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# BreastScreen Australia Achievement Report 1997 and 1998

**BreastScreen Australia, the Australian Institute of Health and Welfare and the Commonwealth Department of Health and Aged Care**

Australian Institute of Health and Welfare

Canberra

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# Foreword

The 1997–1998 BreastScreen Australia Achievement Report is a joint production by the BreastScreen Australia Program, the Australian Institute of Health and Welfare and the Commonwealth Department of Health and Aged Care and sets out the performance of the Program using several key indicators. This publication will add substantially to the information available on breast cancer screening in Australia.

This report has been produced under the guidance of the National Advisory Committee to BreastScreen Australia which advises on specific policy, quality, data management, clinical and administrative issues arising out of the management of the Program. In recent years major progress has been made in these areas. This is largely attributable to the expertise and advice of the Committee's diverse membership and the hard work of the members of the five working groups of the Committee. In the following pages the major achievements of BreastScreen Australia are outlined, including the progress made to date and the major challenges that remain.

The impact of BreastScreen Australia depends upon the skills and dedication of the many staff and clinicians who work in the Program. This report is a tribute to their skills and commitment to improving outcomes for women with breast cancer.

**Professor Sally Redman**
**Chair**
**National Advisory Committee to**
**BreastScreen Australia**

**Dr Richard Madden**
**Director**
**Australian Institute of Health and Welfare**

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The members of the National Advisory Committee to BreastScreen Australia at its meeting on 11 November 1999.

# BreastScreen Australia achievements: 1997 to 1998

- This is the second joint report of BreastScreen Australia, AIHW, and the Department of Health and Aged Care. It provides information about a selection of Program activities and performance indicators for the 1997 and 1998 calendar years.
- In 1997 and 1998, over one and a quarter million Australian women were screened by BreastScreen Australia. These women were screened across Australia, including the most remote areas of the country.
- More than half of all women aged 50–69 participated in the Program. BreastScreen Australia aims to screen 70% of women in this age range.
- The National Accreditation Requirements for BreastScreen Australia require that the number of women screened in the target age group, women aged 50–69 years, be more than 60% of the total number screened. During the 1997–1998 period all States and Territories achieved this target.
- There has been an increase in the number of new cases of breast cancer in women aged 50–69 since the early 1990s, coinciding with the introduction of BreastScreen Australia. This is likely to be due, at least partly, to cancers being detected earlier than they would be if women were not being screened.
- The crude small cancer detection rate (≤10mm) in 1998 was far greater than the National Accreditation Requirements standard (more than 8 per 10,000 women screened), ranging across States/Territories from 13 to 19 cancers detected per 10,000 women screened (all ages).
- The crude national cancer detection rate (all sizes) for women attending the Program for the first time in 1998 was 48 cancers detected per 10,000 women screened (all ages). For women screened in 1998 who had previously attended the Program, this rate was 37 cancers detected per 10,000 women screened.
- Interval cancer (cancers detected between screens) rates are included in this report for the first time for women screened in 1996.
- New policies are being developed to address key issues for the Program, including clinical pathways for symptomatic women, screening intervals for women with a family history of breast cancer, and the impact of emerging technologies.
- A comprehensive, evidence-based review of the National Accreditation Requirements for the Program is under way.
- Research into why some women do not attend BreastScreen Australia services is being undertaken. This will influence future recruitment and education strategies to ensure the Program reaches the desired levels of participation.
- Work on defining workforce requirements has commenced. This will ensure that the Program can maintain screening capacity in line with target population (50–69 years) increases.
- A comprehensive evaluation plan for the Program has been developed. Key projects include the completion of the data dictionary to ensure consistency in the collection of performance data, and investigation of the feasibility of assessing the impact of the Program on breast cancer mortality.

# Introduction

**In Australia, breast cancer is a serious disease with a significant impact on the community. While remaining the most common cause of death from cancer in Australian women, breast cancer is also recognised as the cause of significant morbidity.**

Much research has been conducted into all aspects of this disease: the potential causes, risk factors, early diagnosis and treatment. Although there have been many significant findings, there is still no clear answer as to the cause of breast cancer and as yet no means for preventing the disease. Currently, the best available strategy on a population-wide basis is the early detection of the disease within an organised screening program offering high quality screening and assessment services at a time where treatment can be most effective.

Since the early 1960s, a series of major randomised trials have been conducted to investigate methods for the early detection of breast cancer. Substantial reductions in mortality from breast cancer were observed in women offered mammographic screening in these trials. In this context, mammography is used as a test for women without breast symptoms to detect and investigate any changes in the breast in order to diagnose breast cancer early.

Following a review of international evidence and an evaluation of breast cancer screening in Australia, the Australian Health Ministers' Advisory Council implemented the National Program for the Early Detection of Breast Cancer in 1991. Since 1996 the Program has been called BreastScreen Australia. The National Program had been established as a jointly funded Program between the Commonwealth, States and Territories.

The BreastScreen Australia Program consists of a network of dedicated screening and assessment services throughout urban, rural and remote areas of all States and Territories of Australia. These services provide free biennial mammographic screening and follow-up of any suspicious lesions identified at screening to the point of cytological or histological diagnosis of breast cancer. The Program is aimed specifically at women without symptoms aged 50 to 69 years of age, although women aged 40 to 49 years and 70 years and older are able to attend for screening.

BreastScreen Australia has a strong commitment to the provision of high quality services that are appropriate and accessible to women. To this end, a comprehensive set of minimum standards and requirements, detailing all aspects of service delivery within the Program, from information provision to standards of clinical care, has been developed (DHSH 1994a). These National Accreditation Requirements provide the basis for the development of services, data systems and mechanisms for monitoring the performance of services and the Program on a State/Territory and national basis.

## The six key aims of the BreastScreen Australia Program are to:

- ensure that the Program is implemented in such a way that significant reductions can be achieved in morbidity and mortality attributable to breast cancer;
- maximise the early detection of breast cancer in the target population;
- ensure that screening for breast cancer in Australia is provided in dedicated, accredited screening and assessment services as part of the National Program for the Early Detection of Breast Cancer (BreastScreen Australia);
- ensure equitable access for women aged 50 to 69 years to the Program;
- ensure that services are acceptable and appropriate to the needs of the eligible population; and
- achieve high standards of program management, service delivery, monitoring and evaluation, and accountability.

In recent years, the Program has made major advances against these aims, particularly in relation to policy development, public information and quality assurance.

This report outlines the major achievements and challenges for BreastScreen Australia in a number of key areas:

- maintaining quality standards;
- providing information and services to women; and
- monitoring and evaluating Program performance and outcomes.

## About BreastScreen Australia

- BreastScreen Australia provides free mammographic screening every two years. The Program is aimed specifically at women without symptoms aged 50 to 69 years of age, although women aged 40 to 49 years and 70 years and older are able to attend for screening.
- The aim of the Program is to reduce mortality and morbidity from breast cancer through early detection.
- A National Advisory Committee oversights policy for the Program across Australia.
- Key features of the Program include:
  - a doctor's referral is not required;
  - services located throughout each Australian State and Territory using fixed or mobile services to ensure the Program is accessible to all women;
  - recruitment and reminder systems to ensure that women in the target group are screened and rescreened in accordance with Program policy;
  - comprehensive, multidisciplinary follow-up assessment services to ensure all women with a screen-detected abnormality have appropriate specialist medical assessment to the point of diagnosis and referral to treatment services; and
  - a comprehensive system of accreditation, to ensure that all BreastScreen Australia services operate under a common set of standards. Each service is assessed on a regular basis by an independent team to ensure that the service provided complies with national standards.

## Maintaining quality

While it is important for services within the BreastScreen Australia Program to meet the standards and abide by the policies that were developed when the Program was first introduced, these same standards and policies must remain relevant and in accordance with the best evidence currently available. This is necessary to provide a service of the highest quality and to maintain a nationally consistent identity and practice for the Program. With this in mind, a major focus for BreastScreen Australia has been the review of national standards and policies.

Progress has been made in developing revised policies in relation to appropriate clinical pathways for symptomatic women, screening intervals for women with a strong family history of breast cancer, the collection and ownership of data at a State and service level, and the impact of emerging technologies on clinical service delivery and other areas within the Program.

Progress has also been made in a number of important initiatives aimed at encouraging a national view of quality improvement in the BreastScreen Australia Program. This includes work towards a revitalised accreditation program with the result that most screening and assessment services throughout Australia are now accredited.

More recently, a comprehensive evidence-based review of the National Accreditation Requirements has commenced. Drawing upon the latest research and practice-based evidence, a series of multidisciplinary teams will review and update the standards under which the Program operates and monitors progress and performance. It is anticipated that a draft of the revised accreditation requirements will be available for consultation in 2000.

This review represents a major challenge for BreastScreen Australia in producing a set of standards that represent key indicators of the ability of services to meet the aims and objectives of the Program.

## Providing information and services to women

In order for BreastScreen Australia to realise improvements in morbidity and mortality from breast cancer, it is necessary that a large proportion of women in the target population (aged 50–69 years) attend for screening.

A project is currently under way to investigate the reasons why women choose not to attend or re-attend BreastScreen Australia services. By better understanding women's reasons for non-attendance, it is anticipated that the Program will be able to develop a series of systematic approaches to address and improve the acceptability of, and participation in, the Program.

The development of information resources and the reinforcement of public messages in terms of accuracy, currency and appropriateness continues to be a focus of the Program. In recognition of the importance of links between general practitioners (GPs) and the Program, progress has also been made in exploring options for providing additional information to GPs. This will highlight appropriate strategies for strengthening this important pathway of information to women.

As participation in the Program improves, it is critical that adequate service capacity is available to screen an increasing number of women. A key requirement in this is a sustainable, highly trained and skilled workforce.

Of particular concern is the limited number of radiographers throughout Australia available to work within the Program. Work has commenced to define radiographer workforce requirements and to investigate the demographic characteristics of the workforce. This will lead to more accurate projections of future workforce demand and supply and allow the timely planning of strategies to address this need.

In the interim, new Temporary Entry Labour Agreements to enable the recruitment of radiographers from overseas have been developed to assist State and Territory Programs in recruiting sufficient high-quality staff in the short term.

## Monitoring and evaluating Program performance and outcomes

As BreastScreen Australia matures, the Program's focus shifts towards evaluating the impact of the Program on breast cancer in the community. The building blocks of a successful evaluation initiative are accurate and reliable data that are consistent and timely. To this end, a priority for the Program has been the development of detailed evaluation and monitoring plans and reporting systems to facilitate the monitoring of Program performance and outcomes.

Another critical project to support the monitoring of Program performance is the development of a data dictionary. The dictionary, which will be completed in 2001, will ensure consistency in the calculation and definition of performance and outcome indicators Australia-wide.

The National Advisory Committee to BreastScreen Australia has also invested considerable effort in the development of a comprehensive evaluation plan. The plan focuses on the key outcome measures for the Program in achieving its aims and objectives. It identifies a range of evaluation questions concerning the effectiveness, efficiency and appropriateness of the Program. An immediate priority under the plan is the investigation of the feasibility of an observational study to assess whether the Program has had an impact on breast cancer mortality.

## Guide to this report

The collection and analysis of Program data on an ongoing and periodic basis are key factors in ensuring that the high standards of care the Program strives to achieve are met and maintained in the long term.

This report is the second joint report of BreastScreen Australia, AIHW, State and Territory Health Departments, and the Commonwealth Department of Health and Aged Care. It provides information about a selection of Program indicators for the 1997 and 1998 calendar years. The indicators represent key measures of the Program's success in achieving improvements in morbidity and reductions in mortality from breast cancer.

An effective population-based breast cancer screening program requires the participation of a significant proportion of women in the target age range (50–69 years), an appropriate screening interval and the provision of high-quality mammography, radiology and clinical investigation to the point of cytological or histological diagnosis. The Program indicators measure the three essential components of this:

- participation: the percentage of women who attend for screening in a 24-month period;
- small cancer detection rate: the number of invasive breast cancers of 10 mm or less in size as a rate per number of women screened in a 12-month period; and
- program sensitivity: invasive breast cancers detected by the Program as a percentage of all breast cancers (interval cancers plus screen-detected cancers) found in Program-screened women in a specified period.

In addition, the most current data at the time of publication relating to the incidence and mortality of breast cancer are included to provide a more complete picture of the burden of this disease in Australia.

An overview of each indicator, its application and definition is also presented in each section of the report.

In some circumstances, additional information is included to augment and support the data provided.

The five indicators help to measure progress towards meeting the aims and objectives of the BreastScreen Australia Program. More detailed information concerning the definition and calculation of these indicators, and the limitations of the data presented is included in the body of the report.

At the end of the report, there is a section containing summary tables of numbers of women participating in the Program; numbers of cancers detected and details of rates; more detailed stratifications of cancer detection; and sensitivity data. Appendix 1 contains details of the methods used and the statistical analyses performed on data in the report. Population data are presented in Appendix 2, and Appendix 3 contains information about the National Advisory Committee and its Working Groups. There is also a glossary of terms used throughout the report.

The Program has shown improvements against several of the indicators. Achievements in 1997–1998 include:

## Participation

- In 1997–1998 over one and a quarter million Australian women were screened through the Program—these women were screened across Australia, including the most remote areas of the country.
- All States and Territories have increased participation rates relative to the 1996–1997 reporting period.
- More than half of all women aged 50–69 took part in the BreastScreen Australia Program, Australia-wide.
- Over 60% of women screened in each State and Territory were women aged 50 to 69 years.

## Small cancer detection rate

- The crude small cancer detection rates (combined screening rounds) ranged from 13 to 19 cancers per 10,000 women screened per annum for all States and Territories (all ages). The rate of detection of small cancers was much greater than the current national accreditation standard.
- In 1998, 2,939 cancers were detected through BreastScreen Australia nationally.
- The crude national cancer detection rate (all sizes) for women attending the Program for the first time in 1998 was 48 cancers detected per 10,000 women screened (all ages). For women screened in 1998 who had previously attended the Program, this rate was 37 cancers detected per 10,000 women screened.

## Sensitivity

- The crude interval cancer rate for asymptomatic women aged 50–69 years for the 12 months following a negative screening episode ranged across States and Territories from 2.3 to 9.4 interval cancers per 10,000 women screened (Table 13) for women attending their first screening round (see glossary). For women attending for a subsequent screening round this rate ranged from 5.1 to 7.9 interval cancers per 10,000 women screened (Table 15).
- The national crude interval cancer rate (all ages, all screening rounds) for the 12 months following a negative screening episode was 6.5 per 10,000 women.
- The crude Program sensitivity rate for the same period for asymptomatic women attending for the first screening round ranged from 80% to 100% across States and Territories (Table 20). For asymptomatic women attending for a subsequent screening round this rate ranged from 73.1% to 85.1% (Table 21).

## Incidence and mortality

- There has been an increase in the number of new cases of breast cancer in women aged 50–69 years since the early 1990s, coinciding with the introduction of the breast cancer screening program in Australia. It is likely that the increase in the number of new cases is, at least partly, the result of the early detection of cancers in women who may otherwise have gone undetected for some years.
- The early detection of breast cancer provides the opportunity for early treatment and may lead to a reduction in the morbidity and the number of deaths due to breast cancer.
- Mortality from breast cancer in women aged 50–69 years shows a slight reduction since 1995. Improvement in treatment practices and disease management and early detection of cancer through screening are all likely to have impacted on mortality. The feasibility of an observational study to determine the impact of the BreastScreen Australia Program on breast cancer mortality is currently under consideration by the National Advisory Committee.

This report is a tribute to the skills and dedication of the many people who work in the BreastScreen Australia Program and their commitment to improving outcomes for women with breast cancer.

# Indicator 1
# Participation

## Participation rate

The participation rate is the percentage of women screened through the BreastScreen Australia Program in a 24-month period by 5-year age groups (40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (50–69 years).

## What is the participation rate and why is it important?

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. It is important for a high proportion of women in the target age group to attend for screening in order for BreastScreen Australia to realise anticipated reductions in mortality from breast cancer (DHSH 1994a). The participation rate is a direct measure of this attendance. The indicator also provides information to assist in assessing the effectiveness of the Program's communication and education strategies, and can be used to assess whether the target age group is well represented in the screening population.

The focus of this report is on women who have had a mammogram in the BreastScreen Australia Program. However, other mammography for screening and diagnosis (i.e. investigating breast symptoms) is conducted outside the Program. Therefore, to some extent, the results described in this report are an underestimation of screening on a national basis.

## National Accreditation Requirements

Two of the major objectives of the Program relate specifically to the participation rate:

- to achieve a 70% participation rate in the National Program by women in the target age group (50–69 years) and to provide access to screening for women aged 40–49 and 70 years or more (see table below); and
- to rescreen all women in the Program at 2-yearly intervals.

The Minimum Standards for BreastScreen Australia require:

- participation by 60% of women aged 50 to 69 years for screening services that have been established for 5 years or more; and
- women aged 50–69 years as a percentage of the total number screened to be more than 60%.

**Crude participation rates achieved by BreastScreen Australia nationally and across the States and Territories for women in the target age group (50–69 years)**

| | Objective[(a)] | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|---|
| % | 70.0 | 54.3 | 52.5 | 55.5 | 52.7 | 54.6 | 59.4 | 58.2 | 58.9 | 50.8 |

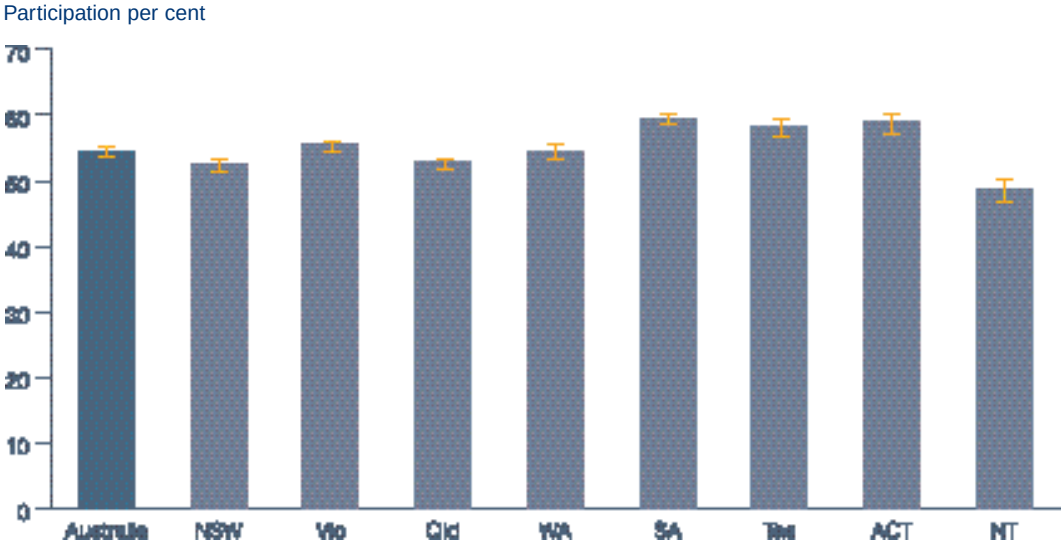
(a) Performance objective of the National BreastScreen Australia Program as set out in the National Accreditation Requirements (DHSH 1994a).

*Note:*

Rates are expressed as the percentage of the eligible female population.

*Sources:* DHSH 1994a and BreastScreen Australia.

## Participation (age-standardised) of women aged 50–69 in BreastScreen Australia, 1997–1998




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| % | 54.3 | 52.6[(a)] | 55.4[(a)] | 52.7[(a)] | 54.6 | 59.5[(a)] | 58.2[(a)] | 58.9[(a)] | 48.6[(a)] |
| 95% CI | 54.2–54.4 | 52.4–52.8 | 55.2–55.6 | 52.5–52.9 | 54.2–54.9 | 59.2–59.9 | 57.6–58.8 | 58.0–59.7 | 47.4–49.9 |

(a) Significantly different from the rest of Australia at the 5% level.

*Notes:*

1. Rates are expressed as the percentage of the eligible female population and age-standardised to the Australian population at 30 June 1991.
2. Period covers 1 January 1997 to 31 December 1998.

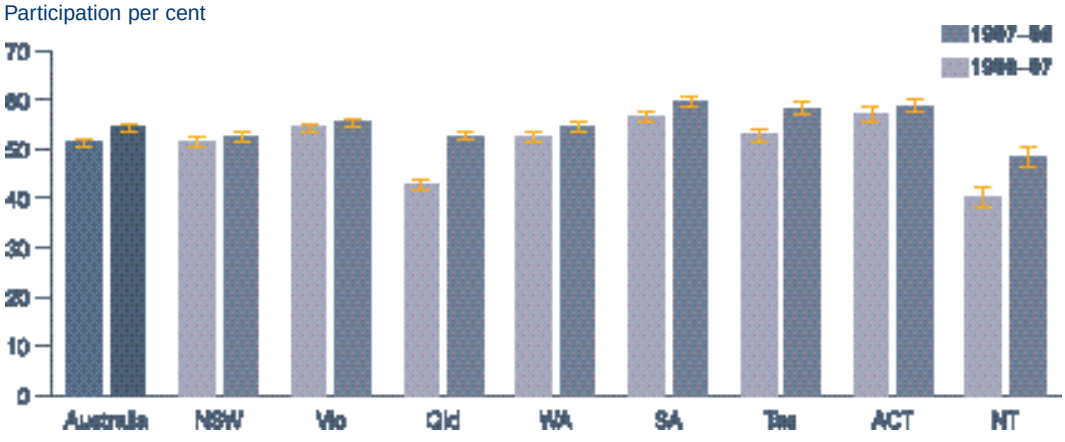
- All States and Territories achieved age-standardised participation rates between 48.6% and 59.5% in the target age group (50–69 years). The crude Australian rate was 54.3%, indicating that just over half of all Australian women in the target age group took part in the BreastScreen Australia Program (Table 2).
- Crude participation rates for the target age group ranged from 50.8% to 59.4% across the States and Territories (Table 2).

**For more information, see:**

Tables 1 and 2.

McLean MJ & Condon JR 1999. A single issue program in an isolated area: mammography screening in Darwin, NT. Aust NZ J Public Health 23:357–361.

## Participation of women aged 50–69 in BreastScreen Australia, 1996–1997 and 1997–1998




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| **1996–97** | 51.4 | 51.6 | 54.4 | 42.9 | 52.6 | 56.4 | 53.1 | 57.1 | 40.4 |
| **95% CI** | 51.3–51.5 | 51.5–51.8 | 54.3–54.6 | 42.7–43.1 | 52.3–52.9 | 56.1–56.8 | 52.5–53.7 | 56.3–57.9 | 39.2–41.6 |
| **1997–98** | 54.3 | 52.6 | 55.4 | 52.7 | 54.6 | 59.5 | 58.2 | 58.9 | 48.6 |
| **95% CI** | 54.2–54.4 | 52.4–52.8 | 55.2–55.6 | 52.5–52.9 | 54.2–54.9 | 59.2–59.9 | 57.6–58.8 | 58.0–59.7 | 47.4–49.9 |

*Notes:*

1. Rates are expressed as the percentage of the eligible female population and age-standardised to the Australian population at 30 June 1991.
2. All differences between 1996–1997 and 1997–1998 were statistically significant at the 5% level.
3. The 1996–1997 NSW participation rate has been revised since its publication in the previous screening report (AIHW 1998b). The revised estimate is now lower than previously reported. This change has also affected the 1996–1997 participation rate for Australia, making it lower than previously reported.

