (68% and 69%) (Table 5.1).

Table 5.1: Five-year relative survival for all cancers combined, 2009–2013

Sex	5-year relative survival (%)
Males	67.5
Females	68.7
Persons	68.0

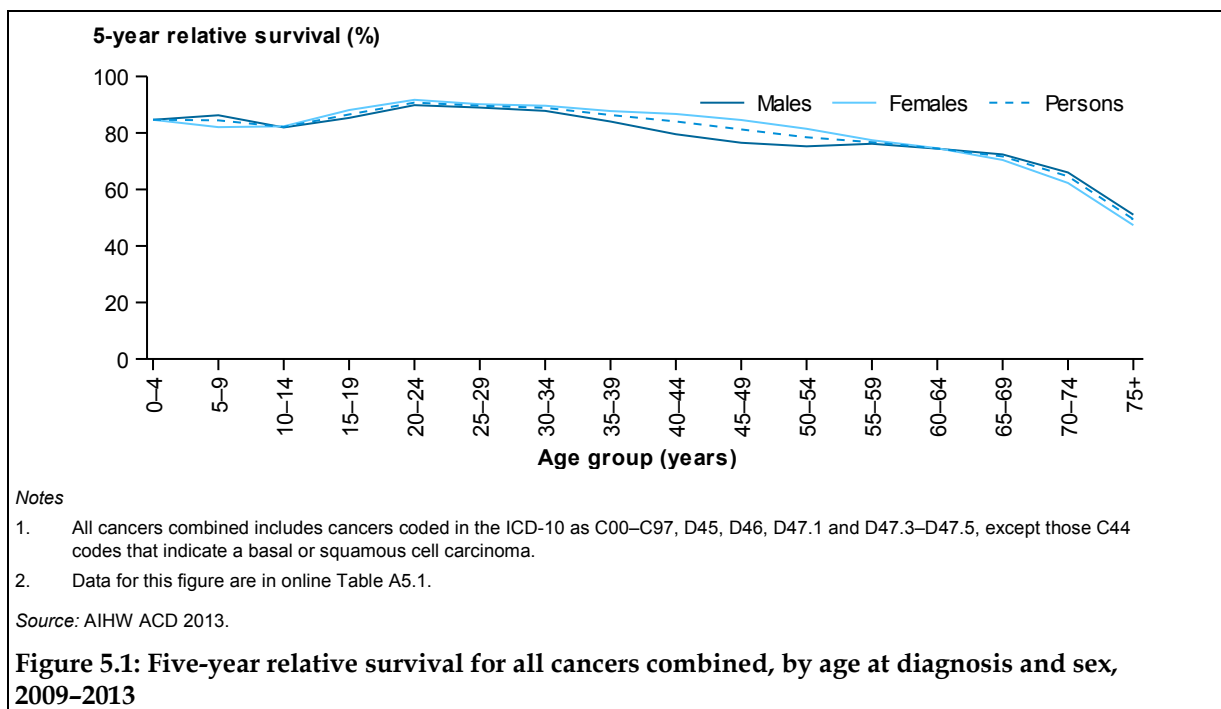
Note: All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma.

Source: AIHW ACD 2013.

Age

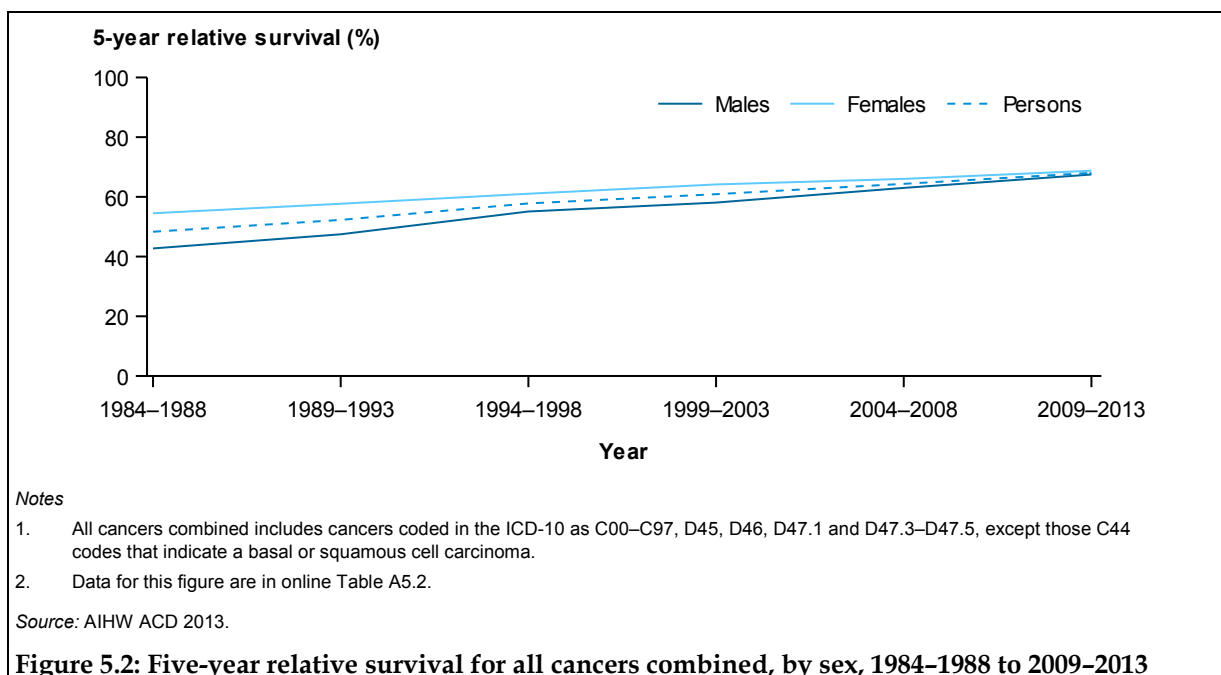
In 2009–2013, for all cancers combined, 5-year relative survival was highest for those aged 20–24 (91%); survival then decreased with age and was lowest for those aged 75 and over (50%) (Figure 5.1). The difference in survival by age may be due to a number of reasons, including the stage at diagnosis of tumours, a greater likelihood of comorbidity 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 aged 10–59 had higher 5-year relative survival than males. The difference was most noticeable for those aged 45–49, where 5-year survival was 85% for females and 77% for males. From the age of 65–69, survival was slightly higher for males (online Table A5.1). 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.



Trend

Five-year relative survival for people diagnosed with cancer increased over time, from 48% in 1984–1988 to 68% in 2009–2013 (Figure 5.2). The increase in 5-year survival over time is evident in both males and females. For all cancers combined, 5-year survival for males increased from 43% in 1984–1988 to 68% in 2009–2013, compared with 55% to 69% for females. These gains may be due to better diagnostic methods, earlier detection and improvements in treatment (Dickman & Adami 2006).



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 conditional survival estimates in this report are conditional relative survival estimates and 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 68%. However, by 1 year after diagnosis, individuals with cancer had an 81% chance of surviving at least 5 more years (Table 5.2). This increased further to 96% by 15 years after diagnosis, at which time survival prospects were almost the same as for the general population.

Table 5.2: Summary of conditional survival for all cancers combined, 2009–2013

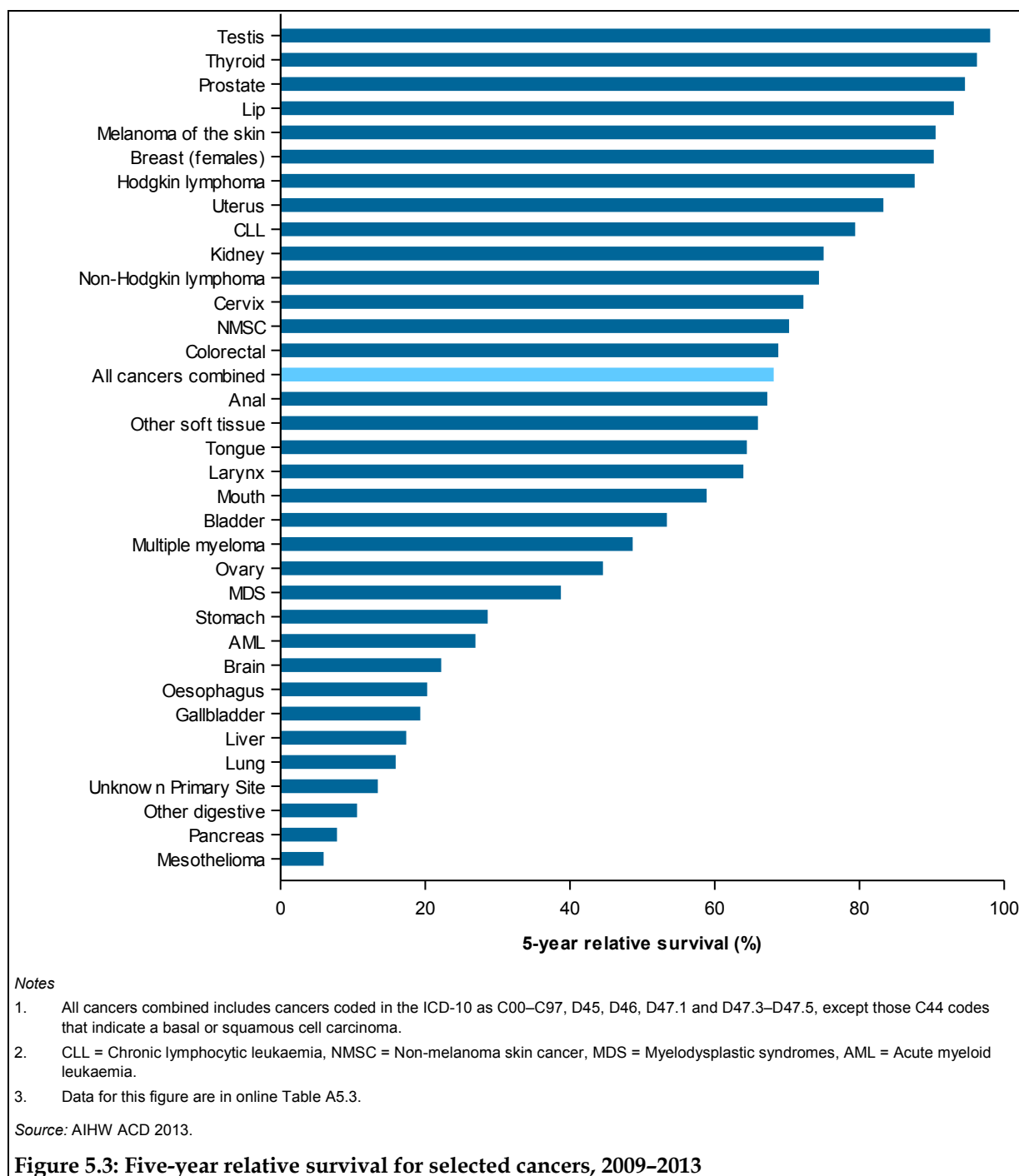
Years already survived	5-year conditional relative survival (%)
At diagnosis	68.0
Already survived 1 year after diagnosis	81.2
Already survived 5 years after diagnosis	91.5
Already survived 10 years after diagnosis	94.1
Already survived 15 years after diagnosis	96.0

Note: All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma.

Source: AIHW ACD 2013.

Cancer site

In 2009–2013, 5-year relative survival was highest for people diagnosed with testicular cancer (98%), thyroid cancer (96%) and prostate cancer (95%) and lowest for those diagnosed with pancreatic cancer (8%) and mesothelioma (6%) (Figure 5.3; online Table A5.3).



For males, 5-year relative survival was highest for those diagnosed with testicular cancer (98%) and prostate cancer (95%) and lowest for mesothelioma (5%) and pancreatic cancer (8%) (online Table A5.3). Of the 10 most commonly diagnosed cancers, 5-year relative survival was highest for prostate cancer (95%) and melanoma of the skin (88%) and lowest for pancreatic cancer (8%) and lung cancer (14%) (Table 5.3).

For females, 5-year relative survival was highest for those diagnosed with thyroid cancer (97%) and lip cancer (94%) and lowest for mesothelioma (8%) and pancreatic cancer (8%) (online Table A5.3). Of the 10 most commonly diagnosed cancers, 5-year relative survival

was highest for thyroid cancer (97%), melanoma of the skin (93%) and breast cancer (90%) and lowest for pancreatic cancer (8%) and lung cancer (19%) (Table 5.3).

In 2009–2013, of the selected cancers, 5-year relative survival was higher for males than for females for cancer of unknown primary site (1.6 times that for females), gallbladder (1.2) and bladder cancer (1.2). Five-year survival was higher for females than for males for mesothelioma (1.5 times that for males), lung cancer (1.4) and anal cancer (1.2) (online Table A5.3).

Table 5.3: Five-year relative survival for the ten most commonly diagnosed cancers, by sex, 2009–2013

Males		Females	
Cancer site (ICD-10 codes)	5-year relative survival (%)	Cancer site (ICD-10 codes)	5-year relative survival (%)
Prostate (C61)	94.5	Breast (C50)	90.2
Colorectal (C18–C20)	68.1	Colorectal (C18–C20)	69.4
Melanoma of the skin (C43)	88.3	Melanoma of the skin (C43)	93.3
Lung (C33–C34)	13.8	Lung (C33–C34)	18.7
Head and neck (C00–C14, C30–C32)	68.4	Uterine (C54–C55)	83.2
Lymphoma (C81–C86)	75.1	Lymphoma (C81–C86)	76.9
Leukaemia (C91–C95)	59.8	Thyroid (C73)	97.2
Bladder (C67)	55.5	Ovary (C56)	44.4
Kidney (C64)	74.5	Pancreas (C25)	7.6
Pancreas (C25)	7.7	Leukaemia (C91–C95)	58.9

Note: Data are sorted in order of most common cancers by sex (see Table 3.2).

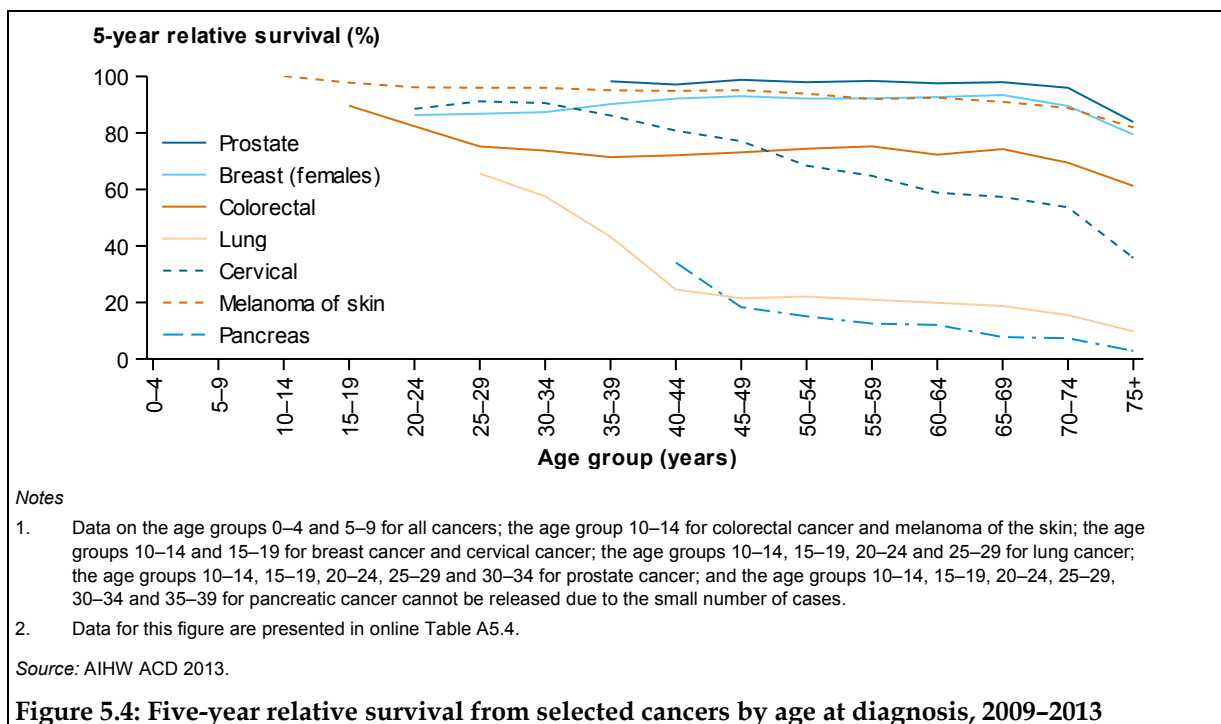
Source: AIHW ACD 2013.

Age

For most individual cancer types, 5-year relative survival decreased with increasing age; however, the pattern of decline varied across cancer types (Figure 5.4; online Table A5.4). The difference in survival by age may be due to a number of reasons, including the stage at diagnosis of tumours, potential comorbidity, and differences in treatments received (Brenner & Arndt 2004; Ellison & Gibbons 2006; NCRI & WHC 2006).

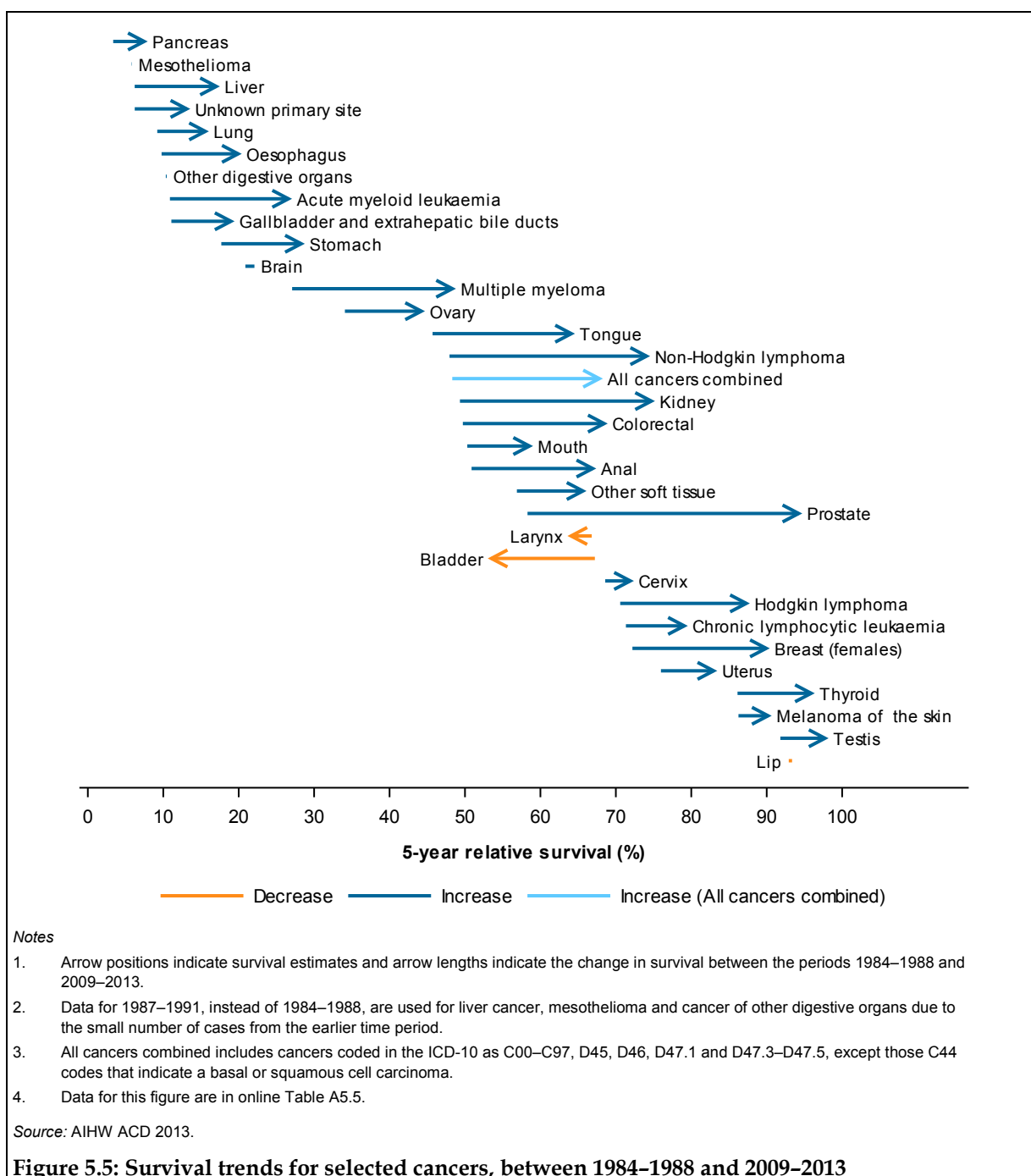
For colorectal cancer, melanoma of the skin and prostate cancer, 5-year relative survival did not vary considerably for those aged between 25 and 69, but it dropped for those aged 70 and over. For breast cancer in females, 5-year relative survival was higher in those aged between 35 and 69 and lower for those aged 70 and over and for those aged between 20 and 34. This may be related to the population-based BreastScreen Australia program, which targets females in the age group of 50–74.

In contrast, 5-year relative survival for lung cancer fell sharply, earlier than for other selected cancers. For those aged 25–29, 5-year survival was 66%; it quickly declined to 25% for those aged 40–44. A more gradual decline continued, to 10% for those aged 75 and over (Figure 5.4). Five-year relative survival for pancreatic cancer had a similar pattern: 5-year relative survival was 34% for those aged 40–44 and decreased to 3% for those aged 75 and over. For cervical cancer, 5-year survival was 91% for those aged 25–29 and decreased to 36% for those aged 75 and over.



Trend

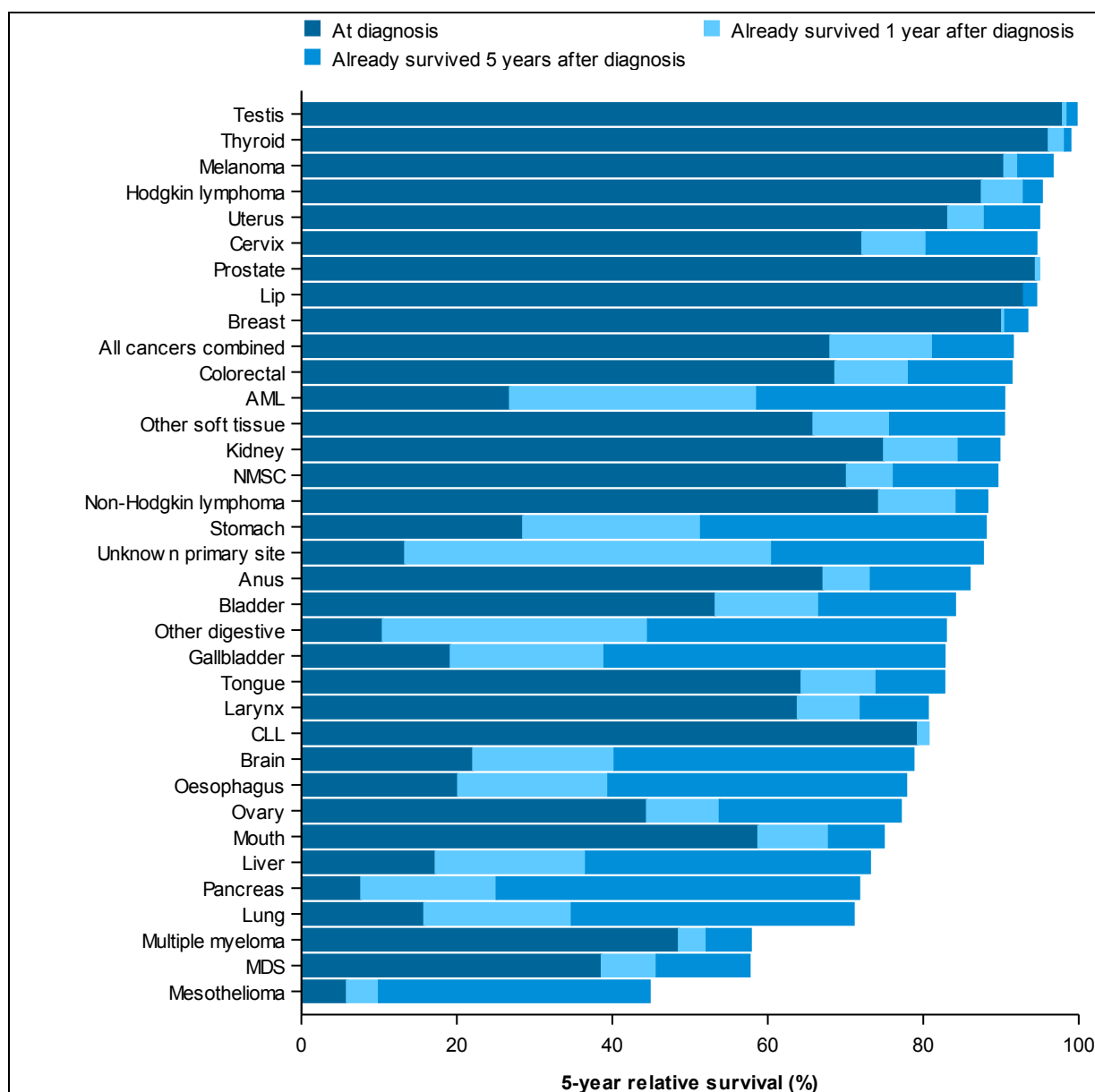
Between 1984–1988 and 2009–2013, survival from most cancers improved, but the change was not uniform over time or across cancer types (Figure 5.5). The cancers that had the largest absolute increase in survival were prostate cancer, non-Hodgkin lymphoma, kidney cancer and multiple myeloma, where 5-year relative survival increased by 21 percentage points or more. Some cancers had a decrease in survival over time, including bladder cancer (67% to 53%) and cancer of the larynx (67% to 64%), while lip cancer (93%) and mesothelioma (6%) had no change between 1984–1988 and 2009–2013.



Conditional survival

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. Of the selected cancers, this included stomach cancer, cancer of the gallbladder and extrahepatic bile ducts, cancer of unknown primary site, acute myeloid leukaemia, and other digestive cancers. 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 at 5 years after diagnosis. Of the selected cancers, this included testicular cancer, thyroid cancer, prostate cancer, lip cancer, melanoma of the skin and breast cancer in females. All of these had high 5-year relative survival 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 includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma.
3. AML = Acute myeloid leukaemia, NMSC = Non-melanoma skin cancer, CLL = Chronic lymphocytic leukaemia, MDS = Myelodysplastic syndromes.
4. Data for this figure are in online Table A5.6.

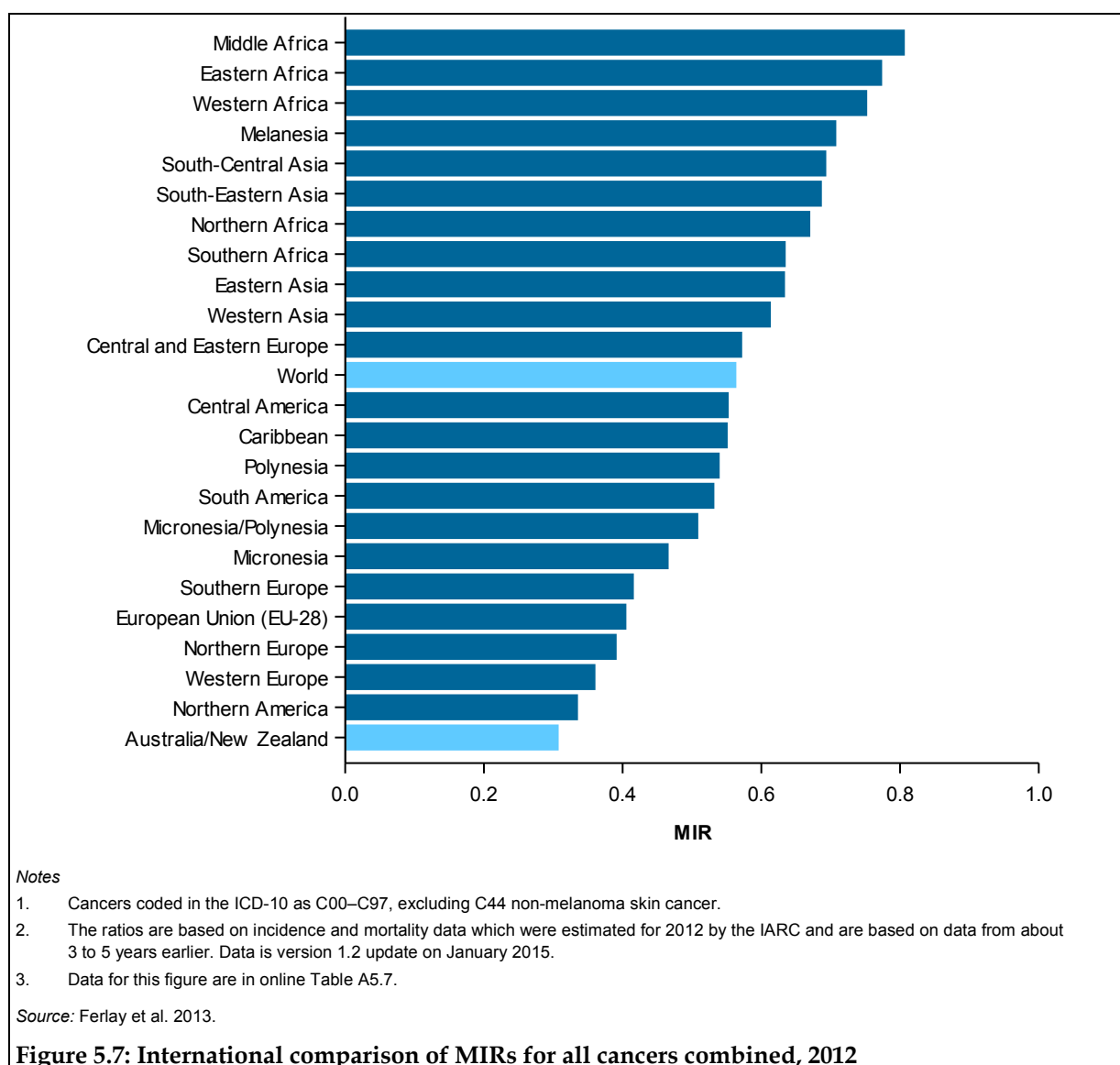
Source: AIHW ACD 2013.

Figure 5.6: Five-year survival by number of years already survived, 2009–2013

International comparisons

Although more rudimentary than relative survival estimates, the mortality-to-incidence ratio (MIR) is used in this report to measure survival in the international context. This ratio describes how many deaths there were in a particular year due to a particular disease, relative to the number of new cases diagnosed that year (using age-standardised data). An MIR is a number between 0 and 1—0 means no-one ever died of the cancer and 1 that everyone died from the cancer. Therefore, low MIR values indicate longer survival, while high MIR values indicate shorter survival.

For this report, data for international comparisons were sourced from the International Agency for Research on Cancer (IARC) 2012 GLOBOCAN database (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 (see Appendix G). In 2012, the MIR for Australia and New Zealand was 0.3, suggesting that cancer survival in Australia 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 cancer survival than the world average (Figure 5.7).



5.2 Survivorship population

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 (National Cancer Institute 2015).

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. Further, improvements in detection technology, improved surgical procedures, changes in pharmacology and developments in treatment have an impact on the survivorship experience for people with cancer.

The survivorship population is measured using prevalence data. Prevalence refers to the number of people alive who have previously been diagnosed with cancer.

Data for this section are sourced from the 2013 ACD and are presented for limited-duration prevalence with an index date of 31 December 2012 (due to availability of actual cancer incidence data) (see Chapter 1 and Appendix G for details on this data source). Data from the NDI on deaths (from any cause) that occurred up to 31 December 2013 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.

All cancers combined

At the end of 2012, 410,530 people were alive who had been diagnosed with cancer (excluding basal cell and squamous cell carcinoma of the skin) in the previous 5 years. This represented 1.8% of the Australian population. Males made up 56% of the 5-year prevalent cases. At the end of 2012, the 10-year prevalence of cancer was 654,124 (2.9% of the Australian population) and the 31-year prevalence was 994,605 (4.3% of the Australian population) (Table 5.4). Note that 31-year prevalence has been used because it is the maximum number of years for which prevalence can be calculated using the available data.

Table 5.4: Limited-duration prevalence of all cancers combined, by sex, as at end of 2012

	Number	Per cent of prevalent cases	Per cent of population
5-year prevalence			
Males	228,161	55.6	2.0
Females	182,369	44.4	1.6
Persons	410,530	100.0	1.8
10-year prevalence			
Males	355,944	54.4	3.1
Females	298,180	45.6	2.6
Persons	654,124	100.0	2.9
31-year prevalence			
Males	499,945	50.3	4.4
Females	494,660	49.7	4.3
Persons	994,605	100.0	4.3

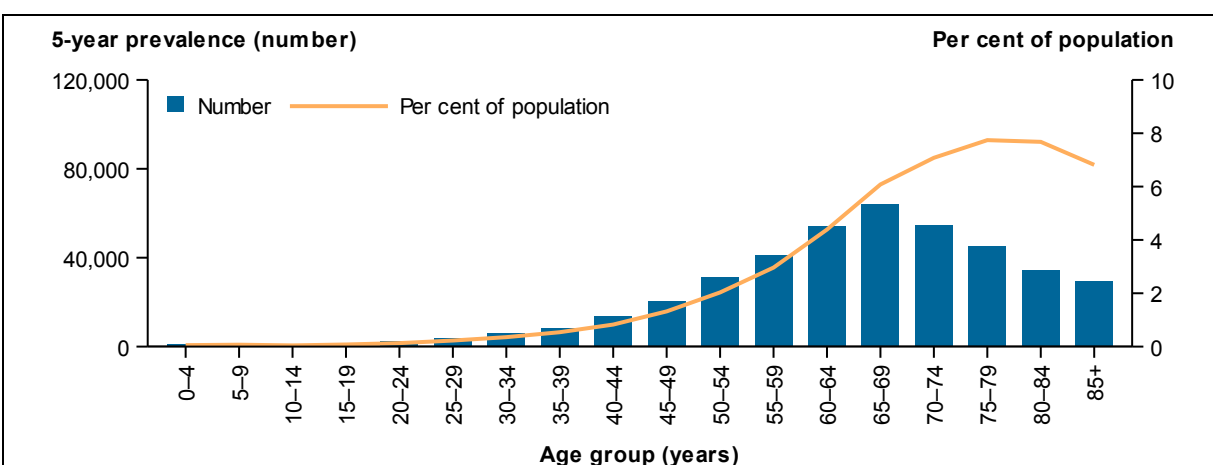
Notes

1. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma.
2. Percentage of population is based on the Australian population as at 31 December 2010.

Source: AIHW ACD 2013.

Age

Five-year prevalence for all cancers combined increased with age. Note that in these prevalence statistics, age refers to the age of a person on the index date of 31 December 2012. At the end of 2012, 7% of all Australians aged 75 and over had a diagnosis of cancer within the previous 5 years. Five-year prevalence rate was highest for those aged 75–79 and 80–84 and lowest for those under 14 (Figure 5.8).



Notes

1. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma.
2. Data for this figure are in online Table A5.8.

Source: AIHW ACD 2013.

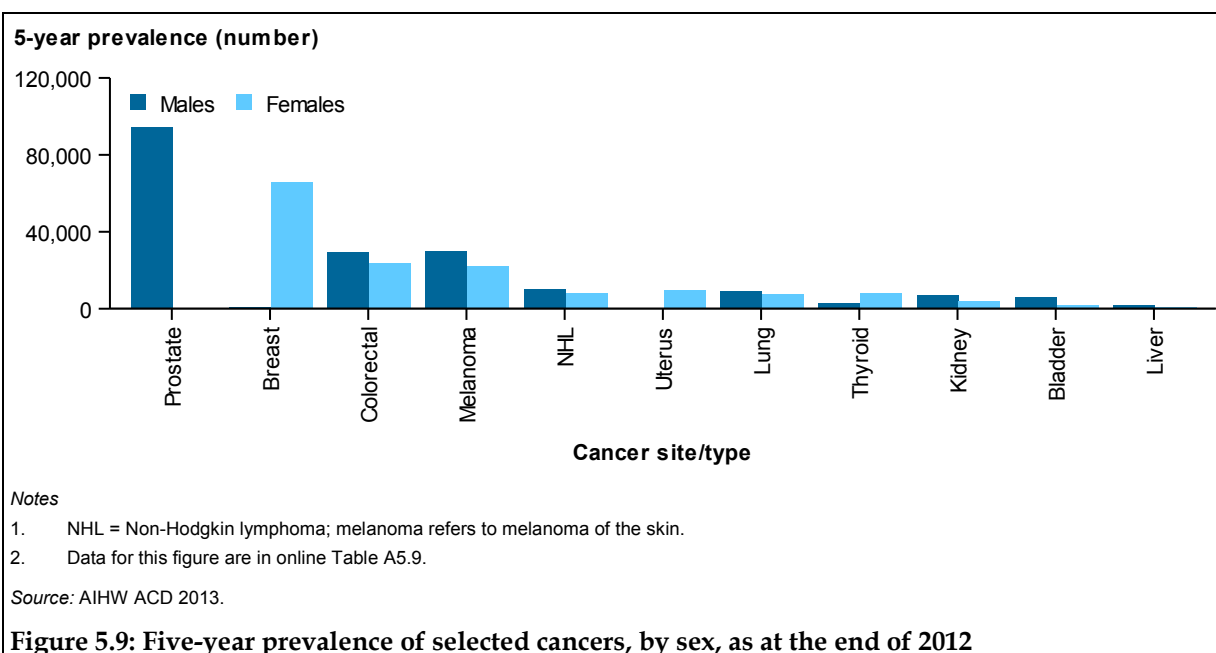
Figure 5.8: Five-year prevalence of all cancers combined, by age group, as at end of 2012

Cancer sites

Among males, prostate cancer had the highest 5-year prevalence (94,114), followed by melanoma of the skin (29,567) and colorectal cancer (29,049). Prostate cancer accounted for 41% of the total 5-year prevalence in males, while melanoma of the skin and colorectal cancer each contributed 13%. Of the selected cancer sites, the lowest 5-year prevalence was observed for liver cancer and thyroid cancer (Figure 5.9).

Among females, breast cancer had the highest 5-year prevalence (65,489), followed by colorectal cancer (23,581) and melanoma of the skin (22,130). Breast cancer accounted for 36% of the total 5-year prevalence in females, while colorectal cancer contributed 13% and melanoma of the skin contributed 12%. Of the selected cancer sites, the lowest 5-year prevalence was observed for liver cancer and bladder cancer (Figure 5.9).

For the majority of cancer sites, 5-year prevalence was higher in males than in females. Of the selected cancers, the trend was most pronounced for bladder cancer (3.6 times as high), liver cancer (2.8) and kidney cancer (1.8). In contrast, the 5-year prevalence for thyroid cancer was 3 times as high in females as in males (Figure 5.9).



6 Number of deaths

Key findings

In 2017, in Australia, it is estimated that:

- 47,753 people will die from cancer
- the age-standardised cancer mortality rate will be 161 per 100,000 persons, a decrease of 23% from 1982 (209 per 100,000)
- males will contribute over half (57%) of all cancer-related deaths
- 88% of cancer deaths in males and 85% of cancer deaths in females will occur among those aged 60 and over
- the risk of dying from cancer before the age of 85 will be 1 in 4 for males and 1 in 6 for females
- lung cancer will be the leading cause of cancer death among males and females, followed by prostate cancer, colorectal cancer and pancreatic cancer for males and breast cancer, colorectal cancer and cancer of unknown primary site for females.

Data for this section are sourced from the NMD and focus on the estimated deaths from cancer for 2017, based on mortality trends from 1982 to 2014 (see Chapter 1 and Appendix G for details on this data source). In this chapter, the number of cancer deaths relates to deaths where the underlying cause was a primary cancer, and includes basal cell and squamous cell carcinoma of the skin. 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 death certificate, which is usually completed by a medical practitioner.

6.1 All cancers combined

In 2014, cancer was the second most common cause of death in Australia, accounting for approximately 3 of every 10 deaths (29%). In 2017, it is estimated that 47,753 people will die from cancer in Australia, an average of 131 deaths every day. More males (57%) than females (43%) are expected to die from cancer, with cancer accounting for 34% of all male deaths and 28% of all female deaths.

The age-standardised mortality rate for all cancers combined is estimated to be 161 per 100,000 in 2017. The mortality rate for males (200 per 100,000) is estimated to be considerably higher than for females (129 per 100,000) (Table 6.1).

In 2017, it is estimated that the risk of dying from cancer before the age of 75 will be 1 in 10 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 6.1: Estimated mortality for all cancers combined, by sex, 2017

	Males	Females	Persons
Number of deaths	27,076	20,677	47,753
ASR	200.1	128.9	160.5
Per cent of all deaths (%)	33.5	27.6	30.6
Per cent of all cancer deaths (%)	56.7	43.3	100.0
Risk to age 75	1 in 10	1 in 13	1 in 11
Risk to age 85	1 in 4	1 in 6	1 in 5

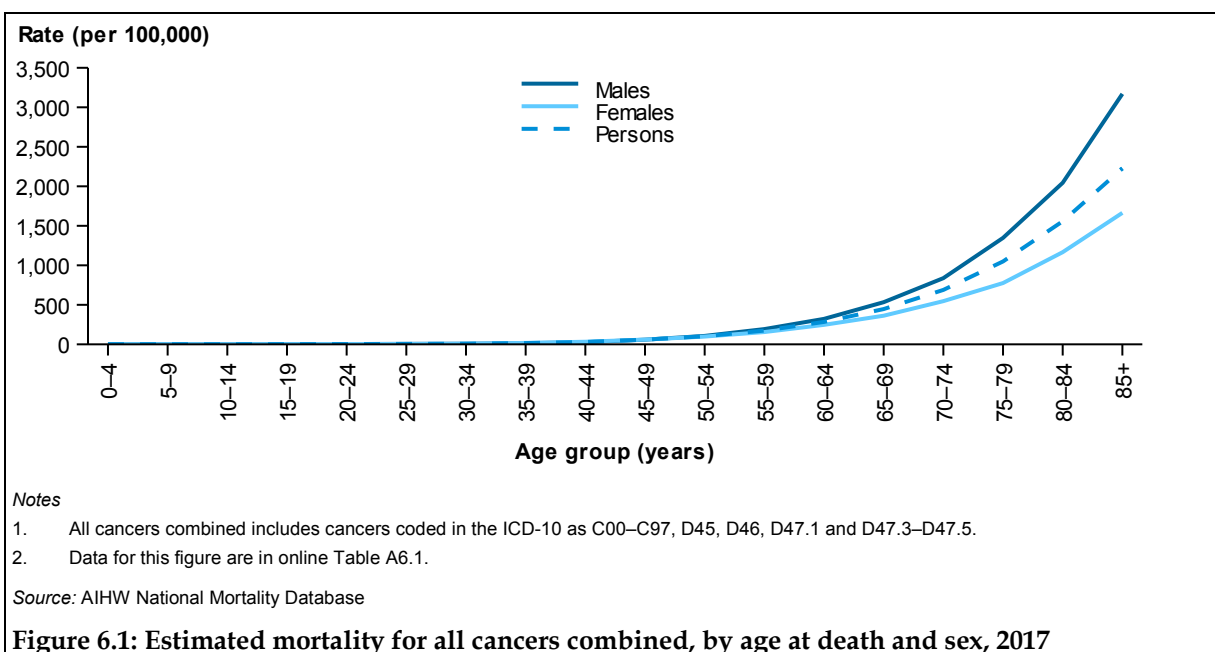
Notes

1. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5.
2. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
3. The per cent of all deaths is based on the number of cancer deaths for each sex divided by the total number of deaths for each sex. Per cents do not sum across the row.
4. The per cent of all cancer deaths is the number of cancer deaths for each sex divided by the total number of cancer deaths. Per cents sum across the row.

Source: AIHW National Mortality Database.

