Breast cancer in Australia: an overview, 2006

The Australian Institute of Health and Welfare is Australia's national health and welfare statistics and information agency. The Institute's mission is *better health and wellbeing for Australians through better health and welfare statistics and information*.

The National Breast Cancer Centre (NBCC) is Australia's peak body for breast and ovarian cancer control. It was established in 1995 by the Australian Government in response to community concerns about the human cost of breast cancer. In 2001 the Government provided additional funding to expand the NBCC's work into ovarian cancer.

The NBCC works with consumers, health professionals, cancer organisations, researchers and governments to improve the management of breast and ovarian cancer and the wellbeing of people with these diseases. It aims to improve health outcomes for people with breast and ovarian cancer by ensuring that wherever they live, they receive the best possible care.

Please note that as with all statistical reports there is the potential for minor revisions of data in this report over its life. Please refer to the online version at <www.aihw.gov.au>.

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Foreword

Breast cancer in Australia: an overview, 2006 brings together under one cover the most recent information available on the epidemiology, public health and health services impact of breast cancer in Australia. These data, collected through population-based cancer registries and other sources, are central to advancing our efforts to understand and ultimately control this disease. This report not only builds on previous monitoring reports but additionally, and for the first time, provides data about the prevalence of breast cancer in Australia.

Breast cancer in Australia: an overview, 2006 also represents the significant contributions and the continuing partnership of the National Breast Cancer Centre (NBCC), the Australian Institute of Health and Welfare (AIHW) and the Australasian Association of Cancer Registries (AACR). Together with its sister publication—*Ovarian cancer in Australia: an overview, 2006*—the current report allows us to build a nationwide snapshot of a major condition affecting a substantial number of Australians. Both reports highlight the importance of registries as a national resource.

The value of data and monitoring is its relevance to outcomes and its capacity to impact on change. This report identifies areas of significant gain over time and provides some predictions for the future. Our ability to plan for services and patient needs are predicated on this understanding of the impact of the disease as it affects our population. This report shows that the thousands affected by breast cancer have benefited greatly from crucial advances in diagnosis and treatment so that the five-year relative survival has increased substantially to 86.6% in 1998-2002 (up from 70.9% in 1982-1986) and—equally importantly—this improvement shows little sign of abating. For the first time, we can estimate that there are roughly 113,000 women and 730 men alive who have been diagnosed in the last 20 years.

We would like to thank the staff members of the various cancer registries and data repositories. It is through their effort and diligence that these data are available to the Australian public. We anticipate that the information contained in *Breast cancer in Australia: an overview, 2006* will be used extensively to further our goal of reducing the mortality from breast cancer and improving the wellbeing of Australians with the disease.

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The report was prepared by Emily Conley, John Harding, Edith Christensen and Dr Mark Short of the AIHW Health Registers and Cancer Monitoring Unit, and Robert Van der Hoek of the AIHW Population Health Unit. Cancer incidence projections were undertaken by Ian McDermid of the Health Registers and Cancer Monitoring Unit.

The support of the Australasian Association of Cancer Registries in both provision of data and reviewing the draft report is also greatly appreciated.

Abbreviations

AACR	Australasian Association of Cancer Registries
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ARIA	Accessibility/Remoteness Index for Australia
ASGC	Australian Standard Geographical Classification
ASR	age-standardised rate, standardised to the 2001 Australian standard population
ASR(W)	age-standardised rate, standardised to the World Standard Population
CI	confidence interval (see glossary)
DoHA	Australian Government Department of Health and Ageing
DCIS	ductal carcinoma in situ
ERP	estimated resident population
GRIM	General Record of Incidence of Mortality
ICD	International Classification of Diseases
ICD-O	International Classification of Diseases for Oncology
IRSD	Index of Relative Socio-economic Disadvantage
MBS	Medicare Benefits Scheme
NBCC	National Breast Cancer Centre
NHL	Non-Hodgkin lymphoma
NOS	not otherwise specified
NSW	New South Wales
NT	Northern Territory
PBS	Pharmaceutical Benefits Scheme
Qld	Queensland
SA	South Australia
SES	socioeconomic status
Tas	Tasmania
Vic	Victoria
WA	Western Australia
WHO	World Health Organization

Executive summary

Breast cancer is the most common invasive cancer diagnosed in females in Australia but is rare in males. It is also the leading cause of cancer death in females.

This report by the Australian Institute of Health and Welfare and the National Breast Cancer Centre aims to provide a comprehensive statistical overview of breast cancer in males and females. In addition to invasive breast cancer, information is provided on ductal carcinoma in situ.

Information sources for national data were the most current available at the time of preparation of the report and the time periods for these sources vary. Where national data were not available for some important data items such as breast cancer survival by stage, state and territory and international sources have been used.

Data included in the report include breast cancer incidence to 2002 with projections to 2011, prevalence to 2002, mortality to 2004, survival to 2002, screening to 2002–2003, hospital admissions to 2003–04, Medicare Benefits Scheme and Pharmaceutical Benefits Scheme services to 2004–05 and expenditure in 2000–01.

The main findings are as follows.

Incidence

Females

- The number of new cases of breast cancer per annum increased from 5,318 in 1983 to 12,027 in 2002. It is projected that there will be 13,261 new cases in 2006 and 14,800 in 2011.
- The age-standardised incidence of breast cancer in females has increased from 80 per 100,000 population in 1983 to 117 per 100,000 in 2002. It is projected to remain at about this level through to 2011.
- The BreastScreen Australia public mammography screening program commenced in most states in 1991 and in the others soon afterwards. Since then there has been very little change in the number of new cases of breast cancer per 100,000 population in women under 50 years of age. In the screening target age group of 50–69 years there has been a considerable increase in incidence. The increases in the incidence rate were greatest in the 60–64 year age group, from 216 per 100,000 population in 1992 to 334 per 100,000 in 2002. There was also an increase in the 65–69 year age group from 264 per 100,000 to 362 per 100,000, but a decline in the 80–84 year age group from 324 per 100,000 to 293 per 100,000.
- Australian females born in 2002–2004 have a life expectancy of 83.0 years. A woman's risk of a first diagnosis of breast cancer before the age of 75 has increased from 1 in 16 in 1983 to 1 in 11 in 2002. The risk of a first diagnosis before the age of 85 has increased from 1 in 12 in 1983 to 1 in 8 in 2002.
- There was almost no change from 1983 to 2002 in the mean and median ages of first diagnosis of breast cancer. In 2002 the mean age was 60.1 years and median age 59 years, compared with a mean of 59.8 and median of 60 in 1983.
- Women living in the areas of highest urbanisation had significantly higher rates of breast cancer in 1998–2002. In *Major cities* there were 117 new cases of breast cancer per 100,000 population compared with 114 in *Inner regional* areas, 105 in *Outer regional*, 101 in *Remote* and 94 in *Very remote* areas.

- Women living in high socioeconomic status areas have a significantly higher incidence of breast cancer, and women living in low socioeconomic status areas a significantly lower incidence. In the 2000–2002 period women in the highest socioeconomic status quintile had an incidence rate of 134 new cases of breast cancer per 100,000 population, significantly greater than women in the second highest quintile with an incidence rate of 120 per 100,000 population. This was in turn significantly greater than the rate of breast cancer experienced by women living in areas that fall into the three remaining quintiles of socioeconomic status. Women living in areas in the lowest socioeconomic status quintile had an incidence rate of 110 new cases per 100,000 population, significantly below the rest of the population.
- Breast cancer is the most common cancer experienced by Aboriginal and Torres Strait Islander women, but the incidence rate is lower than for the non-Indigenous population.
- Age-standardised rates of breast cancer were significantly lower for New South Wales females diagnosed from 1993–2003 and born in Eastern Europe (65 cases per 100,000 population), the Middle East (86) and Asia (71) than for females born in Australia (98), New Zealand (98), United Kingdom and Ireland (100), Northern Europe (101) and Southern Europe (97).
- Eight per cent of all females diagnosed with breast cancer from 1982 to 2002 were diagnosed with at least one other invasive cancer. The most common other cancers were melanoma, colon cancer and cancer of the uterus.

Males

- Breast cancer in males is rare. The number of new cases of breast cancer in males per year increased from 43 in 1983 to 84 in 2002.
- The age-standardised incidence of breast cancer in males was stable at 1 per 100,000 population from 1983 to 2002.
- There was almost no change from 1983 to 2002 in the mean and median ages of first diagnosis. In 2002 the mean age was 66.2 years and median age 68 years.
- A man's risk of a first diagnosis of breast cancer before the age of 85 has decreased marginally from 1 in 739 in 1983 to 1 in 763 in 2002.
- Nineteen per cent of all males diagnosed with breast cancer from 1982 to 2002 were diagnosed with at least one other invasive cancer. The most common other cancers were prostate cancer, lung cancer and melanoma.

Mortality

Females

- There were 2,641 female deaths due to breast cancer in 2004, with an average of 601 additional cases per year from 2000–2004 in which breast cancer was an associated cause but not the underlying cause of death.
- The age-standardised rate of death due to breast cancer among women increased from 21.8 deaths per 100,000 females in 1907 to 35.0 deaths per 100,000 females in 1943. This age-standardised rate was fairly steady until the early 1990s, but since then has fallen markedly, from 31.0 deaths per 100,000 females in 1990 to 23.4 deaths per 100,000 females in 2004.
- The median age of death due to breast cancer for women increased from 64 years in 1983 to 67 years in 2004.

- Despite lower incidence, Aboriginal and Torres Strait Islander women had 9% higher rates of breast cancer mortality than the Australian female population as a whole, based on age-standardised rates for the 2000–2004 period for Queensland, Western Australia, South Australia and Northern Territory registered deaths.

Males

- Male deaths from breast cancer are relatively rare. There were 20 deaths in 2004, resulting in an age-standardised rate of 0.2 deaths per 100,000 males.

Survival

Females

- There was a significant increase in relative survival after diagnosis of breast cancer in females between 1982–1986 and 1998–2002. One-year relative survival increased from 93.2% to 96.7% and five-year relative survival increased from 70.9% to 86.6%.

Males

- One-year relative survival increased from 93.4% to 94.5% and five-year relative survival decreased from 80.0% in 1982–1986 to 79.7% in 1998–2002. Neither difference in relative survival was significant.

Prevalence

Females

- Twenty-year prevalence in 2002 was 113,801 females alive who had been diagnosed in the previous 20 years.
- Fifty-one per cent of 20-year prevalent cases in 2002 were aged 50–69 years and a further 35% aged 70 and over.

Males

- Twenty-year prevalence in 2002 was 729 males who had been diagnosed in the previous 20 years.
- Surviving males with breast cancer had an older age distribution than surviving females. Of the 20-year prevalent cases in 2002, 56% were aged 70 and over.

International comparisons

International comparison data on breast cancer in females are sourced from the incidence and mortality data for all countries in the 2002 edition of the GLOBOCAN database of the International Agency for Research on Cancer.

- Australia had a higher age-standardised incidence of breast cancer with 83.2 new cases per 100,000 population than for the more developed countries of the world (67.8 new cases per 100,000 population) in 2002. However, Australian incidence was lower than for the United States of America (101.1 per 100,000), New Zealand (91.9), the United Kingdom (87.2) and Canada (84.3).
- Similarly, Australia had a higher age-standardised rate of mortality from breast cancer with 18.4 deaths from breast cancer per 100,000 population than for the more developed countries of the world (18.1 new cases per 100,000 population) in 2002. Also, the

Australian death rate was lower than the rates for New Zealand (24.5 per 100,000), the United Kingdom (24.3), Canada (21.1) and the United States of America (19.0).

Screening and other mammography

- In the 2001 National Health Survey, 12.2% of women aged 50–59 years, 11.2% of those aged 60–69 and 27.9% of those 70 years and over reported that they had never had a mammogram.
- The number of women receiving mammography screening in the BreastScreen Australia program has been steadily increasing. In the target age group of 50–69 years the number of women screened increased from 858,303 in 1996–1997 to 1,118,429 in 2002–2003. Across all ages the number increased from 1,262,418 in 1996–1997 to 1,618,306 in 2002–2003.
- The goal of the BreastScreen Australia screening program is 70% participation by women aged 50–69 years in a two-year period. However, participation in 2002–2003 was 56.1%, a fall from 57.1% in 2001–2002.
- In the first screening round in 1999–2001, there were 2,402 invasive cancers detected by screening in women aged 40 and over, and 891 interval cancers detected in women in this age group. These represented age-standardised rates of 67.0 per 10,000 women-years and 10.0 per 10,000 women years, respectively. An interval cancer is an invasive breast cancer that is diagnosed after a screening episode in which no cancer was detected and before the next scheduled screening episode.
- In subsequent screening rounds in 1999–2001, there were 8,014 invasive cancers detected by screening in women aged 40 and over, and 3,717 interval cancers detected in women in this age group. These represented age-standardised rates of 39.3 per 10,000 women-years and 10.1 per 10,000 women years, respectively.
- In 2004–05, there were 345,825 mammography and other radiographic examinations of breasts privately billed to Medicare for symptomatic males and females.

Hospital treatment

Females

- The number of hospital separations in Australia of women with a principal diagnosis of breast cancer (ICD-10 C50) increased from 15,831 in 1995–96 to 23,598 in 2003–04.
- The average length of stay across all ages decreased from 6.1 days per separation in 1995–96 to 3.9 days per separation in 2003–04.
- In 2003–04 the most common procedures for female patients with a principal diagnosis of breast cancer were *Excision of lesion of breast* (Block 1744) with 8,930 separations, followed by *Simple mastectomy* (Block 1748) with 4,817 separations and *Chemotherapy administration* (Block 1780) with 1,913 separations.

Males

- The number of hospital separations of men with a principal diagnosis of breast cancer (ICD-10 C50) increased from 117 in 1995–96 to 148 in 2003–04.
- The average length of stay was 4.4 days in 2003–04.
- In 2003–04 the most common procedures for male patients with a principal diagnosis of breast cancer were *Simple mastectomy* (Block 1748) with 89 separations, followed by *Excision of lesion of breast* (Block 1744) with 19 separations and *Chemotherapy administration* (Block 1780) with 8 separations.

Expenditure

Females

- Total expenditure on breast cancer was $241 million in 2000–01. Of this, $96 million was spent on population screening mammography, $72 million on hospital admitted patients, $21 million on out-of-hospital medical costs and $27 million on pharmaceuticals requiring a prescription.
- Breast cancer accounted for 12.8% of new cases of cancer in 2001 and 7.6% of cancer deaths, while 8.3% of total cancer expenditure in 2000–01 was for breast cancer.
- In 2000–01 breast cancer had an estimated lifetime treatment cost of $11,897.

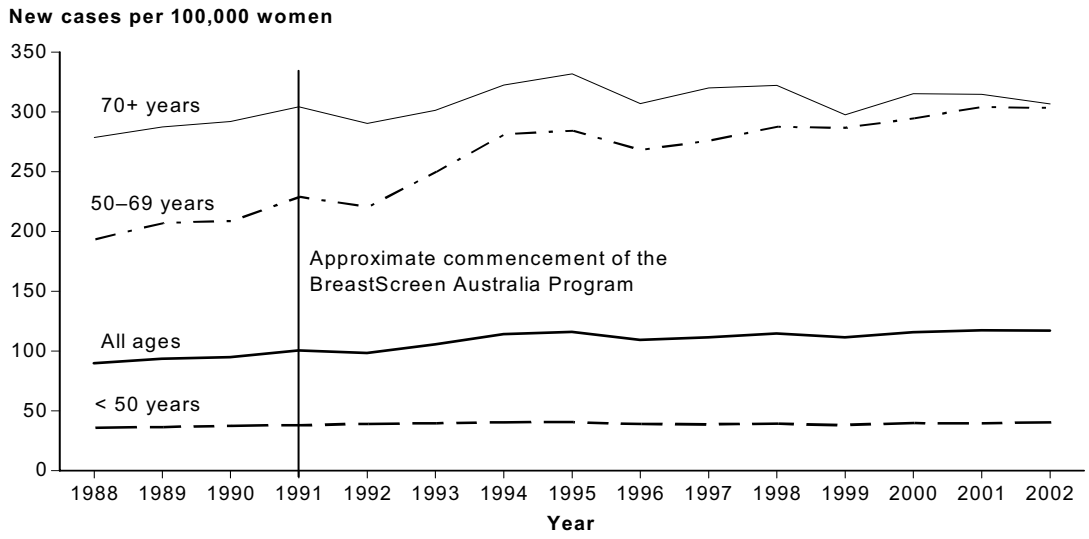
1 Incidence

Breast cancer is the most common invasive cancer diagnosed in females in Australia but is rare in males.

The Australian Institute of Health and Welfare (AIHW) receives data on new cases of cancer (excluding non-melanoma skin cancer) from the eight state and territory cancer registries for cancers diagnosed in residents of Australia. These records are held in the National Cancer Statistics Clearing House (NCSCH) and include new cases of cancer in Australia from 1982 onwards.

Information on incidence from the NCSCH is available from data cubes on the AIHW website (www.aihw.gov.au) containing Australian cancer incidence data from 1983 and through annual AIHW *Cancer in Australia* publications.

This chapter details national breast cancer incidence statistics and rates by type of breast cancer, region, socioeconomic status, Indigenous status and other cancer information for invasive breast cancer. Tables are also included on ductal carcinoma in situ (DCIS).



Source: AIHW National Cancer Statistics Clearing House.

Figure 1.1: Incidence of breast cancer in women, Australia, 1988–2002

The main findings are as follows.

Trends

Females

- The number of new cases of breast cancer increased from 5,318 in 1983 to 12,027 in 2002. It is projected that there will be 13,261 new cases in 2006 and 14,818 in 2011 (Table 1.1).
- The age-standardised incidence of breast cancer in women increased from 80 per 100,000 population in 1983 to 98 per 100,000 in 1992 and 117 per 100,000 in 2002 (Table

1.1, Figure 1.1). The BreastScreen Australia population-based mammography screening program commenced in around 1991 and there was a temporary sharp rise in incidence in the early 1990s as asymptomatic women with breast cancer were diagnosed who would not otherwise have been identified until symptoms emerged. The age-standardised rate is projected to remain at about 117 new cases per 100,000 females through to 2011. However, changes in participation in the BreastScreen Australia population-based mammography screening program and other factors may change the actual rates experienced.

- Since the BreastScreen Australia program began there has been a considerable increase in the incidence rate in the screening target age group of 50–69 years (Table 1.2, Figure 1.2). The increases were greatest in the 60–64 year age group from 216 per 100,000 population in 1992 to 334 per 100,000 in 2002. There has also been an increase in the 65–69 year age group from 264 per 100,000 to 362 per 100,000, but a decline in the 80–84 year age group from 324 per 100,000 to 293 per 100,000. However, there has been very little change in the number of new cases of breast cancer per 100,000 population in women under
50 years of age. In 2002 there were 26 new cases per 100,000 population for women aged 30–34, 58 per 100,000 for women 35–39, 117 per 100,000 for women 40–44 and 189 per 100,000 for women 45–49.
- There has been almost no change from 1983 to 2002 in the mean and median ages of first diagnosis. In 2002 the mean age was 60.1 years and median age 59 years, compared with a mean of 59.8 years and median of 60 in 1983 (Table 1.3).
- Australian females born in 2002–2004 have a life expectancy of 83.0 years. A woman's risk of a first diagnosis of breast cancer before the age of 75 has increased from 1 in 16 in 1983 to 1 in 11 in 2002. The risk of a first diagnosis before the age of 85 has increased from 1 in 12 in 1983 to 1 in 8 in 2002 (Table 1.3).

Males

- Breast cancer in men is rare. The number of new cases of breast cancer in men increased from 43 in 1983 to 84 in 2002 (Table 1.1).
- The age-standardised incidence of breast cancer in men remained stable at around 1 per 100,000 population from 1983 to 2002 (Table 1.1).
- There was almost no change from 1983 to 2002 in the mean and median ages of first diagnosis. In 2002 the mean age was 66.2 years and median age 68 years (Table 1.5), several years older than in women (Table 1.3).
- The age-specific incidence of breast cancer in men increased with age from 1992 to 2002 and was highest in the 80 years and over age group for most years during the 10-year period (Table 1.4).
- Australian males born in 2002–2004 have a life expectancy of 78.1 years. A man's risk of a first diagnosis of breast cancer before the age of 75 increased from 1 in 2,247 in 1983 to 1 in 1,413 in 2002. The risk of a first diagnosis before the age of 85 has decreased from 1 in 739 in 1983 to 1 in 763 in 2002 (Table 1.5).