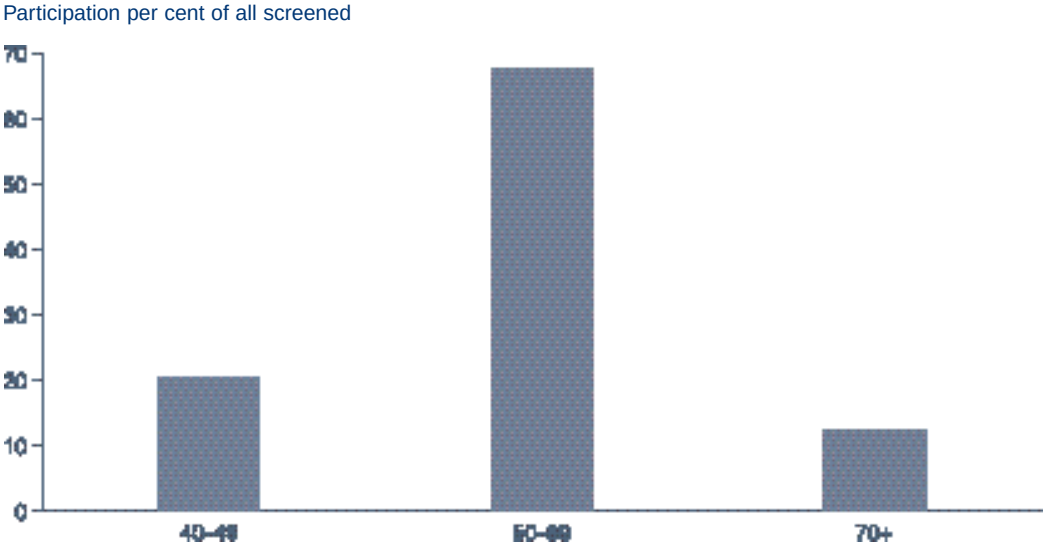
- Increases in participation rates may be due to increasing screening capacity for the Program in the States and Territories. For example, Queensland's participation rate in 1997 reflected the fact that only 5 out of 11 fixed BreastScreen Queensland services had been operating for 5 years or more at this time (AIHW 1998b).
- Participation rates have increased for all States and Territories from 1996–1997 to 1997–1998. Queensland and Northern Territory rates showed the greatest increase, 22.8% for Queensland and 20.3% for the Northern Territory. The age-standardised participation rate for all Australia increased from 51.4% in 1996–1997 to 54.3% in 1997–1998, which constitutes a relative increase of 5.6%.

**For more information, see:**

Tables 1 and 2.

Australian Institute of Health and Welfare (AIHW) 1998b. Breast and cervical cancer screening in Australia 1996–1997. AIHW Cat. No. CAN 3. Canberra: AIHW (Cancer Series No. 8).

## Age distribution of women screened, BreastScreen Australia, 1997–1998




*Source:* BreastScreen Australia.

| Age | 40–49 | 50–69 | 70+ |
|---|---|---|---|
| % | 20.4 | 67.4 | 12.2 |

- The above figure shows the age-distribution of women screened in the BreastScreen Australia Program at the national level. It shows that the majority of those screened were women in the BreastScreen Australia target age group, women aged 50–69 years.
- The National Accreditation Requirements for BreastScreen Australia (DHSH 1994a) require that the number of women screened in the target age group be more than 60% of the total number screened. During the 1997–1998 period all States and Territories achieved this target. In Victoria and South Australia this proportion was the highest, at 75% and 77% respectively for the 24-month period.
- Of all women screened, 20.4% were aged 40–49 years while 12.2% were women over 70 years.

**For more information, see:**

Table 1.

Commonwealth Department of Human Services and Health 1994a. National Program for the Early Detection of Breast Cancer—National Accreditation Requirements. Canberra: Commonwealth Department of Human Services and Health.


# Indicator 2

# Detection of small cancers

## Detection rate for small cancers

This measure is the rate of women with small diameter (≤ 10 mm) invasive breast cancers per 10,000 women screened by 5-year age groups (40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (50–69 years). Detection rates for all invasive cancers are also provided by screening round, 5-year age groups and for the target age group.

## What is small cancer detection rate and why is it important?

The small cancer detection rate measures the rate of small invasive breast cancers of 10 mm or less in size diagnosed in women attending BreastScreen Australia for screening between 1 January and 31 December 1998. This is expressed as the number of small cancers detected for every 10,000 women screened. This chapter uses age-standardised rates where comparisons are made between States and Territories and across time periods. Age-standardised rates enable comparisons to be made between populations which have different age structures.

A greater rate of detection of small cancers within the BreastScreen Australia Program increases the likelihood that the anticipated reductions in morbidity and mortality from breast cancer will be achieved. The aim of BreastScreen Australia is to maximise the early detection of breast cancers. Early detection of small cancers gives a woman the best chance for a good prognosis in addition to requiring less extensive surgery. As a result, women who have cancers detected early may suffer less morbidity from breast cancer. (Day 1991, NHS BSP & BASO 1999)

The interval between screens is an important factor influencing the level of detection of cancers within the Program. Intervals that are too long may allow tumours to grow to the point where symptoms become evident, thereby eliminating the advantage of screening (Day 1991). BreastScreen Australia aims to re-screen all women in the Program at 2-yearly intervals.

Women attending the Program for the first time may have larger tumours than those who have been screened previously because regular, biennial mammography provides the best chance for detection of early-stage small cancers (AHMAC 1990). As a result, the proportion of small cancers detected in first attenders may be lower relative to those returning for subsequent screens.

## National Accreditation Requirements

The Minimum Standards for BreastScreen Australia require that:

- the breast cancer detection rate (all sizes, including Ductal Carcinoma In Situ) for women screened in the prevalent screening round should be greater than 50 per 10,000 women screened (see glossary).
- for women screened in incident screening rounds, the rate of cancer detection (including Ductal Carcinoma In Situ) should be greater than 20 per 10,000 women screened.
- the number of small invasive breast cancers less than or equal to 10 mm in diameter should be greater than 8 cancers per 10,000 women screened.

## Crude cancer detection rates achieved by BreastScreen Australia nationally and across the States/Territories

### Small (≤ 10 mm) invasive cancers

| | NAR | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|---|
| **Rate** | 8.0 | 15.5 | 14.3 | 17.9 | 12.9 | 16.8 | 14.8 | 20.2 | 18.6 | 16.6 |

*Note:*

Rates are expressed per 10,000 women screened.

*Sources:* DHSH 1994a and BreastScreen Australia.

The National Accreditation Requirements (NARs) for BreastScreen Australia are currently under review. While the new NARs have not yet been finalised, the current Minimum Standards are the main benchmark by which the Program can be measured. This report includes current Minimum Standards as a reference point. However, some inconsistencies exist between the definition of these Minimum Standards and the indicator specifications. In this context, the following two points should be considered when interpreting the all invasive cancer detection rates given below:

- the Minimum Standards of the NARs for cancer detection (all sizes) include both invasive cancers and Ductal Carcinoma In Situ (DCIS). The performance indicator for cancer detection in this report has specifically excluded DCIS in its measurement. This has been done so as to focus on the main aim of the Program—to reduce mortality. As DCIS does not cause mortality it falls outside this scope. If however the DCIS cases were included in the cancer detection performance indicator for this report, the resulting rate would be higher.
- the Minimum Standards for invasive cancer (all sizes) are based on prevalent and incident screening rounds which are defined differently from the terms first and subsequent screening round used in the indicator specifications (see glossary). It is difficult to predict how this difference in definitions may affect the cancer detection rates.

### All invasive cancers

| | NAR | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|---|
| **First round** | | | | | | | | | | |
| **Rate** | 50.0 | 47.5 | 42.9 | 56.9 | 49.3 | 34.3 | 49.5 | 50.9 | 47.5 | 48.2 |
| **Subsequent round** | | | | | | | | | | |
| **Rate** | 20.0 | 36.6 | 33.0 | 39.2 | 33.7 | 39.9 | 43.7 | 37.4 | 37.1 | 26.6 |

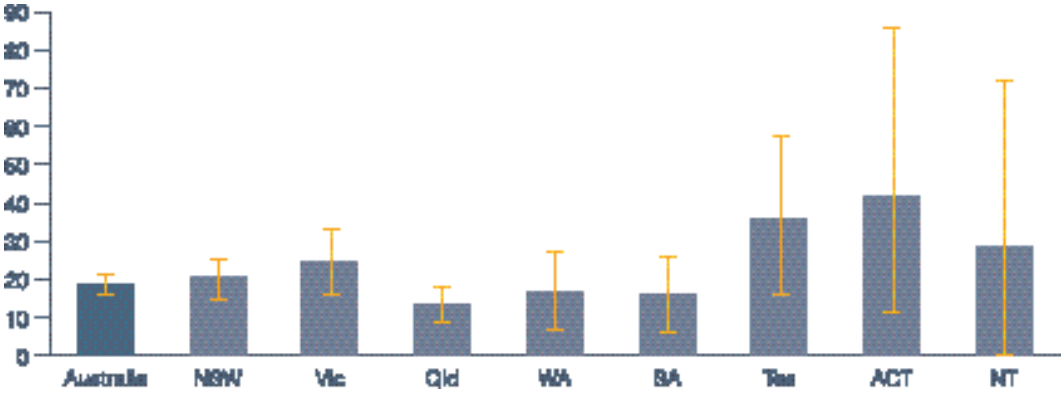
*Note:*

Rates are expressed per 10,000 women screened.

*Sources:* DHSH 1994a and BreastScreen Australia.

## Small (≤ 10 mm) invasive breast cancer detection in women aged 50–69, first screening round, 1998

Per 10,000 women screened




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| Rate | 18.6 | 20.4 | 24.4 | 13.6 | 16.5 | 15.8 | 36.0 | 42.0 | 28.3 |
| 95% CI | 16.3–20.8 | 16.1–24.7 | 17.5–32.1 | 10.1–17.0 | 8.0–26.2 | 7.4–25.3 | 17.5–56.9 | 12.7–84.7 | 0–70.9 |

*Notes:*

1. Rates are expressed per 10,000 women screened and standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from the rest of Australia at the 5% level.

- In 1998, BreastScreen Australia detected small invasive cancer in 1,095 women screened. Seventy per cent (766) of all small invasive cancers were detected in women in the target age group, 50–69 years (Tables 3 and 4).
- For women screened for the first time in 1998, the age-standardised national small cancer detection rate was 17.8 per 10,000 women screened for all women, and 18.6 for the target age group. Across the States and Territories, age-standardised small cancer detection rates ranged from 11.4 to 32.9 per 10,000 women screened. For the target age group, these rates ranged from 13.6 to 42.0 per 10,000 women screened (Table 5).
- The crude rates for all screening rounds combined ranged from 12.9 to 20.2 per 10,000 women screened for the target age group, and 13.2 to 18.8 for all women screened. These rates comply with the National Accreditation Standard (> 8 cancers per 10,000 women screened) (Table 7).

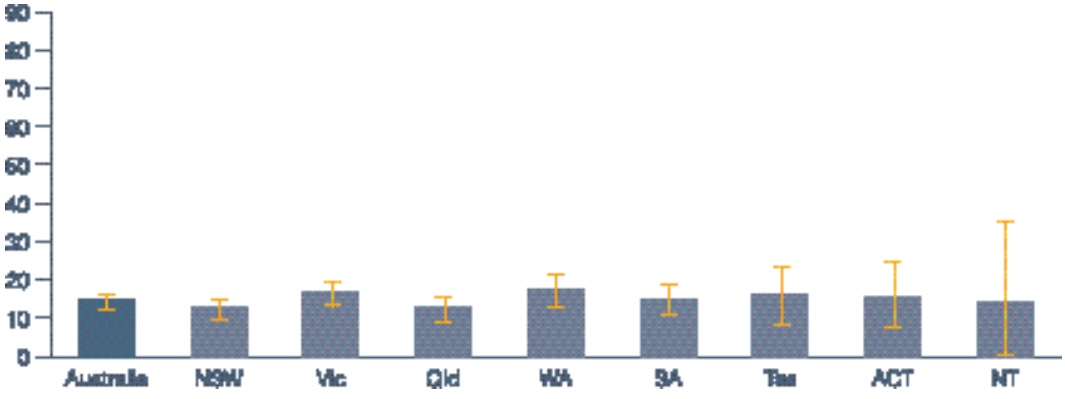
**For more information, see:**

Tables 3 to 11.

Commonwealth Department of Human Services and Health (DHSH) 1994a. National Program for the Early Detection of Breast Cancer—National Accreditation Requirements. Canberra: Commonwealth Department of Human Services and Health.

## Small (≤ 10 mm) invasive breast cancer detection in women aged 50–69, subsequent screening round, 1998

Per 10,000 women screened




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| **Rate** | 14.6 | 12.6 | 16.6 | 12.6 | 17.4 | 15.0 | 15.9 | 15.5 | 14.3 |
| **95% CI** | 13.6–15.6 | 10.9–14.2 | 14.4–18.7 | 10.2–15.0 | 13.9–20.8 | 11.6–18.3 | 9.8–22.5 | 7.9–23.9 | 0–34.7 |

*Notes:*

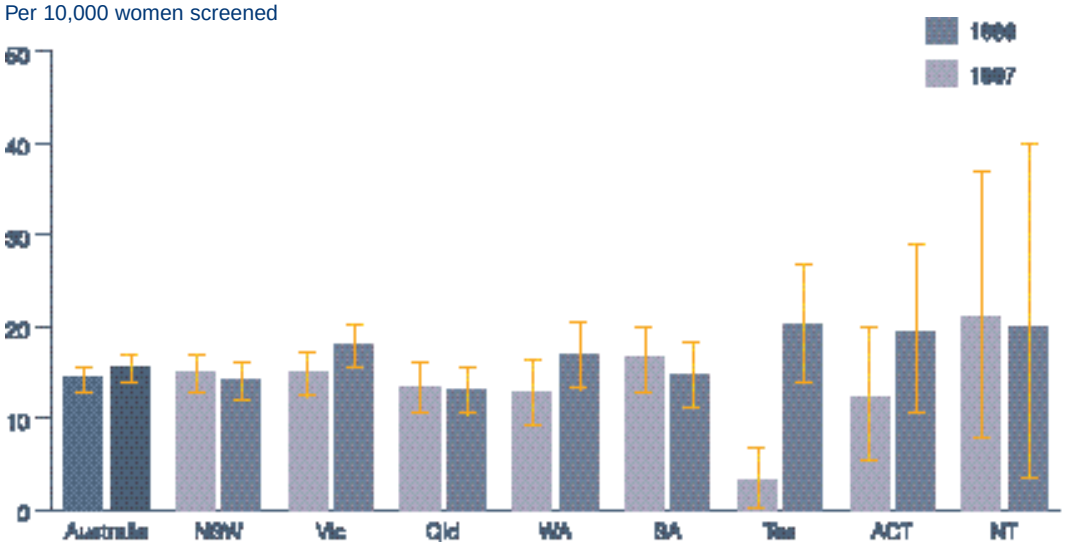
1. Rates are expressed per 10,000 women screened and standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from the rest of Australia at the 5% level.

- For women who had previously attended the Program, the age-standardised national small cancer detection rate for 1998 was 14.0 per 10,000 women screened, and 14.6 for the target age group (Table 6).
- Women attending the Program for a subsequent screen had age-standardised small cancer detection rates ranging from 10.4 to 19.7 per 10,000 women screened. These rates ranged from 12.6 to 17.4 per 10,000 women screened for the target age group (Table 6).

**For more information, see:**

Tables 3 to 11.

## Small (≤ 10 mm) invasive breast cancer detection in women aged 50–69, combined screening rounds, 1997 and 1998




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| 1997 | 14.4 | 15.0 | 14.9 | 13.4 | 12.7 | 16.6 | 3.2 | 12.3 | 21.0 |
| 95% CI | 13.4–15.3 | 13.5–16.6 | 13.0–16.7 | 11.2–15.6 | 9.8–15.8 | 13.4–19.6 | 0.7–6.3 | 6.1–19.4 | 8.4–36.4 |
| 1998 | 15.5 | 14.1 | 17.9 | 13.0 | 17.0 | 14.8 | 20.3 | 19.5 | 19.9 |
| 95% CI | 14.6–16.4 | 12.7–15.6 | 16.0–19.8 | 11.1–15.2 | 13.8–20.1 | 11.7–17.9 | 14.4–26.4 | 11.1–28.5 | 4.1–39.5 |

*Notes:*

1. Standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the 1998 rates were significantly different from the 1997 rates at the 5% level.

- In 1998, 37% of invasive breast cancers of all sizes detected by BreastScreen Australia were small diameter cancers (≤ 10 mm). In 1997 this figure was 36%. This percentage for the target age group increased from 37% in 1997 to 38% in 1998.
- The small cancer detection rates did not change significantly from 1997 to 1998. The Tasmanian rates changed from 3.2 to 20.3. However, this was not statistically significant using the methods provided in Appendix 1. Variation in the rates for this indicator are expected to stabilise for the smaller States and Territories by the accumulation of several years' data.

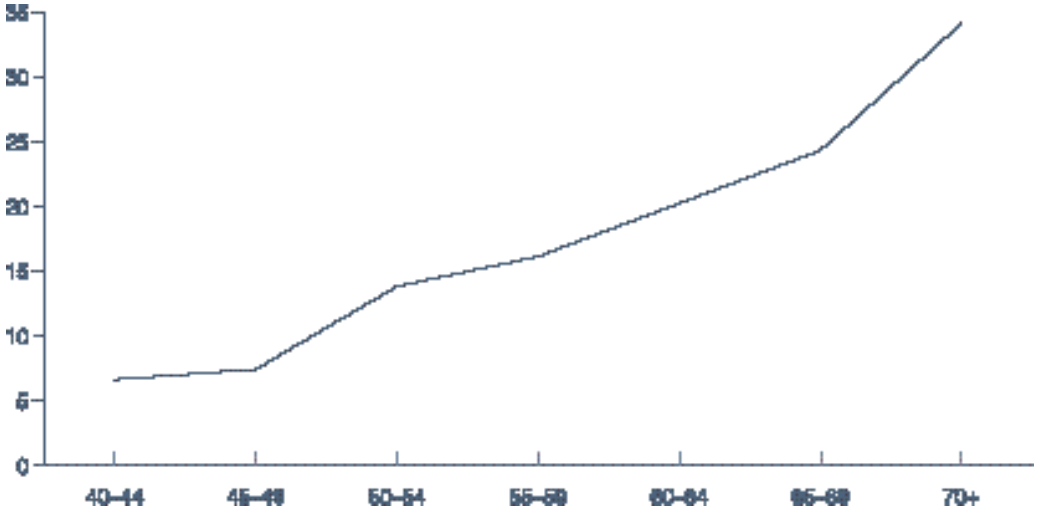
**For more information, see:**

Tables 3 to 11.

Australian Institute of Health and Welfare (AIHW) 1998b. Breast and cervical cancer screening in Australia 1996–97. AIHW Cat. No. CAN 3. Canberra: AIHW (Cancer Series No. 8).

## Small (≤ 10 mm) invasive breast cancer detection by age, 1998

Per 10,000 women screened




*Source:* BreastScreen Australia.

| Age | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70+ |
|---|---|---|---|---|---|---|---|
| Rate | 6.6 | 7.4 | 13.8 | 16.1 | 20.2 | 24.3 | 34.1 |

*Note:*

Rate expressed per 10,000 women screened.

- The detection rate for small cancers increased with age. This is in line with the increase in breast cancer incidence that occurs with age. Note that the age-specific rates reported here are for small cancers detected during first and subsequent screening rounds combined.
- The age-specific rates ranged from 6.6 per 10,000 women screened (ages 40–44) to 34.1 per 10,000 women screened (age 70+) (Table 7).

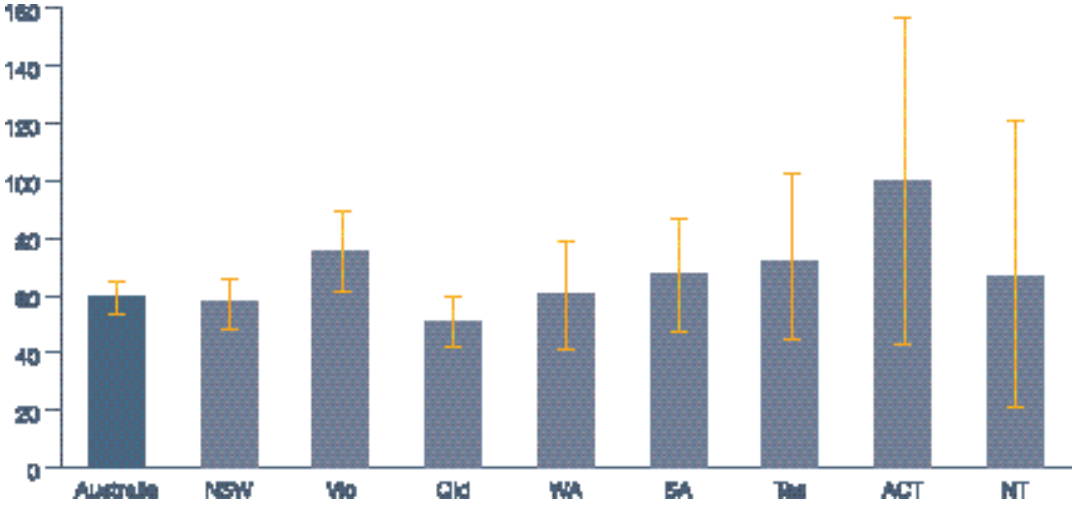
**For more information, see:**

Tables 3 to 11.

Australian Institute of Health and Welfare (AIHW) 1998b. Breast and cervical cancer screening in Australia 1996–97. AIHW Cat. No. CAN 3. Canberra: AIHW (Cancer Series No. 8).

## All-size invasive breast cancer detection in women aged 50–69, first screening round, 1998

Per 10,000 women screened




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| Rate | 59.3 | 57.6 | 75.8 | 51.0 | 60.1 | 67.1 | 71.9 | 100.0 | 66.6 |
| 95% CI | 55.4–63.1 | 50.5–64.7 | 63.5–88.2 | 44.2–57.5 | 43.1–77.5 | 49.0–85.7 | 47.1–101.0 | 44.7–155.4 | 23.4–119.5 |

*Notes:*

1. Standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from the rest of Australia at the 5% level.

- For women attending for their first screening round, the national age-standardised invasive breast cancer detection rate (all sizes) for the target age group was 59.3 per 10,000 women screened, and 60.3 per 10,000 women screened for all ages (Table 10).
- The States and Territories achieved age-standardised rates for the target age group of between 51.0 and 100.0 per 10,000 women screened, while for all ages this rate ranged from 48.8 to 77.0 per 10,000 women screened (Table 10).
- The crude cancer detection rates for all women attending the Program for the first time in 1998 ranged from 34.3 to 56.9 per 10,000 women screened. The crude national rate was 47.5 cancers per 10,000 women screened (excluding DCIS), just under the National Accreditation Standard (> 50 cancers detected per 10,000 women screened) (Table 10).

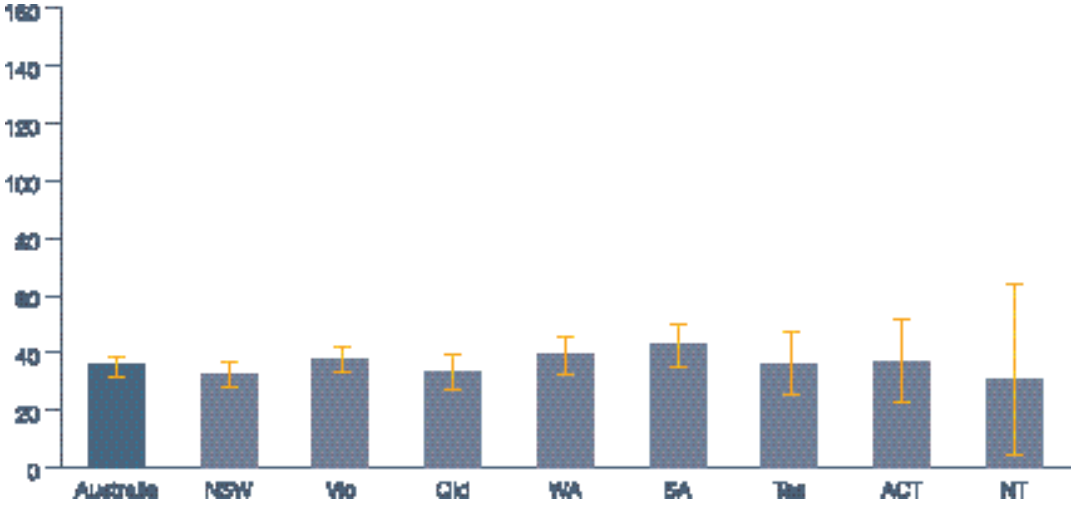
**For more information, see:**

Tables 3 to 11.

