

BreastScreen

BreastScreen WA

2001/2002 Annual Statistical Report

BreastScreen WA

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Foreword

The period covered by this Report was a time of consolidation for BreastScreen WA, following the granting of accreditation in 2000 for the first time - a great milestone for the service.

In 2001 BreastScreen Australia was finalizing the new National Accreditation Standards (NAS). BreastScreen WA was required to undertake considerable changes in policy and procedures to meet the new NAS, particularly in the area of performance audit and reporting. BreastScreen Australia had placed considerable emphasis on staff training in cultural awareness and client's rights, and cultural awareness training was undertaken by all staff in 2001/2002. BreastScreen WA provided funding to ensure that consumer representatives of the BreastScreen WA Consumer Reference Group could attend the Breast Cancer Network Australia meetings and undertake consumer advocacy training.

A number of structural changes and strategic decisions were made in this period. Plans were made to relocate the Fremantle Clinic to a site that would accommodate two mammography machines; this was aimed at increasing capacity challenged by rapid population growth in the south metropolitan region. The screening service's organisational structure was changed to include an extra position, Senior Radiographer (Tutor and Quality Assurance). Recognizing that participation rates for Aboriginal women are less than the participation rates for other women, an Aboriginal and Torres Strait Islander (ATSI) Senior Project Officer was appointed to liaise with ATSI women and ATSI health organisations to develop and implement strategies aimed at increasing the participation of ATSI women in breast cancer screening.

Dr Roslyn Adamson retired from BreastScreen WA in June 2002. Dr Adamson had been actively campaigning for a screening service in the 1980's, had worked tirelessly on ministerial task forces to plan the service and had been instrumental in its implementation, firstly as a trial screening service in 1989 and as part of the national program in 1992. Dr Adamson had been active in screen reading as a senior radiologist since its inception. Responsible for teaching mammography to a whole generation of registrars, Dr Adamson left an effective legacy of radiologists with a high level of professional competency and an eye for attention to detail. BreastScreen WA was lucky enough to persuade Dr Adamson to chair the State Accreditation Committee following her retirement from BreastScreen WA.

The continuing overall high cancer detection rates described in this Report reflect the ongoing striving for excellence and the dedication of screening, assessment and central coordinating unit support staff.



Dr Elizabeth Wylie MBBS FRANZCR

1 June 2006



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About this Report

The 2001/2002 Annual Statistical Report presents summary data for breast cancer screens, and assessments of any abnormality detected, for West Australian women who attended the BreastScreen WA program from 1st July 2001 to 30th June 2002.

The data has been extracted from BreastScreen WA's Mammography Screening Registry, which holds information on screened women ranging from their demographic characteristics and screen-related personal details to assessment and cancer treatment information, including details about identified cancers such as pathology, size and metastatic status.

The data is presented by age group or by screening round, with results for the target age group (50-69 years) highlighted. Comparisons are made throughout the text with the results from the previous Report, for the 2000/2001 screening year, so that trends in performance outcomes and progress towards or beyond minimum standards can be gauged.

Throughout the Report, first screens refer to the first screen with BreastScreen WA even though some of these women may have had a previous screen outside the WA program. Subsequent screens include all those subsequent to the first screen for the time period reported.

BreastScreen WA's performance against a selected number of National Accreditation Standards is also presented in the Report. Comparison with these new standards, which came into effect in 2002, is considered appropriate for this Report even though until June 2002 the program was assessing its performance against the previous version of the performance standards.

General population statistics used as denominators for participation rates were drawn from the Australian Bureau of Statistics 2002 Estimated Resident Population tables. The 2001 Census data was used to derive target population figures for Indigenous women from Aboriginal or Torres Strait Islander background, and for women who speak a language other than English at home, referred to here as women from culturally and linguistically diverse backgrounds (CALD).

BreastScreen WA thanks all staff and sessional clinicians for their commitment and dedication in helping the program attain the highest of standards and for the quality of the data collected and maintained in the Registry. The service also appreciates the contributions of the members of the State Accreditation Committee and others who have assisted in the production of this Report.

BreastScreen WA

BreastScreen WA is part of the national mammographic screening program BreastScreen Australia, aimed at reducing morbidity and mortality from breast cancer through early detection of the disease. Asymptomatic women aged 40 years and over are eligible to attend, but the program targets women aged 50 to 69 years as the benefits of screening have been most clearly demonstrated in this age group. BreastScreen WA has since 1989 provided a free breast cancer screening and assessment program for the women of Western Australia, up to and including a definitive diagnosis of breast cancer or referral for diagnostic open biopsy.

To achieve the program's aims it is critical for the service to maintain high standards of program management and service delivery. BreastScreen Australia National Accreditation Requirements were introduced in 1994 with wide-ranging standards covering recruitment, screening services, follow-up of women with abnormalities, assessment services, data management and service management. These standards were reviewed and extended with a strong quality improvement focus to become the National Accreditation Standards (2002). They describe the minimum standards and requirements developed by the National Accreditation Committee for services operating within BreastScreen Australia. BreastScreen WA aims to be compliant with the BreastScreen Australia National Accreditation Standards and in October 2003 the service achieved full four-year re-accreditation.