Age

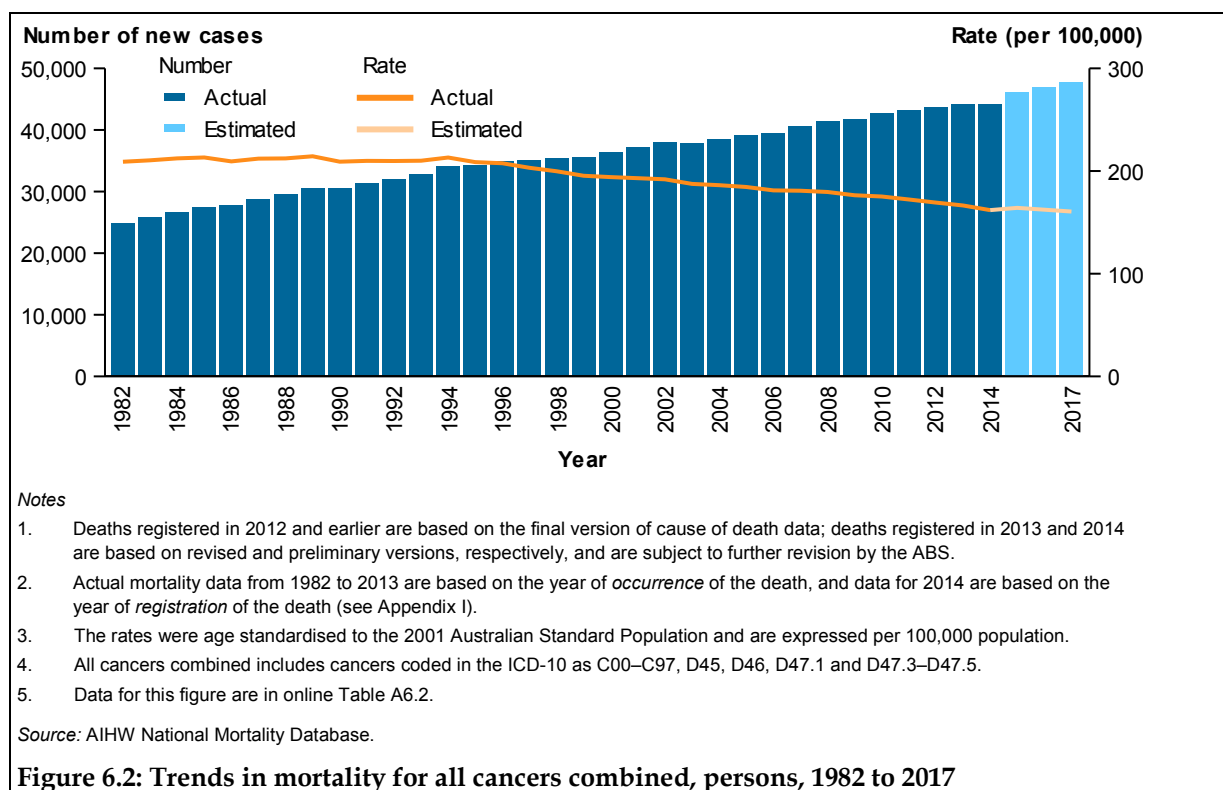
The age-specific mortality rate of all cancers combined increased with age (Figure 6.1). In 2017, it is estimated that 88% of all cancer deaths in males and 85% of all cancer deaths in females will occur in people aged 60 and over. For those aged under 50, the estimated age-specific mortality rate is similar for males and females. After 55, the mortality rate increased more steeply for males. Mortality from prostate cancer would be contributing to the high cancer mortality rate in older males.



Trend

The number of deaths in 2017 from all cancers combined is estimated to be 1.9 times greater than in 1982. The number of deaths estimated for 2017 will be the largest number reported in any year to date. In contrast, it is estimated that the age-standardised mortality rate from all

cancers combined will decrease by 23%, from 209 per 100,000 in 1982 to 161 per 100,000 in 2017 (Figure 6.2). A decrease in the mortality rate may be due to various factors, such as early detection and improvements in treatment.

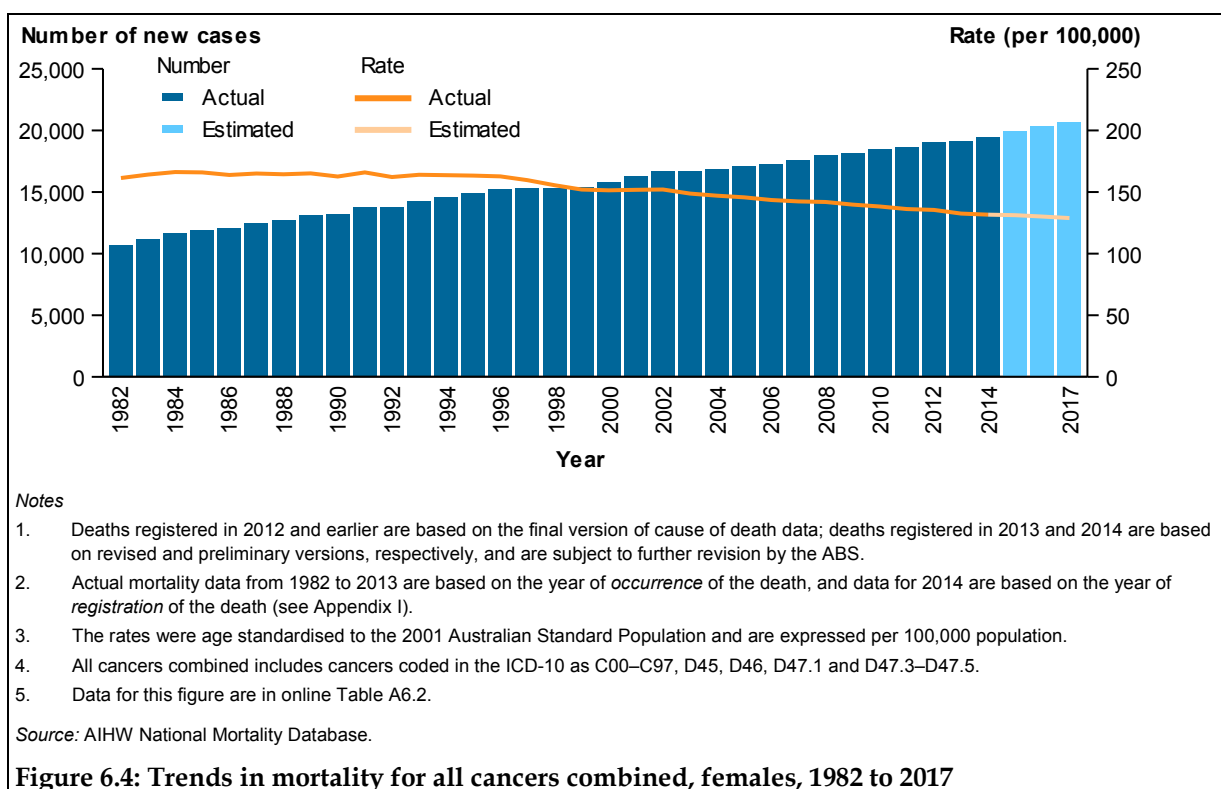
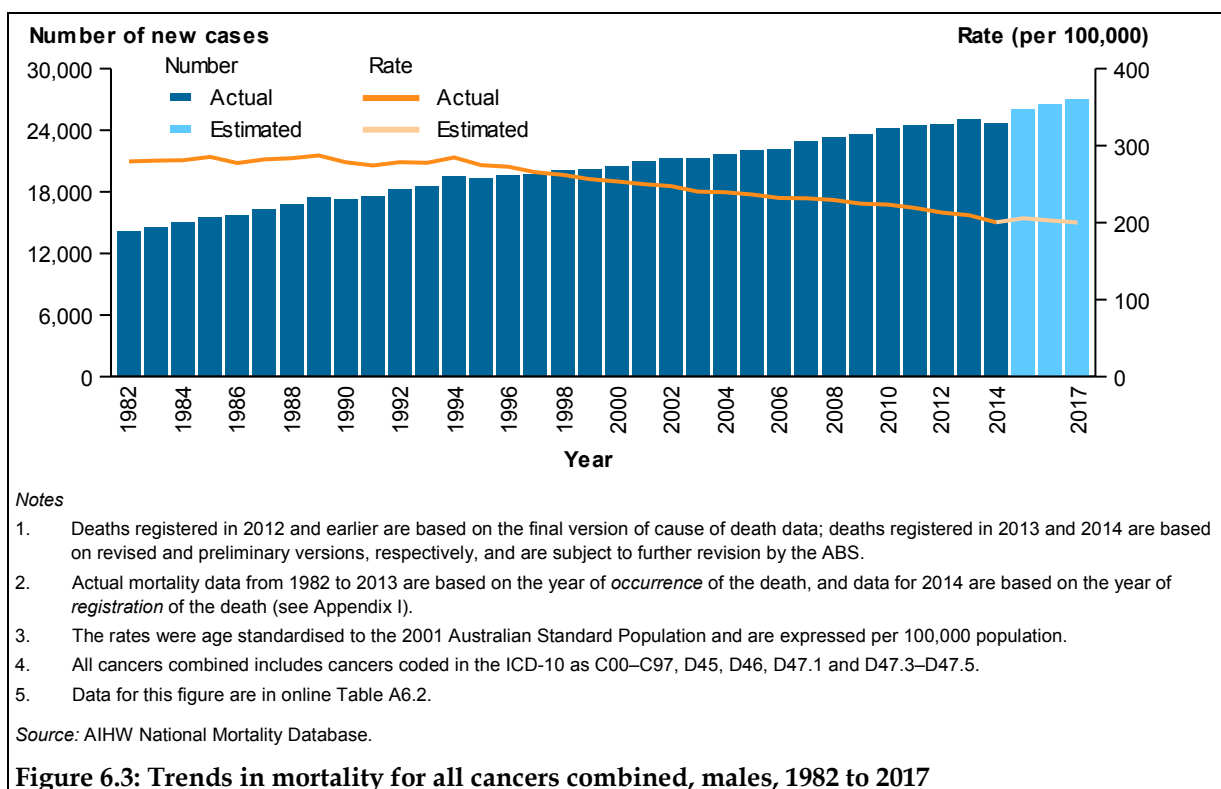


Males

For males, the mortality rate reached a peak in 1994 and is estimated to decrease by 30% from 285 per 100,000 in 1994 to 200 per 100,000 in 2017 (Figure 6.3). The trend can be largely attributed to declines in mortality rates for lung cancer, prostate cancer and colorectal cancer.

Females

The cancer mortality rate was consistently lower for females than males. The mortality rate remained fairly steady up until 1993, before decreasing by 21% from 164 per 100,000 in 1993 to 129 per 100,000 in 2017 (Figure 6.4). This decrease can be largely attributed to the decline in the mortality rates of breast cancer and colorectal cancer.



6.2 Most common causes of death from cancer

In 2017, lung cancer is estimated to be the leading cause of death from cancer in Australia (9,021 deaths), followed by colorectal cancer (4,114), prostate cancer (3,452), breast cancer in females (3,087) and pancreatic cancer (2,915). These five cancers are expected to account for just under half (47%) of the total mortality from cancer in 2017, with lung cancer alone expected to account for 1 in 5 (19%) cancer deaths.

Note that the number of deaths from colorectal cancer are likely to be underestimates because some deaths from colorectal cancer may be misattributed to cancer of other digestive organs (C26). For further information, refer to “Complexities in the measurement of bowel cancer in Australia” in Causes of Death, Australia (ABS 2016).

Males

Lung cancer is estimated to be the leading cause of cancer death in males (5,179 deaths), with the estimated risk of death from lung cancer before the age of 85 being 1 in 18. This is followed by prostate cancer (3,452 deaths; 1 in 30 risk of death), colorectal cancer (2,136; 1 in 47), pancreatic cancer (1,515; 1 in 64) and cancer of unknown primary site (1,369; 1 in 75) (Table 6.2). These five cancers are expected to account for around 50% of all estimated cancer deaths in males in 2017.

Females

Lung cancer is estimated to be the leading cause of cancer death in females (3,842 deaths), with the estimated risk of death from lung cancer before the age of 85 being 1 in 29. This is followed by breast cancer (3,087 deaths; 1 in 41 risk of death), colorectal cancer (1,978; 1 in 63), cancer of unknown primary site (1,461; 1 in 84) and pancreatic cancer (1,400; 1 in 80) (Table 6.2). These 5 cancers are expected to account for around 57% of all estimated cancer deaths in females in 2017.

Table 6.2: Estimated 10 most common causes of death for cancer, by sex, 2017

Males				Females			
Cancer site/type (ICD-10 codes)	Deaths	ASR	Risk to age 85	Cancer site/type (ICD-10 codes)	Deaths	ASR	Risk to age 85
Lung (C33–C34)	5,179	38.0	1 in 18	Lung (C33–C34)	3,842	24.4	1 in 29
Prostate (C61)	3,452	25.8	1 in 30	Breast (C50)	3,087	19.9	1 in 41
Colorectal (C18–C20)	2,136	15.8	1 in 47	Colorectal (C18–C20)	1,978	12.2	1 in 63
Pancreas (C25)	1,515	11.1	1 in 64	Unknown primary (C77–C80, C97)	1,461	8.7	1 in 84
Unknown primary (C77–C80, C97)	1,369	10.2	1 in 75	Pancreas (C25)	1,400	8.7	1 in 80
Liver (C22)	1,332	9.8	1 in 74	Ovary (C56)	1,047	6.6	1 in 112
Melanoma of the skin (C43)	1,280	9.5	1 in 77	Leukaemia (C91–C95)	729	4.5	1 in 164
Leukaemia (C91–C95)	1,111	8.2	1 in 86	Other digestive (C26)	728	4.3	1 in 178
Oesophagus (C15)	1,021	7.4	1 in 96	Liver (C22)	647	4.1	1 in 172
Lymphoma (C81–C86)	863	6.4	1 in 114	Lymphoma (C81–C86)	618	3.7	1 in 196
All cancers combined	27,076	200.1	1 in 4	All cancers combined	20,677	128.9	1 in 6

Notes

1. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
2. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5.

Source: AIHW National Mortality Database.

Age

Aged 0–24

In 2017, it is estimated that there will be 173 cancer-related deaths in people aged 0–24. People aged 0–24 tend to die from different cancers than older people. For this age group, brain cancer (50 deaths) is estimated to be the leading cause of death from cancer, followed by leukaemia (30) and bone cancer (20).

For males, brain cancer (27 deaths) is estimated to be the leading cause of death from cancer, followed by leukaemia (21) and bone cancer (13). Females follow a similar pattern for this age group, with brain cancer estimated as the leading cause of death from cancer (23 deaths), followed by leukaemia (9) and bone cancer (7) (Figure 6.6).

Aged 25–49

In 2017, it is estimated that there will be 1,990 cancer-related deaths in people aged 25–49. For this age group, breast cancer in females (294 deaths) is estimated to be the leading cause of death from cancer, followed by lung cancer (258) and colorectal cancer (213).

For males, lung cancer (127 deaths) is estimated to be the leading cause of death from cancer, followed by brain cancer (122) and colorectal cancer (104). For females, breast cancer (294 deaths) is estimated to be the leading cause of death from cancer, followed by lung cancer (131) and colorectal cancer (109) (Figure 6.6). For this age group, females represent a greater proportion of total cancer-related deaths than males. This may be due to the high number of deaths related to breast cancer for this age group.

Aged 50–64

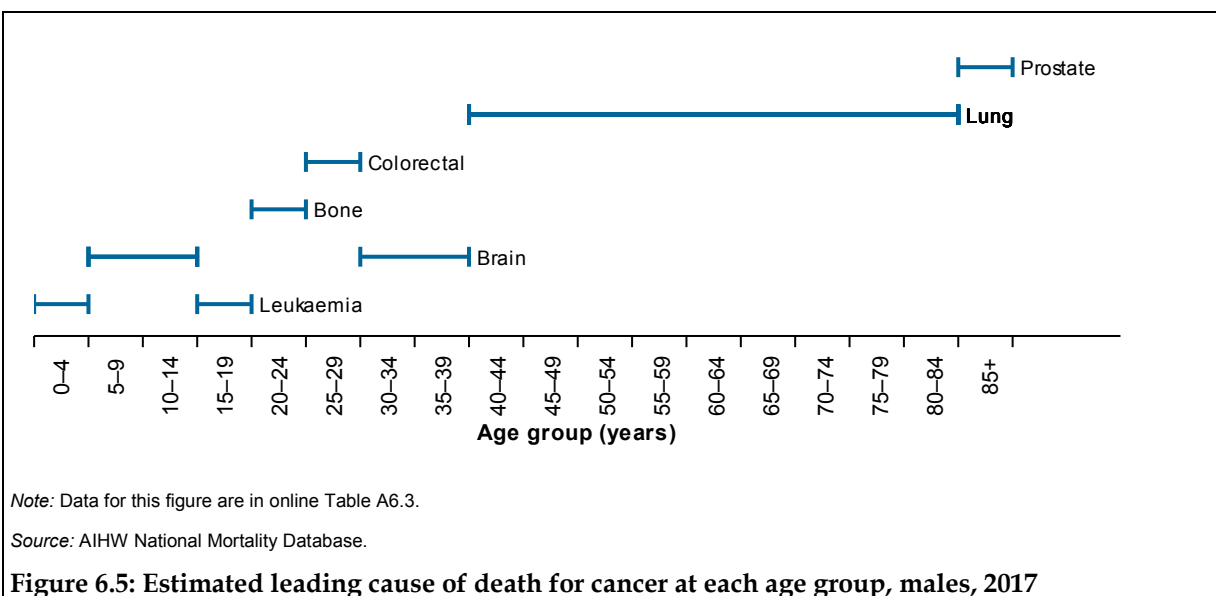
In 2017, it is estimated that there will be 8,046 cancer-related deaths in people aged 50–64. For this age group, lung cancer (1,689 deaths) is estimated to be the most common cause of death from cancer, followed by breast cancer in females (777) and colorectal cancer (716).

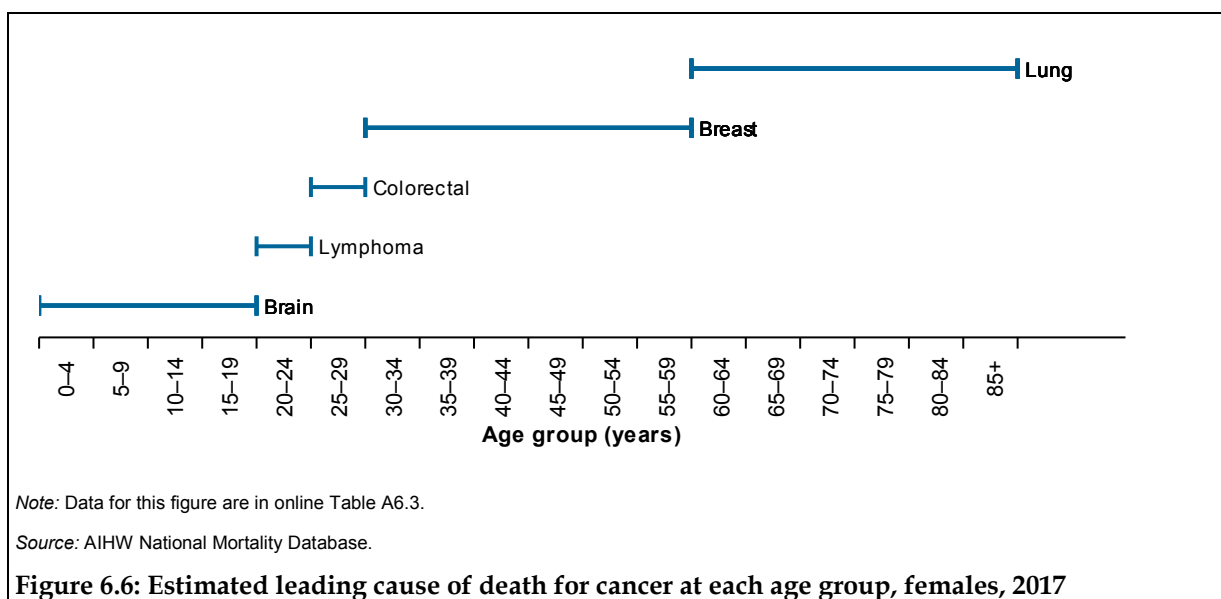
For males, lung cancer (897 deaths) is estimated to be the leading cause of death from cancer, followed by liver cancer (403) and colorectal cancer (363). For females, lung cancer (792 deaths) is estimated to be the leading cause of death from cancer, followed by breast cancer (777) and colorectal cancer (353) (Figure 6.6).

Aged 65 and over

In 2017, it is estimated that there will be 37,543 cancer-related deaths in people aged 65 and older. For this age group, lung cancer (7,072 deaths) is estimated to be the leading cause of death from cancer, followed by prostate cancer (3,256) and colorectal cancer (3,180).

For males, lung cancer (4,154 deaths) is estimated to be the leading cause of death from cancer, followed by prostate cancer (3,256) and colorectal cancer (1,667). For females, lung cancer (2,918 deaths) is estimated to be the leading cause of death from cancer, followed by breast cancer (2,015) and colorectal cancer (1,513) (Figure 6.6).

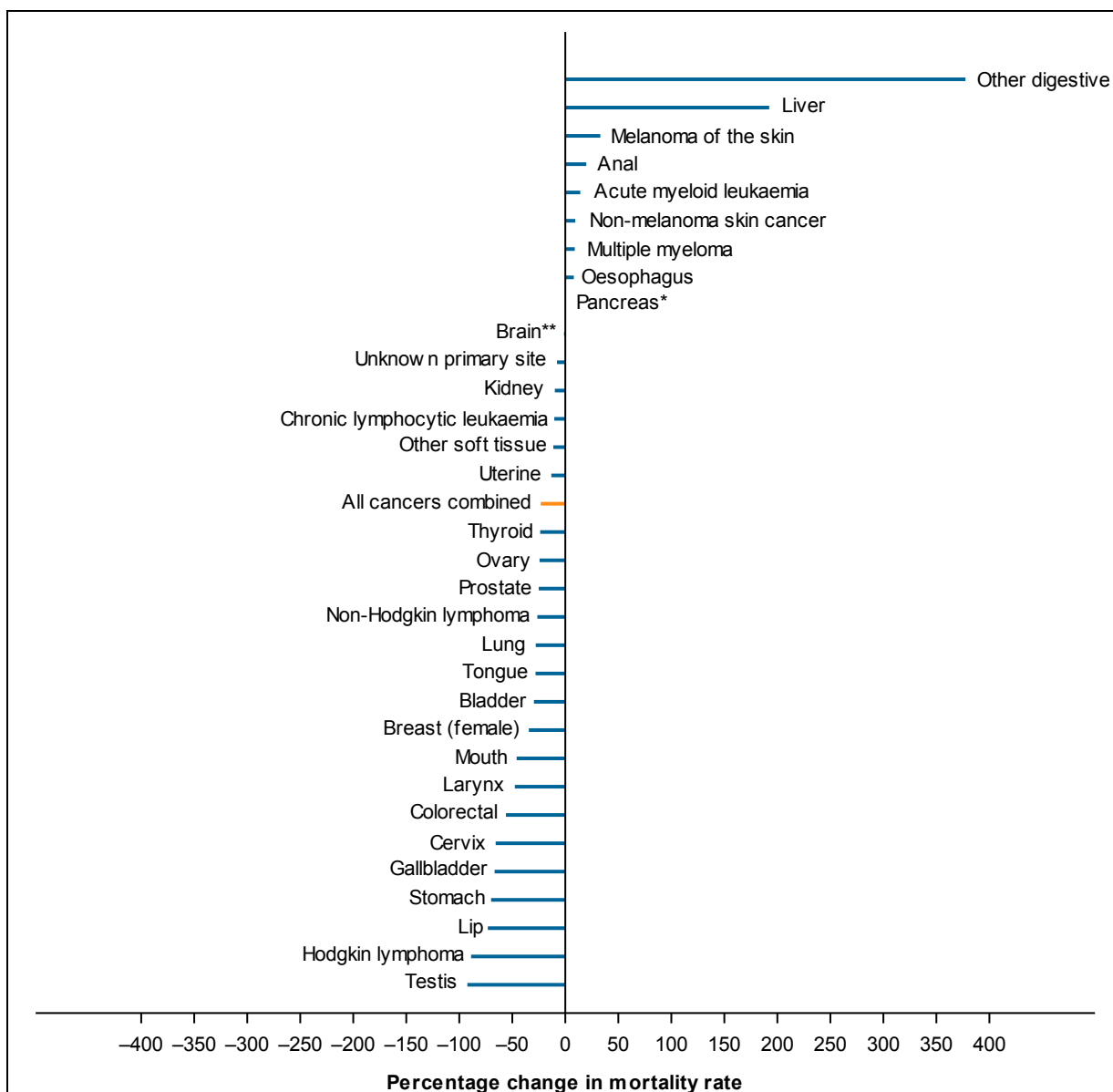




Trend

Between 1982 and 2017, stomach cancer had a substantial decrease in the age-standardised mortality rate of approximately 70% (from 12 to 3.7 per 100,000 persons). There were estimated decreases in the age-standardised mortality rates for some cancers, including cervical cancer (5.2 to 1.8 per 100,000 females), colorectal cancer (32 to 14 per 100,000), breast cancer (30 to 20 per 100,000 females), bladder cancer (5.4 to 3.8 per 100,000) and lung cancer (42 to 31 per 100,000) (Figure 6.7).

Between 1982 and 2017, the cancers that show the greatest estimated percentage increase in mortality (an increase of at least 30%) are cancer of other digestive organs (from 1.1 to 5.1 deaths per 100,000 persons), liver cancer (2.3 to 6.8 per 100,000) and melanoma of the skin (4.7 to 6.3 per 100,000). However, note that the apparent increase in mortality from cancer of other digestive organs may have been affected by some colorectal deaths being misattributed as deaths from cancer of other digestive organs. For further information, refer to “Complexities in the measurement of bowel cancer in Australia” in Causes of Death, Australia (ABS 2016).



* The mortality rate of pancreatic cancer increased by 0.6%.

** The mortality rate of brain cancer decreased by 1.2%.

Notes

1. The bars indicate the percentage change in mortality rates between 1982 and 2017. The percentage change between 1982 and 2017 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.
2. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
3. Data for this figure are in online Table A6.5.

Source: AIHW National Mortality Database.

Figure 6.7: Estimated percentage change in age-standardised mortality rates for selected cancers between 1982 and 2017

7 Burden of disease

Key findings

In 2011:

- Australians lost 833,250 DALY due to premature death from cancer or living with cancer
- 94% of the burden was due to people dying prematurely, while only 6% of the burden was due to living with cancer
- lung cancer was associated with the highest proportion of the cancer burden, followed by colorectal cancer, breast cancer, prostate cancer and pancreatic cancer.

Burden of disease analysis measures the combined impact of fatal and non-fatal burden. More than merely counting deaths or disease prevalence, it takes into account age at death and severity of disease. Burden of disease analysis quantifies the gap between a population's actual health and an ideal level of health in a given year – that is, every individual living in full health to a theoretical maximum life span – for all diseases at the same time.

This chapter presents data on the burden of cancer, based on the Australian Burden of Disease Study (ABDS) 2011. The ABDS 2011 provides Australia-specific burden of disease estimates best matched to the Australian context for the total 2011 population. In the ABDS 2011, the cancer and other neoplasms disease group also includes the impact of benign, in situ and uncertain neoplasms. See *Australian Burden of Disease Study: impact and causes of illness and death in Australia 2011* (AIHW 2016b) for more information.

Data are presented for the fatal burden, non-fatal burden and the overall burden. Fatal burden, which is expressed as years of life lost (YLL), measures the years lost between the age at which people die and the number of years they could have potentially gone on to live, based on the current best life expectancy across the world. Total YLL are influenced by both the number of deaths, and the ages at which the deaths occur.

Non-fatal burden, which is expressed as years lived with disability (YLD), measures the years of healthy life lost due to living with a disease in a given year. Total YLD are influenced by the number of people with each disease, the duration of its effects and how severe those effects are.

The overall burden, which is expressed as disability-adjusted life years (DALY), is the sum of YLL and YLD. One DALY is one year of 'healthy life' lost due to premature death or living with the effects of an illness or injury. The more DALY associated with a disease, the greater the burden.

7.1 All cancers combined

In 2011, Australians lost 4.5 million DALY due to premature death or living with disease or injury. Cancer (19% of total DALY) was the leading disease group, followed by cardiovascular disease (15%) and mental and substance use disorders (12%). Australians lost 833,250 DALY due to premature death from cancer or living with cancer. Despite the high

survival and prevalence rates of cancer in Australia, this burden was almost entirely due to dying prematurely (94%), with only 6% of this burden due to living with cancer (Table 7.1).

Table 7.1: Burden of disease from all cancers combined, by sex, 2011

	Males		Females		Person	
	Number	%	Number	%	Number	%
Fatal burden (YLL)	442,228	94.1	340,121	93.7	782,349	93.9
Non-fatal burden (YLD)	27,882	5.9	23,019	6.3	50,901	6.1
Total burden (DALY)	470,110	100.0	363,140	100.0	833,250	100.0

Note: The ICD codes shown here describe the ABDS 2011 diseases generally. All cancers are coded using the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5; breast in situ are coded in the ICD-10 as D05; and other benign, in situ and uncertain neoplasms are coded in the ICD-10 D00–D04, D06–D31, D34–D48.

Source: AIHW Burden of Disease Database.

7.2 Cancer type

In 2011, lung cancer (19%) was associated with the largest proportion of the cancer burden, followed by colorectal cancer (11%), breast cancer (8.5%), prostate cancer (5.9%) and pancreatic cancer (5.3%). Together, these five cancers accounted for almost half the cancer burden (Table 7.2). Despite improved survival for all these cancers since 1982, the burden from these five cancers was predominantly due to dying early (Figure 7.1).

Table 7.2: Top 10 causes of fatal and non-fatal cancer burden, 2011

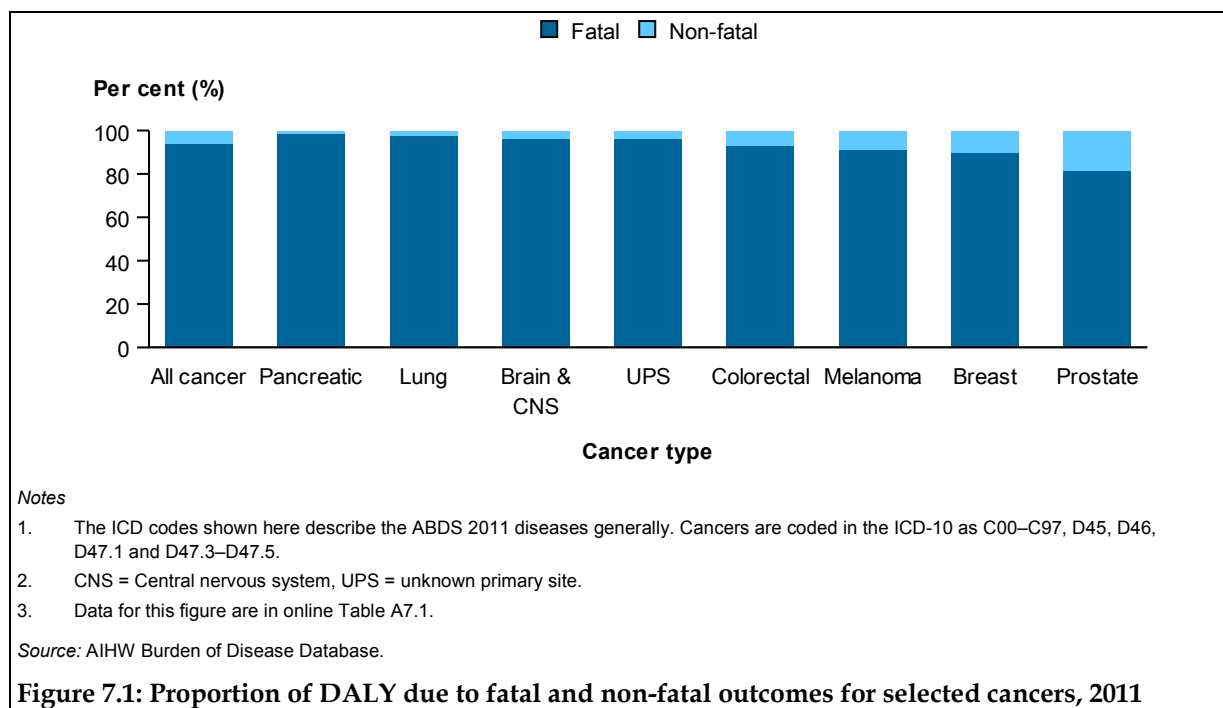
Fatal burden		Non-fatal burden		Total burden	
Type	%	Type	%	Type	%
Lung (C33–C34)	19.3	Prostate (C61)	17.8	Lung (C33–C34)	18.6
Colorectal (C18–C20)	11.0	Breast (C50)	14.4	Colorectal (C18–C20)	11.1
Breast (C50)	8.1	Colorectal (C18–C20)	13.0	Breast (C50)	8.5
Pancreas (C25)	5.6	Lung cancer (C33–C34)	7.2	Prostate (C61)	5.9
Prostate (C61)	5.1	Melanoma of the skin (C43)	5.9	Pancreas (C25)	5.3
Brain and central nervous system (C70–C72)	4.4	Other benign, in situ and uncertain neoplasms (see footnote 2)	4.2	Brain and central nervous system (C70–C72)	4.3
Unknown primary (see footnote 1)	4.4	Non-Hodgkin lymphoma (C82–C86)	3.0	Unknown primary (see footnote 1)	4.3
Melanoma of the skin (C43)	4.0	Benign and uncertain brain tumours (C70–C72)	2.8	Melanoma of the skin (C43)	4.2
Leukaemia (C91–C95)	3.7	Leukaemia (C91–C95)	2.8	Leukaemia (C91–C95)	3.7
Liver (C22)	3.7	Other malignant neoplasms (see footnote 2)	2.8	Other malignant neoplasms (see footnote 2)	3.6

Notes

1. The ICD codes shown here describe the ABDS 2011 diseases generally. ICD codes were not necessarily the basis of the morbidity (non-fatal) estimates, as this depended on the data source used. Unknown primary is coded differently for the analysis using the AIHW National Mortality Database, and is coded as C26, C39, C76–C79, C80, C97.
2. Other benign, in situ and uncertain neoplasms are coded as D00–D04, D06–D31, D34–D48. Other malignant neoplasms are coded as C17, C21, C26–C31, C37–C41, C46–C49, C51–C52, C57–C60, C63, C65–C66, C68–C69, C74–C75.

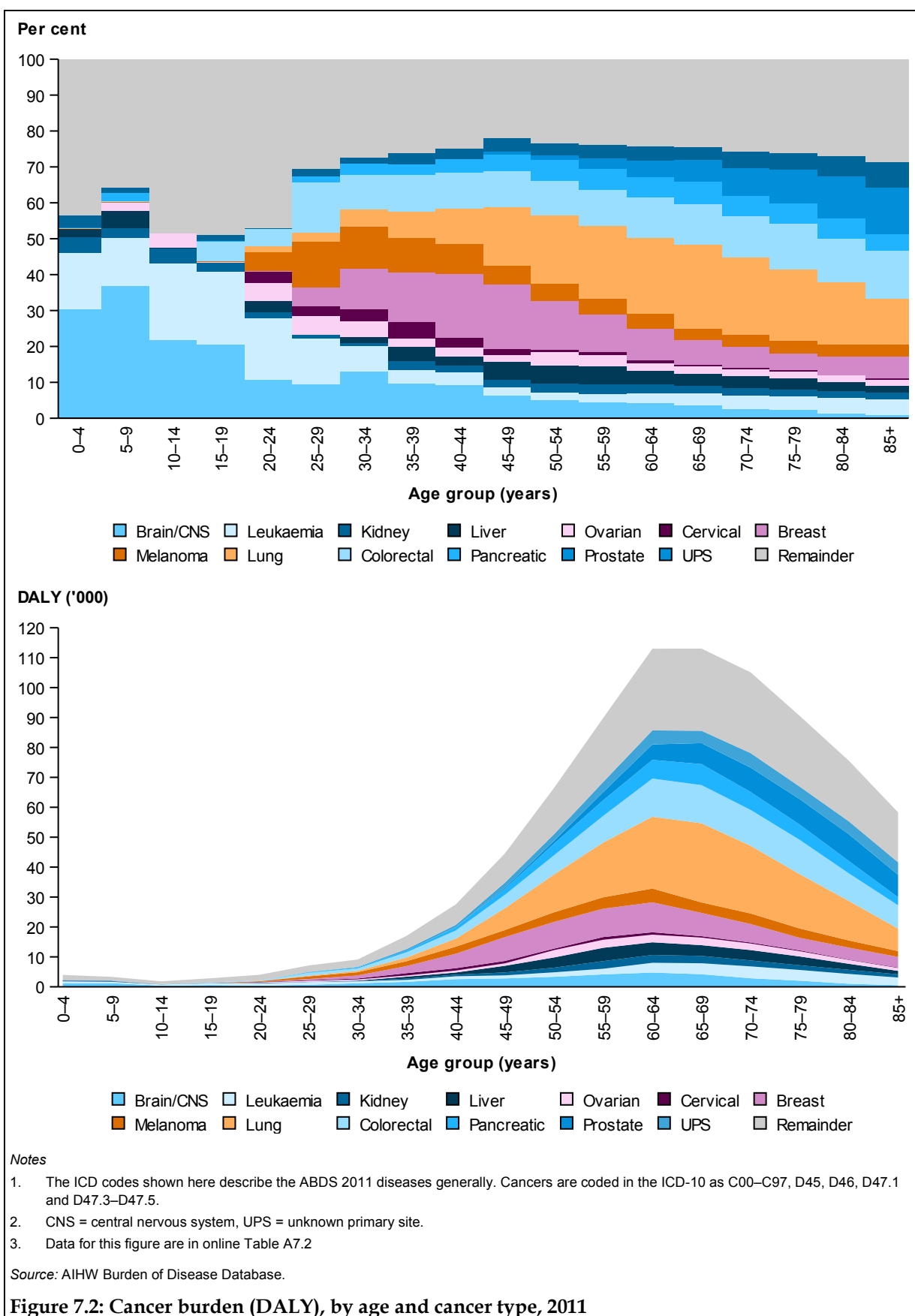
Source: AIHW Burden of Disease Database.

The burden of living with cancer compared with dying early varied by cancer type. Lung and pancreatic cancer had proportionately very little non-fatal burden due to the low survival rate of these cancers, whereas prostate cancer, melanoma of the skin and breast cancer (which had higher survival rates) had a proportionately higher non-fatal burden (Figure 7.1).



Age

For people aged 25 and under, brain and central nervous system cancer and leukaemia accounted for a large proportion of the burden. For people aged between 25 and 50, breast cancer, melanoma of the skin, and colorectal cancer accounted for a large proportion of the burden. For people aged 55 and over, lung cancer, colorectal cancer, breast cancer and prostate cancer accounted for a large proportion of the burden (Figure 7.2).



8 Key population groups

Key findings

Indigenous Australians

In the 5 years from 2008–2012 in New South Wales, Victoria, Queensland, Western Australia and the Northern Territory, the age-standardised incidence rate:

- for all cancers combined was higher for Indigenous Australians (484 per 100,000 persons) than non-Indigenous Australians (439 per 100,000 persons)
- was higher among Indigenous Australians than non-Indigenous Australians for liver cancer, cervical cancer, lung cancer, cancer of unknown primary site, uterine cancer and pancreatic cancer.

In the 5 years from 2010–2014 in New South Wales, Queensland, Western Australia, South Australia and the Northern Territory, the age-standardised mortality rate:

- for all cancers combined was higher for Indigenous Australians (221 per 100,000 persons) than non-Indigenous Australians (171 per 100,000 persons)
- was higher among Indigenous Australians than non-Indigenous Australians for cervical cancer, liver cancer, lung cancer, uterine cancer, cancer of unknown primary site and pancreatic cancer.

State and territory

- in the 5 years from 2008–2012, the age-standardised incidence rate of all cancers combined was highest in Queensland and lowest in the Australian Capital Territory
- in the 5 years from 2010–2014, the age-standardised mortality rate was highest in the Northern Territory and lowest in the Australian Capital Territory.

Remoteness area

- during the period 2008–2012, those living in *Inner regional* areas of Australia had higher age-standardised incidence rates for melanoma of the skin, prostate cancer, kidney cancer and colorectal cancer compared with people living in *Very remote* areas of Australia
- during the period 2010–2014, those living in *Very remote* areas of Australia had higher age-standardised mortality rates from cervical cancer, cancer of unknown primary site, lung cancer and bladder cancer compared with people living in *Major cities*.

Socioeconomic disadvantage

Those living in the most disadvantaged areas of Australia during the period:

- 2008–2012 had higher age-standardised incidence rates for lung cancer, cancer of unknown primary site, cervical cancer, pancreatic cancer and bladder cancer compared with those living in the most advantaged areas
- 2010–2014 had higher age-standardised mortality rates from cervical cancer, lung cancer, cancer of unknown primary site, kidney cancer, colorectal cancer, bladder cancer, pancreatic cancer and non-Hodgkin lymphoma compared with those living in the most advantaged areas.

Data for this section are sourced from the 2013 ACD and the NMD (see Chapter 1 and Appendix G for details on these data sources). Incidence data are presented for 2008 to 2012 because 2012 is the most recent year for which actual data were available for all states and territories (see Appendix C). Mortality data are presented for 2010 to 2014. 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, prostate cancer and uterine cancer, results are presented for persons to reduce the random variation in the data.

Data are presented for all cancers combined and for the following selected cancer types: breast cancer in females, cancer of unknown primary site, cervical cancer, colorectal cancer, lung cancer, non-Hodgkin lymphoma and prostate cancer. For Aboriginal and Torres Strait Islander people, the following cancer types are also included due to higher incidence or mortality rates: liver cancer, uterine cancer and pancreatic cancer. For other population groups, the following cancer types are included due to higher incidence or mortality rates: kidney cancer, melanoma of the skin and pancreatic cancer.

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.

Differences in cancer incidence and mortality rates by other geographies can be obtained on the AIHW's website: < <http://www.aihw.gov.au/cancer-data/cancer-incidence/> >.

8.1 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 non-Indigenous 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 2016c). Aboriginal and Torres Strait Islander people are also more likely to live in remote areas of Australia than non-Indigenous people.

New cases

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 analysis. Information in the ACD on Indigenous status is considered to be of sufficient completeness for reporting for New South Wales, Victoria, Queensland, Western Australia and the Northern Territory. While the majority (83%) of Australian Indigenous people live in these five jurisdictions, the degree to which data for these jurisdictions are representative of data for all Indigenous people is unknown (ABS 2012). For the five jurisdictions analysed,

12% of the ACD had records with unknown Indigenous status. It is unclear how many Indigenous Australians are misclassified as non-Indigenous.

Between 2008 and 2012, an average of 1,189 Indigenous Australians were diagnosed with cancer each year – this comprised 1.1% of all cancer cases diagnosed in that period. Of the selected cancers, lung cancer (average of 173 cases per year) was the most commonly diagnosed cancer among Indigenous Australians, followed by breast cancer in females (143), colorectal cancer (116) and prostate cancer (101).

Between 2008 and 2012, the age-standardised incidence rate for all cancers combined was higher for Indigenous Australians than for their non-Indigenous counterparts (484 and 439 per 100,000, respectively). This finding, while contrasting with the 2014 edition of this report (AIHW 2014b), is similar to previous editions of this report (AIHW & AACR 2012). The change in trend is attributable to changes in the ABS estimated population for Indigenous Australians.

The age-standardised incidence rate was higher for Indigenous than for non-Indigenous Australians for liver cancer (2.8 times as high), cervical cancer (2.2), lung cancer (2.0), cancer of unknown primary site (1.9), uterine cancer (1.7) and pancreatic cancer (1.4).

High rates of liver, lung and cervical cancer may be related to high prevalence of cancer-related modifiable risk factors such as smoking, alcohol consumption, lower participation in cancer screening and hepatitis B infection in Indigenous Australians (Cunningham et al. 2008; AIHW & CA 2013). The high rates of unknown primary site may be because 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).

There are also some cancers for which the age-standardised incidence rate was lower for Indigenous than non-Indigenous Australians. The cancers with lower incidence rates for Indigenous Australians are the most commonly diagnosed cancers in non-Indigenous Australians, namely colorectal cancer and breast cancer in females (rate ratio of 0.9), non-Hodgkin lymphoma (0.8) and prostate cancer (0.7) (Figure 8.1; online Table A8.1).

The reasons for the lower incidence rate of some cancers among Indigenous Australians are not clear. The uptake of screening and diagnostics testing (such as bowel screening and PSA testing) is lower among Indigenous people (Condon et al. 2001; Roder 2005; Stumpers & Thomson 2009; Threlfall & Thompson 2009), which may also contribute to a lower rate of diagnosis.