Commonwealth Department of Human Services and Health (DHSH) 1994a. National Program for the Early Detection of Breast Cancer—National Accreditation Requirements. Canberra: Commonwealth Department of Human Services and Health.

## All-size invasive breast cancer detection in women aged 50–69, subsequent screening round, 1998

Per 10,000 women screened




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| **Rate** | 35.9 | 32.4 | 37.7 | 33.7 | 39.5 | 42.9 | 36.4 | 36.9 | 30.5 |
| **95% CI** | 34.3–37.5 | 29.7–35.2 | 34.6–40.9 | 29.5–37.9 | 34.4–44.8 | 37.3–48.7 | 26.8–46.1 | 24.7–50.5 | 6.8–62.9 |

*Notes:*

1. Standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from the rest of Australia at the 5% level.

- The age-standardised national cancer detection rate (all sizes) for women attending the Program for a subsequent screen in 1998 was 34.3 per 10,000 women screened, and 35.9 for the target age group (Table 11).
- Across the States and Territories the age-standardised cancer detection rates ranged from 28.2 to 41.9 per 10,000 women screened .These rates ranged from 30.5 to 42.9 per 10,000 women screened for the target age group (Table 11).
- For women attending the Program for a subsequent screen in 1998, the crude cancer detection rates ranged from 24.3 to 43.3 per 10,000 women screened, while the crude national rate was 36.6 cancers per 10,000 women screened (excluding DCIS).These rates for the subsequent round comply with the National Accreditation Standard (> 20 cancers detected per 10,000 women screened) (Table 11).

**For more information, see:**

Tables 3 to 11.

# Indicator 3
# Sensitivity

## Sensitivity

### 3a. Interval cancer rate

An interval cancer is an invasive breast cancer that is diagnosed after a screening episode that detected no cancer and before the scheduled next screening episode. This measure is the rate of interval invasive breast cancers per 10,000 women years stratified by 10-year age groups (40–49, 50–59, 60–69, 70+ years), symptom status (symptomatic/asymptomatic), time since screen (0–12 months, 13–24 months) and screening round (first or subsequent). This report contains data from 0 to 12 months following a 1996 screening episode. (See glossary for a definition of symptom.)

### 3b. Program sensitivity

Program sensitivity measures the ability of the Program to detect invasive breast cancers in women attending for screening. This is measured by the percentage of women with screen-detected invasive breast cancer amongst all women diagnosed with invasive breast cancers during the screening interval (screen-detected and interval cancers) stratified by 10-year age groups (40–49, 50–59, 60–69, 70+ years), symptom status (symptomatic/asymptomatic), time since screen (0–12 months, 13–24 months) and screening round (first or subsequent). This report contains data from 0 to 12 months following a 1996 screening episode.

## Why measure sensitivity?

Sensitivity measures how effective the BreastScreen Australia Program is at detecting the presence of breast cancer in well women. Measuring the interval cancer rate and program sensitivity aims to:

- obtain an early measure of the likely impact of the screening program on mortality;
- monitor trends in the performance of the BreastScreen Australia Program over time;
- allow comparisons of the performance of the BreastScreen Australia Program across the States and Territories;
- allow comparisons of the Australian Program with overseas programs and trials; and
- provide important information to guide the review and determination of BreastScreen Australia Program policy (Kavanagh et al. 1999a).

## Sensitivity data issues

The interval cancer rate is calculated by using various data sources. These are the databases of BreastScreen Australia and the State and Territory cancer registries. Information about women with cancer is matched between State/Territory cancer registries and the BreastScreen Programs in each State/Territory in order to identify women who attended the Program for a mammogram but had a cancer detected outside of the

Program. Such women will be recorded on the cancer registry database but not recorded as having a cancer on the Program database. When matching these data together, there are several problems that need to be addressed. States and Territories may differ in:

- the accuracy and completeness of information collected by the BreastScreen services (for example, the absence of a unique identifier for each woman);
- variation in policies regarding data collection;
- the completeness of the cancer registries for breast cancer data;
- the timely registration of breast cancers to the cancer registries;
- migration of women between States and Territories; and
- the type of matching algorithms and software used.

Variation in the above processes makes its difficult to reliably compare interval cancer rates between States and Territories. This in turn affects the comparability of the Program sensitivity indicator between States and Territories. Nevertheless, the reporting of sensitivity data for women screened in 1996 will provide a benchmark for comparisons in future reports. A validation of the methods of matching data is planned and will be reported on in the next monitoring report. Appendix 1 provides further information about the current matching processes.

Interval cancer rates for 1996 from BreastScreen NSW are not available stratified by symptom status. This means that Australian totals could not be calculated for the stratified rates in this report. However, a non-stratified rate is reported for NSW and other States and Territories on page 23.

## How is sensitivity measured?

### Interval cancer rate

The interval cancer rate is calculated here as the number of invasive interval cancers detected in women attending the Program for screening in 1996. The interval cancers for each 10-year age group are divided by the number of 'women years at risk' (see glossary) for each time period since screening. The rate is expressed per 10,000 women years (Kavanagh et al. 1999a). This rate indicates how good mammographic screening is at detecting cancers for a given age group. A low interval cancer rate suggests that the screening process is sensitive. This chapter uses age-standardised rates where States and Territories are compared. Age-standardised rates enable comparisons to be made between populations which have different age structures.

### Program sensitivity

Program sensitivity is the proportion of invasive breast cancers that are detected within the BreastScreen Australia Program out of all breast cancers (interval cancers plus screen-detected cancers) diagnosed in Program-screened women in the screening interval.

Ideally, sensitivity incorporates the number of interval cancers in the 24-month period after a negative screen, 24 months being the recommended screening interval. However, breast cancer data are not currently available from all cancer registries for the full 24-month period following a 1996 screen. As a result, this report contains data from 0 to 12 months only following a 1996 screen. Such data do not provide a comprehensive picture of interval cancer rate and program sensitivity for BreastScreen Australia. It is planned that future reports will refine this indicator so that it includes the full 24 months following a screen.

## Standards for sensitivity

This is the first year that indicators of sensitivity have been reported for the BreastScreen Australia Program at a national level. The Minimum Standard for sensitivity requires the Program to have less than 6 per 10,000 screened women develop an interval breast cancer.

The National Accreditation Requirements (NARs) for BreastScreen Australia are currently under review. While the new NARs have not yet been finalised, the current Minimum Standards are the main benchmark by which the Program can be measured. This report includes current Minimum Standards as a reference point. However, some inconsistencies exist between the definition of these Minimum Standards and the indicator specifications. In this context, the following two points should be considered when interpreting the interval cancer rates given below.

- The Minimum Standard for interval cancer measurement includes both invasive cancers and Ductal Carcinoma In Situ (DCIS). The performance indicator for interval cancer in this report has specifically excluded DCIS in its measurement. This has been done so as to focus on the main aim of the Program—to reduce mortality. As DCIS does not cause mortality it falls outside this scope. If however the DCIS interval cases were included in the interval cancer performance indicator for this report, the resulting rate would be marginally higher.
- For the purpose of the NARs the interval cancer rates are not stratified by any other factor. However, the indicator specifications in this report include stratification by screening round and by symptom status. Stratification by screening round allows for expected variation in interval cancer rates between rounds, while stratification by symptom status is important for the following reasons:
  - the underlying breast cancer rate is higher in symptomatic women than in asymptomatic women;
  - the proportion of symptomatic women attending for screening varies between States/Territories; and
  - policies in relation to symptomatic women differ between States/Territories.

**Crude interval cancer rates achieved by BreastScreen Australia nationally and across the States/Territories**

| | NAR | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|---|
| Rate | 6.0 | 6.5 | 7.8 | 6.2 | 5.5 | 5.7 | 6.0 | 4.2 | 6.2 | 0.0 |

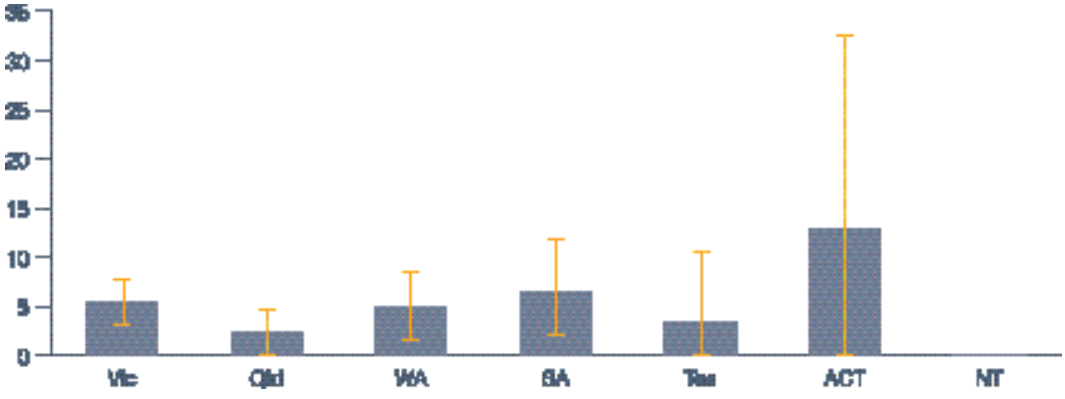
*Note:*

Rates are expressed per 10,000 women screened.

*Sources:* DHSH 1994a and BreastScreen Australia.

## Interval cancer rate for asymptomatic women aged 50–69, screened during 1996, first screening round, 0–12 months follow-up

Per 10,000 women-years of observation




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| **Rate** | 5.5 | 2.4 | 5.0 | 6.5 | 3.4 | 12.8 | 0.0 |
| **95% CI** | 3.6–7.5 | 0.5–4.4 | 2.0–8.4 | 2.5–11.5 | 0.0–10.2 | 0.0–32.1 | .. |

.. means not applicable.

*Notes:*

1. Standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from Victoria at the 5% level.

- The States and Territories that were able to report an interval cancer rate for asymptomatic women in the target age group screened in 1996 produced age-standardised rates ranging from 0 interval cancers to 12.8 interval cancers per 10,000 women screened. The same rates for all ages ranged from 0 to 10.6 interval cancers per 10,000 women screened (Table 13).
- The rates reported here are for women screened in 1996 (first screening round) and followed for the first 12-month period after screening. Future reporting of this indicator will include a 13–24-month follow-up period.
- States and Territories with smaller populations are less likely to have interval cancers amongst their screened population due to small numbers. This report contains the first information on interval cancer rates, which will form a basis on which future data will build. The aggregation of data over a 3-year time-period in the future will help to ensure that smaller States and Territories are more accurately represented.

### For more information, see:

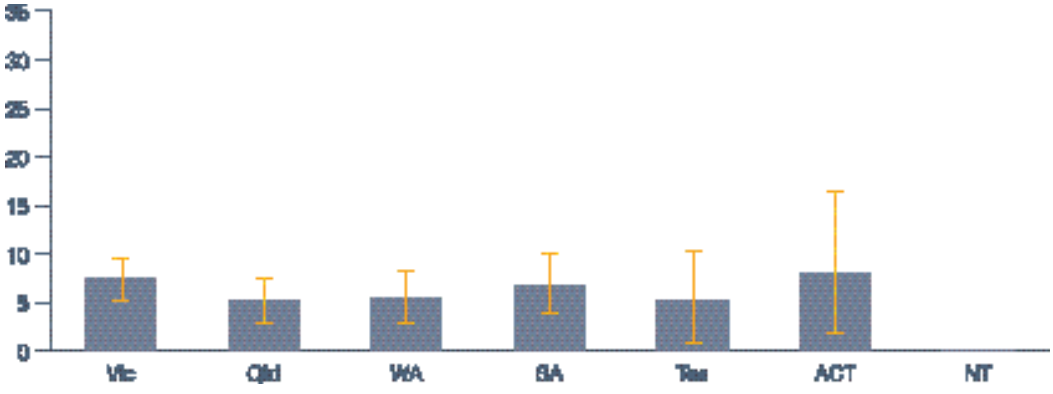
Tables 13 to 19.

Kavanagh AM, Mitchell H, Farrugia H & Giles GG 1999. Monitoring interval cancers in an Australian mammographic screening programme. J Med Screen 6:139–143.

Sylvester PA, Kutt E, Baird A, Vipond MN, Webb AJ & Farndon JR 1997. Rate and classification of interval cancers in the breast screening programme. Annals of the Royal College of Surgeons of England 79(4):276–7.

## Interval cancer rate for asymptomatic women aged 50–69, screened during 1996, subsequent screening round, 0–12 months follow-up

Per 10,000 women-years of observation




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| Rate | 7.5 | 5.2 | 5.5 | 6.8 | 5.1 | 7.9 | 0.0 |
| 95% CI | 5.7–9.2 | 3.3–7.3 | 3.2–7.9 | 4.3–9.7 | 1.2–10.1 | 2.5–16.2 | .. |

.. means not applicable.

*Notes:*

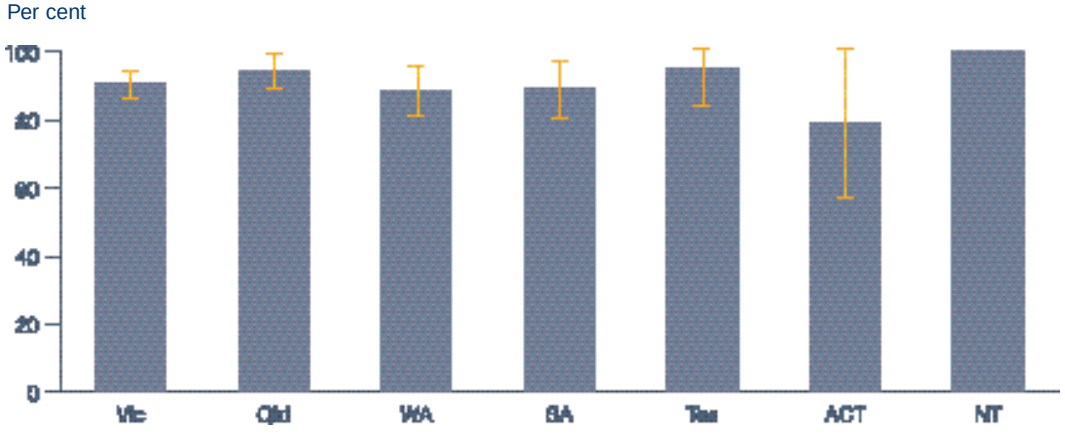
1. Standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from Victoria at the 5% level.

- The age-standardised interval cancer rates for asymptomatic women in the target age group who attended for a subsequent screen in 1996 ranged from 0 interval cancers to 7.9 interval cancers per 10,000 women screened (Table 15).
- The same rates for all ages ranged from 0 to 5.9 interval cancers per 10,000 women screened (Table 15).

**For more information, see:**

Tables 13 to 19.

## Program sensitivity for asymptomatic women aged 50–69, screened during 1996, first screening round, 0–12 months follow-up




Bars on graphs represent 95% confidence intervals.

*Source*: BreastScreen Australia.

| | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| % | 90.9 | 94.7 | 88.9 | 89.3 | 95.1 | 79.2 | 100.0 |
| 95% CI | 87.9–93.7 | 90.7–98.7 | 82.5–95.2 | 82.1–96.3 | 85.3–100.0 | 58.4–100.0 | .. |

.. means not applicable.

*Notes:*

1. Standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from Victoria at the 5% level.

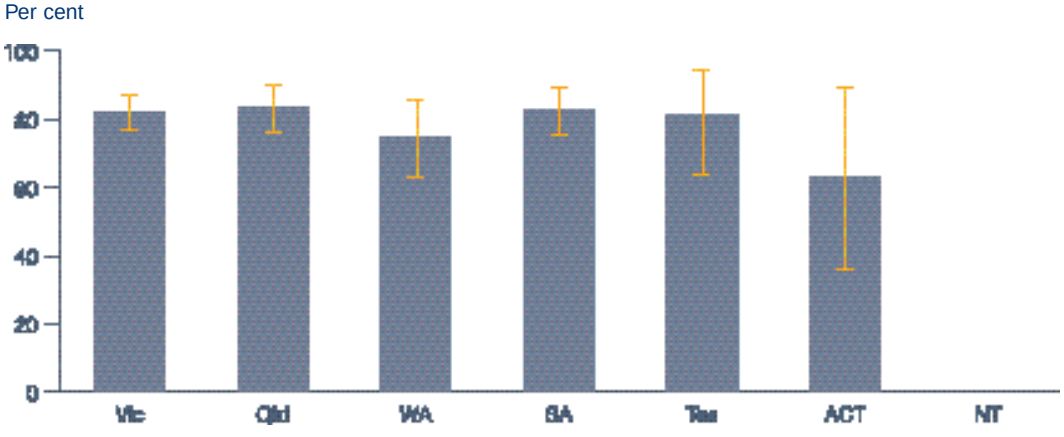
- The age-standardised program sensitivity rates for asymptomatic women aged 50–69 screened in 1996 ranged from 79.2% for the Australian Capital Territory to 100% for the Northern Territory (Table 20). The same rates for all ages ranged from 75.5% to 100%.
- These rates are for women screened for the first time in 1996 and followed for 12-months after screening. It is intended to report on a 13–24-month follow-up period in future reports.
- The rate for the Northern Territory reflects that no interval cancers were detected in the 12 months following a screen in 1996. Small States/Territories are more likely to have relatively few cancers and no interval cancers detected during a 1-year period. Aggregation of 3-years' data in future reports would provide more stability in this rate, particularly for the smaller States and Territories. This is the first information on Program sensitivity, and will form a baseline for future comparisons.

**For more information, see:**

Tables 20 to 23.

Kavanagh A, Amos AF & Marr GM 1999a. The ascertainment and reporting of interval cancers within the BreastScreen Australia Program. NHMRC National Breast Cancer Centre report. Sydney: National Breast Cancer Centre.

## Program sensitivity for asymptomatic women aged 50–69, screened during 1996, subsequent screening round, 0–12 months follow-up




Bars on graphs represent 95% confidence intervals.

*Source:* BreastScreen Australia.

| | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| % | 82.1 | 83.7 | 75.0 | 82.9 | 81.1 | 62.8 | .. |
| 95% CI | 78.0–85.8 | 77.6–89.6 | 64.1–84.9 | 76.6–88.6 | 65.1–94.0 | 37.2–88.3 | .. |

.. means not applicable.

*Notes:*

1. Standardised to the Australian population of women attending a BreastScreen service in 1998.
2. None of the rates were significantly different from Victoria at the 5% level.

- The age-standardised program sensitivity rates for asymptomatic women in the target age group who attended for a subsequent screen in 1996 ranged from 62.8% to 83.7% (Table 21). The same rates for all ages ranged from 71.4% to 84.7%.

**For more information, see:**

Tables 20 to 23.

# Indicator 4

# Incidence

## Incidence of breast cancer

The incidence rate of breast cancer is calculated per 100,000 estimated resident female population in a 12-month period by 5-year age groups (40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (50–69 years).

## Breast cancer incidence data

Since 1982, the registration of cancer has occurred nationally. The data are collected by State and Territory cancer registries and compiled in a national database, the National Cancer Statistics Clearing House, which is held by the AIHW. These data include clinical and demographic information about people with newly diagnosed cancer. The incidence indicator measures the number of new cases of breast cancer in the community. The indicator does not distinguish between screen-detected cancers and other detection methods.

Paradoxically, the introduction of a screening program may result in an increase in the number of new cases of breast cancer in the short term (Peeters et al. 1989). This results directly from the early detection of cancers in women without symptoms who may otherwise go undetected for a number of years. However, the early detection of breast cancer provides the opportunity for early treatment and may ultimately lead to a reduction in the number of deaths due to breast cancer.

## Why report on incidence?

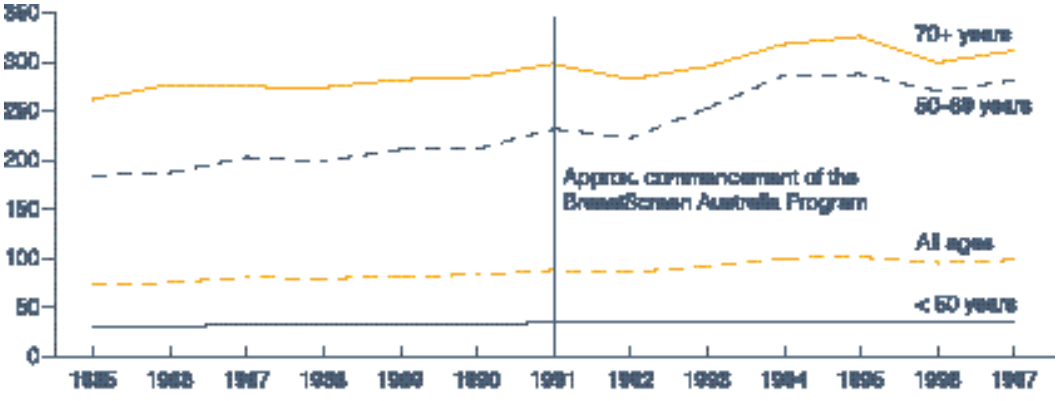
Incidence data provide us with information about the burden of disease for breast cancer in the Australian community. This knowledge can be used to assist in developing policies on breast cancer screening. For example, examining the trends in breast cancer incidence in different age groups helps to identify the ages at which women are most at risk of developing breast cancer. Incidence data can also be used to examine the distribution of disease by State and Territory to determine whether the screening Program needs to be tailored for particular local circumstances. These data also allow for national and international comparisons.

This chapter reports the rates of breast cancer from 1985 to 1997, the latest national data available. Two pages of supplementary information are also included:

- breast cancer incidence by State and Territory for the target age group (women aged 50–69 years) for the period 1994–1997. Data are aggregated over a 4-year period to improve the stability of rates, especially in the small States and Territories.
- national age-specific breast cancer incidence rates for 1997 by 5-year age groups.

## Incidence of breast cancer, Australia, 1985–1997

New cases per 100,000 women




*Source:* AIHW National Cancer Statistics Clearing House.

| | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **All ages** | 74.5 | 75.2 | 81.1 | 79.3 | 82.3 | 83.0 | 88.1 | 85.8 | 92.4 | 100.4 | 101.5 | 95.5 | 98.5 |
| **50–69** | 184.1 | 187.6 | 203.1 | 199.0 | 211.1 | 211.5 | 231.9 | 222.5 | 253.1 | 286.5 | 287.5 | 270.2 | 281.5 |
| **< 50** | 30.9 | 29.5 | 34.0 | 32.6 | 33.0 | 33.7 | 34.4 | 35.0 | 35.5 | 36.3 | 36.7 | 35.4 | 35.4 |
| **70+** | 261.8 | 277.1 | 274.8 | 274.1 | 281.8 | 285.1 | 297.9 | 282.5 | 295.3 | 317.9 | 326.0 | 299.4 | 311.7 |

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

- This figure shows the trend in breast cancer incidence rates for the years 1985 to 1997. These data are important for the Program as they indicate the underlying risk of breast cancer in the community. From these data performance standards can be set for breast cancer detection. Information about incidence allows for planning of screening and downstream treatment services, and helps in assessing the Program's impact on detection.
- Age-standardised incidence rates have increased for women in the target age group, 50–69 years. Rates for this age group have increased by an average of 4.4% per year from 1985 to 1997 (Table 25). A similar pattern of increase is evident for women aged 70+ years.
- Age-standardised incidence rates have also increased for women of all ages, from 74.5 new cancers per 100,000 women in 1985 to 98.5 new cancers per 100,000 women in 1997 (Table 25). Rates have increased by an average of 2.7% per year from 1985 to 1997. The rates for women aged under 50 years have remained stable throughout this period.
- The increase in the rate of new cancers, especially in the 50 to 69 age group, corresponds to the introduction in 1991 of BreastScreen Australia (then known as the National Program for the Early Detection of Breast Cancer). Although the underlying rate for breast cancer is increasing, the sharp increase between 1992 and 1994 is likely to be, at least partly, the result of the early detection of cancers in women who may otherwise have gone undetected for some years.

**For more information, see:**

Tables 24 to 27.