Service provision

The program aims to make the screening service available and accessible to all eligible women in Western Australia. There are seven clinics in the metropolitan area and one mobile unit covering the south-eastern outer metropolitan area. Three mobile units service the south west, south eastern and northern regions of the state within a two-year cycle, visiting towns from Kununurra to Esperance and east to Laverton for periods ranging from a few days to twelve months (see Figure 1 and 2).

The State Coordination Unit (SCU) in Perth manages the appointment bookings, coordinating them with recruitment initiatives, clinic capacities and schedules, and is responsible for film reading, record and data handling and for mailing all invitation, reminder and result letters. The SCU also manages and reports on the financial aspects of the program, monitors and reports on program performance internally and to State and Commonwealth directorates and produces and coordinates the dissemination of all promotional materials.

BreastScreen WA also provides assessment of screen-detected abnormalities up to definitive diagnosis, including diagnostic open biopsy. The triple assessment process is utilised, involving clinical examination, imaging with special view mammography and ultrasound, and biopsy pathology. Assessment is conducted in two dedicated and accredited clinics located at Royal Perth Hospital and Sir Charles Gairdner Hospital. Breast Assessment Nurses inform women and their nominated general practitioner of the need for further assessment, organise appointments at the program assessment centres and offer support and advice to women regarding their assessment visit. Metropolitan clients are invited to attend one of the two assessment centres in Perth, whilst country clients may have their diagnostic further views done on the mobile unit. Some women choose to be assessed privately, outside the program, under the direction of their general practitioner. Information regarding the outcome of all assessments, including any treatments for cancer, is recorded on the database. Any anomalies or failures to attend for assessment are followed up by the service.

A range of recruitment strategies is developed by the SCU in consultation with consumer and health professional reference groups. Specific strategies are devised for recruitment through general practitioners and community groups, and for recruiting Indigenous women, those from culturally and linguistically diverse backgrounds and for women living in rural and remote regions of the state. Presentations are regularly made to ethnic groups and publications are available in a wide range of languages.

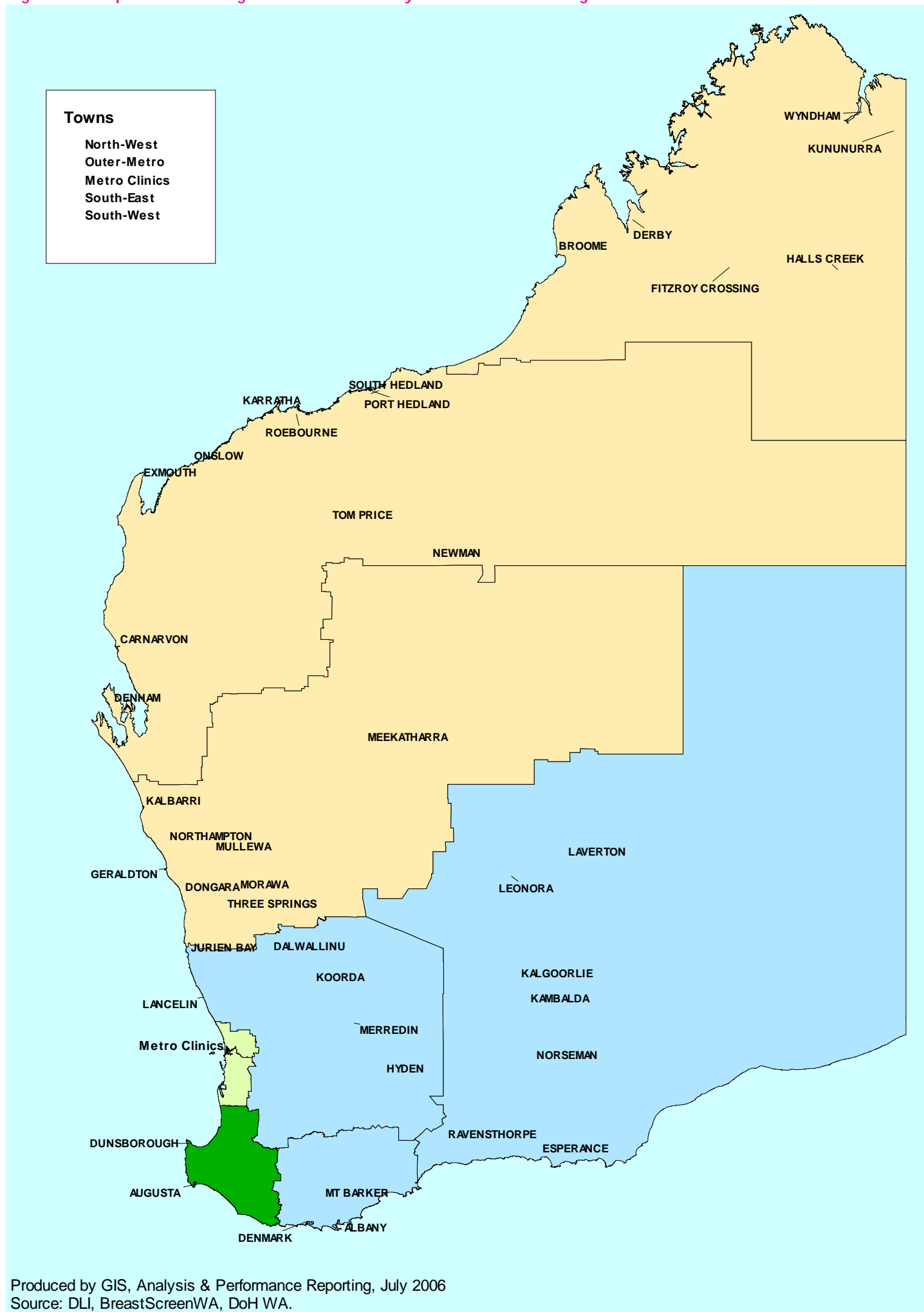
The service provides information and training to health professionals through educational activities such as a biennial breast cancer conference, communications workshops for general practitioners, and breast disease courses involving general practitioner attendance at 8 to 10 clinical sessions at the service's multidisciplinary breast assessment clinics. Screening-related articles are occasionally published in medical practitioner newsletters or journals and the service employs a GP Liaison Officer to assist in building partnerships with this group of health professionals.