Histology and anatomical location

Females

- At 72.9% of new cases, *infiltrating duct carcinoma* was the most common recorded histology for breast cancer in 2002 (Table 1.6). *Lobular carcinoma, not otherwise specified* was the second most common with 10.6% of cases in 2002.
- In 2002 there was no specific anatomical location recorded for 61.7% of breast cancer cases in women (Table 1.7). *Upper-outer quadrant of breast* was the most common recorded anatomical location with 17.8% of cases in 2002.

Males

- At 76.0% of new cases, *infiltrating duct carcinoma* was the most common recorded histology for breast cancer in 2002 (Table 1.8). *Carcinoma, not otherwise specified* was the second most common with 5.6% of cases in 2002.
- In 2002 there was no specific anatomical location of recorded for 78.6% of breast cancer cases in men (Table 1.9). *Central portion of breast* was the most common recorded anatomical location with 7.9% of cases in 2002.

Geographic differences

The Australian Standard Geographic Classification (ASGC) of the Australian Bureau of Statistics (ABS 2001) has been used to classify regional areas according to the Accessibility/Remoteness Index for Australia (ARIA). The geographic categories are *Major cities*, *Inner regional* areas, *Outer regional* areas, *Remote* areas and *Very remote* areas.

Females

- Women living in the areas of highest urbanisation had significantly higher rates of breast cancer in 1998–2002 (Table 1.10). In *Major cities* there were 117 new cases of breast cancer per 100,000 population compared with 114 in *Inner regional* areas, 105 in *Outer regional*, 101 in *Remote* and 94 in *Very remote* areas.
- The Australian Capital Territory had the highest average annual age-standardised rate of breast cancer among women living in the states and territories with 127 new cases of breast cancer per 100,000 population in the period from 1998 to 2002 (Table 1.12).

Males

- Largely because of small numbers, the incidence rates of breast cancer among males between regional categories do not differ significantly from the all areas rate in either the 1993–1997 five-year period with 0.9 cases per 100,000 population or the 1998–2002 five-year period with 1.0 cases per 100,000 population (Table 1.11).

Socioeconomic status

Females

- Women living in areas in the highest socioeconomic status quintile had significantly higher rates of breast cancer (Table 1.13). In the 2000–2002 period women in the highest socioeconomic status quintile had an incidence rate of 134 new cases of breast cancer per

100,000 population, significantly greater than women in the second highest quintile with an incidence rate of 120 per 100,000 population. This was in turn significantly greater than the rate of breast cancer experienced by woman living in areas that fall into the three remaining quintiles of socioeconomic status.

- Women living in the areas in the lowest socioeconomic status quintiles had an incidence rate of 110 new cases per 100,000 population, significantly below the rest of the population.

Males

- The incidence rates of breast cancer among men in each socioeconomic status quintile do not differ significantly from each other in 2000–2002 (Table 1.14).

Aboriginal and Torres Strait Islanders

Females

- The most common cancer in Aboriginal and Torres Strait Islander women (in Queensland, Northern Territory, South Australia and Western Australia) from 1997 to 2001 was breast cancer, followed by lung cancer, cervical cancer, colorectal cancer and cancer of the uterus (Table 1.15).
- The incidence of breast cancer in Aboriginal and Torres Strait Islander females has been found to be lower than in the non-Indigenous population (Condon 2004).

Males

- Breast cancer is extremely rare in Aboriginal and Torres Strait Islander males. In the five years between 1997 and 2001 there was only one case of breast cancer in an Aboriginal and Torres Strait Islander male in Queensland, South Australia, Western Australia and the Northern Territory combined (AIHW unpublished data).

Country of birth

Country of birth incidence data are not available nationally. New South Wales data for 1993–2003, however, show significant differences in incidence by region of birth for females (NSW Central Cancer Registry Reporting Module 2005).

Females

- Age-standardised rates of breast cancer per 100,000 population were significantly lower for New South Wales females born in Eastern Europe (65 cases per 100,000 population), the Middle East (86) and Asia (71) than for females born in Australia (98), New Zealand (98), United Kingdom and Ireland (100), Northern Europe (101) and Southern Europe (97) (Table 1.16).

Males

- There are no significant differences in incidence rates by region of birth because numbers are too small (Table 1.17).

Ductal carcinoma in situ

Ductal carcinoma in situ (DCIS) is a non-invasive tumour of the breast arising from cells lining the ducts.

Females

- The total number of cases diagnosed of DCIS increased from 5,489 in the 1993–1998 period to 7,434 in the 1997–2002 period (Table 1.18).
- The age-standardised incidence for DCIS increased from 11 cases per 100,000 population in the 1993–1998 period to 13 cases per 100,000 population in the 1997–2002 period (Table 1.19).
- The highest age-specific incidence rate of DCIS was found in women in the screening target age group of 50–69 years. This was 40 new cases per 100,000 females in 1997–2002, compared with 22 new cases per 100,000 for females aged 70 and over and 17 per 100,000 for females aged 40–49 years (Table 1.19).

Other cancers

Some women and some men diagnosed with breast cancer will also be diagnosed with another cancer, either before they were diagnosed with the breast cancer, at the same time as the breast cancer diagnosis or after the breast cancer diagnosis. The following statistics show that this is more common among males diagnosed with breast cancer than it is for females, and which other cancers are most frequently diagnosed.

Females

- Of the 176,967 women first diagnosed with breast cancer between 1982 and 2002 there were 14,782 other cancers diagnosed in these women (Table 1.20). Of these women, 13,963 had multiple cancers, representing 8% of all women diagnosed with breast cancer from 1982 to 2002.
- Thirty-six per cent of these other cancers were diagnosed before the breast cancer was diagnosed, with the most common other cancers including melanoma, colon cancer and cancer of the uterus.
- Four per cent of these other cancers were diagnosed in the same month as the breast cancer, with the most common other cancers including lung cancer, colon cancer and melanoma.
- Sixty-one per cent of these other cancers were diagnosed after the breast cancer, with the most common other cancers including colon cancer, cancer of the uterus and melanoma.

Males

- Of the 1,425 men first diagnosed with breast cancer between 1982 and 2002 there were 307 other cancers diagnosed in these men (Table 1.21). Two-hundred and seventy-four men had multiple cancers, representing 19% of all males diagnosed with breast cancer from 1982 to 2002.
- Thirty-three per cent of these other cancers were diagnosed before the breast cancer was diagnosed, with the most common other cancers including prostate cancer, colon cancer and melanoma.

- Six per cent of these other cancers were diagnosed in the same month as the breast cancer, with the most common other cancers including prostate, lung and bladder cancer.
- Sixty-one per cent of these other cancers were diagnosed after the breast cancer, with the most common other cancers including prostate cancer, lung cancer and melanoma.

Table 1.1: Incidence of breast cancer, 1983 to 2002 and projections to 2011

	1983	1987	1992	1997	2002	2006[(a)]	2011[(a)]
				New cases			
Breast cancer (females)	5,318	6,680	8,022	10,175	12,027	13,261	14,818
Breast cancer (males)	43	56	47	71	84	106	122
				Age-standardised rate (number per 100,000 population[(b)])			
Breast cancer (females)	80.0	91.1	98.1	111.3	116.8	117.3	117.3
Breast cancer (males)	0.8	0.9	0.7	0.9	0.8	1.0	1.0

(a) AIHW projections.

(b) Standardised to the 2001 Australian standard population.

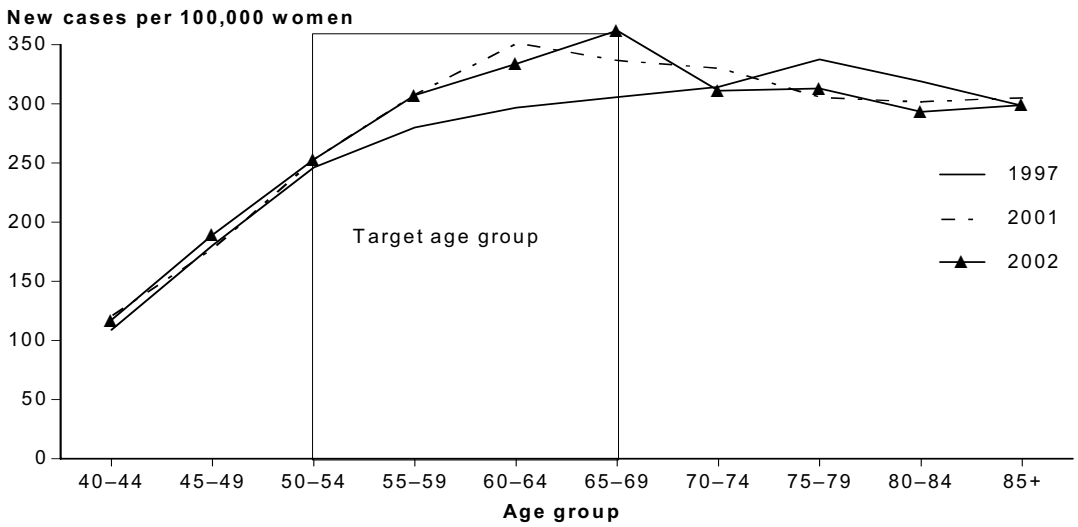
Source: National Cancer Statistics Clearing House, AIHW.

Table 1.2: Incidence of breast cancer in females, 1992 to 2002

Age groups	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
						New cases					
Under 20	0	0	0	2	0	2	3	0	2	0	1
20–24	6	13	7	8	6	13	14	11	5	9	7
25–29	46	58	57	56	42	50	50	50	54	44	54
30–34	180	169	197	199	194	173	198	185	186	172	199
35–39	378	412	394	398	424	444	418	435	437	448	433
40–44	715	778	770	750	759	755	847	821	840	910	892
45–49	1,013	1,030	1,136	1,235	1,182	1,160	1,160	1,149	1,269	1,224	1,313
50–54	858	978	1,106	1,241	1,182	1,324	1,466	1,500	1,562	1,650	1,645
55–59	819	927	1,035	1,144	1,123	1,179	1,264	1,294	1,424	1,534	1,646
60–64	787	972	1,101	1,066	1,017	1,079	1,140	1,244	1,334	1,438	1,402
65–69	931	1,000	1,216	1,095	1,063	1,077	1,136	1,093	1,119	1,171	1,286
70–74	778	899	1,017	1,009	984	1,033	1,056	988	1,098	1,109	1,036
75–79	654	693	782	849	741	866	884	832	899	895	923
80–84	491	466	527	579	571	574	590	555	583	611	620
85+	366	394	377	417	434	446	493	491	521	561	570
Total	**8,022**	**8,789**	**9,722**	**10,048**	**9,722**	**10,175**	**10,719**	**10,648**	**11,333**	**11,776**	**12,027**
						Age-specific rate (number per 100,000 population[(a)])					
Under 20	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0
20–24	0.9	1.8	1.0	1.1	0.9	1.9	2.1	1.7	0.8	1.4	1.1
25–29	6.7	8.5	8.4	8.1	5.9	6.9	6.8	6.8	7.4	6.2	7.9
30–34	24.8	23.1	26.8	27.2	26.8	24.2	27.9	26.0	25.9	23.3	26.3
35–39	55.8	59.9	56.5	55.9	58.1	59.8	55.6	57.4	57.8	59.7	58.4
40–44	111.4	120.2	117.2	112.3	111.8	109.2	120.6	114.9	115.2	122.2	117.3
45–49	188.1	179.8	190.6	200.3	184.8	180.5	177.5	172.7	188.2	179.1	189.4
50–54	202.2	225.4	244.1	260.7	237.6	246.5	256.0	250.9	250.7	254.5	253.0
55–59	223.5	246.7	268.4	289.2	275.6	279.9	291.6	285.9	300.7	309.3	307.4
60–64	215.5	270.3	308.5	298.8	285.1	296.7	306.1	323.8	336.1	352.4	333.9
65–69	263.8	281.4	343.0	309.2	299.7	305.7	325.5	315.8	324.3	337.5	361.9
70–74	265.9	296.2	320.5	312.4	300.9	314.3	319.0	296.4	329.1	331.2	311.2
75–79	285.5	301.3	343.3	363.8	303.9	337.7	328.9	296.2	312.4	306.5	313.2
80–84	324.2	294.4	315.2	335.8	323.3	319.1	324.1	303.2	306.8	302.8	293.2
85+	316.5	323.4	295.7	310.4	306.5	298.6	314.5	295.6	297.5	306.0	299.1

(a) Standardised to the 2001 Australian standard population.

Source: National Cancer Statistics Clearing House, AIHW.



Source: AIHW National Cancer Statistics Clearing House.

Figure 1.2: Age-specific incidence rates for breast cancer in women, Australia, 1997, 2001 and 2002

Table 1.3: Breast cancer: age and risk of first diagnosis, females, 1983 to 2002

	1983	1987	1992	1997	2002
Mean age at first diagnosis	59.8	59.9	59.9	60.2	60.1
Median age at first diagnosis	60.0	60.0	59.0	59.0	59.0
Risk of first diagnosis before age 75	1 in 16	1 in 15	1 in 13	1 in 11	1 in 11
Risk of first diagnosis before age 85	1 in 12	1 in 10	1 in 10	1 in 9	1 in 8

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.4: Incidence of breast cancer in males, 1992 to 2002

Age groups	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
						New cases					
Under 50	2	7	7	9	7	12	12	8	11	9	7
50–59	10	10	10	13	16	7	13	14	11	15	19
60–69	14	21	25	12	24	16	34	23	14	16	22
70–79	9	15	15	14	26	27	24	23	35	27	19
80+	12	11	15	9	13	9	9	8	8	29	17
Total	**47**	**64**	**72**	**57**	**86**	**71**	**92**	**76**	**79**	**96**	**84**
						Age-specific rate (number per 100,000 population[(a)])					
Under 50	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1
50–59	1.2	1.2	1.2	1.4	1.7	0.7	1.2	1.3	1.0	1.3	1.6
60–69	2.0	3.1	3.6	1.7	3.5	2.3	4.8	3.2	1.9	2.1	2.8
70–79	2.2	3.6	3.5	3.2	5.7	5.7	4.9	4.5	6.7	5.1	3.5
80+	8.8	7.7	9.9	5.6	7.8	5.2	5.0	4.3	4.1	13.8	7.6

(a) Standardised to the 2001 Australian standard population.

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.5: Breast cancer: age and risk of first diagnosis, males, 1983 to 2002

	1983	1987	1992	1997	2002
Mean age at first diagnosis	66.6	63.6	68.7	65.6	66.2
Median age at first diagnosis	68.0	65.5	69.0	70.0	67.5
Risk of first diagnosis before age 75	1 in 2,247	1 in 1,505	1 in 2,439	1 in 1,604	1 in 1,413
Risk of first diagnosis before age 85	1 in 739	1 in 832	1 in 955	1 in 761	1 in 763

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.6: Histology subtypes of new cases of breast cancer in females, 2002

Type of cancer	Number of cases	Per cent
Infiltrating duct carcinoma	8,782	72.9
Lobular carcinoma, NOS	1,283	10.6
Infiltrating duct and lobular carcinoma	400	3.3
Carcinoma, NOS	348	2.9
Tubular adenocarcinoma	283	2.3
Mucinous adenocarcinoma	216	1.8
Adenocarcinoma, NOS	148	1.2
Neoplasm, malignant	91	0.8
Medullary carcinoma, NOS	48	0.4
Paget disease and intraductal carcinoma of breast	42	0.3
Paget disease and infiltrating duct carcinoma of breast	40	0.3
Papillary carcinoma, NOS	32	0.3
Intraductal papillary adenocarcinoma with invasion	29	0.2
Infiltrating ductular carcinoma	26	0.2
Infiltrating duct mixed with other types of carcinoma	23	0.2
Phyllodes tumour, malignant	22	0.2
Cribriform carcinoma, NOS	20	0.2
Paget disease, mammary	20	0.2
Adenoid cystic carcinoma	10	0.1
Papillary adenocarcinoma, NOS	9	0.1
Inflammatory carcinoma	7	0.1
Intracystic carcinoma, NOS	7	0.1
Squamous cell carcinoma, NOS	7	0.1
Apocrine adenocarcinoma	5	0.0
Other	129	1.1
Total	**12,027**	**100.0**

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.7: Anatomical location of new cases of breast cancer in females, 2002

Site code	Description	Number of cases	Per cent
C50.0	Nipple and areola	121	1.0
C50.1	Central portion of breast	367	3.1
C50.2	Upper-inner quadrant of breast	654	5.4
C50.3	Lower-inner quadrant of breast	334	2.8
C50.4	Upper-outer quadrant of breast	2,137	17.8
C50.5	Lower-outer quadrant of breast	532	4.4
C50.6	Axillary tail of breast	35	0.3
C50.8	Overlapping lesion of breast	431	3.6
C50.9	Breast, NOS	7,416	61.7
Total		**12,027**	**100.0**

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.8: Histology subtypes of new cases of breast cancer in males, 1998–2002

Type of cancer	Number of cases	Per cent
Infiltrating duct carcinoma	326	76.0
Carcinoma, NOS	24	5.6
Adenocarcinoma, NOS	12	2.8
Lobular carcinoma, NOS	11	2.6
Intraductal papillary adenocarcinoma with invasion	8	1.9
Paget disease and infiltrating duct carcinoma of breast	8	1.9
Intracystic carcinoma, NOS	6	1.4
Other	32	7.8
Total	**427**	**100.0**

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.9: Anatomical location of new cases of breast cancer in males, 1998–2002

Site code	Description	Number of cases	Per cent
C50.0	Nipple and areola	22	5.1
C50.1	Central portion of breast	34	7.9
C50.2	Upper-inner quadrant of breast	<5	
C50.3	Lower-inner quadrant of breast	<5	
C50.4	Upper-outer quadrant of breast	12	2.8
C50.5	Lower-outer quadrant of breast	7	1.6
C50.6	Axillary tail of breast	<5	
C50.8	Overlapping lesion of breast	11	2.6
C50.9	Breast, NOS	335	78.6
Total		**427**	**100.0**

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.10: Breast cancer incidence rates[(a)], females, region, 1993–1997 and 1998–2002

	Major cities	Inner regional	Outer regional	Remote	Very remote	All
Rate 1998–2002	117.3*†	114.1	105.4*	100.7*	93.8*	115.0†
95% CI	116.1–118.5	112.1–116.1	102.6–108.3	93.0–108.8	81.8–106.6	114.1–116.0
Rate 1993–1997	113.3	109.9	102.5*	96.8*	82.8*	111.1
95% CI	112.0–114.5	107.8–112.1	99.5–105.5	88.9–105.3	70.9–96.0	110.1–112.1

* Significantly different from the Australian rate.

† Significantly different from the 1993–1997 rate.

(a) Standardised to the 2001 Australian standard population.

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.11: Breast cancer incidence rates[(a)], males, region, 1993–1997 and 1998–2002

	Major cities	Inner regional	Outer regional	Remote	Very remote	All
Rate 1998–2002	1.0	0.9	1.0	0.7	1.2	1
95% CI	0.9–1.1	0.8–1.2	0.7–1.3	0.2–1.8	0.2–3.0	0.9–1.1
Rate 1993–1997	1.0	0.9	0.9	0.7	2.2	0.9
95% CI	0.9–1.1	0.7–1.1	0.6–1.2	0.1–1.8	0.4–5.5	0.8–1

(a) Standardised to the 2001 Australian standard population.

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.12: Incidence of breast cancer, state and territory averages, 1998–2002

	Males		Females		Persons	
State	Number	ASR[(a)]	Number	ASR[(a)]	Number	ASR[(a)]
NSW	31	1.0	3,818	113.0	3,849	59.1
Vic	22	1.0	2,862	115.0	2,884	60.7
Qld	15	1.0	2,075	118.1	2,090	61.0
WA	7	0.9	1,037	114.6	1,044	59.3
SA	7	1.0	990	118.6	998	62.5
Tas	1	0.6	282	110.8	283	57.8
ACT	1	1.0	181	126.5	183	66.7
NT	1	1.4	55	98.8	56	46.9

(a) Age-standardised rate standardised to the 2001 Australian standard population.