## Incidence of breast cancer, ages 50–69, 1994–1997

New cases per 100,000 women


Bars on graphs represent 95% confidence intervals.

*Source:* AIHW National Cancer Statistics Clearing House.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| Rate | 281.5 | 285.0 | 290.8[(a)] | 263.1 | 290.8 | 277.3 | 266.8 | 280.3 | 194.0[(a)] |
| 95% CI | 278.0–285.1 | 279.0–290.9 | 283.4–297.5 | 255.0–270.9 | 279.1–302.3 | 265.7–289.0 | 246.5–286.7 | 250.8–310.9 | 152.5–234.5 |

(a) Significantly different from the rest of Australia at the 5% level.

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

- Incidence data by State and Territory provide an indication as to whether a Program needs to be specially tailored to local conditions, e.g. high incidence in a State, or whether a relatively generic program can be used nationally. Although some differences in incidence exist between the States and Territories, these differences are relatively small and therefore BreastScreen Australia aims to provide a similar level of service in each State and Territory.
- From 1994 to 1997, the age-standardised incidence rate for women aged 50 to 69 years was highest in Vic and WA (290.8 per 100,000 women) and lowest in the NT (194.0 per 100,000 women) (Table 27). Statistically, only Vic and the NT were significantly different from the national rate (see Appendix 1).
- Rates for all States and Territories except for SA and Tas have increased from 1993–1996 to 1994–1997. The increase in rates between the time-periods may be a result of several factors including increases in data capture, underlying causes and screening. The largest increases have been for the NT (a relative increase of 10.3%) and the ACT (a relative increase of 4.1%). Mammographic screening can have a large impact by detecting a small number of cases in relatively small populations like the NT and the ACT.

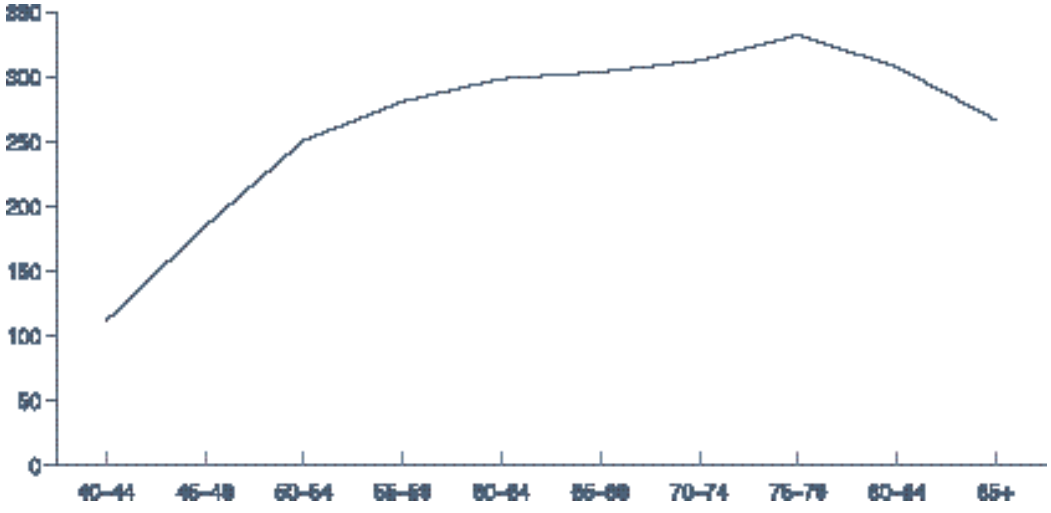
### For more information, see:

Tables 24 to 27.

Australian Institute of Health and Welfare (AIHW) 1998b. Breast and cervical cancer screening in Australia 1997. AIHW Cat. No. CAN 3. Canberra: AIHW (Cancer Series No. 8).

## Age-specific incidence rates for breast cancer, Australia, 1997

New cases per 100,000 women




*Source:* AIHW National Cancer Statistics Clearing House.

| Age | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80–84 | 85+ |
|---|---|---|---|---|---|---|---|---|---|---|
| Rate | 111.2 | 184.2 | 250.5 | 280.6 | 298.2 | 303.4 | 312.2 | 332.0 | 307.3 | 266.2 |

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

- The age distribution of breast cancer is an important factor for BreastScreen Australia. From this distribution the Program is able to be targeted at those women where significant benefit can be achieved due to their risk profile. The distribution is also used to determine the likely cancer detection rates in various age groups.
- Breast cancer incidence increases with age. In 1997 the age-specific incidence rates ranged from 111.2 new cancers per 100,000 women aged 40–44 years to 332 new cancers per 100,000 women aged 75 to 79 years (Table 25). This pattern is similar to that seen in 1996 (AIHW 1998b).
- All women over 40 years of age are able to attend for screening at BreastScreen Australia, although the Program is specifically aimed at women without symptoms aged 50–69 years of age. In 1997, almost half (46%) of breast cancer cases occurred in women in the target age group, 50–69 years (Table 24).

**For more information, see:**

Tables 24 to 27.

# Indicator 5
# Mortality

## Mortality from breast cancer

The mortality rate from breast cancer is calculated per 100,000 estimated resident female population in a 12-month period by 5-year age groups (40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (50–69 years). Supplementary information presented in this chapter includes mortality rates by State and Territory and by region (metropolitan, rural and remote), and age-specific mortality rates.

## Where do mortality data come from?

Mortality statistics are one of the most comprehensively collected national data sets. Registration of death is a legal requirement in Australia and, as such, compliance is virtually complete. Registration of deaths is the responsibility of the Registrars of Births, Deaths and Marriages in each State and Territory of Australia. The Registrars provide the mortality data to the Australian Bureau of Statistics for coding the cause of death and compilation into national statistics. The AIHW also holds these data in a national mortality database. The data presented here are from the AIHW National Mortality Database and are based on year of registration of the death.

## Why report on mortality from breast cancer?

Breast cancer is the most common cause of cancer death in Australian women. In 1998, 2,542 women died from this disease. The aim of BreastScreen Australia is to detect invasive breast cancer at an early stage so that it may be treated effectively and reduce mortality. Mortality rates from breast cancer are an important indicator of the effectiveness of the screening program. A particularly important indication of the effectiveness of a screening program is the change in mortality rates over time in the target age group for screening. However, changes in the mortality rates may not be apparent for a number of years following the commencement of a screening program. Accordingly, this measure needs to be viewed over the long term.

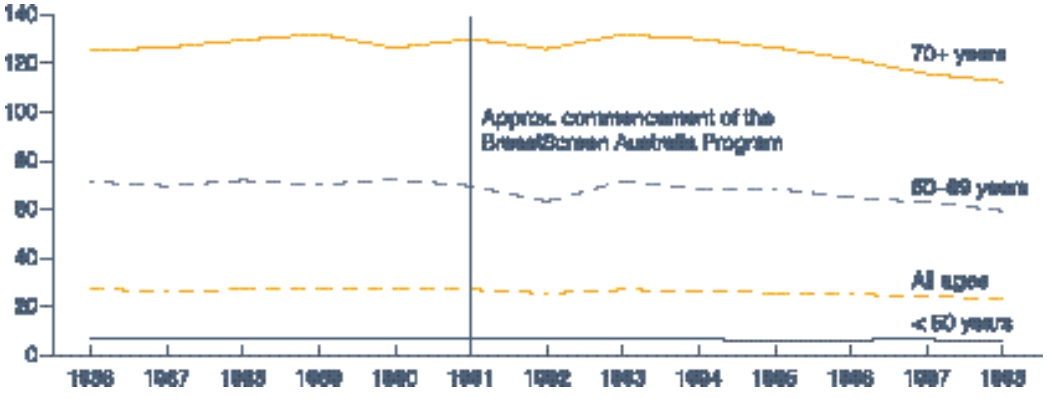
The mortality rates presented here are for the total female population of Australia and not just for those women who participated in the BreastScreen Australia Program.

This chapter shows the trend in breast cancer mortality from 1986 to 1998, the latest national data available. Three pages of supplementary information are also included:

- breast cancer mortality for the target age group (women aged 50–69 years) by State and Territory. These rates are presented for an aggregate of 4 years, 1995 to 1998. Data are aggregated over a 4-year period to improve the stability of rates, especially in the small States and Territories.
- national age-specific breast cancer mortality rates for 1998 by 5-year age groups.
- breast cancer mortality rates by Rural, Remote and Metropolitan Area classification. This classification (Appendix 1) is used to examine mortality rates in rural and remote areas.

## Mortality from breast cancer, Australia, 1986–1998

Deaths per 100,000 women




*Source:* AIHW National Mortality Database.

| | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **All ages** | 27.0 | 26.5 | 26.9 | 27.2 | 26.9 | 27.0 | 25.4 | 26.9 | 26.5 | 25.6 | 25.0 | 24.2 | 23.0 |
| **< 50** | 7.1 | 6.8 | 6.5 | 7.1 | 6.8 | 7.1 | 6.9 | 6.4 | 6.6 | 5.8 | 6.3 | 6.4 | 5.8 |
| **50–69** | 71.3 | 69.6 | 71.9 | 70.1 | 72.2 | 69.6 | 63.3 | 71.5 | 68.6 | 68.5 | 65.0 | 62.8 | 59.4 |
| **70+** | 125.2 | 126.6 | 129.6 | 132.1 | 126.5 | 130 | 126 | 131.8 | 130 | 126.5 | 121.9 | 115.8 | 112.6 |

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

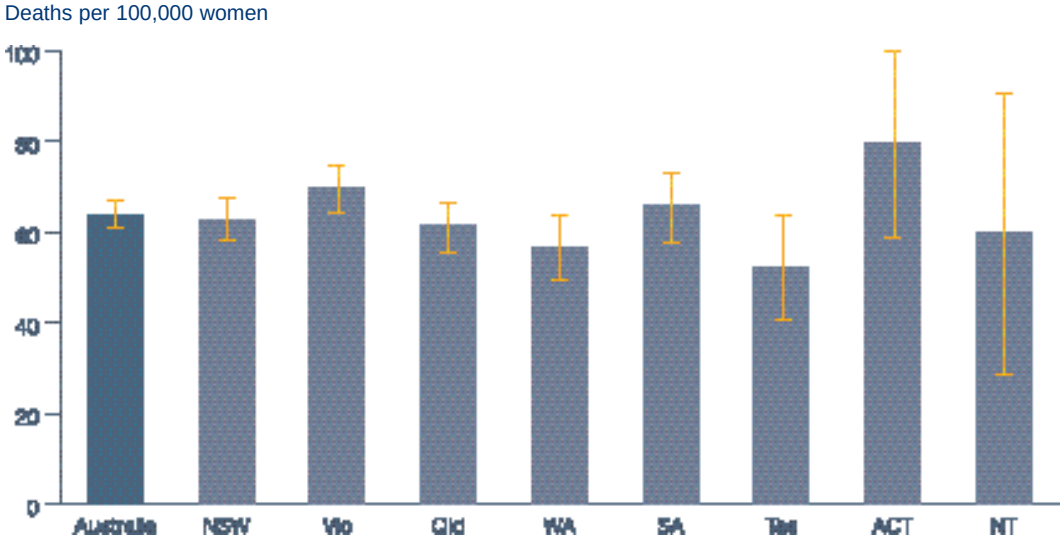
- The above figure shows the mortality rates from breast cancer for the years 1986 to 1998. Monitoring mortality rates over time assists in assessing the Program's impact on mortality.
- Age-standardised mortality rates for the BreastScreen Australia target age group (50 to 69 years) have remained stable over the period 1986 to 1993 except for the fluctuation in the rate in 1992. Since 1993 the rates have declined steadily to 59.4 deaths per 100,000 women in 1998 (Table 29). The age-standardised mortality rates for women aged 70+ years show a similar pattern of decline since 1993.
- A small decline in mortality rates since 1993 is apparent for women of all ages. The rates for women under 50 years have remained fairly stable throughout this period. More detailed information is provided by the age-specific mortality rates in Table 29.
- Improvement in treatment practices and disease management and early detection of cancer through screening are all likely to have impacted on mortality. The feasibility of an observational study to determine the impact of the BreastScreen Australia Program on breast cancer mortality is currently under consideration by the National Advisory Committee.

**For more information, see:**

Tables 28 to 31.

Kricker A, Farac K, Smith D, Sweeny A, McCredie M & Armstrong BK 1999. Breast cancer in New South Wales in 1972–1995: tumor size and the impact of mammographic screening. Int J Cancer 81:877–888.

## Mortality from breast cancer, ages 50–69, 1995–1998




Bars on graphs represent 95% confidence intervals.

*Source:* AIHW National Mortality Database.

| | Australia | NSW | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|---|---|
| **Rate** | 63.9 | 62.8 | 69.7[(a)] | 61.3 | 56.5 | 65.7 | 52.2 | 79.7[(a)] | 60.0 |
| **95% CI** | 62.0–65.9 | 59.6–66.1 | 65.7–73.7 | 56.7–65.9 | 50.4–62.7 | 58.9–72.4 | 41.4–62.9 | 60.3–99.2 | 30.0–90.0 |

(a) Significantly different from the rest of Australia at the 5% level.

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

- Mortality data by State and Territory provide an indication as to whether a Program needs to be specially tailored to local conditions, e.g. high mortality in a State, or whether a relatively generic program can be used nationally. Although some differences in mortality exist between the States and Territories, these differences are relatively small and therefore BreastScreen Australia aims to provide a similar level of service in each State and Territory.
- Across all States and Territories, age-standardised mortality rates for the target age group ranged from 52.2 per 100,000 women for Tasmania to 79.7 per 100,000 women for the ACT for the period 1995 to 1998 (Table 31). This range is similar to that reported for the period 1993 to 1996 where the rates ranged from 56.9 per 100,000 women in Tasmania to 82.7 per 100,000 women for the ACT (AIHW 1998b).

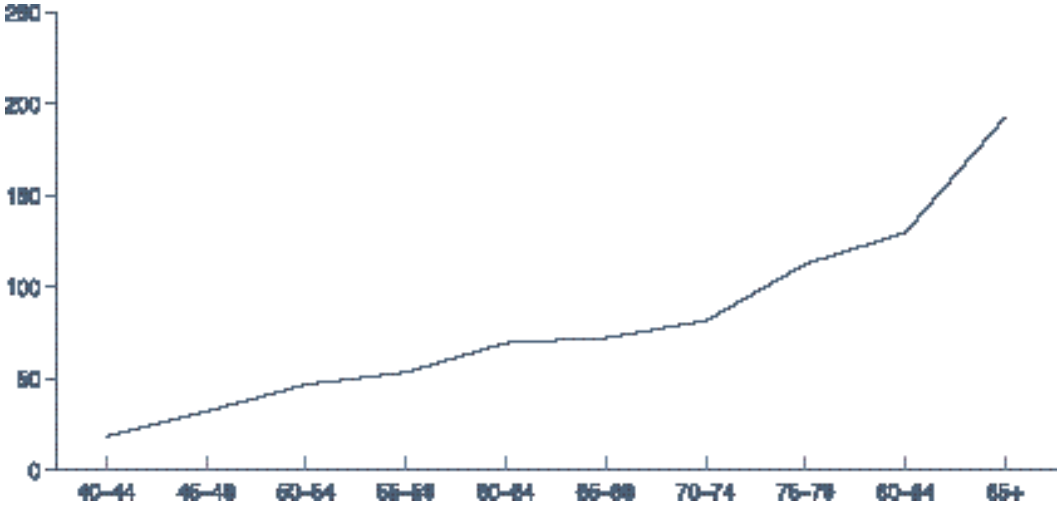
**For more information, see:**

Tables 28 to 31.

Australian Institute of Health and Welfare (AIHW) 1998b. Breast and cervical cancer screening in Australia 1996–97. AIHW Cat. No. CAN 3. Canberra: AIHW (Cancer Series No. 8).

## Age-specific mortality rates for breast cancer, Australia, 1998

Deaths per 100,000 women




*Source:* AIHW National Mortality Database.

| Age | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80–84 | 85+ |
|---|---|---|---|---|---|---|---|---|---|---|
| Rate | 18.2 | 31.7 | 46.5 | 53.1 | 69.2 | 72.0 | 81.2 | 112.3 | 129.4 | 192.3 |

*Note:*

Rates are expressed per 100,000 women.

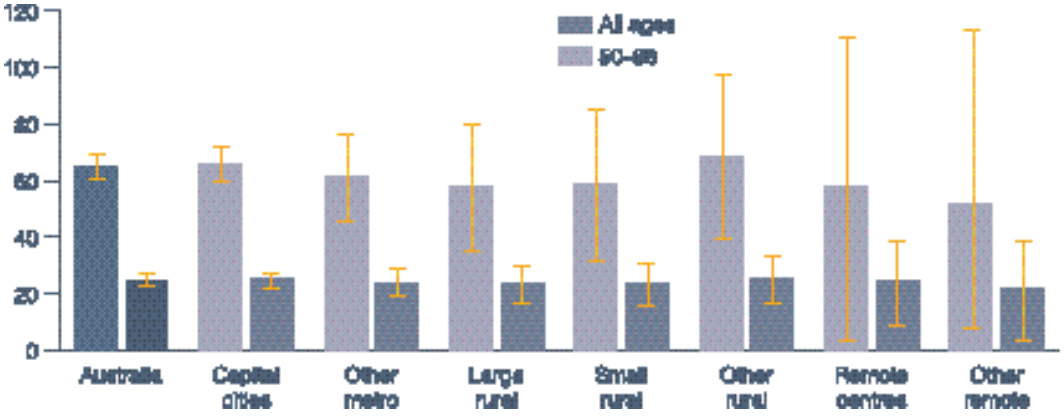
- The age distribution of breast cancer mortality is an important factor for BreastScreen Australia. From this distribution the Program is able to be targeted at those women where significant benefit can be achieved due to their risk profile.
- Age-specific mortality rates of breast cancer are low among women aged less than 35 (4.0 deaths per 100,000 women aged 30 to 34 and 1.0 deaths per 100,000 women aged 25 to 29). However, death rates increase rapidly with age after 35 years (Table 29).
- In 1998 death rates rose from 18.2 per 100,000 women aged 40 to 44 to 192.3 per 100,000 women over the age of 85 years.
- There has been little change in age-specific mortality rates over the years 1986 to 1998 (Table 29).

**For more information, see:**

Tables 28 to 31.

## Mortality from breast cancer by region, 1994–1998

Deaths per 100,000 women




Bars on graphs represent 95% confidence intervals.

*Source:* AIHW National Mortality Database.

| | Australia | Capital cities | Other metro | Large rural | Small rural | Other rural | Remote centres | Other remote |
|---|---|---|---|---|---|---|---|---|
| **50–69** | 64.9 | 66.2 | 61.4 | 57.9 | 58.9 | 68.8 | 57.6 | 51.5 |
| **95% CI** | 60.9–68.9 | 61.1–71.3 | 46.9–75.8 | 36.8–79.0 | 33.5–84.3 | 41.3–96.3 | 5–110.1 | 9.5–112.4 |
| **All ages** | 24.8 | 25.2 | 24.0 | 23.5 | 23.5 | 25.3 | 24.3 | 21.6 |
| **95% CI** | 23.9–25.8 | 24.0–26.4 | 20.5–27.6 | 18.3–28.8 | 17.2–29.8 | 18.5–32.2 | 10.2–38.3 | 5.2–37.9 |

*Notes:*

1. Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.
2. None of the rates were significantly different from 'capital cities' at the 5% level.
3. The Rural, Remote and Metropolitan Areas classification (RRMA, DPIE & DHSH 1994) was used to create the above categories.

- Geographic area of residence does not appear to be a factor in mortality from breast cancer for women of all ages combined. The death rates for this group are similar in all regions and are not statistically significantly different from 'capital cities' at the 5% level.
- For women in the target age group, death rates are highest in 'capital cities' and 'other rural centres'. Death rates are lowest in 'other remote areas'. Geographic area of residence does not seem to be a factor in mortality from breast cancer in the target age group as demonstrated by the lack of statistically significant differences between the rates for 'other remote areas' and 'capital cities'.

### For more information, see:

Australian Institute of Health and Welfare (AIHW) 1998c. Health in rural and remote Australia. AIHW Cat. No. PHE 6. Canberra: AIHW.

Commonwealth Department of Primary Industries and Energy & Department of Human Services and Health (DPIE & DHSH) 1994. Rural, remote and metropolitan areas classification. 1991 Census edition. Canberra: AGPS.

Tables

# Tables

# Indicator 1: Participation

## Table 1

**Number of women participating in breast screening in BreastScreen Australia by age, by State and Territory, 1997–1998**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 40–44 | 45,501 | 12,348 | 29,531 | 7,350 | 5,910 | 3,531 | 1,851 | 862 | 106,884 |
| 45–49 | 67,777 | 22,579 | 40,712 | 17,276 | 12,308 | 6,331 | 4,007 | 1,352 | 172,342 |
| 50–54 | 95,383 | 80,014 | 53,384 | 27,834 | 26,772 | 8,266 | 5,527 | 2,325 | 299,505 |
| 55–59 | 80,278 | 60,364 | 41,385 | 22,254 | 22,113 | 7,008 | 3,992 | 1,386 | 238,780 |
| 60–64 | 69,196 | 52,021 | 33,874 | 18,632 | 19,513 | 5,842 | 2,817 | 723 | 202,618 |
| 65–69 | 62,786 | 46,824 | 30,185 | 15,549 | 17,333 | 5,058 | 2,169 | 476 | 180,380 |
| 70–74 | 45,746 | 34,233 | 19,255 | 4,501 | 5,506 | 1,442 | 688 | 186 | 111,557 |
| 75–79 | 18,925 | 8,024 | 10,006 | 1,791 | 1,974 | 570 | 316 | 89 | 41,695 |
| 80–84 | 5,854 | 1,616 | 3,000 | 448 | 477 | 121 | 63 | 22 | 11,601 |
| 85+ | 1,178 | 346 | 676 | 87 | 72 | 21 | 16 | 1 | 2,397 |
| **All ages** | **492,624** | **318,369** | **262,008** | **115,722** | **111,978** | **38,190** | **21,446** | **7,422** | **1,367,759** |
| **Ages 50–69** | **307,643** | **239,223** | **158,828** | **84,269** | **85,731** | **26,174** | **14,505** | **4,910** | **921,283** |

*Note:*

Period covers 1 January 1997 to 31 December 1998.

*Source:* BreastScreen Australia.

## Table 2

**Age-specific rates for women participating in breast screening in BreastScreen Australia by age, by State and Territory, 1997–1998**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 40–44 | 19.5 | 7.1 | 23.3 | 10.4 | 10.7 | 19.8 | 14.9 | 12.4 | 15.3 |
| 45–49 | 31.5 | 14.1 | 34.4 | 27.2 | 23.3 | 38.6 | 32.9 | 23.6 | 26.7 |
| 50–54 | 51.0 | 57.9 | 52.3 | 53.8 | 58.3 | 58.2 | 57.2 | 54.3 | 54.1 |
| 55–59 | 55.0 | 56.2 | 54.1 | 56.2 | 62.3 | 61.7 | 63.0 | 53.9 | 56.1 |
| 60–64 | 54.0 | 55.0 | 53.8 | 56.5 | 61.7 | 59.0 | 60.3 | 42.8 | 55.3 |
| 65–69 | 50.5 | 51.8 | 50.6 | 51.7 | 55.6 | 53.2 | 54.9 | 42.1 | 51.5 |
| 70–74 | 38.9 | 39.9 | 35.1 | 16.9 | 17.8 | 16.4 | 19.0 | 23.4 | 33.9 |
| 75–79 | 20.2 | 11.9 | 22.7 | 8.5 | 7.9 | 7.8 | 11.5 | 17.7 | 15.9 |
| 80–84 | 9.1 | 3.5 | 10.0 | 3.0 | 2.8 | 2.4 | 3.7 | 7.1 | 6.5 |
| 85+ | 2.2 | 0.9 | 2.7 | 0.7 | 0.5 | 0.5 | 1.3 | 0.4 | 1.6 |
| **All ages** | | | | | | | | | |
| Crude rate | 36.1 | 31.7 | 37.4 | 31.8 | 32.9 | 36.5 | 36.6 | 30.7 | 34.5 |
| ASR (A) | 37.1 | 32.6 | 38.3 | 32.9 | 34.6 | 38.1 | 37.0 | 31.3 | 35.6 |
| 95% CI | 37.1–37.2 | 32.5–32.7 | 38.2–38.4 | 32.8–33.1 | 34.5–34.8 | 37.7–38.4 | 36.6–37.5 | 30.6–32.0 | 35.5–35.7 |
| **Ages 50–69** | | | | | | | | | |
| Crude rate | 52.5 | 55.5 | 52.7 | 54.6 | 59.4 | 58.2 | 58.9 | 50.8 | 54.3 |
| ASR (A) | 52.6 | 55.4 | 52.7 | 54.6 | 59.5 | 58.2 | 58.9 | 48.6 | 54.3 |
| 95% CI | 52.4–52.8 | 55.2–55.6 | 52.5–52.9 | 54.2–54.9 | 59.2–59.9 | 57.6–58.8 | 58.0–59.7 | 47.4–49.9 | 54.2–54.4 |

*Notes:*

1. Period covers 1 January 1997 to 31 December 1998.
2. Rates are expressed as the percentage of the eligible female population and age-standardised to the Australian population at 30 June 1991.