Quality improvement

Accreditation with BreastScreen Australia involves thorough review of all practices and outcomes in relationship to compliance with the National Accreditation Standards. Frequent auditing of processes and outcomes of both screening and assessment forms part of the program's routine quality improvement activities. Comprehensive and confidential individual performance management for radiologists is a particularly important part of the program's activities, and is conducted quarterly by the Medical Director. Ongoing staff training, quality assurance of data held by the program and equipment and IT programming improvements are also part of the process of ensuring that BreastScreen WA offers the best possible standard of care and service to all women who take part in the program.

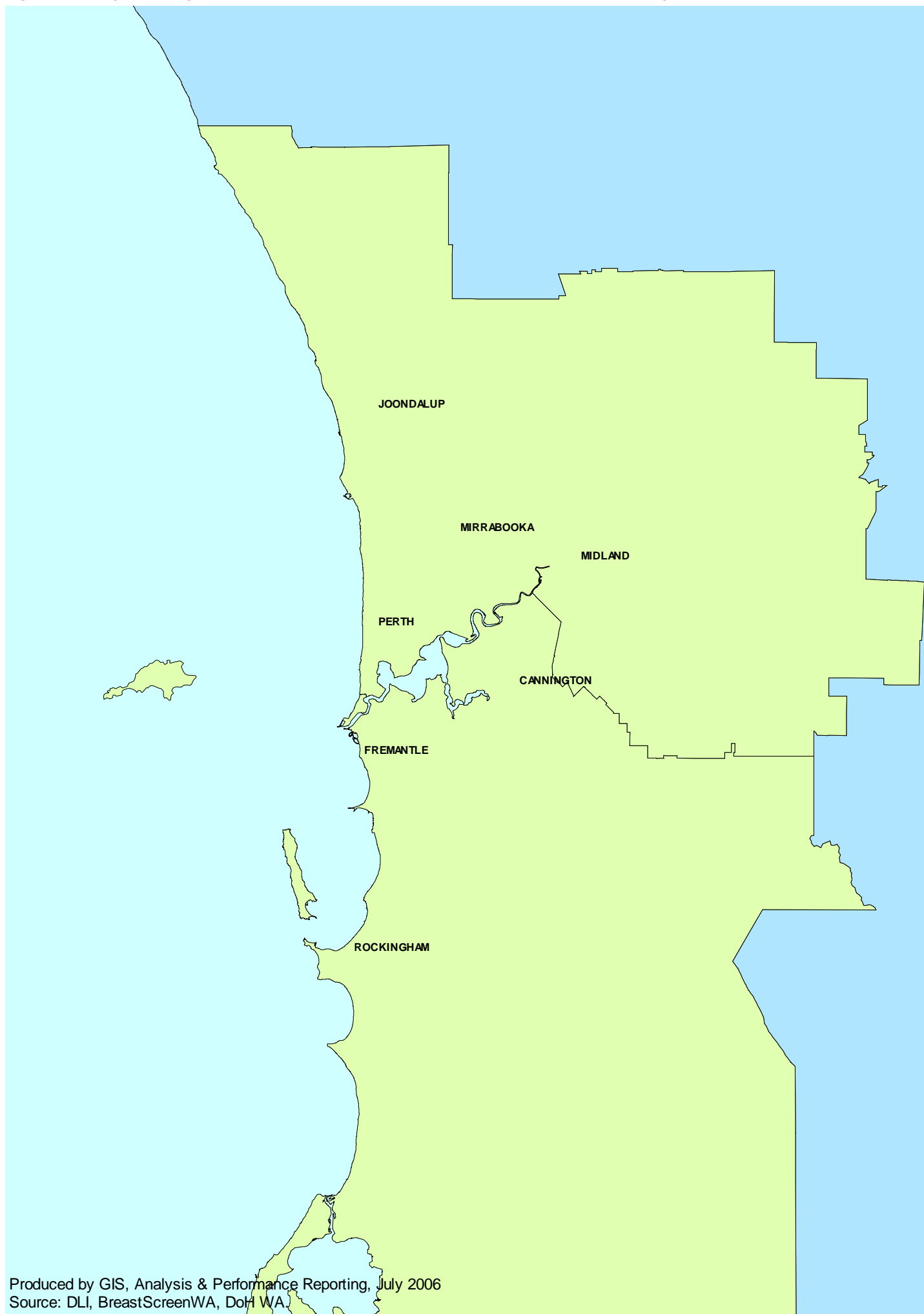
BreastScreen WA established a Quality Improvement Committee in early 2002 under the auspices of the Health Services (Quality Improvement) Act 1994. The Act grants special immunities and protections, including qualified privilege, for all activities and information gathered by the Committee. The main role of the Committee is to audit clinical and administrative practices, assess new technologies and oversee compliance with National Accreditation Standards with the aim of continually improving mammography screening services to the women of Western Australia. The Quality Improvement Committee's Annual Report to the Minister for Health reflects the service's focus on improving clinical and administrative practices.