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.13: Incidence of breast cancer, females, socioeconomic status[(a)], 2000–2002

	1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile	All
New cases	8,317	6,752	6,752	6,950	6,235	35,006
ASR	133.8	120.2	115.8	116.2	110.2	119.5
95% CI	132.2–135.4	118.7–121.8	114.3–117.4	114.7–117.8	108.7–111.7	117.9–121.0

(a) The first quintile corresponds to the highest socioeconomic status and the fifth to the lowest socioeconomic status, using the ABS SEIFA Index of Socioeconomic Disadvantage.

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.14: Incidence of breast cancer, males, socioeconomic status[(a)], 2000–2002

	1st quintile	2nd quintile	3rd quintile	4th quintile	5th quintile	All
New cases	58	52	43	69	36	258
ASR	1.1	1.0	0.9	1.2	0.7	1.0
95% CI	0.9–1.2	0.9–1.1	0.8–1.1	1.1–1.4	0.6–0.8	0.8–1.1

(a) The first quintile corresponds to the highest socioeconomic status and the fifth to the lowest socioeconomic status, using the ABS SEIFA Index of Socioeconomic Disadvantage.

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.15: Most common cancers reported in Aboriginal and Torres Strait Islander people, Qld, SA, WA and NT combined, 1997–2001

Males		Females	
New cases			
Lung	190	Breast	185
Prostate	73	Lung	101
Colorectal	70	Cervix	80
Unknown primary site	54	Colorectal	60
Liver	43	Corpus uteri	58
Deaths			
Lung	161	Lung	85
Unknown primary site	47	Breast	66
Liver	40	Unknown primary site	40
Oesophagus	37	Cervix	39
Prostate	30	Ovary & other female genital organs	25

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.16: Incidence of breast cancer by country of birth, females, New South Wales, 1993–2003

Region of birth	Number	Crude rate	ASR(A)	95% confidence interval
Australia	11,566	92.9	98.4	96.6–100.2
New Zealand	264	90.4	98.2	85.9–111.7
UK and Ireland	1,333	170.5	100.2	94.7–105.9
Northern Europe	401	186.8	101.0	90.7–112.1
Southern Europe	843	186.1	96.9	89.5–104.8
Eastern Europe	265	116.3	64.6	56.4–73.5
Middle East	376	105.7	86.4	77.7–95.8
Asia	897	70.2	70.7	65.8–75.8
Other	337	72.8	70.8	63.0–79.2
All	16,282	98.6	94.5	93.1–96.0

Note: Rates are expressed per 100,000 population and age-standardised to the Australian 2001 Standard Population (ASR(A)).

Source: NSW Central Cancer Registry Reporting Module, 2005. Available at Cancer Institute NSW: http://www.statistics.cancerinstitute.org.au.

Table 1.17: Incidence of breast cancer by country of birth, males, New South Wales, 1993–2003

Region of birth	Number	Crude rate	ASR(A)	95% confidence interval
Australia	93	0.8	0.9	0.7–1.1
UK and Ireland	7	0.8	0.5	0.2–1.1
Southern Europe	11	2.2	1.0	0.5–1.9
All	124	0.8	0.8	0.7–1.0

Note: Rates are expressed per 100,000 population and age-standardised to the Australian 2001 Standard Population (ASR(A)).

Source: NSW Central Cancer Registry Reporting Module, 2005. Available at Cancer Institute NSW: http://www.statistics.cancerinstitute.org.au.

Table 1.18: Number of new cases of ductal carcinoma in situ by age, Australia, 1993–1998 and 1997–2002

Age group	1993–1998	1997–2002
0–19	1	0
20–29	28	32
30–39	270	284
40–49	1,191	1,452
50–59	1,682	2,499
60–69	1,364	1,887
70+	953	1,280
All ages	**5,489**	**7,434**
Ages 50–69	**3,046**	**4,386**

Source: AIHW National Cancer Statistics Clearing House.

Table 1.19: Age-specific and age-standardised rates of ductal carcinoma in situ, Australia, 1993–1998 and 1997–2002

Age group	1993–1998	1997–2002
0–19	0.0	0.0
20–29	0.3	0.4
30–39	3.1	3.2
40–49	15.3	17.4
50–59	31.2	38.8
60–69	31.8	42.5
70+	18.1	21.9
All ages		
Crude	10.0	12.9
ASR (A)	10.6	13.0
CI	10.3–10.9	12.7–13.3
Ages 50–69		
Crude	31.5	40.3
ASR (A)	31.5	40.3
CI	30.3–32.6	39.1–41.5

Source: AIHW National Cancer Statistics Clearing House.

Table 1.20: Breakdown and timing of the 25 most common other cancers in females diagnosed with breast cancer, 1982–2002

ICD-10 code	Description	Before first breast cancer	Same month as first breast cancer	After first breast cancer	Total
C18	Colon	876	57	1,380	2,313
C43	Melanoma of the skin	1,115	55	933	2,103
C54	Corpus uteri	544	28	935	1,507
C34	Bronchus and lung	155	60	793	1,008
C56	Ovary	241	32	480	753
C20	Rectum	268	18	402	688
C53	Cervix uteri	285	27	181	493
C67	Bladder	204	15	224	443
C16	Stomach	71	8	342	421
C64	Kidney, except renal pelvis	128	16	247	391
C83	Diffuse non-Hodgkin lymphoma	115	24	217	356
C25	Pancreas	16	15	321	352
C73	Thyroid gland	159	10	122	291
C80	Unspecified site	62	8	208	278
C92	Myeloid leukaemia	29	10	234	273
C19	Rectosigmoid junction	103	8	135	246
C91	Lymphoid leukaemia	81	26	126	233
C90	Multiple myeloma and malignant plasma cell neoplasms	60	10	159	229
C82	Follicular non-Hodgkin lymphoma	69	16	94	179
C85	Other and unspecified types of non-Hodgkin lymphoma	55	8	111	174
C15	Oesophagus	27	4	139	170
C00	Lip	78	6	84	168
C51	Vulva	62	7	74	143
C71	Brain	19	3	119	141
C49	Other connective and soft tissue	38	1	81	120
	All other cancers	422	60	827	1,309
	Total	**5,282**	**532**	**8,968**	**14,782**

Note: Counts are of cancers, not persons.

Source: National Cancer Statistics Clearing House, AIHW.

Table 1.21: Breakdown and timing of the 15 most common other cancers in males diagnosed with breast cancer, 1982–2002

ICD-10 code	Description	Before first breast cancer	Same month as first breast cancer	After first breast cancer	Total
C61	Prostate	28	6	57	91
C34	Bronchus and lung	5	2	23	30
C18	Colon	12	1	15	28
C43	Melanoma of skin	9	0	15	24
C67	Bladder	8	2	8	18
C16	Stomach	3	1	7	11
C20	Rectum	3	1	7	11
C64	Kidney, except renal pelvis	1	0	9	10
C19	Rectosigmoid junction	4	1	3	8
C80	Unspecified site	2	0	5	7
C92	Myeloid leukaemia	1	0	6	7
C83	Diffuse non-Hodgkin lymphoma	3	0	3	6
C00	Lip	3	0	2	5
C32	Larynx	2	0	3	5
C22	Liver and intrahepatic bile ducts	0	0	4	4
	All other cancers	18	3	21	42
	Total	**102**	**17**	**188**	**307**

Note: Counts are of cancers, not persons.

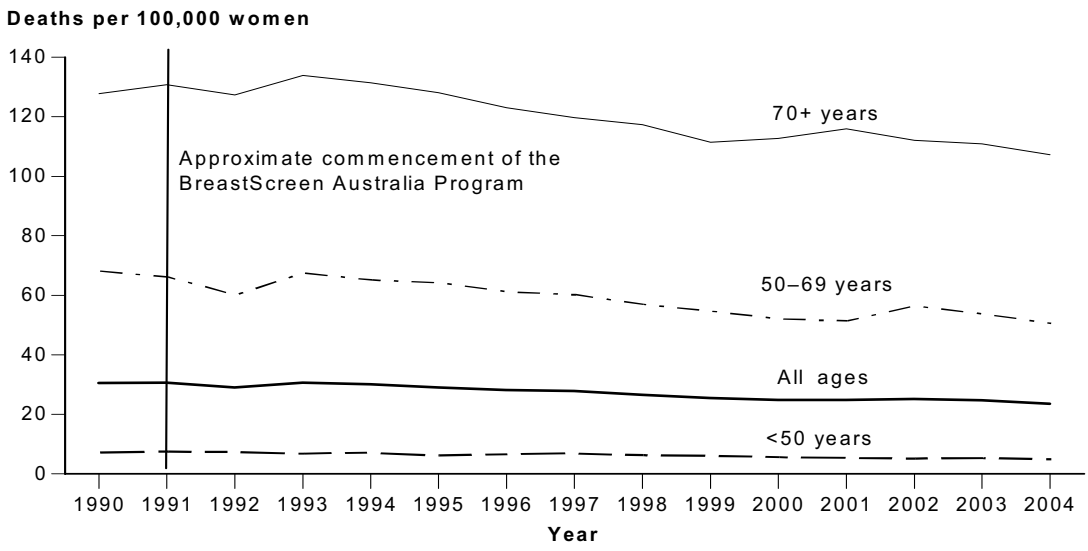
Source: National Cancer Statistics Clearing House, AIHW.

2 Mortality

Breast cancer is the leading cause of death from cancer in females in Australia.

The AIHW receives coded mortality data from the ABS, which sources its data from the Registries of Births, Deaths and Marriages. The AIHW has electronic unit record data of all Australian registered deaths for the period 1964–2004, and summarised information for some causes of death going back to 1907. These records are held in the AIHW National Mortality Database and summarised in Excel tables and graphs in the AIHW General Record of Incidence of Mortality books.

This chapter details national breast cancer mortality statistics by sex, region, socioeconomic status and Indigenous status.



Source: AIHW National Mortality Database.

Figure 2.1: Mortality from breast cancer, females, Australia, 1990–2004

The main findings are as follows.

Trends

Females

- There were 2,641 female deaths due to breast cancer in 2004 (Table 2.1), with an average of 601 additional cases per year from 2000–2004 in which breast cancer was an associated cause not the underlying cause of death (Table 2.12). The 'underlying cause' of death is the disease or injury that initiated the train of events leading directly to death. An 'associated cause' is any other condition or event that is not the underlying cause but is still considered to contribute to the death.
- The age-standardised rate of death due to breast cancer among women increased steadily in the early part of the century, from 21.8 deaths per 100,000 females in 1907 to

35.0 deaths per 100,000 females in 1943. This age-standardised rate was fairly steady until the early 1990s, and has fallen markedly since then, from 31.0 deaths per 100,000 females in 1990 to 23.4 deaths per 100,000 females in 2004 (Figure 2.1). The age-standardised rate is approaching the rates experienced in the beginning of the 20th century.

- Of the 601 deaths per year from 2000–2004 where breast cancer contributed to death but was not the underlying cause of death, about half had cardiovascular disease as the underlying cause of death (Table 2.11). Ischaemic heart disease was the single greatest contributor to this group (Table 2.12).
- Mortality rates are highest in the older age groups; women 80 to 84 years of age had an age-specific mortality rate of 125.0 deaths per 100,000 women in 2004. Deaths in women aged 25 and younger are very rare, with no deaths due to breast cancer in women under 25 years of age in 2004 (Table 2.2, Figure 2.3).
- The average age of death due to breast cancer for women has increased from 64.7 years in 1983 to 67.1 years in 2004 (Table 2.3)
- The median age of death due to breast cancer for women also increased, from 64 years in 1983 to 67 years in 2004 (Table 2.3).
- A woman's risk of dying from breast cancer before the age of 75 has been declining, from a 1 in 43 risk in 1983 to 1 in 56 in 2004 (Table 2.3). The risk of dying before the age of 85 has decreased from 1 in 29 in 1983 to 1 in 36 in 2004.

Males

- Male deaths from breast cancer are relatively rare and trends over time are difficult to report due to large fluctuations from year to year (Figure 2.4). There were 20 deaths in 2004, resulting in an age-standardised rate of 0.2 deaths per 100,000 males (Table 2.4).

Aboriginal and Torres Strait Islanders

Females

- Aboriginal and Torres Strait Islander women in Queensland, South Australia, Western Australia and the Northern Territory had approximately 9% higher rates of breast cancer mortality than the Australian female population as a whole, with 26.9 deaths per 100,000 population, compared with 24.7 per 100,000, in the 2000–2004 period (Table 2.6). Because of small numbers, this difference is not statistically significant.

Socioeconomic status

Females

For socioeconomic analysis women have been grouped into five quintiles of socioeconomic disadvantage using the ABS SEIFA Index of Socioeconomic Disadvantage to classify their areas of residence at the time of death.

- The two least disadvantaged groups of women, with breast cancer mortality rates of 24.1 and 25.8 deaths per 100,000 women in 2000–2002, had higher mortality rates compared to the three most disadvantaged groups, with 23.6, 22.3 and 23.7 deaths per 100,000 women (Table 2.7). However, these differences were not statistically significant.

Geographic differences

Females

- *Major cities*, *Inner regional* and *Outer regional* areas had the highest rates of deaths from breast cancer with 24.4, 24.6 and 24.9 deaths per 100,000 females, respectively; *Remote* and *Very remote* areas had the lowest, with 21.6 and 22.0 deaths per 100,000 females, respectively, in 2000–2004 (Table 2.8). The differences, however, are not statistically significant.
- Mortality rates have declined in all five geographic categories between the 1997–2000 and 2000–2004 periods, with the all area mortality rate decreasing from 26.0 deaths per 100,000 women in 1997–2000 to 24.4 deaths per 100,000 women in 2000–2004. This decline was statistically significant in only the *Major cities* category, with the mortality rate decreasing from 26.2 deaths per 100,000 women in 1997–2000 to 24.4 deaths per 100,000 women in 2000–2004 (Table 2.8).

Country of birth

Females

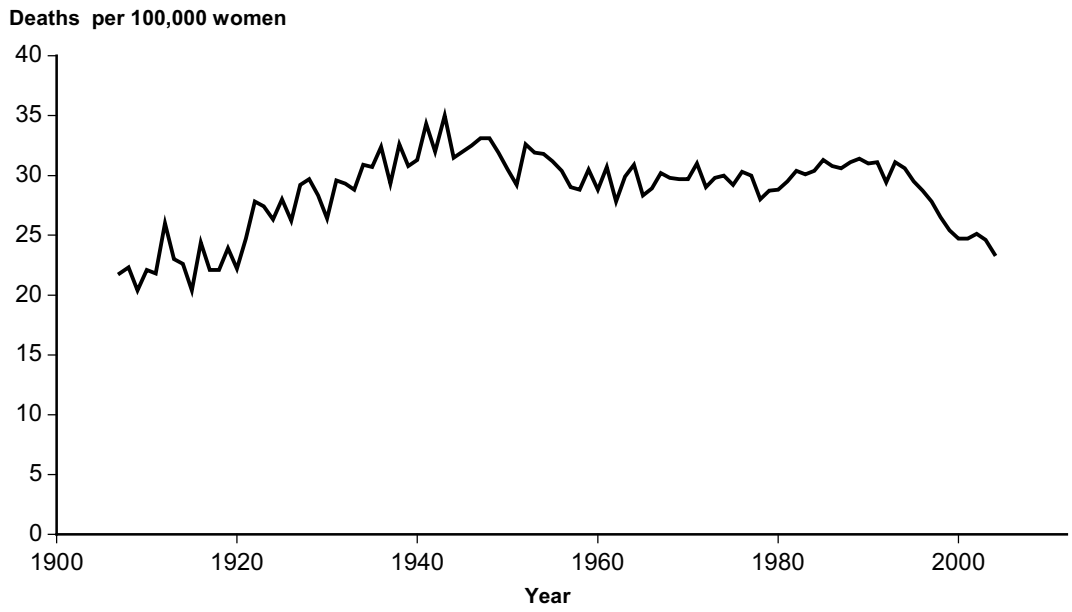
- Mortality rates vary greatly for Australian women born in different countries (Table 2.9). Australian women born in the UK and Ireland had a significantly higher rate of 27.2 deaths per 100,000 females than Australian-born women, with 24.9 deaths per 100,000 females in 2000–2004. Italian, Greek, Chinese and Vietnamese-born Australian women had significantly lower rates, with 20.7, 18.6, 13.0, 9.6 deaths per 100,000 females, respectively, than Australian-born Australian women.

Table 2.1: Breast cancer mortality, age-standardised rates and numbers, 1983 to 2004

	1983	1987	1992	1997	2002	2003	2004
				Deaths			
Breast cancer (females)	2,033	2,258	2,438	2,609	2,698	2,713	2,641
Breast cancer (males)	11	21	19	18	18	9	20
				Age-standardised rate (number per 100,000 population[(a)])			
Breast cancer (females)	30.1	30.6	29.4	27.8	25.1	24.6	23.4
Breast cancer (males)	0.3	0.4	0.3	0.3	0.2	0.0	0.2

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National Mortality Database.



Note: Standardised to the 2001 Australian standard population.

Source: AIHW National GRIM Books.

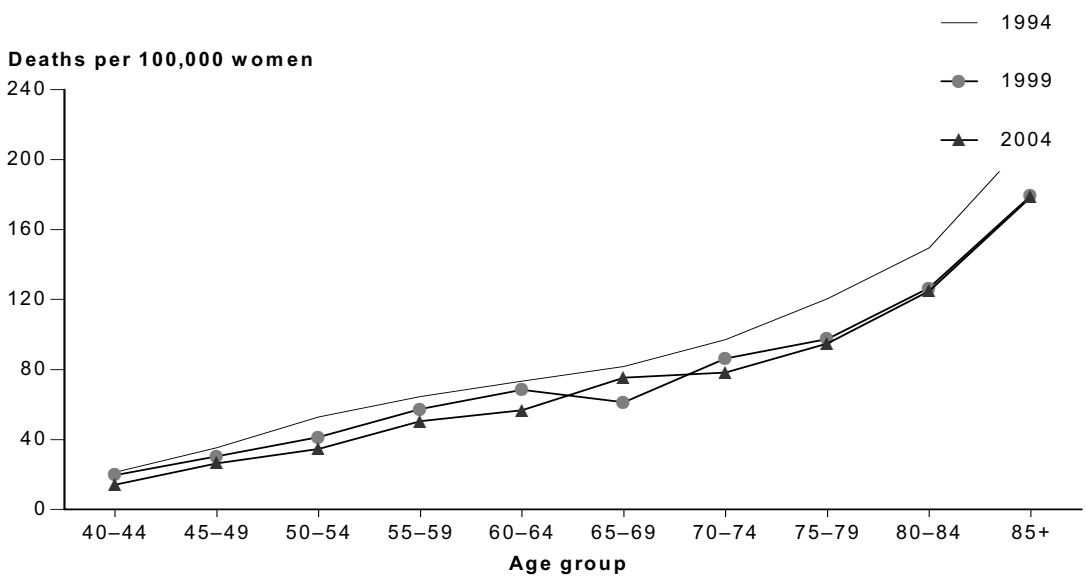
Figure 2.2: Age-standardised mortality rates for breast cancer, females, 1907 to 2004

Table 2.2: Breast cancer deaths and age-specific rates in females, 1994 to 2004

Age groups	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
						Deaths					
Under 25	1	1	0	1	2	2	1	1	0	0	0
25–29	2	5	9	6	7	6	5	2	4	5	5
30–34	19	26	29	37	28	20	23	21	24	26	24
35–39	89	58	92	84	68	59	66	63	71	65	50
40–44	142	122	139	135	128	141	122	126	112	118	109
45–49	215	211	193	211	207	203	187	185	173	185	191
50–54	244	226	235	271	265	247	255	262	295	242	230
55–59	254	253	245	236	227	260	257	253	289	307	301
60–64	267	273	263	239	255	263	239	228	273	289	254
65–69	296	323	295	284	252	212	216	242	256	263	285
70–74	314	294	302	297	268	288	287	315	245	252	256
75–79	280	287	285	291	300	274	281	289	312	301	287
80–84	255	264	257	244	236	232	237	273	277	277	288
85+	277	286	279	273	314	298	335	325	367	383	361
Total	**2,655**	**2,629**	**2,623**	**2,609**	**2,557**	**2,505**	**2,511**	**2,585**	**2,698**	**2,713**	**2,641**
						Age-specific rate (number per 100,000 population[(a)])					
Under 25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25–29	0.3	0.7	1.3	0.8	1.0	0.8	0.7	0.3	0.6	0.7	0.7
30–34	2.6	3.6	4.0	5.2	3.9	2.8	3.2	2.8	3.2	3.4	3.1
35–39	12.8	8.1	12.6	11.3	9.0	7.8	8.7	8.4	9.6	8.8	6.8
40–44	21.6	18.3	20.5	19.5	18.2	19.7	16.7	16.9	14.7	15.3	14.1
45–49	36.1	34.2	30.2	32.8	31.7	30.5	27.7	27.1	25.0	26.2	26.5
50–54	53.9	47.5	47.2	50.4	46.3	41.3	40.9	40.4	45.4	36.8	34.6
55–59	65.9	64.0	60.1	56.0	52.4	57.4	54.3	51.0	54.0	53.8	50.5
60–64	74.8	76.5	73.7	65.7	68.5	68.4	60.2	55.9	65.0	67.1	56.7
65–69	83.5	91.2	83.2	80.6	72.2	61.3	62.6	69.8	72.0	71.9	75.4
70–74	99.0	91.0	92.3	90.4	80.9	86.4	86.0	94.1	73.6	76.4	78.3
75–79	122.9	123.0	116.9	113.5	111.6	97.6	97.7	99.0	105.9	100.9	95.0
80–84	152.5	153.1	145.5	135.7	129.6	126.7	124.7	135.3	131.0	125.2	125.0
85+	217.2	212.9	197.0	182.8	200.3	179.4	191.3	177.3	192.6	194.9	178.7

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National GRIM Books.