*Source:* BreastScreen Australia.

## Indicator 2: Detection rate for small cancers

### Table 3

**Number of women screened and number of cases of small diameter (≤ 10 mm) invasive cancers detected in women screened by age, by State and Territory, in 1998, first screening round**

| Age group | Number | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|---|
| 40–44 | No. screened | 17,488 | 5,193 | 11,118 | 2,604 | 2,578 | 1,226 | 577 | 299 | 41,083 |
| | No. of cases | 4 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 9 |
| 45–49 | No. screened | 14,598 | 6,698 | 9,073 | 3,747 | 3,006 | 1,068 | 682 | 412 | 39,284 |
| | No. of cases | 7 | 7 | 7 | 1 | 2 | 0 | 0 | 1 | 25 |
| 50–54 | No. screened | 16,099 | 17,399 | 14,015 | 3,509 | 4,710 | 1,306 | 766 | 725 | 58,529 |
| | No. of cases | 20 | 29 | 16 | 1 | 4 | 5 | 1 | 0 | 76 |
| 55–59 | No. screened | 7,856 | 3,252 | 8,665 | 1,604 | 1,371 | 582 | 280 | 281 | 23,891 |
| | No. of cases | 19 | 3 | 9 | 2 | 2 | 3 | 1 | 0 | 39 |
| 60–64 | No. screened | 6,317 | 2,501 | 6,623 | 1,221 | 981 | 383 | 165 | 156 | 18,347 |
| | No. of cases | 9 | 11 | 15 | 1 | 2 | 0 | 1 | 2 | 41 |
| 65–69 | No. screened | 5,048 | 1,973 | 6,111 | 920 | 826 | 382 | 129 | 127 | 15,516 |
| | No. of cases | 18 | 7 | 7 | 5 | 2 | 2 | 1 | 0 | 42 |
| 70–74 | No. screened | 3,357 | 1,285 | 2,495 | 518 | 473 | 174 | 76 | 41 | 8,419 |
| | No. of cases | 9 | 4 | 10 | 0 | 2 | 0 | 0 | 0 | 25 |
| 75–79 | No. screened | 2,058 | 1,050 | 1,307 | 344 | 430 | 139 | 46 | 28 | 5,402 |
| | No. of cases | 9 | 6 | 6 | 0 | 0 | 2 | 0 | 1 | 24 |
| 80–84 | No. screened | 620 | 307 | 472 | 105 | 147 | 36 | 10 | 6 | 1,703 |
| | No. of cases | 3 | 4 | 2 | 0 | 1 | 0 | 0 | 0 | 10 |
| 85+ | No. screened | 142 | 85 | 132 | 18 | 30 | 9 | 4 | 1 | 421 |
| | No. of cases | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| **All ages** | **No. screened** | **73,583** | **39,743** | **60,011** | **14,590** | **14,552** | **5,305** | **2,735** | **2,076** | **212,595** |
| | **No. of cases** | **99** | **69** | **77** | **10** | **15** | **12** | **5** | **4** | **293** |
| **Ages 50–69** | **No. screened** | **35,320** | **25,125** | **35,414** | **7,254** | **7,888** | **2,653** | **1,340** | **1,289** | **116,283** |
| | **No. of cases** | **66** | **50** | **47** | **9** | **10** | **10** | **4** | **2** | **198** |

*Source:* BreastScreen Australia.

## Table 4

**Number of women screened and number of cases of small diameter (≤ 10 mm) invasive cancers detected in women screened by age, by State and Territory, in 1998, subsequent screening round**

| Age group | Number | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|---|
| 40–44 | No. screened | 7,622 | 1,260 | 5,595 | 1,258 | 899 | 780 | 377 | 126 | 17,917 |
| | No. of cases | 1 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 6 |
| 45–49 | No. screened | 22,805 | 4,997 | 13,690 | 5,423 | 4,162 | 2,354 | 1,336 | 285 | 55,052 |
| | No. of cases | 13 | 5 | 6 | 4 | 2 | 2 | 0 | 0 | 32 |
| 50–54 | No. screened | 34,367 | 23,587 | 16,711 | 11,843 | 9,701 | 3,211 | 2,207 | 478 | 102,105 |
| | No. of cases | 25 | 25 | 15 | 11 | 12 | 4 | 4 | 1 | 97 |
| 55–59 | No. screened | 35,035 | 28,885 | 14,618 | 10,470 | 9,782 | 3,131 | 1,803 | 346 | 104,070 |
| | No. of cases | 41 | 46 | 15 | 20 | 14 | 1 | 4 | 1 | 142 |
| 60–64 | No. screened | 30,735 | 25,646 | 12,012 | 9,138 | 9,197 | 2,694 | 1,262 | 183 | 90,867 |
| | No. of cases | 41 | 57 | 20 | 17 | 18 | 8 | 1 | 0 | 162 |
| 65–69 | No. screened | 28,170 | 23,201 | 10,417 | 7,650 | 7,964 | 2,181 | 920 | 120 | 80,623 |
| | No. of cases | 61 | 49 | 18 | 21 | 12 | 5 | 1 | 0 | 167 |
| 70–74 | No. screened | 22,038 | 17,792 | 7,834 | 1,880 | 2,851 | 636 | 236 | 71 | 53,338 |
| | No. of cases | 45 | 50 | 27 | 5 | 8 | 0 | 0 | 0 | 135 |
| 75–79 | No. screened | 8,438 | 3,127 | 3,917 | 600 | 768 | 178 | 113 | 30 | 17,171 |
| | No. of cases | 25 | 6 | 12 | 2 | 3 | 1 | 0 | 1 | 50 |
| 80–84 | No. screened | 2,652 | 466 | 1,161 | 133 | 162 | 32 | 23 | 8 | 4,637 |
| | No. of cases | 1 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 7 |
| 85+ | No. screened | 571 | 92 | 263 | 18 | 18 | 6 | 4 | 0 | 972 |
| | No. of cases | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 4 |
| **All ages** | **No. screened** | **192,433** | **129,053** | **86,218** | **48,413** | **45,504** | **15,203** | **8,281** | **1,647** | **526,752** |
| | **No. of cases** | **253** | **240** | **121** | **80** | **73** | **22** | **10** | **3** | **802** |
| **Ages 50–69** | **No. screened** | **128,307** | **101,319** | **53,758** | **39,101** | **36,644** | **11,217** | **6,192** | **1,127** | **377,665** |
| | **No. of cases** | **168** | **177** | **68** | **69** | **56** | **18** | **10** | **2** | **568** |

*Source:* BreastScreen Australia.

## Table 5

**Rate of small diameter (≤ 10 mm) invasive cancers detected in women screened by age, by State and Territory, in 1998, first screening round**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 40–44 | 2.3 | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 17.3 | 0.0 | 2.2 |
| 45–49 | 4.8 | 10.5 | 7.7 | 2.7 | 6.7 | 0 | 0.0 | 24.3 | 6.4 |
| 50–54 | 12.4 | 16.7 | 11.4 | 2.8 | 8.5 | 38.3 | 13.1 | 0.0 | 13.0 |
| 55–59 | 24.2 | 9.2 | 10.4 | 12.5 | 14.6 | 51.5 | 35.7 | 0.0 | 16.3 |
| 60–64 | 14.2 | 44.0 | 22.6 | 8.2 | 20.4 | 0.0 | 60.6 | 128.2 | 22.3 |
| 65–69 | 35.7 | 35.5 | 11.5 | 54.3 | 24.2 | 52.4 | 77.5 | 0.0 | 27.1 |
| 70–74 | 26.8 | 31.1 | 40.1 | 0.0 | 42.3 | 0.0 | 0.0 | 0.0 | 29.7 |
| 75–79 | 43.7 | 57.1 | 45.9 | 0.0 | 0.0 | 143.9 | 0.0 | 357.1 | 44.4 |
| 80–84 | 48.4 | 130.3 | 42.4 | 0.0 | 68.0 | 0.0 | 0.0 | 0.0 | 58.7 |
| 85+ | 70.4 | 0.0 | 75.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 47.5 |
| **All ages** | | | | | | | | | |
| Crude rate | 13.5 | 17.9 | 12.8 | 6.9 | 10.3 | 22.6 | 18.3 | 19.3 | 13.8 |
| ASR (A) | 18.5 | 23.1 | 15.6 | 11.4 | 15.5 | 28.4 | 29.4 | 32.9 | 17.8 |
| 95% CI | 15.2–21.8 | 17.6–29.1 | 12.6–18.8 | 5.7–17.8 | 8.7–23.0 | 15.4–42.9 | 8.5–58.0 | 9.5–64.2 | 15.9–19.6 |
| **Ages 50–69** | | | | | | | | | |
| Crude rate | 18.7 | 19.9 | 13.3 | 12.4 | 12.7 | 37.7 | 29.9 | 15.5 | 17.0 |
| ASR (A) | 20.4 | 24.4 | 13.6 | 16.5 | 15.8 | 36.0 | 42.0 | 28.3 | 18.6 |
| 95% CI | 16.1–24.7 | 17.5–32.1 | 10.1–17.0 | 8.0–26.2 | 7.4–25.3 | 17.5–56.9 | 12.7–84.7 | 0–70.9 | 16.3–20.8 |

*Note:*

Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1988.

*Source:* Breastscreen Australia.

## Table 6

**Rate of small diameter (≤ 10 mm) invasive cancers detected in women screened by age, by State and Territory, in 1998, subsequent screening round**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 40–44 | 1.3 | 7.9 | 5.4 | 0.0 | 11.1 | 0.0 | 0.0 | 0.0 | 3.3 |
| 45–49 | 5.7 | 10.0 | 4.4 | 7.4 | 4.8 | 8.5 | 0.0 | 0.0 | 5.8 |
| 50–54 | 7.3 | 10.6 | 9.0 | 9.3 | 12.4 | 12.5 | 18.1 | 20.9 | 9.5 |
| 55–59 | 11.7 | 15.9 | 10.3 | 19.1 | 14.3 | 3.2 | 22.2 | 28.9 | 13.6 |
| 60–64 | 13.3 | 22.2 | 16.7 | 18.6 | 19.6 | 29.7 | 7.9 | 0.0 | 17.8 |
| 65–69 | 21.7 | 21.1 | 17.3 | 27.5 | 15.1 | 22.9 | 10.9 | 0.0 | 20.7 |
| 70–74 | 20.4 | 28.1 | 34.5 | 26.6 | 28.1 | 0.0 | 0.0 | 0.0 | 25.3 |
| 75–79 | 29.6 | 19.2 | 30.6 | 33.3 | 39.1 | 56.2 | 0.0 | 333.3 | 29.1 |
| 80–84 | 3.8 | 21.5 | 17.2 | 0.0 | 185.2 | 0.0 | 0.0 | 0.0 | 15.1 |
| 85+ | 0.0 | 0.0 | 114.1 | 0.0 | 0.0 | 1666.7 | 0.0 | 0.0 | 41.2 |
| **All ages** | | | | | | | | | |
| Crude rate | 13.1 | 18.6 | 14.0 | 16.5 | 16.0 | 14.5 | 12.1 | 18.2 | 15.2 |
| ASR (A) | 11.9 | 16.1 | 13.6 | 15.8 | 16.6 | 16.6 | 10.4 | 19.7 | 14.0 |
| 95% CI | 10.6–13.1 | 14.1–18.2 | 11.6–15.7 | 12.8–19.0 | 13.2–20.1 | 10.1–23.9 | 5.3–16.0 | 4.5–40.5 | 13.1–14.8 |
| **Ages 50–69** | | | | | | | | | |
| Crude rate | 13.1 | 17.5 | 12.6 | 17.6 | 15.3 | 16.0 | 16.1 | 17.7 | 15.0 |
| ASR (A) | 12.6 | 16.6 | 12.6 | 17.4 | 15.0 | 15.9 | 15.5 | 14.3 | 14.6 |
| 95% CI | 10.9–14.2 | 14.4–18.7 | 10.2–15.0 | 13.9–20.8 | 11.6–18.3 | 9.8–22.5 | 7.9–23.9 | 0–34.7 | 13.6–15.6 |

*Note:*

Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1988.

*Source:* Breastscreen Australia.

## Table 7

**Rate of small diameter (≤ 10 mm) invasive cancers detected in women screened by age, by State and Territory, in 1998, all rounds combined**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 40–44 | 2.0 | 1.5 | 4.2 | 0.0 | 2.9 | 0.0 | 10.5 | 0.0 | 2.5 |
| 45–49 | 5.3 | 10.3 | 5.7 | 5.5 | 5.6 | 5.8 | 0.0 | 14.3 | 6.0 |
| 50–54 | 8.9 | 13.2 | 10.1 | 7.8 | 11.1 | 19.9 | 16.8 | 8.3 | 10.8 |
| 55–59 | 14.0 | 15.2 | 10.3 | 18.2 | 14.3 | 10.8 | 24.0 | 15.9 | 14.1 |
| 60–64 | 13.5 | 24.2 | 18.8 | 17.4 | 19.7 | 26.0 | 18.4 | 59.0 | 18.6 |
| 65–69 | 23.8 | 22.2 | 15.1 | 30.3 | 15.9 | 27.3 | 19.1 | 0.0 | 21.7 |
| 70–74 | 21.3 | 28.3 | 35.8 | 20.9 | 30.1 | 0.0 | 0.0 | 0.0 | 25.9 |
| 75–79 | 32.4 | 28.7 | 34.5 | 21.2 | 25.0 | 94.6 | 0.0 | 344.8 | 32.8 |
| 80–84 | 12.2 | 64.7 | 24.5 | 0.0 | 129.4 | 0.0 | 0.0 | 0.0 | 26.8 |
| 85+ | 14.0 | 0.0 | 101.3 | 0.0 | 0.0 | 666.7 | 0.0 | 0.0 | 43.1 |
| **All ages** | | | | | | | | | |
| Crude rate | 13.2 | 18.4 | 13.5 | 14.3 | 14.7 | 16.6 | 13.6 | 18.8 | 14.8 |
| ASR (A) | 13.2 | 17.2 | 14.2 | 14.5 | 15.2 | 18.5 | 13.8 | 25.6 | 14.8 |
| 95% CI | 12.1–14.4 | 15.6–18.8 | 12.5–15.8 | 11.8–17.3 | 12.5–18.0 | 12.9–24.3 | 8.1–20.9 | 9.6–43.3 | 14.0–15.5 |
| **Ages 50–69** | | | | | | | | | |
| Crude rate | 14.3 | 18 | 12.9 | 16.8 | 14.8 | 20.2 | 18.6 | 16.6 | 15.5 |
| ASR (A) | 14.1 | 17.9 | 13.0 | 17.0 | 14.8 | 20.3 | 19.5 | 19.9 | 15.5 |
| 95% CI | 12.7–15.6 | 16.0–19.8 | 11.1–15.2 | 13.8–20.1 | 11.7–17.9 | 14.4–26.4 | 11.1–28.5 | 4.1–39.5 | 14.6–16.4 |

*Note:*

Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1988.

*Source:* Breastscreen Australia.

## Table 8

**Number of women screened and number of cases of invasive cancer detected in women screened by age, by State and Territory, in 1998, first screening round**

| Age group | Number | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|---|
| 40–44 | No. screened | 17,488 | 5,193 | 11,118 | 2,604 | 2,578 | 1,226 | 577 | 299 | 41,083 |
| | No. of cases | 26 | 4 | 18 | 1 | 0 | 1 | 2 | 1 | 53 |
| 45–49 | No. screened | 14,598 | 6,698 | 9,073 | 3,747 | 3,006 | 1,068 | 682 | 412 | 39,284 |
| | No. of cases | 22 | 19 | 35 | 10 | 11 | 2 | 0 | 2 | 101 |
| 50–54 | No. screened | 16,099 | 17,399 | 14,015 | 3,509 | 4,710 | 1,306 | 766 | 725 | 58,529 |
| | No. of cases | 68 | 81 | 53 | 7 | 21 | 13 | 4 | 1 | 248 |
| 55–59 | No. screened | 7,856 | 3,252 | 8,665 | 1,604 | 1,371 | 582 | 280 | 281 | 23,891 |
| | No. of cases | 46 | 19 | 42 | 6 | 6 | 4 | 3 | 2 | 128 |
| 60–64 | No. screened | 6,317 | 2,501 | 6,623 | 1,221 | 981 | 383 | 165 | 156 | 18,347 |
| | No. of cases | 27 | 27 | 43 | 9 | 11 | 2 | 3 | 2 | 124 |
| 65–69 | No. screened | 5,048 | 1,973 | 6,111 | 920 | 826 | 382 | 129 | 127 | 15,516 |
| | No. of cases | 50 | 22 | 37 | 13 | 7 | 2 | 1 | 1 | 133 |
| 70–74 | No. screened | 3,357 | 1,285 | 2,495 | 518 | 473 | 174 | 76 | 41 | 8,419 |
| | No. of cases | 38 | 19 | 33 | 2 | 5 | 0 | 0 | 0 | 97 |
| 75–79 | No. screened | 2,058 | 1,050 | 1,307 | 344 | 430 | 139 | 46 | 28 | 5,402 |
| | No. of cases | 28 | 21 | 19 | 2 | 6 | 3 | 0 | 1 | 80 |
| 80–84 | No. screened | 620 | 307 | 472 | 105 | 147 | 36 | 10 | 6 | 1,703 |
| | No. of cases | 9 | 9 | 13 | 0 | 5 | 0 | 0 | 0 | 36 |
| 85+ | No. screened | 142 | 85 | 132 | 18 | 30 | 9 | 4 | 1 | 421 |
| | No. of cases | 2 | 5 | 3 | 0 | 0 | 0 | 0 | 0 | 10 |
| **All ages** | **No. screened** | **73,583** | **39,743** | **60,011** | **14,590** | **14,552** | **5,305** | **2,735** | **2,076** | **212,595** |
| | **No. of cases** | **316** | **226** | **296** | **50** | **72** | **27** | **13** | **10** | **1,010** |
| **Ages 50–69** | **No. screened** | **35,320** | **25,125** | **35,414** | **7,254** | **7,888** | **2,653** | **1,340** | **1,289** | **116,283** |
| | **No. of cases** | **191** | **149** | **175** | **35** | **45** | **21** | **11** | **6** | **633** |

*Source:* Breastscreen Australia.

## Table 9

**Number of women screened and number of cases of invasive cancer detected in women screened by age, by State and Territory, in 1998, subsequent screening round**

| Age group | Number | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|---|
| 40–44 | No. screened | 7,622 | 1,260 | 5,595 | 1,258 | 899 | 780 | 377 | 126 | 17,917 |
| | No. of cases | 5 | 1 | 14 | 1 | 2 | 2 | 0 | 0 | 25 |
| 45–49 | No. screened | 22,805 | 4,997 | 13,690 | 5,423 | 4,162 | 2,354 | 1,336 | 285 | 55,052 |
| | No. of cases | 49 | 14 | 23 | 11 | 10 | 3 | 0 | 0 | 110 |
| 50–54 | No. screened | 34,367 | 23,586 | 16,711 | 11,843 | 9,701 | 3,211 | 2,207 | 478 | 102,105 |
| | No. of cases | 91 | 65 | 47 | 31 | 36 | 6 | 8 | 1 | 285 |
| 55–59 | No. screened | 35,035 | 28,884 | 14,618 | 10,470 | 9,782 | 3,131 | 1,803 | 346 | 104,070 |
| | No. of cases | 108 | 107 | 41 | 40 | 36 | 13 | 7 | 1 | 353 |
| 60–64 | No. screened | 30,735 | 25,646 | 12,012 | 9,138 | 9,197 | 2,694 | 1,262 | 183 | 90,867 |
| | No. of cases | 104 | 110 | 41 | 40 | 51 | 13 | 5 | 0 | 364 |
| 65–69 | No. screened | 28,170 | 23,201 | 10,417 | 7,650 | 7,964 | 2,181 | 920 | 120 | 80,623 |
| | No. of cases | 120 | 115 | 52 | 45 | 37 | 10 | 3 | 1 | 383 |
| 70–74 | No. screened | 22,038 | 17,792 | 7,834 | 1,880 | 2,851 | 636 | 236 | 71 | 53,338 |
| | No. of cases | 109 | 97 | 44 | 10 | 19 | 4 | 1 | 0 | 284 |
| 75–79 | No. screened | 8,438 | 3,127 | 3,917 | 600 | 768 | 178 | 113 | 30 | 17,171 |
| | No. of cases | 44 | 15 | 24 | 6 | 3 | 1 | 0 | 1 | 94 |
| 80–84 | No. screened | 2,652 | 466 | 1,161 | 133 | 162 | 32 | 23 | 8 | 4,637 |
| | No. of cases | 8 | 3 | 6 | 3 | 3 | 0 | 0 | 0 | 23 |
| 85+ | No. screened | 571 | 92 | 263.0 | 18.0 | 18.0 | 6 | 4 | 0 | 972 |
| | No. of cases | 1 | 1 | 5 | 0 | 0 | 1 | 0 | 0 | 8 |
| **All ages** | **No. screened** | **192,433** | **129,051** | **86,218** | **48,413** | **45,504** | **15,203** | **8,281** | **1,647** | **526,752** |
| | **No. of cases** | **639** | **528** | **297** | **187** | **197** | **53** | **24** | **4** | **1,929** |
| **Ages 50–69** | **No. screened** | **128,307** | **101,317** | **53,758** | **39,101** | **36,644** | **11,217** | **6,192** | **1,127** | **377,665** |
| | **No. of cases** | **423** | **397** | **181.0** | **156.0** | **160.0** | **42** | **23** | **3** | **1,385** |

*Source:* BreastScreen Australia.