Deaths

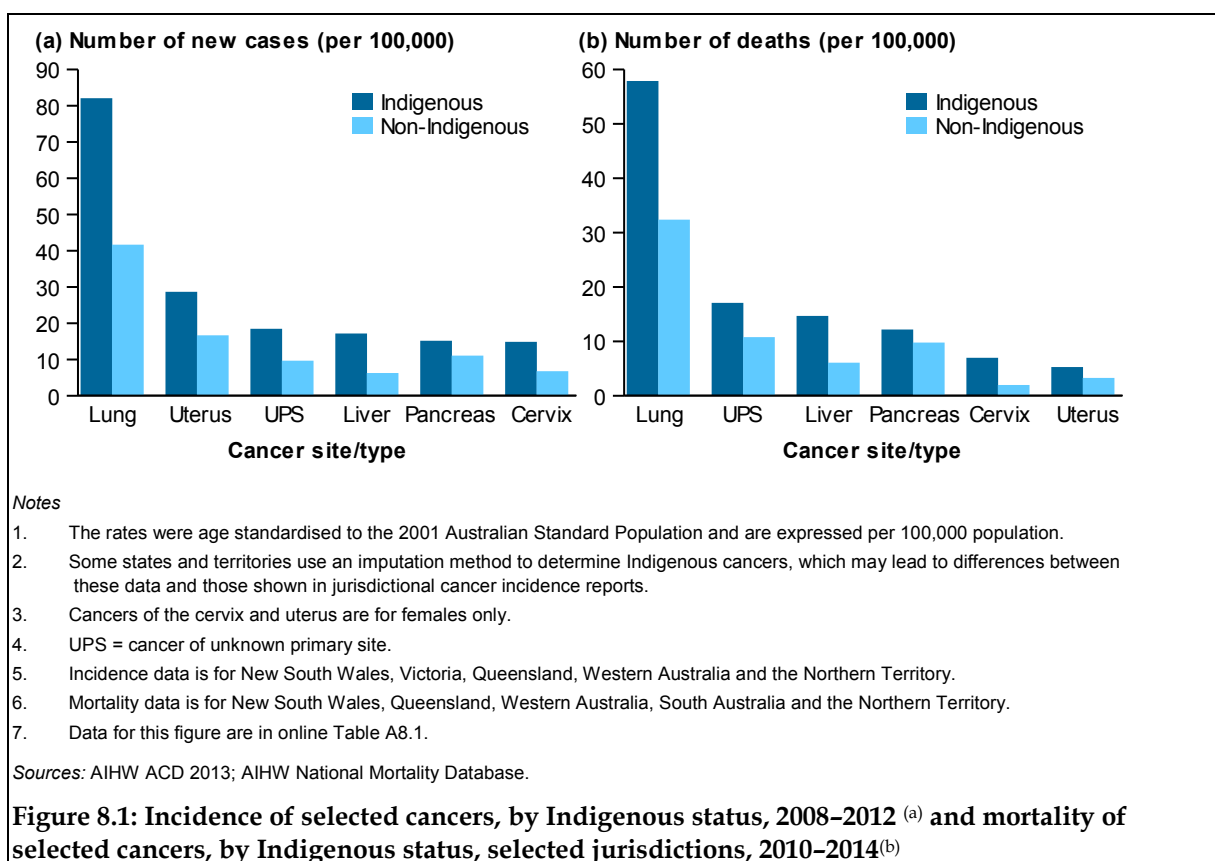
Information in the NMD on Indigenous status from 2010 to 2014 is considered to be of sufficient quality for reporting five jurisdictions: New South Wales, Queensland, Western Australia, South Australia and the Northern Territory. Almost 9 in 10 (89%) Indigenous people live in these jurisdictions (ABS 2012). For these five jurisdictions, about 1% of the NMD had records with unknown Indigenous status data.

Between 2010 and 2014, there was an average of 512 cancer-related deaths for Indigenous Australians (1.6% of all deaths due to cancer). Of the selected cancers, lung cancer accounted for the highest average number of cancer-related deaths for Indigenous Australians (134 deaths per year), followed by liver cancer (35), cancer of unknown primary site (35) and breast cancer in females (31).

The age-standardised mortality rate of all cancers combined was higher for Indigenous Australians than for their non-Indigenous counterparts (221 and 171 per 100,000, respectively). The age-standardised mortality rate was higher for Indigenous than for non-Indigenous Australians for cervical cancer (3.8 times as high), liver cancer (2.5), lung cancer (1.8), uterine cancer and cancer of unknown primary site (both 1.6), and pancreatic cancer (1.3) (Figure 8.1; online Table A8.1).

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, Armstrong et al. 2003; Condon, Zhang et al. 2014; Threlfall & Thompson 2009) or by being diagnosed at an advanced stage, as well as their lesser likelihood of receiving adequate treatment (AIHW 2016c; Cunningham et al. 2008).

The age-standardised mortality rate was lower for Indigenous Australians than for non-Indigenous Australians for colorectal cancer (rate ratio 0.7). Mortality rates were lower for Indigenous Australians than for non-Indigenous Australians for non-Hodgkin lymphoma (0.9) and prostate cancer (0.8), but the differences were not statistically significant.



8.2 State and territory

New cases

Between 2008 and 2012, the average annual number of cancer cases diagnosed ranged from 690 in the Northern Territory to 39,827 in New South Wales. When the size and age structure

of the population in each state and territory are considered, the highest incidence rates of all cancers combined were in Queensland (532 per 100,000) and Tasmania (517 per 100,000). In contrast, the incidence rates were lowest in the Australian Capital Territory (460 per 100,000) and the Northern Territory (463 per 100,000) (Table 8.1).

Table 8.1: Incidence of all cancers combined, by state and territory, 2008–2012

State or territory	Average annual number of cases	Total number of cases	Age-standardised rate
New South Wales	39,827	199,136	499.5
Victoria	28,911	144,553	483.4
Queensland	24,302	121,510	531.9
Western Australia	11,443	57,215	492.7
South Australia	9,394	46,970	478.3
Tasmania	3,200	16,002	517.3
Australian Capital Territory	1,536	7,681	460.3
Northern Territory	690	3,449	463.1
Total	119,303	596,516	498.9

Notes

1. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.
2. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.

Source: AIHW ACD 2013.

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

- New South Wales for prostate cancer (184 per 100,000 males)
- New South Wales and Victoria for pancreatic cancer (12 per 100,000 persons)
- Queensland for melanoma of the skin (70 per 100,000)
- South Australia for non-Hodgkin lymphoma (22 per 100,000)
- Tasmania for colorectal cancer (74 per 100,000), kidney cancer (14 per 100,000) and bladder cancer (12 per 100,000)
- Australian Capital Territory for breast cancer in females (136 per 100,000 females)
- Northern Territory for lung cancer (61 per 100,000), cancer of unknown primary site (17 per 100,000) and cervical cancer (11 per 100,000 females) (online Table A8.2).

Deaths

Between 2010 and 2014, the average annual number of deaths from all cancers combined ranged from 276 in the Northern Territory to 14,702 in New South Wales. After taking the size and age structure of the population in each state and territory into consideration, the mortality rate for all cancers combined was highest in the Northern Territory (218 per 100,000) followed by Tasmania (189 per 100,000). In contrast, the mortality rates were lowest in the Australian Capital Territory (148 per 100,000) and Western Australia (162 per 100,000) (Table 8.2).

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. 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 (see Appendix G for more details).

Table 8.2: Mortality for all cancers combined, by state and territory, 2010–2014

State or territory	Average annual number of deaths	Total number of deaths	Age-standardised rate
New South Wales	14,702	73,508	169.2
Victoria	10,734	53,672	164.7
Queensland	8,502	42,508	175.8
Western Australia	3,973	19,865	162.3
South Australia	3,615	18,074	167.0
Tasmania	1,259	6,295	189.3
Australian Capital Territory	504	2,519	147.9
Northern Territory	276	1,382	217.9
Total	43,566	217,832	168.8

Notes

1. All cancers combined includes cancers coded in the ICD-10 as C00–C97, D45, D46, D47.1 and D47.3–D47.5, except those C44 codes that indicate a basal or squamous cell carcinoma of the skin.
2. 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 ABS to determine the cause of death.
3. Total includes records with 'unknown' jurisdictions.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.

Source: AIHW National Mortality Database.

Between 2010 and 2014, the highest age-standardised mortality rates for selected cancers were in:

- Queensland for prostate cancer (33 per 100,000 males) and melanoma of the skin (8 per 100,000)
- Tasmania for colorectal cancer (19 per 100,000) and pancreatic cancer (11 per 100,000)
- the Australian Capital Territory for breast cancer in females (23 per 100,000 females)
- the Northern Territory for lung cancer (47 per 100,000), cancer of unknown primary site (17 per 100,000), bladder cancer (7 per 100,000) and cervical cancer (4 per 100,000 females) (online Table 8.2).

8.3 Remoteness area

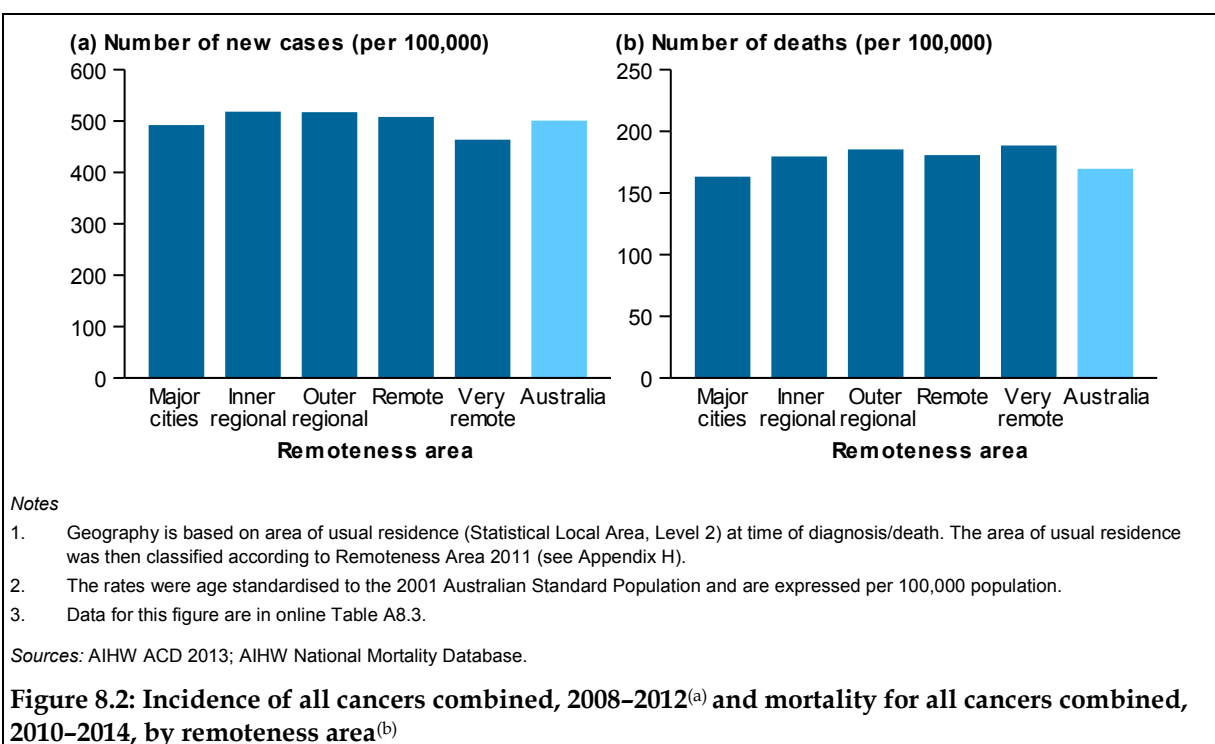
People living in remote areas of Australia are often disadvantaged in relation to access to primary health-care services, educational and employment opportunities, and income. Further, they are more likely to have higher rates of risky health behaviours, such as smoking, heavy alcohol use and poor nutrition (AIHW 2016c). Incidence and mortality rates were calculated according to the level of remoteness area of residence at diagnosis or death. The remoteness areas divide Australia into broad geographic regions that share common characteristics of remoteness for statistical purposes (see Appendix H).

New cases

Between 2008 and 2012, the age-standardised incidence rate of all cancers combined was highest in *Inner regional* areas (516 per 100,000 persons) and lowest in *Very remote* areas (462 per 100,000) (Figure 8.3). Compared with *Very remote* areas, people living in *Inner regional* areas are more likely to be diagnosed with melanoma of the skin (1.8 times more likely), prostate cancer (1.5), kidney cancer (1.4) and colorectal cancer (1.3) and less likely to be diagnosed with lung cancer and cancer of unknown primary site (both 0.7) (online Table A8.3).

Deaths

Between 2010 and 2014, the age-standardised mortality rate for all cancers combined was highest in *Very remote* areas (188 per 100,000) and lowest in *Major cities* (162 per 100,000) (Figure 8.2). Compared with *Major cities*, the age-standardised mortality rate of people living in *Very remote* areas was higher for cervical cancer (2.8 times), cancer of unknown primary site (1.5), lung cancer (1.4) and bladder cancer (1.3) and lower for pancreatic and colorectal cancers (both rate ratios of 0.7) and melanoma of the skin (0.5) (online Table A8.3).



8.4 Socioeconomic group

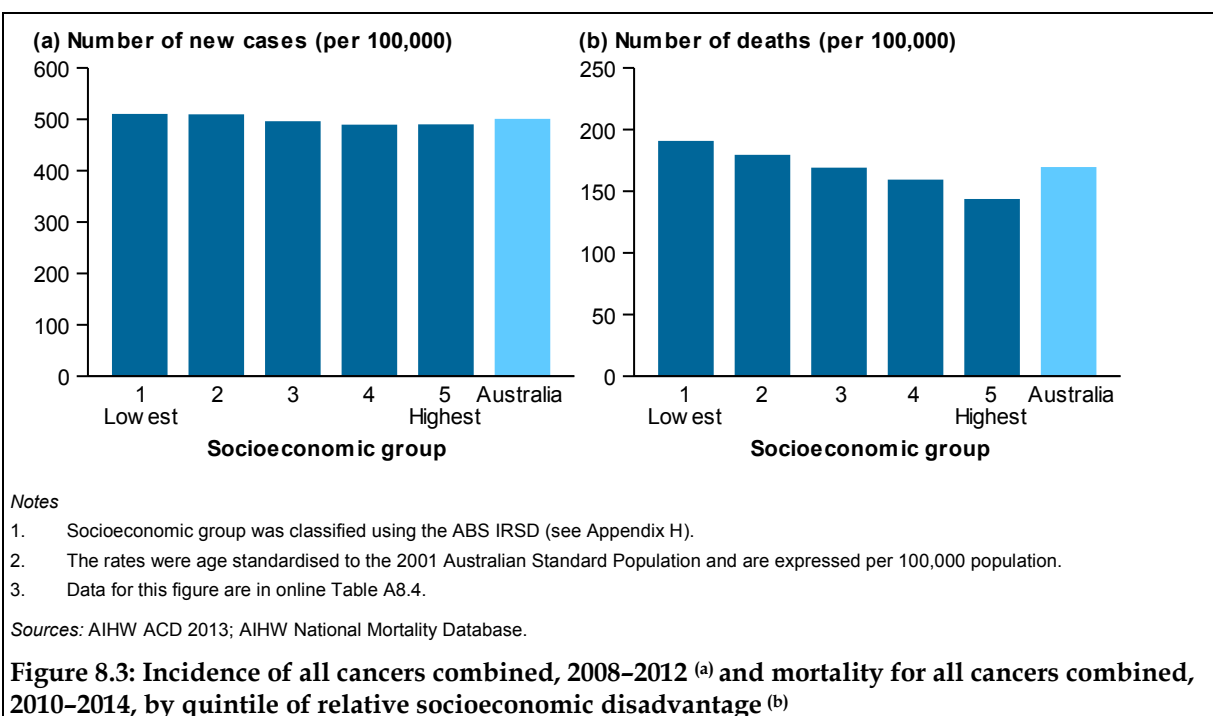
The Index of Relative Socio-economic Disadvantage (IRSD) is used to indicate socioeconomic groups. The IRSD scores each geographic area by summarising attributes of the population, such as low income, low educational attainment, high unemployment and jobs in relatively unskilled occupations. Note that the IRSD is an area-based measure of socioeconomic group rather than a person-based measure (see Appendix H).

New cases

Between 2008 and 2012, the age-standardised incidence rate for all cancers combined was highest for those living in the two lowest socioeconomic groups and lowest for those living in the two highest socioeconomic groups (Figure 8.3). Compared with those in the highest socioeconomic group, people in the lowest group are more likely to be diagnosed with lung cancer (1.7 times), cancer of unknown primary site (1.5), cervical cancer (1.4) and pancreatic cancer and bladder cancer (both 1.2 times) and less likely to be diagnosed with melanoma of the skin, prostate cancer and breast cancer in females (both rate ratios of 0.8) (online Table A8.4).

Deaths

Between 2010 and 2014, the age-standardised mortality rate for all cancers combined was highest among those living in the lowest socioeconomic group (190 per 100,000 persons) and lowest among those living in the highest socioeconomic group (143 per 100,000) (Figure 8.3). Compared with those in the highest socioeconomic group, people in the lowest group are more likely to die from cervical cancer (2.4 times more likely), lung cancer (1.7), cancer of unknown primary site (1.6), kidney cancer (1.4), colorectal cancer and bladder cancer (both 1.3) and pancreatic cancer and non-Hodgkin lymphoma (both 1.2) (online Table A8.4).



Section two: Selected cancers

This chapter 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. An overview of incidence statistics for all cancers is presented in Appendix B. It includes information on the latest incidence data (2013) and mortality data (2014) and estimates for 2017 and 2018.

Data for this section are sourced from the 2013 Australian Cancer Database and from the AIHW National Mortality Database (see Chapter 1 and Appendix G for details on these data sources). Data for the figures presented are available in the online supplementary tables.

9 Summary pages for selected cancers

All cancers combined (C00–C97, D45, D46, D47.1, D47.3–D47.5)

Risk factors:



Table 9.1(a): Incidence and mortality of all cancers combined, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	68,936	55,529	124,465	24,718	19,453	44,171
Crude rate	599.2	478.2	538.4	211.8	165.0	188.2
ASR	561.9	416.3	482.7	200.4	131.6	161.9
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 (years)	67.2	64.7	66.0	73.3	73.3	73.3
Median age (years)	68.2	65.8	67.2	75.0	75.0	75.0
Estimated number for 2017 and 2018						
2017	72,169	62,005	134,174	27,076	20,677	47,753
2018	74,644	63,676	138,321	27,552	21,034	48,586

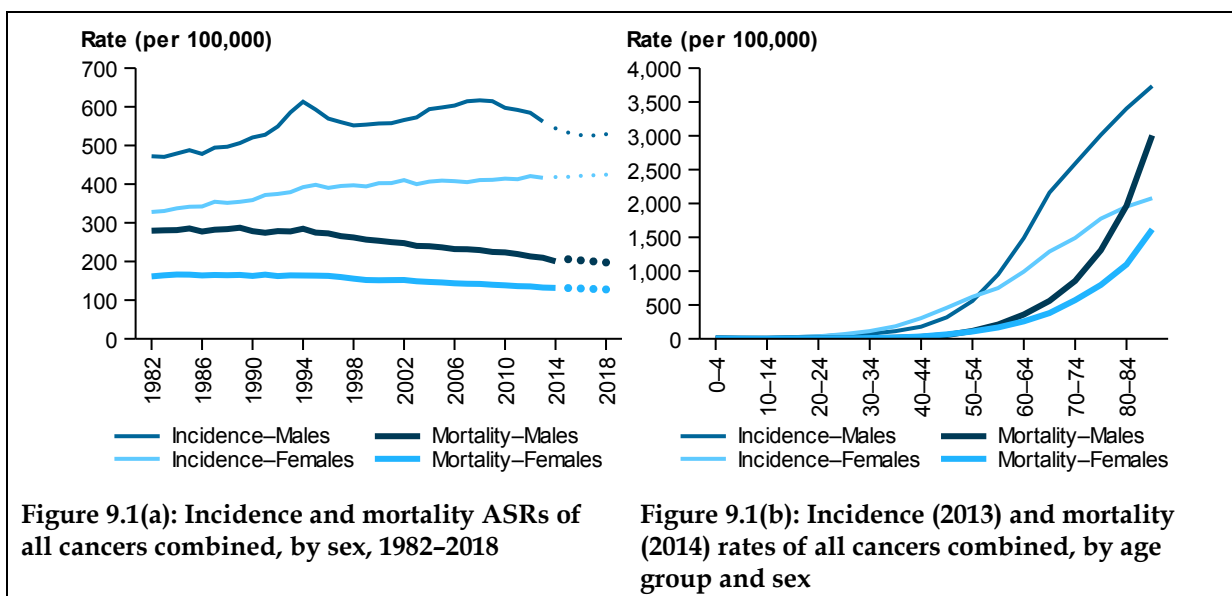
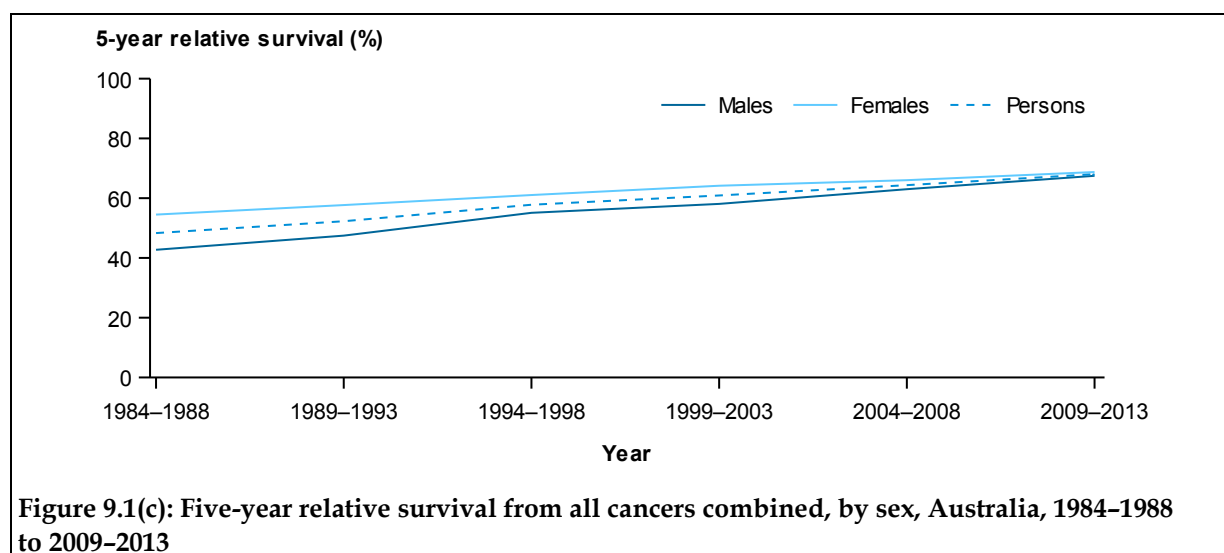


Table 9.1(b): Survival and prevalence of all cancers combined, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	59,212	47,128	106,340
5-year prevalence	228,161	182,369	410,530
31-year prevalence	499,945	494,660	994,605
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	81.4	82.7	82.0
5-year relative survival at diagnosis	67.5	68.7	68.0
5-year conditional relative survival for those already survived 1 year after diagnosis	81.1	81.4	81.2
5-year conditional relative survival for those already survived 5 years after diagnosis	91.0	92.1	91.5
5-year conditional relative survival for those already survived 10 years after diagnosis	93.1	95.0	94.1
5-year conditional relative survival for those already survived 15 years after diagnosis	95.3	96.6	96.0



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. For incidence, survival and prevalence data, ICD-10 C44 codes that indicate a basal or squamous cell carcinoma are not included.
3. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
4. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
5. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
6. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1994–2013 mortality data for males and 1995–2013 mortality data for females (see Appendix D).
7. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW National Mortality Database.

Acute myeloid leukaemia (C92.0, C92.3–C92.6, C92.8, C93.0, C94.0, C94.2, C94.4–C94.5)

Risk factors:



Table 9.2(a): Incidence and mortality of acute myeloid leukaemia, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	549	408	957	514	397	911
Crude rate	4.8	3.5	4.1	4.4	3.4	3.9
ASR	4.6	3.1	3.8	4.2	2.7	3.4
Risk to age 75	1 in 332	1 in 476	1 in 392	1 in 404	1 in 619	1 in 490
Risk to age 85	1 in 169	1 in 260	1 in 208	1 in 162	1 in 265	1 in 204
Mean age (years)	66.1	63.3	64.9	72.2	72.7	72.4
Median age (years)	70.0	66.6	68.9	74.0	75.0	75.0
Estimated number for 2017 and 2018						
2017	632	482	1,114	613	410	1,023
2018	649	494	1,143	637	422	1,060

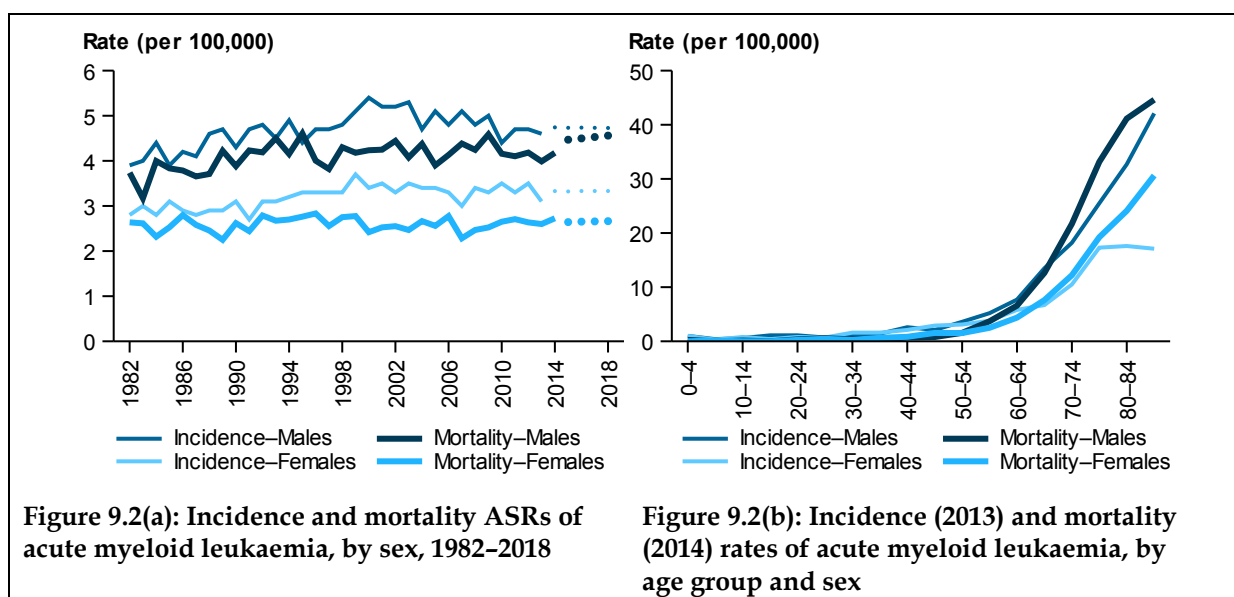
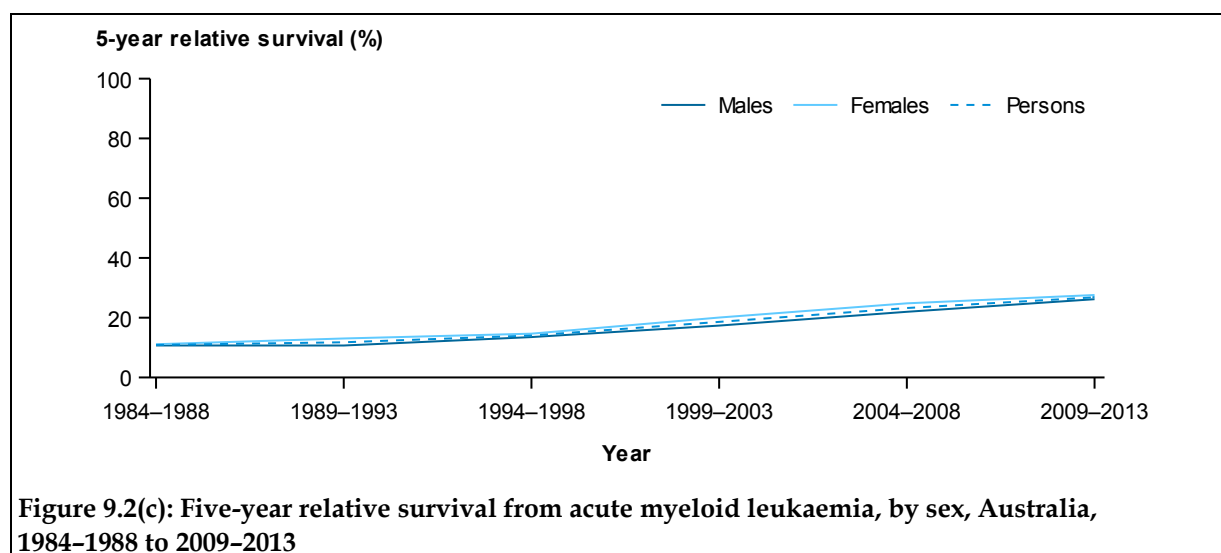


Table 9.2(b): Survival and prevalence of acute myeloid leukaemia, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	351	283	634
5-year prevalence	985	831	1,816
31-year prevalence	2,229	2,016	4,245
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	43.4	45.1	44.1
5-year relative survival at diagnosis	26.2	27.6	26.8
5-year conditional relative survival for those already survived 1 year after diagnosis	58.5	58.7	58.6
5-year conditional relative survival for those already survived 5 years after diagnosis	91.3	89.4	90.4
5-year conditional relative survival for those already survived 10 years after diagnosis	96.7	94.3	95.5
5-year conditional relative survival for those already survived 15 years after diagnosis	100.0	94.4	98.0



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1968–2013 mortality data for males and 1993–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW National Mortality Database.

Anal cancer (C21)

Risk factor:



Table 9.3(a): Incidence and mortality of anal cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	160	225	385	43	55	98
Crude rate	1.4	1.9	1.7	0.4	0.5	0.4
ASR	1.3	1.7	1.5	0.3	0.4	0.4
Risk to age 75	1 in 1,008	1 in 706	1 in 829	1 in 3,512	1 in 3,480	1 in 3,497
Risk to age 85	1 in 614	1 in 501	1 in 551	1 in 2,763	1 in 2,015	1 in 2,284
Mean age (years)	65.5	62.4	63.6	67.7	70.4	69.2
Median age (years)	66.4	60.9	63.2	69.0	71.0	69.5
Estimated number for 2017 and 2018						
2017	179	249	429	45	42	87
2018	184	256	440	47	43	90

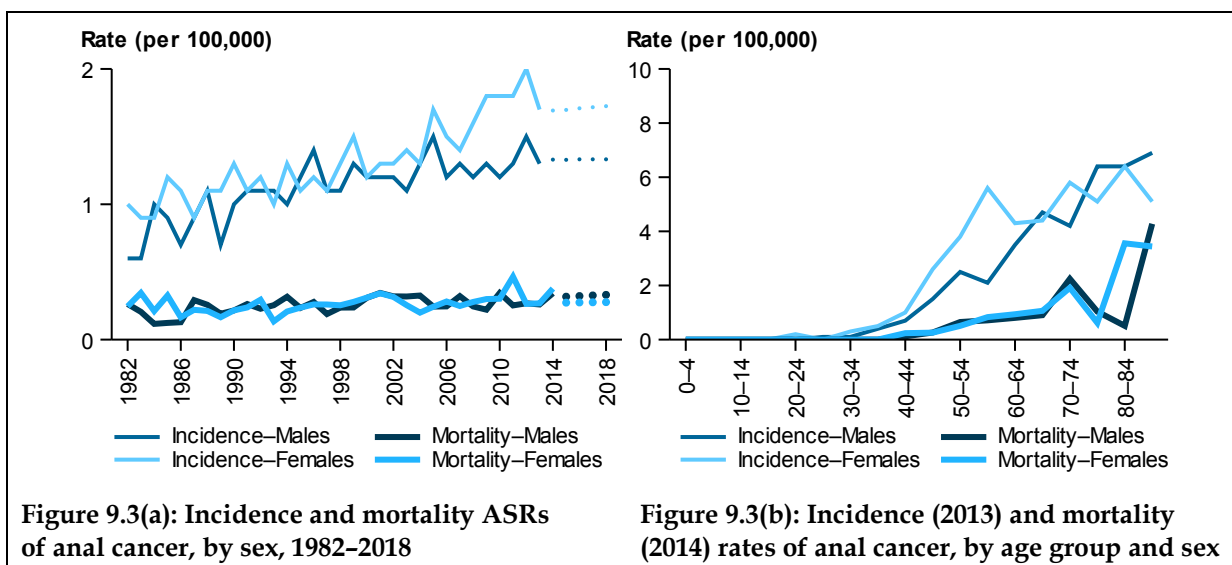
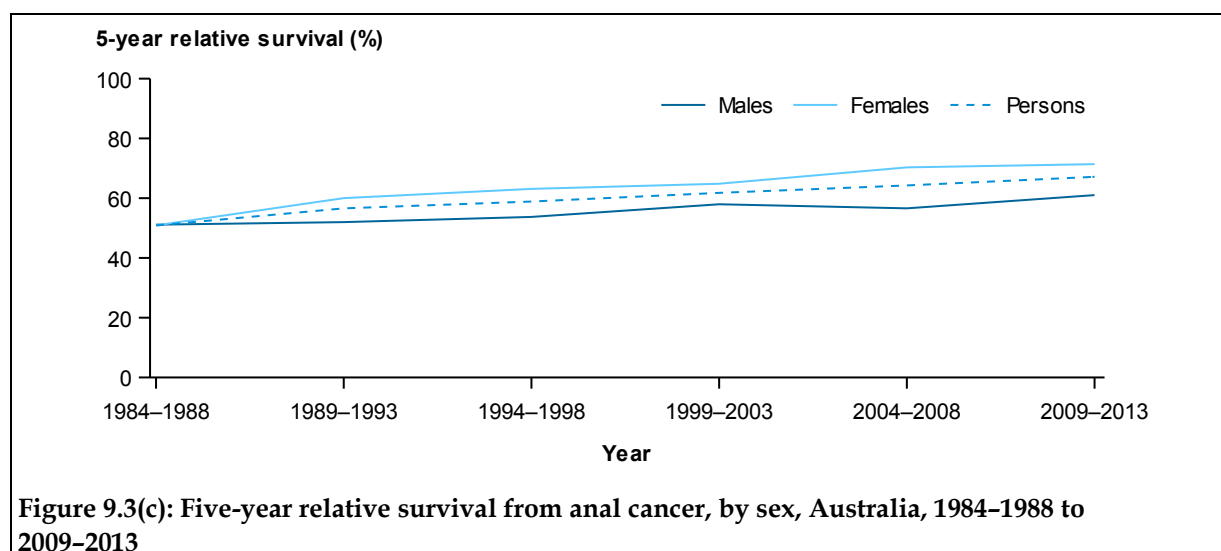


Table 9.3(b): Survival and prevalence of anal cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	167	245	412
5-year prevalence	542	871	1,413
31-year prevalence	1,170	1,852	3,022
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	85.4	90.4	88.4
5-year relative survival at diagnosis	61.0	71.4	67.1
5-year conditional relative survival for those already survived 1 year after diagnosis	68.9	76.1	73.2
5-year conditional relative survival for those already survived 5 years after diagnosis	84.1	87.2	86.0
5-year conditional relative survival for those already survived 10 years after diagnosis	85.7	87.4	86.6
5-year conditional relative survival for those already survived 15 years after diagnosis	86.4	86.8	86.8



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1968–2013 mortality data for males and 1980–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW National Mortality Database.

Bladder cancer (C67)

Risk factors:



Table 9.4(a): Incidence and mortality of bladder cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	1,957	598	2,555	735	305	1,040
Crude rate	17	5.1	11.1	6.3	2.6	4.4
ASR	16.5	4.1	9.7	6.1	1.9	3.7
Risk to age 75	1 in 114	1 in 422	1 in 181	1 in 488	1 in 1,557	1 in 748
Risk to age 85	1 in 43	1 in 170	1 in 71	1 in 124	1 in 385	1 in 195
Mean age (years)	74.4	75.6	74.7	79.1	81.5	79.8
Median age (years)	76.0	77.5	76.3	81.0	83.0	82.0
Estimated number for 2017 and 2018						
2017	2,267	728	2,995	822	350	1,172
2018	2,335	749	3,084	839	357	1,196

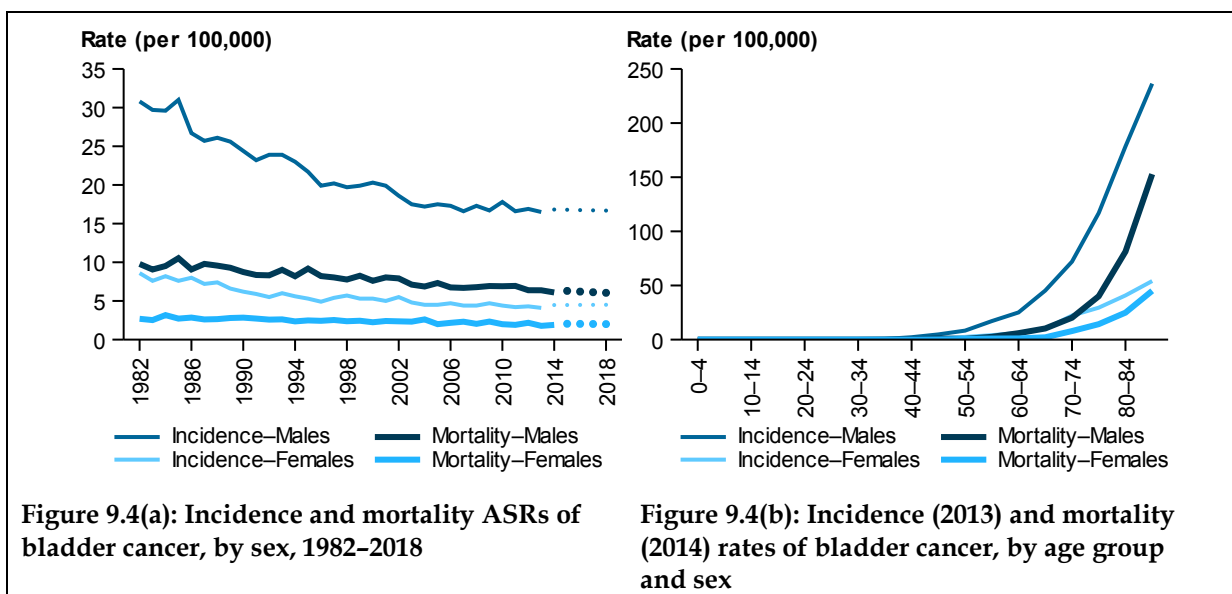
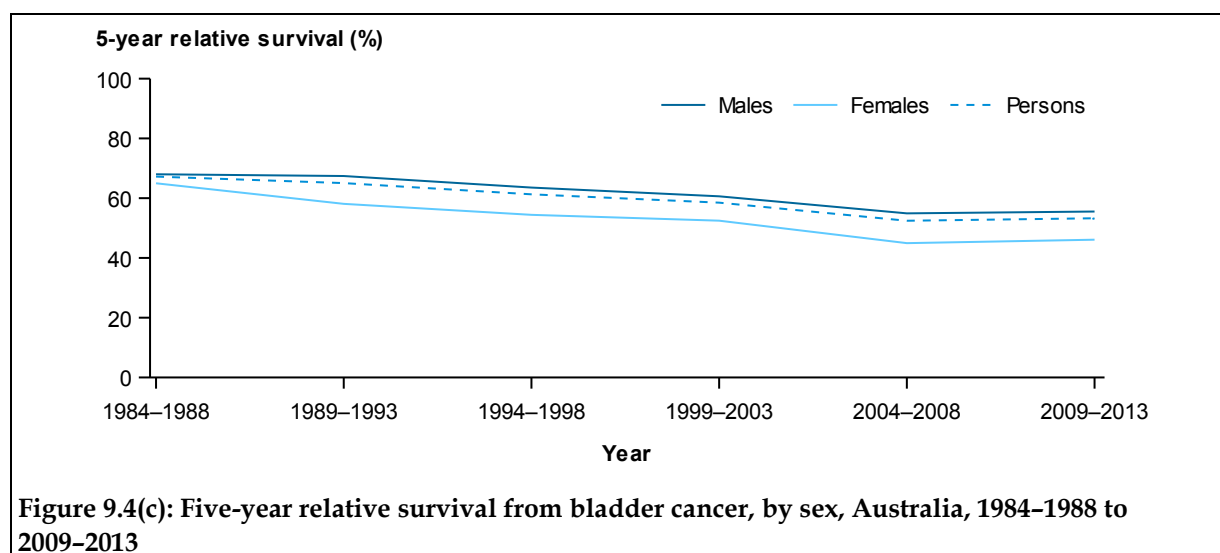


Table 9.4(b): Survival and prevalence of bladder cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	1,671	460	2,131
5-year prevalence	5,644	1,560	7,204
31-year prevalence	13,951	4,397	18,348
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	79.0	68.2	76.4
5-year relative survival at diagnosis	55.5	46.1	53.3
5-year conditional relative survival for those already survived 1 year after diagnosis	67.2	64.6	66.6
5-year conditional relative survival for those already survived 5 years after diagnosis	83.7	85.4	84.1
5-year conditional relative survival for those already survived 10 years after diagnosis	90.9	90.9	90.9
5-year conditional relative survival for those already survived 15 years after diagnosis	93.6	98.0	94.7



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1985–2013 mortality data for males and 1968–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW National Mortality Database.