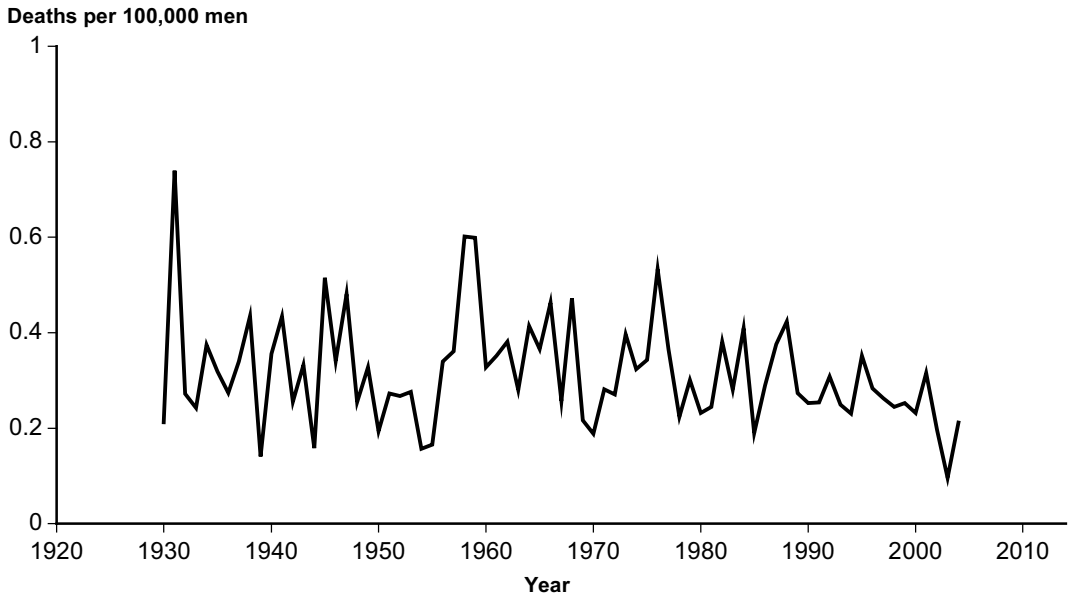
Source: AIHW National Mortality Database.

Figure 2.3: Age-specific mortality rates for breast cancer, females, Australia, 1994, 1999 and 2004

Table 2.3: Breast cancer mortality statistics, females, 1983 to 2004

	1983	1987	1992	1997	2002	2004
Mean age of death	64.7	64.8	65.2	63.3	66.7	67.1
Median age of death	64	65	66	66	67	67
Risk of dying before age 75	1 in 43	1 in 45	1 in 13	1 in 47	1 in 49	1 in 56
Risk of dying before age 85	1 in 29	1 in 29	1 in 30	1 in 31	1 in 34	1 in 36

Source: AIHW National GRIM Books and AIHW National Mortality Database.



Note: Standardised to the 2001 Australian standard population.

Source: AIHW National GRIM Books.

Figure 2.4: Age-standardised mortality rates for breast cancer, males, 1930 to 2004

Table 2.4: Breast cancer deaths and age-specific rates in males, 1994 to 2004

Age groups	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
						Deaths					
Under 50	0	2	2	1	1	5	4	2	0	2	1
50–59	1	4	4	0	2	1	3	3	6	0	3
60–69	8	7	4	3	4	9	3	6	3	2	4
70–79	5	11	6	9	7	5	5	8	7	3	5
80+	3	2	4	6	5	2	4	8	2	2	7
Total	**17**	**26**	**20**	**19**	**19**	**22**	**19**	**27**	**18**	**9**	**20**
						Age-specific rate (number per 100,000 population[(a)])					
Under 50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50–59	0.1	0.4	0.4	0.0	0.2	0.0	0.3	0.3	0.5	0.0	0.2
60–69	1.2	1.0	0.6	0.4	0.6	1.3	0.4	0.8	0.4	0.3	0.5
70–79	1.2	2.5	1.3	1.9	1.4	1.0	1.0	1.5	1.3	0.6	0.9
80+	2.0	1.3	2.4	3.5	2.8	1.1	2.0	3.8	0.9	0.8	2.8

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National GRIM Books.

Table 2.5: Breast cancer mortality statistics, males, 1983 to 2004

	1983	1987	1992	1997	2002	2004
Mean age of death	74.8	65.6	72.8	75.1	67.5	71.8
Median age of death	71	65	76	75	66	77
Risk of dying before age 75	1 in 6,508	1 in 5,582	1 in 7,520	1 in 9,584	1 in 7,349	1 in 10,313
Risk of dying before age 85	1 in 4,163	1 in 1,648	1 in 2,189	1 in 2,032	1 in 3,874	1 in 2,945

Source: AIHW National GRIM Books and AIHW National Mortality Database.

Table 2.6: Indigenous and total population age-standardised mortality rates[(a)] for breast cancer in females, Qld, SA, WA and NT combined, 2000–2004

	Indigenous Australians	Qld, SA, WA and NT
Rate 2000–2004	26.9	24.7
95% CI	20.2–34.8	24.3–25.1

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National Mortality Database.

Table 2.7: Breast cancer mortality rates[(a)] for females, socioeconomic status[(b)], 2000–2002

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Rate 2000–2002	24.1	25.8	23.6	22.3	23.7
95% CI	20.5–27.7	22.0–29.8	20.0–27.3	18.8–26.0	20.1–27.5

(a) Standardised to the 2001 Australian standard population.

(b) The first quintile corresponds to the highest socioeconomic status and the fifth to the lowest socioeconomic status, using the ABS SEIFA Index of Socioeconomic Disadvantage.

Source: AIHW National Mortality Database.

Table 2.8: Breast cancer mortality rates[(a)] for females, region, 1997–2000 and 2001–2004

	Major cities	Inner regional	Outer regional	Remote	Very remote	All
Rate 2000–2004	24.4	24.6	24.9	21.6	22.0	24.4
95% CI	23.8–25.0	23.6–25.6	23.4–26.4	17.7–26.0	15.7–29.4	24.0–24.9
Rate 1997–2000	26.2	25.9	26.2	23.4	22.3	26
95% CI	25.5–26.8	24.8–27.0	24.6–27.8	19.2–28.2	15.7–30.1	25.5–26.5

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National Mortality Database.

Table 2.9: Breast cancer mortality rates[(a)] for females, country of birth, 2000–2004

	Australia	UK & Ireland	New Zealand	India	Italy	Greece	China	Vietnam
Rate 2000–2004	24.9	27.2	22.7	22.0	20.7	18.6	13.0	9.6
95% CI	24.3–25.4	25.8–28.6	19.4–26.4	17.1–28.0	18.1–23.5	15.0–22.6	10.0–16.7	6.5–13.6

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National Mortality Database.

Table 2.10: Breast cancer deaths, average annual numbers and rates, states and territories, 2000–2004

	Males		Females	
State	Number	ASR	Number	ASR
NSW	7	0.2	888	24.0
Vic	6	0.3	704	25.8
Qld	3	0.2	449	23.5
WA	1	0.1	228	23.5
SA	1	0.1	243	26.3
Tas	<1	–	71	25.4
ACT	<1	–	33	23.4
NT	<1	–	12	21.6

Source: AIHW National Mortality Database.

Table 2.11: Annual female deaths by broad underlying cause groups, where breast cancer is an associated cause but not the underlying cause, 2000 to 2004 combined

Age group	Cancers (not breast cancer)	Cardiovascular diseases	Digestive diseases	Endocrine & metabolic diseases	Nervous system diseases	Respiratory system diseases	Other
				Average annual deaths			
Under 50	2	2	1	0	1	1	2
50–54	2	3	0	1	1	0	2
55–59	8	4	1	0	2	2	2
60–64	7	5	1	1	1	2	3
65–69	10	8	2	3	1	3	3
70–74	14	19	2	4	1	4	8
75–79	19	38	3	3	3	8	9
80–84	16	64	4	7	7	10	14
85+	20	155	11	10	15	15	31
Total	**99**	**298**	**24**	**30**	**31**	**45**	**74**
				Age-specific number per 100,000 population[(a)]			
Under 50	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50–54	0.4	0.4	0.0	0.1	0.1	0.1	0.2
55–59	1.5	0.8	0.2	0.0	0.3	0.4	0.4
60–64	1.8	1.2	0.3	0.3	0.2	0.4	0.8
65–69	2.8	2.2	0.4	0.7	0.3	0.9	0.8
70–74	4.1	5.7	0.5	1.3	0.4	1.2	2.5
75–79	6.4	13.0	0.9	1.1	1.2	2.7	3.1
80–84	7.5	30.1	2.0	3.5	3.1	4.6	6.4
85+	10.4	81.6	5.6	5.5	7.7	7.8	16.3

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National Mortality Database.

Table 2.12: Annual female deaths by selected underlying causes, where breast cancer is an associated cause but not the underlying cause, 2000 to 2004 combined

Underlying cause of death	ICD10 codes	Average annual deaths	Per cent
Ischaemic heart disease	I20–-I25	143	23.8
Cerebrovascular disease	I60–-I69	85	14.1
Other forms of heart disease	I30–I52	39	6.5
Dementia and related disorders	F01–F03, G30–G32	30	5.1
Diabetes	E10–E14	25	4.1
Chronic obstructive pulmonary disease	J41–J44	25	4.1
Lung cancer	C33–C34	20	3.4
Colorectal cancer	C18–-C21	14	2.3
Renal failure	N17–N19	11	1.8
Septicaemia	A40–A41	8	1.3
Top 10 selected causes		400	66.7
All causes		**601**	**100.0**

Source: AIHW National Mortality Database.

Table 2.13: Annual female cancer deaths, where breast cancer is an associated cause but not the underlying cause, 2000 to 2004 combined

Age group	Colorectal cancer	Leukaemia	Lung cancer	Melanoma	NHL	Ovarian cancer	Pancreatic cancer	Stomach cancer
				Average annual deaths				
Under 50	0	0	0	0	0	1	0	0
50–54	1	0	0	0	0	0	1	0
55–59	1	0	3	1	0	1	0	0
60–64	1	0	2	0	1	1	1	0
65–69	1	1	2	0	1	1	0	0
70–74	2	1	3	1	0	1	1	1
75–79	2	2	6	1	1	0	1	0
80–84	2	1	3	1	1	1	1	1
85+	4	2	1	0	1	1	1	2
Total	**14**	**7**	**20**	**5**	**6**	**6**	**6**	**5**
				Age-specific number per 100,000 population[(a)]				
Under 50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50–54	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
55–59	0.1	0.1	0.6	0.1	0.1	0.3	0.0	0.1
60–64	0.2	0.0	0.5	0.0	0.1	0.2	0.1	0.0
65–69	0.3	0.3	0.6	0.1	0.4	0.2	0.1	0.1
70–74	0.6	0.3	0.9	0.3	0.1	0.2	0.2	0.4
75–79	0.7	0.7	2.0	0.4	0.4	0.1	0.3	0.1
80–84	1.0	0.3	1.2	0.3	0.5	0.3	0.7	0.4
85+	2.3	0.9	0.5	0.2	0.6	0.4	0.3	1.1

(a) Standardised to the 2001 Australian standard population.

Source: AIHW National Mortality Database.

3 Survival

In general terms, survival is the length of time lived after the initial diagnosis of cancer. Relative survival analysis compares the survival of persons diagnosed with cancer (observed) with that experienced by the same age- and sex-matched population to which they belong (expected). The ratio of observed to expected is used to estimate the proportion of people whose risk of dying has been affected by their disease. This method of analysis does not require knowledge of the cause of death.

This chapter details national breast cancer survival statistics. Survival information for females by region and socioeconomic status is available for Queensland only. Survival by stage at diagnosis is available for the United States only in this report, but is expected to be available for New South Wales by the Cancer Institute NSW later in 2006–07.

Trends

The main trends in relative survival are as follows.

Females

- There was a significant increase in relative survival after diagnosis of breast cancer in females between 1982–1986 and 1998–2002 (Table 3.1, Figure 3.1). One-year relative survival increased from 93.2% to 96.7% and five-year relative survival increased from 70.9% to 86.6%.
- Ten-year relative survival increased from 57.5% for women diagnosed in 1982–1986 to 73.6% for women diagnosed in 1992–1997.
- Fifteen-year relative survival increased from 50.3% for women diagnosed in 1982–1986 to 58.2% for women diagnosed in 1987–1991.
- Five-year relative survival for women diagnosed from 1998–2002 was highest at around 90% for the 40–49, 50–59 and 60–69 age groups, then fell to 85% for women aged 70–79, 76% for the 80–89 year group, and 56% for women aged 90–99 (Table 3.2).
- For individual age groups, there was a significant increase in relative survival between 1982–1986 and 1998–2002 for all age groups between 20–29 and 80–89 years. This increase ranged from 11.1 percentage points for women aged 20–29 and 80–89 years to 19.8 percentage points for women aged 50–59 years (Table 3.2, Figure 3.2)).

Males

- There was no significant change in relative survival after diagnosis of breast cancer in males between 1982–1986 and 1998–2002 (Table 3.3, Figure 3.3). One-year relative survival increased from 93.4% to 94.5% and five-year relative survival decreased from 80.0% to 79.7%.
- Ten-year relative survival increased from 63.1% for men diagnosed in 1982–1986 to 67.2% for men diagnosed in 1992–1997, although the difference was not significant.
- Fifteen-year relative survival increased from 47.9% for men diagnosed in 1982–1986 to 56.5% for men diagnosed in 1987–1991, although the difference was not significant.

- Five-year survival for men diagnosed from 1998–2002 was highest at 87% in men aged 60–69 years (Table 3.4, Figure 3.4).

Geographic differences and socioeconomic status

The only recent data on geographic differences and socioeconomic status are for Queensland.

Females

- *Major city* and *Inner regional* areas of Queensland had higher five-year relative survival rates with 86.6% and 87.0% survival, respectively, compared with *Outer regional* and *Remote* areas with five-year relative survival rates of 85.8% and 81.9% survival, respectively, in the 1996–2002 period (Table 3.5).
- Over the same period *Affluent* areas of Queensland had the highest five-year relative survival rates with 88.1% survival compared to the *Middle 80% Socioeconomic* status areas with 86.5% survival and the *Disadvantaged* areas of Queensland with 84.7% five-year relative survival (Table 3.5).

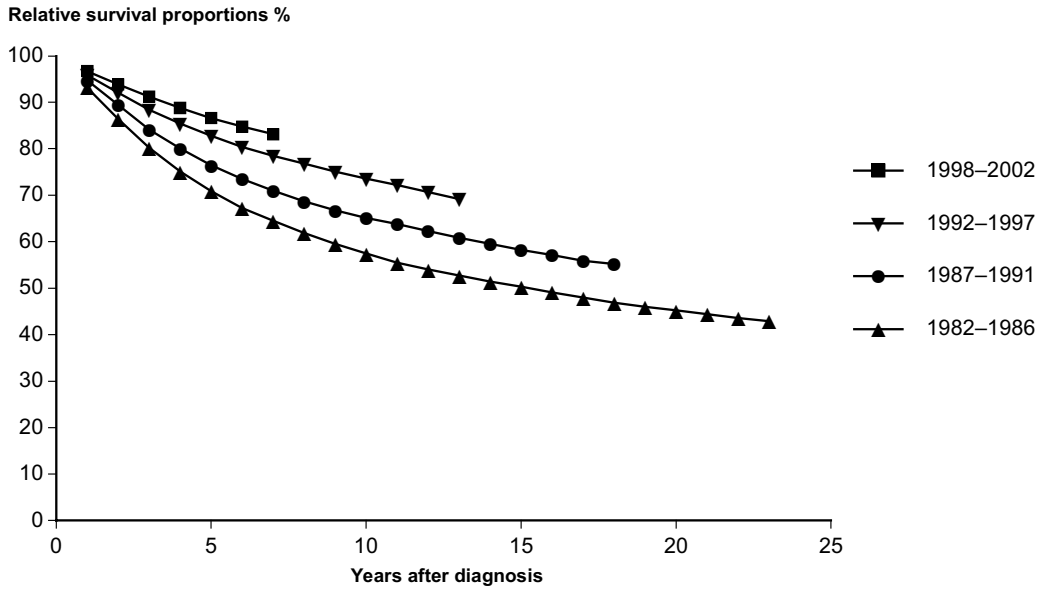
Survival by stage

There are no Australian nationwide data on survival by stage of breast cancer. The survival by stage data were obtained from the United States of America.

- In 2005, five-year relative survival for breast cancer in females in the United States was 100% for stage 0 and stage I but only 20% for stage IV.

Females

- Early stage breast cancers are associated with higher relative survival rates than later stage breast cancers. The five-year relative survival rate for breast cancer was 100% for stage 0 and stage I cancers but only 20% for stage IV cancers in the United States of America in 2005 (Table 3.6).



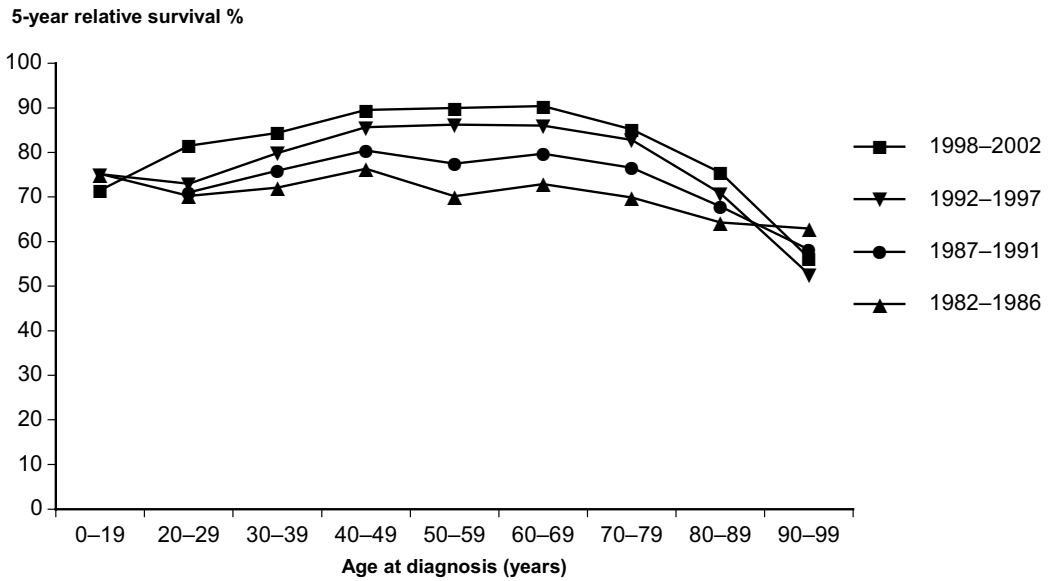
Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.