## Table 10

**Rate of invasive breast cancers per 10,000 women screened, by age, by State and Territory, in 1998, first screening round**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 40–44 | 14.9 | 7.7 | 16.2 | 3.8 | 0.0 | 8.2 | 34.7 | 33.4 | 12.9 |
| 45–49 | 15.1 | 28.4 | 38.6 | 26.7 | 36.6 | 18.7 | 0.0 | 48.5 | 25.7 |
| 50–54 | 42.2 | 46.6 | 37.8 | 19.9 | 44.6 | 99.5 | 52.2 | 13.8 | 42.4 |
| 55–59 | 58.6 | 58.4 | 48.5 | 37.4 | 43.8 | 68.7 | 107.1 | 71.2 | 53.6 |
| 60–64 | 42.7 | 108.0 | 64.9 | 73.7 | 112.1 | 52.2 | 181.8 | 128.2 | 67.6 |
| 65–69 | 99.0 | 111.5 | 60.5 | 141.3 | 84.7 | 52.4 | 77.5 | 78.7 | 85.7 |
| 70–74 | 113.2 | 147.9 | 132.3 | 38.6 | 105.7 | 0.0 | 0.0 | 0.0 | 115.2 |
| 75–79 | 136.1 | 200.0 | 145.4 | 58.1 | 139.5 | 215.8 | 0.0 | 357.1 | 148.1 |
| 80–84 | 145.2 | 293.2 | 275.4 | 0.0 | 340.1 | 0.0 | 0.0 | 0.0 | 211.4 |
| 85+ | 140.8 | 588.2 | 227.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 237.5 |
| **All ages** | | | | | | | | | |
| Crude rate | 42.9 | 56.9 | 49.3 | 34.3 | 49.5 | 50.9 | 47.5 | 48.2 | 47.5 |
| ASR (A) | 56.7 | 77.0 | 58.6 | 48.8 | 65.5 | 57.7 | 69.6 | 64.2 | 60.3 |
| 95% CI | 51.2–62.2 | 67.1–87.0 | 52.9–64.4 | 36.2–60.9 | 51.2–80.3 | 39.3–78.1 | 32.6–106.9 | 29.5–101.8 | 56.9–63.6 |
| **Ages 50–69** | | | | | | | | | |
| Crude rate | 54.1 | 59.3 | 49.4 | 48.2 | 57.0 | 79.2 | 82.1 | 46.5 | 54.4 |
| ASR (A) | 57.6 | 75.8 | 51.0 | 60 | 67.1 | 71.9 | 100.0 | 66.6 | 59.3 |
| 95% CI | 50.5–64.7 | 63.5–88.2 | 44.2–57.5 | 43.1–77.5 | 49.0–85.7 | 47.1–101.0 | 44.7–155.4 | 23.4–119.5 | 55.4–63.1 |

*Notes:*

1. Period covers 1 January to 31 December 1998.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

## Table 11

**Rate of invasive breast cancers per 10,000 women screened, by age, by State and Territory, in 1998, subsequent screening round**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 40–44 | 6.6 | 7.9 | 25.0 | 7.9 | 22.2 | 25.6 | 0.0 | 0.0 | 14.0 |
| 45–49 | 21.5 | 28.0 | 16.8 | 20.3 | 24.0 | 12.7 | 0.0 | 0.0 | 20.0 |
| 50–54 | 26.5 | 27.6 | 28.1 | 26.2 | 37.1 | 18.7 | 36.2 | 20.9 | 27.8 |
| 55–59 | 30.8 | 37.0 | 28.0 | 38.2 | 36.8 | 41.5 | 38.8 | 28.9 | 33.9 |
| 60–64 | 33.8 | 42.9 | 34.1 | 43.8 | 55.5 | 48.3 | 39.6 | 0.0 | 40.1 |
| 65–69 | 42.6 | 49.6 | 49.9 | 58.8 | 46.5 | 45.9 | 32.6 | 83.3 | 47.5 |
| 70–74 | 49.5 | 54.5 | 56.2 | 53.2 | 66.6 | 62.9 | 42.4 | 0.0 | 53.2 |
| 75–79 | 52.1 | 48.0 | 61.3 | 100.0 | 39.1 | 56.2 | 0.0 | 333.3 | 54.7 |
| 80–84 | 30.2 | 64.4 | 51.7 | 225.6 | 185.2 | 0.0 | 0.0 | 0.0 | 49.6 |
| 85+ | 17.5 | 108.7 | 190.1 | 0.0 | 0.0 | 1666.7 | 0.0 | 0.0 | 82.3 |
| **All ages** | | | | | | | | | |
| Crude rate | 33.2 | 40.9 | 34.4 | 38.6 | 43.3 | 34.9 | 29.0 | 24.3 | 36.6 |
| ASR (A) | 30.9 | 36.2 | 34.0 | 39.1 | 41.9 | 38.1 | 28.2 | 30.5 | 34.3 |
| 95% CI | 28.9–33.0 | 33.2–39.4 | 30.5–37.5 | 33.9–44.4 | 39.4–47.5 | 28.1–48.0 | 18.7–39.1 | 5.0–59.2 | 33.1–35.6 |
| **Ages 50–69** | | | | | | | | | |
| Crude rate | 33.0 | 39.2 | 33.7 | 39.9 | 43.7 | 37.4 | 37.1 | 26.6 | 36.6 |
| ASR (A) | 32.4 | 37.7 | 33.7 | 39.5 | 42.9 | 36.4 | 36.9 | 30.5 | 35.9 |
| 95% CI | 29.7–35.2 | 34.6–40.9 | 29.5–37.9 | 34.4–44.8 | 37.3–48.7 | 26.8–46.1 | 24.7–50.5 | 6.8–62.9 | 34.3–37.5 |

*Note:*

Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

# Indicator 3A: Interval cancer rate

## Table 12

**Number of interval cancers in asymptomatic women screened during 1996, first screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 6 | 11 | 5 | 2 | 0 | 1 | 0 |
| 50–59 | 15 | 2 | 6 | 5 | 1 | 0 | 0 |
| 60–69 | 9 | 2 | 1 | 1 | 0 | 2 | 0 |
| 70+ | 3 | 1 | 0 | 0 | 0 | 0 | 0 |
| **All ages** | **33** | **16** | **12** | **8** | **1** | **3** | **0** |
| **Ages 50–69** | **24** | **4** | **7** | **6** | **1** | **2** | **0** |

*Note:*

NSW data unavailable.

*Source:* BreastScreen Australia.

## Table 13

**Interval cancer rates in asymptomatic women screened during 1996, first screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 5.2 | 8.9 | 5.3 | 5.6 | 0.0 | 9.6 | 0.0 |
| 50–59 | 5.9 | 1.8 | 7.0 | 8.7 | 5.8 | 0.0 | 0.0 |
| 60–69 | 4.8 | 3.2 | 2.3 | 3.5 | 0.0 | 30.9 | 0.0 |
| 70+ | 3.9 | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **All ages** | | | | | | | |
| Crude rate | 5.2 | 4.9 | 5.1 | 6.0 | 2.0 | 8.8 | 0.0 |
| ASR (A) | 5.2 | 3.8 | 4.4 | 5.5 | 2.3 | 10.6 | 0.0 |
| 95% CI | 3.8–6.7 | 2.1–5.7 | 2.4–6.8 | 2.5–8.8 | 0–6.8 | 2.0–21.4 | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 5.5 | 2.3 | 5.4 | 7.0 | 3.5 | 9.4 | 0.0 |
| ASR (A) | 5.5 | 2.4 | 5.0 | 6.5 | 3.4 | 12.8 | 0.0 |
| 95% CI | 3.7–7.3 | 0.5–4.5 | 2.0–8.4 | 2.5–11.5 | 0–10.2 | 0.0–32.1 | .. |

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

## Table 14

**Number of interval cancers in asymptomatic women screened during 1996, subsequent screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 1 | 4 | 4 | 2 | 1 | 0 | 0 |
| 50–59 | 31 | 9 | 6 | 8 | 2 | 2 | 0 |
| 60–69 | 20 | 8 | 8 | 11 | 2 | 1 | 0 |
| 70+ | 3 | 6 | 0 | 0 | 0 | 0 | 0 |
| **All ages** | **55** | **27** | **18** | **21** | **5** | **3** | **0** |
| **Ages 50–69** | **51** | **17** | **14** | **19** | **4** | **3** | **0** |

*Note:*

NSW data unavailable.

*Source:* BreastScreen Australia.

## Table 15

**Interval cancer rates in asymptomatic women screened during 1996, subsequent screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 2.7 | 3.1 | 10.4 | 4.3 | 3.5 | 0.0 | 0.0 |
| 50–59 | 8.4 | 4.9 | 4.4 | 5.7 | 4.6 | 8.4 | 0.0 |
| 60–69 | 6.1 | 5.5 | 7.1 | 8.4 | 5.8 | 7.1 | 0.0 |
| 70+ | 2.6 | 7.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **All ages** | | | | | | | |
| Crude rate | 6.5 | 5.1 | 6.0 | 6.3 | 4.6 | 5.3 | 0.0 |
| ASR (A) | 5.9 | 5.1 | 5.8 | 5.5 | 4.1 | 5.3 | 0.0 |
| 95% CI | 4.4–7.5 | 3.5–6.8 | 5.6–8.2 | 3.5–7.6 | 1.5–7.4 | 1.6–10.8 | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 7.3 | 5.2 | 5.6 | 7.0 | 5.1 | 7.9 | 0.0 |
| ASR (A) | 7.5 | 5.2 | 5.5 | 6.8 | 5.1 | 7.9 | 0.0 |
| 95% CI | 5.8–9.2 | 3.0–7.4 | 3.2–47.9 | 4.3–9.7 | 1.2–10.0 | 2.5–16.2 | .. |

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

## Table 16

**Number of interval cancers in symptomatic women screened during 1996, first screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50–59 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 60–69 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70+ | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| **All ages** | **2** | **1** | **1** | **0** | **0** | **0** | **0** |
| **Ages 50–69** | **2** | **0** | **1** | **0** | **0** | **0** | **0** |

*Note:*

NSW data unavailable.

*Source:* BreastScreen Australia.

## Table 17

**Interval cancer rates in symptomatic women screened during 1996, first screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50–59 | 14.3 | 0.0 | 181.8 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60–69 | 36.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70+ | 0.0 | 87.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **All ages** | | | | | | | |
| Crude rate | 11.2 | 4.1 | 48.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| ASR (A) | 15.7 | 10.8 | 71.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95% CI | 0.0–36.9 | 0–32.5 | 0.0–212.9 | .. | .. | .. | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 20.5 | 0.0 | 142.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| ASR (A) | 23.4 | 0.0 | 106.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| 95% CI | 0.0–55.2 | .. | 0.0–318.7 | .. | .. | .. | .. |

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

## Table 18

**Number of interval cancers in symptomatic women screened during 1996, subsequent screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50–59 | 1 | 5 | 0 | 0 | 1 | 0 | 0 |
| 60–69 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| 70+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **All ages** | **3** | **6** | **0** | **0** | **1** | **0** | **0** |
| **Ages 50–69** | **3** | **6** | **0** | **0** | **1** | **0** | **0** |

*Note:*

NSW data unavailable.

*Source:* BreastScreen Australia.

## Table 19

**Interval cancer rates in symptomatic women screened during 1996, subsequent screening round, by age, by State and Territory, for 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50–59 | 13.8 | 51.2 | 0.0 | 0.0 | 58.1 | 0.0 | 0.0 |
| 60–69 | 59.9 | 22.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70+ | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **All ages** | | | | | | | |
| Crude rate | 22.6 | 22.1 | 0.0 | 0.0 | 25.6 | 0.0 | 0.0 |
| ASR (A) | 22.0 | 26.2 | 0.0 | 0.0 | 22.7 | 0.0 | 0.0 |
| 95% CI | 5.4–44.0 | 8.0–44.5 | .. | .. | 0–68.1 | .. | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 28.3 | 42.2 | 0.0 | 0.0 | 42.6 | 0.0 | 0.0 |
| ASR (A) | 33.0 | 39.2 | 0.0 | 0.0 | 33.9 | 0.0 | 0.0 |
| 95% CI | 0–65.9 | 12.0–66.6 | .. | .. | 0–101.9 | .. | .. |

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen Service in 1998.

*Source:* BreastScreen Australia.

# Indicator 3B: Program sensitivity

## Table 20

**Program sensitivity rates of asymptomatic women screened during 1996, first screening round, by State and Territory, 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 82.4 | 66.7 | 77.3 | 80.0 | 100.0 | 50.0 | 100.0 |
| 50–59 | 89.1 | 95.5 | 83.8 | 84.4 | 91.7 | 100.0 | 100.0 |
| 60–69 | 93.4 | 93.8 | 96.0 | 96.2 | 100.0 | 50.0 | 100.0 |
| 70+ | 96.3 | 96.7 | 100.0 | 100.0 | 100.0 | 100.0 | (a) |
| **All ages** | | | | | | | |
| Crude rate | 91.5 | 88.5 | 87.9 | 89.9 | 95.7 | 80.0 | 100.0 |
| ASR (A) | 89.8 | 89.2 | 87.8 | 88.7 | 96.7 | 75.7 | 100.0 |
| 95% CI | 86.6–92.7 | 85.0–93.1 | 82.4–92.8 | 82.0–94.6 | 90.2–100.0 | 58.4–93.1 | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 91.2 | 94.7 | 88.7 | 89.7 | 94.7 | 80.0 | 100.0 |
| ASR (A) | 90.9 | 94.7 | 88.9 | 89.3 | 95.1 | 79.2 | 100.0 |
| 95% CI | 87.9–93.7 | 90.7–98.7 | 82.5–95.2 | 82.1–96.3 | 85.3–100.0 | 58.4–100.0 | .. |

(a) no screen-detected or interval cancers in this group

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

## Table 21

**Program sensitivity rates of asymptomatic women screened during 1996, subsequent screening round, by State and Territory, 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 87.5 | 81.0 | 42.9 | 77.8 | 80.0 | 100.0 | (a) |
| 50–59 | 77.9 | 83.0 | 75.0 | 83.3 | 77.8 | 60.0 | (a) |
| 60–69 | 88.0 | 84.6 | 75.0 | 82.3 | 85.7 | 66.7 | (a) |
| 70+ | 94.5 | 82.9 | 100.0 | 100.0 | 100.0 | 100.0 | (a) |
| **All ages** | | | | | | | |
| Crude rate | 85.1 | 83.2 | 73.1 | 84.0 | 82.8 | 75.0 | (a) |
| ASR (A) | 84.7 | 83.0 | 71.4 | 84.0 | 83.2 | 75.1 | .. |
| 95% CI | 79.6–88.8 | 77.6–88.1 | 62.1–80.6 | 77.6–90.1 | 70.5–93.6 | 58.1–92.2 | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 83.3 | 83.8 | 75.0 | 82.7 | 82.6 | 62.5 | (a) |
| ASR (A) | 82.1 | 83.7 | 75.0 | 82.9 | 81.1 | 62.8 | .. |
| 95% CI | 78.0–85.8 | 77.6–89.6 | 64.1–84.9 | 76.6–88.6 | 65.1–94.0 | 37.2–88.3 | .. |

(a) no screen-detected or interval cancers in this group

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

## Table 22

**Program sensitivity rates of symptomatic women screened during 1996, first screening round, by State and Territory, 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | (a) |
| 50–59 | 95.0 | 100.0 | 67.7 | 100.0 | 100.0 | 100.0 | (a) |
| 60–69 | 92.3 | 100.0 | 100.0 | 100.0 | 100.0 | (a) | (a) |
| 70+ | 100.0 | 90.9 | 100.0 | 100.0 | 100.0 | (a) | (a) |
| **All ages** | | | | | | | |
| Crude rate | 96.2 | 97.6 | 91.7 | 100.0 | 100.0 | 100.0 | (a) |
| ASR (A) | 95.9 | 98.9 | 87.0 | 100.0 | 100.0 | 100.0 | .. |
| 95% CI | 90.1–100.0 | 96.6–100.0 | 73.9–100.0 | .. | .. | .. | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 93.9 | 100.0 | 85.7 | 100.0 | 100.0 | 100.0 | (a) |
| ASR (A) | 93.9 | 100.0 | 80.5 | 100.0 | 100.0 | 100.0 | .. |
| 95% CI | 85.1–100.0 | .. | 61.0–100.0 | .. | .. | .. | .. |

(a) no screen-detected or interval cancers in this group

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

## Table 23

**Program sensitivity rates of symptomatic women screened during 1996, subsequent screening round, by State and Territory, 0–12 months**

| Age group | Vic | Qld | WA | SA | Tas | ACT | NT |
|---|---|---|---|---|---|---|---|
| 40–49 | 100.0 | 100.0 | (a) | (a) | 100.0 | 100.0 | (a) |
| 50–59 | 87.5 | 54.6 | 100.0 | 100.0 | (b) | (a) | (a) |
| 60–69 | 50.0 | 80.0 | 100.0 | 100.0 | (a) | 100.0 | (a) |
| 70+ | 100.0 | 100.0 | (a) | (a) | (a) | (a) | (a) |
| **All ages** | | | | | | | |
| Crude rate | 83.3 | 72.7 | 100.0 | 100.0 | 50.0 | 100.0 | (a) |
| ASR (A) | 81.2 | 76.7 | 100.0 | 100.0 | .. | 100.0 | .. |
| 95% CI | 67.3–95.1 | 64.0–89.3 | .. | .. | .. | .. | .. |
| **Ages 50–69** | | | | | | | |
| Crude rate | 75.0 | 62.5 | 100.0 | 100.0 | (b) | 100.0 | (a) |
| ASR (A) | 71.9 | 65.1 | 100.0 | 100.0 | .. | 100.0 | .. |
| 95% CI | 51.1–92.6 | 46.1–84.0 | .. | .. | .. | .. | .. |

(a) no screen-detected or interval cancers in this group

(b) interval cancer detected but no screen cancer in this age group

.. means not applicable

*Notes:*

1. NSW data unavailable.
2. Rates are expressed per 10,000 women screened and age-standardised to the Australian population of women attending a BreastScreen service in 1998.

*Source:* BreastScreen Australia.

# Indicator 4: Incidence of breast cancer

## Table 24

**Number of new cases of breast cancer in women by age, Australia, 1985–1997**

| Age group | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5–9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 10–14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 15–19 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 |
| 20–24 | 5 | 5 | 5 | 7 | 8 | 4 | 11 | 7 | 12 | 7 | 8 | 6 | 13 |
| 25–29 | 35 | 50 | 61 | 47 | 46 | 50 | 51 | 46 | 58 | 57 | 58 | 44 | 55 |
| 30–34 | 144 | 146 | 189 | 167 | 158 | 204 | 178 | 180 | 168 | 197 | 198 | 197 | 180 |
| 35–39 | 353 | 328 | 370 | 347 | 375 | 341 | 401 | 384 | 409 | 401 | 398 | 423 | 453 |
| 40–44 | 478 | 484 | 584 | 660 | 652 | 671 | 723 | 711 | 771 | 769 | 757 | 758 | 770 |
| 45–49 | 596 | 574 | 691 | 662 | 750 | 828 | 858 | 1,008 | 1,026 | 1,127 | 1,234 | 1,191 | 1,179 |
| 50–54 | 503 | 582 | 594 | 636 | 713 | 780 | 851 | 849 | 976 | 1,104 | 1,244 | 1,165 | 1,343 |
| 55–59 | 668 | 666 | 699 | 631 | 680 | 684 | 806 | 817 | 922 | 1,027 | 1,142 | 1,112 | 1,178 |
| 60–64 | 720 | 715 | 822 | 843 | 880 | 825 | 884 | 777 | 961 | 1,098 | 1,060 | 1,012 | 1,082 |
| 65–69 | 672 | 673 | 782 | 768 | 830 | 848 | 930 | 921 | 1,000 | 1,203 | 1,093 | 1,056 | 1,067 |
| 70–74 | 622 | 685 | 625 | 690 | 710 | 750 | 790 | 752 | 905 | 1,015 | 991 | 984 | 1,025 |
| 75–79 | 497 | 534 | 580 | 569 | 616 | 621 | 660 | 654 | 677 | 761 | 845 | 732 | 849 |
| 80–84 | 324 | 343 | 389 | 383 | 385 | 415 | 478 | 483 | 449 | 508 | 569 | 540 | 550 |
| 85+ | 253 | 297 | 301 | 288 | 319 | 319 | 357 | 353 | 372 | 372 | 394 | 401 | 397 |
| **Total** | **5,871** | **6,082** | **6,693** | **6,698** | **7,122** | **7,340** | **7,978** | **7,942** | **8,707** | **9,646** | **9,994** | **9,622** | **10,144** |

*Source:* AIHW National Cancer Statistics Clearing House.

## Table 25

**Age-specific and age-standardised incidence rates for breast cancer in women by age, Australia, 1985–1997**

| Age group | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| 10–14 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 | 0.0 | 0.0 |
| 15–19 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.5 |
| 20–24 | 0.8 | 0.8 | 0.8 | 1.1 | 1.2 | 0.6 | 1.6 | 1.0 | 1.7 | 1.0 | 1.1 | 0.9 | 1.9 |
| 25–29 | 5.4 | 7.5 | 8.9 | 6.8 | 6.5 | 7.1 | 7.3 | 6.7 | 8.5 | 8.4 | 8.4 | 6.2 | 7.6 |
| 30–34 | 23.0 | 23.0 | 29.2 | 25.3 | 23.3 | 29.4 | 25.0 | 24.8 | 23.0 | 26.8 | 27.1 | 27.2 | 25.2 |
| 35–39 | 58.5 | 52.5 | 59.3 | 54.7 | 58.1 | 51.9 | 60.4 | 56.7 | 59.4 | 57.5 | 55.9 | 58.0 | 61.1 |
| 40–44 | 101.2 | 97.9 | 109.0 | 115.8 | 109.4 | 108.4 | 113.1 | 110.8 | 119.1 | 117.0 | 113.4 | 111.6 | 111.2 |
| 45–49 | 149.6 | 140.3 | 163.9 | 152.1 | 164.5 | 173.0 | 170.7 | 187.2 | 179.1 | 189.1 | 200.1 | 186.2 | 184.2 |
| 50–54 | 140.5 | 161.7 | 161.4 | 168.5 | 183.2 | 194.6 | 206.0 | 200.1 | 224.9 | 243.7 | 261.4 | 234.2 | 250.5 |
| 55–59 | 178.6 | 179.7 | 190.4 | 173.6 | 188.4 | 190.5 | 224.7 | 223.0 | 245.4 | 266.3 | 288.7 | 272.9 | 280.6 |
| 60–64 | 197.9 | 194.4 | 223.2 | 227.8 | 237.5 | 222.6 | 238.9 | 212.7 | 267.2 | 307.6 | 297.1 | 283.7 | 298.2 |
| 65–69 | 229.8 | 221.3 | 247.4 | 233.2 | 242.1 | 243.3 | 264.8 | 260.9 | 281.4 | 339.4 | 308.6 | 297.7 | 303.4 |
| 70–74 | 240.0 | 259.6 | 233.9 | 257.9 | 267.1 | 277.1 | 279.9 | 257.0 | 298.1 | 319.9 | 306.8 | 300.9 | 312.2 |
| 75–79 | 270.1 | 278.6 | 291.6 | 276.4 | 286.8 | 281.4 | 292.7 | 285.5 | 294.3 | 334.1 | 362.0 | 300.2 | 332.0 |
| 80–84 | 280.7 | 289.0 | 314.3 | 296.8 | 287.7 | 297.9 | 328.7 | 318.9 | 283.6 | 303.9 | 330.0 | 305.8 | 307.3 |
| 85+ | 284.9 | 314.0 | 309.7 | 288.5 | 309.1 | 302.1 | 324.5 | 305.3 | 305.3 | 291.8 | 293.3 | 283.2 | 266.2 |
| **All ages** | | | | | | | | | | | | | |
| ASR (A) | 74.5 | 75.2 | 81.1 | 79.3 | 82.3 | 83.0 | 88.1 | 85.8 | 92.4 | 100.4 | 101.5 | 95.5 | 98.5 |
| **Ages 50–69** | | | | | | | | | | | | | |
| ASR (A) | 184.1 | 187.6 | 203.1 | 199.0 | 211.1 | 211.5 | 231.9 | 222.5 | 253.1 | 286.5 | 287.5 | 270.2 | 281.5 |

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

*Source:* AIHW National Cancer Statistics Clearing House.

## Table 26

**Number of new cases of breast cancer in women by age, by State and Territory, 1994–1997**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5–9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 10–14 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15–19 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 5 |
| 20–24 | 11 | 6 | 10 | 4 | 2 | 1 | 0 | 0 | 34 |
| 25–29 | 73 | 49 | 37 | 26 | 16 | 9 | 3 | 1 | 214 |
| 30–34 | 253 | 189 | 155 | 65 | 68 | 19 | 17 | 6 | 772 |
| 35–39 | 536 | 413 | 329 | 170 | 125 | 51 | 30 | 21 | 1,675 |
| 40–44 | 1,063 | 755 | 498 | 316 | 261 | 74 | 57 | 30 | 3,054 |
| 45–49 | 1,617 | 1,162 | 894 | 438 | 375 | 113 | 93 | 39 | 4,731 |
| 50–54 | 1,692 | 1,265 | 825 | 401 | 439 | 120 | 86 | 28 | 4,856 |
| 55–59 | 1,549 | 1,160 | 740 | 422 | 379 | 124 | 65 | 20 | 4,459 |
| 60–64 | 1,542 | 1,124 | 675 | 419 | 334 | 97 | 49 | 12 | 4,252 |
| 65–69 | 1,569 | 1,212 | 674 | 404 | 387 | 118 | 48 | 7 | 4,419 |
| 70–74 | 1,399 | 1,082 | 712 | 322 | 356 | 89 | 53 | 2 | 4,015 |
| 75–79 | 1,118 | 823 | 544 | 267 | 310 | 91 | 31 | 3 | 3,187 |
| 80–84 | 743 | 608 | 329 | 180 | 236 | 54 | 16 | 1 | 2,167 |
| 85+ | 496 | 412 | 296 | 155 | 152 | 39 | 13 | 1 | 1,564 |
| **Total** | **13,661** | **10,262** | **6,721** | **3,590** | **3,441** | **999** | **561** | **171** | **39,406** |

*Source:* AIHW National Cancer Statistics Clearing House.