Brain cancer (C71)

Table 9.5(a): Incidence and mortality of brain cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	939	697	1,636	801	565	1,366
Crude rate	8.2	6	7.1	6.9	4.8	5.8
ASR	7.8	5.4	6.5	6.4	4.2	5.3
Risk to age 75	1 in 161	1 in 239	1 in 192	1 in 195	1 in 306	1 in 239
Risk to age 85	1 in 111	1 in 160	1 in 132	1 in 119	1 in 194	1 in 150
Mean age (years)	56.8	59.8	58.1	63.1	63.2	63.2
Median age (years)	60.7	63.9	62.2	65.0	66.0	65.0
Estimated number for 2017 and 2018						
2017	1,109	782	1,891	838	567	1,405
2018	1,135	800	1,935	856	579	1,435

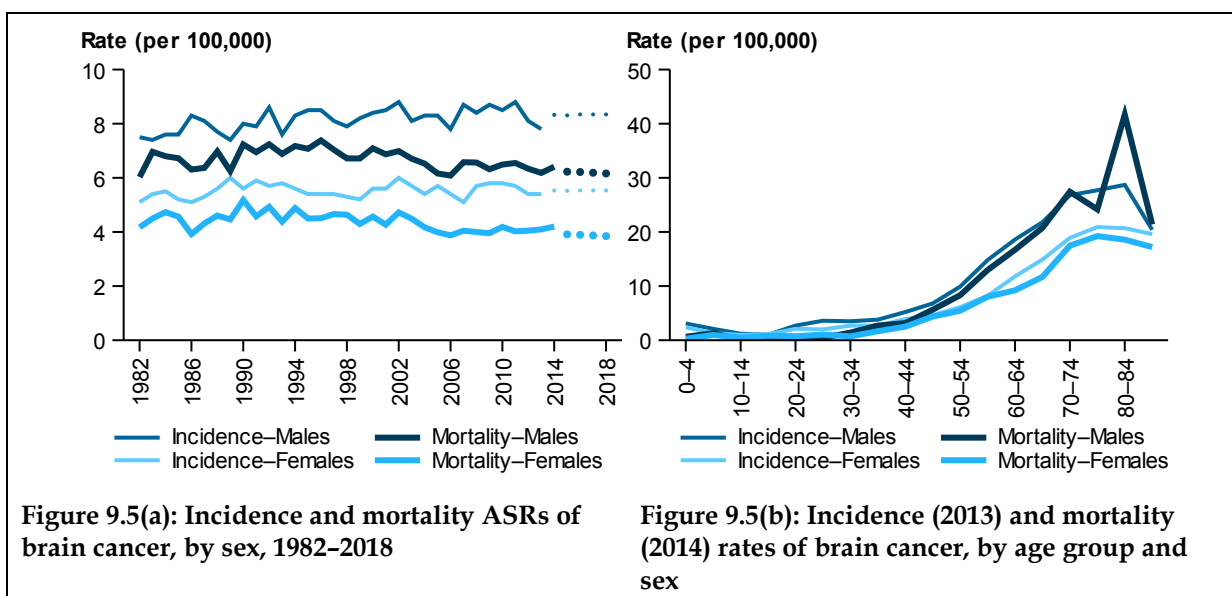


Table 9.5(b): Survival and prevalence of brain cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	691	462	1,153
5-year prevalence	1,755	1,299	3,054
31-year prevalence	3,916	3,099	7,015
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	52.9	50.0	51.7
5-year relative survival at diagnosis	21.1	23.3	22.1
5-year conditional relative survival for those already survived 1 year after diagnosis	37.1	44.8	40.3
5-year conditional relative survival for those already survived 5 years after diagnosis	75.9	82.2	78.8
5-year conditional relative survival for those already survived 10 years after diagnosis	85.7	88.8	87.2
5-year conditional relative survival for those already survived 15 years after diagnosis	93.0	90.3	91.7

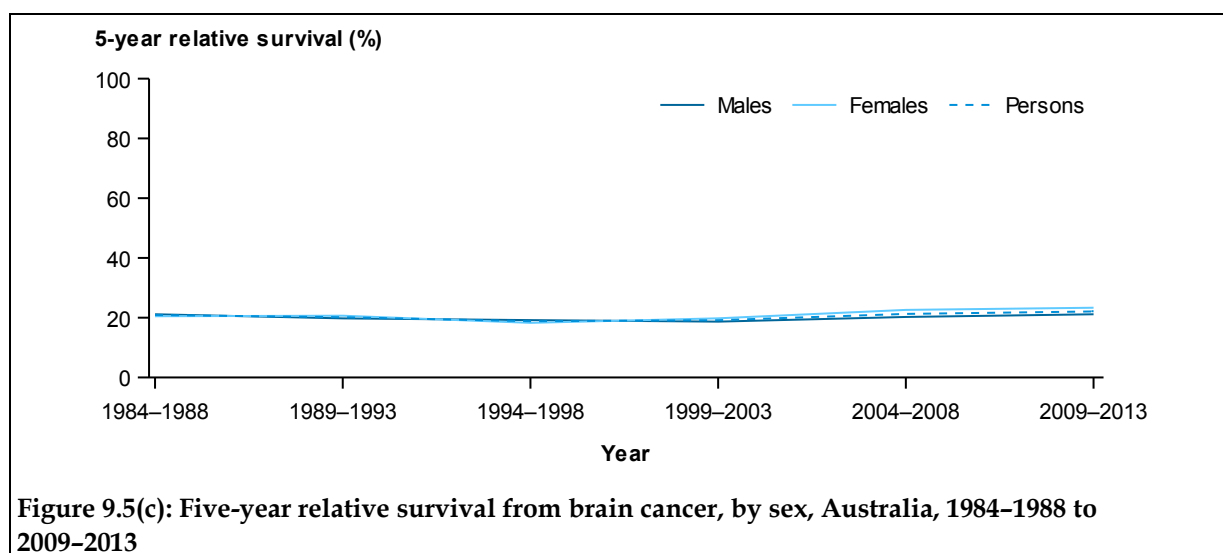


Figure 9.5(c): Five-year relative survival from brain cancer, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 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 2001 Australian Standard Population and are expressed per 100,000 population.
4. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1996–2013 mortality data for males and 1990–2013 mortality data for females (see Appendix D).
5. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Breast cancer (C50)

Risk factors:



Table 9.6(a): Incidence and mortality of breast cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	142	15,902	16,045	30	2,814	2,844
Crude rate	1.2	137.0	69.4	0.3	23.9	12.1
ASR	1.1	122.5	63.6	0.2	19.6	10.5
Risk to age 75	1 in 1,231	1 in 10	1 in 20	1 in 6,703	1 in 73	1 in 143
Risk to age 85	1 in 631	1 in 8	1 in 15	1 in 3,385	1 in 42	1 in 79
Mean age (years)	68.8	61.4	61.5	70.5	69.7	69.7
Median age (years)	67.9	61.0	61.1	72.0	70.0	70.0
Estimated number for 2017 and 2018						
2017	144	17,586	17,730	28	3,087	3,114
2018	148	18,087	18,235	28	3,128	3,157

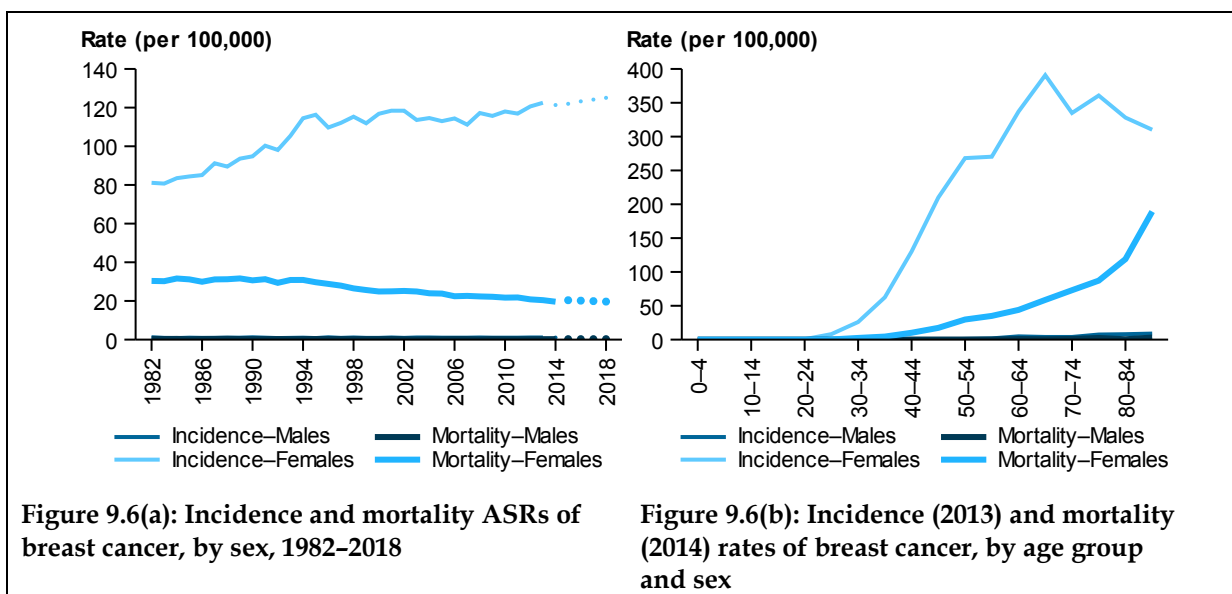
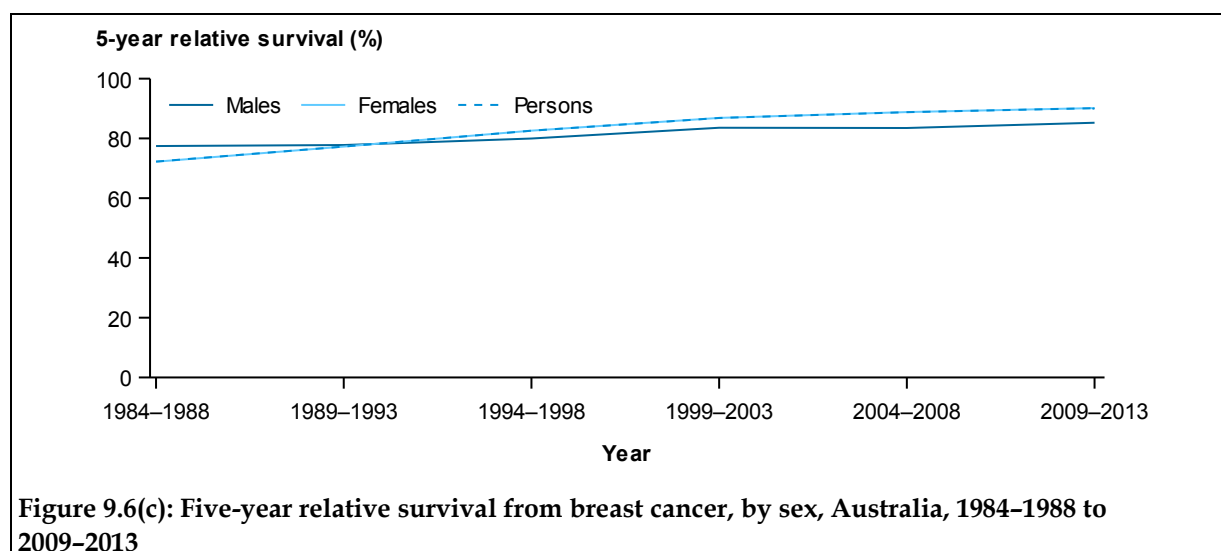


Table 9.6(b): Survival and prevalence of breast cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	120	14,972	15,092
5-year prevalence	487	65,489	65,976
31-year prevalence	1,179	192,551	193,730
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	96.9	97.9	97.9
5-year relative survival at diagnosis	85.2	90.2	90.1
5-year conditional relative survival for those already survived 1 year after diagnosis	84.7	90.6	90.5
5-year conditional relative survival for those already survived 5 years after diagnosis	87.3	93.4	93.4
5-year conditional relative survival for those already survived 10 years after diagnosis	88.4	94.6	94.6
5-year conditional relative survival for those already survived 15 years after diagnosis	93.1	95.5	95.5



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1968–2013 mortality data for males and 1999–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Cervical cancer (C53)

Risk factors:



Table 9.7(a): Incidence and mortality of cervical cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	..	813	..	..	223	..
Crude rate	..	7.0	..	..	1.9	..
ASR	..	6.8	..	..	1.7	..
Risk to age 75	..	1 in 200	..	..	1 in 764	..
Risk to age 85	..	1 in 168	..	..	1 in 535	..
Mean age (years)	..	48.3	..	..	61.3	..
Median age (years)	..	44.1	..	..	61.0	..
Estimated number for 2017 and 2018						
2017	..	912	..	..	254	..
2018	..	930	..	..	258	..

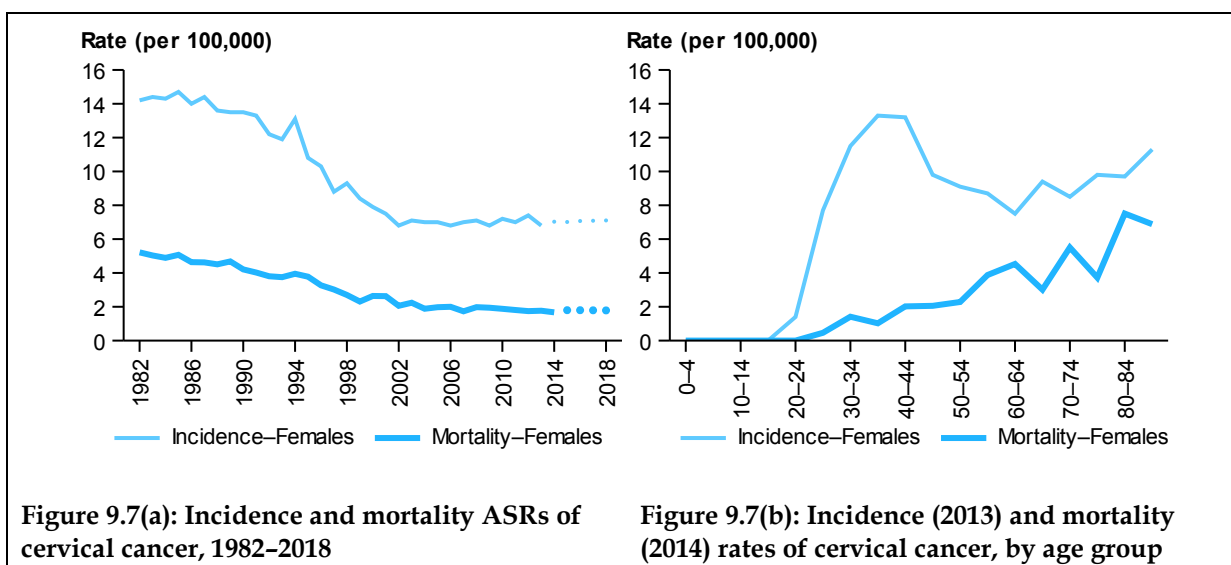
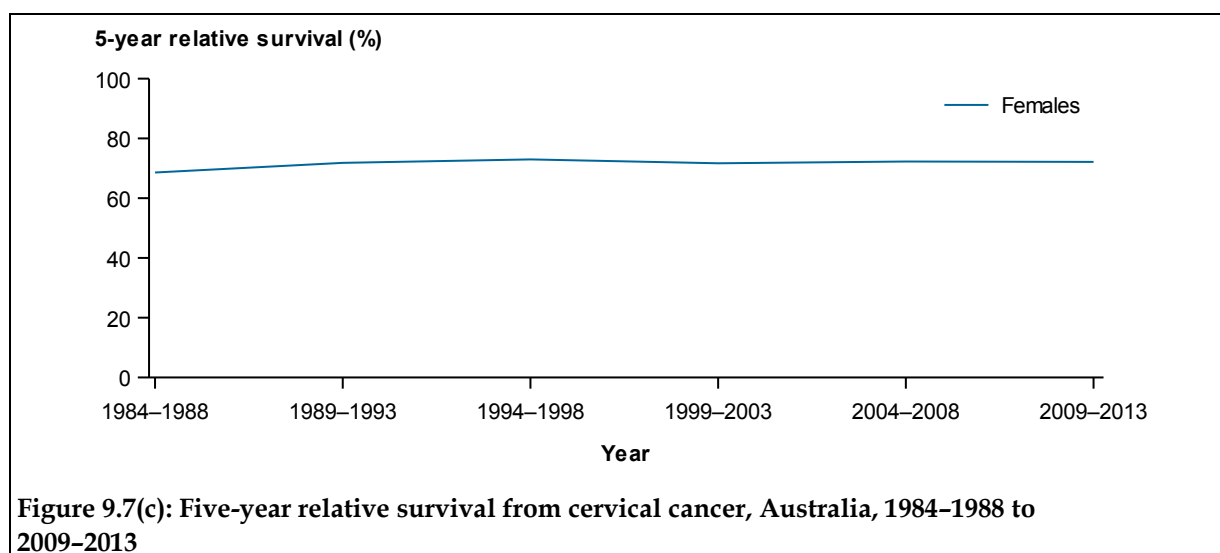


Table 9.7(b): Survival and prevalence of cervical cancer

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	..	797	..
5-year prevalence	..	3,165	..
31-year prevalence	..	15,604	..
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	..	88.2	..
5-year relative survival at diagnosis	..	72.1	..
5-year conditional relative survival for those already survived 1 year after diagnosis	..	80.4	..
5-year conditional relative survival for those already survived 5 years after diagnosis	..	94.6	..
5-year conditional relative survival for those already survived 10 years after diagnosis	..	95.4	..
5-year conditional relative survival for those already survived 15 years after diagnosis	..	96.4	..



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 2004–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Chronic lymphocytic leukaemia (C91.1)

Risk factors:



Table 9.8(a): Incidence and mortality of chronic lymphocytic leukaemia, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	826	433	1,259	206	135	341
Crude rate	7.2	3.7	5.4	1.8	1.1	1.5
ASR	6.7	3.1	4.8	1.7	0.8	1.2
Risk to age 75	1 in 207	1 in 436	1 in 282	1 in 1,703	1 in 4,483	1 in 2,484
Risk to age 85	1 in 110	1 in 239	1 in 154	1 in 432	1 in 924	1 in 604
Mean age (years)	68.8	71.2	69.6	78.8	83.0	80.5
Median age (years)	68.9	70.2	69.4	80.0	84.0	81.0
Estimated number for 2017 and 2018						
2017	921	500	1,421	249	142	392
2018	942	509	1,451	257	145	402

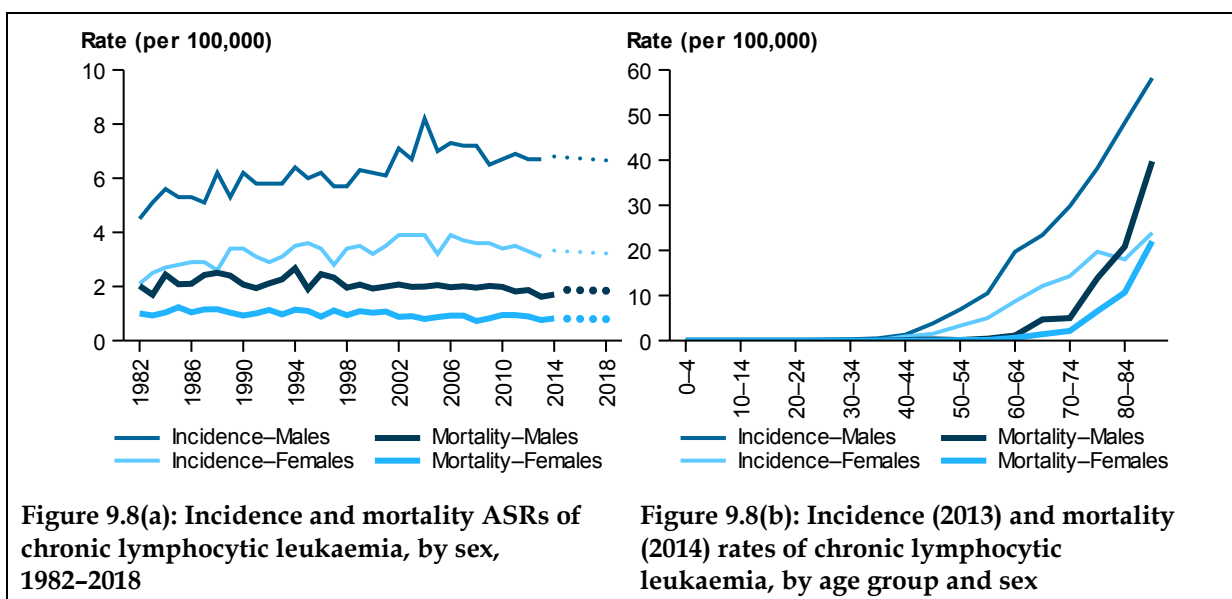
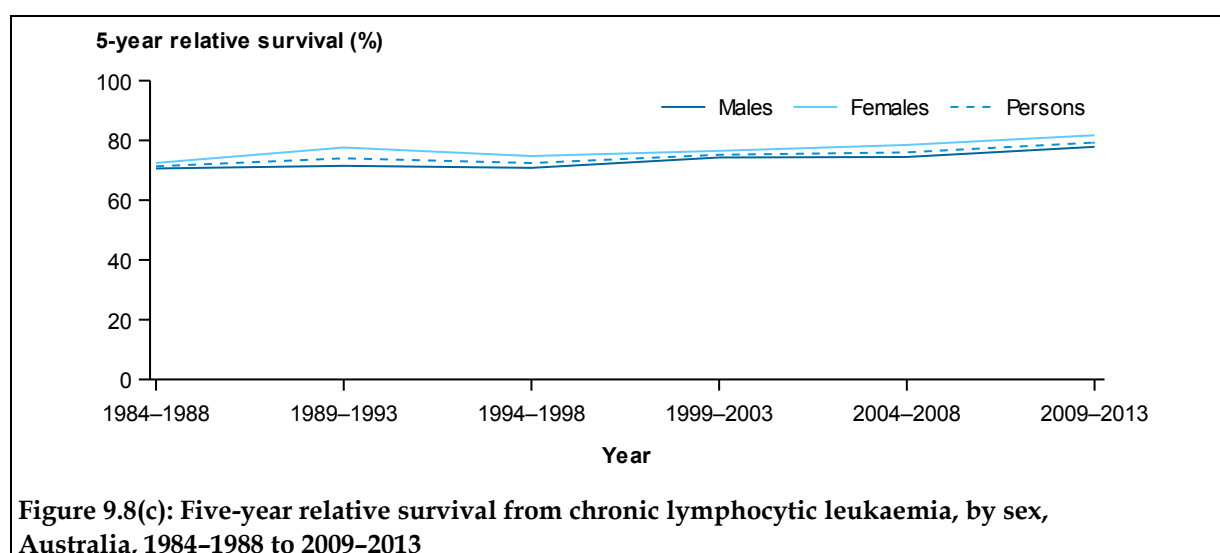


Table 9.8(b): Survival and prevalence of chronic lymphocytic leukaemia, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	742	401	1,143
5-year prevalence	3,049	1,779	4,828
31-year prevalence	6,205	4,132	10,337
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	93.6	95.2	94.2
5-year relative survival at diagnosis	77.9	81.7	79.3
5-year conditional relative survival for those already survived 1 year after diagnosis	79.0	83.4	80.7
5-year conditional relative survival for those already survived 5 years after diagnosis	76.0	83.1	78.8
5-year conditional relative survival for those already survived 10 years after diagnosis	75.4	82.0	78.4
5-year conditional relative survival for those already survived 15 years after diagnosis	79.8	86.9	83.2



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1994–2013 mortality data for males and 1988–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Colorectal cancer (C18–C20)

Risk factors:



Table 9.9(a): Incidence and mortality of colorectal cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	8,214	6,748	14,962	2,236	1,835	4,071
Crude rate	71.4	58.1	64.7	19.2	15.6	17.3
ASR	67.6	48.8	57.7	18.1	12.1	14.9
Risk to age 75	1 in 21	1 in 30	1 in 25	1 in 95	1 in 156	1 in 118
Risk to age 85	1 in 11	1 in 16	1 in 13	1 in 41	1 in 64	1 in 51
Mean age (years)	68.4	69.9	69.0	72.5	75.2	73.7
Median age (years)	69.7	72.4	70.8	74.0	78.0	75.0
Estimated number for 2017 and 2018						
2017	9,127	7,555	16,682	2,136	1,978	4,114
2018	9,294	7,709	17,004	2,124	2,005	4,129

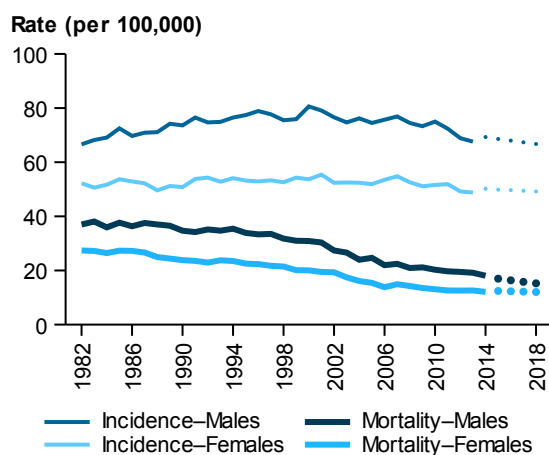


Figure 9.9(a): Incidence and mortality ASRs of colorectal cancer, by sex, 1982–2018

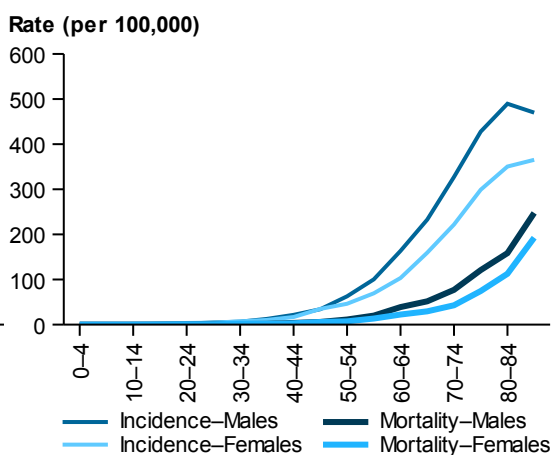
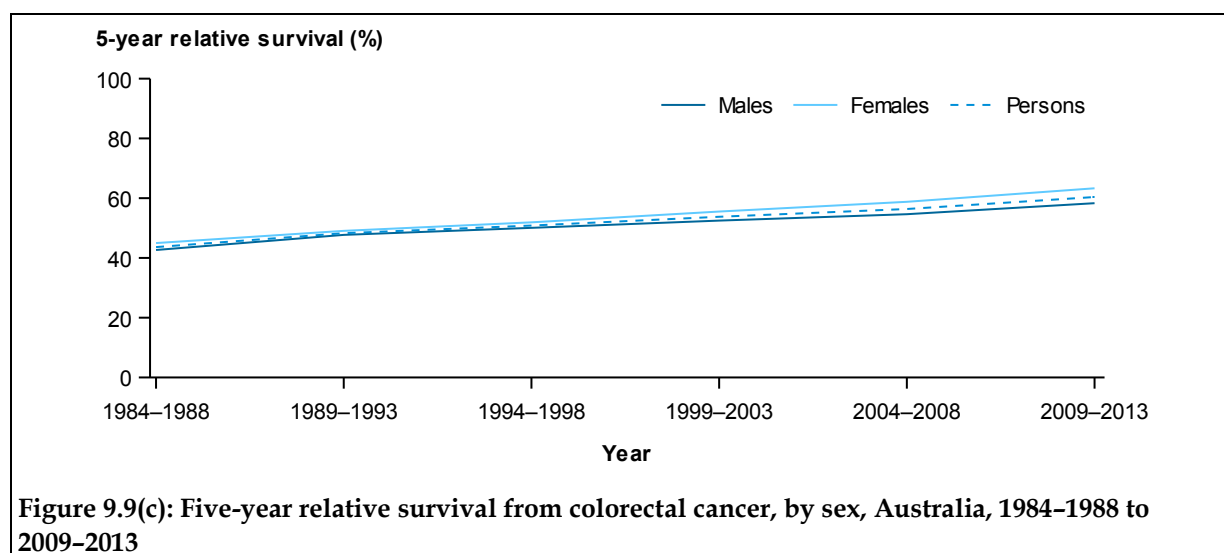


Figure 9.9(b): Incidence (2013) and mortality (2014) rates of colorectal cancer, by age group and sex

Table 9.9(b): Survival and prevalence of colorectal cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	7,230	5,848	13,078
5-year prevalence	29,049	23,581	52,630
31-year prevalence	68,527	60,970	129,497
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	86.2	85.1	85.7
5-year relative survival at diagnosis	68.1	69.4	68.7
5-year conditional relative survival for those already survived 1 year after diagnosis	76.8	79.8	78.1
5-year conditional relative survival for those already survived 5 years after diagnosis	90.3	92.6	91.4
5-year conditional relative survival for those already survived 10 years after diagnosis	95.9	96.8	96.3
5-year conditional relative survival for those already survived 15 years after diagnosis	98.8	99.8	99.3



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. Colorectal deaths presented are likely underestimates (see ABS 2016).
5. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
6. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1997–2013 mortality data for males and 2006–2013 mortality data for females (see Appendix D).
7. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

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

Risk factors:



Table 9.10(a): Incidence and mortality of cancer of the gallbladder and extrahepatic bile ducts, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	366	408	774	93	146	239
Crude rate	3.2	3.5	3.3	0.8	1.2	1.0
ASR	3.0	2.9	2.9	0.8	1.0	0.9
Risk to age 75	1 in 477	1 in 531	1 in 502	1 in 2,386	1 in 1,737	1 in 2,006
Risk to age 85	1 in 244	1 in 238	1 in 240	1 in 937	1 in 772	1 in 845
Mean age (years)	71.4	73.4	72.5	75.0	76.2	75.7
Median age (years)	71.8	74.3	72.7	76.0	77.0	77.0
Estimated number for 2017 and 2018						
2017	428	474	902	123	137	261
2018	444	487	931	127	135	262

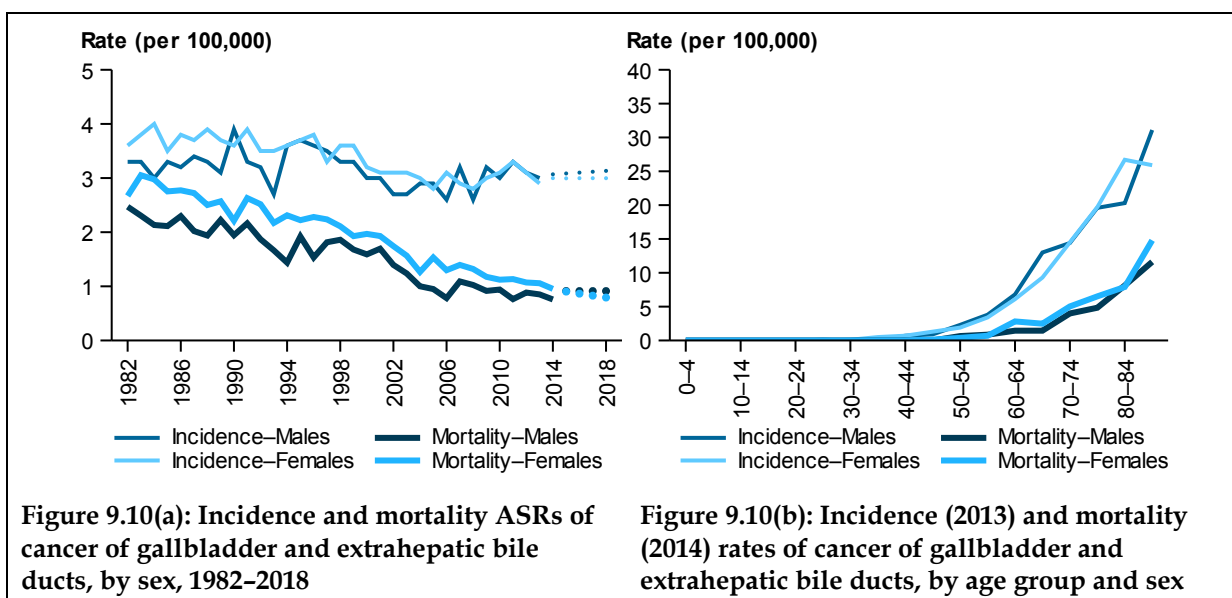


Table 9.10(b): Survival and prevalence of cancer of the gallbladder and extrahepatic bile ducts, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	255	270	525
5-year prevalence	624	632	1,256
31-year prevalence	1,088	1,218	2,306
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	51.8	41.6	46.3
5-year relative survival at diagnosis	21.4	17.3	19.2
5-year conditional relative survival for those already survived 1 year after diagnosis	38.7	39.2	39.0
5-year conditional relative survival for those already survived 5 years after diagnosis	85.8	80.5	82.8
5-year conditional relative survival for those already survived 10 years after diagnosis	98.9	98.4	98.6
5-year conditional relative survival for those already survived 15 years after diagnosis	97.6	100.0	100.0

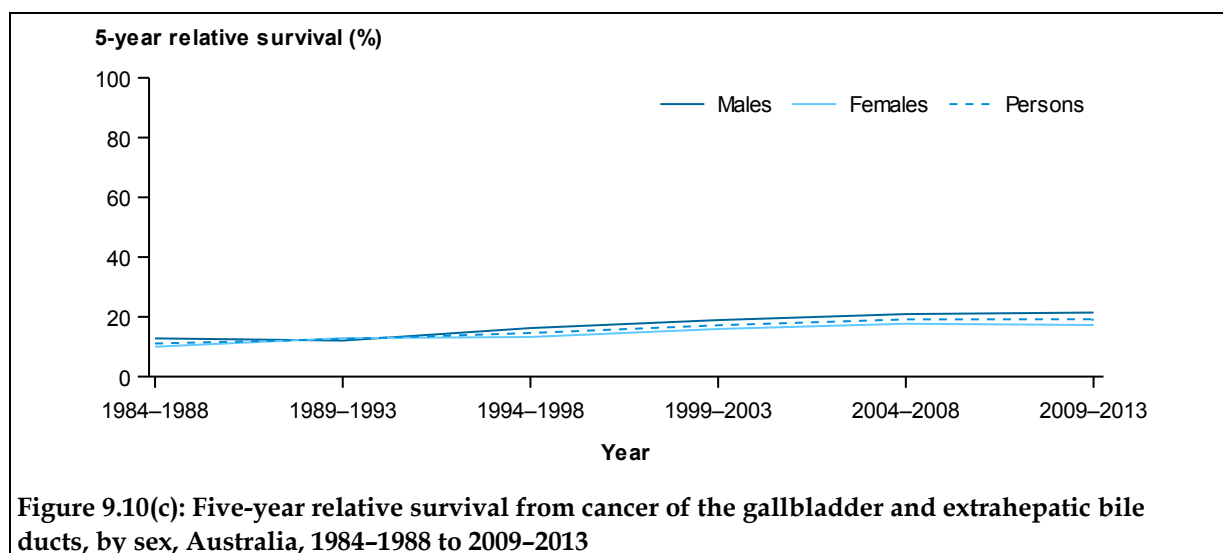


Figure 9.10(c): Five-year relative survival from cancer of the gallbladder and extrahepatic bile ducts, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 2005–2013 mortality data for males and 1996–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Hodgkin lymphoma (C81)

Risk factors:



Table 9.11(a): Incidence and mortality of Hodgkin lymphoma, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	337	274	611	47	47	94
Crude rate	2.9	2.4	2.6	0.4	0.4	0.4
ASR	2.9	2.4	2.6	0.4	0.3	0.4
Risk to age 75	1 in 464	1 in 589	1 in 520	1 in 4,249	1 in 5,386	1 in 4,774
Risk to age 85	1 in 370	1 in 486	1 in 422	1 in 2,105	1 in 2,382	1 in 2,245
Mean age (years)	45.1	42.6	44.0	69.2	64.4	66.8
Median age (years)	41.9	39.2	40.2	70.0	72.0	70.5
Estimated number for 2017 and 2018						
2017	377	291	669	16	14	30
2018	387	296	683	16	15	30

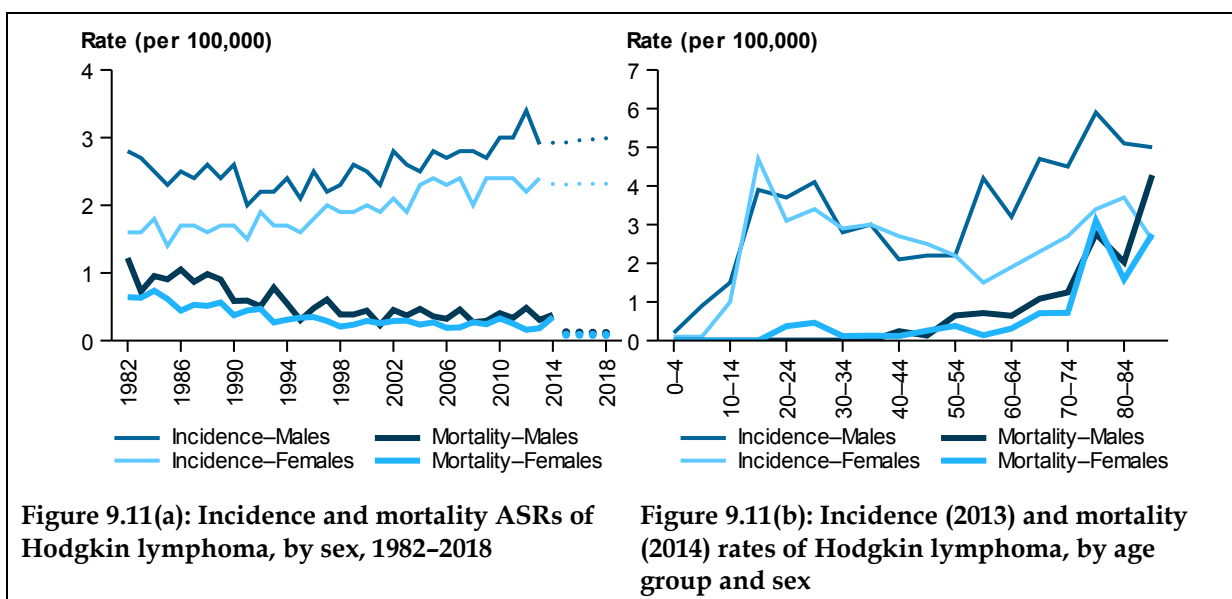
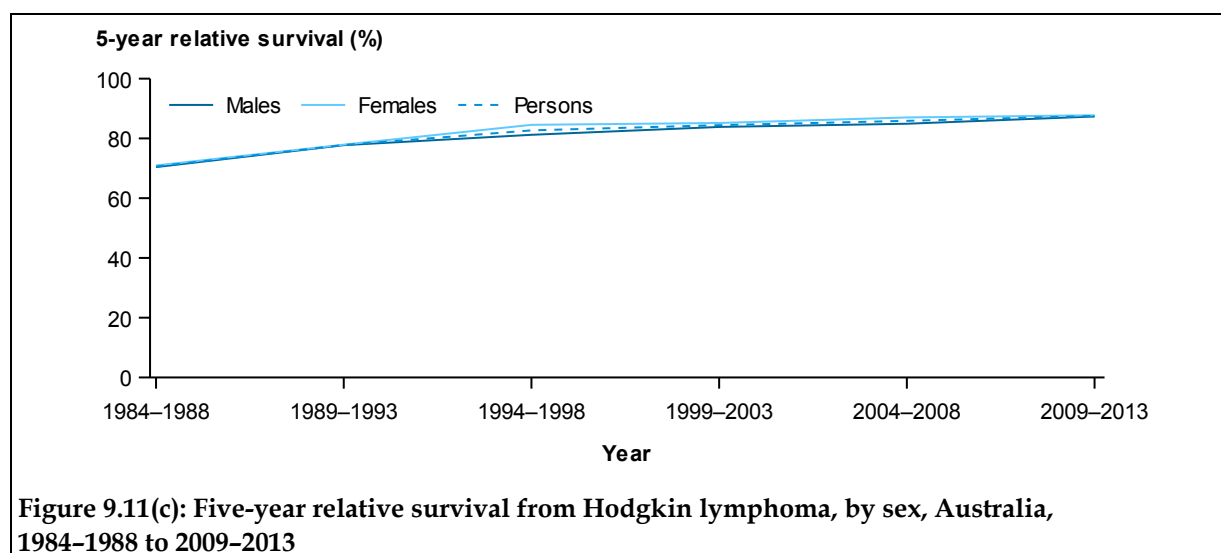


Table 9.11(b): Survival and prevalence of Hodgkin lymphoma, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	360	253	613
5-year prevalence	1,469	1,154	2,623
31-year prevalence	5,051	4,218	9,269
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	92.8	93.8	93.3
5-year relative survival at diagnosis	87.3	87.7	87.5
5-year conditional relative survival for those already survived 1 year after diagnosis	93.1	92.7	92.9
5-year conditional relative survival for those already survived 5 years after diagnosis	95.4	95.2	95.3
5-year conditional relative survival for those already survived 10 years after diagnosis	96.9	95.3	96.2
5-year conditional relative survival for those already survived 15 years after diagnosis	95.5	97.9	96.6



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1968–2013 mortality data for males and 1968–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Kidney cancer (C64)

Risk factors:



Table 9.12(a): Incidence and mortality of kidney cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	1,987	1,071	3,059	574	346	920
Crude rate	17.3	9.2	13.2	4.9	2.9	3.9
ASR	16.1	8.1	11.9	4.6	2.3	3.4
Risk to age 75	1 in 77	1 in 154	1 in 103	1 in 349	1 in 827	1 in 494
Risk to age 85	1 in 51	1 in 99	1 in 68	1 in 168	1 in 330	1 in 227
Mean age (years)	63.6	63.8	63.7	71.2	75.3	72.7
Median age (years)	64.3	64.7	64.4	71.5	78.0	74.0
Estimated number for 2017 and 2018						
2017	2,256	1,256	3,512	681	368	1,049
2018	2,321	1,296	3,617	696	373	1,069

Rate (per 100,000)

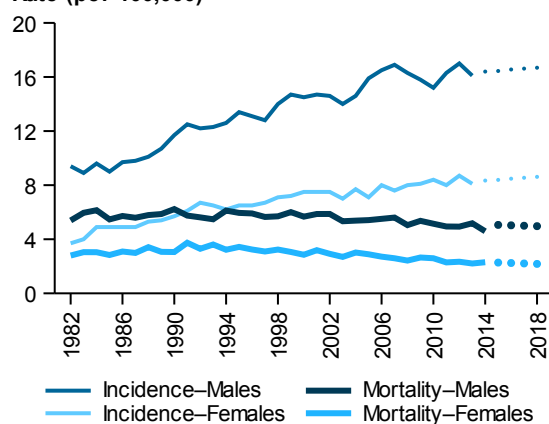


Figure 9.12(a): Incidence and mortality ASRs of kidney cancer, by sex, 1982–2018

Rate (per 100,000)

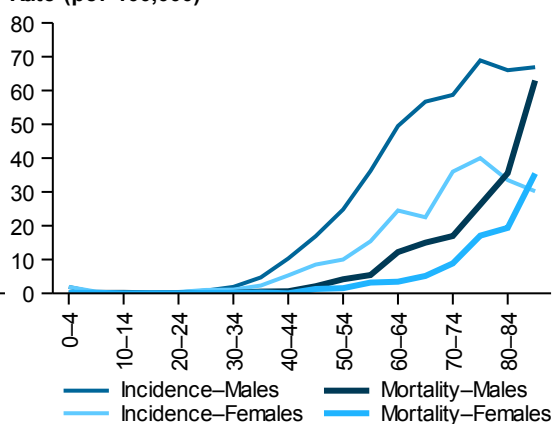
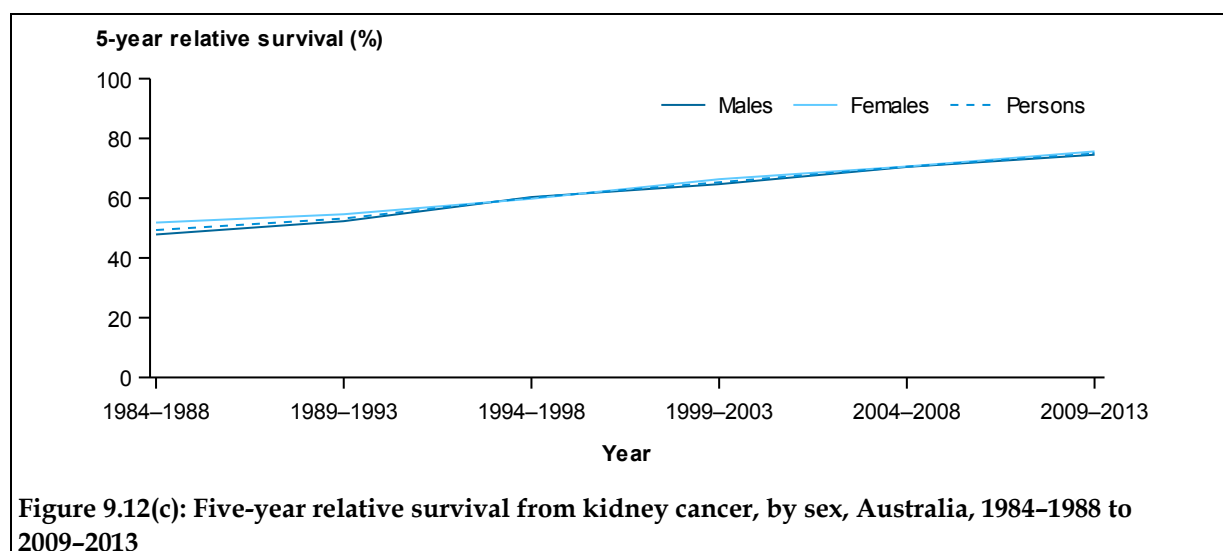


Figure 9.12(b): Incidence (2013) and mortality (2014) rates of kidney cancer, by age group and sex

Table 9.12(b): Survival and prevalence of kidney cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	1,826	999	2,825
5-year prevalence	7,093	3,965	11,058
31-year prevalence	16,120	9,732	25,852
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	87.2	85.9	86.7
5-year relative survival at diagnosis	74.5	75.7	74.9
5-year conditional relative survival for those already survived 1 year after diagnosis	83.7	86.2	84.5
5-year conditional relative survival for those already survived 5 years after diagnosis	89.5	90.4	89.8
5-year conditional relative survival for those already survived 10 years after diagnosis	90.6	93.4	91.7
5-year conditional relative survival for those already survived 15 years after diagnosis	91.5	94.3	92.7



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1999–2013 mortality data for males and 1993–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Laryngeal cancer (C32)

Risk factors:



Table 9.13(a): Incidence and mortality of laryngeal cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	512	80	592	187	25	212
Crude rate	4.5	0.7	2.6	1.6	0.2	0.9
ASR	4.1	0.6	2.3	1.5	0.2	0.8
Risk to age 75	1 in 293	1 in 2,118	1 in 519	1 in 988	1 in 10,036	1 in 1,821
Risk to age 85	1 in 174	1 in 1,243	1 in 316	1 in 499	1 in 4,615	1 in 941
Mean age (years)	67.4	68.8	67.6	71.9	76.0	72.4
Median age (years)	67.5	70.1	67.8	72.0	77.0	73.0
Estimated number for 2017 and 2018						
2017	543	84	627	201	41	242
2018	547	87	634	202	42	245

Rate (per 100,000)

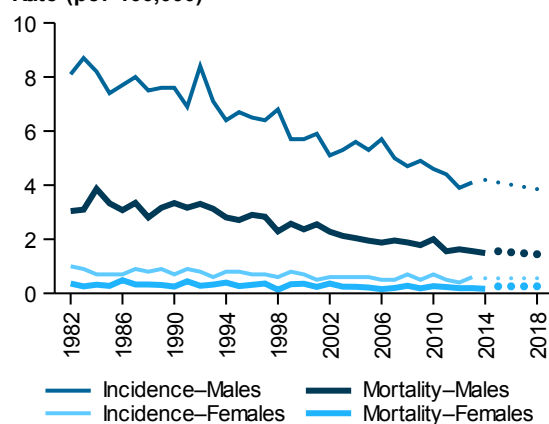


Figure 9.13(a): Incidence and mortality ASRs of laryngeal cancer, by sex, 1982–2018

Rate (per 100,000)