Figure 1: Map of WA showing the towns visited by the mobile screening units



Produced by GIS, Analysis & Performance Reporting, July 2006
 Source: DLI, BreastScreenWA, DoH WA.

Figure 2: Map showing the locations of the 7 fixed site clinics in the Perth metropolitan area



Produced by GIS, Analysis & Performance Reporting, July 2006
Source: DLI, BreastScreenWA, DoH WA.

BreastScreen WA Key Results for 2001/2002

Attendance

- Between July 2001 and June 2002, BreastScreen WA performed 71,405 screens with 77% of screens in women in the 50-69 years target age group.
- For the 24-month period to June 2002, the participation rate for women aged 50 to 69 years was 54%, compared with 53% for the 24-month period to June 2001.
- Of the women aged 50-69 years who were screened between July 1999 and June 2000, 59% of those having their first screen and 77% of those having second or subsequent screens returned for rescreening within 27 months.

Demography

- Of all women screened in 2001/2002, 19% were having their first screen.
- Of all the women in the target age group, 73% resided in the metropolitan area.
- Indigenous women made up 1% (957) of all screens.
- Women of culturally and linguistically diverse background comprised 13% (8,910) of screens.
- 17% of all women screened had a family history of breast cancer.

Recall to assessment

- In 2001/2002, 5% (3,851) of women were recalled to assessment; 11% (1,536) of women having an initial screening round and 4% (2,315) having a rescreen were recalled.
- Of the women screened, 5% of those aged between 50 and 69 years, 8% of those aged 40 to 49 and 4% aged 70 onwards, were recalled to assessment.

Assessment procedures

- On average, each woman recalled for assessment underwent two assessment procedures. Sixty-one percent required only further mammographic views, clinical examination and/or ultrasound to confirm an outcome indicating no significant abnormality.
- Diagnostic open biopsy was performed in 4% (146) of assessments, of which 22% (32) indicated a malignant lesion.
- The majority of women (88%) who were assessed had a benign outcome.
- Of the 443 screen-detected breast cancers, 168 (38%) were diagnosed by fine needle aspiration, 244 (55%) by core biopsy and 31 (7%) by surgical biopsy.

Breast cancer detection

- Of the 442 screen-detected breast cancers of known pathology, 75% were invasive and 25% were DCIS (ductal carcinoma *in situ*).
- The invasive cancer detection rate for women in the target age group was 63 per 10,000 women having their first screen and 47 per 10,000 for women having subsequent screens.
- Interval cancer rates for screens in 2000 for women in the target age group were 5.7 and 6.6 per 10,000 for first and subsequent screens, respectively, for the 12 months following a normal mammogram. The combined rate for all screens for this age group was 6.5 per 10,000 screens.