Figure 3.1: Breast cancer in females: relative survival proportions, period of diagnosis, Australia, 1982–1986 to 1998–2002

Table 3.1: Breast cancer in females: relative survival, period of diagnosis, Australia, 1982–1986 to 1998–2002

	1982–1986		1987–1991		1992–1997		1998–2002	
Years after diagnosis	%	95% CI	%	95% CI	%	95% CI	%	95% CI
1	93.2	92.9–93.6	94.8	94.5–95.0	95.9	95.7–96.1	96.7	96.5–96.9
2	86.5	86.0–86.9	89.5	89.1–89.8	92.1	91.8–92.4	93.9	93.6–94.1
3	80.2	79.7–80.7	84.1	83.7–84.6	88.4	88.1–88.7	91.2	90.9–91.4
4	75.1	74.5–75.7	80.1	79.6–80.6	85.4	85.0–85.7	88.8	88.5–89.1
5	70.9	70.2–71.5	76.5	76.0–77.0	82.8	82.4–83.1	86.6	86.3–87.0
6	67.3	66.7–67.9	73.5	72.9–74.0	80.4	80.0–80.8	84.8	84.3–85.2
7	64.5	63.8–65.1	71.0	70.5–71.6	78.5	78.1–78.9	83.1	82.6–83.6
8	61.9	61.2–62.6	68.7	68.1–69.3	76.8	76.4–77.2		
9	59.5	58.8–60.2	66.8	66.2–67.4	75.1	74.7–75.6		
10	57.5	56.8–58.2	65.1	64.5–65.8	73.6	73.1–74.1		
11	55.5	54.8–56.2	63.8	63.1–64.4	72.2	71.7–72.7		
12	54.0	53.3–54.7	62.3	61.6–62.9	70.7	70.1–71.2		
13	52.7	52.0–53.5	60.8	60.2–61.5	69.2	68.5–69.8		
14	51.4	50.7–52.2	59.5	58.8–60.2				
15	50.3	49.5–51.0	58.2	57.6–58.9				
16	49.1	48.3–49.8	57.1	56.4–57.8				
17	48.0	47.2–48.7	55.9	55.2–56.7				
18	46.9	46.2–47.7	55.2	54.4–56.0				
19	46.0	45.2–46.8						
20	45.2	44.4–46.0						
21	44.4	43.6–45.3						
22	43.6	42.7–44.4						
23	42.9	42.0–43.8						

Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.



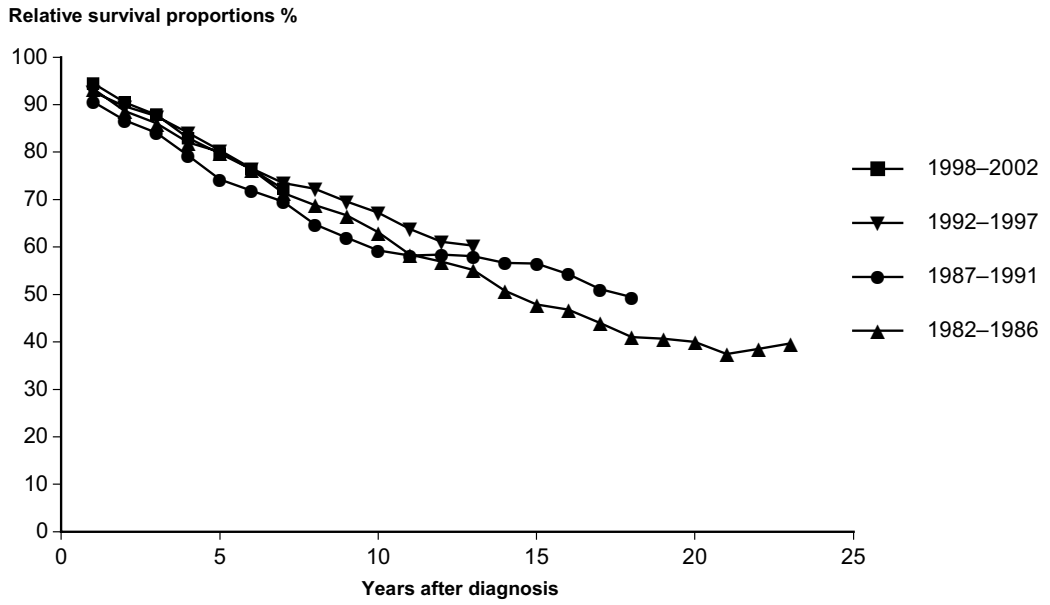
Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.

Figure 3.2: Breast cancer in females: five-year relative survival proportions, age at diagnosis, Australia, 1982–1986 to 1998–2002

Table 3.2: Breast cancer in females: five-year relative survival, age at diagnosis, Australia, 1982–1986 to 1998–2002

	1982–1986		1987–1991		1992–1997		1998–2002	
Age at diagnosis	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**
0–19 years	75.2	32.6–100.0	—	—	75.1	32.6–100.0	71.5	38.0–100.0
20–29 years	70.3	64.6–76.0	71.1	65.8–76.3	73.0	68.4–77.6	81.5	76.8–86.2
30–39 years	72.1	70.2–73.9	75.9	74.3–77.6	79.9	78.6–81.2	84.4	83.0–85.8
40–49 years	76.4	75.2–77.6	80.4	79.4–81.3	85.7	85.1–86.4	89.5	88.8–90.1
50–59 years	70.2	69.0–71.4	77.5	76.5–78.5	86.3	85.7–86.9	90.0	89.5–90.6
60–69 years	72.9	71.7–74.1	79.7	78.7–80.7	86.1	85.4–86.8	90.4	89.7–91.1
70–79 years	69.9	68.3–71.5	76.6	75.2–78.0	82.8	81.8–83.9	85.2	84.1–86.2
80–89 years	64.3	61.0–67.7	67.9	65.1–70.8	70.8	68.6–73.1	75.5	73.1–77.9
90–99 years	63.0	49.0–76.9	58.2	47.2–69.2	52.7	44.5–60.8	56.3	47.7–64.9
All ages	**70.9**	**70.2–71.5**	**76.5**	**76.0–77.0**	**82.8**	**82.4–83.1**	**86.6**	**86.3–87.0**

Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.



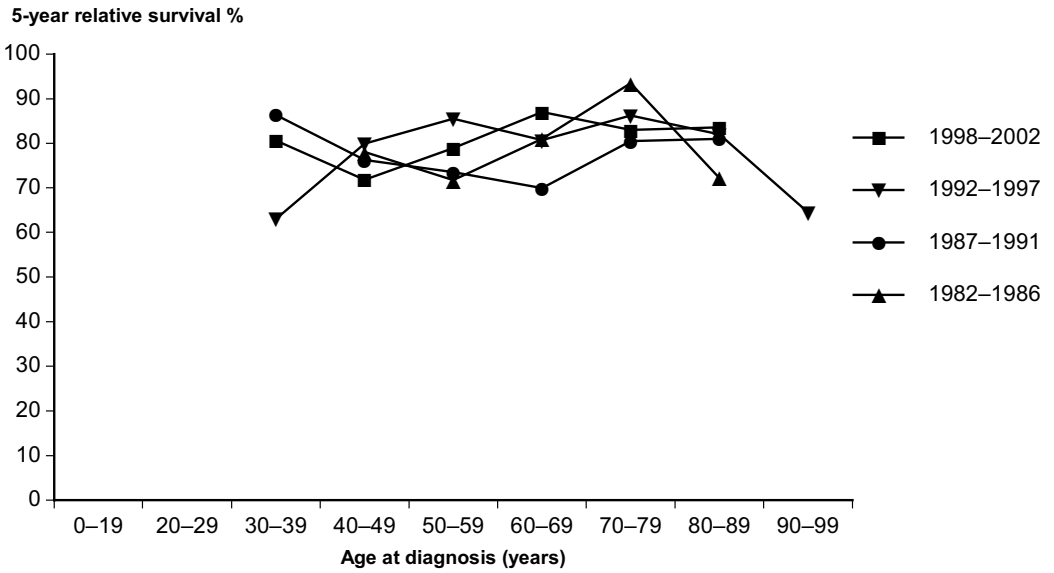
Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.

Figure 3.3: Breast cancer in males: relative survival proportions, Australia, 1982–1986 to 1998–2002

Table 3.3: Breast cancer in males: relative survival proportions, Australia, 1982–1986 to 1998–2002

Years after diagnosis	1982–1986		1987–1991		1992–1997		1998–2002	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
1	93.4	89.5–97.2	90.6	86.8–94.4	92.7	89.5–95.9	94.5	91.8–97.3
2	88.7	83.7–93.7	86.7	82.1–91.4	89.7	85.7–93.6	90.5	86.8–94.2
3	86.1	80.3–91.9	84.1	78.8–89.4	87.6	83.0–92.1	87.9	83.7–92.2
4	82.1	75.6–88.6	79.3	73.4–85.3	84.1	79.0–89.1	83.0	78.1–87.9
5	80.0	72.9–87.0	74.3	67.9–80.8	80.4	74.9–86.0	79.7	74.2–85.3
6	76.4	68.9–83.9	71.9	65.1–78.7	76.6	70.7–82.6	76.4	70.0–82.7
7	71.4	63.5–79.3	69.6	62.5–76.8	73.5	67.2–79.7	72.3	64.9–79.7
8	68.9	60.6–77.1	64.8	57.4–72.3	72.3	65.8–78.9		
9	66.7	58.1–75.2	62.0	54.4–69.7	69.6	62.8–76.5		
10	63.1	54.3–71.8	59.3	51.5–67.1	67.2	60.0–74.3		
11	58.4	49.5–67.3	58.2	50.2–66.2	63.8	55.9–71.6		
12	56.9	47.8–66.0	58.4	50.1–66.7	61.1	52.4–69.8		
13	55.2	45.9–64.5	58.1	49.6–66.7	60.3	49.9–70.6		
14	50.8	41.5–60.1	56.7	48.0–65.5				
15	47.9	38.6–57.3	56.5	47.5–65.4				
16	46.8	37.3–56.3	54.3	45.1–63.6				
17	44.0	34.5–53.6	51.1	41.1–61.1				
18	41.0	31.6–50.4	49.4	37.3–61.4				
19	40.7	31.1–50.3						
20	40.0	30.3–49.7						
21	37.5	27.6–47.4						
22	38.5	28.4–48.7						
23	39.7	29.3–50.2						

Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.



Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.

Figure 3.4: Breast cancer in males: five-year relative survival proportions, age at diagnosis, Australia, 1982–1986 to 1998–2002

Table 3.4: Breast cancer in males: five-year relative survival proportions, age at diagnosis, Australia, 1982–1986 to 1998–2002

	1982–1986		1987–1991		1992–1997		1998–2002	
Age at diagnosis	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**	**%**	**95% CI**
0–19 years	—	—	—	—	—	—	—	—
20–29 years	—	—	—	—	—	—	—	—
30–39 years	—	—	86.4	67.9–101.0	63.0	29.2–96.8	80.6	55.6–101.0
40–49 years	78.0	59.3–96.6	76.2	58.6–93.9	79.9	65.8–94.1	71.8	55.3–88.3
50–59 years	71.7	58.5–84.9	73.5	59.1–88.0	85.5	75.9–95.1	78.9	67.6–90.2
60–69 years	81.0	69.0–93.0	69.9	59.5–80.3	80.7	71.3–90.0	87.0	78.2–95.7
70–79 years	93.4	76.9–110.0	80.5	66.9–94.1	86.2	74.4–98.1	83.0	72.0–93.9
80–89 years	72.2	39.1–105.0	81.0	50.3–112.0	82.0	58.0–106.0	83.5	60.1–107.0
90–99 years	—	—	—	—	64.5	0.0–177.0	—	—
All ages	**80.0**	**72.9–87.0**	**74.3**	**67.9–80.8**	**80.4**	**74.9–86.0**	**79.7**	**74.2–85.3**

Note: The relative survival estimates indicated by a dash (—) showed considerable statistical instability making interpretation difficult. The instability in this age/sex/site group may be due to the survival model's handling a combination of small number of cases/deaths and or unstable background survival patterns resulting in invalid estimates. These results are therefore not presented here.

Source: National Cancer Statistics Clearing House and the National Death Index, AIHW.

Table 3.5: Breast cancer in females: age-standardised rate and five-year relative survival proportions by region and socioeconomic status, Queensland, 1996–2002

	Incidence		Five-year relative survival
Characteristic	Average number of cases per year	ASR	%
Geographic area			
Major city	1,087	119.5	86.6
Inner regional	575	120.3	87.0
Outer regional	280	99.9	85.8
Remote	33	89.5	81.9
Socioeconomic status (SES)			
Affluent	143	129.4	88.1
Middle 80% SES	1,716	115.5	86.5
Disadvantaged	115	106.2	84.7

Source: Geographical differentials in cancer incidence and survival in Queensland, 1996 to 2002 (2005).

Table 3.6: Female cancer of the breast five-year relative survival proportions by stage at diagnosis, American Joint Committee on Cancer staging system, United States of America, 2005

Stage	Five-year relative survival %
0	100
I	100
IIA	92
IIB	81
IIIA	67
IIIB	54
IV	20

Source: American Cancer Society as at Sept 2005.

4 Prevalence

Cancer prevalence is the number of people who have been diagnosed with cancer who are alive at a given time. As it is impossible to identify 'cured' breast cancer cases in the registry, and because people with breast cancer have an elevated mortality risk even decades after diagnosis (Brenner & Hakulinen 2004), any other measure of prevalence is inappropriate. The prevalence of a cancer is therefore determined by its incidence and survival rates.

In Tables 4.1 and 4.2 the *n*-year prevalence (*n* = 1, 5, 10, 15 and 20) is the number of surviving persons at the end of 2002 who received a breast cancer diagnosis in the last *n* years. Because the NCSCH only contains complete incidence records for Australia back to 1983, it is only possible to calculate 20-year prevalence estimates for Australia at present.

The main findings are as follows.

Females

- In 2002 the one-year prevalence of breast cancer in females was 11,693; the five-year prevalence 50,549, the ten-year prevalence 84,421, the fifteen-year prevalence 103,422 and the twenty-year prevalence 113,801 females (Table 4.1).
- Fifty-one per cent of the 20-year prevalent cases in 2002 were aged 50–69 years and a further 35% were aged 70 and over (Table 4.3).

Males

- In 2002 the one-year prevalence of breast cancer in males was 82; the five-year prevalence 355, the ten-year prevalence 557, the fifteen-year prevalence 674 and the twenty-year prevalence 729 males (Table 4.2).
- Surviving males with breast cancer had an older age distribution than surviving females. Of the 20-year prevalent cases in 2002, 56% were aged 70 and over (Table 4.4).

Table 4.1: 1-year, 5-year, 10-year, 15-year and 20-year prevalence of breast cancer in females, Australia, 2002

Time period	Number of surviving females
1-year prevalence	11,693
5-year prevalence	50,549
10-year prevalence	84,421
15-year prevalence	103,422
20-year prevalence	113,801

Source: National Cancer Statistics Clearing House, AIHW.

Table 4.2: 1-year, 5-year, 10-year, 15-year and 20-year prevalence of breast cancer in males, Australia, 2002

Time period	Number of surviving males
1-year prevalence	82
5-year prevalence	355
10-year prevalence	557
15-year prevalence	674
20-year prevalence	729

Source: National Cancer Statistics Clearing House, AIHW.

Table 4.3: 20-year prevalence of breast cancer in females, by age group, Australia, 2002

Age group	Number	Per cent
0–24	23	0.0
25–29	128	0.1
30–34	642	0.6
35–39	1,865	1.6
40–44	4,635	4.1
45–49	8,239	7.2
50–54	13,195	11.6
55–59	16,088	14.1
60–64	15,119	13.3
65–69	13,493	11.9
70–74	12,552	11.0
75–79	11,855	10.4
80–84	8,663	7.6
85+	7,304	6.4
Total	**113,801**	**100.0**

Source: National Cancer Statistics Clearing House, AIHW.

Table 4.4: 20-year prevalence of breast cancer in males, by age group, Australia, 2002

Age group	Number	Per cent
0–34	8	1.1
35–39	5	0.7
40–44	13	1.8
45–49	32	4.4
50–54	45	6.2
55–59	58	8.0
60–64	69	9.5
65–69	88	12.1
70–74	130	17.8
75–79	113	15.5
80–84	101	13.9
85+	67	9.2
Total	**729**	**100.0**

Source: National Cancer Statistics Clearing House, AIHW.

5 International comparisons

The International Agency for Research on Cancer (IARC) is part of the World Health Organization. IARC's mission is 'to coordinate and conduct research on the causes of human cancer, the mechanisms of carcinogenesis, and to develop scientific strategies for cancer control'.

IARC collates cancer incidence and mortality data for 27 cancers from countries around the world and publishes estimates for all countries in its GLOBOCAN database, which is publicly available on its website at <www.iarc.fr>.

The following table was extracted from the GLOBOCAN database for 2002 and present comparative data on crude and age-standardised rates of incidence and mortality for breast cancer for selected countries and regions of the world. Numbers and rates are estimates for the middle of 2002, based on the most recent data available, generally three to five years earlier, so care should be taken in interpretation. Nevertheless they provide a good guide to how Australia compares with countries such as Canada, New Zealand, the United States and the United Kingdom, to the world as a whole, and to regions such as eastern, southern, western and northern Europe and South East Asia.

The rates for the more developed regions have been calculated as the population-weighted average of Northern America, Japan, Eastern Europe, Northern Europe, Southern Europe, Western Europe, Australia and New Zealand. The rates for the less developed regions have been calculated as the population-weighted average of Eastern Africa, Middle Africa, Northern Africa, Southern Africa, Western Africa, Caribbean, Central America, South America, Eastern Asia (less Japan), South Eastern Asia, South Central Asia, Western Asia, Melanesia, Micronesia and Polynesia.

Main features

- In the GLOBOCAN database for 2002 Australia had a higher age-standardised incidence of breast cancer with 83.2 new cases per 100,000 population than age-standardised incidence for both the more developed and less developed countries of the world which had 67.8 and 23.8 new cases, respectively, per 100,000 population in 2002 (Table 5.1).
- Australia's age-standardised incidence of 83.2 new cases per 100,000 population was lower than the age-standardised incidence for the United States of America with 101.1, New Zealand with 91.9, the United Kingdom with 87.2 and Canada with 84.3 new cases per 100,000 population.
- Similarly, Australia had a higher age-standardised rate of mortality from breast cancer with 18.4 deaths from breast cancer per 100,000 population than age-standardised mortality for both the more developed and less developed countries of the world with 18.1 and 10.3 new cases, respectively, per 100,000 population in 2002.
- Australia's death rate of 18.4 deaths per 100,000 population was also lower than the rates for New Zealand with 24.5, the United Kingdom with 24.3, Canada with 21.1 and the United States of America with 19.0 deaths from breast cancer per 100,000 population.

Table 5.1: Global ranking of incidence and mortality for breast cancer in females, selected countries, 2002 GLOBOCAN

	Incidence			Mortality		
Population (female)	**Numbers**	**Crude**	**ASR(W)**	**Numbers**	**Crude**	**ASR(W)**
World	1,151,298	37.4	37.4	410,712	13.3	13.2
More developed countries	636,128	103.7	67.8	189,765	30.9	18.1
Less developed countries	514,072	20.9	23.8	220,648	9.0	10.3
Australia	11,176	114.1	83.2	2,667	27.2	18.4
Canada	19,540	124.0	84.3	5,305	33.7	21.1
New Zealand	2,330	120.0	91.9	670	34.5	24.5
United Kingdom	40,928	135.5	87.2	13,303	44.0	24.3
United States of America	209,995	143.8	101.1	42,913	29.4	19.0
Central & Eastern Europe	100,262	63.4	42.6	45,310	28.7	17.9
Northern Europe	62,425	128.8	82.5	19,789	40.8	22.6
South-Eastern Asia	58,495	21.8	25.5	26,818	10.0	11.8
Southern Europe	72,458	97.8	62.4	24,617	33.2	18.1
Western Europe	125,604	134.3	84.6	39,297	42.0	22.3

Notes

1. Cancer numbers and rates are estimates for the middle of 2002, from the most recent data available, generally 3–5 years earlier.
2. Rates are expressed per 100,000 populations and age-standardised to the year 2002 Standard Population of the corresponding country and to the World Standard Population (ASR (W)).