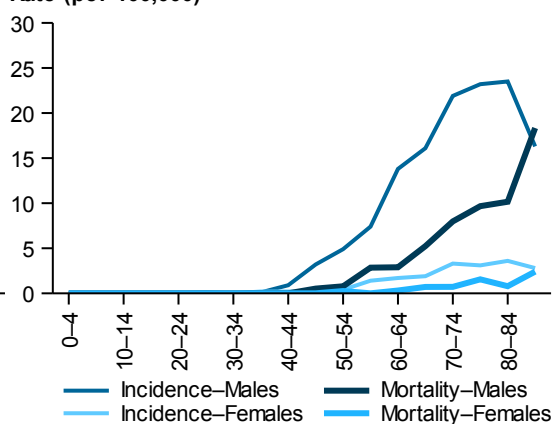
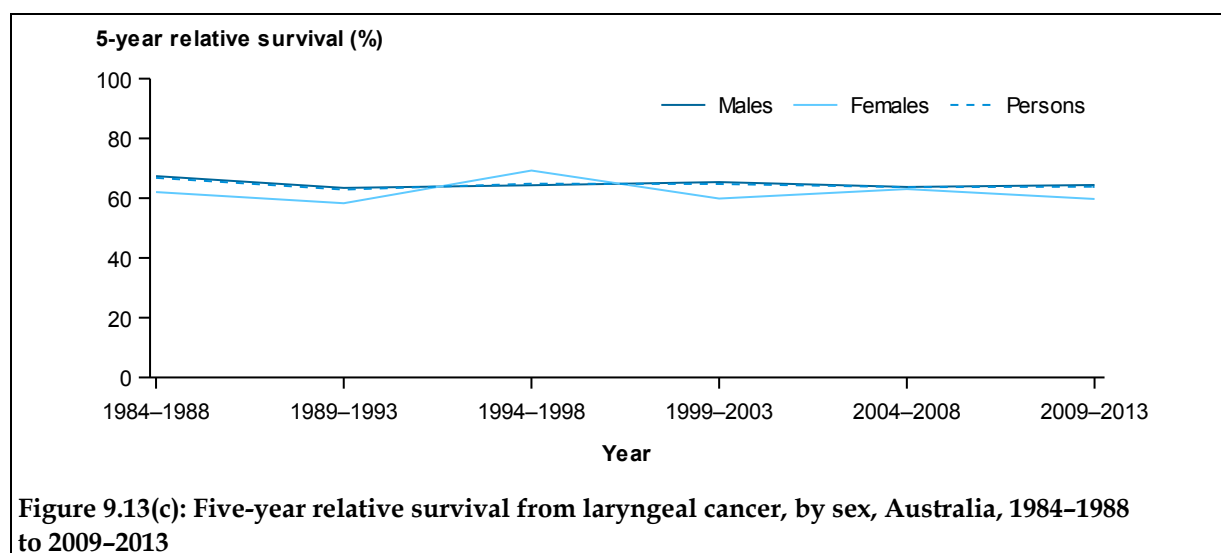


Figure 9.13(b): Incidence (2013) and mortality (2014) rates of laryngeal cancer, by age group and sex

Table 9.13(b): Survival and prevalence of laryngeal cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	427	47	474
5-year prevalence	1,837	240	2,077
31-year prevalence	5,011	645	5,656
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	84.7	83.0	84.5
5-year relative survival at diagnosis	64.4	59.7	63.8
5-year conditional relative survival for those already survived 1 year after diagnosis	72.2	70.5	71.9
5-year conditional relative survival for those already survived 5 years after diagnosis	80.3	83.4	80.6
5-year conditional relative survival for those already survived 10 years after diagnosis	82.0	79.4	81.7
5-year conditional relative survival for those already survived 15 years after diagnosis	84.0	76.7	83.2



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1991–2013 mortality data for males and 1968–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Lip cancer (C00)

Table 9.14(a): Incidence and mortality of lip cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	759	288	1,047	2	—	2
Crude rate	6.6	2.5	4.5	0.0	..	0.0
ASR	6.3	2.1	4.2	0.0	..	0.0
Risk to age 75	1 in 211	1 in 688	1 in 325	1 in 55,396	..	1 in 111,825
Risk to age 85	1 in 135	1 in 356	1 in 199	1 in 55,396	..	1 in 111,825
Mean age (years)	61.7	68.8	63.7	n.p.	..	n.p.
Median age (years)	61.6	71.3	64.1	n.p.	..	n.p.
Estimated number for 2017 and 2018						
2017	820	308	1,128	3	7	10
2018	838	316	1,153	4	7	10

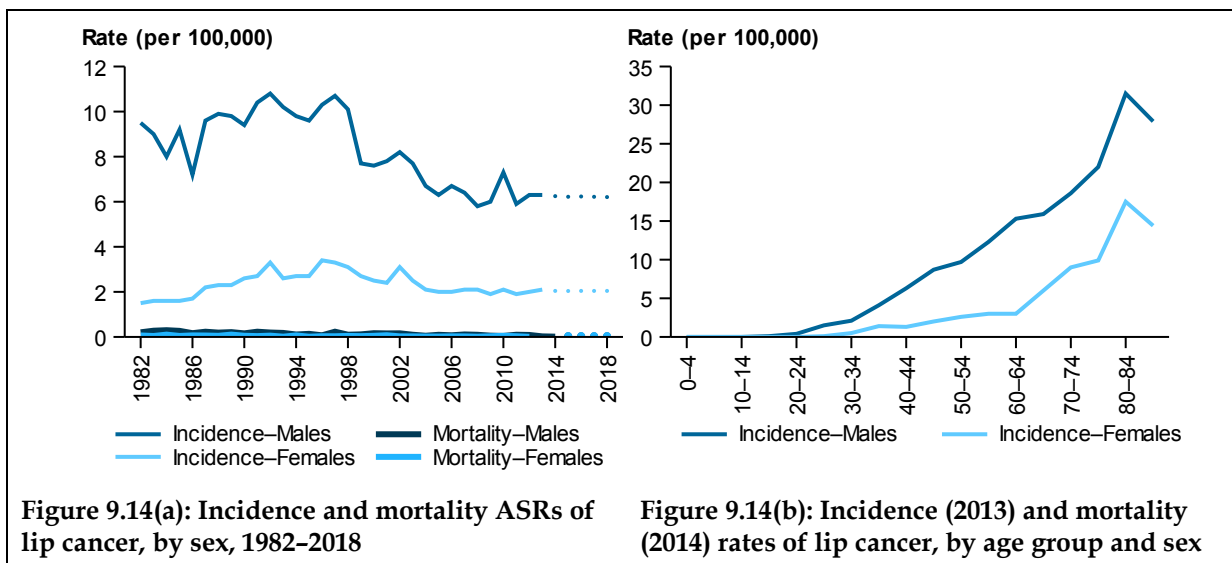


Figure 9.14(a): Incidence and mortality ASRs of lip cancer, by sex, 1982–2018

Figure 9.14(b): Incidence (2013) and mortality (2014) rates of lip cancer, by age group and sex

Table 9.14(b): Survival and prevalence of lip cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	719	264	983
5-year prevalence	3,215	1,159	4,374
31-year prevalence	12,299	3,924	16,223
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	99.0	99.0	99.0
5-year relative survival at diagnosis	92.6	93.8	92.9
5-year conditional relative survival for those already survived 1 year after diagnosis	91.9	93.3	92.3
5-year conditional relative survival for those already survived 5 years after diagnosis	94.5	92.3	93.9
5-year conditional relative survival for those already survived 10 years after diagnosis	94.8	91.4	93.9
5-year conditional relative survival for those already survived 15 years after diagnosis	96.3	96.6	96.3

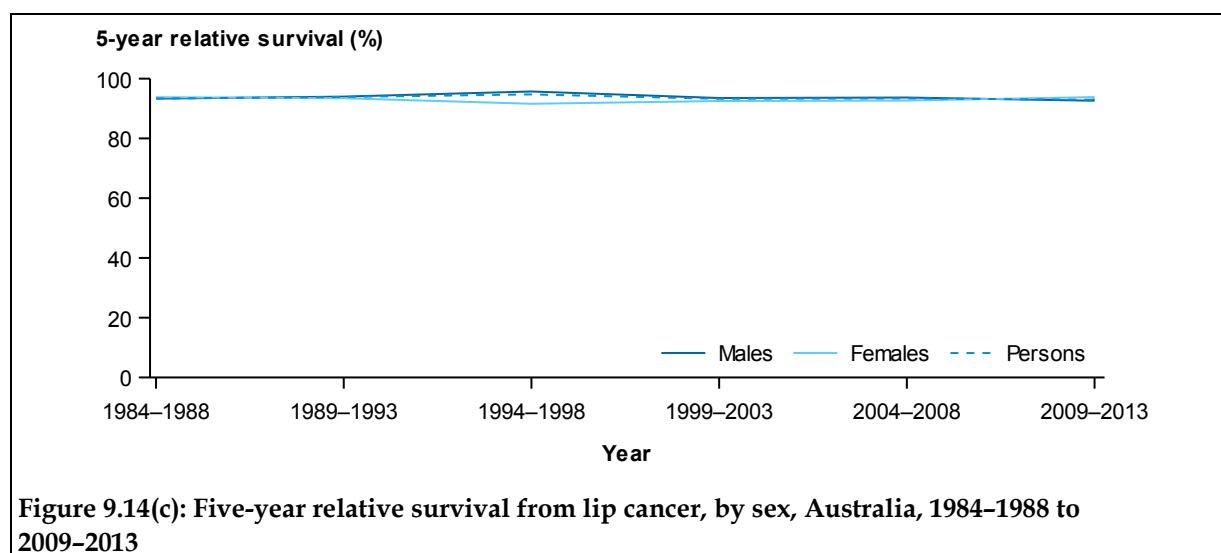


Figure 9.14(c): Five-year relative survival from lip cancer, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
3. Due to the small number of deaths, age-specific mortality rates are not presented.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1968–2013 mortality data for males and 1968–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Liver cancer (C22)

Risk factors:



Table 9.15(a): Incidence and mortality of liver cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	1,283	495	1,778	1,131	601	1,732
Crude rate	11.2	4.3	7.7	9.7	5.1	7.4
ASR	10.5	3.6	6.9	8.9	4.1	6.4
Risk to age 75	1 in 125	1 in 393	1 in 190	1 in 154	1 in 368	1 in 218
Risk to age 85	1 in 75	1 in 210	1 in 113	1 in 83	1 in 169	1 in 113
Mean age (years)	65.7	69.7	66.8	68.7	72.8	70.1
Median age (years)	65.4	71.3	67.2	69.0	74.0	70.0
Estimated number for 2017 and 2018						
2017	1,589	527	2,116	1,332	647	1,979
2018	1,669	545	2,215	1,407	681	2,088

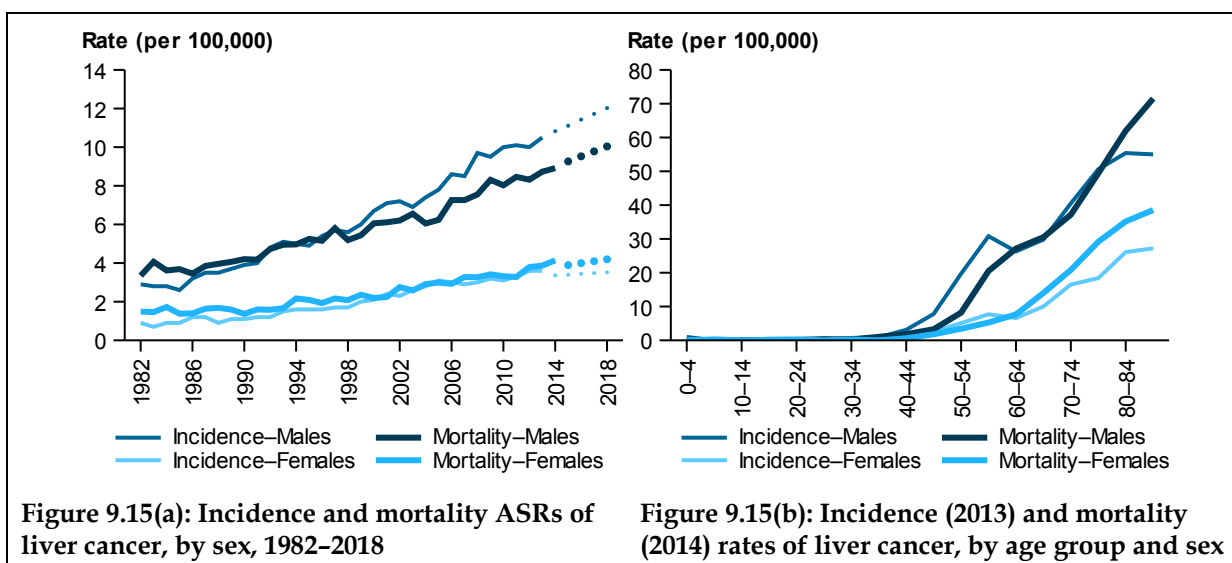


Table 9.15(b): Survival and prevalence of liver cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	761	288	1,049
5-year prevalence	1,861	656	2,517
31-year prevalence	2,675	1,015	3,690
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	44.1	40.0	43.0
5-year relative survival at diagnosis	17.8	15.8	17.3
5-year conditional relative survival for those already survived 1 year after diagnosis	36.0	38.1	36.6
5-year conditional relative survival for those already survived 5 years after diagnosis	71.2	78.5	73.2
5-year conditional relative survival for those already survived 10 years after diagnosis	92.9	89.9	92.0
5-year conditional relative survival for those already survived 15 years after diagnosis	100.0	100.0	100.0

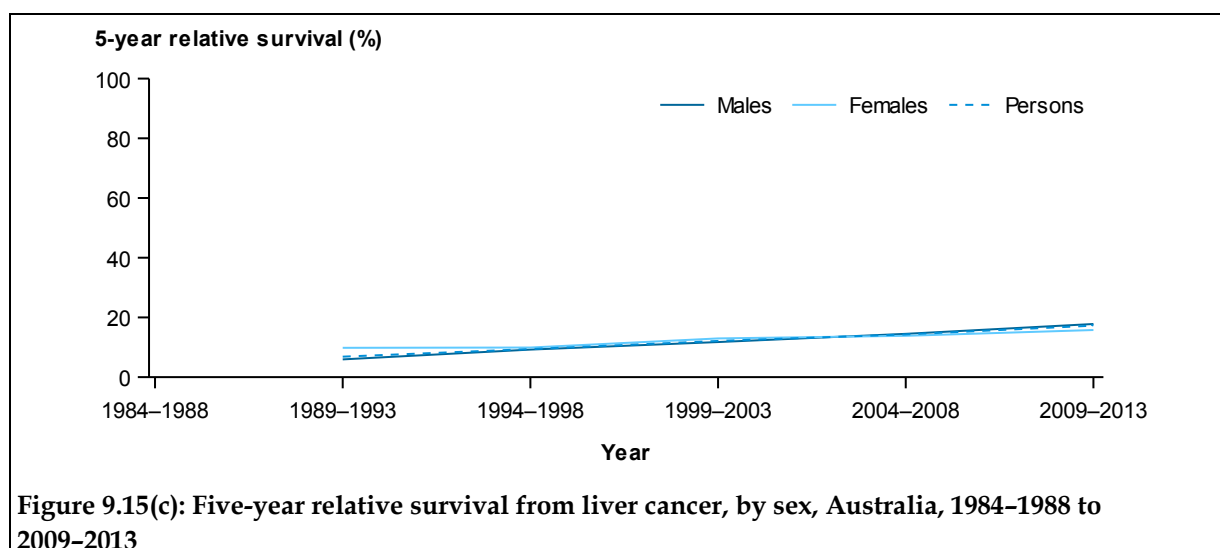


Figure 9.15(c): Five-year relative survival from liver cancer, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 2004–2013 mortality data for males and 1993–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).
7. Due to the small number of cases in the period 1984–1988, 5-year relative survival is presented from 1989–1993.

Sources: AIHW ACD 2013; AIHW NMD.

Lung cancer (C33–C34)

Risk factors:



Table 9.16(a): Incidence and mortality of lung cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	6,627	4,548	11,174	4,947	3,304	8,251
Crude rate	57.6	39.2	48.3	42.4	28.0	35.2
ASR	54.5	32.9	42.6	39.7	22.9	30.5
Risk to age 75	1 in 27	1 in 40	1 in 32	1 in 40	1 in 61	1 in 49
Risk to age 85	1 in 13	1 in 22	1 in 17	1 in 18	1 in 31	1 in 23
Mean age (years)	71.6	70.6	71.2	72.5	72.2	72.4
Median age (years)	72.2	70.7	71.6	73.0	73.0	73.0
Estimated number for 2017 and 2018						
2017	7,094	5,340	12,434	5,179	3,842	9,021
2018	7,212	5,529	12,741	5,229	3,969	9,198

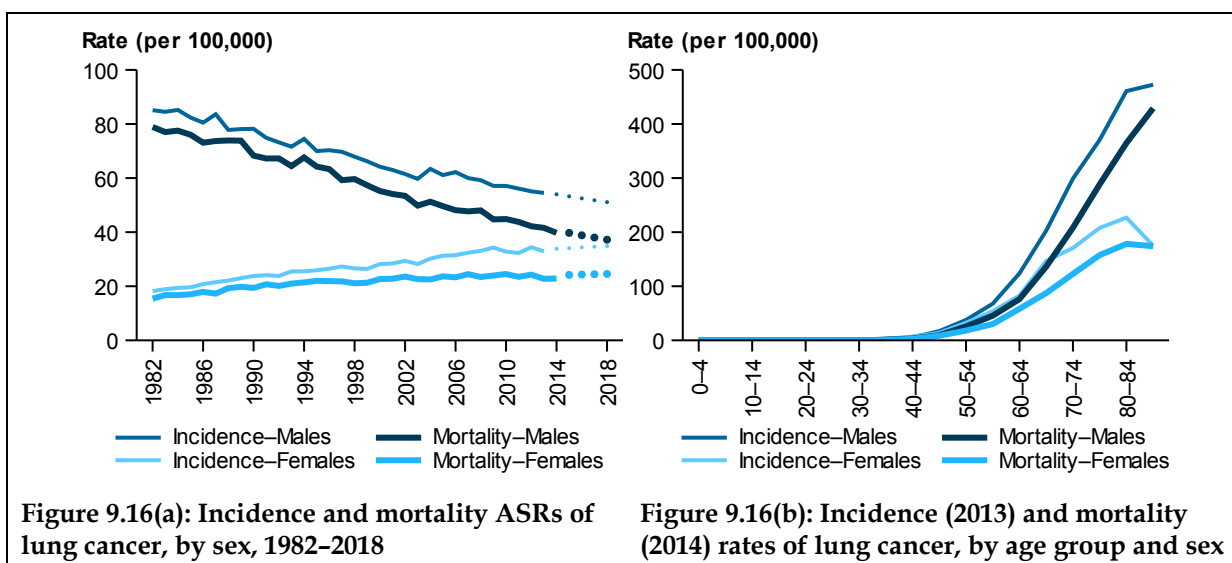
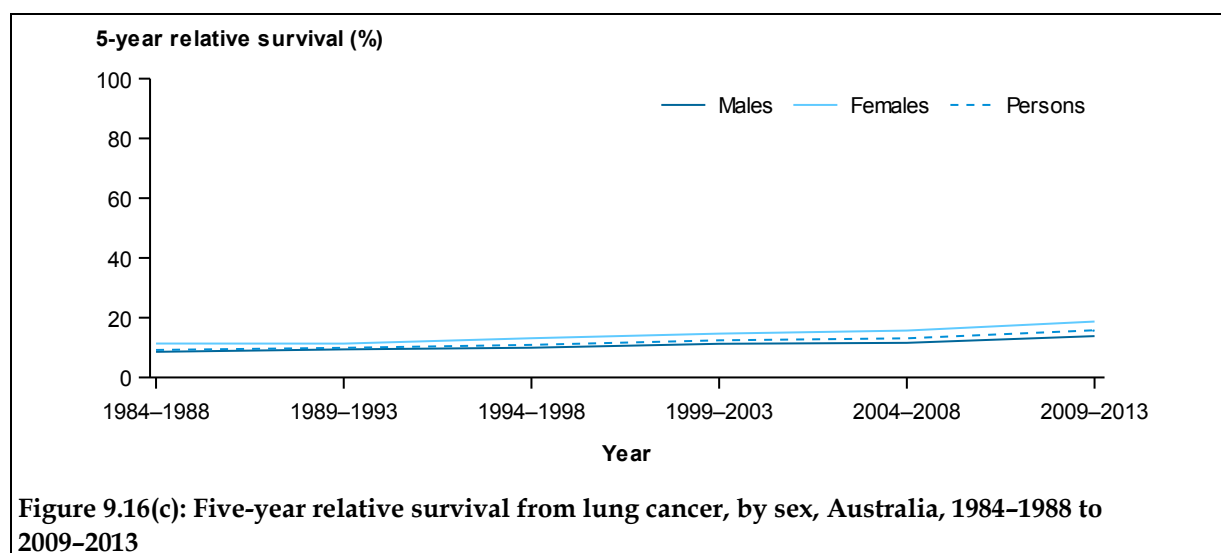


Table 9.16(b): Survival and prevalence of lung cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	3,940	3,011	6,951
5-year prevalence	8,740	7,184	15,924
31-year prevalence	13,972	11,409	25,381
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	38.3	46.6	41.6
5-year relative survival at diagnosis	13.8	18.7	15.8
5-year conditional relative survival for those already survived 1 year after diagnosis	32.7	37.4	34.8
5-year conditional relative survival for those already survived 5 years after diagnosis	68.8	73.8	71.1
5-year conditional relative survival for those already survived 10 years after diagnosis	78.5	83.3	80.6
5-year conditional relative survival for those already survived 15 years after diagnosis	90.7	89.0	90.0



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1994–2013 mortality data for males and 1999–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Melanoma of the skin (C43)

Risk factor:



Table 9.17(a): Incidence and mortality of melanoma of the skin, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	7,513	5,232	12,744	988	479	1,467
Crude rate	65.3	45.1	55.1	8.5	4.1	6.3
ASR	61.9	40.4	50.3	8.1	3.3	5.5
Risk to age 75	1 in 22	1 in 33	1 in 26	1 in 221	1 in 449	1 in 298
Risk to age 85	1 in 13	1 in 23	1 in 17	1 in 90	1 in 238	1 in 135
Mean age (years)	64.7	60.6	63.0	71.0	70.1	70.7
Median age (years)	66.2	61.3	64.6	74.0	72.0	73.0
Estimated number for 2017 and 2018						
2017	8,392	5,549	13,941	1,280	559	1,839
2018	8,653	5,667	14,320	1,331	574	1,905

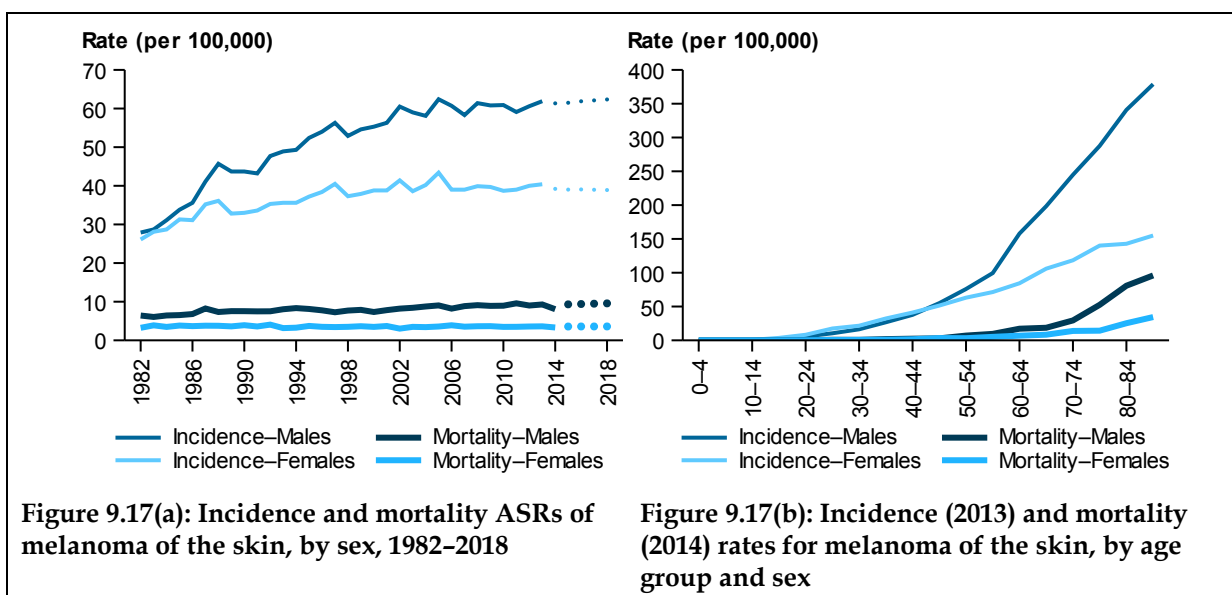
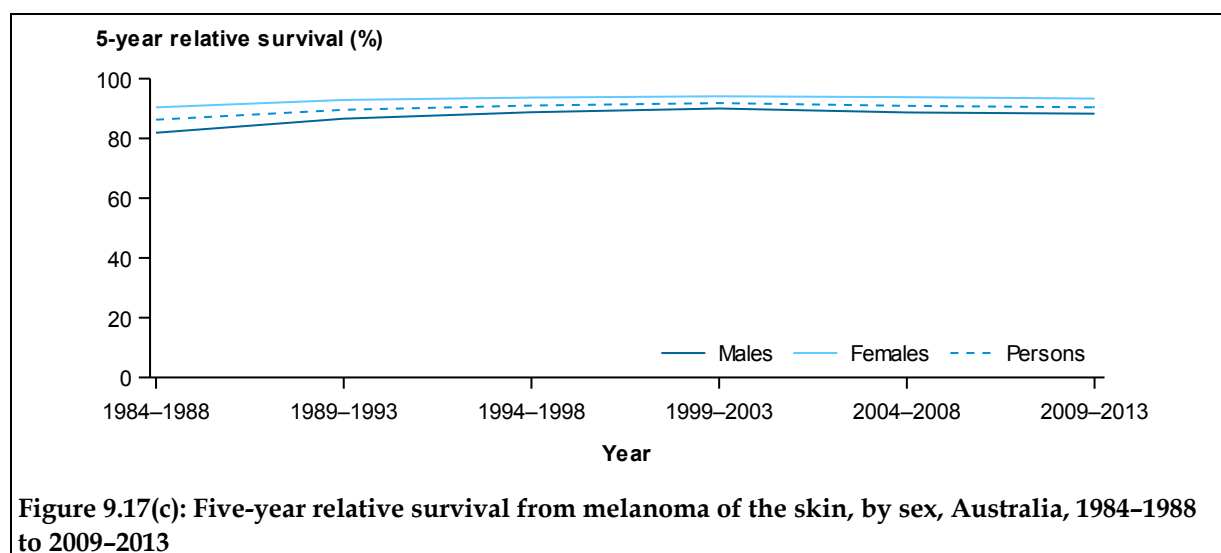


Table 9.17(b): Survival and prevalence of melanoma of the skin, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	6,957	5,003	11,960
5-year prevalence	29,567	22,130	51,697
31-year prevalence	88,778	80,514	169,292
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	96.5	98.2	97.2
5-year relative survival at diagnosis	88.3	93.3	90.4
5-year conditional relative survival for those already survived 1 year after diagnosis	90.4	94.5	92.2
5-year conditional relative survival for those already survived 5 year after diagnosis	95.9	97.6	96.7
5-year conditional relative survival for those already survived 10 year after diagnosis	98.3	99.0	98.6
5-year conditional relative survival for those already survived 15 year after diagnosis	98.2	99.5	98.9



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1987–2013 mortality data for males and 1986–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Mesothelioma (C45)

Risk factors:



Table 9.18(a): Incidence and mortality of mesothelioma, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	574	132	706	575	117	692
Crude rate	5.0	1.1	3.1	4.9	1.0	2.9
ASR	4.8	0.9	2.7	4.7	0.8	2.6
Risk to age 75	1 in 360	1 in 1,522	1 in 587	1 in 392	1 in 2,126	1 in 669
Risk to age 85	1 in 137	1 in 712	1 in 241	1 in 138	1 in 807	1 in 247
Mean age (years)	74.5	72.8	74.1	75.4	74.1	75.1
Median age (years)	75.3	73.1	75.0	76.0	76.0	76.0
Estimated number for 2017 and 2018						
2017	655	146	801	645	145	790
2018	674	150	824	671	152	823

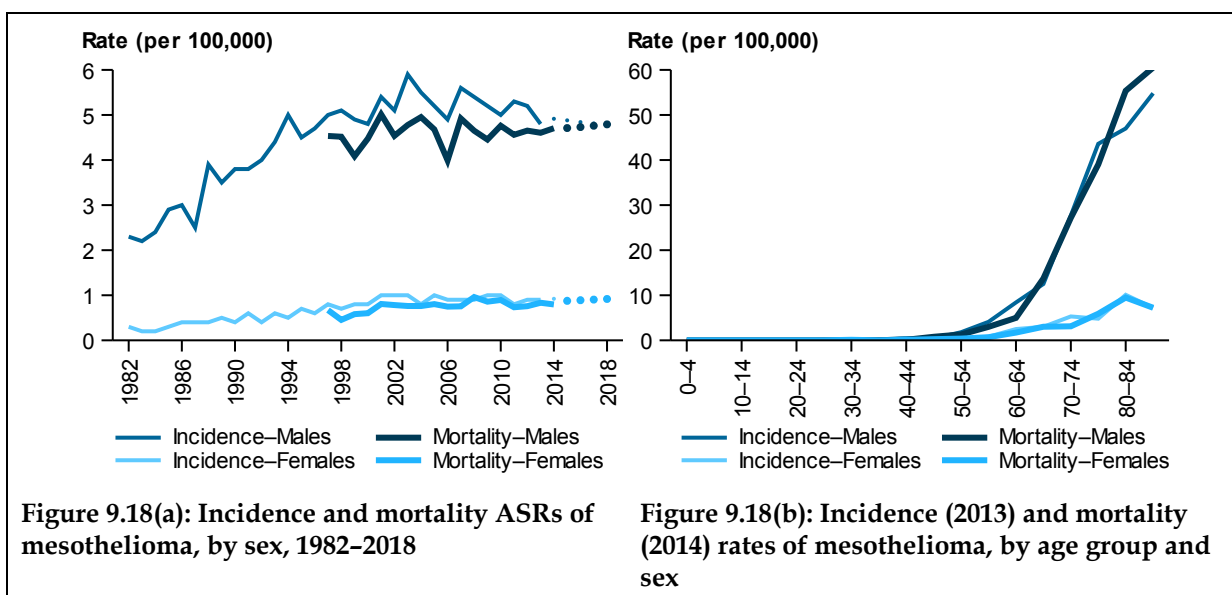


Table 9.18(b): Survival and prevalence of mesothelioma, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	409	89	498
5-year prevalence	706	171	877
31-year prevalence	846	243	1,089
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	43.9	48.1	44.6
5-year relative survival at diagnosis	5.3	8.2	5.8
5-year conditional relative survival for those already survived 1 year after diagnosis	9.0	13.9	10.0
5-year conditional relative survival for those already survived 5 years after diagnosis	43.0	n.p.	44.8
5-year conditional relative survival for those already survived 10 years after diagnosis	n.p.	n.p.	75.0
5-year conditional relative survival for those already survived 15 years after diagnosis	n.p.	n.p.	93.1

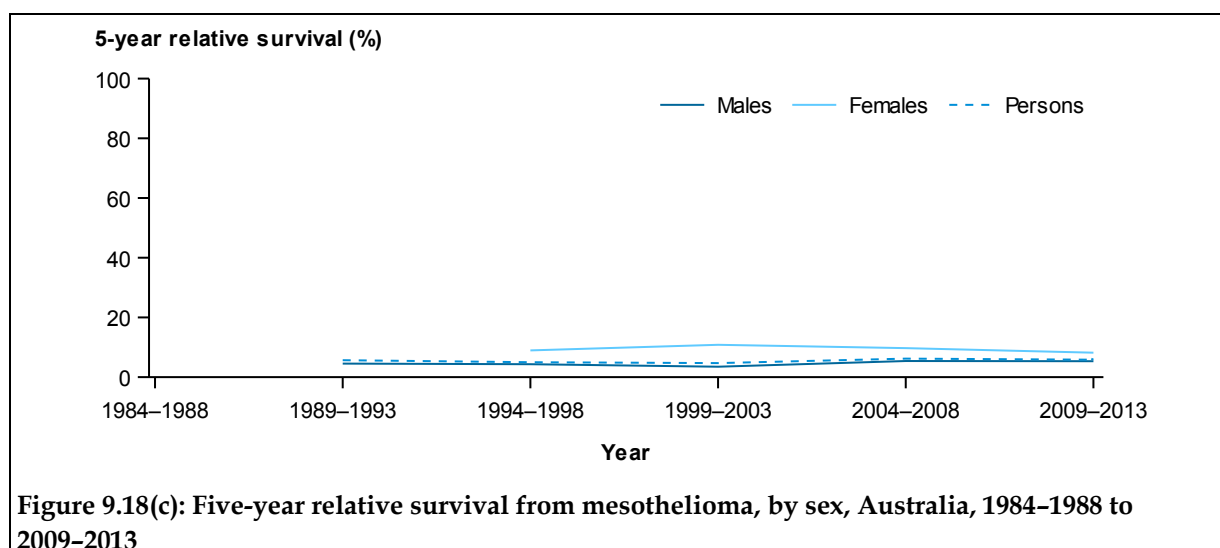


Figure 9.18(c): Five-year relative survival from mesothelioma, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1997–2013 mortality data for males and 1997–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).
7. Due to the small number of cases in earlier periods, 5-year relative survival was presented from 1989–1993 for males and persons, and 1994–1998 for females. Mortality data are available from 1997.

Sources: AIHW ACD 2013; AIHW NMD.

Mouth cancer (C03–C06)

Risk factors:



Table 9.19(a): Incidence and mortality of mouth cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	323	235	558	83	49	132
Crude rate	2.8	2.0	2.4	0.7	0.4	0.6
ASR	2.6	1.7	2.2	0.7	0.3	0.5
Risk to age 75	1 in 463	1 in 746	1 in 572	1 in 1,945	1 in 4,513	1 in 2,732
Risk to age 85	1 in 315	1 in 447	1 in 373	1 in 1,219	1 in 2,615	1 in 1,689
Mean age (years)	63.1	68.7	65.5	67.5	75.6	70.5
Median age (years)	63.4	70.2	65.1	67.0	76.0	70.0
Estimated number for 2017 and 2018						
2017	395	253	648	74	59	133
2018	404	259	663	75	60	135

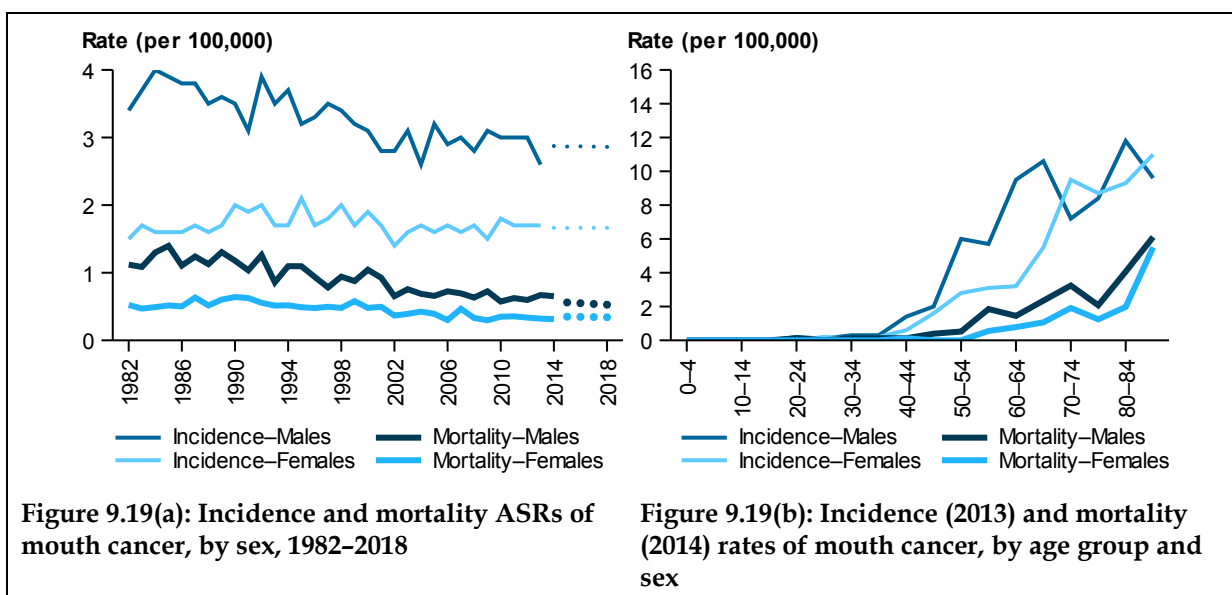
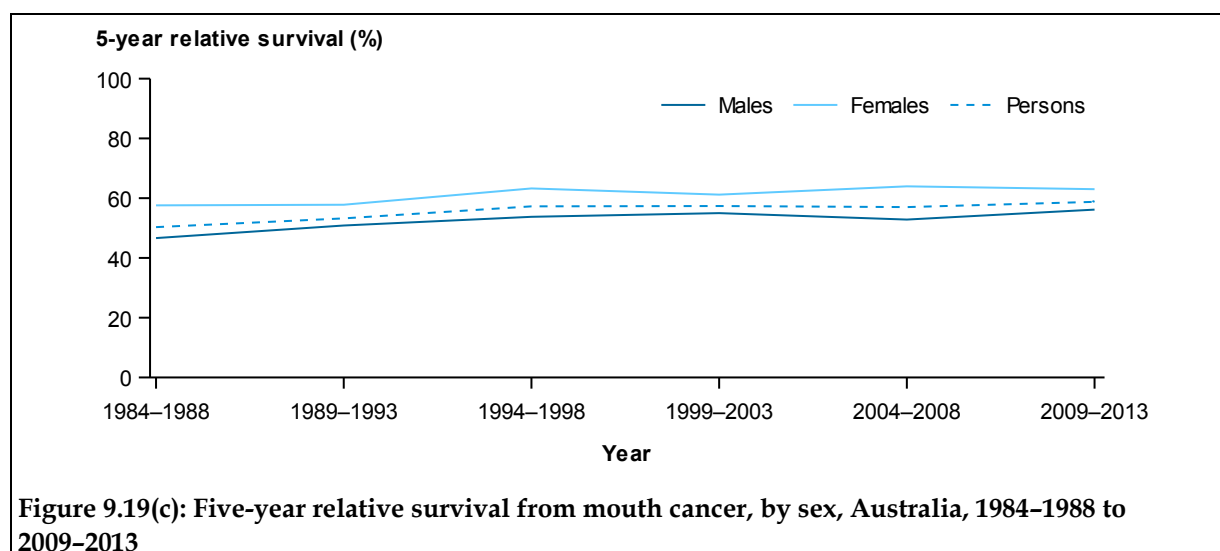


Table 9.19(b): Survival and prevalence of mouth cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	318	203	521
5-year prevalence	1,150	745	1,895
31-year prevalence	2,560	1,845	4,405
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	82.2	83.8	82.8
5-year relative survival at diagnosis	56.2	63.0	58.8
5-year conditional relative survival for those already survived 1 year after diagnosis	64.6	73.0	67.8
5-year conditional relative survival for those already survived 5 years after diagnosis	72.1	78.9	74.9
5-year conditional relative survival for those already survived 10 years after diagnosis	74.1	84.1	78.5
5-year conditional relative survival for those already survived 15 years after diagnosis	78.6	82.4	80.3



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1987–2013 mortality data for males and 1990–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Myelodysplastic syndromes (D46)

Table 9.20(a): Incidence and mortality of myelodysplastic syndromes, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	804	503	1,307	258	186	444
Crude rate	7.0	4.3	5.7	2.2	1.6	1.9
ASR	6.9	3.4	4.9	2.2	1.2	1.5
Risk to age 75	1 in 332	1 in 555	1 in 417	1 in 2,630	1 in 2,872	1 in 2,749
Risk to age 85	1 in 104	1 in 209	1 in 143	1 in 420	1 in 633	1 in 516
Mean age (years)	77.2	77.0	77.1	83.1	81.5	82.4
Median age (years)	78.9	79.1	79.1	85.0	83.0	84.0
Estimated number for 2017 and 2018						
2017	967	593	1,560	287	177	464
2018	995	606	1,602	295	180	475

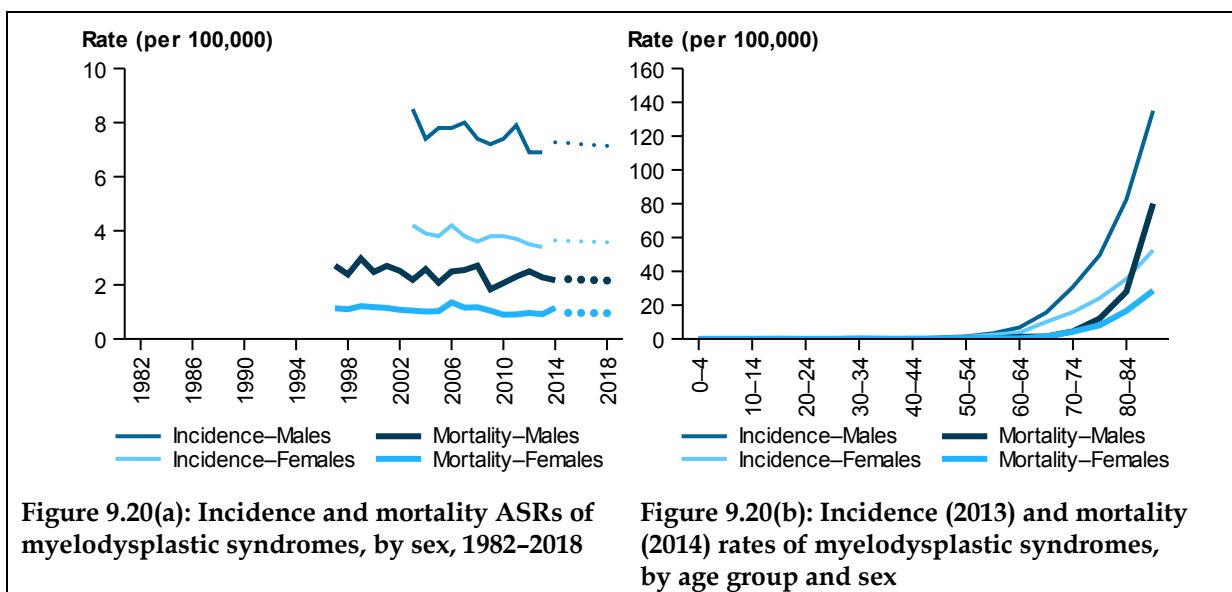
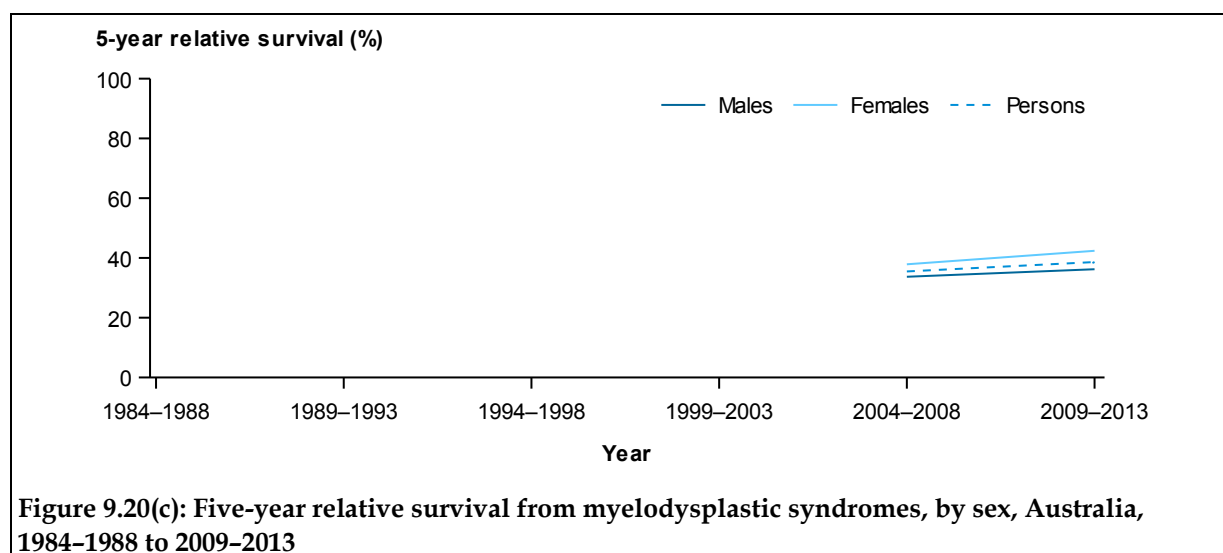


Figure 9.20(a): Incidence and mortality ASRs of myelodysplastic syndromes, by sex, 1982–2018

Figure 9.20(b): Incidence (2013) and mortality (2014) rates of myelodysplastic syndromes, by age group and sex

Table 9.20(b): Survival and prevalence of myelodysplastic syndromes, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	620	425	1,045
5-year prevalence	1,970	1,337	3,307
31-year prevalence	2,755	2,073	4,828
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	73.4	76.7	74.6
5-year relative survival at diagnosis	36.2	42.4	38.6
5-year conditional relative survival for those already survived 1 year after diagnosis	43.8	48.5	45.7
5-year conditional relative survival for those already survived 5 years after diagnosis	54.3	61.5	57.7
5-year conditional relative survival for those already survived 10 years after diagnosis	62.9	73.7	68.2
5-year conditional relative survival for those already survived 15 years after diagnosis	n.p.	70.3	74.4



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1997–2013 mortality data for males and 1997–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).
7. Due to data availability, 5-year relative survival was presented from 2004–2008. Incidence data are available from 2003 and mortality data are available from 1997.