## Table 27

**Age-specific and age-standardised incidence rates for breast cancer in women by age, by State and Territory, 1994–1997**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10–14 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15–19 | 0.0 | 0.2 | 0.4 | 0.4 | 0.5 | 0.0 | 0.0 | 0.0 | 0.2 |
| 20–24 | 1.2 | 0.9 | 1.9 | 1.5 | 1.0 | 1.5 | 0.0 | 0.0 | 1.2 |
| 25–29 | 7.8 | 6.8 | 7.3 | 9.7 | 7.5 | 13.6 | 5.8 | 2.8 | 7.6 |
| 30–34 | 25.7 | 25.8 | 29.9 | 23.1 | 29.8 | 26.1 | 33.0 | 18.0 | 26.6 |
| 35–39 | 55.1 | 57.4 | 63.8 | 59.9 | 54.0 | 67.5 | 58.1 | 69.8 | 58.1 |
| 40–44 | 117.9 | 112.1 | 102.9 | 117.1 | 119.0 | 105.8 | 113.0 | 114.6 | 113.3 |
| 45–49 | 193.6 | 186.3 | 197.5 | 182.3 | 181.4 | 175.7 | 195.1 | 181.1 | 189.8 |
| 50–54 | 252.4 | 257.2 | 231.7 | 220.7 | 268.9 | 233.8 | 259.3 | 190.5 | 247.4 |
| 55–59 | 278.2 | 282.4 | 263.5 | 285.6 | 277.7 | 285.1 | 281.1 | 221.4 | 277.2 |
| 60–64 | 305.7 | 301.9 | 279.1 | 331.2 | 266.5 | 247.8 | 279.9 | 197.7 | 296.7 |
| 65–69 | 310.6 | 330.1 | 284.6 | 340.4 | 299.4 | 309.6 | 306.6 | 164.7 | 312.3 |
| 70–74 | 301.0 | 320.2 | 333.8 | 310.3 | 288.9 | 249.4 | 377.1 | 69.0 | 309.9 |
| 75–79 | 323.2 | 333.5 | 337.8 | 350.4 | 336.6 | 332.2 | 328.5 | 161.9 | 331.7 |
| 80–84 | 300.1 | 333.8 | 289.7 | 311.2 | 352.1 | 273.2 | 256.4 | 99.2 | 311.7 |
| 85+ | 255.7 | 277.0 | 332.5 | 330.3 | 282.6 | 263.9 | 291.5 | 118.3 | 283.1 |
| **All ages** | | | | | | | | | |
| ASR (A) | 99.0 | 100.6 | 97.2 | 101.3 | 98.1 | 93.7 | 100.5 | 67.9 | 98.9 |
| 95% CI | 97.5–100.4 | 89.9–102.3 | 95.2–99.2 | 98.5–103.9 | 95.3–100.9 | 88.6–98.6 | 92.9–108.0 | 58.4–77.7 | 98.1–99.7 |
| **Ages 50–69** | | | | | | | | | |
| ASR (A) | 285.0 | 290.8 | 263.1 | 290.8 | 277.3 | 266.8 | 280.3 | 194.0 | 281.5 |
| 95% CI | 279.0–290.9 | 283.6–298.0 | 255.0–270.9 | 279.1–302.3 | 265.7–289.0 | 246.5–286.7 | 250.8–310.9 | 152.5–234.5 | 278.0–285.1 |

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

*Source:* AIHW National Cancer Statistics Clearing House.

# Indicator 5: Mortality from breast cancer

## Table 28

**Number of deaths from breast cancer in women by age, Australia, 1986–1998**

| Age group | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5–9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 10–14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15–19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20–24 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 2 |
| 25–29 | 4 | 10 | 5 | 7 | 6 | 12 | 4 | 2 | 2 | 5 | 9 | 6 | 7 |
| 30–34 | 34 | 31 | 27 | 35 | 27 | 26 | 34 | 40 | 19 | 26 | 29 | 37 | 28 |
| 35–39 | 76 | 77 | 67 | 68 | 64 | 81 | 81 | 75 | 89 | 58 | 92 | 84 | 68 |
| 40–44 | 114 | 126 | 122 | 140 | 152 | 153 | 139 | 118 | 142 | 122 | 139 | 135 | 128 |
| 45–49 | 150 | 132 | 155 | 173 | 171 | 181 | 200 | 206 | 215 | 211 | 193 | 211 | 206 |
| 50–54 | 184 | 210 | 206 | 216 | 233 | 237 | 216 | 230 | 244 | 226 | 235 | 272 | 265 |
| 55–59 | 254 | 249 | 243 | 221 | 219 | 232 | 223 | 257 | 254 | 253 | 245 | 238 | 229 |
| 60–64 | 257 | 275 | 297 | 293 | 288 | 263 | 241 | 282 | 267 | 273 | 263 | 239 | 256 |
| 65–69 | 308 | 259 | 296 | 303 | 335 | 312 | 278 | 322 | 296 | 323 | 295 | 286 | 251 |
| 70–74 | 262 | 262 | 256 | 256 | 263 | 311 | 293 | 269 | 314 | 294 | 302 | 300 | 268 |
| 75–79 | 230 | 235 | 259 | 266 | 259 | 254 | 259 | 304 | 280 | 287 | 285 | 283 | 301 |
| 80–84 | 168 | 169 | 188 | 209 | 209 | 215 | 217 | 262 | 255 | 264 | 257 | 246 | 233 |
| 85+ | 189 | 221 | 227 | 243 | 223 | 234 | 252 | 273 | 277 | 286 | 279 | 264 | 300 |
| **Total** | **2,230** | **2,258** | **2,348** | **2,431** | **2,449** | **2,513** | **2,438** | **2,641** | **2,655** | **2,629** | **2,623** | **2,602** | **2,542** |

*Source:* AIHW National Mortality Database.

## Table 29

**Age-specific and age-standardised mortality rates for breast cancer in women by age, Australia, 1986–1998**

| Age group | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| 5–9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0.0 |
| 10–14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| 15–19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| 20–24 | 0 | 0.3 | 0 | 0.2 | 0 | 0.3 | 0.1 | 0 | 0.1 | 0.1 | 0 | 0.1 | 0.3 |
| 25–29 | 0.6 | 1.5 | 0.7 | 1 | 0.8 | 1.7 | 0.6 | 0.3 | 0.3 | 0.7 | 1.3 | 0.8 | 1.0 |
| 30–34 | 5.4 | 4.8 | 4.1 | 5.2 | 3.9 | 3.7 | 4.7 | 5.5 | 2.6 | 3.6 | 4 | 5.2 | 4.0 |
| 35–39 | 12.2 | 12.3 | 10.6 | 10.5 | 9.7 | 12.2 | 12 | 10.9 | 12.8 | 8.1 | 12.6 | 11.3 | 9.1 |
| 40–44 | 23.1 | 23.5 | 21.4 | 23.5 | 24.6 | 23.9 | 21.7 | 18.2 | 21.6 | 18.3 | 20.5 | 19.5 | 18.2 |
| 45–49 | 36.7 | 31.3 | 35.6 | 37.9 | 35.7 | 36 | 37.1 | 36 | 36.1 | 34.2 | 30.2 | 33 | 31.7 |
| 50–54 | 51.1 | 57.1 | 54.6 | 55.5 | 58.1 | 57.4 | 50.9 | 53 | 53.9 | 47.5 | 47.2 | 50.7 | 46.5 |
| 55–59 | 68.5 | 67.8 | 66.8 | 61.2 | 61 | 64.7 | 60.9 | 68.4 | 65.9 | 64 | 60.1 | 56.7 | 53.1 |
| 60–64 | 69.9 | 74.7 | 80.3 | 79.1 | 77.7 | 71.1 | 66 | 78.4 | 74.8 | 76.5 | 73.7 | 65.9 | 69.2 |
| 65–69 | 101.3 | 81.9 | 89.9 | 88.4 | 96.1 | 88.8 | 78.8 | 90.6 | 83.5 | 91.2 | 83.2 | 81.3 | 72.0 |
| 70–74 | 99.3 | 98.1 | 95.7 | 96.3 | 97.2 | 110.2 | 100.2 | 88.6 | 99 | 91 | 92.3 | 91.4 | 81.2 |
| 75–79 | 120 | 118.2 | 125.8 | 123.8 | 117.4 | 112.6 | 113.1 | 132.2 | 122.9 | 123 | 116.9 | 110.7 | 112.3 |
| 80–84 | 141.6 | 136.5 | 145.7 | 156.2 | 150 | 147.9 | 143.3 | 165.5 | 152.5 | 153.1 | 145.5 | 137.5 | 129.4 |
| 85+ | 199.8 | 227.4 | 227.4 | 235.4 | 211.2 | 212.7 | 217.9 | 224.1 | 217.2 | 212.9 | 197 | 177 | 192.3 |
| **All ages** | | | | | | | | | | | | | |
| ASR (A) | 27.0 | 26.5 | 26.9 | 27.2 | 26.9 | 27.0 | 25.4 | 26.9 | 26.5 | 25.6 | 25.0 | 24.2 | 23.0 |
| **Ages 50–69** | | | | | | | | | | | | | |
| ASR (A) | 71.3 | 69.6 | 71.9 | 70.1 | 72.2 | 69.6 | 63.3 | 71.5 | 68.6 | 68.5 | 65.0 | 62.8 | 59.4 |

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

*Source:* AIHW National Cancer Statistics Clearing House.

## Table 30

**Number of deaths from breast cancer in women by age, by State and Territory, 1995–1998**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5–9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10–14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15–19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20–24 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| 25–29 | 9 | 5 | 7 | 6 | 0 | 0 | 0 | 0 | 27 |
| 30–34 | 43 | 32 | 22 | 5 | 12 | 4 | 2 | 0 | 120 |
| 35–39 | 90 | 89 | 52 | 31 | 25 | 10 | 3 | 2 | 302 |
| 40–44 | 187 | 140 | 74 | 60 | 39 | 14 | 7 | 3 | 524 |
| 45–49 | 269 | 216 | 145 | 85 | 64 | 20 | 19 | 3 | 821 |
| 50–54 | 338 | 271 | 191 | 81 | 71 | 22 | 17 | 7 | 998 |
| 55–59 | 313 | 272 | 164 | 92 | 88 | 22 | 13 | 1 | 965 |
| 60–64 | 351 | 290 | 173 | 76 | 97 | 19 | 20 | 5 | 1,031 |
| 65–69 | 418 | 324 | 170 | 82 | 110 | 28 | 18 | 5 | 1,155 |
| 70–74 | 406 | 321 | 176 | 101 | 110 | 36 | 11 | 3 | 1,164 |
| 75–79 | 410 | 304 | 189 | 84 | 127 | 26 | 14 | 2 | 1,156 |
| 80–84 | 351 | 262 | 155 | 88 | 101 | 23 | 19 | 1 | 1,000 |
| 85+ | 343 | 320 | 193 | 103 | 129 | 30 | 10 | 1 | 1,129 |
| **Total** | **3,529** | **2,848** | **1,711** | **894** | **974** | **254** | **153** | **33** | **10,396** |

*Source:* AIHW National Cancer Statistics Clearing House.

## Table 31

**Age-specific and age-standardised mortality rates for breast cancer in women by age, by State and Territory, 1995–1998**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5–9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10–14 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15–19 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20–24 | 0.1 | 0.3 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.1 |
| 25–29 | 0.9 | 0.7 | 1.3 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 |
| 30–34 | 4.4 | 4.4 | 4.2 | 1.8 | 5.5 | 5.6 | 3.8 | 0.0 | 4.2 |
| 35–39 | 9.1 | 12.2 | 9.8 | 10.7 | 10.7 | 13.2 | 5.8 | 6.4 | 10.3 |
| 40–44 | 20.4 | 20.4 | 14.9 | 21.8 | 17.7 | 19.7 | 13.9 | 11.0 | 19.1 |
| 45–49 | 31.6 | 34.0 | 31.2 | 34.1 | 30.5 | 30.9 | 39.1 | 13.5 | 32.3 |
| 50–54 | 47.9 | 52.1 | 49.5 | 41.9 | 41.5 | 41.0 | 48.2 | 46.6 | 48.0 |
| 55–59 | 55.0 | 64.9 | 56.1 | 60.6 | 63.3 | 49.4 | 53.9 | 10.0 | 58.5 |
| 60–64 | 69.2 | 77.5 | 70.2 | 59.0 | 77.3 | 48.3 | 111.3 | 78.8 | 71.3 |
| 65–69 | 83.3 | 88.8 | 71.6 | 68.6 | 86.3 | 73.6 | 114.8 | 113.1 | 81.9 |
| 70–74 | 86.7 | 94.1 | 81.2 | 96.4 | 88.9 | 101.1 | 76.8 | 97.6 | 89.0 |
| 75–79 | 114.5 | 117.9 | 113.0 | 105.3 | 132.7 | 92.4 | 137.1 | 99.3 | 115.7 |
| 80–84 | 139.3 | 142.1 | 132.9 | 150.2 | 148.4 | 114.1 | 292.5 | 114.2 | 141.4 |
| 85+ | 169.4 | 205.5 | 205.0 | 207.4 | 228.9 | 196.4 | 209.6 | 102.0 | 194.8 |
| **All ages** | | | | | | | | | |
| ASR (A) | 23.9 | 26.1 | 23.3 | 23.6 | 25.4 | 22.1 | 29.0 | 20.1 | 24.4 |
| 95% CI | 23.4–24.3 | 25.7–26.5 | 22.8–23.7 | 23.2–24.1 | 24.9–25.8 | 21.7–22.6 | 28.6–29.5 | 19.7–20.5 | 24.0–24.9 |
| **Ages 50–69** | | | | | | | | | |
| ASR (A) | 62.8 | 69.7 | 61.3 | 56.5 | 65.7 | 52.2 | 79.7 | 60.0 | 63.9 |
| 95% CI | 59.6–66.1 | 65.7–73.7 | 56.7–65.9 | 50.4–62.7 | 58.9–72.4 | 41.4–62.9 | 60.3–99.2 | 30.0–90.0 | 62.0–65.9 |

*Note:*

Rates are expressed per 100,000 women and age-standardised to the Australian population at 30 June 1991.

*Source:* AIHW National Cancer Statistics Clearing House.

Appendixes

# Appendixes

# Appendix 1: Data and statistical issues

## Data sources

Multiple data sources were analysed to produce this report and these are summarised below. All data used in this report are based on calendar years.

| Indicator | Description | Data source |
|---|---|---|
| 1 | Participation rate | BreastScreen Australia State and Territory services |
| 2 | Detection rate for small cancers | BreastScreen Australia State and Territory services |
| 3 | Sensitivity | BreastScreen Australia State and Territory services |
| 4 | Incidence (ICD 174) | National Cancer Statistics Clearing House, AIHW |
| 5 | Mortality (ICD 174) | National Mortality Database, AIHW |

## Population data

The Australian Bureau of Statistics' estimated resident population has been used to calculate incidence and mortality rates. Participation rates were calculated using the average of the 1997 and 1998 estimated resident female populations (see Appendix 2 for tables). There may be some variation in published participation rates because national rates use estimated resident population data in the denominator whereas some local data analysis may use census counts.

## Development of monitoring indicators

Epidemiologists, health economists, health statisticians and specialist medical professionals with an interest in breast cancer and screening provide input for indicator development for the BreastScreen Australia Program. The Monitoring and Evaluation Working Group of the National Advisory Committee to BreastScreen Australia and the National Screening Information Advisory Group to the Australian Institute of Health and Welfare are the main forums for discussion and debate on the indicators. The National Advisory Committee to BreastScreen Australia endorses the final indicators.

Developing indicators for the BreastScreen Australia Program is an ongoing process. The National Advisory Committee is currently considering additional indicators that will allow the monitoring of factors that change slowly over time. These periodic indicators will include population level analyses that are possible because of the aggregation of data over extended periods of time. Examples of population level analyses include participation rates of women of varying socioeconomic status, women in rural and remote Australia, and Indigenous women. These periodic indicators will improve the ability of the Program to measure its effectiveness and efficiency in meeting its objectives.

The current indicators are summarised below. A more detailed description is presented in the section devoted to the data and analysis of each indicator.

### Indicator 1: Participation rate for breast cancer screening

Percentage of eligible women attending for a mammogram within a 24-month period (1 January 1997 to 31 December 1998). The percentages are presented by age and State/Territory where a woman is resident.

### Indicator 2: Detection rate for small cancers

The rate of detection of small invasive breast cancers (≤ 10mm) in 1998 by age and State/ Territory where a woman is resident. The overall invasive cancer detection rate is presented in addition to rates for first and subsequent attenders to the Program.

A screen-detected cancer is an invasive breast cancer diagnosed within the BreastScreen Australia Program during a screening episode (Kavanagh et al. 1999).

### Indicator 3: Sensitivity

**3a: Interval cancer rate.** The rate of breast cancers diagnosed after completion of a negative screening episode and before the next screening examination.

**3b: Program sensitivity.** The percentage of breast cancers detected by the Program amongst all breast cancers (interval cancers plus screen-detected cancers) found in Program-screened women in a specified period.

### Indicator 4: Incidence of breast cancer

The rate of all new cases of breast cancer in each State and Territory and nationally by age.

### Indicator 5: Mortality from breast cancer

The death rate from breast cancer for each State and Territory and for the whole of Australia by age.

## Matching data from BreastScreen Australia and cancer registry databases

In order to develop a consistent method of reporting interval cancer rates and program sensitivity, a national protocol for matching data from BreastScreen Australia and cancer registry databases should be developed. BreastScreen Australia State/Territory Programs have taken the first step in this direction by developing a process of matching to their own State/Territory cancer registries in a way that is suitable to the size of their screening populations. For example, States with large population sizes have larger numbers of women to match with the cancer registries. In these cases, the volume of matching needs to be facilitated by an automated matching program. Smaller State/Territories may be able to do their matching manually with the aid of SQL-based queries. Regardless of method, it is important that each State and Territory uses a comparable set of variables for their matches. The recommended variables (Kavanagh et al. 1999) to extract from both BreastScreen databases and the cancer registry databases are:

- first name
- last name
- date of birth
- address (including number, street, suburb/town and postcode)
- date of cancer diagnosis
- date of death (or last contact)
- second given name
- alias/maiden name
- tumour details.

Additional information required from the BreastScreen Australia databases include:

- symptomatic status (at first screen and at rescreen within 24 months)
- date of screen
- outcome of screening episode (cancer detected, routine recall or early review).

A validation of the methods used by States and Territories to match data is needed to ensure that each State/Territory Program is accurate in its matching process. Accurate matching is necessary for comparable interval cancer rates and program sensitivity between States and Territories. Future reports will aim to have matching processes validated nationally. The sensitivity chapter provides further information about sensitivity data issues.

## Statistical analysis of BreastScreen monitoring indicators

### Crude rates

A crude rate is defined as the number of events over a specified period of time (e.g. a year) divided by the total population. For example, a crude cancer incidence rate is similarly defined as the number of new cases of cancer in a specified period of time divided by the population at risk. Crude death rates and cancer incidence rates are expressed in this report as annual rates per 100,000 population. Rates for cancer detection are calculated per 10,000 women screened.

### Age-specific rates

Age-specific rates are calculated by dividing the number of deaths, cancer cases or women participating in the screening program in each specified age group by the corresponding population in the same age group. The rates are expressed per 100,000 population for mortality and cancer incidence, per 10,000 population for cancer detection and as a percentage for participation.

### Age-standardised rates (ASR)

Age-standardised rates enable comparisons to be made between populations which have different age structures. This publication uses direct standardisation, in which the age-specific rates are multiplied by a constant population. This effectively removes the influence of the age structure on the summary rate.

The National Health Data Committee has advocated the use of the 1991 Australian total estimated resident population as the standard population until the year 2001. Mortality, incidence and participation rates are age-standardised to the 1991 (final) Australian total population.

For statistics based on the population of women screened, i.e. cancer detection rates, interval cancer rates and program sensitivity, the rates are standardised to the 1998 population of women screened by BreastScreen Australia. The standard populations used in this report are found in Appendix 2.

The method used for all of these calculations is composed of three steps:

**Step 1:** Calculate the age-specific rate for each age group.

**Step 2:** Calculate the expected number of cases in each 5-year age group by multiplying the age-specific rates by the corresponding standard population and dividing by 100,000 (or 10,000 or 100 depending on the type of rate) to get the expected number of cases.

**Step 3:** Sum the expected number of cases in each age group and divide by the total of the standard population and multiply by the appropriate factor (i.e. 100,000 for mortality and incidence rates, 10,000 for cancer detection and sensitivity rates and 100 for the participation rate).

### Confidence intervals

The 95% confidence intervals in this report were calculated using the software package Palisade @Risk (http://www.palisade.com). These calculations were based on 1000 simulations using a binomial or Poisson distribution with the observed data to calculate the distribution parameters. The confidence intervals represent a range of values within which it is 95% certain that the true value of the rate is present.

### Statistical tests

While confidence intervals provide an indication of the variability of the age-standardised rates, the application of a statistical test provides a more rigorous basis for the comparison between rates. For example, the confidence intervals of two different rates may overlap while the rates themselves are statistically significantly different.

To compare the age-standardised rates calculated by the direct method, the methods of Boyle and Parkin (1991) were used. We calculated a standardised rate ratio for those age-standardised rates that we wanted to compare. The statistical significance of each

standardised rate ratio was obtained by calculating a confidence interval for the rate ratio. An approximation of the exact confidence interval of the standardised rate ratio was used as follows:

$$(ASR_1/ASR_2)^{1\pm(X)Z_{\alpha/2}}$$

Where $ASR_1$ and $ASR_2$ are the standardised rates to be compared using the standardised rate ratio and

$$X = \frac{(ASR_1 - ASR_2)}{\sqrt{se(ASR_1)^2 + se(ASR_2)^2}}$$

where $se(ASR_1)$ and $se(ASR_2)$ are the standard errors for the standardised rates and

$$Z_{\alpha/2} = 1.96$$

for a 95% confidence interval. If this interval includes 1.0 then the standardised rates, $ASR_1$ and $ASR_2$ are not significantly different at the 5% level.

Where age-standardised rates were compared for States and Territories, the method described above was used. Where a particular State or Territory (e.g. NSW) was compared with the national rate, the State/Territory in question was removed from the national rate before undertaking the comparison. This is referred to as a comparison with the 'rest of Australia' (e.g. NSW compared with Australia minus NSW).

## Analysis by geographic area

Analysis of mortality data by geographic area uses the Rural, Remote and Metropolitan Areas classification. This classification, developed in 1994 by the then Department of Primary Industries and Energy and the then Department of Human Services and Health, is used as a framework for examining breast cancer mortality data at a national level. Seven categories are included — two metropolitan, three rural and two remote zones (see the following table). The classification is based on Statistical Local Areas (SLA) and allocates each SLA in Australia to a category based primarily on population numbers and an index of remoteness (DPIE & DHSH 1994). Both the size of SLAs and the distribution of population within SLAs vary significantly. This can mean that within a remote SLA there can be pockets that are rural rather than remote and vice versa.