Source: GLOBOCAN 2002, IARC, 2005.

6 Screening

The BreastScreen Australia Program aims to reduce mortality from breast cancer through early detection using mammography. It consists of a network of dedicated screening and assessment services throughout urban, rural and remote areas of all states and territories.

The program provides free biennial mammographic screening and follow-up of any suspicious lesions identified at screening to the point of diagnosis. It is aimed specifically at asymptomatic women aged 50 to 69 years of age, with a participation target of 70%. However, women aged 40 to 49 years and 70 years and older are able to attend for screening.

The national program was established in 1991. It commenced at different points in time for each state and territory, from 1989 in Western Australia and South Australia to 1994 in the Northern Territory. It is funded through the Australian Government Department of Health and Ageing and each of the state and territory governments, and is administered through state coordination units.

In order to measure the effectiveness and coverage of these programs a performance monitoring system has been developed. The AIHW monitors and reports biennially on the performance of the BreastScreen Australia.

This chapter includes the key statistics on participation and interval cancers from the program using data up to the 2002–2003 screening period as well as information on self-reported mammography from the 2001 National Health Survey conducted by the ABS. Mammography is also undertaken by private medical practitioners on symptomatic women. Medicare statistics on private mammography are included in Chapter 7.

Participation

The participation rate is a population-based indicator that measures the proportion of the eligible population attending the screening program within the recommended screening interval. All women aged 40 years and over who are Australian citizens or have permanent residency status are eligible for breast screening. The participation rate is a direct measure of this attendance.

This section details national participation rates by region, socioeconomic status, Indigenous status and main language spoken at home. Participation rates are measured for a 2-year period, for example 2002–2003, to capture the proportion of women screened within the recommended screening interval of two years.

The main trends in participation are as follows.

- The number of women being screened by BreastScreen Australia has been steadily increasing, with more women from all ages and the target age group participating (Table 6.1). In the target age group the number of women screened has increased from 858,303 in 1996–1997 to 1,118,429 in 2002–2003. Among all women aged 40 and over screening numbers have increased from 1,262,418 in 1996–1997 to 1,618,306 in 2002–2003.
- The age-standardised national participation rate for women in the target group in the two-year period of 2002–2003 was 56.1% (Table 6.2). The rate increased from 52.3% in 1996–1997 to 57.1% in 2001–2002, but fell to 56.1% in 2002–2003.
- Similarly, the age-standardised national participation rate for women aged 40 and over increased between 1996–1997, when it was 33.7%, and 2000–2001, when it was 37.5%, but decreased to 36.7% in 2002–2003.

Geographic categories

- The numbers of women being screened by BreastScreen Australia has increased across all geographic categories over the three two-year periods, 1997–1998, 2000–2001 and 2002–2003 (Table 6.3).
- Among women aged 50–59 years in 2002–2003 the age-standardised participation rate was 54.5% in *Major cities*, significantly lower than the national rate of 56.1% (Table 6.4). The 48.4% participation rate in *Very remote* areas was also below the national rate.
- In contrast, in 2002–2003 the age-standardised participation rate was significantly above the national rate for *Inner regional*, *Outer regional* and *Remote* geographic regions.

Socioeconomic status

- In the 50–69 year age group in 2002–2003, there is no statistical correlation between quintiles of socioeconomic status and screening participation (Table 6.5).

Aboriginal and Torres Strait Islander women

- The number of women being screened who self-identify as Aboriginal and Torres Strait Islander increased from 8,729 participants in 1997–1998, to 10,605 participants in 2000–2001, to 12,354 participants in 2002–2003 (Table 6.7).
- The screening participation rate of Aboriginal and Torres Strait Islander women in the 50–69 year age group is low, but has been improving over time, from 29.1% in 1997–1998 to 35.9% in 2002–2003 (Table 6.8).

These figures may, however, understate Aboriginal and Torres Strait Islander participation to a small extent as in some states and territories, values for Indigenous status that are not stated are not separately quantified, instead being included in the non-Indigenous numbers.

Main language spoken at home

- The screening participation rate of 50–69 year women whose main language at home is other than English fell from 49.7% in 1997–1998 to 43.7% in 2002–2003 (Tables 6.9 & 6.10).

These numbers should, however, be interpreted with caution as in some states and territories, not stated values for language spoken at home are not separately quantified, instead being included in the English speaking totals.

Self-reported mammography

In the 2001 National Health Survey 11.8% of women aged 50–69 years and 27.9% of those aged 70 and over reported that they had never had a mammogram. The true figure may be higher as 9.7% of women aged 50–59 years and 11.0% of women aged 60–69 years did not answer the question in the survey (Tables 6.14–6.18).

Among women aged 50–69 years, those less likely to have had a mammogram were as follows:

- women from non-English-speaking countries, especially those who arrived more than 10 years earlier
- less well educated women

- those without private health insurance coverage
- women not in the labour force
- residents of remote areas and outer regional Australia (Tables 6.15 & 6.16).

Interval cancers

An interval cancer is an invasive breast cancer that is diagnosed after a screening episode in which no cancer was detected and before the next scheduled screening episode. An interval cancer may have existed at the time of screening but been either too small for detection or else not detected for some other reason. It may also not have been present at the time of screening and instead grew quickly and was diagnosed before the next screening episode was due.

The interval cancer rate is expressed per 10,000 women-years at risk. 'Women at risk' are defined as women who are resident in the service catchment area in which they are screened and at the time of screening have not reported a personal history of invasive cancer or ductal carcinoma in situ. More information can be seen in the Glossary on page 72.

In tables 6.11 to 6.14 the numbers and rates of invasive cancers detected by screening are compared with the numbers and rates of interval cancers. The findings are as follows.

- In the first screening round in 1999–2001, there were 2,402 invasive cancers detected by screening in women aged 40 and over, and 891 interval cancers detected in women in this age group. These represented age-standardised rates of 67.0 per 10,000 women-years and 10.0 per 10,000 women years respectively (Tables 6.11 and 6.13).
- In subsequent screening rounds in 1999–2001, there were 8,014 invasive cancers detected by screening in women aged 40 and over, and 3,717 interval cancers detected in women in this age group. These represented age-standardised rates of 39.3 per 10,000 women-years and 10.1 per 10,000 women years respectively (Tables 6.12 and 6.14).

Table 6.1: Number of women participating in BreastScreen Australia program by age, 1996–1997 to 2002–2003

Age group	1996–1997	1997–1998	1998–1999	1999–2000	2000–2001	2001–2002	2002–2003
40–44	94,690	106,543	110,558	106,445	107,075	106,594	103,893
45–49	161,744	172,878	179,765	177,997	180,868	181,431	177,196
50–54	267,088	301,151	318,313	331,717	344,043	348,968	344,775
55–59	225,824	240,398	254,115	265,123	284,637	304,986	318,767
60–64	190,959	204,289	216,424	225,921	239,033	246,608	249,877
65–69	174,432	181,804	187,028	189,103	196,177	201,753	205,010
70–74	99,223	112,760	122,364	128,455	135,771	139,619	139,181
75–79	36,166	42,323	47,670	53,883	59,461	60,548	59,140
80–84	11,262	11,800	13,232	14,543	16,626	17,209	16,851
85+	1,030	2,455	2,903	3,256	3,787	3,749	3,616
All ages	**1,262,418**	**1,376,401**	**1,452,372**	**1,496,443**	**1,567,478**	**1,611,465**	**1,618,306**
Ages 50–69	**858,303**	**927,642**	**975,880**	**1,011,864**	**1,063,890**	**1,102,315**	**1,118,429**

Note: Periods cover 1 January 1996 to 31 December 1997, 1 January 1997 to 31 December 1998, 1 January 1998 to 31 December 1999, 1 January 1999 to 31 December 2000, 1 January 2000 to 31 December 2001, 1 January 2001 to 31 December 2002 and 1 January 2002 to 31 December 2003.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.2: Crude and age-standardised participation rates[(a)] in BreastScreen Australia program, 1996–1997 to 2002–2003

Rate	1996–1997	1997–1998	1998–1999	1999–2000	2000–2001	2001–2002	2002–2003
				All ages 40 and over			
Crude	32.6	34.6	35.7	35.8	36.6	36.7	36.0
ASR	33.7	35.7	36.6	36.7	37.5	37.5	36.7
95% CI	33.6–33.8	35.6–35.8	36.6–36.7	36.7–36.8	37.4–37.5	37.4–37.6	36.7–36.8
				Ages 50–69			
Crude	52.2	54.5	55.6	55.9	56.9	57.1	56.1
ASR	52.3	54.6	55.7	55.9	56.9	57.1	56.1
95% CI	52.2–52.4	54.5–54.7	55.6–55.8	55.8–56.0	56.8–57.0	57.0–57.2	56.0–56.2

(a) Rates are the number of women screened as a percentage of the eligible female population and age-standardised to the Australian population at 30 June 2001.

Notes

1. Periods cover 1 January 1996 to 31 December 1997, 1 January 1997 to 31 December 1998, 1 January 1998 to 31 December 1999, 1 January 1999 to 31 December 2000, 1 January 2000 to 31 December 2001, 1 January 2001 to 31 December 2002 and 1 January 2002 to 31 December 2003.
2. BreastScreen Australia services are not provided in some remote areas of the Northern Territory. This may affect the Northern Territory's participation rate.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.3: Participation in BreastScreen Australia program by age and region, 1997–1998, 2000–2001 and 2002–2003

Category	1997–1998	2000–2001	2002–2003
		All ages 40 and over	
Major cities	863,960	989,927	1,017,255
Inner regional	316,601	367,381	380,090
Outer regional	165,017	178,453	186,959
Remote	22,858	23,278	24,841
Very remote	7,964	8,438	9,161
Australia	**1,376,401**	**1,567,478**	**1,618,306**
		Ages 50–69	
Major cities	587,099	675,182	707,586
Inner regional	213,234	249,948	262,495
Outer regional	108,316	118,554	126,284
Remote	14,453	15,077	16,340
Very remote	4,540	5,130	5,725
Australia	**927,642**	**1,063,890**	**1,118,429**

Notes

1. Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.
2. The Australian Standard Geographical Classification was used to create the above categories (ABS 2001).

Source: AIHW analysis of BreastScreen Australia data.

Table 6.4: Age-standardised participation rates[(a)] in BreastScreen Australia program by age and region, 1997–1998, 2000–2001 and 2002–2003

	1997–1998		2000–2001		2002–2003	
Category	**ASR**	**95% CI**	**ASR**	**95% CI**	**ASR**	**95% CI**
			All ages 40 and over			
Major cities	34.0	33.9–34.0	36.1	36.0–36.1	35.3	35.2–35.4
Inner regional	38.1	37.9–38.2	39.8	39.7–40.0	38.6	38.5–38.8
Outer regional	40.9	40.7–41.1	41.0	40.8–41.2	40.9	40.7–41.1
Remote	42.8	42.2–43.4	40.6	40.1–41.1	41.2	40.7–41.7
Very remote	35.8	35.0–36.6	34.6	33.9–35.4	34.8	34.1–35.6
Australia	**35.7**	**35.6–35.8**	**37.5**	**37.4–37.5**	**36.7**	**36.7–36.8**
			Ages 50–69			
Major cities	52.7	52.6–52.8	55.3	55.2–55.5	54.5	54.4–54.6
Inner regional	57.7	57.5–58.0	60.4	60.1–60.6	58.7	58.5–58.9
Outer regional	59.7	59.4–60.1	60.0	59.6–60.3	60.1	59.8–60.4
Remote	61.2	60.2–62.2	58.0	57.0–58.9	59.4	58.5–60.4
Very remote	47.0	45.6–48.3	47.3	46.0–48.7	48.4	47.2–49.7
Australia	**54.6**	**54.5–54.7**	**56.9**	**56.8–57.0**	**56.1**	**56.0–56.2**

(a) Rates are the number of women screened as a percentage of the eligible female population and age-standardised to the Australian population at 30 June 2001.

Notes

1. Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.
2. The Australian Standard Geographical Classification was used to create the above categories (ABS 2001).

Source: AIHW analysis of BreastScreen Australia data.

Table 6.5: Participation in BreastScreen Australia program by age and socioeconomic status[a], 1997–1998, 2000–2001 and 2002–2003

Category	1997–1998	2000–2001	2002–2003
		All ages 40 and over	
1st quintile	281,415	320,412	332,835
2nd quintile	254,965	293,097	303,501
3rd quintile	282,081	322,549	336,300
4th quintile	287,080	329,488	337,393
5th quintile	270,860	301,932	308,277
Australia	**1,376,401**	**1,567,478**	**1,618,306**
		Ages 50–69	
1st quintile	190,634	218,418	232,412
2nd quintile	174,203	202,260	213,604
3rd quintile	186,711	215,354	228,967
4th quintile	191,969	221,383	230,493
5th quintile	184,124	206,475	212,953
Australia	**927,642**	**1,063,890**	**1,118,429**

(a) The first quintile corresponds to the highest socioeconomic status and the fifth to the lowest socioeconomic status, using the ABS SEIFA Index of Socioeconomic Disadvantage.

Note: Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.6: Age-standardised participation rates[a] in BreastScreen Australia program by age and socioeconomic status[b], 1997–1998, 2000–2001 and 2002–2003

	1997–1998		2000–2001		2002–2003	
Category	**ASR**	**95% CI**	**ASR**	**95% CI**	**ASR**	**95% CI**
			All ages 40 and over			
1st quintile	34.3	34.2–34.5	36.6	36.5–36.7	36.6	36.4–36.7
2nd quintile	34.4	34.3–34.5	36.0	35.9–36.1	35.0	34.9–35.1
3rd quintile	37.1	37.0–37.2	38.8	38.7–39.0	38.2	38.1–38.3
4th quintile	37.4	37.2–37.5	39.1	39.0–39.3	37.8	37.7–37.9
5th quintile	35.4	35.3–35.6	36.8	36.6–36.9	36.0	35.8–36.1
Australia	**35.7**	**35.6–35.8**	**37.5**	**37.4–37.5**	**36.7**	**36.7–36.8**
			Ages 50–69			
1st quintile	53.4	53.1–53.6	56.0	55.7–56.2	56.2	56.0–56.5
2nd quintile	53.8	53.6–54.1	55.7	55.5–56.0	54.5	54.2–54.7
3rd quintile	55.9	55.7–56.2	58.4	58.2–58.7	57.8	57.5–58.0
4th quintile	56.0	55.7–56.3	58.5	58.3–58.8	56.9	56.6–57.1
5th quintile	54.1	53.9–54.3	56.0	55.8–56.2	54.8	54.6–55.1
Australia	**54.6**	**54.5–54.7**	**56.9**	**56.8–57.0**	**56.1**	**56.0–56.2**

(a) Rates are the number of women screened as a percentage of the eligible female population and age-standardised to the Australian population at 30 June 2001.

(b) The first quintile corresponds to the highest socioeconomic status and the fifth to the lowest socioeconomic status, using the ABS SEIFA Index of Socioeconomic Disadvantage.

Note: Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.7: Participation in BreastScreen Australia program by age and Indigenous status, 1997–1998, 2000–2001 and 2002–2003

Indigenous status	1997–1998	2000–2001	2002–2003
		All ages 40 and over	
Indigenous Australians	8,729	10,605	12,354
Non-Indigenous Australians	1,361,367	1,473,434	1,576,572
Australia	**1,376,396**	**1,567,478**	**1,618,306**
		Ages 50–69	
Indigenous Australians	5,224	6,589	7,715
Non-Indigenous Australians	918,024	994,318	1,089,982
Australia	**927,641**	**1,063,890**	**1,118,429**

Notes

1. Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.
2. Women in the 'unknown' category are included in 'Australia', but are not included in the other categories.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.8: Age-standardised participation rates[(a)] in BreastScreen Australia program by age and Indigenous status, 1997–1998, 2000–2001 and 2002–2003

Indigenous status	1997–1998	2000–2001	2002–2003
		All ages 40 and over	
Indigenous Australians	20.5	23.0	25.1
Non-Indigenous Australians	35.6	35.5	36.1
Australia	**35.6**	**37.4**	**36.6**
		Ages 50–69	
Indigenous Australians	29.1	33.1	35.9
Non-Indigenous Australians	54.6	53.8	55.2
Australia	**54.6**	**56.9**	**56.1**

(a) Rates are the number of women screened as a percentage of the eligible female population and age-standardised to the Australian population at 30 June 2001.

Notes

1. Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.
2. Women in the 'unknown' category are included in 'Australia', but are not included in the other categories.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.9: Participation in BreastScreen Australia program by age and main language spoken at home, 1997–1998, 2000–2001 and 2002–2003

Main language spoken at home	1997–1998	2000–2001	2002–2003
		All ages 40 and over	
English	1,180,058	1,306,176	1,408,111
Non-English	195,731	198,295	205,683
Australia	**1,376,401**	**1,511,177**	**1,618,306**
		Ages 50–69	
English	786,740	874,834	968,709
Non-English	140,494	141,787	146,650
Australia	**927,642**	**1,021,204**	**1,118,429**

Notes

1. Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.
2. Women who were recorded as not stating their language spoken at home are included in the analysis for all women but excluded from the analysis by language.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.10: Age-standardised participation rates[(a)] in BreastScreen Australia program by age and main language spoken at home, 1997–1998, 2000–2001 and 2002–2003

Main language spoken at home	1997–1998	2000–2001	2002–2003
		All ages 40 and over	
English	36.7	37.4	38.3
Non-English	30.8	28.5	28.0
Australia	**35.7**	**36.1**	**36.7**
		Ages 50–69	
English	55.7	56.3	58.4
Non-English	49.7	45.1	43.7
Australia	**54.6**	**54.7**	**56.1**

(a) Rates are the number of women screened as a percentage of the eligible female population and age-standardised to the Australian population at 30 June 2001.

Notes

1. Periods cover 1 January 1997 to 31 December 1998, 1 January 2000 to 31 December 2001, 1 January 2002 to 31 December 2003.
2. Women who were recorded as not stating their language spoken at home are included in the analysis for all women but excluded from the analysis by language.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.11: Numbers and age-specific rates of interval cancers in women screened during 1996, 1997, 1998 and 1999, 2000, 2001, first screening round, 0–24 months, Australia

Age group		1996, 1997, 1998[(a)]	1999, 2000, 2001
40–49	Number	373	327
	Rate	8.7	8.7
50–59	Number	522	391
	Rate	10.2	11.0
60–69	Number	229	121
	Rate	8.6	9.9
70+	Number	111	52
	Rate	9.1	9.3
All ages	**Number**	**1,235**	**891**
	Crude rate	9.3	9.8
	ASR	**9.3**	**10.0**
	95% CI	8.8–9.9	9.2–10.8
Ages 50–69	**Number**	**751**	**512**
	Crude rate	9.6	10.7
	ASR	**9.5**	**10.5**
	95% CI	8.8–10.2	9.6–11.5

(a) The Australian figure includes data from Vic, Qld, WA, SA, Tas and ACT. NT data were unavailable at the time of publication of the *BreastScreen Australia monitoring report 1998–1999 and 1999–2000* from which the data for index years 1996, 1997 and 1998 were copied. Updated NSW data were supplied separately.

Note: Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.12: Numbers and age-specific rates of interval cancers in women screened during 1996, 1997, 1998 and 1999, 2000, 2001, subsequent screening rounds, 0–24 months, Australia

Age group		1996, 1997, 1998[(a)]	1999, 2000, 2001
40–49	Number	350	467
	Rate	9.4	9.7
50–59	Number	1,104	1,577
	Rate	10.8	10.6
60–69	Number	831	1,160
	Rate	9.6	10.1
70+	Number	273	513
	Rate	7.8	9.1
All ages	**Number**	**2,558**	**3,717**
	Crude rate	9.8	10.1
	ASR	**9.8**	**10.1**
	95% CI	9.4–10.2	9.8–10.5
Ages 50–69	**Number**	**1,935**	**2,737**
	Crude rate	10.2	10.4
	ASR	**10.3**	**10.4**
	95% CI	9.8–10.8	10.0–10.8

(a) The Australian figure includes data from Vic, Qld, WA, SA, Tas and ACT. NT data were unavailable at the time of publication of the *BreastScreen Australia monitoring report 1998–1999 and 1999–2000* from which the data for index years 1996, 1997 and 1998 were copied. Updated NSW data were supplied separately.