Sources: AIHW ACD 2013; AIHW NMD.

Multiple myeloma (C90.0)

Risk factor:



Table 9.21(a): Incidence and mortality of multiple myeloma, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	928	708	1,637	497	394	891
Crude rate	8.1	6.1	7.1	4.3	3.3	3.8
ASR	7.6	5.1	6.3	4.0	2.6	3.3
Risk to age 75	1 in 185	1 in 267	1 in 219	1 in 456	1 in 688	1 in 550
Risk to age 85	1 in 94	1 in 142	1 in 114	1 in 169	1 in 257	1 in 207
Mean age (years)	69.9	70.5	70.2	74.2	76.2	75.1
Median age (years)	70.7	71.2	70.9	75.0	77.0	76.0
Estimated number for 2017 and 2018						
2017	1,025	791	1,816	566	406	971
2018	1,056	820	1,876	584	415	999

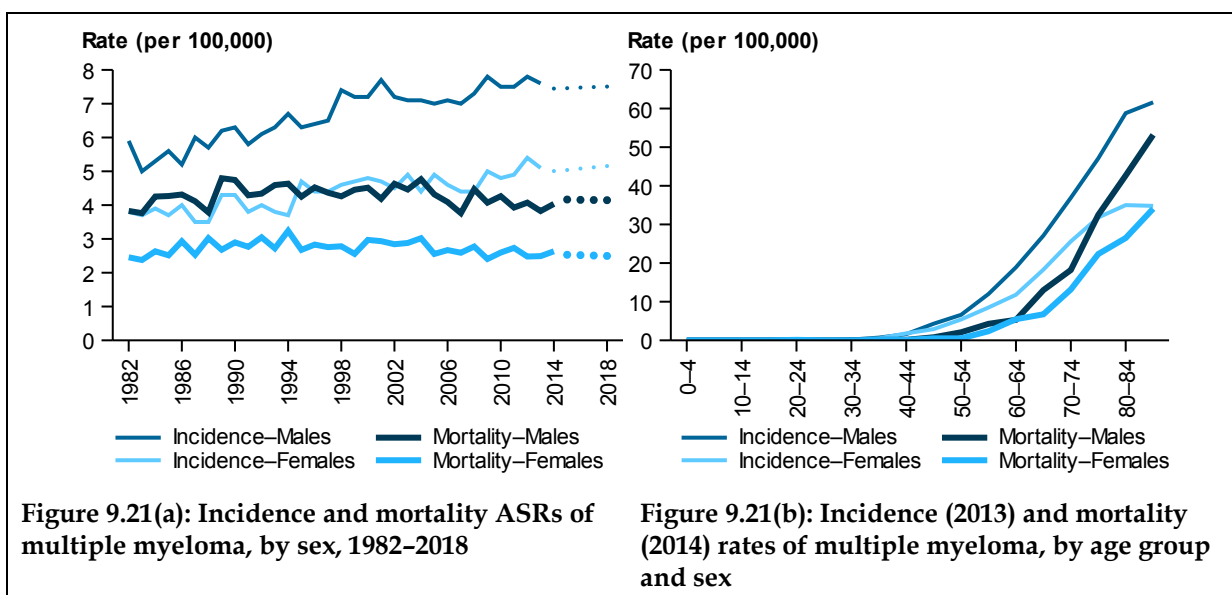


Figure 9.21(a): Incidence and mortality ASRs of multiple myeloma, by sex, 1982-2018

Figure 9.21(b): Incidence (2013) and mortality (2014) rates of multiple myeloma, by age group and sex

Table 9.21(b): Survival and prevalence of multiple myeloma, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	798	629	1,427
5-year prevalence	2,710	2,017	4,727
31-year prevalence	4,117	3,178	7,295
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	82.2	81.4	81.9
5-year relative survival at diagnosis	48.8	48.2	48.5
5-year conditional relative survival for those already survived 1 year after diagnosis	52.0	52.2	52.1
5-year conditional relative survival for those already survived 5 years after diagnosis	58.1	57.5	57.8
5-year conditional relative survival for those already survived 10 years after diagnosis	70.7	65.9	68.4
5-year conditional relative survival for those already survived 15 years after diagnosis	86.6	79.0	83.0

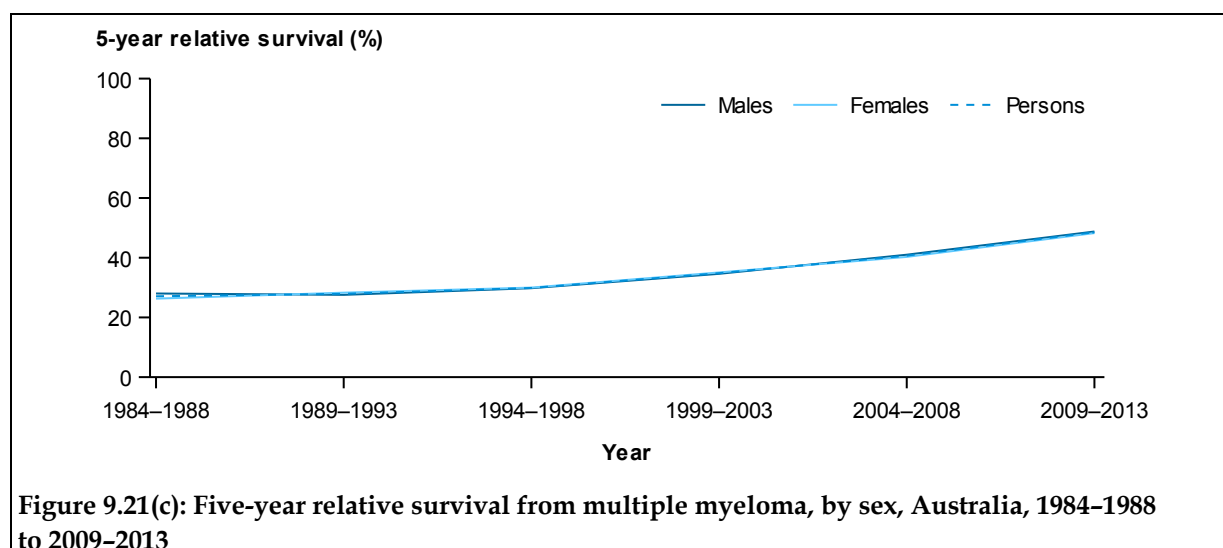


Figure 9.21(c): Five-year relative survival from multiple myeloma, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1986–2013 mortality data for males and 1988–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Non-Hodgkin lymphoma (C82–C86)

Risk factors:



Table 9.22(a): Incidence and mortality of Non-Hodgkin lymphoma, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	2,814	2,164	4,978	860	644	1,504
Crude rate	24.5	18.6	21.5	7.4	5.5	6.4
ASR	23.2	16.1	19.4	7.0	4.2	5.5
Risk to age 75	1 in 58	1 in 83	1 in 69	1 in 275	1 in 489	1 in 354
Risk to age 85	1 in 34	1 in 48	1 in 40	1 in 105	1 in 167	1 in 130
Mean age (years)	65.4	67.0	66.1	74.1	76.7	75.2
Median age (years)	67.4	68.6	67.9	76.0	79.5	77.0
Estimated number for 2017 and 2018						
2017	3,196	2,367	5,563	846	587	1,434
2018	3,294	2,426	5,720	857	586	1,443

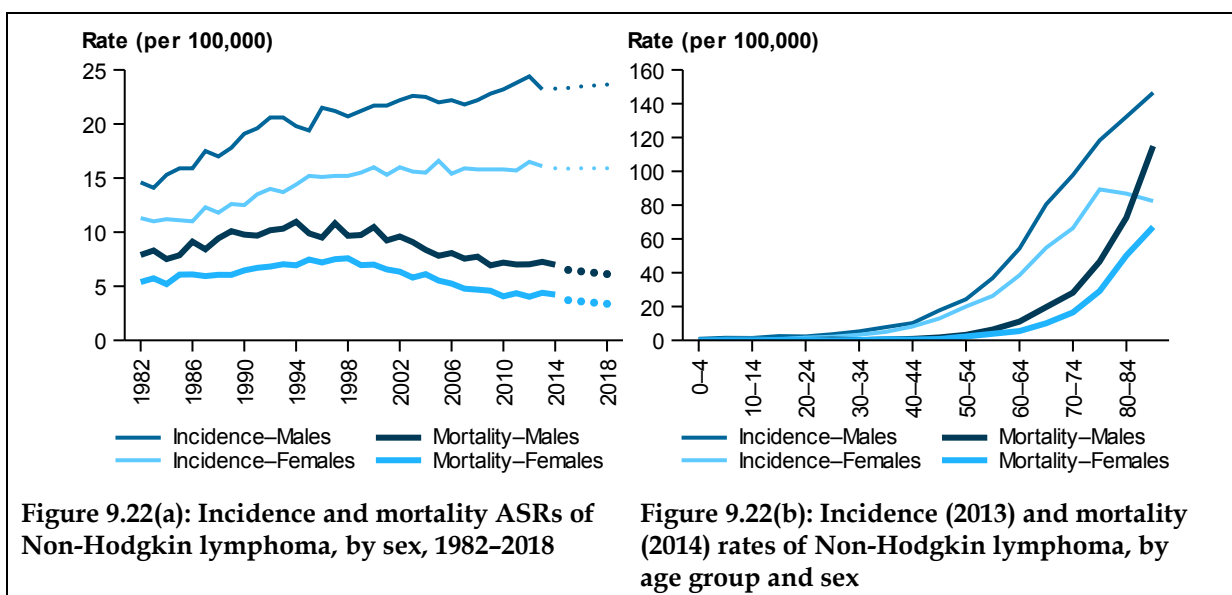


Table 9.22(b): Survival and prevalence of Non-Hodgkin lymphoma, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	2,552	1,935	4,487
5-year prevalence	9,863	7,735	17,598
31-year prevalence	22,693	18,896	41,589
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	85.9	85.9	85.9
5-year relative survival at diagnosis	73.4	75.4	74.3
5-year conditional relative survival for those already survived 1 year after diagnosis	83.0	85.9	84.3
5-year conditional relative survival for those already survived 5 years after diagnosis	87.6	89.1	88.3
5-year conditional relative survival for those already survived 10 years after diagnosis	88.6	90.6	89.5
5-year conditional relative survival for those already survived 15 years after diagnosis	92.8	93.5	93.1

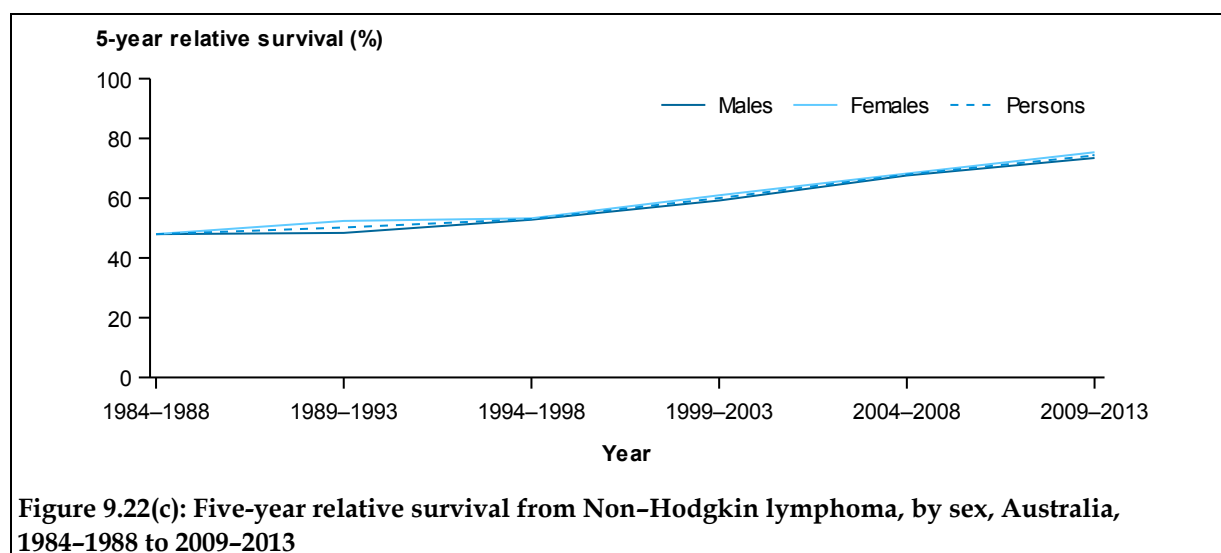


Figure 9.22(c): Five-year relative survival from Non-Hodgkin lymphoma, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1994–2013 mortality data for males and 1998–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Non-melanoma skin cancer (C44)

Risk factors:    

Table 9.23(a): Incidence and mortality of non-melanoma skin cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	570	333	903	391	209	600
Crude rate	5.0	2.9	3.9	3.3	1.8	2.6
ASR	4.8	2.4	3.5	3.2	1.3	2.1
Risk to age 75	1 in 403	1 in 718	1 in 518	1 in 671	1 in 1,881	1 in 996
Risk to age 85	1 in 151	1 in 342	1 in 216	1 in 249	1 in 691	1 in 377
Mean age (years)	71.8	69.7	71.1	76.9	80.8	78.2
Median age (years)	75.2	73.5	74.8	78.0	84.0	80.0
Estimated number for 2017 and 2018						
2017	594	341	935	378	196	574
2018	612	349	961	385	201	587

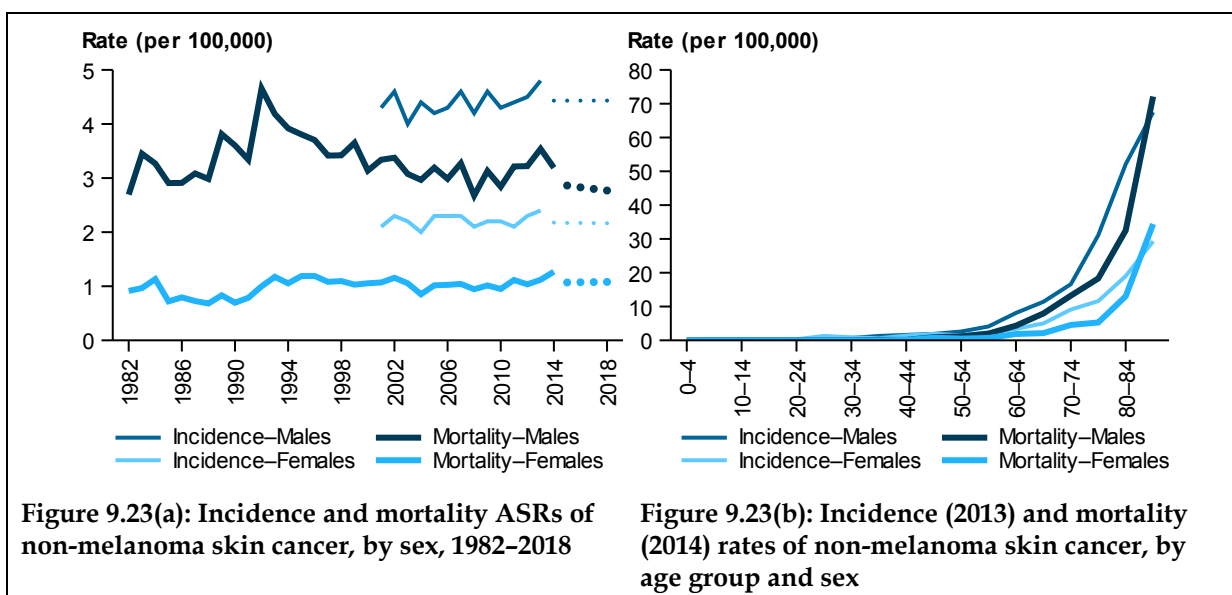
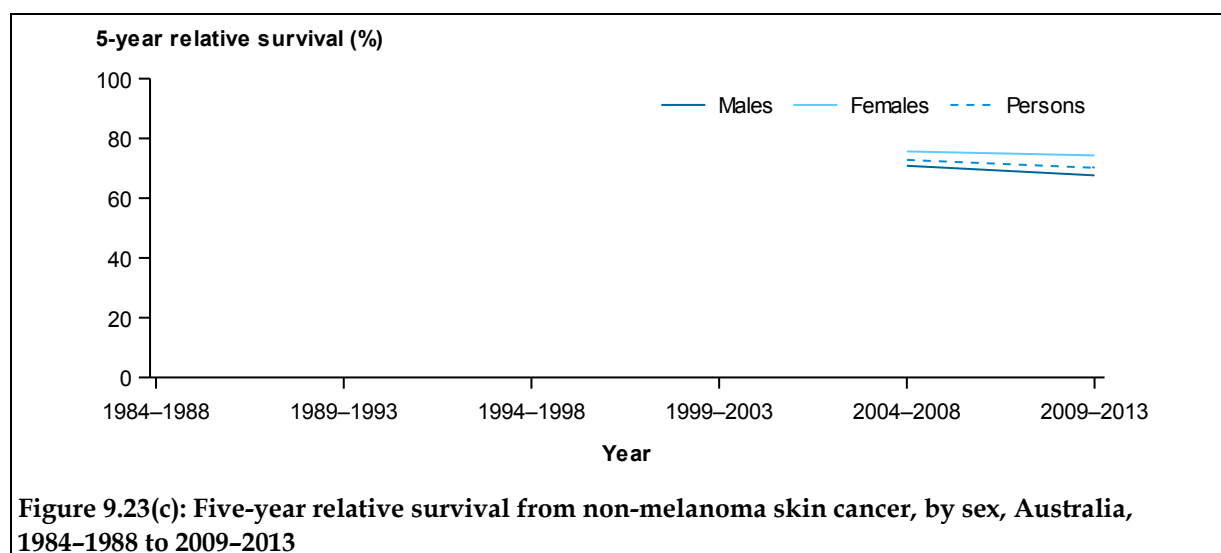


Figure 9.23(a): Incidence and mortality ASRs of non-melanoma skin cancer, by sex, 1982–2018

Figure 9.23(b): Incidence (2013) and mortality (2014) rates of non-melanoma skin cancer, by age group and sex

Table 9.23(b): Survival and prevalence of non-melanoma skin cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	483	299	782
5-year prevalence	1,725	1,086	2,811
31-year prevalence	3,981	2,871	6,852
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	89.6	89.6	89.6
5-year relative survival at diagnosis	67.6	74.3	70.2
5-year conditional relative survival for those already survived 1 year after diagnosis	73.5	80.6	76.2
5-year conditional relative survival for those already survived 5 years after diagnosis	88.6	90.9	89.6
5-year conditional relative survival for those already survived 10 years after diagnosis	93.0	93.6	93.3
5-year conditional relative survival for those already survived 15 years after diagnosis	98.9	98.8	98.8



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. For incidence, survival and prevalence data, ICD-10 C44 codes that indicate a basal or squamous cell carcinoma are not included. For mortality, ICD-10 C44 codes that indicate a basal or squamous cell carcinoma are included. Therefore, incidence, survival and prevalence are not directly comparable with mortality.
3. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
4. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
5. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
6. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1992–2013 mortality data for males and 1994–2013 mortality data for females (see Appendix D).
7. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).
8. Due to data availability, 5-year relative survival was presented from 2004–2008. Incidence data are available from 2001.

Sources: AIHW ACD 2013; AIHW NMD.

Oesophageal cancer (C15)

Risk factors:



Table 9.24(a): Incidence and mortality of oesophageal cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	1,013	421	1,434	869	329	1,198
Crude rate	8.8	3.6	6.2	7.4	2.8	5.1
ASR	8.2	2.9	5.4	6.9	2.1	4.4
Risk to age 75	1 in 158	1 in 575	1 in 250	1 in 211	1 in 1,023	1 in 353
Risk to age 85	1 in 89	1 in 251	1 in 134	1 in 103	1 in 366	1 in 166
Mean age (years)	68.6	75.1	70.4	70.4	77.7	72.4
Median age (years)	68.7	76.9	70.8	71.0	80.0	73.0
Estimated number for 2017 and 2018						
2017	1,151	490	1,642	1,021	397	1,418
2018	1,182	504	1,685	1,045	403	1,447

Rate (per 100,000)

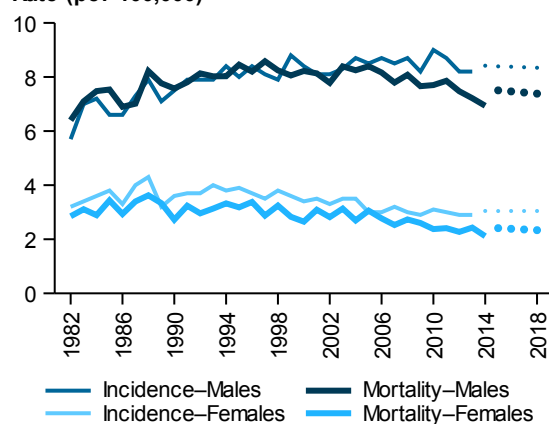


Figure 9.24(a): Incidence and mortality ASRs of oesophageal cancer, by sex, 1982–2018

Rate (per 100,000)

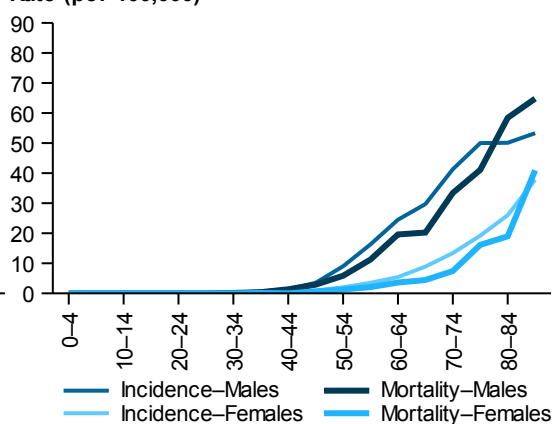
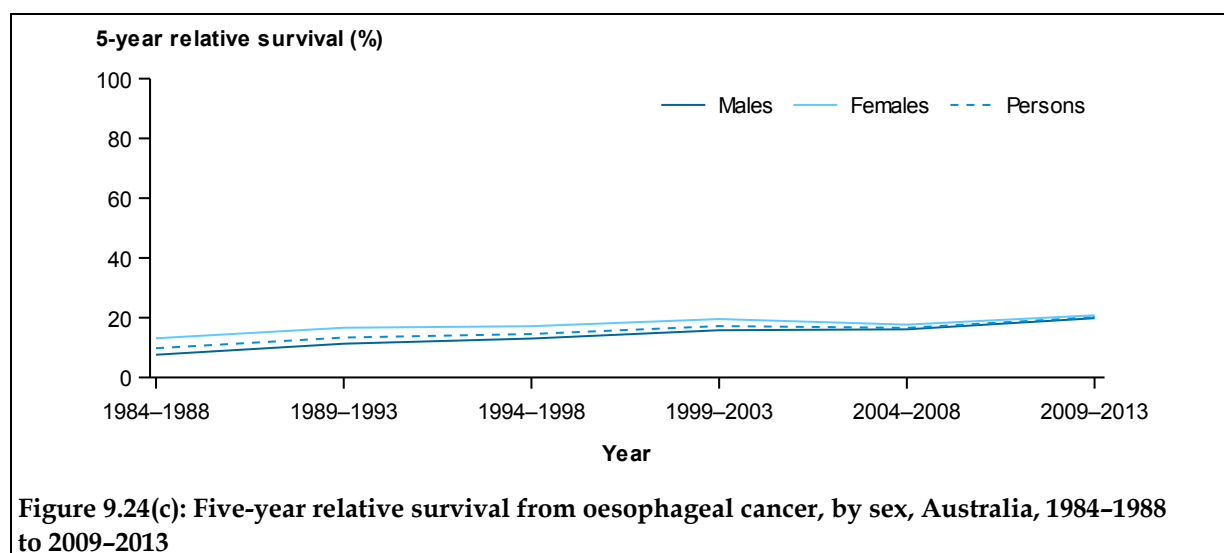


Figure 9.24(b): Incidence (2013) and mortality (2014) rates of oesophageal cancer, by age group and sex

Table 9.24(b): Survival and prevalence of oesophageal cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	701	273	974
5-year prevalence	1,686	689	2,375
31-year prevalence	2,655	1,253	3,908
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	49.3	46.0	48.4
5-year relative survival at diagnosis	19.8	20.8	20.1
5-year conditional relative survival for those already survived 1 year after diagnosis	38.1	42.9	39.5
5-year conditional relative survival for those already survived 5 years after diagnosis	79.3	75.3	77.8
5-year conditional relative survival for those already survived 10 years after diagnosis	93.8	83.5	89.4
5-year conditional relative survival for those already survived 15 years after diagnosis	100.0	82.0	92.4



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1998–2013 mortality data for males and 1995–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Cancer of other digestive organs (C26)

Table 9.25(a): Incidence and mortality of cancer of other digestive organs, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	135	134	269	631	592	1,223
Crude rate	1.2	1.2	1.2	5.4	5.0	5.2
ASR	1.1	0.9	1.0	5.1	3.8	4.4
Risk to age 75	1 in 1,596	1 in 2,589	1 in 1,982	1 in 418	1 in 603	1 in 495
Risk to age 85	1 in 658	1 in 1,001	1 in 801	1 in 146	1 in 205	1 in 172
Mean age (years)	73.5	76.2	74.7	74.9	78.2	76.5
Median age (years)	73.9	78.2	76.3	77.0	82.0	79.0
Estimated number for 2017 and 2018						
2017	125	129	254	804	728	1,532
2018	131	132	263	830	746	1,576

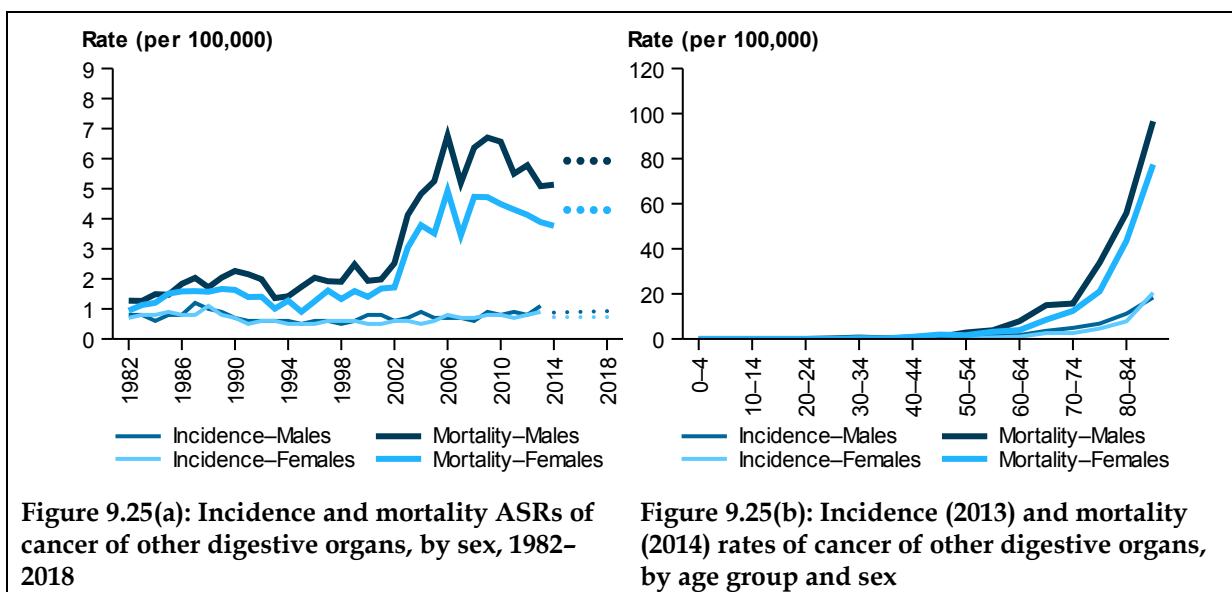


Table 9.25(b): Survival and prevalence of cancer of other digestive organs, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	30	33	63
5-year prevalence	71	87	158
31-year prevalence	163	162	325
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	20.9	21.2	21.1
5-year relative survival at diagnosis	11.2	9.8	10.5
5-year conditional relative survival for those already survived 1 year after diagnosis	49.5	40.0	44.6
5-year conditional relative survival for those already survived 5 years after diagnosis	82.1	83.9	82.9
5-year conditional relative survival for those already survived 10 years after diagnosis	n.p.	n.p.	83.5
5-year conditional relative survival for those already survived 15 years after diagnosis	n.p.	n.p.	100.0

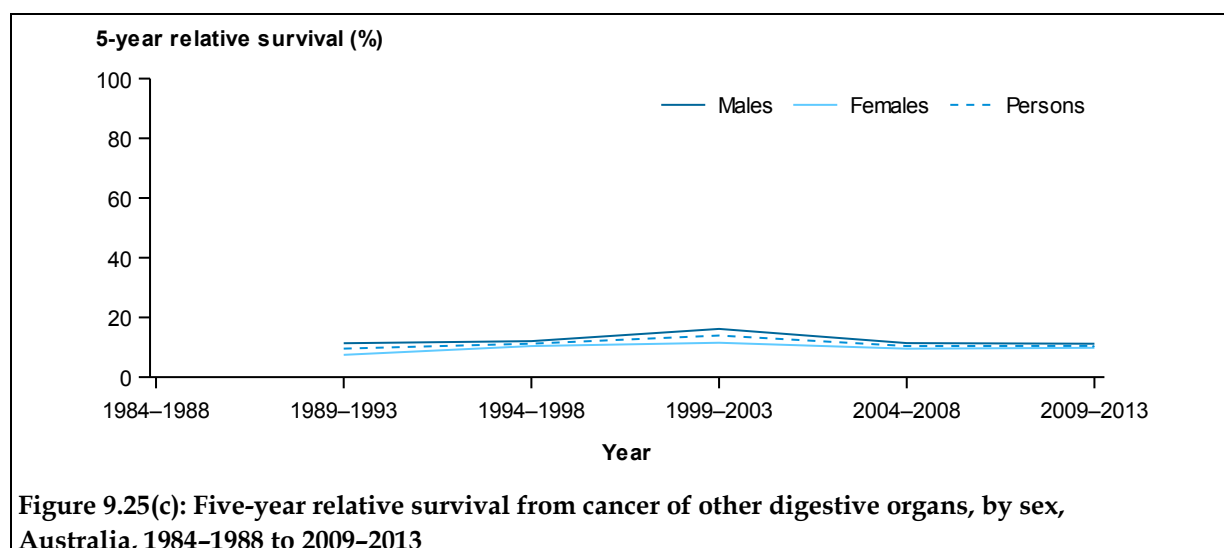


Figure 9.25(c): Five-year relative survival from cancer of other digestive organs, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
3. Cancer of other digestive organs deaths presented are likely overestimates (see ABS 2016).
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 2005–2013 mortality data for males and 2006–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).
7. Due to the small number of cases in the period 1984–1988, 5-year relative survival was presented from 1989–1993.

Sources: AIHW ACD 2013; AIHW NMD.

Other soft tissue cancers (C47, C49)

Table 9.26(a): Incidence and mortality of other soft tissue cancers, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	396	281	678	181	118	299
Crude rate	3.4	2.4	2.9	1.6	1.0	1.3
ASR	3.4	2.2	2.7	1.5	0.8	1.1
Risk to age 75	1 in 428	1 in 596	1 in 499	1 in 1,012	1 in 1,434	1 in 1,187
Risk to age 85	1 in 252	1 in 421	1 in 322	1 in 561	1 in 969	1 in 721
Mean age (years)	58.9	58.9	58.9	62.4	64.9	63.4
Median age (years)	62.5	62.7	62.5	67.0	67.0	67.0
Estimated number for 2017 and 2018						
2017	430	311	741	167	142	308
2018	442	317	760	171	145	316

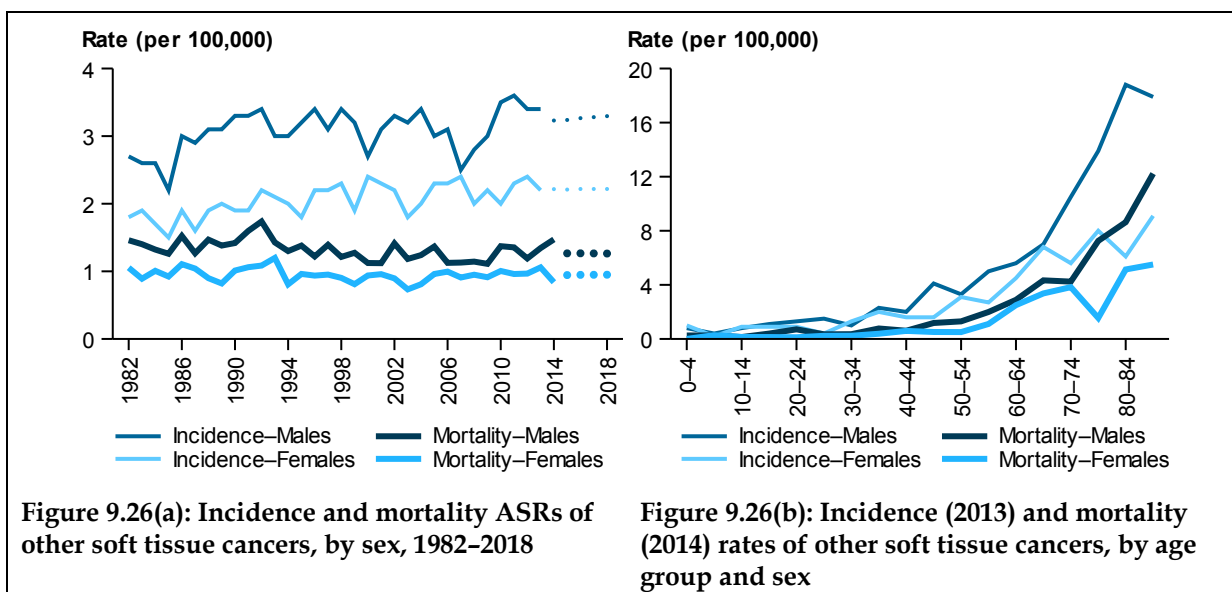


Figure 9.26(a): Incidence and mortality ASRs of other soft tissue cancers, by sex, 1982–2018

Figure 9.26(b): Incidence (2013) and mortality (2014) rates of other soft tissue cancers, by age group and sex

Table 9.26(b): Survival and prevalence of other soft tissue cancers, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	352	282	634
5-year prevalence	1,306	1,006	2,312
31-year prevalence	3,758	2,992	6,750
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	83.2	86.7	84.7
5-year relative survival at diagnosis	64.8	67.4	65.9
5-year conditional relative survival for those already survived 1 year after diagnosis	76.1	75.3	75.7
5-year conditional relative survival for those already survived 5 years after diagnosis	90.7	90.1	90.4
5-year conditional relative survival for those already survived 10 years after diagnosis	95.5	95.8	95.6
5-year conditional relative survival for those already survived 15 years after diagnosis	97.0	95.4	96.3

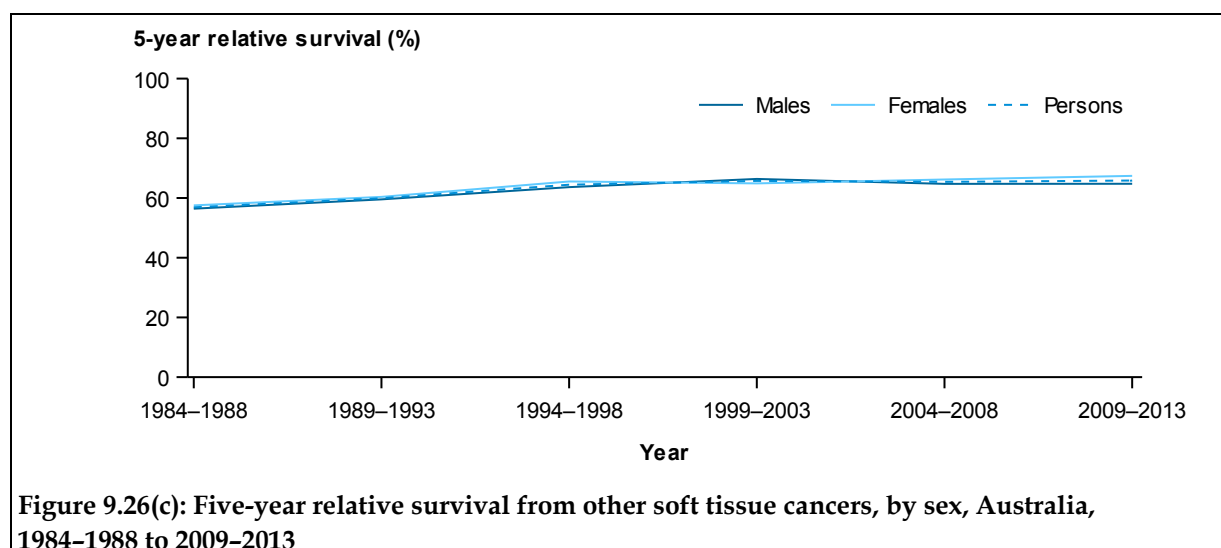


Figure 9.26(c): Five-year relative survival from other soft tissue cancers, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 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 2001 Australian Standard Population and are expressed per 100,000 population.
4. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1988–2013 mortality data for males and 1982–2013 mortality data for females (see Appendix D).
5. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Ovarian cancer (C56)

Risk factors:



Table 9.27(a): Incidence and mortality of ovarian cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	..	1,394	..	..	974	..
Crude rate	..	12.0	..	..	8.3	..
ASR	..	10.6	..	..	6.8	..
Risk to age 75	..	1 in 122	..	..	1 in 209	..
Risk to age 85	..	1 in 81	..	..	1 in 106	..
Mean age (years)	..	63.0	..	..	71.2	..
Median age (years)	..	64.5	..	..	73.0	..
Estimated number for 2017 and 2018						
2017	..	1,580	..	..	1,047	..
2018	..	1,613	..	..	1,069	..

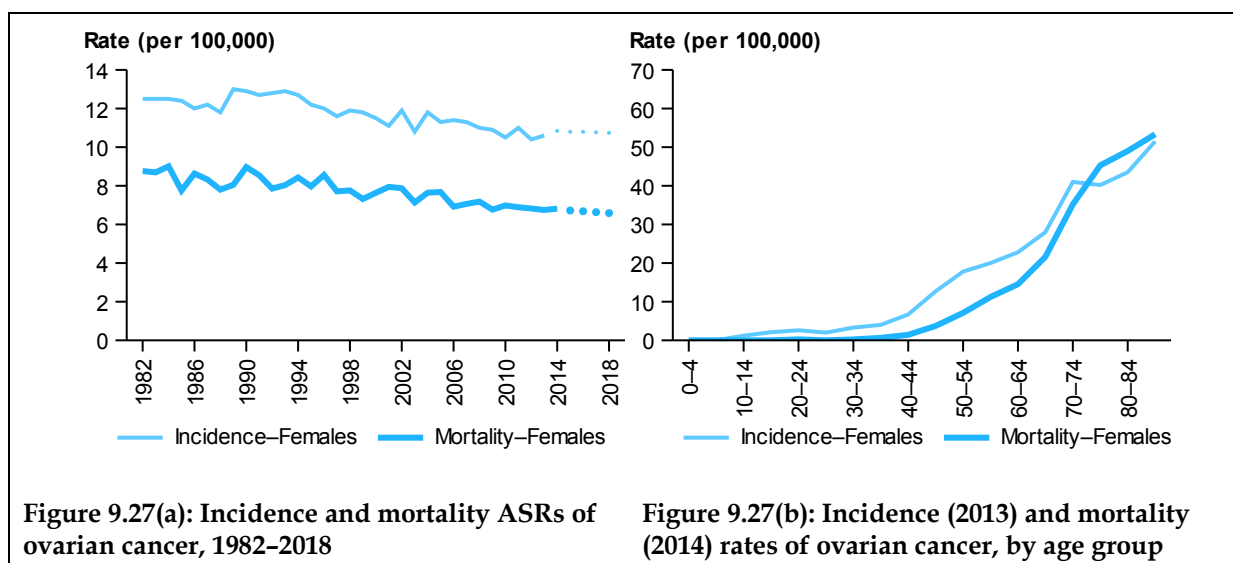


Table 9.27(b): Survival and prevalence of ovarian cancer

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	..	1,116	..
5-year prevalence	..	3,980	..
31-year prevalence	..	10,468	..
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	..	76.6	..
5-year relative survival at diagnosis	..	44.4	..
5-year conditional relative survival for those already survived 1 year after diagnosis	..	53.8	..
5-year conditional relative survival for those already survived 5 years after diagnosis	..	77.1	..
5-year conditional relative survival for those already survived 10 years after diagnosis	..	92.8	..
5-year conditional relative survival for those already survived 15 years after diagnosis	..	97.0	..