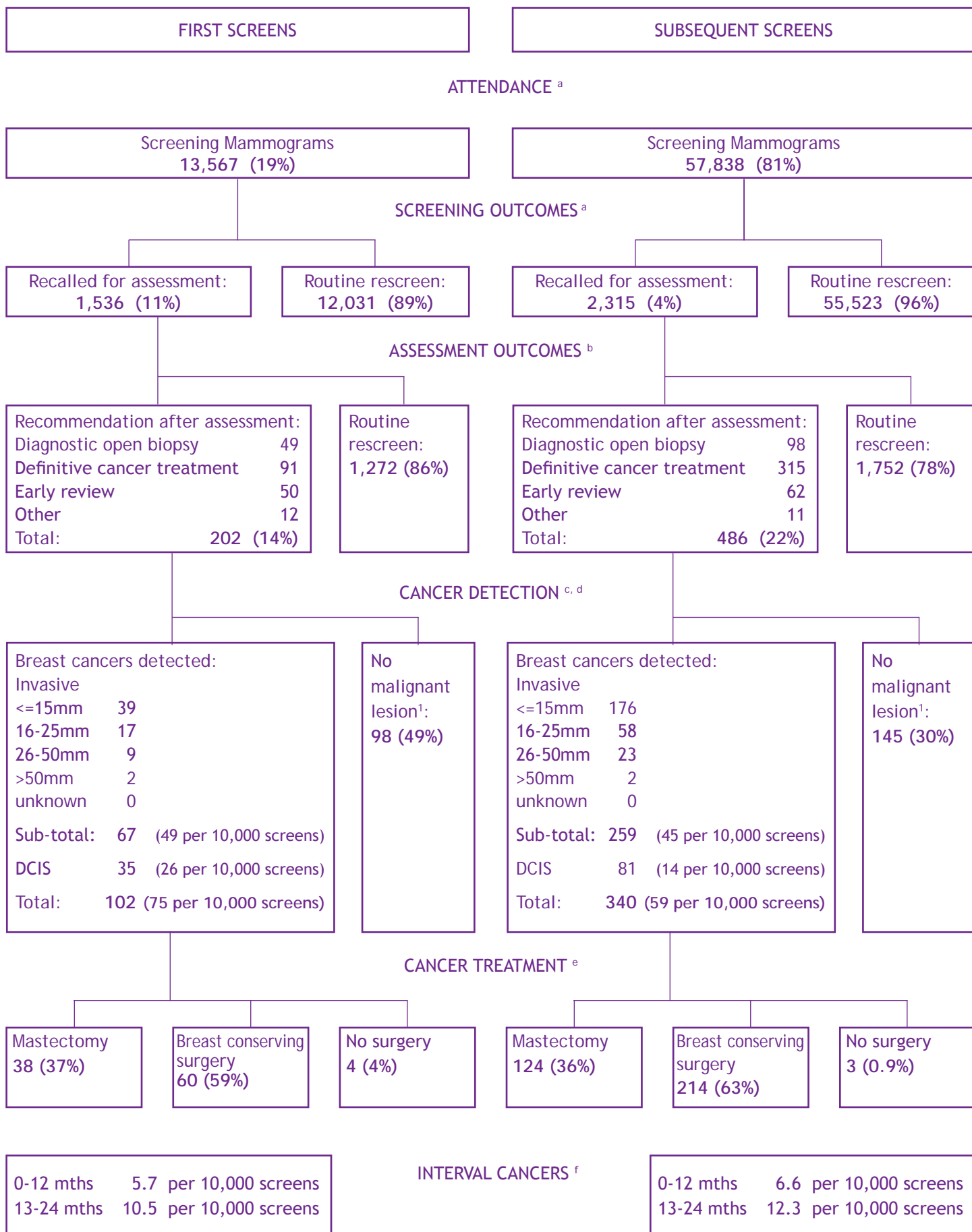
Small invasive cancer detection

- Of the 325 invasive cancers of known size, 66% were 15mm or less. The small invasive cancer detection rate for cancers <=15mm was 30 per 10,000 women screened in the 50-69 year age group.
- Of those invasive cancers <=15mm, 30% were classified as Grade 1, 47% as Grade 2 and 21% as Grade 3.

Treatment

- Sixty two percent of all women with breast cancer chose breast-conserving surgery while 37% had a mastectomy for the treatment of their breast cancer, regardless of whether it was an invasive or *in situ* type. Mastectomy was chosen more often by country women than those living in the metropolitan area (37% compared to 34%).

The flowchart below summarises the outcomes of screening and assessment for women who attended for a screen from July 2001 to June 2002. It displays the information in two streams according to screening round - first screens or subsequent screens.



SOURCE: ^a Table 16; ^b Table 19; ^c Table 23; ^d Table 25; ^e Table 29; ^f Table 33

¹ Benign outcome after diagnostic open biopsy, early review or other

Participation Rates

The participation rate of the breast cancer screening program is defined as the proportion of eligible women in the target age group screened at least once over a 24 month period. The aim of the BreastScreen program is to attain a 70% participation rate for women aged 50-69 years in order to reduce mortality and morbidity attributable to breast cancer and to realise the benefits of early detection in this target population.

Table 1 shows the participation rate by place of residence for women screened between 1st July 2000 and 30th June 2002. There has been a 1% increase in the participation rate for women aged 50 to 69 years from 53% in 1999-2001 to 54% in 2000-2002. As has been the pattern over a number of years, participation in the program by this age group was higher in country areas, with 58% of country women attending compared to 53% of metropolitan women.

Figure 3 shows the steady increase in participation rates for women aged 50-69 years screened during the 24-month periods from 1995-1997 to 2000-2002.