Note: Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.13: Numbers and age-specific rates of all invasive cancers detected in women screened during 1996, 1997, 1998 and 1999, 2000, 2001, first screening round, Australia

Age group		1996, 1997, 1998	1999, 2000, 2001
40–49	Number	503	498
	Rate	23.0	25.8
50–59	Number	1,201	946
	Rate	45.8	52.0
60–69	Number	970	536
	Rate	71.7	84.6
70+	Number	782	422
	Rate	125.8	143.7
All ages	**Number**	**3,456**	**2,402**
	Crude rate	50.9	51.4
	ASR	**58.2**	**67.0**
	95% CI	56.2–60.2	64.1–70.1
Ages 50–69	**Number**	**2,171**	**1,482**
	Crude rate	54.6	60.4
	ASR	**56.6**	**65.5**
	95% CI	54.2–59.0	62.0–69.2

Note: Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.14: Numbers and age-specific rates of all invasive cancers detected in women screened during 1996, 1997, 1998 and 1999, 2000, 2001, subsequent screening rounds, Australia

Age group		1996, 1997, 1998	1999, 2000, 2001
40–49	Number	335	473
	Rate	17.3	18.7
50–59	Number	1,668	2,692
	Rate	31.7	35.0
60–69	Number	1,887	3,049
	Rate	42.9	50.9
70+	Number	993	1,800
	Rate	55.3	61.1
All ages	**Number**	**4,883**	**8,014**
	Crude rate	36.5	41.9
	ASR	**34.8**	**39.3**
	95% CI	33.8–35.8	38.4–40.2
Ages 50–69	**Number**	**3,555**	**5,741**
	Crude rate	36.8	42.0
	ASR	**36.4**	**41.6**
	95% CI	35.2–37.6	40.6–42.7

Note: Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

Source: AIHW analysis of BreastScreen Australia data.

Table 6.15: Use of mammography, females, Australia, 2001

	Age group						
Frequency of mammogram	**18–29**	**30–39**	**40–49**	**50–59**	**60–69**	**70+**	**Total**
				Number ('000s)			
Has regular mammograms							
At least annually	9.9	28.8	144.4	227.2	118.0	72.1	600.5
More than 1, up to 2 years	2.4	18.4	195.3	510.3	363.7	214.7	1,304.8
More than 2 years apart	0.0	6.1	12.8	9.3	6.3	7.9	42.5
Not stated	0.0	0.0	4.6	13.6	6.7	9.3	34.3
Total	**12.4**	**53.3**	**357.2**	**760.5**	**494.7**	**304.0**	**1,982.1**
Only had one mammogram	32.5	133.8	229.9	67.7	31.2	50.5	545.6
Does not have regular mammograms	14.7	79.2	112.9	56.9	54.4	135.0	453.2
Has never had a mammogram	1,380.1	1,090.4	584.6	138.2	83.8	251.3	3,528.4
Not stated	124.5	122.3	132.6	109.3	81.7	158.8	729.1
Total	**1,564.3**	**1,478.9**	**1,417.2**	**1,132.4**	**745.9**	**899.5**	**7,238.3**
				Per cent			
Has regular mammograms							
At least annually	0.6	1.9	10.2	20.1	15.8	8.0	8.3
More than 1, up to 2 years	0.0	1.2	13.8	45.1	48.8	23.9	18.0
More than 2 years apart	0.0	0.0	0.9	0.8	0.8	0.9	0.6
Not stated	0.0	0.0	0.3	1.2	0.9	1.0	0.5
Total	**0.8**	**3.6**	**25.2**	**67.2**	**66.3**	**33.8**	**27.4**
Only had one mammogram	2.1	9.0	16.2	6.0	4.2	5.6	7.5
Does not have regular mammograms	0.9	5.4	8.0	5.0	7.3	15.0	6.3
Has never had a mammogram	88.2	73.7	41.3	12.2	11.2	27.9	48.7
Not stated	8.0	8.3	9.4	9.7	11.0	17.7	10.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Note: Estimates of less than 20,000 have high standard errors and should be used with caution while estimates of less than 5,000 are considered too unreliable for general use.

Source: ABS 2002.

Table 6.16: Women aged 50–69 years: mammogram status and population characteristics, 2001

Population characteristics	Whether has had a mammogram		
	Yes	Never	Not stated
	Per cent (standard error)		
Country of birth			
Australia	81.5 (1.5)	11.2 (1.2)	7.3 (0.9)
Main English-speaking countries	85.2 (2.8)	8.2 (2.0)	6.6 (2.1)
Other	67.0 (1.9)	15.1 (1.6)	17.9 (1.9)
Born overseas			
Arrived before 1991	64.8 (9.1)	22.6 (8.0)	12.5 (4.9)
Arrived 1991–2001	73.0 (2.0)	12.3 (1.5)	14.7 (1.7)
Main language spoken at home			
English	81.8 (1.3)	10.7 (1.0)	7.5 (0.7)
Other	61.4 (2.5)	17.4 (2.3)	21.2 (2.7)
Highest educational qualification			
Associate diploma or above	84.6 (2.0)	9.5 (1.7)	6.0 (1.2)
Other qualification	76.9 (1.4)	12.4 (1.0)	10.7 (1.0)
Labour force			
Employed	83.3 (1.5)	10.1 (1.0)	6.6 (1.0)
Unemployed	75.0 (1.4)	12.8 (1.0)	12.2 (1.1)
Not in the labour force	68.2 (13.2)	25.0 (13.9)	6.8 (4.9)
Location			
Major cities of Australia	76.6 (1.4)	11.8 (0.9)	11.6 (1.2)
Inner regional Australia	85.2 (2.1)	10.0 (1.6)	4.8 (1.1)
Outer regional Australia/other areas	74.5 (3.0)	15.7 (2.5)	9.8 (2.0)
Household composition			
Couple only	82.7 (1.7)	9.2 (1.1)	8.2 (1.2)
Couple with children	75.6 (3.4)	11.5 (2.3)	12.9 (2.5)
Lone parent	78.5 (1.8)	12.2 (1.7)	9.3 (1.0)
Person living alone	71.5 (3.5)	14.9 (3.6)	13.6 (2.5)
All other households	67.2 (5.0)	22.8 (4.1)	10.0 (2.2)
Income unit			
1st quintile (lowest income)	75.7 (2.0)	12.5 (1.4)	11.8 (1.7)
5th quintile (highest income)	85.1 (3.0)	7.3 (1.7)	7.6 (2.6)
Index of socioeconomic disadvantage			
1st quintile (most disadvantaged)	78.3 (2.6)	12.2 (2.0)	9.6 (1.6)
5th quintile (least disadvantaged)	79.7 (2.2)	12.0 (1.8)	8.3 (1.5)
Private health insurance			
With private cover	82.2 (1.5)	9.1 (0.9)	8.7 (1.0)
Without private cover	73.3 (1.6)	15.5 (1.6)	11.3 (1.2)
Government health card			
With card	76.6 (1.3)	12.4 (1.0)	11.1 (1.1)
Without card	80.0 (1.8)	11.3 (1.2)	8.7 (1.0)

Source: ABS 2002.

Table 6.17: Women who have never had a mammogram, main language spoken at home, 2001

	Age group			
Main language spoken at home	**18–49**	**50–69**	**70 and over**	**18 and over**
		Per cent		
English only	69.3	10.7	27.5	48.7
Italian	67.2	9.4	26.9	35.5
Greek	72.1	n.a.	n.a.	46.4
Cantonese	52.0	n.a.	n.a.	47.0
Mandarin	75.1	n.a.	n.a.	70.6
Arabic	55.9	n.a.	n.a.	58.7
Vietnamese	64.2	n.a.	n.a.	60.5
German	66.6	23.1	45.1	43.7
Spanish	50.5	n.a.	n.a.	39.3
Tagalog (Filipino)	49.3	n.a.	n.a.	41.5
Other language	66.4	14.9	27.9	51.5
Total	**68.5**	**11.8**	**27.9**	**48.7**

n.a. not available for publication.

Source: 2001 National Health Survey, ABS.

Table 6.18: Women who have never had a mammogram, country of birth, 2001

	Age group			
Country of birth	**18–49**	**50–69**	**70 and over**	**18 and over**
		Per cent		
Australia	70.5	11.2	27.8	51.1
New Zealand	81.7	8.5	65.6	65.0
England	60.5	8.9	23.9	35.6
Scotland	48.9	4.5	32.9	26.9
Italy	60.6	11.1	25.7	27.6
Greece	55.8	n.a.	n.a.	26.2
Germany	65.6	19.7	47.9	38.5
Netherlands	69.0	n.a.	n.a.	23.2
Viet Nam	64.6	n.a.	n.a.	58.1
Philippines	54.1	n.a.	n.a.	46.4
Other	60.6	16.6	27.0	45.4
Total	**68.5**	**11.8**	**27.9**	**48.7**

n.a. not available for publication.

Source: 2001 National Health Survey, ABS.

Table 6.19: Women who have never had a mammogram, states and territories, 2001

State or territory	Age group			
	18–49	50–69	70 and over	18 and over
	Per cent			
NSW	63.9	12.2	25.2	45.4
Vic	71.0	13.9	29.7	51.1
Qld	67.0	9.3	27.0	47.4
WA	71.8	9.4	28.4	51.3
SA	75.7	11.8	33.8	52.3
Tas	73.3	12.0	36.3	51.2
ACT	73.3	13.2	17.3	53.8
Australia, including NT	**68.5**	**11.8**	**27.9**	**48.7**

Note: Separate numbers not available for publication for the Northern Territory.

Source: 2001 National Health Survey, ABS.

7 Medicare services

This chapter provides data on:

- Medicare diagnostic mammography of the breasts in symptomatic women provided by private practitioners
- selected drugs in the Pharmaceutical Benefits Scheme (PBS) identified in the PBS Schedule for the treatment of breast cancer.

Many other Medicare Benefits Scheme (MBS) and PBS services are provided by the Australian Government for the diagnosis and treatment of breast cancer but services specific to breast cancer are not identifiable, for example, general practitioner consultations.

Data sources

Information on MBS and PBS items processed are available from data cubes on the Medicare Australia website (www.medicareaustralia.gov.au).

Mammography of the breast

- The most frequently used MBS service in 2004–05 was *Mammography of both breasts* (item number 59300) with 298,178 services, followed by *Mammography of one breast* (item number 59303) with 39,740 services (Table 7.1).
- Since 2000–01 there has been very little change in the numbers of private mammography services used in each state.
- New South Wales has the highest number of services used per 100,000 population in every category. In 2004–05 there were 1,939 Medicare mammography services utilised per 100,000 population in NSW, 16% above the national average of 1,672 services per 100,000 population (Table 7.1). This contrasts with participation in the BreastScreen Australia Program in which the age-standardised participation rate for 2002–2003 for NSW was 51.4%, significantly below the national rate of 56.1% (AIHW 2006). This may mean that private mammography services in NSW may be undertaking some de facto screening in lieu of participation in the BreastScreen Australia Program.
- Women aged between 45 and 54 years used *Mammography of both breast* services 88,301 times in 2004–05, more than any other age group (Table 7.2).

Drugs used in treatment of breast cancer

- In 2004–05 *Tamoxifen citrate* (item number 2110C) with 178,506 prescription items and *Anastrozole* (item number 8179L) with 47,734 prescription items are the most commonly used breast cancer specific pharmaceuticals used in Australia (Table 7.3).

Table 7.1: Medicare Benefits Scheme mammography of breasts, states and territories, 2000–01 to 2004–05

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number of services				
Mammography of both breasts 59300									
2000–01	114,511	75,994	54,020	32,860	19,077	5,680	4,085	1,286	307,513
2001–02	111,467	74,088	53,649	28,955	18,557	5,429	4,186	1,341	297,672
2002–03	111,651	73,748	53,186	26,515	19,282	5,806	4,197	1,255	295,640
2003–04	107,761	72,924	52,578	25,956	18,948	5,719	3,931	1,224	289,041
2004–05	115,175	74,712	52,731	24,977	19,623	5,716	4,158	1,086	298,178
Mammography of one breast 59303									
2000–01	13,313	8,264	6,252	3,132	2,480	882	521	119	34,963
2001–02	13,688	8,554	6,744	3,300	2,408	963	602	91	36,350
2002–03	14,417	8,976	7,028	4,293	2,470	1,018	645	123	38,970
2003–04	15,591	9,336	7,402	3,676	2,467	1,167	732	135	40,506
2004–05	15,688	9,279	7,030	3,214	2,542	1,128	735	124	39,740
Mammography ductogram (galactography) one breast 59306									
2000–01	154	69	91	38	20	9	21	1	403
2001–02	123	47	86	20	18	7	11	3	315
2002–03	99	44	63	25	16	8	11	3	269
2003–04	113	38	59	25	16	9	16	3	279
2004–05	90	37	47	10	14	1	15	0	214
Mammography ductogram (galactography) two breasts 59309									
2000–01	58	3	1	2	1	0	1	1	67
2001–02	8	2	4	1	0	0	0	1	16
2002–03	8	2	4	1	2	0	0	0	17
2003–04	3	2	3	0	1	0	1	1	11
2004–05	3	3	1	0	0	0	0	0	7
					Number of mammography services per 100,000 population				
2000–01	1,961	1,768	1,680	1,909	1,431	1,394	1,460	716	1,779
2001–02	1,895	1,711	1,646	1,686	1,383	1,354	1,496	724	1,711
2002–03	1,894	1,694	1,602	1,592	1,429	1,438	1,502	696	1,694
2003–04	1,841	1,666	1,559	1,509	1,400	1,434	1,443	684	1,649
2004–05	1,939	1,682	1,522	1,414	1,443	1,415	1,509	603	1,672

Sources: http://www.medicareaustralia.gov.au and AIHW population database.

Table 7.2: Medicare Benefits Scheme mammography of both breasts (item 59300), states and territories, 2004–05

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number of services				
0–4	5	2	0	0	1	0	0	0	8
5–14	29	11	9	9	0	0	2	0	60
15–24	666	413	121	118	53	18	34	6	1,429
25–34	6,893	4,590	2,636	1,291	800	380	243	80	16,913
35–44	27,034	18,280	12,488	5,980	4,432	1,416	1,046	363	71,039
45–54	33,159	22,564	15,705	7,918	5,685	1,526	1,350	394	88,301
55–64	25,431	15,606	12,695	5,325	4,336	1,304	853	183	65,733
65–74	14,986	8,795	6,409	3,058	2,755	743	423	43	37,212
75–84	6,214	3,958	2,363	1,158	1,363	289	191	16	15,552
85+	758	493	305	120	198	40	16	1	1,931
Total	**115,175**	**74,712**	**52,731**	**24,977**	**19,623**	**5,716**	**4,158**	**1,086**	**298,178**
					Number of services per 100,000 population				
0–4	1.2	0.7	0.0	0.0	1.1	0.0	0.0	0.0	0.6
5–14	3.2	1.7	1.6	3.3	0.0	0.0	4.7	0.0	2.2
15–24	73.1	60.5	21.8	41.4	25.8	27.8	66.1	19.6	51.3
25–34	710.4	631.7	474.5	458.5	402.0	659.7	475.3	228.2	587.8
35–44	2,714.4	2,432.2	2,149.0	1,974.6	1,971.9	2,056.7	2,141.5	1,101.0	2,362.2
45–54	3,615.7	3,322.0	2,931.2	2,796.7	2,617.4	2,185.5	2,910.5	1,479.1	3,181.2
55–64	3,549.3	2,985.7	3,003.7	2,550.7	2,502.1	2,308.1	2,584.8	1,136.4	3,057.7
65–74	3,141.7	2,519.7	2,504.3	2,390.1	2,367.8	2,000.5	2,503.1	716.1	2,684.0
75–84	1,875.3	1,631.2	1,438.7	1,448.9	1,563.4	1,174.5	1,791.7	661.7	1,649.1
85+	708.2	629.3	578.6	464.4	685.8	505.6	507.6	151.5	634.1
Total	**1,706.5**	**1,496.4**	**1,343.1**	**1,252.7**	**1,277.3**	**1,181.4**	**1,282.4**	**540.7**	**1,475.4**

Sources: http://www.medicareaustralia.gov.au and AIHW population database.

Table 7.3: Pharmaceutical Benefits Scheme breast cancer treatment and prevention items, 2000–01 to 2004–05

PBS item	Item no.	2000–01	2001–02	2002–03	2003–04	2004–05	Change[(a)] (%)
Tamoxifen citrate	2109B	12,734	11,121	9,665	8,525	7,117	-13.5%
Tamoxifen citrate	2110C	187,517	189,868	186,177	184,675	178,506	-1.2%
Medroxyprogesterone acetate	2728N	3,721	1,611	1,803	1,469	1,163	-26.0%
Megestrol acetate	2734X	2,791	2,756	2,306	2,167	1,496	-13.2%
Anastrozole	8179L	16,238	20,829	27,533	33,251	47,734	33.2%
Toremifene citrate	8216K	8,793	9,237	9,196	8,547	6,986	-4.9%
Letrozole	8245Y	17,387	21,865	27,444	32,896	39,602	23.5%
Exemestane	8506Q	233	4,488	6,141	6,591	7,295	48.1%
Total		**249,414**	**261,775**	**270,265**	**278,121**	**289,899**	**3.7%**

(a) Average annual rate of change.

Sources: http://www.medicareaustralia.gov.au and AIHW population database.

8 Hospital treatment

This chapter provides statistics on the number of separations, the average length of stay for each separation and the most common selected procedures performed on patients with a principal diagnosis of breast cancer (ICD-10 C50). Where separations are defined as the total number of episodes of care for admitted patients, including total hospital stays (from admission to discharge, transfer or death), or portions of hospital stays beginning or ending in a change of type of care (for example, from acute to rehabilitation). The information is derived from the AIHW's National Hospital Morbidity Database which covers diagnoses, other characteristics and treatment of admitted patients in public and private hospitals in Australia.

The separation rates are age-standardised to take into account changes in the age structure of admitted patients in the years 1995–96 to 2003–04. In addition, the National Hospital Morbidity Database records same-day patients with a hospital stay of less than one day.

The main trends are as follows.

Separations and average length of stay, 1995–96 to 2003–04

Females

- The number of separations of women with a principal diagnosis of breast cancer (ICD-10 C50) increased from 15,831 in 1995–96 to 23,598 in 2003–04 (Table 8.1).
- The age-standardised separation rate increased from 1.74 separations per 1,000 population in 1995–96 to 2.36 per 1,000 population in 2003–04 (Table 8.1).
- The average length of stay across all ages decreased from 6.1 days per separation in 1995–96 to 3.9 days per separation in 2003–04. The average length of stay has steadily decreased over the nine-year period at an annual average rate of 5.4% (Table 8.1).
- Patients had longer average lengths of stay with increasing age, from 2.3 days per separation in women under 30 years of age to 7.6 days per separation in women aged 80 years and over, in 2003–04 (Table 8.1).
- In 2003–04 there was no specific breast cancer anatomical location recorded for 13,019 patients. The *Upper-outer quadrant of breast* was the most common anatomical location recorded, with 4,183 patients (Table 8.2). The rarest anatomical location of breast cancer was in the *Axillary tail of the breast* with 116 patients in 2003–04.

Males

- The number of hospital separations of men with a principal diagnosis of breast cancer (ICD-10 C50) increased from 117 separations in 1995–96 to 148 separations in 2003–04 (Table 8.3).
- The age-standardised separation rate of 0.08–0.13 separations per 1,000 population remained relatively constant over the 1995–96 to 2003–04 period (Table 8.3).
- The average length of stay was 4.4 days in 2003–04 (Table 8.3) and 55% of separations were for men in their 60s and 70s (Table 8.4).
- In 2003–04 there was no specific breast cancer anatomical location recorded for 99 patients. The *Nipple and areola* was the most common anatomical location recorded, with 23 patients (Table 8.5).