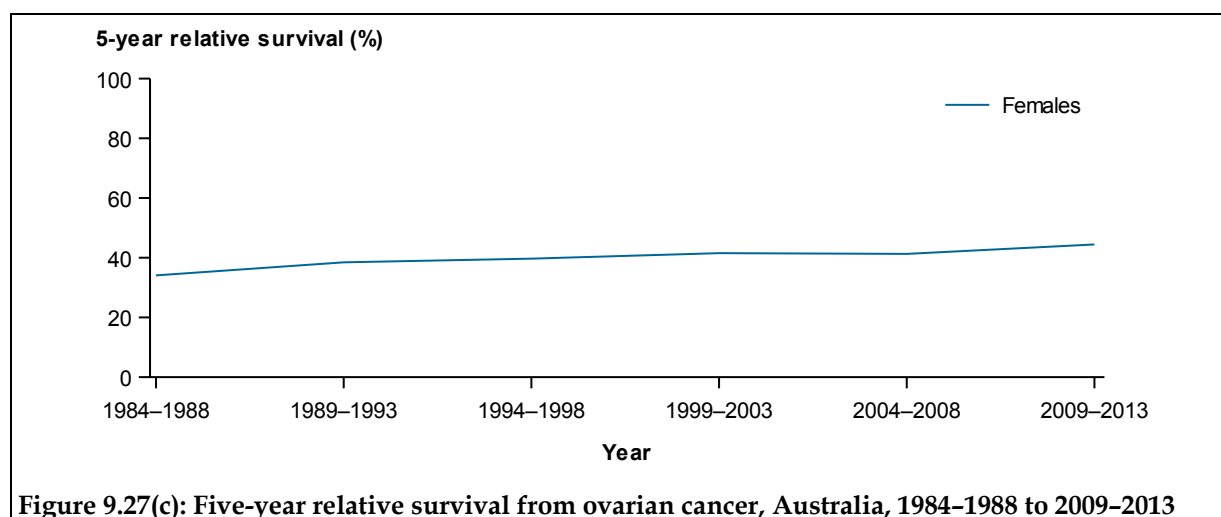


Figure 9.27(c): Five-year relative survival from ovarian cancer, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1994–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Pancreatic cancer (C25)

Risk factors:



Table 9.28(a): Incidence and mortality of pancreatic cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	1,490	1,374	2,865	1,292	1,255	2,547
Crude rate	13.0	11.8	12.4	11.1	10.6	10.9
ASR	12.3	9.5	10.9	10.3	8.3	9.3
Risk to age 75	1 in 119	1 in 160	1 in 136	1 in 145	1 in 197	1 in 168
Risk to age 85	1 in 58	1 in 78	1 in 67	1 in 67	1 in 85	1 in 75
Mean age (years)	70.9	73.2	72.0	71.7	75.1	73.4
Median age (years)	71.6	74.1	72.8	72.0	76.0	74.0
Estimated number for 2017 and 2018						
2017	1,722	1,548	3,271	1,515	1,400	2,915
2018	1,774	1,590	3,364	1,563	1,443	3,006

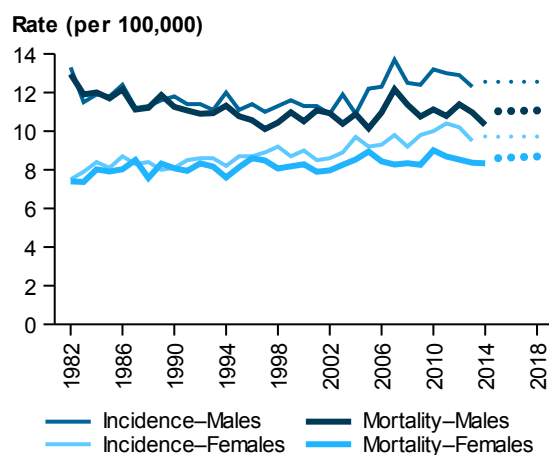


Figure 9.28(a): Incidence and mortality ASRs of pancreatic cancer, by sex, 1982-2018

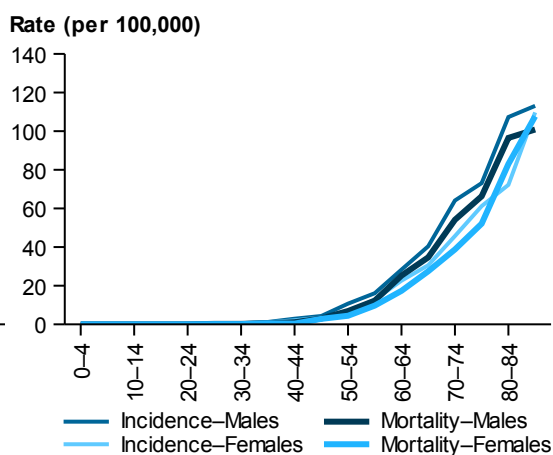
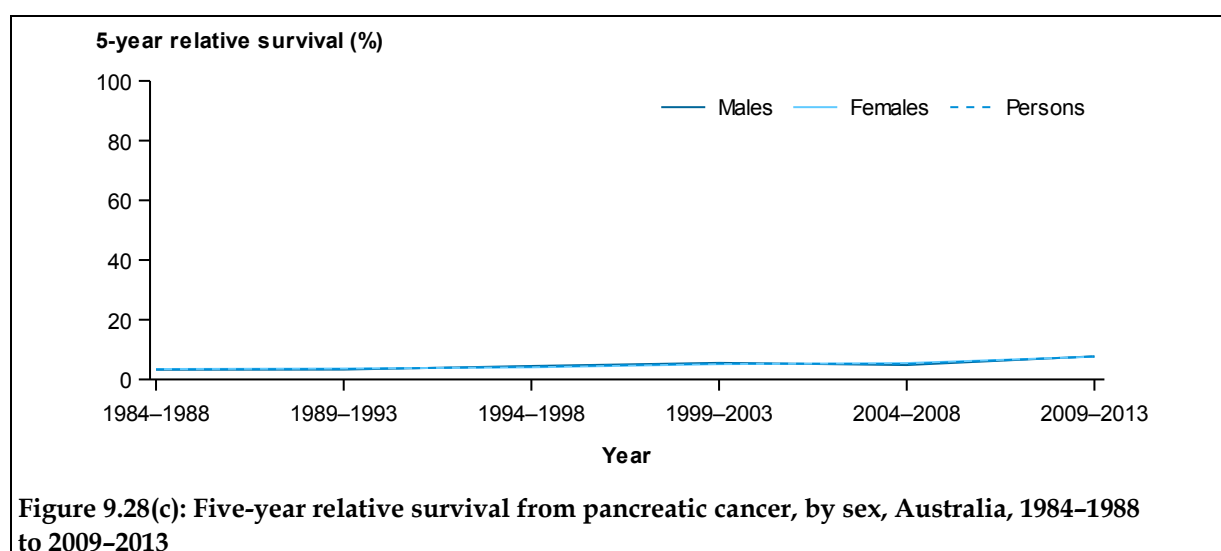


Figure 9.28(b): Incidence (2013) and mortality (2014) rates of pancreatic cancer, by age group and sex

Table 9.28(b): Survival and prevalence of pancreatic cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	837	737	1,574
5-year prevalence	1,494	1,351	2,845
31-year prevalence	2,029	1,887	3,916
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	28.0	27.3	27.7
5-year relative survival at diagnosis	7.7	7.6	7.7
5-year conditional relative survival for those already survived 1 year after diagnosis	24.5	25.7	25.1
5-year conditional relative survival for those already survived 5 years after diagnosis	70.6	73.1	71.8
5-year conditional relative survival for those already survived 10 years after diagnosis	91.3	88.9	90.0
5-year conditional relative survival for those already survived 15 years after diagnosis	100.0	100.0	100.0



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1997–2013 mortality data for males and 1968–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Prostate cancer (C61)

Risk factor:



Table 9.29(a): Incidence and mortality of prostate cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	19,233	..	..	3,102	..	..
Crude rate	167.2	..	..	26.6	..	..
ASR	151.3	..	..	25.8	..	..
Risk to age 75	1 in 8	..	..	1 in 130	..	..
Risk to age 85	1 in 5	..	..	1 in 30	..	..
Mean age (years)	68.1	..	..	80.5	..	..
Median age (years)	67.6	..	..	82.0	..	..
Estimated number for 2017 and 2018						
2017	16,665	..	..	3,452	..	..
2018	17,729	..	..	3,500	..	..

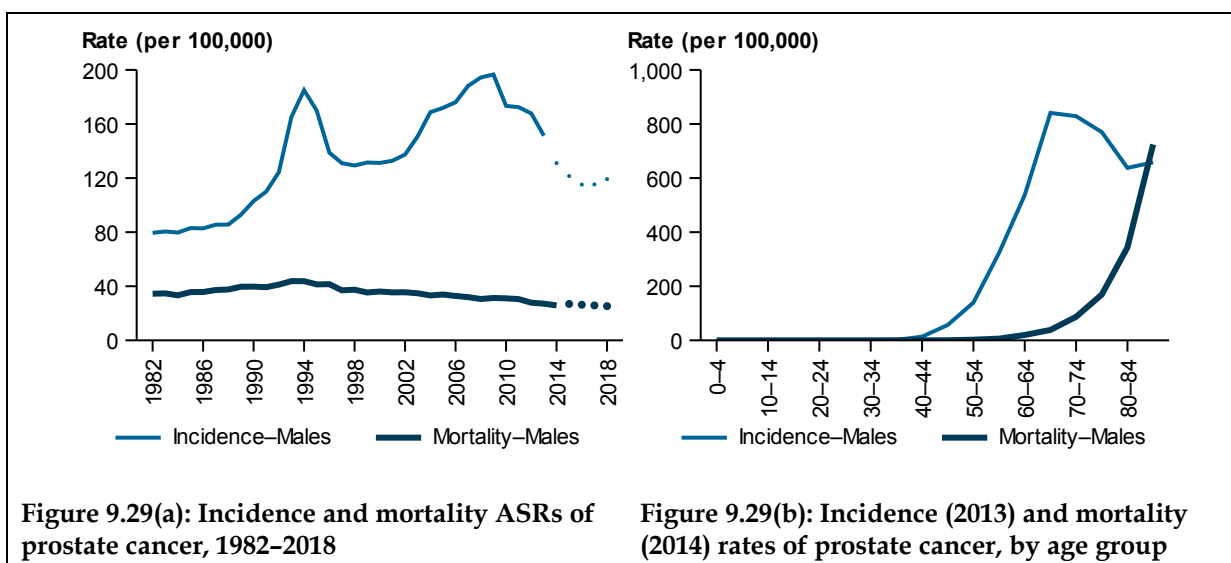


Table 9.29(b): Survival and prevalence of prostate cancer

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	20,122	..	..
5-year prevalence	94,114	..	..
31-year prevalence	191,896	..	..
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	98.6	..	..
5-year relative survival at diagnosis	94.5	..	..
5-year conditional relative survival for those already survived 1 year after diagnosis	94.9	..	..
5-year conditional relative survival for those already survived 5 years after diagnosis	94.5	..	..
5-year conditional relative survival for those already survived 10 years after diagnosis	91.8	..	..
5-year conditional relative survival for those already survived 15 years after diagnosis	92.7	..	..

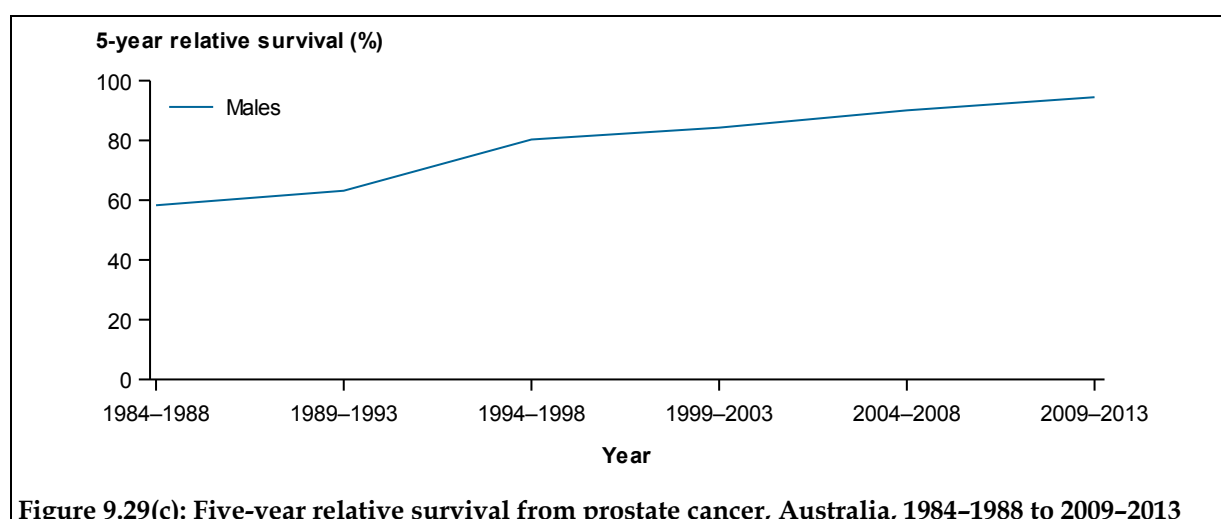


Figure 9.29(c): Five-year relative survival from prostate cancer, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1993–2013 mortality data for males.
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Stomach cancer (C16)

Risk factors:



Table 9.30(a): Incidence and mortality of stomach cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	1,418	700	2,117	705	432	1,137
Crude rate	12.3	6.0	9.2	6.0	3.7	4.8
ASR	11.6	5.1	8.1	5.7	2.9	4.2
Risk to age 75	1 in 121	1 in 290	1 in 172	1 in 304	1 in 565	1 in 397
Risk to age 85	1 in 62	1 in 145	1 in 88	1 in 126	1 in 267	1 in 175
Mean age (years)	69.5	69.6	69.5	71.5	72.8	72.0
Median age (years)	70.3	71.8	70.7	73.0	75.0	74.0
Estimated number for 2017 and 2018						
2017	1,494	800	2,294	681	403	1,084
2018	1,517	815	2,332	677	401	1,078

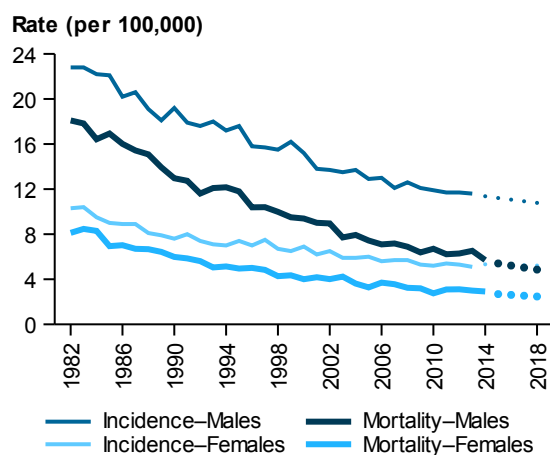


Figure 9.30(a): Incidence and mortality ASRs of stomach cancer, by sex, 1982–2018

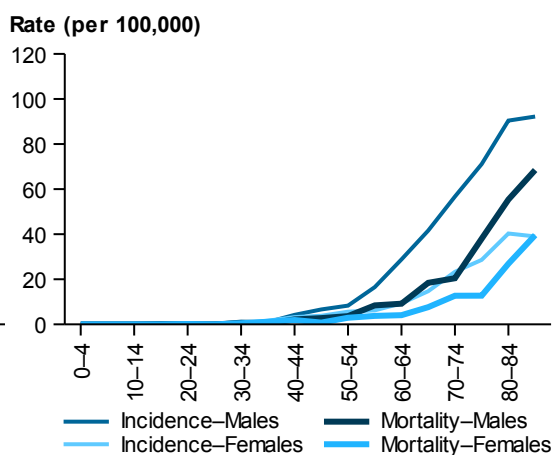


Figure 9.30(b): Incidence (2013) and mortality (2014) rates of stomach cancer, by age group and sex

Table 9.30(b): Survival and prevalence of stomach cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	992	502	1,494
5-year prevalence	2,658	1,443	4,101
31-year prevalence	5,727	3,429	9,156
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	54.0	53.1	53.7
5-year relative survival at diagnosis	27.3	30.8	28.5
5-year conditional relative survival for those already survived 1 year after diagnosis	48.6	56.8	51.4
5-year conditional relative survival for those already survived 5 years after diagnosis	86.1	91.4	88.1
5-year conditional relative survival for those already survived 10 years after diagnosis	96.5	97.3	96.9
5-year conditional relative survival for those already survived 15 years after diagnosis	100.0	100.0	100.0

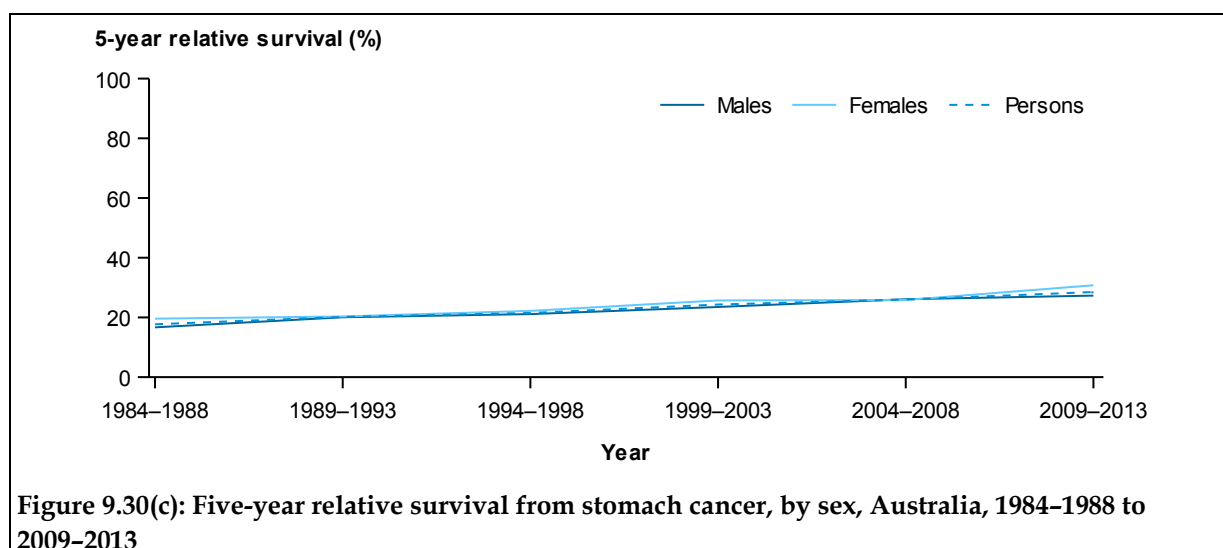


Figure 9.30(c): Five-year relative survival from stomach cancer, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1985–2013 mortality data for males and 1993–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Testicular cancer (C62)

Risk factor:



Table 9.31(a): Incidence and mortality of testicular cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	721	..	..	23	..	..
Crude rate	6.3	..	..	0.2	..	..
ASR	6.4	..	..	0.2	..	..
Risk to age 75	1 in 222	..	..	1 in 7,766	..	..
Risk to age 85	1 in 218	..	..	1 in 5,081	..	..
Mean age (years)	37.1	..	..	45.3	..	..
Median age (years)	34.8	..	..	43.0	..	..
Estimated number for 2017 and 2018						
2017	816	..	..	4	..	..
2018	828	..	..	4	..	..

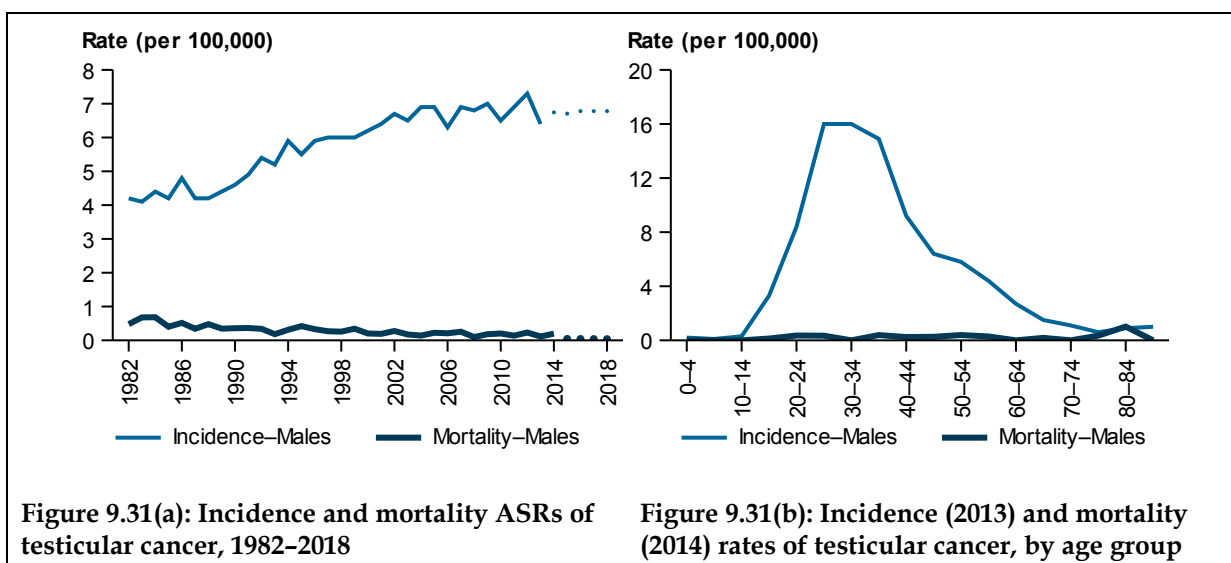


Table 9.31(b): Survival and prevalence of testicular cancer

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	797	..	..
5-year prevalence	3,639	..	..
31-year prevalence	15,129	..	..
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	99.3	..	..
5-year relative survival at diagnosis	97.9	..	..
5-year conditional relative survival for those already survived 1 year after diagnosis	98.5	..	..
5-year conditional relative survival for those already survived 5 years after diagnosis	99.7	..	..
5-year conditional relative survival for those already survived 10 years after diagnosis	99.4	..	..
5-year conditional relative survival for those already survived 15 years after diagnosis	99.0	..	..

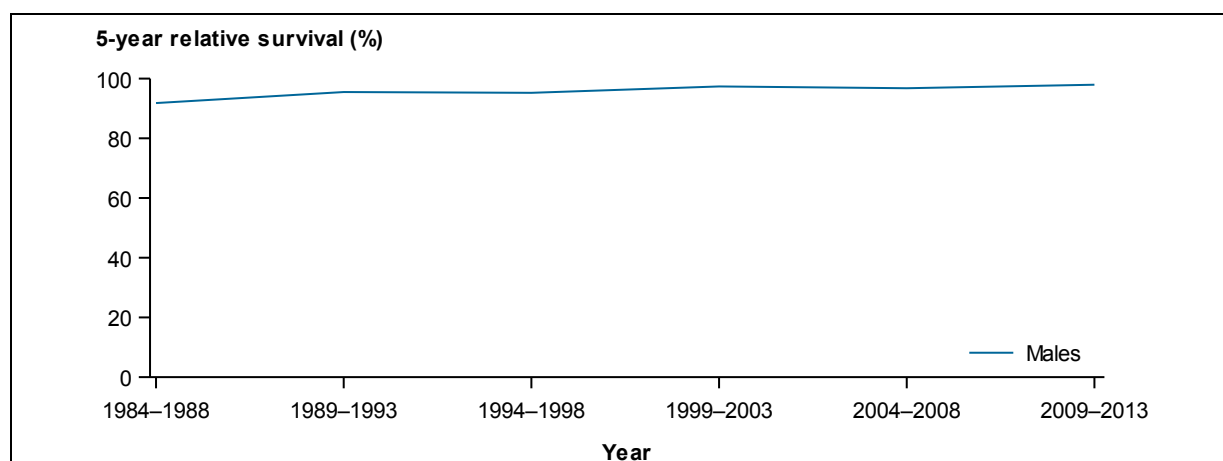


Figure 9.31(c): Five-year relative survival from testicular cancer, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1968–2013 mortality data for males.
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Thyroid cancer (C73)

Risk factors:



Table 9.32(a): Incidence and mortality of thyroid cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	663	1,889	2,553	54	79	133
Crude rate	5.8	16.3	11.0	0.5	0.7	0.6
ASR	5.6	15.6	10.6	0.4	0.5	0.5
Risk to age 75	1 in 222	1 in 81	1 in 118	1 in 4,206	1 in 3,108	1 in 3,567
Risk to age 85	1 in 178	1 in 70	1 in 100	1 in 1,487	1 in 1,371	1 in 1,430
Mean age (years)	54.8	51.5	52.4	72.4	73.3	72.9
Median age (years)	55.0	51.0	52.0	74.5	76.0	75.0
Estimated number for 2017 and 2018						
2017	850	2,329	3,179	60	80	140
2018	894	2,436	3,330	62	82	144

Rate (per 100,000)

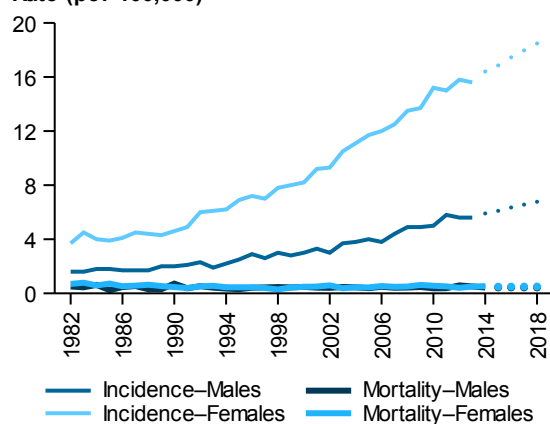


Figure 9.32(a): Incidence and mortality ASRs of thyroid cancer, by sex, 1982–2018

Rate (per 100,000)

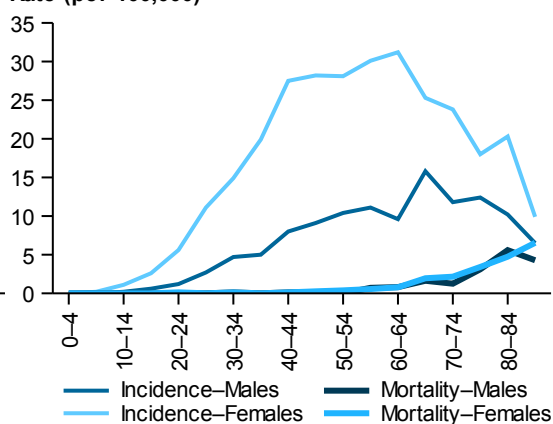


Figure 9.32(b): Incidence (2013) and mortality (2014) rates of thyroid cancer, by age group and sex

Table 9.32(b): Survival and prevalence of thyroid cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	625	1,830	2,455
5-year prevalence	2,668	7,961	10,629
31-year prevalence	6,483	21,902	28,385
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	96.1	98.2	97.7
5-year relative survival at diagnosis	92.9	97.2	96.1
5-year conditional relative survival for those already survived 1 year after diagnosis	95.9	99.0	98.2
5-year conditional relative survival for those already survived 5 years after diagnosis	97.5	99.4	98.9
5-year conditional relative survival for those already survived 10 years after diagnosis	96.7	100.0	99.3
5-year conditional relative survival for those already survived 15 years after diagnosis	98.5	99.8	99.6

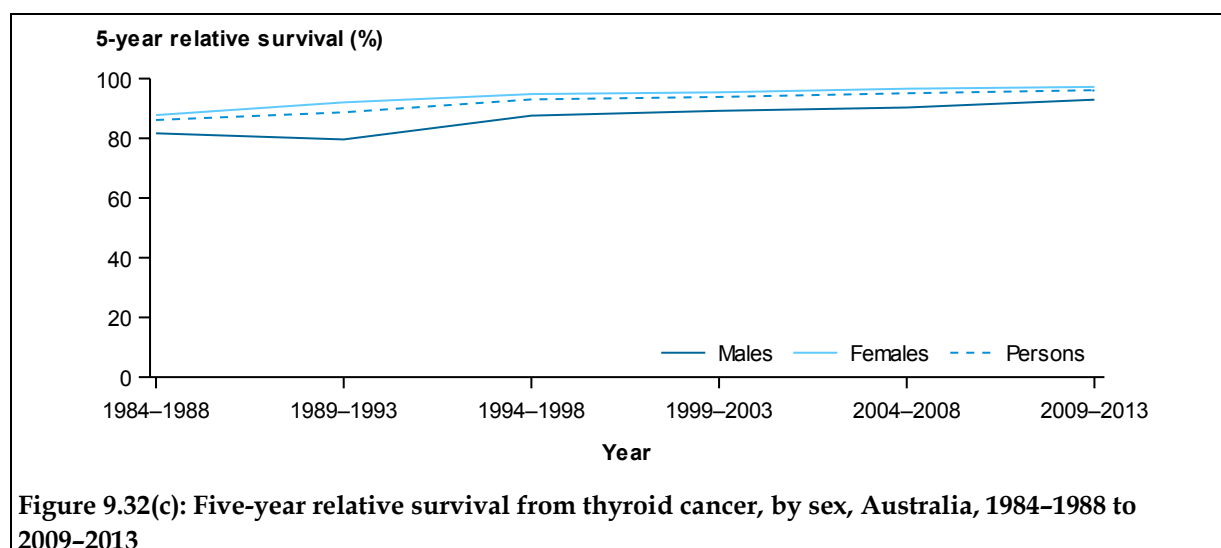


Figure 9.32(c): Five-year relative survival from thyroid cancer, by sex, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1968–2013 mortality data for males and 1996–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Tongue cancer (C01–C02)

Risk factors:



Table 9.33(a): Incidence and mortality of tongue cancer, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	578	242	820	119	67	186
Crude rate	5.0	2.1	3.5	1.0	0.6	0.8
ASR	4.6	1.8	3.2	0.9	0.5	0.7
Risk to age 75	1 in 243	1 in 667	1 in 358	1 in 1,335	1 in 3,424	1 in 1,933
Risk to age 85	1 in 183	1 in 449	1 in 263	1 in 772	1 in 1,696	1 in 1,078
Mean age (years)	62.3	64.0	62.8	68.1	73.3	70.0
Median age (years)	62.6	62.7	62.6	68.0	74.0	70.0
Estimated number for 2017 and 2018						
2017	642	257	899	129	75	204
2018	669	264	933	130	77	207

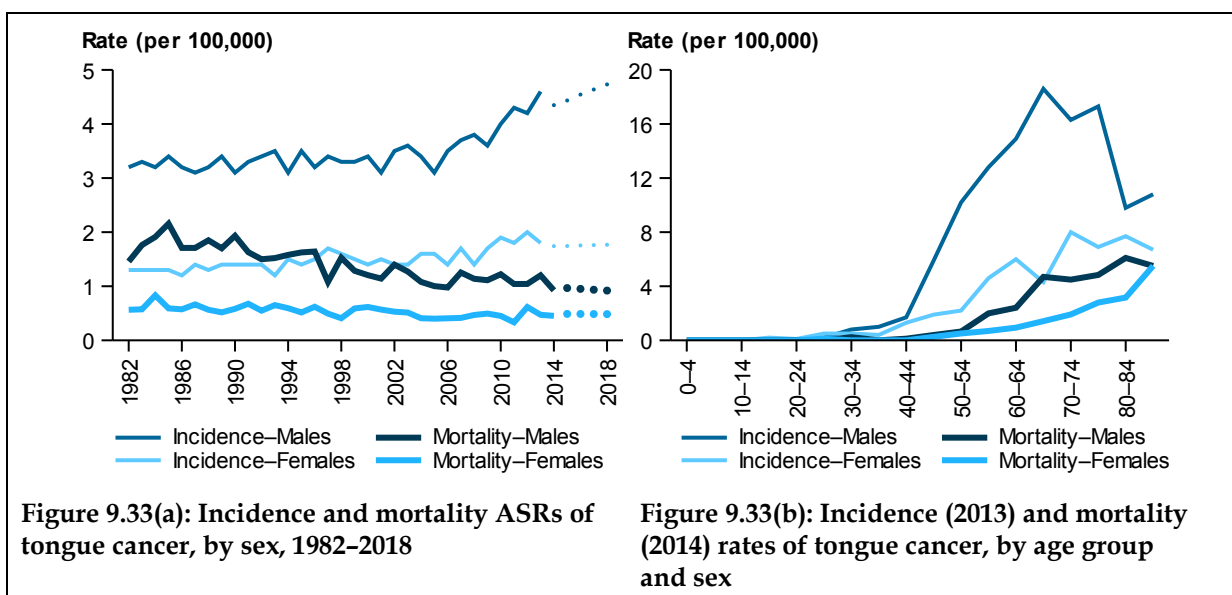
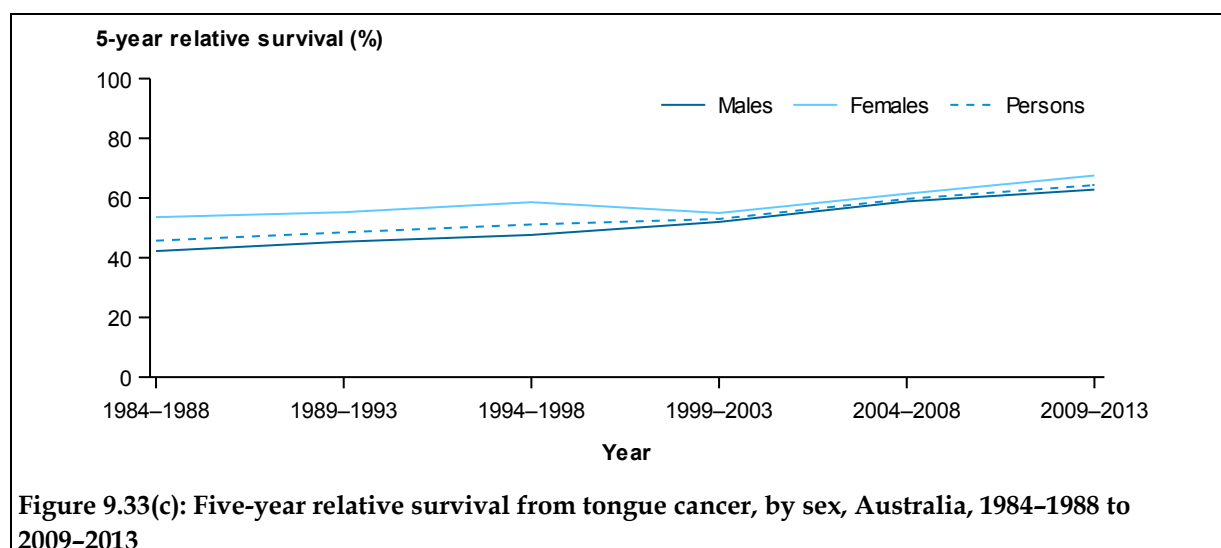


Table 9.33(b): Survival and prevalence of tongue cancer, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (Number)			
1-year prevalence	474	231	705
5-year prevalence	1,664	811	2,475
31-year prevalence	3,417	1,813	5,230
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	83.1	84.9	83.7
5-year relative survival at diagnosis	62.8	67.5	64.3
5-year conditional relative survival for those already survived 1 year after diagnosis	72.2	77.7	74.0
5-year conditional relative survival for those already survived 5 years after diagnosis	80.7	86.7	82.7
5-year conditional relative survival for those already survived 10 years after diagnosis	81.9	83.7	82.6
5-year conditional relative survival for those already survived 15 years after diagnosis	84.1	92.0	87.0



Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1987–2013 mortality data for males and 1968–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Cancer of unknown primary site (C80)

Table 9.34(a): Incidence and mortality of cancer of unknown primary site, by sex

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	1,416	1,288	2,704	1,284	1,211	2,495
Crude rate	12.3	11.1	11.7	11.0	10.3	10.6
ASR	11.9	8.6	10.1	10.5	7.8	9.0
Risk to age 75	1 in 161	1 in 233	1 in 191	1 in 192	1 in 266	1 in 224
Risk to age 85	1 in 64	1 in 92	1 in 76	1 in 73	1 in 102	1 in 86
Mean age (years)	73.5	76.2	74.8	74.8	77.7	76.2
Median age (years)	76.0	79.3	77.5	76.0	80.0	78.0
Estimated number for 2017 and 2018						
2017	1,346	1,209	2,555	1,369	1,461	2,830
2018	1,340	1,201	2,541	1,351	1,484	2,835

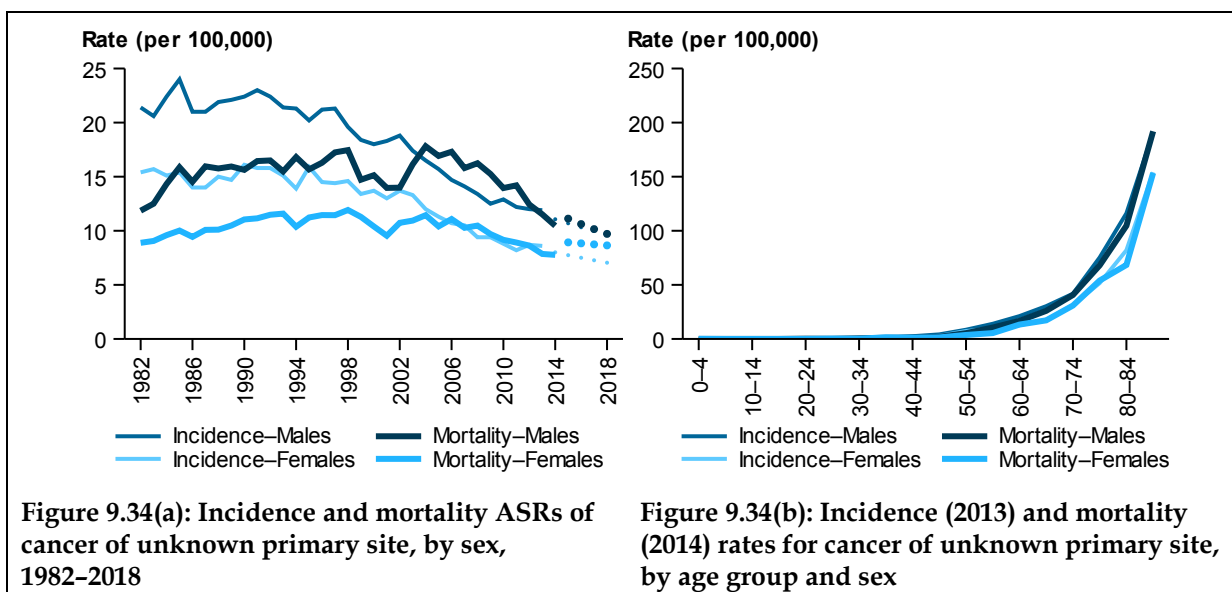


Table 9.34(b): Survival and prevalence of cancer of unknown primary site, by sex

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	611	473	1,084
5-year prevalence	1,745	1,172	2,917
31-year prevalence	3,936	2,809	6,745
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	24.8	17.9	21.5
5-year relative survival at diagnosis	16.3	10.1	13.3
5-year conditional relative survival for those already survived 1 year after diagnosis	64.8	54.7	60.5
5-year conditional relative survival for those already survived 5 years after diagnosis	87.6	87.8	87.7
5-year conditional relative survival for those already survived 10 years after diagnosis	98.6	94.3	96.8
5-year conditional relative survival for those already survived 15 years after diagnosis	100.0	100.0	100.0

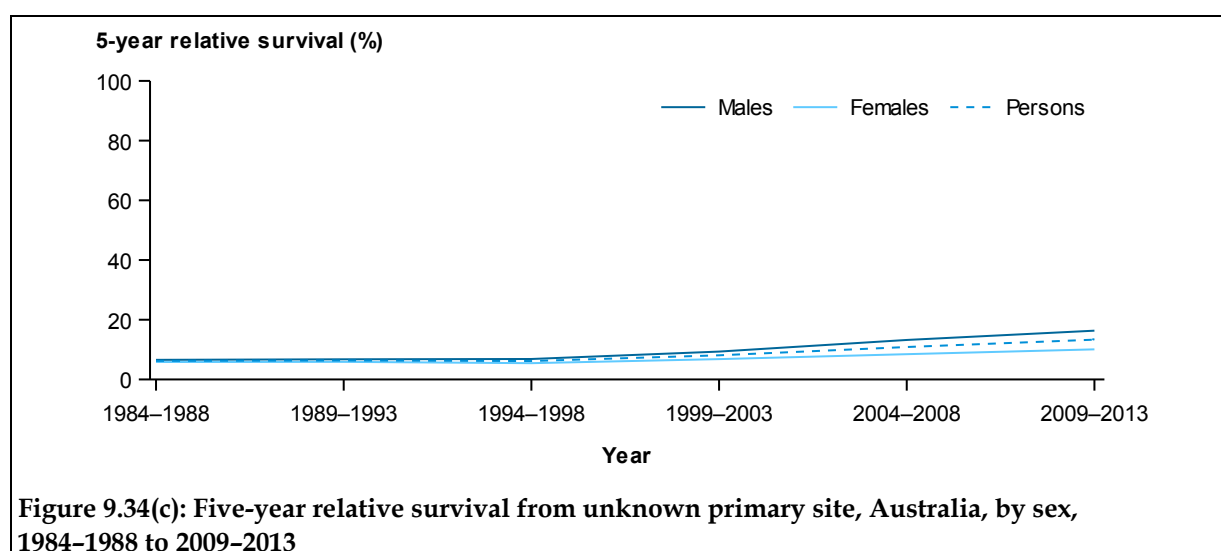


Figure 9.34(c): Five-year relative survival from unknown primary site, Australia, by sex, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 2005–2013 mortality data for males and 1993–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

Uterine cancer (C54–C55)

Table 9.35(a): Incidence and mortality of uterine cancer

	Incidence			Mortality		
	Males	Females	Persons	Males	Females	Persons
2013 incidence/2014 mortality						
Number	..	2,511	..	..	494	..
Crude rate	..	21.6	..	..	4.2	..
ASR	..	18.6	..	..	3.4	..
Risk to age 75	..	1 in 60	..	..	1 in 420	..
Risk to age 85	..	1 in 44	..	..	1 in 206	..
Mean age (years)	..	64.7	..	..	72.7	..
Median age (years)	..	64.8	..	..	74.0	..
Estimated number for 2017 and 2018						
2017	..	2,861	..	..	453	..
2018	..	2,963	..	..	466	..

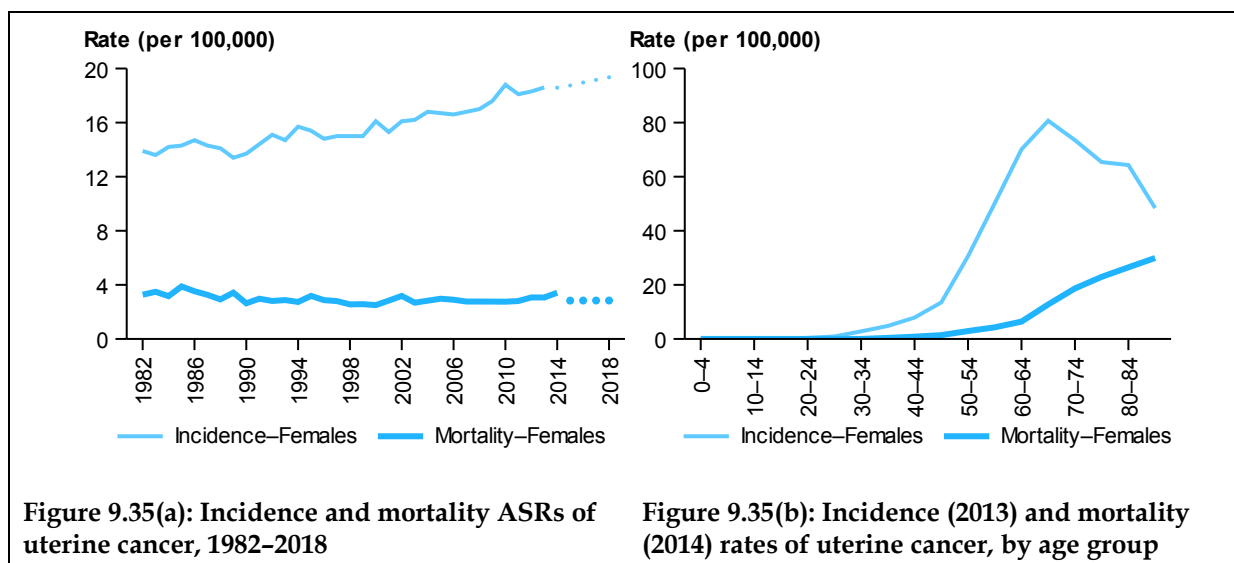


Table 9.35(b): Survival and prevalence of uterine cancer

	Males	Females	Persons
Prevalence as at the end of 2012 (number)			
1-year prevalence	..	2,263	..
5-year prevalence	..	9,589	..
31-year prevalence	..	26,879	..
Relative survival in 2009–2013 (%)			
1-year relative survival at diagnosis	..	93.5	..
5-year relative survival at diagnosis	..	83.2	..
5-year conditional relative survival for those already survived 1 year after diagnosis	..	87.9	..
5-year conditional relative survival for those already survived 5 years after diagnosis	..	94.9	..
5-year conditional relative survival for those already survived 10 years after diagnosis	..	96.7	..
5-year conditional relative survival for those already survived 15 years after diagnosis	..	95.4	..

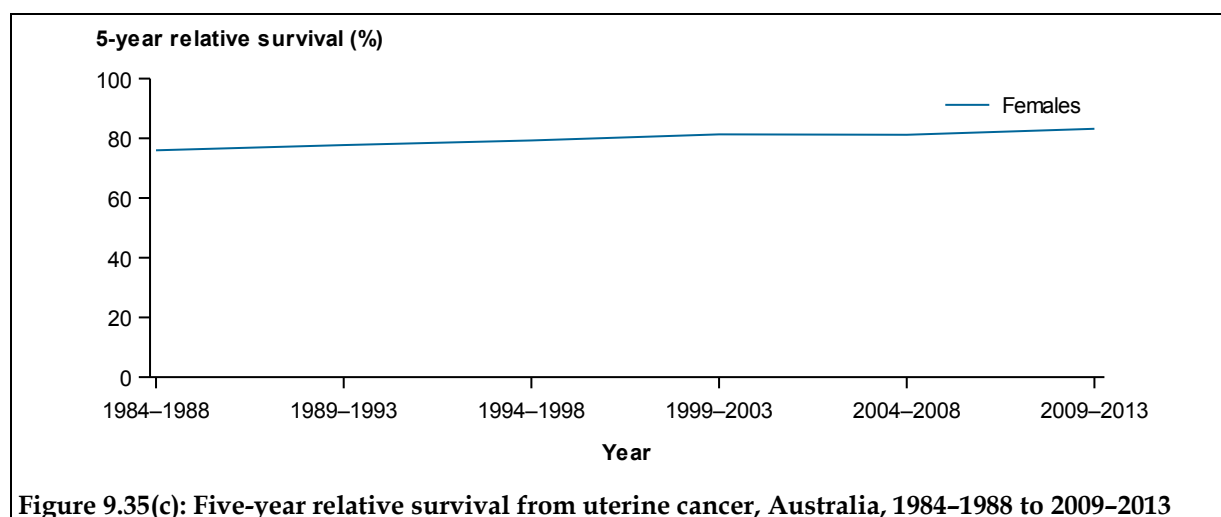


Figure 9.35(c): Five-year relative survival from uterine cancer, Australia, 1984–1988 to 2009–2013

Notes

1. Risk factors based on IARC (2014) (see Chapter 1).
2. The 2013 incidence data include estimates for NSW. Mean and median age for 2013 incidence was calculated excluding NSW.
3. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
4. The rates were age standardised to the 2001 Australian Standard Population and are expressed per 100,000 population.
5. The 2014–2018 estimates for incidence are based on 2004–2013 incidence data. The 2015–2018 estimates for mortality are based on joinpoint analysis of 1992–2013 mortality data for females (see Appendix D).
6. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).

Sources: AIHW ACD 2013; AIHW NMD.

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
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–C86
Immunoproliferative cancers	C88
Multiple myeloma	C90.0
Other plasma cell	C90.1–C90.9
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–C92.6, C92.8, 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, C94.6–C94.7
Other and unspecified leukaemia	C94.1, C94.3, C95
Myelodysplastic syndromes	D46
Other cancers of the blood and lymphatic system	C96, D45, D47.1, D47.3–D47.5

(continued)

Table A1 (continued): Cancer codes

Cancer site/type	ICD-10 codes
Other	
Other and ill-defined sites	C76
Unknown primary site	C80
All cancers combined	C00–C97, D45, D46, D47.1, D47.3–D47.5

Notes

1. For incidence and survival data, those C44 codes that indicate basal or squamous cell carcinoma of the skin are not included.
2. For mortality data before 2008, unknown primary site is coded as C77–C80. For mortality data before 2013, C97 was an applicable code.