Table 1: Participation rates by place of residence by age group, July 2000 to June 2002

Place of residence	Age group			Total
	40-49	50-69	70+	
METROPOLITAN				
Number of women screened	16,732	73,088	5,116	94,936
Estimated female resident population	109,075	139,036	30,991	279,102
<i>% population screened</i>	15.3%	52.6%	16.5%	34.0%
COUNTRY				
Number of women screened	6,788	27,407	2,388	36,583
Estimated female resident population	37,162	47,064	19,605	103,831
<i>% population screened</i>	18.3%	58.2%	12.2%	35.2%
TOTAL				
Number of women screened	23,520	100,495	7,504	131,519
Estimated female resident population	146,237	186,100	50,596	382,933
<i>% population screened</i>	16.1%	54.0%	14.8%	34.3%

Figure 3: Participation rates by age group from 1994-1996 to 2000-2002

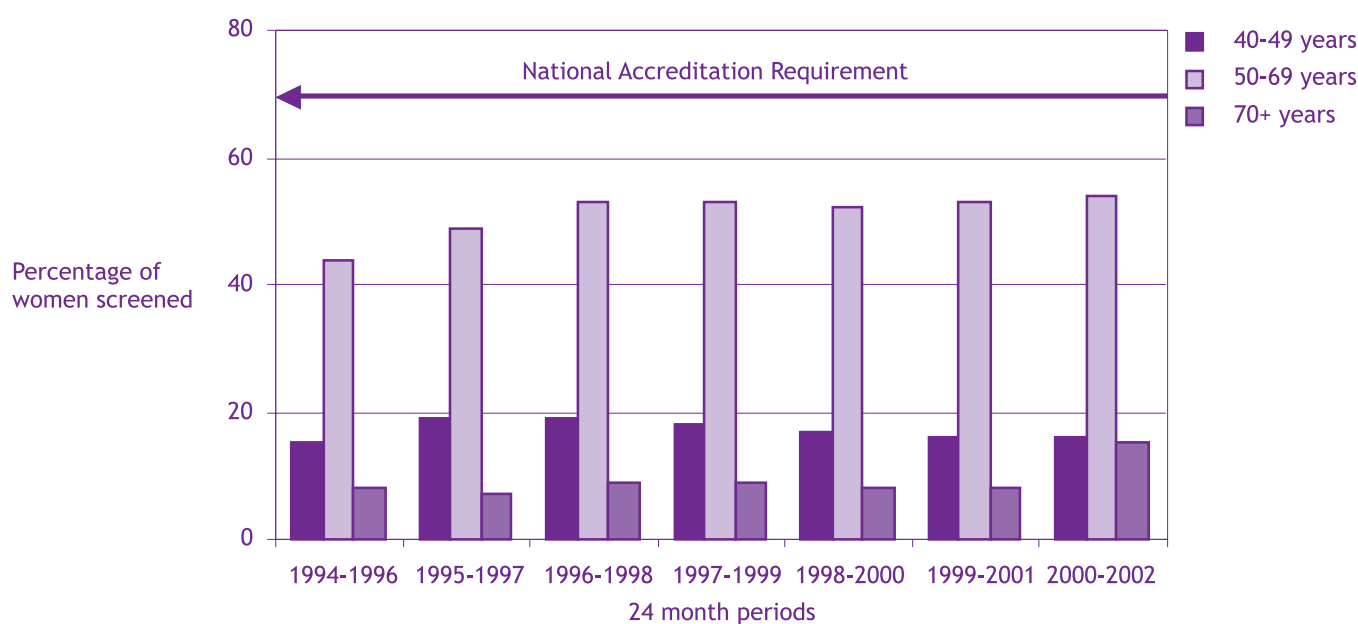


Table 2 shows the participation rates for Indigenous women by place of residence and by age group. The overall participation rate for women aged 50-69 years in this group was 36%, an increase of 5% since the previous reporting year. The rate was higher for country residents (45%) than for those living in the metropolitan area (18%).

Table 2: Participation rates of Indigenous women by place of residence and by age group, July 2000 to June 2002

Place of residence	Age group			Total
	40-49	50-69	70+	
Metropolitan				
Number of women screened	19	137	8	164
2001 Estimated resident pop'n	1,054	774	118	1,946
<i>% of pop'n screened</i>	2%	18%	7%	8%
Country				
Number of women screened	310	770	93	1,173
2001 Estimated resident pop'n	1,917	1,723	467	4,107
<i>% of pop'n screened</i>	16%	45%	20%	29%
Total				
Number of women screened	329	907	101	1,337
2001 Estimated resident pop'n	2,971	2,497	585	6,053
<i>% of pop'n screened</i>	11%	36%	17%	22%

Table 3 shows the participation rates for culturally and linguistically diverse women (those speaking a language other than English at home). This group of women had a participation rate equal to that of the general population of 58% but showed a lower participation rate for country residents than for metropolitan area residents. In this group also, the overall participation rate for the target age women was higher than the previous reporting year (53%).

Table 3: Participation rates of CALD women by place of residence and by age group, July 2000 to June 2002

Place of residence	Age group			Total
	40-49	50-69	70+	
Metropolitan				
Number of women screened	2,543	11,482	682	14,707
2001 Census pop'n	16,091	19,352	9,139	44,582
<i>% of pop'n screened</i>	16%	59%	7%	33%
Country				
Number of women screened	314	1,212	119	1,645
2001 Census pop'n	1,963	2,435	1,262	5,660
<i>% of pop'n screened</i>	16%	50%	9%	29%
Total				
Number of women screened	2,857	12,694	801	16,352
2001 Census pop'n	18,054	21,787	10,401	50,242
<i>% of pop'n screened</i>	16%	58%	8%	33%

Special needs groups, such as Indigenous women and CALD women and women with physical disabilities, are supported through the program by a number of strategies, such as liaison with cultural groups and communities, translation services, reading aids, wheelchair access at all clinics and translated reading material in a number of languages available through the service's website. Transport assistance can be provided for Indigenous women in far remote communities.