Procedures

Females

- The most common procedures performed in 2003–04 for women with a principal diagnosis of breast cancer were *Excision of lesion of breast* (Block 1744) with 8,930 separations, followed by *Simple mastectomy* (Block 1748) with 4,817 separations and *Chemotherapy administration* (Block 1780) with 1,913 separations (Table 8.6).

Males

- The most common procedures performed in 2003–04 for men with a principal diagnosis of breast cancer were *Simple mastectomy* (Block 1748) with 89 separations, followed by *Excision of lesion of breast* (Block 1744) with 19 separations and *Chemotherapy administration* (Block 1780) with 8 separations (Table 8.7).

Table 8.1: Separations and average length of stay for female patients admitted with a principal diagnosis of breast cancer (C50), 1995–96 to 2003–04

Age group	1995–96	1996–97	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04
					Separations				
Under 30	169	117	131	128	152	144	147	112	95
30–39	1,285	1,337	1,292	1,337	1,364	1,192	1,369	1,486	1,609
40–49	3,719	3,673	3,966	4,090	4,255	4,305	4,024	4,562	4,668
50–59	3,885	3,959	4,768	4,897	5,460	5,704	6,111	6,397	6,643
60–69	3,189	3,111	3,553	3,927	4,194	4,359	4,653	4,865	5,171
70–79	2,625	2,582	2,917	2,846	3,024	3,371	3,308	3,441	3,596
80+	959	1,070	1,104	1,127	1,202	1,364	1,426	1,696	1,816
Total	**15,831**	**15,849**	**17,731**	**18,352**	**19,651**	**20,439**	**21,038**	**22,559**	**23,598**
ASR[(a)]	**1.74**	**1.72**	**1.90**	**1.95**	**2.06**	**2.12**	**2.15**	**2.28**	**2.36**
					Average length of stay (days)				
Under 30	3.9	3.6	3.3	3.0	2.5	2.7	2.5	2.7	2.3
30–39	3.7	3.6	3.6	3.6	3.5	3.1	2.9	2.8	2.8
40–49	4.5	4.0	3.8	3.7	3.4	3.4	3.3	3.1	3.1
50–59	5.2	4.6	4.5	4.1	3.8	3.7	3.5	3.4	3.2
60–69	6.2	5.7	5.8	5.0	4.6	4.3	4.0	3.8	3.6
70–79	7.2	6.7	6.2	6.4	6.0	5.1	5.2	4.9	4.6
80+	12.1	8.8	7.6	7.6	7.1	7.0	7.3	6.4	7.6
Total	**6.1**	**5.3**	**5.0**	**4.8**	**4.4**	**4.2**	**4.1**	**3.9**	**3.9**

Source: National Hospital Morbidity Database, AIHW.

Table 8.2: Separations for female patients admitted with a principal diagnosis of breast cancer (C50.0 to 50.9), area of breast and age, 2003–04

Site code	Description	Under 30	30–39	40–49	50–59	60–69	70–79	80+	Total
C50.0	Nipple and areola	3	23	67	90	90	57	64	**394**
C50.1	Central portion of breast	4	103	253	381	311	195	89	**1,336**
C50.2	Upper-inner quadrant of breast	6	76	245	389	292	176	71	**1,255**
C50.3	Lower-inner quadrant of breast	0	44	120	220	131	121	43	**679**
C50.4	Upper-outer quadrant of breast	13	310	831	1,168	975	568	318	**4,183**
C50.5	Lower-outer quadrant of breast	1	64	208	284	223	151	81	**1,012**
C50.6	Axillary tail of breast	0	5	44	23	22	15	7	**116**
C50.8	Overlapping lesion of breast	5	105	363	496	329	204	102	**1,604**
C50.9	Breast, NOS	63	879	2,537	3,592	2,798	2,109	1,041	**13,019**
Total		**95**	**1,609**	**4,668**	**6,643**	**5,171**	**3,596**	**1,816**	**23,598**

Source: National Hospital Morbidity Database, AIHW.

Table 8.3: Separations and average length of stay for male patients admitted with a principal diagnosis of breast cancer (C50), 1995–96 to 2003–04

Age group	1995–96	1996–97	1997–98	1998–99	1999–00	2000–01	2001–02	2002–03	2003–04
					Separations				
Under 50	19	17	12	20	21	18	12	15	26
50–59	31	13	20	23	22	23	29	29	27
60–69	35	31	30	36	29	37	26	47	39
70–79	21	25	21	35	45	48	29	40	42
80+	11	14	8	8	18	22	17	11	14
Total	**117**	**100**	**91**	**122**	**135**	**148**	**113**	**142**	**148**
ASR[(a)]	**0.11**	**0.09**	**0.08**	**0.11**	**0.12**	**0.13**	**0.10**	**0.12**	**0.13**
					Average length of stay (days)				
Under 50	4.9	4.1	5.7	3.9	4.1	2.8	2.8	7.5	3.2
50–59	5.9	4.9	3.5	2.5	4.4	4.3	2.7	3.0	4.0
60–69	4.4	5.2	5.8	4.5	8.7	3.9	3.2	6.5	5.6
70–79	7.8	6.9	8.3	5.9	5.3	5.9	5.8	5.7	5.8
80+	3.5	5.9	4.8	9.5	7.9	8.8	6.8	6.4	3.4
Total	**5.3**	**5.4**	**5.6**	**5.2**	**6.1**	**5.1**	**4.2**	**5.8**	**4.4**

(a) Age-standardised rate, standardised to the 2001 Australian standard population.

Source: National Hospital Morbidity Database, AIHW.

Table 8.4: Separations for male patients admitted with a principal diagnosis of breast cancer (C50.0 to 50.9), age at diagnosis, 2003–04

	Under 30	30–39	40–49	50–59	60–69	70–79	80+	Total
Total	2	6	18	27	39	42	14	**148**
Per cent	1.4	4.1	12.2	18.2	26.4	28.4	9.5	**100.0**

Source: National Hospital Morbidity Database, AIHW.

Table 8.5: Separations for male patients admitted with a principal diagnosis of breast cancer (C50.0 to 50.9), anatomical location, 2003–04

Site code	Description	Total	Per cent
C50.0	Nipple and areola	23	15.5
C50.1	Central portion of breast	10	6.8
C50.2	Upper-inner quadrant of breast	5	3.4
C50.3	Lower-inner quadrant of breast	0	0.0
C50.4	Upper-outer quadrant of breast	3	2.0
C50.5	Lower-outer quadrant of breast	3	2.0
C50.6	Axillary tail of breast	0	0.0
C50.8	Overlapping lesion of breast	5	3.4
C50.9	Breast, NOS	99	66.9
Total		**148**	**100.0**

Source: National Hospital Morbidity Database, AIHW.

Table 8.6: Separations for female patients with a principal diagnosis of breast cancer (C50), most common procedures, 2002–03 and 2003–04

Block number	Procedure description	2002–03	2003–04
1744	Excision of lesion of breast	8,820	8,930
1748	Simple mastectomy	4,712	4,817
1780	Chemotherapy administration	1,693	1,913
808	Excision procedures on lymph node of axilla	560	542
1743	Biopsy of breast	408	421
1740	Examination procedures on breast	159	164
1747	Subcutaneous mastectomy	122	143
1788	Megavoltage radiation treatment	68	75
1952	Computerised tomography of brain	51	67
1756	Reconstruction procedures on breast	50	29

Source: National Hospital Morbidity Database, AIHW.

Table 8.7: Separations for male patients with a principal diagnosis of breast cancer (C50), most common procedures, 2002–03 and 2003–04

Block number	Procedure description	2002–03	2003–04
1748	Simple mastectomy	72	89
1744	Excision of lesion of breast	17	19
1780	Chemotherapy administration	9	8
1747	Subcutaneous mastectomy	7	9

Source: National Hospital Morbidity Database, AIHW.

9 Expenditure

This chapter describes breast cancer expenditure for treatment of female patients in 2000–01.

Disease-specific expenditure estimates provide a useful perspective on the utilisation and costs of health services in Australia, as well as a reference source for planners and researchers interested in the costs and utilisation patterns for a particular disease group.

Expenditure for cancer and other neoplasms in 2000–01 was $2.9 billion which was 5.8% of total health expenditure allocated by disease.

Main features

The main features of expenditure on breast cancer in 2000–01 are as follows:

- Total expenditure on breast cancer was $241 million in 2000–01 (Table 9.1). Of this, $96 million was spent on organised mammography, $72 million on hospital admitted patients, $21 million on out-of-hospital medical costs and $27 million on pharmaceuticals requiring a prescription.
- Breast cancer accounted for 12.8% of new cases of cancer in 2001 and 7.6% of deaths, while 8.3% of total cancer expenditure in 2000–01 was for breast cancer (Table 9.2)
- In 2000–01 breast cancer had an estimated lifetime treatment cost of $11,897, one of the least expensive cancers to treat (Table 9.3).
- In 2000–01 there were 20,182 breast cancer admissions to hospital, 75,200 attendances at hospital without admission, 181,793 attendances at an out-of-hospital medical service without a referral, 160,094 attendances at other medical services, 258,679 prescriptions of pharmaceuticals and 34,371 attendances at other health professionals (Table 9.4).
- Total expenditure on breast cancer treatment increased by 41% from $103.2 million in 1993–94 to $145.1 million in 2000–01 (Table 9.5).
- The age group with the highest usage of health services and health service expenditure by women with breast cancer in 2000–01 was the 45–54 year age group (Table 9.6).

Table 9.1: Expenditure on breast cancer and on all cancers, health system costs by sector, 2000–01, and numbers of new cases and deaths in 2001 ($ million)

Condition	Admitted patients	Out-of-hospital medical	Pharmaceuticals requiring a prescription	Other	Total expenditure	New cases in 2001	Deaths in 2001
Breast cancer expenditure:							
Organised mammography[(a)]	0	0	0	96	96	0	0
Other	72	21	27	25	145	11,314	2,873
Total breast cancer expenditure	72	21	27	122	241	11,314	2,873
All cancer expenditure	**1,716**	**343**	**167**	**693**	**2,919**	**452,538**	**37,615**

(a) Includes public health expenditure by the Australian Government and states and territories for the Breastscreen Australia screening program. See Table 8.3.

Source: AIHW disease expenditure database and National public health expenditure report 2000–01 (p24).

Table 9.2: Breast cancer percentage of total cancer expenditure, by sector, 2000–01

Condition	Admitted patients	Out-of-hospital medical	Pharmaceuticals requiring a prescription	Other	Total expenditure	New cases in 2001[(a)]	Deaths in 2001
Breast cancer	4.2	6.3	15.9	17.5	8.3	12.8	7.6
All cancers	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Proportion of new cases not including non-melanoma skin cancer.

Source: AIHW disease expenditure database.

Table 9.3: Estimated lifetime treatment cost of each cancer, 2000–01

	Lifetime cost of cancer ($)[(a)]
Leukaemia	51,196
Brain	40,732
Multiple myeloma	37,068
Larynx	34,413
Oesophagus	30,808
Bone and connective tissue	29,593
Non-Hodgkin lymphoma	27,620
Mouth and oropharynx cancer	22,996
Bladder	22,915
Stomach	21,573
Ovarian cancer	19,677
Hodgkin's disease	18,998
Colorectal	18,246
Pancreatic	18,204
Gall bladder	18,141
Liver	18,046
Prostate	17,942
Cervical cancer	17,240
Lung	16,476
Kidney	15,892
Breast cancer	**11,897**
Uterine cancer	11,867
Thyroid	8,792
Testicular	5,805
Melanoma	3,341

(a) Total average cost of treatment across an entire lifetime. Total treatment cost in 2000–01 divided by new cases in 2001 gives an approximate estimate of lifetime costs per incident case where treatment costs, incidence and mortality rates have been steady over time.

Source: AIHW disease expenditure database.

Table 9.4: Health service usage for breast cancer and all cancers, 2000–01

	Hospitals		Out-of-hospital medical services			
	Patient separations	Non-admitted patients occasions of service	Unreferred attendances	Other medical services[(a)]	Pharmaceuticals requiring a prescription	Other health professional attendances
Breast cancer	20,182	75,200	181,793	160,094	258,679	34,371
All cancers	**475,519**	**1,510,266**	**2,991,642**	**4,646,928**	**3,020,368**	**1,291,644**

(a) Other out-of-hospital medical services include imaging, pathology and other medical services.

Source: AIHW disease expenditure database.

Table 9.5: Change in treatment expenditures between 1993–94 and 2000–01 for breast cancer and all cancers, 2000–01 dollars

	1993–94[a]		2000–01		Change		
Conditions	Expend. per case ($000)	Total ($ million)	Expend. per case ($000)	Total ($ million)	$ million	% per case	% total
Breast cancer	10.6	103.2	12.8	145.1	41.9	21	41
All cancers	**n.a.**	**1,690.1**	**n.a.**	**2,102.2**	**412.0**	**n.a.**	**24**
All cancers excluding NMSC	**18.8**	**1,476.4**	**20.8**	**1,837.7**	**361.3**	**10**	**24**

(a) 1993–94 expenditure expressed in terms of 2000–01 dollars. Health prices increased 20% between 1993–94 and 2000–01. The original 1993–94 expenditure has been increased by 20% to convert it to 2000–01 prices.

Source: AIHW disease expenditure database.

Table 9.6: Health service expenditure and usage for breast cancer for women by age, 2000–01

	0–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75+	All ages
Expenditure					**($ million)**					
Admitted patient[a]	0.0	0.0	0.1	1.4	7.8	17.2	17.3	14.6	13.4	71.8
Unreferred attendance [b]	0.0	0.0	0.3	0.7	1.7	1.9	1.3	0.9	0.8	7.6
Out-of-hospital[c]	0.1	0.0	0.5	1.1	4.5	5.5	4.2	2.9	2.7	21.4
Prescription pharmaceutical[d]	0.1	0.0	0.0	0.1	2.0	5.7	6.1	5.0	7.4	26.5
Total	**0.2**	**0.0**	**0.8**	**3.3**	**16.0**	**30.3**	**28.9**	**23.3**	**24.4**	**127.4**
Usage					**('000's)**					
Admitted patient services	0.0	0.0	0.0	0.4	2.5	5.4	4.9	3.7	2.8	19.7
Unreferred attendance services[e]	0.9	0.0	6.5	16.4	36.7	43.0	33.2	23.4	21.5	181.8
Out-of-hospital services[f]	3.0	0.0	9.7	22.8	63.7	89.0	64.9	47.0	41.7	341.9
Number of prescriptions[g]	1.3	0.0	0.0	1.8	19.8	56.0	59.9	45.8	73.6	258.7
Total	**5.2**	**0.0**	**16.2**	**41.4**	**122.7**	**193.4**	**163.0**	**120.0**	**139.6**	**802.1**

(a) Includes estimates for private medical services in hospitals

(b) Includes expenditure for general practitioner attendances

(c) Includes unreferred attendances, imaging, pathology and other out-of-hospital medical services (i.e. referral to specialists)

(d) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under-copayment prescriptions.

(e) Includes visits to a General Practitioner

(f) Includes unreferred attendances, imaging, pathology and other out-of-hospital medical services (i.e. referral to specialists)

(g) Includes all pharmaceuticals for which a prescription is needed, including private prescriptions and under-copayment prescriptions.

Source: AIHW disease expenditure database.

Glossary

Aboriginal and Torres Strait Islander: a person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander person and is accepted as such by the community with which he or she is associated.

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 National Mortality Database, the National Hospital Morbidity Database and the National Cancer Statistics Clearing House Database.

Age-specific rate: a rate for a specific age group. The numerator and denominator relate to the same age group.

Age-standardised rate: weighted average of age-specific rates according to a standard distribution of the population by age to eliminate the effect of different age distributions and thus facilitate valid comparison of groups with differing age compositions.

Average length of stay: the average number of patient days for admitted patient episodes. Patients admitted and separated on the same day are allocated a length of stay of one day.

Cancer (malignant neoplasm): a term used to describe one of several diseases that result when the process of cell division, by which tissues normally grow and renew themselves, becomes uncontrolled and leads to the development of malignant cells. These cancer cells multiply in an uncoordinated way, independently of normal growth control mechanisms, to form a tumour. The tumour can expand locally by invasion or systemically by metastasis via the lymphatic or vascular systems. If left untreated, most malignant tumours eventually result in death.

Cancer death: a death where the underlying cause is indicated as cancer. People with cancer who died of other causes are not counted in the death statistics in this publication.

Confidence interval: a range determined by variability in data, within which there is a specified (usually 95%) chance that the true value of a calculated parameter (for example, relative risk) lies.

Data: refers to the building blocks of health information, including observations from administrative databases and health survey data sets.

Ductal carcinoma in situ: a non-invasive tumour of the mammary gland (breast) arising from cells lining the ducts.

First screening round: see *Screening round.*

Incidence: see *New cancer case.*

Indigenous: a person of Aboriginal and/or Torres Strait Islander descent who identifies as an Aboriginal and/or Torres Strait Islander person and is accepted as such by the community with which he or she is associated.

International Classification of Diseases: The World Health Organization's internationally accepted classification of death and disease. The tenth revision (ICD-10) is currently in use.

Interval cancer—invasive (as defined for national reporting purposes by Kavanagh et al. (1999), with minor changes pending endorsement by the National Advisory Committee):

- an invasive breast cancer diagnosed after completion of a negative screening episode and before the next screening examination (within 24 months from the date of the previous screen)
- a case of invasive breast cancer that is diagnosed at early review or in the interval between assessment and early review, where the recommendation for early review is six months or more from the screening date
- breast cancer diagnosed in a woman by BreastScreen Australia within 24 months of a negative screen (early rescreen) if the woman presents with a breast lump and/or clear or blood-stained nipple discharge in the breast in which the breast cancer was diagnosed, or
- an invasive breast cancer diagnosed between six and 24 months after a recommendation for assessment is made and a woman fails to attend assessment.

Invasive cancer: a tumour whose cells have invaded healthy or normal tissue.

Length of stay: the length of stay of 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 one day.

Lymph node: masses of lymphatic tissue, often bean-shaped, that produce lymphocytes and through which lymph filters. These are located throughout the body.

Mammogram: a radiographic depiction of the breast.

Mortality: see *Cancer death.*

New cancer case: a person who has a new cancer diagnosed for the first time. One person can have more than one cancer and therefore may be counted twice in incidence statistics if it is decided that the two cancers are not of the same origin. This decision is based on a series of principles set out in more detail in a publication by Jensen et al. (1991).

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 geographic areas of differing population sizes and age structures.

Prevalence: the number of instances of a specific disease or other condition in a given population at a designated time.

Principal diagnosis: the diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care.

Procedure block: the block number is a means of numerically ordering groups of related procedure codes.

Risk factor: an attribute or exposure that is associated with an increased probability of a specified outcome, such as the occurrence of a disease. Risk factors are not necessarily the causes of disease.

Screening: the performance of tests on apparently well people in order to detect a medical condition at an earlier stage than would otherwise be the case.

Screening round: the first screening round is a woman's first visit to a mammography screening service; a subsequent screening round means that she has been screened before. If she attends for the fourth screening round, she has been screened three times before.

Screening round (first): a woman's first visit to a BreastScreen Australia mammography screening service.

Screening round (subsequent): a woman's visit to a BreastScreen Australia mammography screening service when she has attended such a service before.

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

Separations: the total number of episodes of care for admitted patients, which can be total hospital stays (from admission to discharge, transfer or death), or portions of hospital stays beginning or ending in a change of type of care (for example, from acute to rehabilitation) that cease during a reference period.

Significant difference: where rates are referred to as significantly different, or one rate is deemed significantly higher or lower than another, these differences are statistically significant. Rates are deemed statistically significantly different when their confidence intervals do not overlap, since their difference is greater than what could be explained by chance. See 'confidence intervals' for more information.

Symptom: any evidence of disease apparent to the patient.

Unit record file: observations containing person-specific records from health surveys and administrative databases that are unanalysed and not tabulated. This is the most basic form of data and cannot be accessed for general use without appropriate confidentiality measures being in place.

Women 'at risk' of interval or screen-detected breast cancer are:

- All women screened aged 50–69 years who are resident in the service catchment area in which they are screened at the time of screening who have not reported a personal history of invasive cancer or DCIS.
- Women who are recommended for annual rescreening are only at risk of interval cancer up until 12 months after the screening examination.
- Women who are recommended for routine rescreening are only at risk of an interval cancer up until 24 months after the screening examination.

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