Appendix B: Cancer incidence, mortality and survival for all cancer groupings

Table B1: Incidence (2013), mortality (2014) and 5-year relative survival (2009–2013) by cancer type, persons, Australia

Cancer site/type (ICD-10 codes)	Incidence		Mortality		Survival
	Number	ASR	Number	ASR	Relative Survival (%)
Lip (C00)	1,047	4.2	2	0.0	92.9
Tongue (C01–C02)	820	3.2	186	0.7	64.3
Mouth (C03–C06)	558	2.2	132	0.5	58.8
Salivary glands (C07–C08)	322	1.3	113	0.4	75.4
Oropharynx (C09–C10)	530	2.1	158	0.6	65.6
Nasopharynx (C11)	128	0.5	57	0.2	70.6
Hypopharynx (C12–C13)	170	0.6	58	0.2	33.3
Other sites in pharynx, etc. (C14)	69	0.3	75	0.3	36.7
Oesophagus (C15)	1,434	5.4	1,198	4.4	20.1
Stomach (C16)	2,117	8.1	1,137	4.2	28.5
Small intestines (C17)	534	2.1	98	0.4	64.8
Colorectal (C18–C20)	14,962	57.7	4,071	14.9	68.7
Anus (C21)	385	1.5	98	0.4	67.1
Liver (C22)	1,778	6.9	1,732	6.4	17.3
Gallbladder and extrapheticbile ducts (C23–C24)	774	2.9	239	0.9	19.2
Pancreas (C25)	2,865	10.9	2,547	9.3	7.7
Other digestive organs (C26)	269	1.0	1,223	4.4	10.5
Nose, sinuses, etc. (C30–C31)	171	0.7	47	0.2	57.3
Larynx (C32)	592	2.3	212	0.8	63.8
Lung (C33–C34)	11,174	42.6	8,251	30.5	15.8
Other thoracic and respiratory organs (C37–C39)	107	0.4	56	0.2	56.1
Bone (C40–C41)	203	0.8	104	0.4	69.7
Melanoma of the skin (C43)	12,744	50.3	1,467	5.5	90.4
Non-melanoma of the skin (C44)	903	3.5	600	2.1	70.2
Mesothelioma (C45)	706	2.7	692	2.6	5.8
Kaposi sarcoma (C46)	63	0.3	2	0.0	84.9
Peritoneum (C48)	221	0.9	74	0.3	39.9
Other soft tissue (C47,C49)	678	2.7	299	1.1	65.9
Breast in females (C50)	15,902	122.5	2,814	19.6	90.2
Vulva (C51)	341	2.5	79	0.5	72.5
Vagina (C52)	83	0.6	28	0.2	47.6
Cervix (C53)	813	6.8	223	1.7	72.1

(continued)

Table B1 (continued): Incidence (2013), mortality (2014) and 5-year relative survival (2009–2013) by cancer type, persons, Australia

Cancer site/type (ICD-10 codes)	Incidence		Mortality		Survival
	Number	ASR	Number	ASR	Relative survival (%)
Uterus (C54–C55)	2,511	18.6	494	3.4	83.2
Ovary (C56)	1,394	10.6	974	6.8	44.4
Other female genital organs and placenta (C57–C58)	193	1.4	40	0.3	55.7
Penis (C60)	104	0.9	10	0.1	69.1
Prostate (C61)	19,233	151.3	3,102	25.8	94.5
Testis (C62)	721	6.4	23	0.2	97.9
Other male genitals (C63)	37	0.3	4	0.0	81.0
Kidney (C64)	3,059	11.9	920	3.4	74.9
Bladder (C67)	2,555	9.7	1,040	3.7	53.3
Other urinary organs (C65–C66,C68)	498	1.9	316	1.1	41.2
Eye (C69)	327	1.3	40	0.1	79.0
Brain (C71)	1,636	6.5	1,366	5.3	22.1
Other central nervous system (C70,C72)	91	0.4	17	0.1	72.0
Thyroid (C73)	2,553	10.6	133	0.5	96.1
Other endocrine glands (C74–C75)	117	0.5	57	0.2	59.7
Hodgkin lymphoma (C81)	611	2.6	94	0.4	87.5
Non-Hodgkin lymphoma (C82–C86)	4,978	19.4	1,504	5.5	74.3
Immunoproliferative cancers (C88)	95	0.4	38	0.1	76.0
Multiple myeloma (C90.0)	1,637	6.3	891	3.3	48.5
Other plasma cell cancers (C90.1–C90.9)	89	0.3	21	0.1	61.3
Acute lymphoblastic leukaemia (ALL)(C91.0)	348	1.5	97	0.4	72.7
Chronic lymphocytic leukaemia (CLL)(C91.1)	1,259	4.8	341	1.2	79.3
Other and unspecified lymphoid leukaemia (C91.2–C91.9)	149	0.6	33	0.1	79.8
Acute myeloid leukaemia (AML)(C92.0, C92.3–C92.6,C92.8,C93.0,C94.0,C94.2, C94.4–C94.5)	957	3.8	911	3.4	26.8
Chronic myelogenous leukaemia (CML)(C92.1)	286	1.1	89	0.3	81.4
Other and unspecified myeloid leukaemia (C92.2,C92.7,C92.9,C93.1–C93.9,C94.6–C94.7)	295	1.1	92	0.3	35.4
Other and unspecified leukaemia (C94.1,C94.3,C95)	65	0.2	0	0.0	18.8
Myelodysplastic syndromes (D46)	1,307	4.9	444	1.5	38.6
Other cancers of blood and lymphatic system (C96,D45,D47.1,D47.3–D47.5)	998	3.9	199	0.7	77.0
Other and ill-defined sites (C76)	52	0.2	141	0.5	45.3
Unknown primary site (C80)	2,704	10.1	2,495	9.0	13.3

(continued)

Table B1 (continued): Incidence (2013), mortality (2014) and 5-year relative survival (2009–2013) by cancer type, persons, Australia

Cancer site/type (ICD-10 codes)	Incidence		Mortality		Survival
	Number	ASR	Number	ASR	Relative survival (%)
All cancers combined (C00–C97,D45,D46,D47.1,D47.3–D47.5)	124,465	482.7	44,171	161.9	68.0

Notes

1. The 2013 incidence data include estimates for NSW. See Appendix C for more details.
2. Deaths registered in 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.
3. Relative survival was calculated with the period method, using the period 2009–2013 (Brenner & Gefeller 1996). Note that this period does not contain incidence data for 2013 for NSW (see Appendix C).
4. The rates were age standardised to the Australian population as at 30 June 2001 and expressed per 100,000 population.
5. For incidence and survival data, those C44 codes that indicate basal or squamous cell carcinoma of the skin are not included.
6. For mortality data before 2008, unknown primary site is coded as C77–C80.

Sources: AIHW ACD 2013; AIHW National Mortality Database.

Appendix C: Methodology for estimating 2013 cancer incidence in NSW

The development of the new NSW Cancer Registries system has resulted in a delay in processing incidence data; therefore, the most recent NSW data available for inclusion in the ACD are for 2012. Hence, the 2013 NSW incidence data were estimated by the AIHW (see the next subsection for detail of procedure). These estimates were combined with the actual data supplied by the other seven state and territory cancer registries to form the 2013 ACD.

Estimating 2013 cancer incidence for NSW, excluding prostate cancer

To estimate 2013 cancer incidence for NSW – except for prostate cancer (which is detailed as described here) – 10 years of incidence count data, from 2003 to 2012, were divided into time series and stratified as:

- 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 steps described here 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 2003 to 2012
- if any of the rates in the series was zero (0), the mean of the 10 rates was used as the estimate of the 2013 rate
- if none of the rates was 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 significantly different from zero (0), the mean of the 10 rates was used as the estimate of the 2013 rate
- if the slope was positive, the straight line of best fit was extrapolated to obtain the estimates of the 2013 rate
- 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 rate for 2013 was found by extrapolating this line
- the estimated incidence rates for 2013 were then multiplied by the Estimated Resident Populations for 2013 to obtain the estimated incidence numbers.

Estimating 2013 prostate cancer incidence for NSW

Due to the effect of PSA testing, prostate cancer incidence rates have fluctuated considerably over time, making the methodology described in the previous subsection unreliable for estimating the incidence of prostate cancer. Instead, the estimates of 2013 prostate cancer incidence for NSW were based on the actual data for 2013 for the other seven states and territories combined.

Prostate cancer in those aged under 35 is very rare in Australia in the period 2003–2012, and therefore the number of cases estimated for this age group was zero (0). For those aged 35 and over, the 2003–2012 time series of prostate cancer incidence counts were stratified as:

- jurisdiction: NSW, SEVEN, where 'SEVEN' stands for the other seven jurisdictions combined. Note that the series for SEVEN extends to 2013
- age group: 5-year age groups, 35–39, ..., 80–84, and 85+.

The procedure for estimating the incidence count in NSW in each age group was as described here:

- convert the count data to age-specific incidence rates, using the relevant age- and jurisdiction-specific populations
- for each year from 2003 to 2012, divide the age-specific incidence rate for NSW by the corresponding age-specific incidence rate for SEVEN
- 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 SEVEN in 2013. This gives the estimated age-specific incidence rate for NSW for 2013
- convert these incidence rates to incidence counts by multiplying by the relevant populations.

Appendix D: Methodology for cancer projections

Estimating the incidence of cancer, excluding prostate cancer

Estimates of national incidence in 2014–2018 were calculated using the same approach as used to estimate 2013 incidence for NSW (Appendix C). Note that:

- 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 B)
- the incidence estimates already made for 2013 for NSW were treated as real data for the purposes of estimating Australian incidence for 2014–2018
- the 10 years of incidence data used as the baseline were 2004–2013
- for populations, the ABS preliminary Estimated Resident Populations were used for 2014–2015, and the ABS population projection series 29(B) for 2016–2018 (ABS 2013).

Estimating the incidence of prostate cancer

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 the end of June 2016. The total number of services for 2016 was estimated using these data:

- year of test: 2006, ..., 2015
- 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 age group to form a time series from 2006 to 2015. The same approach as is described in Appendix C was used to estimate the ratios for 2016. Applying these ratios to the known ‘January to June’ totals for 2016 produced the estimated number of services for the whole of 2016. This number is used in the calculations described as follows.

It has been noted previously that there is a positive correlation between the number of services of item 66655 in a given year and the incidence of prostate cancer in the following year (AIHW & AACR 2012). This relationship is employed in the following explanation of how the estimates of prostate cancer incidence for 2014–2017 were derived. The data used were:

- year: 2004, ..., 2013
- 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 2003–2012.

The ratio ‘number of cases’ divided by ‘number of tests’ was computed for each stratum in the MBS dataset to form a time series of ratios from 2004 to 2013. For each of these time series, the method explained in Appendix C was used to estimate the ratios for 2014–2017. The estimated incidence counts for 2014–2017 were then obtained by multiplying the estimated ratios for 2014–2017 by the number of services of item 66655 for 2013–2016, respectively. (Note that the method for estimating the number of services for 2016 is explained earlier.)

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:

- year of diagnosis: 2004, ..., 2013
- MBS age group: 10-year age groups 5–14, ..., 75–84 (0–4 and 85+ not required)
- indicator variable for 5-year age group within the 10-year age group. For example, in the MBS age group 5–14, the ‘younger’ age group is 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 as the ‘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 steps described here were then undertaken:

- the younger ratios were computed for each stratum in the MBS data set to form a time series of ratios from 2004 to 2013
- if any of the ratios in the series was zero (0), the mean of the 10 ratios was used as the estimate of the 2014–2017 younger ratios
- if none of the ratios was 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 significantly different from zero (0), the mean of the ratios was used as the estimate of the 2014–2017 younger ratios
- if the slope was significantly different from zero (0), 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 a negative slope was fitted with a log-linear model and the estimated ratios for 2014–2017 were found by extrapolating this line
- for each 2014–2017 ratio that was determined by these means (by either the mean or a log-linear model), the other ratios for 2014–2017 were computed to be 1 minus the ratio determined. There is now a complete set of estimated younger and older ratios for 2014–2017
- the estimated number of cases for each 5-year age group for 2014–2017 was 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 2014–2017.

At this point, there were incidence estimates for each 5-year age group for each year from 2014 to 2017. The estimates for 2018 cannot be obtained by the same method as there are no PSA data for 2017 yet. After examining the actual and projected incidence data up to 2017, it was judged that a quadratic model (one for each 5-year age group) would probably give a more accurate prediction than a linear model. The baseline data used for the quadratic model were for the period 2014–2017 (treated as real data).

Mortality projections methodology

Simple linear or log-linear OLS linear regression models of age-specific rates generally provided a good fit to the data, while giving reasonably accurate predictions over a short to medium time span. As was done for incidence projections, a linear model was used for increasing rates, and a log-linear model for decreasing rates to prevent projecting rates below zero (0). Where there was no significant trend, the mean rate over the most recent trend was used. Following this approach, a national model was developed for each cancer (stratified by sex) as described here:

- the most recent year of mortality data available at the time of analysis was 2013. For most cancers, the earliest year available was 1968 but for some cancers it was more recent due to a lack of a code for that cancer in earlier times. For example, mesothelioma did not have a code in mortality data until 1997
- joinpoint analysis was used on the longest time series of age-standardised rates available to determine the starting year of the most recent trend. The period from the starting year to 2013 is called the observation window
- an OLS linear regression model was developed for each 5-year age-group using national mortality rates for the observation window
- increases or decreases in the trend over time were tested for statistical significance by testing the slope of the trend
- where the increase or decrease was not significant, it was assumed there was no change over time, and the mean mortality rate over the most recent trend was used to project future mortality
- where a significant increasing trend was detected, the OLS linear model was used
- where a significant decreasing trend was detected, it was assumed the rate is declining over time, but will never reach zero (0). In this case, the OLS linear model was replaced with an OLS regression model with a log transformation (log-linear model)
- for each of the age-sex cancer models developed, the projected rates were applied to ABS preliminary or projected population data to estimate the future number of deaths. The projected number of deaths for each age and sex group was then summed to obtain the total deaths for each cancer.

Estimated counts were rounded to the nearest whole number. Calculations of percentage and numeric change, proportions and rates were based on unrounded data.

Assumptions

The national mortality projections are based on a number of assumptions:

- the factors that affect national cancer mortality rates (for example, risk factors, incidence rates, and treatment) evolve in an approximately linear or log-linear way with time for

each sex and age group. This assumption holds as long as there are no major quantitative changes in trends, as might occur, for example, from increased risk factors or treatment or screening breakthroughs

- an appropriate model has been chosen to describe the historical data
- the most recent historical trend will continue into the future for the years covered by the projections
- projected populations, based on current trends in fertility, life expectancy at birth and net overseas migration, are approximately correct.

Appendix E: Definition of cancer-related hospitalisations

Hospitalisations related to cancer

A separation is the term used to refer to the episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay, starting or ending in a change of type of care (for example, from acute care to rehabilitation). In this report, a separation is also referred to as a hospitalisation.

Due to coding methods, it is insufficient to simply select 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. 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’ (NCCCH 2010).

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. For example, Z51.0 ‘Radiotherapy session’ services 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.

Table E1: Definition of cancer-related hospitalisations

Definition	ICD-10 AM codes	
	Principal diagnosis	Additional diagnosis
Principal diagnosis of cancer	C00–C97, D45, D46, D47.1, D47.3, D47.4, D47.5	
Additional diagnosis of cancer		C00–C97, D45, D46, D47.1, D47.3, D47.4, D47.5
Principal diagnosis is a cancer-related treatment (and cancer is not an additional diagnosis)	Z08 (Follow-up examination after treatment for malignant neoplasms) Z40.00 (Breast prophylactic surgery for risk-factors related to malignant neoplasms) Z40.01 (Ovary 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)	Not a cancer code (C00–C97, D45, D46, D47.1 and D47.3)

Note: Codes were sourced from the eighth edition of the (NCCC 2012).

Palliative care separations

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 and/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. See the AIHW report *Palliative care services in Australia 2014* (AIHW 2014c).

Table E2: Definition of palliative care separations

Definition	ICD-10 AM codes	
	Care type	Diagnoses
Care type is palliative care	3.0	
Additional diagnosis is palliative care		Z51.5

Note: Codes were sourced from the eight edition of theACHI (NCCC 2012).

Terms and classifications relating to admitted patient care

Statistics on admitted patients are compiled when an **admitted patient** (a patient who undergoes a hospital's formal admission process) completes an episode of admitted patient care and 'separates' from the hospital. This is because most of the data on the use of hospitals by admitted patients are based on information provided at the end of the patients' episodes of care, rather than at the start. The length of stay and the procedures carried out are then known and the diagnostic information is more accurate.

Separation is the term used to refer to the episode of admitted patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay, starting or ending in a change of type of care (for example, from acute care to rehabilitation). 'Separation' means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

Patient day (or day of patient care) means the occupancy of a hospital bed (or chair in the case of some same-day patients) by an admitted patient for all or part of a day. The length of stay for an overnight patient is calculated by subtracting the date the patient is admitted from the date of separation and deducting days the patient was on leave. A same-day patient is allocated a length of stay of 1 day.

A **same-day separation** occurs when a patient is admitted to and separated from the hospital on the same date. It should be noted that a separation may be generated by a transfer between hospitals, or by a change in the type of care provided. Therefore, same-day separations may include records for patients whose stay in hospital was longer than 1 day but involved more than one separation.

An **overnight separation** occurs when a patient is admitted to and separated from the hospital on different dates.

The **principal diagnosis** is the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care. An **additional diagnosis** is a

condition or complaint that either coexists with the principal diagnosis or arises during the episode of care. An additional diagnosis is reported if the condition affects patient management.

In 2014–15, diagnoses and external causes of injury were recorded using the eighth edition of the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM) (NCCC 2012).

A **procedure** is a clinical intervention that is surgical in nature, carries an anaesthetic risk, requires specialised training and/or requires special facilities or services available only in an acute care setting. Procedures therefore encompass surgical procedures and non-surgical investigative and therapeutic procedures, such as X-rays. Patient support interventions that are neither investigative nor therapeutic (such as anaesthesia) are also included. In 2014–15, procedures were recorded using the eighth edition of the Australian Classification of Health Interventions (ACHI) (NCCC 2012).

See the Glossary for more information, and for more terms relating to admitted patient care.

Appendix F: Definition of Medicare items

Medicare provides free or subsidised access to a range of medical services. The MBS lists services that are subsidised by the Australian Government under Medicare. Each professional service (consultation, procedure, test) contained in the schedule has a unique item number and a set schedule fee. Services listed in the MBS must be rendered according to the provisions of the relevant Commonwealth, state and territory laws. The AIHW MBS claims database contains information about the type of service provided (MBS item number) and the amount of benefit paid for that service (based on the schedule fee). MBS item numbers used in this report are in Table F1.

See this website <<http://www.mbsonline.gov.au/>> for more information on MBS item numbers.

Table F1: MBS items

Procedure	MBS items
Breast ultrasound:	55059, 55060, 55070, 55073, 55061, 55062, 55076, 55079
Mammogram	59300, 59301, 59303, 59304
Breast MRI	63464, 63467
PSA testing	66655, 66656, 66659, 66660
Radiotherapy	15000, 15003, 15006, 15009, 15012, 15100, 15103, 15106, 15109, 15112, 15115, 15211, 15214, 15215, 15218, 15221, 15224, 15227, 15230, 15233, 15236, 15239, 15242, 15245, 15248, 15251, 15254, 15257, 15260, 15263, 15266, 15269, 15272, 15275, 15303, 15304, 15307, 15308, 15311, 15312, 15315, 15316, 15319, 15320, 15323, 15324, 15327, 15328, 15331, 15332, 15335, 15336, 15338, 15339, 15342, 15345, 15348, 15351, 15354, 15357, 15500, 15503, 15506, 15509, 15512, 15513, 15515, 15518, 15521, 15524, 15527, 15530, 15533, 15536, 15539, 15550, 15553, 15555, 15556, 15559, 15562, 15565, 15600, 15700, 15705, 15710, 15715, 15800, 15850, 15900

Appendix G: Data sources

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 2012 for all states and territories, and for 2013 cases for all jurisdictions except NSW.

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 2013 can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/658607>.

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 2014. Registration of deaths is the responsibility of each state and territory Registry 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 in which the death occurred and the year in which it was registered are provided. For the purposes of this report, actual mortality data are shown based on the year the death occurred, except for the most recent year (namely 2014) 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 2012 and earlier are based on the final version of cause of death data; deaths registered in 2013 and 2014 are based on revised and preliminary versions, respectively, and are subject to further revision by the ABS.

The data quality statements underpinning the AIHW NMD can be found on the following ABS internet pages:

- ABS quality declaration summary for *Deaths, Australia* (ABS cat. no. 3302.0)
<<http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3302.0/>>
- ABS quality declaration summary for *Causes of death, Australia* (ABS cat. no. 3303.0)
<<http://www.abs.gov.au/ausstats/abs%40.nsf/mf/3303.0/>>.

For more information on the AIHW NMD see *Deaths data at AIHW*
<<http://www.aihw.gov.au/deaths/aihw-deaths-data/>>.

AIHW National Hospital Morbidity Database

The AIHW NHMD is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals. The data supplied are based on the National Minimum Data Set (NMDS) for Admitted patient care; they include demographic, administrative and length of stay data, as well as data on the diagnoses of the patients, the procedures they underwent in hospital and external causes of injury and poisoning.

The purpose of the NMDS for Admitted patient care is to collect information about care provided to admitted patients in Australian hospitals. The scope of the NMDS is episodes of care for admitted patients in all public and private acute and psychiatric hospitals, free-standing day hospital facilities, and alcohol and drug treatment centres in Australia. Hospitals operated by the Australian Defence Force, corrections authorities and in Australia's off-shore territories are not in scope, but some are included.

For more information on the specific use of the NHMD in cancer reporting, see Appendix E. The Data Quality Statement for the AIHW NHMD 2014–15 can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/638202>.

AIHW Medicare Benefits Schedule claims database

The AIHW MBS claims database is compiled from data supplied by the Department of Health for services processed between 1 April 2010 and 30 June 2015. These data are generated as an administrative by-product of the processing of MBS claims and payments. Information is collected about patients, providers, the type of service provided (MBS item number) and the amount of benefit paid for that service (based on the schedule fee). The database does not include information on public patients in public hospitals or services that are not listed on the MBS.

For more information on the specific MBS item number used in this report, see Appendix F.

National Death Index

The 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 <http://meteor.aihw.gov.au/content/index.phtml/itemId/480010>.

BreastScreen Australia Program data

Data for the number of women who had a screening mammogram and the number of women with invasive breast cancer and DCIS (detected through BreastScreen Australia) are sourced from the BreastScreen register in each state and territory, according to definitions and data specifications in the *BreastScreen Australia data dictionary version 1.1* (AIHW 2015b).

These data are compiled into national figures by the AIHW to allow national monitoring of BreastScreen Australia.

The Data Quality Statement for BreastScreen Australia data can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/610753>.

National Bowel Cancer Screening Program data

Data from the National Bowel Cancer Screening Register were used to indicate both the number of persons who participated in the National Bowel Cancer Screening Program and 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 2014a).

The Data Quality Statement for the National Bowel Cancer Screening Program can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/637181>.

National Cervical Screening Program data

Data on the number of women who participated in the National Cervical Screening Program and the number of women with a high-grade cervical abnormality detected through the program are provided by the cervical screening register in each state and territory according to definitions and data specifications in the *National cervical cancer prevention data dictionary version 1: working paper* (AIHW 2014d). These data are compiled into national figures by the AIHW to allow national monitoring of the NCSP.

The Data Quality Statement for cervical screening data can be found at <http://meteor.aihw.gov.au/content/index.phtml/itemId/610779>.

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. 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. 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.

Australian Burden of Disease Study

Data to develop the ABDS estimates for cancer were obtained from many different sources. Deaths data for the fatal burden were sourced from the NMD. Data for the non-fatal burden came from a variety of administrative sources including the ACD, the NHMD and MBS claims data, as well as a number of epidemiological studies.

Other inputs for the ABDS were obtained from the 2010 or 2013 Global Burden of Disease. These included the standard life table for fatal burden, health states and disability weights

for the non-fatal burden and relative risks, and Theoretical Minimum Risk Exposure Distributions for the risk factor attribution.

Population estimates underpinning all estimates were sourced from the Australian Demographic Statistics from the ABS.

Full details on the various methods, data sources and standard inputs are available in *Australian Burden of Disease Study 2011: methods and supplementary material* (AIHW 2016a).

National Radiotherapy Waiting Times Database

The National Radiotherapy Waiting Times Database (NRWTD) (METeOR ID: 598445) is a compilation of data supplied to the AIHW – based on the Radiotherapy Waiting Times Data Set Specification (METeOR ID: 517220) – which was collected from participating radiotherapy providers for the period 2014–15 (as the second year of a pilot collection). Each record provides information relating to a course of radiotherapy that began in the reference period (that is, where the waiting period associated with the course of radiotherapy ended in the reference period). Other data collected includes administrative details, patient demographic characteristics and some clinical information, including principal diagnosis (eighth edition of ICD-10-AM).

The Data Quality Statement for the National Radiotherapy Waiting Times Database can be found at <<http://meteor.aihw.gov.au/content/index.phtml/itemId/648146>>.

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 its estimates of the resident populations, the ABS uses the 5-yearly Census of Population and Housing data and adjusts it as described here:

- 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 2014). Those estimates were based on the 2011 Census of Population and Housing.

Appendix H: Classifications

Remoteness areas

The remoteness areas divide Australia for statistical purposes into broad geographic regions that share common characteristics of remoteness. The Remoteness Structure, which divides each state and territory into several regions on the basis of their relative access to services, has six classes of remoteness area: *Major cities*, *Inner regional*, *Outer regional*, *Remote*, *Very remote* and *Migratory*. The category *Major cities* includes Australia's capital cities, except for Hobart and Darwin, which are classified as *Inner regional*. Remoteness areas are based on the Accessibility and Remoteness Index of Australia, produced by the Australian Population and Migration Research Centre at the University of Adelaide.

Each unit record in the ACD contains the 2006 SLA and the 2011 SA2, but not the remoteness area. To calculate the cancer incidence rates by remoteness area, a correspondence was used to map the 2011 SA2 to the 2011 remoteness areas. Similarly, the cancer mortality rates by remoteness area were calculated by applying a correspondence from the 2011 SA2 to the 2011 remoteness areas.

Index of Relative Socio-economic Disadvantage

The IRSD is one of four Socio-Economic Indexes for Areas developed by the ABS. 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.

In this report, the first socioeconomic 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.

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 SA2 of residence at the time of death.

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 lymphoma and leukaemia. 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 to recognise 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 World Health Organization 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 MBS coding system and originally called MBS-Extended. The name was changed to the Australian Classification of Health Interventions 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 I: 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 heavily depends 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 using 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 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 10,000 or 100,000 population, as appropriate.

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:

$$\text{Cumulative risk} = 1 - e^{-\text{rate}/100}$$

where the rate is expressed as a percentage.

The risk is expressed as a '1 in n ' proportion by taking the inverse of the above formula:

$$n = \frac{1}{(1 - e^{-\text{rate}/100})}$$

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.

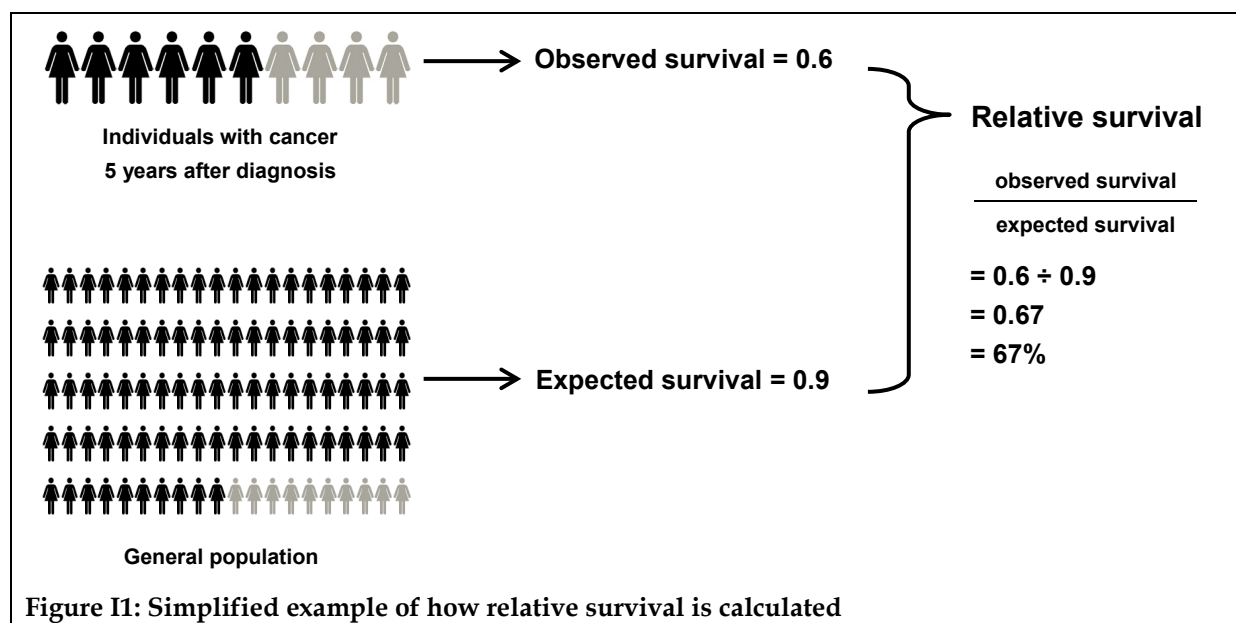
Relative survival

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. 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 G1. 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 as are their counterparts in the general population.



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 group 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 and Heise 1959).

The period method was used to calculate the survival estimates in this report (Brenner and 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.

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):

$$\text{Var}[S(j|i)] = \sum_{k=i+1}^{i+j} \frac{d_k}{r_k(r_k - d_k)}$$

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.

Prevalence

Limited-duration prevalence is expressed as *N-year prevalence* throughout this report. *N-year prevalence* on a given index date—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 2012
- 5-year prevalence is the number of living people who were diagnosed in the past 5 years to 31 December 2012. 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 2012 in this report. Therefore, a person diagnosed with cancer in 1982 when they turned 50 that year would be counted as age 80 in the prevalence statistics (as at the end of 2012).

Mortality-to-incidence ratio

Both 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. 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.

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 (ALOS): The average (mean) number of patient days for *admitted patient* episodes. Patients who are admitted and have a *separation* 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/m². 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: 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 lungs.

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.

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.

iFOBT (immunochemical 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 iFOBT is a central part of Australia's National Bowel Cancer Screening Program.

Health 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 also *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 (see also *Age-standardisation* and *Incidence*).

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.

Overnight patient: An *admitted patient* who receives hospital treatment for a minimum of 1 night (that is, is admitted to, and has a *separation* 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 has a *separation* 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.

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 iFOBT test result: Immunochemical faecal occult blood test (*iFOBT*) result that is either positive or negative. Inconclusive results are excluded from analysis.

References

- ABS (Australian Bureau of Statistics) 2012. Census of Population and Housing: characteristics of Aboriginal and Torres Strait Islander Australians, 2011. ABS cat. no. 2076.0. Canberra: ABS. Viewed 5 September 2014, <<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2076.0main+features1102011>>.
- ABS 2013. Population projections, Australia, 2012 (base) to 2101. ABS cat. no. 3222.0. Canberra: ABS.
- ABS 2014. Estimates and projections, Aboriginal and Torres Strait Islander Australians, 2001 to 2026. ABS cat. no. 3238.0. Canberra: ABS.
- ABS 2016. Causes of Death, Australia, 2015, Complexities in the measurement of bowel cancer in Australia. ABS cat no. 3303.0. Canberra: ABS.
- AIHW (Australian Institute of Health and Welfare) 2000. Australian hospital statistics 1998–99. Health services series no. 15. Cat. No. HSE 11. Canberra: AIHW.
- AIHW 2013. Health system expenditure on cancer and other neoplasms in Australia: 2008–09. Cancer series no. 81. Cat. no. CAN 78. Canberra: AIHW.
- AIHW 2014a. Analysis of bowel cancer outcomes for the National Bowel Cancer Screening Program. Cat. no. CAN 87. Canberra: AIHW.
- AIHW 2014b. Cancer in Australia: an overview 2014. Cancer series no. 90. Cat. no. CAN 88. Canberra: AIHW.
- AIHW 2014c. Palliative care services in Australia 2014. Cat. no. HWI 128. Canberra: AIHW.
- AIHW 2014d. National cervical cancer prevention data dictionary version 1: working paper. Cancer series no. 88. Cat. no. CAN 85. Canberra: AIHW. Viewed 9 January 2017, <<http://www.aihw.gov.au/publication-detail/?id=60129549329>>.
- AIHW 2015a. Admitted patient care 2013–14: Australian hospital statistics. Health services series no. 60. Cat. no. HSE 156. Canberra: AIHW.
- AIHW 2015b. BreastScreen Australia data dictionary: version 1.1. Cancer series no. 92. Cat. no. CAN 90. Canberra: AIHW. Viewed 9 January 2017, <<http://www.aihw.gov.au/publication-detail/?id=60129550293>>.
- AIHW 2016a. Australian Burden of Disease Study 2011: methods and supplementary material. Australian Burden of Disease Study series no. 5. Cat. no. BOD 6. Canberra: AIHW.
- AIHW 2016b. Australian Burden of Disease Study: impact and causes of illness and death in Australia 2011. Australian Burden of Disease Study series no. 3. BOD 4. Canberra: AIHW.
- AIHW 2016c. Australia's health 2016. Australia's health series no. 15. Cat. no. AUS 199. Canberra: AIHW.
- AIHW 2016d. BreastScreen Australia monitoring report 2013–2014. Cancer series no. 100. Cat. no. CAN 99. Canberra: AIHW.
- AIHW 2016e. Radiotherapy in Australia: report on the second year of a pilot collection 2014–15. Cat. no. HSE 181. Canberra: AIHW.
- AIHW 2016f. Skin cancer in Australia. Cat. no. CAN 96. Canberra: AIHW.

AIHW & AACR (Australasian Association of Cancer Registries) 2012. Cancer in Australia: an overview 2012. Cancer series no. 74. Cat. no. CAN 70. Canberra: AIHW.

AIHW & CA (Cancer Australia) 2008. Non-melanoma skin cancer: general practice consultations, hospitalisation and mortality. Cancer series no. 43. Cat. no. CAN 39. Canberra: AIHW.

AIHW & CA 2013. Cancer in Aboriginal and Torres Strait Islander peoples of Australia: an overview. Cancer series no. 78. Cat. no. CAN 75. Canberra: AIHW.

AIHW & NBCC (National Breast Cancer Centre) 2007. Breast cancer survival by size and nodal status in Australia. Cancer series no. 39. Cat. no. CAN 34. Canberra: AIHW.

American Urological Association 2007. Prostate cancer: guideline for the management of clinically localized prostate cancer: 2007 update. Linthicum: American Urological Association. Viewed 4 March 2013, <<http://www.auanet.org/content/clinical-practiceguidelines/clinical-guidelines.cfm?sub=pc>>.

Andrology Australia 2007. Fact sheet: PSA test. Clayton: Andrology Australia. Viewed 5 March 2013, <http://www.andrologyaustralia.org/wp-content/uploads/Factsheet_PSA_Test.pdf>.

Barton M, Jacob S, Shafiq J, Wong K, Thompson S, Hanna T & Delaney G 2014. Estimating the demand for radiotherapy from the evidence: a review of changes from 2003 to 2012. *Radiotherapy and Oncology* 112:140–4.

Black R, Sankaranarayanan R & Parkin D 1998. Interpretation of population-based cancer survival data. In: Black R, Sankaranarayanan R & Parkin D (eds). *Cancer survival in developing countries*. Lyon: IARC (International Agency for Research on Cancer) Scientific Publication, 13–7.

Brenner H & Arndt V 2004. Recent increase in cancer survival according to age: higher survival in all age groups, but widening age gradient. *Cancer Causes Control* 15:903–10.

Brenner H & Gefeller O 1996. An alternative approach to monitoring cancer patient survival. *Cancer* 78:2004–10.

Condon J, Armstrong B, Barnes A & Cunningham J 2003. Cancer in Indigenous Australians: a review. *Cancer Causes Control* 14:109–21.

Condon J, Warman G & Arnold L (eds) 2001. *The health and welfare of Territorians*. Darwin: Epidemiology Branch, Territory Health Services.

Condon J, Zhang X, Baade P, Griffiths K, Cunningham J, Roder D et al. 2014. Cancer survival for Aboriginal and Torres Strait Islander Australians: a national study of survival rates and excess mortality. *Population Health Metrics* 12:1.

Connolly A, Bird S, Allingham S, Clapham S, Quinsey K & Foskett L 2016. Patient outcomes in palliative care in Australia. National compendium report, January to June 2016. Palliative Care Outcomes Collaboration, Australian Health Services Research Institute. Wollongong: University of Wollongong.

Cunningham J, Rumbold AR, Zhang X & Condon JR 2008. Incidence, aetiology, and outcomes of cancer in Indigenous people in Australia. *Lancet Oncology* 9:585–95.

Dickman PW 2004. Estimating and modelling relative survival using SAS. Stockholm: Karolinska Institutet. Viewed 8 May 2007, <http://pauldickman.com/rsmodel/sas_colon/>.

- Dickman PW & Adami H-O 2006. Interpreting trends in cancer patient survival. *Journal of Internal Medicine* 260:103–17.
- Ederer F & Heise H 1959. Instructions to IBM 650 programmers in processing survival computations. Methodological note.
- Ellison LF & Gibbons L 2006. Survival from cancer – up-to-date predictions using period analysis. *Health Reports* 17:19–30.
- Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C et al. 2013. GLOBOCAN 2012, V1.0. Cancer incidence and mortality worldwide. Lyon, France: IARC.
- Greenwood M 1926. The errors of sampling of the survivorship table, vol. 33 of reports on public health and medical subjects. London: Her Majesty's Stationery Office.
- IARC (International Agency for Research on Cancer) 2009. A review of human carcinogens. Part E: Personal habits and indoor combustions. IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. Lyon, France: IARC.
- IARC 2014. World cancer report 2014. Lyon, France: IARC.
- IARC 2016. IARC handbooks of cancer prevention. Volume 16: body fatness. Lyon, France: IARC.
- Jensen O, Parkin D, MacLennan R, Muir C & Skeet R (eds) 1991. Cancer registration: principles and methods. IARC scientific publications no. 95. Lyon: IARC.
- Leest RJ, Zoutendijk J, Nigsten T, Mooi W, Rhee JI & Vries E 2015. Increasing time trends of thin melanomas in the Netherlands: what are the explanations of recent accelerations? *European Journal of Cancer* 51:2833–41.
- MSAC (Medical Services Advisory Committee) 2014. MSAC application no. 1276: National Cervical Screening Program renewal. Canberra: MSAC.
- National Cancer Institute 2015. National Cancer Institute Dictionary of Cancer Terms. Bethesda, Maryland: National Cancer Institute. Viewed 5 November 2016, <<http://www.cancer.gov/publications/dictionaries/cancer-terms?expand=S>>.
- NBOCC (National Breast and Ovarian Cancer Centre) 2009. National Breast and Ovarian Cancer Centre and Royal Australasian College of Surgeons National Breast Cancer audit. Public health monitoring series 2007 data. Sydney: NBOCC.
- NCCC (National Casemix and Classification Centre) 2012. The international statistical classification of disease and related health problems, 10th revision, Australia Modification (ICD-10-AM), Australian Classification of Health Interventions (ACHI) and Australia Coding Standards (ACS), eighth edition. Wollongong: University of Wollongong.
- NCCH (National Centre for Classification in Health) 2010. The International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM), Australian Classification of Health Interventions (ACHI) and Australian Coding Standards (ACS), Seventh Edition. Sydney; University of Sydney.
- NCRI (National Cancer Research Institute) & WHC (Women's Health Council) 2006. Women and cancer in Ireland 1994–2001. Dublin: WHC.
- O'Keefe CM & Connolly CJ 2010. Privacy and the use of health data for research. *Medical Journal of Australia* 193:537–41.

Prostate Cancer Foundation of Australia and Cancer Council Australia 2016. PSA testing and early management of test-detected prostate cancer. Sydney: Cancer Council Australia.

Roder D 2005. Comparative cancer incidence, mortality and survival in Indigenous and non-Indigenous residents of South Australia and the Northern Territory. *Cancer Forum* 29.

Skuladottir H & Olsen JH 2003. Conditional survival of patients with the four major histologic subgroups of lung cancer in Denmark. *Journal of Clinical Oncology* 21(16):3035–40.

Stumpers S & Thomson N 2009. Review of cancer among Indigenous peoples: Australian Indigenous Health Infonet. Viewed 22 February, 2010, <<http://www.healthinfonet.ecu.edu.au/chronic-conditions/cancer/reviews/our-review>>.

Threlfall TJ & Thompson JR 2009. Cancer incidence and mortality in Western Australia, 2007. Perth: Western Australian Department of Health.

Toender A, Kjaer SK & Jensen A 2014. Increased incidence of melanoma in situ in Denmark from 1997 to 2011: results from a nationwide population-based study. *Melanoma Research* 24: 488–95.

Vaccarella S, Franceschi S, Bray F, Wild C, Plummer M & Dal Maso L 2016. The increase in thyroid cancer may be due to an increase in medical surveillance and the introduction of new diagnostic techniques, such as neck ultrasonography. *The New England Journal of Medicine*. 375:614–17.

WCRF (World Cancer Research Fund) & AICR (American Institute for Cancer Research) 2007. Food, nutrition, physical activity, and the prevention of cancer: a global perspective. Washington, DC: AICR.

WHO (World Health Organization) 1992. International Statistical Classification of Disease and Related Health Problems, Tenth Revision. Volume 1. Geneva: WHO.

WHO 2002. National Cancer Control Programmes: policies and managerial guidelines. Second edition. Geneva: WHO.

Youlden DR, Cramb SM, Dunn NAM, Muller JM, Pyke CM & Baade PD 2012. The descriptive epidemiology of female breast cancer: an international comparison of screening, incidence, survival and mortality. *Cancer Epidemiology* 36:237–48.

Zhou CK, Check DP, Lorter-Tieulent J, Laversanne M, Jemal A, Ferlay J et al. 2016. Prostate cancer incidence in 43 populations worldwide: an analysis of time trends overall and by age group. *International Journal of Cancer* 138:1388–400.

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Related publications


This report, *Cancer in Australia 2017*, is part of an annual series. The 17 earlier editions and any published subsequently can be downloaded for free from the AIHW website <<http://www.aihw.gov.au/cancer-publications/>>. The website also includes information on ordering printed copies.

The following AIHW publications relating to cancer might also be of interest:

- AIHW 2016. BreastScreen Australia monitoring report 2013–2014. Cancer series no. 100. Cat. no. CAN 99. Canberra: AIHW.
- AIHW 2016. Cervical screening in Australia 2013–2014. Cancer series no. 97. Cat. no. CAN 95. Canberra: AIHW.
- AIHW 2016. National Bowel Cancer Screening Program: monitoring report 2016. Cancer series no. 98. Cat. no. CAN 97. Canberra: AIHW.
- AIHW 2016. Radiotherapy in Australia: report on the second year of a pilot collection 2014–15. Cat. no. HSE 181. Canberra: AIHW.
- AIHW 2016. Skin cancer in Australia. Cat. no. CAN 96. Canberra: AIHW.
- AIHW 2015. Breast cancer in young women: key facts about breast cancer in women in their 20s and 30s. Cancer series no. 96. Cat. no. CAN 94. Canberra: AIHW.
- AIHW 2014. Head and neck cancers in Australia. Cancer series no. 83. Cat. no. CAN 80. Canberra: AIHW.

The following online AIHW products relating to cancer might also be of interest:

- Australian Cancer Incidence and Mortality books
<<http://www.aihw.gov.au/acim-books/>>
- Cancer incidence and mortality by small geographic areas
<<http://www.aihw.gov.au/cancer-data/cancer-incidence/>>
- Cancer screening by small geographic areas <http://www.aihw.gov.au/cancer-data/cancer-screening/>.



Cancer in Australia 2017 presents the latest available information on national population screening programs, Medicare data, cancer incidence, hospitalisations, survival, prevalence, mortality and burden of disease. Cancer is the leading cause of disease burden in Australia. For all cancers combined, the incidence rate increased from 383 per 100,000 persons in 1982 to 504 per 100,000 in 2008, before an expected decrease to 470 per 100,000 in 2017. During the same period, the mortality rate decreased from 209 per 100,000 in 1982 to 161 per 100,000 in 2017. Cancer survival has improved over time. It is estimated that the most commonly diagnosed cancers in Australia in 2017 will be breast cancer in females, followed by colorectal cancer and prostate cancer (excluding basal and squamous cell carcinoma of the skin, as these cancers are not notifiable diseases in Australia).