**Structure of the Rural, Remote and Metropolitan Areas classification**

| Zone | Category |
|---|---|
| Metropolitan | Capital cities |
| | Other metropolitan centres (urban centre population > 100,000) |
| Rural | Large rural centres (urban centre population 25,000–99,000) |
| | Small rural centres (urban centre population 10,000–24,999) |
| | Other rural centres (urban centre population ≤ 10,000) |
| Remote | Remote centres (urban centre population > 5,000) |
| | Other remote areas (urban centre population ≤ 5,000) |

*Sources:* DPIE and DHSH 1994.

# Appendix 2: Population data

## Table 32

**Estimated resident female population, by State and Territory, June 1997**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 213,602 | 153,004 | 117,741 | 61,641 | 47,117 | 16,167 | 10,805 | 8,754 | 628,975 |
| 5–9 | 215,452 | 155,910 | 120,659 | 64,705 | 48,050 | 17,118 | 10,981 | 8,052 | 641,103 |
| 10–14 | 212,957 | 153,621 | 122,265 | 65,724 | 49,787 | 17,717 | 11,007 | 7,267 | 640,506 |
| 15–19 | 208,613 | 154,677 | 120,201 | 63,526 | 48,055 | 16,633 | 12,200 | 6,573 | 630,537 |
| 20–24 | 222,995 | 168,887 | 128,552 | 66,530 | 50,239 | 15,359 | 14,108 | 8,402 | 675,157 |
| 25–29 | 243,236 | 185,747 | 133,382 | 70,032 | 53,699 | 16,493 | 13,501 | 9,460 | 725,686 |
| 30–34 | 241,527 | 180,658 | 129,315 | 69,898 | 54,861 | 17,239 | 12,652 | 8,419 | 714,742 |
| 35–39 | 250,552 | 183,985 | 135,043 | 73,076 | 58,587 | 19,143 | 13,021 | 7,723 | 741,273 |
| 40–44 | 231,972 | 172,446 | 125,622 | 69,750 | 55,418 | 17,846 | 12,457 | 6,796 | 692,443 |
| 45–49 | 213,725 | 159,502 | 117,362 | 62,781 | 52,430 | 16,375 | 12,263 | 5,713 | 640,228 |
| 50–54 | 182,009 | 133,847 | 98,769 | 49,912 | 44,573 | 13,841 | 9,382 | 4,135 | 536,531 |
| 55–59 | 144,389 | 106,269 | 75,098 | 39,083 | 34,991 | 11,294 | 6,170 | 2,497 | 419,831 |
| 60–64 | 127,041 | 93,703 | 62,228 | 32,483 | 31,324 | 9,820 | 4,551 | 1,611 | 362,779 |
| 65–69 | 125,247 | 90,505 | 59,640 | 30,029 | 31,355 | 9,473 | 3,923 | 1,111 | 351,299 |
| 70–74 | 117,239 | 85,779 | 54,277 | 26,452 | 31,035 | 8,838 | 3,599 | 774 | 327,997 |
| 75–79 | 91,554 | 65,723 | 43,003 | 20,398 | 24,558 | 7,169 | 2,596 | 494 | 255,497 |
| 80–84 | 63,698 | 46,473 | 29,632 | 14,781 | 17,125 | 5,130 | 1,682 | 297 | 178,825 |
| 85+ | 53,221 | 40,121 | 24,362 | 12,919 | 14,683 | 4,041 | 1,235 | 238 | 150,822 |
| **Total** | **3,159,029** | **2,330,857** | **1,697,151** | **893,720** | **747,887** | **239,696** | **156,133** | **88,316** | **9,314,231** |

*Source:* Australian Bureau of Statistics 1998.

## Table 33

**Estimated resident female population, by State and Territory, June 1998**

| Age group | NSW | Vic | Qld | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| 0–4 | 211,964 | 151,230 | 118,238 | 61,590 | 46,451 | 15,566 | 10,462 | 8,599 | 624,234 |
| 5–9 | 216,598 | 156,623 | 122,769 | 64,891 | 48,262 | 16,882 | 10,785 | 8,227 | 645,215 |
| 10–14 | 212,926 | 154,468 | 121,554 | 66,277 | 49,492 | 17,415 | 10,863 | 7,568 | 640,736 |
| 15–19 | 211,691 | 156,110 | 122,923 | 64,859 | 48,307 | 16,804 | 11,724 | 6,801 | 639,297 |
| 20–24 | 219,602 | 167,409 | 126,100 | 67,118 | 49,190 | 15,037 | 13,223 | 7,940 | 665,691 |
| 25–29 | 246,280 | 186,409 | 136,225 | 71,206 | 53,605 | 16,466 | 13,292 | 9,531 | 733,145 |
| 30–34 | 237,843 | 180,162 | 128,250 | 69,463 | 53,750 | 16,601 | 12,265 | 8,436 | 706,925 |
| 35–39 | 253,091 | 185,703 | 137,485 | 73,996 | 58,855 | 18,924 | 12,781 | 7,923 | 748,913 |
| 40–44 | 235,756 | 174,788 | 128,226 | 70,927 | 55,553 | 17,901 | 12,324 | 7,007 | 702,629 |
| 45–49 | 216,581 | 161,284 | 119,578 | 64,508 | 53,063 | 16,475 | 12,174 | 5,783 | 649,539 |
| 50–54 | 192,250 | 142,523 | 105,601 | 53,595 | 47,242 | 14,574 | 9,998 | 4,445 | 570,287 |
| 55–59 | 147,772 | 108,537 | 78,235 | 40,092 | 35,929 | 11,424 | 6,505 | 2,646 | 431,183 |
| 60–64 | 129,092 | 95,392 | 63,813 | 33,488 | 31,816 | 9,980 | 4,771 | 1,754 | 370,123 |
| 65–69 | 123,457 | 90,160 | 59,496 | 30,121 | 30,876 | 9,500 | 3,946 | 1,136 | 348,707 |
| 70–74 | 117,664 | 86,057 | 55,247 | 26,908 | 30,802 | 8,806 | 3,614 | 806 | 329,909 |
| 75–79 | 95,504 | 69,353 | 44,979 | 21,587 | 25,717 | 7,403 | 2,866 | 513 | 267,923 |
| 80–84 | 64,393 | 46,276 | 30,230 | 14,665 | 17,197 | 5,165 | 1,752 | 316 | 180,000 |
| 85+ | 54,706 | 41,424 | 25,580 | 13,305 | 15,255 | 4,173 | 1,310 | 249 | 156,006 |
| **Total** | **3,187,170** | **2,353,908** | **1,724,529** | **908,596** | **751,362** | **239,096** | **154,655** | **89,680** | **9,410,462** |

*Source:* Australian Bureau of Statistics 1998.

## Table 34

### Australian population of women attending a BreastScreen service in 1998

| Age group | |
|---|---|
| 40–44 | 59,000 |
| 45–49 | 94,336 |
| 50–54 | 160,633 |
| 55–59 | 127,960 |
| 60–64 | 109,214 |
| 65–69 | 96,139 |
| 70–74 | 61,757 |
| 75–79 | 22,573 |
| 80–84 | 6,340 |
| 85+ | 1,393 |
| **All ages** | **739,345** |
| **Ages 50–69** | **493,946** |

*Source:* BreastScreen Australia.

## Table 35

### Australian 1991 Standard Population

| Age group | |
|---|---|
| 0–4 | 1,271,703 |
| 5–9 | 1,272,208 |
| 10–14 | 1,241,619 |
| 15–19 | 1,364,074 |
| 20–24 | 1,396,764 |
| 25–29 | 1,399,663 |
| 30–34 | 1,425,735 |
| 35–39 | 1,328,387 |
| 40–44 | 1,294,271 |
| 45–49 | 1,029,145 |
| 50–54 | 846,934 |
| 55–59 | 725,950 |
| 60–64 | 736,868 |
| 65–69 | 671,390 |
| 70–74 | 510,755 |
| 75–79 | 384,495 |
| 80–84 | 229,828 |
| 85+ | 154,247 |
| **Total** | **17,284,036** |

*Source:* Australian Bureau of Statistics 1998.

# Appendix 3: The National Advisory Committee's role

The National Advisory Committee to the BreastScreen Australia Program is the body which coordinates advice on national policy related to BreastScreen Australia, integrating feedback from individual States and Territories, the Commonwealth, relevant professional bodies and Indigenous and consumer representatives. Its terms of reference are to:

- advise Commonwealth, State and Territory Governments on national policy and quality standards for the BreastScreen Australia Program;
- develop and implement a work program addressing agreed and emerging Program priorities;
- provide a focus for informed comment and debate on issues relating to breast cancer screening, particularly in respect of medical/technical developments, research and epidemiological evidence and other relevant issues; and
- oversee the monitoring and evaluation of the Program.

The membership of the National Advisory Committee consists of an independent chair, eight State and Territory representatives, one representative from the Commonwealth Department of Health and Aged Care and representatives of relevant medical colleges, various peak bodies and specialist groups.

## Working groups

To assist the National Advisory Committee to achieve its objectives, a number of working groups have been established to examine and progress priorities established in the National Advisory Committee's work program. The working groups are formed around the following issues:

- monitoring and evaluation;
- communication and education;
- workforce and training; and
- policy review.

**The working groups are responsible for:**

- making recommendations to the National Advisory Committee on priority projects in their areas of responsibility;
- progressing projects approved by the National Advisory Committee;
- finalising work plans, tender and policy documentation as appropriate; and
- providing progress reports on approved projects to the National Advisory Committee.

A National Quality Management Committee monitors and advises on quality management and oversees the accreditation of BreastScreen Australia services.

Abbreviations

# Abbreviations

**ACT:** Australian Capital Territory — a land-locked Territory of Australia situated within the State of New South Wales on the eastern seaboard with a population of 310,173 (1999). Its capital city is Canberra, which is also Australia's capital city.

**AIHW:** Australian Institute of Health and Welfare.

**ASR:** age-standardised rates.

**CI: 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 (e.g. relative risk) lies.

**DHSH:** Commonwealth Department of Human Services and Health (1994 to 1996)

**NSW:** New South Wales—a State of Australia on the eastern seaboard which has the largest capital city in Australia, Sydney, and a population of 6,411,680 (1999).

**NT:** Northern Territory—a Territory in the north of Australia with a population of 192,882 (1999) and Darwin as its capital city.

**Qld:** Queensland—a State in the north-east of Australia with a population of 3,512,356 (1999) and Brisbane as its capital city.

**SA:** South Australia — a State in the southern part of Australia with a population of 1,493,074 (1999) and Adelaide as its capital city.

**SLA:** Statistical local area—the smallest spatial unit used to geographically classify locations for economic, social and demographic statistics other than those collected in population censuses.

**Tas:** Tasmania—an island State in the south-east of Australia with a population of 470,074 (1999) and Hobart as its capital city.

**The Program:** The BreastScreen Australia Program.

**Vic:** Victoria—a State in the south-east of Australia with a population of 4,712,173 (1999) and Melbourne as its capital city.

**WA:** Western Australia—the largest State in Australia, located in the west with a population of 1,861,016 (1999) and Perth as its capital city.

**WHO:** World Health Organization.

# Glossary

**Adjuvant:** enhancing or administered to enhance the effectiveness of a treatment or substance.

**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.

**Assessment:** further investigation of a mammographic abnormality or symptom reported at screening. This includes women who choose assessment outside the Program.

**Benchmark:** a criterion against which something is measured.

**Benign:** not cancerous.

**Cancer (malignant neoplasm):** a term used to describe one of several diseases, which 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. This tumour may expand locally by invasion or systemically by metastasis via the lymphatic or vascular systems. If left untreated most malignant tumours will eventually result in death.

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

**Confidence interval:** a computed interval within which there is a specified (usually 95%) chance that the true value of a variable such as a mean, proportion or rate is contained within the interval.

**Core biopsy:** removal of a cylindrical sample of breast tissue under a local or general anaesthetic through a needle for microscopic examination.

**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.

**Early review:** a woman is screened but not cleared for routine rescreening but referred for further assessment within 6 to 12 months of the index screen.

**Early rescreen:** a woman attends for a routine rescreen less than 24 months from previous negative screen (or less than 12 months for women recommended for annual screening).

**Eligible population:** any women 40 years or over.

**Epidemiology:** the quantitative study of the distribution and determinants of health-related states and events in populations, and the application of this study to the control of health problems.

**False negative:** means that the test has incorrectly observed that the disease is not present.

**False positive:** means that the test has incorrectly observed that the disease is present.

**Film reading:** viewing of a radiographic depiction of the breast (mammogram) to determine the presence or absence of a tumour.

**Fine-needle aspiration biopsy:** removal of breast tissue under a local anaesthetic through a fine needle for microscopic examination.

**Incidence:** the number of instances of illness commencing, or of persons falling ill, during a given period.

**Incident screening round:** is the screening episode of a woman who has had a mammogram within the past five years.

**Index screening year:** the year for which the interval cancer rate and the program sensitivity is determined.

**Index screens:** all screening examinations performed within the index screening year.

**Indicators:** observations about data that have been analysed to provide a means of comparing measures of health within and between population groups.

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

**Information:** observations about data that have been analysed to provide a means of comparing measures of health within and between population groups.

**International Classification of Diseases:** WHO's internationally accepted classification of death and disease. The Ninth Revision (ICD-9) is currently in use.

**Interval cancer:** is any invasive breast cancer diagnosed in the interval following a negative screening episode and before the next scheduled screening examination.

**Invasive cancer:** a tumour whose cells have a tendency to invade healthy or normal tissues.

**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.

**Metastasis:** the process by which a disease is transferred from one part of the body to another, for example, via the lymphatic system or the bloodstream.

**Morbidity:** a measure of illness when referring to ill health in an individual or ill health in a population or group.

**Mortality:** see cancer death.

**New cancer case:** a person who has a new cancer diagnosed for the first time. One person may 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).

**Next scheduled screening examination:** 24 months after previous screen unless the woman is recommended for annual rescreening when the next scheduled screening examination is 12 months.

**Population estimates:** official population numbers compiled by the Australian Bureau of Statistics at both State/Territory and SLA level by age and sex, as at 30 June each year. These estimates allow for comparisons to be made between geographic areas of differing population sizes and age structures.

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

**Prevalent screening round:** is the screening episode of a woman who has never had a mammogram before, or a woman who has not had a mammogram within the past five years (in or out of the Program).

**Program sensitivity:** is the percentage of invasive breast cancers detected by the Program amongst the total number of invasive breast cancers found in Program-screened women.

**Recruitment:** the strategies that aim to promote participation of women in the BreastScreen Australia Program through direct contact with women in the target age group and education of health practitioners and the general public. Women are encouraged to attend every two years.

**Rescreening:** the next screening examination after the screening episode in the index screening year.

**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.

**Screen-detected cancer:** an invasive breast cancer detected during a screening episode.

**Screening:** the performance of tests on apparently well people in order to detect those who have a disease from those who probably do not. As a screening test is not intended to be diagnostic, a person with a positive or suspicious result must be referred for diagnosis and treatment.

**Screening episode:** includes screening examination and assessment. Early review within 6–12 months of initial screen is not considered part of the screening episode.

**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.

**Sensitivity:** the proportion of people with the disease who have a positive test for the disease.

**Small cancer:** an invasive cancer 10 mm or less in size.

**Symptom:** any evidence of disease apparent to the patient. For the purposes of this report, symptoms refer to self-reported breast lump and/or blood-stained/ watery nipple discharge.

**Target population:** women aged between 50 and 69 years.

**Torres Strait Islander:** a person of Torres Strait Islander descent who identifies as a Torres Strait Islander and is accepted as such by the community in which he or she lives.

**Ultrasound:** diagnostic method based on the reflection of ultrasonic sound waves, generated through scanning of the breast. The reflections are viewed on a computer screen or photograph, and checked for variations in images.

**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 assurances that appropriate confidentiality measures are in place.

**Women-years at risk:** all women screened in the index screening year who are resident in the State/Territory in which they are screened who have not reported a personal history of breast cancer.

# References

Australian Health Ministers' Advisory Council. Breast Cancer Screening Evaluation Committee 1990. Breast cancer screening in Australia: future directions. Australian Institute of Health: Prevention Program Evaluation Series No. 1. Canberra: AGPS.

Australian Institute of Health and Welfare (AIHW) 1998a. Diagnostic mammography, 1991–1996. Australia. Unpublished brief prepared for the Department of Health and Family Services.

Australian Institute of Health and Welfare (AIHW) 1998b. Breast and cervical cancer screening in Australia 1996–97. AIHW Cat. No. CAN 3 (Cancer Series No. 8). Canberra: AIHW .

Australian Institute of Health and Welfare (AIHW) 1998c. Health in rural and remote Australia. AIHW Cat. No. PHE 6. Canberra: AIHW.

Boyle P & Parkin DM 1991. Chapter 11. Statistical methods for registries. In Jensen OM, Parkin DM, Maclennan R, Muir CS and Skeet RG (eds). Cancer registration: principles and methods. Lyon: International Agency for Research on Cancer.

BreastScreen Australia 1996. BreastScreen Australia statistical report 1996. Canberra: BreastScreen Australia.

Butler JRG, Furnival CM & Hart RFG 1990. Do treatment costs vary by stage of detection of breast cancer? Working Paper No. 18. Canberra: National Centre for Epidemiology and Population Health, ANU.

Commonwealth Department of Human Services and Health (DHSH) 1994a. National Program for the Early Detection of Breast Cancer — National Accreditation Requirements. Canberra: Commonwealth Department of Human Services and Health.

Commonwealth Department of Human Services and Health (DHSH) 1994b. National Program for the Early Detection of Breast Cancer — minimum data set: for screening and assessment services. Canberra: AGPS.

Commonwealth Department of Primary Industries and Energy & Department of Human Services and Health (DPIE & DHSH) 1994. Rural, remote and metropolitan areas classification. 1991 Census edition. Canberra: AGPS.

Day NE 1991. Screening for breast cancer. British Medical Bulletin 47:400–15.

Fletcher RH, Fletcher S & Wagner EH 1988. Clinical epidemiology: the essentials, 2nd ed. Baltimore: Williams & Wilkins.

Jensen OM, Parkin DM, Maclennan R, Muir CS & Skeet RG (eds) 1991. Cancer registration: principles and methods. Lyon: International Agency for Research on Cancer.

Kavanagh A, Amos AF & Marr GM 1999a. The ascertainment and reporting of interval cancers within the BreastScreen Australia Program. NHMRC National Breast Cancer Centre report. Sydney: National Breast Cancer Centre.

Kavanagh AM, Mitchell H, Farrugia H & Giles GG 1999b. Monitoring interval cancers in an Australian mammographic screening programme. J Med Screen 6:139–143.

Kricker A, Farac K, Smith D, Sweeny A, McCredie M & Armstrong BK 1999. Breast cancer in New South Wales in 1972–1995: tumor size and the impact of mammographic screening. International Journal of Cancer 81:877–888.

McLean MJ & Condon JR 1999. A single issue program in an isolated area: mammography screening in Darwin, NT. Australian and New Zealand Journal of Public Health 23:357–361.

NHS Breast Screening Programme & British Association of Surgical Oncology (NHS & BASO) 1999. An audit of screen detected breast cancers for the year of screening April 1997 to March 1998. United Kingdom: West Midlands NHS Breast and Cervical Screening Quality Assurance Reference Centre.

Peeters PHM, Verbeek ALM, Straatman H et al. 1989. Evaluation of overdiagnosis of breast cancer in screening with mammography: results of the Nijmegen Programme. International Journal of Epidemiology 18(2):295–299.

Sylvester PA, Kutt E, Baird A, Vipond MN, Webb AJ & Farndon JR 1997. Rate and classification of interval cancers in the breast screening programme. Annals of the Royal College of Surgeons of England 79(4):276–7.

# Related Publications

Armitage P & Berry B 1971. Statistical methods in medical research, 2nd ed. Oxford: Blackwell Scientific Publications.

Australian Institute of Health and Welfare, Australasian Association of Cancer Registries & NHMRC National Breast Cancer Centre. 1998. Breast cancer survival in Australian women 1982–1994. AIHW Cat. No. CAN 4 (Cancer Series No. 9). Canberra: AIHW .

Barratt AL, Cockburn J, Redman S, Paul C & Perkins J 1997. Mammographic screening: results from the 1996 National Breast Health Survey. Medical Journal of Australia 167 Nov: 521–4.

Blanks RG & Moss SM 1996. Monitoring the performance of breast screening programmes: allowing for geographical variation in breast cancer incidence. Journal of Medical Screening 3(2):82–4.

BreastScreen ACT 2000. BreastScreen ACT & SENSW Annual Statistical Report 1998/1999. Canberra: BreastScreen ACT.

BreastScreen Queensland 2000. Annual Statistical Report for 1997. Brisbane: BreastScreen Queensland.

BreastScreen SA at 10 Years (incorporating the 1997 Statistical Report) 1999. Adelaide: BreastScreen South Australia.

BreastScreen Victoria 1998. BreastScreen Victoria's annual report 1997–98. Melbourne: BreastScreen Victoria.

BreastScreen Victoria 2000. Annual Statistical Report, 1998. Melbourne: BreastScreen Victoria.

BreastScreen WA 1999. BreastScreen WA Statistical Report 1996–1997. Perth: BreastScreen WA.

Day N, McCann J, Camilleri-Ferrante C et al. on behalf of the Quality Assurance Management Group of the East Anglian Breast Screening Programme 1995. Monitoring interval cancers in breast screening programmes: the East Anglian experience. Journal of Medical Screening 2:180–85.

de Koning HJ, Fracheboud J, Boer R et al. (National Evaluation Team for Breast Cancer Screening) 1995. Nation-wide breast cancer screening in the Netherlands: support for breast cancer mortality reduction. International Journal of Cancer 60:777–80.

Esteve J, Benhamou E, Raymond L 1994. Descriptive epidemiology. International Agency for Research on Cancer (WHO): Statistical Methods in Cancer Research Volume IV. Lyon: IARC.

Estoesta J, Supramaniam R, Taylor R, Brassil A 2000. BreastScreen NSW Statistical Report 1988 to 1998. Sydney: BreastScreen NSW. (Forthcoming)

Gotzsche PC & Olsen O 2000. Is screening for breast cancer with mammography justifiable? The Lancet 355:129–34.

Jelfs P 1998. Using cancer registries to evaluate cancer screening programs. Cancer Forum 22(1):3–6.

Kricker A & Jelfs P 1996. Breast cancer in Australian women 1921–1994. Cancer Series No. 7. Canberra: Australian Institute of Health and Welfare.

Meissner HI, Breen N, Coyne C, Legler JM, Green DT & Edwards BK 1998. Breast and cervical cancer screening interventions: an assessment of the literature. Cancer Epidemiology and Biomarkers Prevention 7:951–961.

National Health Service (NHS) Breast Screening Programme 1998. NHS breast screening review 1997. United Kingdom: NHS Breast Screening Programme.

Pagano M & Gauvreau K 1992. Principles of biostatistics. Belmont, California: Duxbury Press.

Prior P, Woodman CBJ, Wilson S & Threlfall AG 1996. Reliability of underlying incidence rates for estimating the effect and efficiency of screening for breast cancer. Journal of Medical Screening 3:119–22.

Ponten J, Holmberg L, Trichopoulos D et al. 1990. Biology and natural history of breast cancer. International Journal of Cancer: Supplement (5):5–21.

Quinn M & Allen E on behalf of the United Kingdom Association of Cancer Registries 1995. Changes in incidence of and mortality from breast cancer in England and Wales since introduction of screening. British Medical Journal 311:1391–95.

Rickard MT, Taylor RJ, Fazli MA & El Hassan N 1998. Interval breast cancers in an Australian mammographic screening program. Medical Journal of Australia 169:184–7.

Rodger A & Kavanagh AM 1998. Outcome measures of an Australian breast-screening program. Editorial. Medical Journal of Australia 169:179–80.

Smith DP, Oudod V, Supramaniam R, Ryan E, Armstrong BK 1996. BreastScreen NSW Statistical Report 1991 to 1995. Sydney: NSW Cancer Council.

Tabar L, Duffy SW & Krusemo UB 1987. Detection method, tumour size and node metastases in breast cancers diagnosed during a trial of breast cancer screening. European Journal of Cancer and Clinical Oncology 23(7):959–62.