Characteristics of Women Screened

At the time of screening, information is collected regarding a previous breast cancer or ovarian cancer, family history of breast cancer, the use of hormone replacement therapy or any previous breast procedures such as mammoplasty or surgery that may affect the accurate assessment of the mammogram. These characteristics of screened women and several demographic features are summarised in the following sections.

Type of Attendance

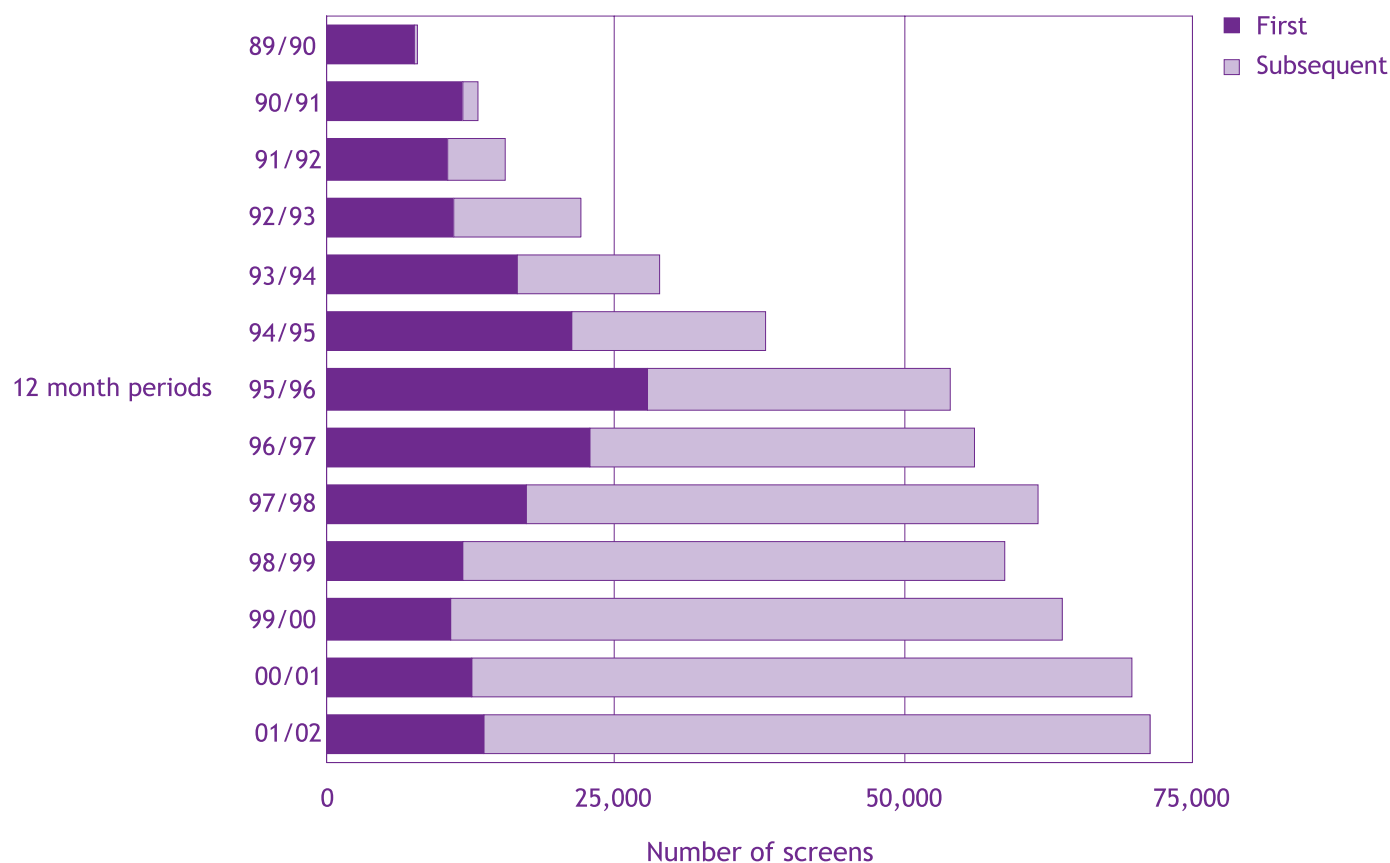
Total annual attendance rose by 2.4% from the previous year, from 69,707 in 2000/2001 to 71,405 this year. The growth in annual screens and the breakdown by screening round is illustrated in Figure 4.

Of the total number of women screened, 12,608 (18%) were aged between 40 and 49, 54,880 (77%) were aged between 50 and 69 and 3,893 (5%) were aged 70 years and over (Table 4).

Table 4: Number of screens by round by age, July 2001 to June 2002

TYPE OF ATTENDANCE	Age group						50-69	All ages
	<40	40-49	50-59	60-69	70-79	80+		
First screens	17	5,246	6,467	1,446	323	68	7,913	13,567
% of first screens	0.1%	38.7%	47.7%	10.7%	2.4%	0.5%	58.3%	100%
Subsequent screens	7	7,362	26,509	20,458	3,274	228	46,967	57,838
% of subsequent screens	0.0%	12.7%	45.8%	35.4%	5.7%	0.4%	81.2%	100%
TOTAL	24	12,608	32,976	21,904	3,597	296	54,880	71,405
% of all screens	0.0%	17.7%	46.2%	30.7%	5.0%	0.4%	76.9%	100%

Figure 4: Number of screens by round by 12-month period between 1989/1990 and 2001/2002



Area of Residence

In 2001/2002, 72% of all screens were for women resident in the metropolitan areas, which is comparable to the population profile for women in Western Australia where 75% of those aged 50-69 years live in the Perth metropolitan area.^{1,2} The country mobile units performed 19,955 screens or 28% of the total, an increase of 1% over the previous year. The annual screening throughput in country areas is affected by the mobile unit schedules and by changing populations.

Table 5: Number of women screened by place of residence, July 2001 to June 2002

Place of residence	<40		40-49		Age group 50-69		70+		All ages	
	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%
METROPOLITAN	2	8.3%	8,842	70.1%	39,840	72.6%	2,728	70.1%	51,412	72.0%
COUNTRY	22	91.7%	3,763	29.8%	15,005	27.3%	1,165	29.9%	19,955	27.9%
Interstate/Unknown	0	0.0%	3	0.0%	35	0.1%	0	0.0%	38	0.1%
TOTAL	24	100%	12,608	100%	54,880	100%	3,893	100%	71,405	100%

¹ Metropolitan and rural/remote (i.e. country) classifications are according to the "Rural, Remote and Metropolitan Areas Classification" of the Commonwealth Departments of Health and Family Services and Primary Industries and Energy, January 1994 and based on concordance with statistical local areas.

² Australian Bureau of Statistics, Estimated Residential Population, June 2001 (based on the 2001 Census)

Indigenous Women

In the 2001 Census, 1.5% (6,053) of all Western Australian women over the age of 40 years identified themselves as being of Aboriginal or Torres Strait Islander (ATSI) descent, with 41% being in the screening program target age group of 50 to 69 years and 68% living in rural and remote areas.³

BreastScreen WA screened 957 Indigenous women, representing 1.3% of all screens and similar to the representation of Indigenous women in the total population. This was twice the proportion in 2000/2001 (0.6%). The proportion of indigenous women screened who were in the 40-49 year age group (24%) was similar to previous years and is higher than that for non-Indigenous women, where 18% of those screened were 40-49.

Table 6: Number of Indigenous women screened by age group, July 2001 to June 2002

	Age group				All ages	% of all women
	<40	40-49	50-69	70+		
ABORIGINAL OR TORRES STRAIT ISLANDER (ATSI) WOMEN						
Number of women screened	1	228	649	79	957	1.3%
% of women screened	0.1%	23.8%	67.8%	8.3%	100%	
NON- ABORIGINAL OR TORRES STRAIT ISLANDER (ATSI) WOMEN						
Number of women screened	23	12,380	54,231	3,814	70,448	98.7%
% of women screened	0.0%	17.6%	77.0%	5.4%	100%	
ALL WOMEN						
Number of women screened	24	12,608	54,880	3,893	71,405	100%
% of women screened	0.0%	17.7%	76.9%	5.5%	100%	

Women Speaking a Language Other than English at Home

An estimated 12% of West Australian women over the age of 40 years are from culturally and linguistically diverse (CALD) backgrounds, speaking a language other than English at home.³

In 2001/2002 the program screened 8,910 CALD women, 13% of all women screened and of the total target age group. This represents a 1% increase compared to 2000/2001. Those in the target age group made up 78% of the CALD women, a 1% higher proportion than for the population as a whole.

Table 7: Number of women screened by language spoken at home by age group, July 2001 to June 2002

	Age group				All ages	% of all women
	<40	40-49	50-69	70+		
WOMEN SPEAKING LANGUAGE OTHER THAN ENGLISH AT HOME						
Number of women screened	1	1,504	6,976	429	8,910	12.5%
% of women screened	0.0%	16.9%	78.3%	4.8%	100%	
WOMEN SPEAKING ENGLISH AT HOME						
Number of women screened	23	11,104	47,904	3,464	62,495	87.5%
% of women screened	0.0%	17.8%	76.7%	5.5%	100%	
ALL WOMEN						
Number of women screened	24	12,608	54,880	3,893	71,405	100%
% of women screened	0.0%	17.7%	76.9%	5.5%	100%	

³ Australian Bureau of Statistics, Census of Population and Housing 2001.

The most common languages other than English spoken at home amongst women who attended for a screen in the target age group were Italian, Chinese languages, Croatian, German and Netherlandic languages. All other languages made up less than 7% of the total number of screens.

Table 8: Attendance by age and major languages spoken at home, July 2001 to June 2002

Language spoken at home	Attendance by age group				All ages
	<40	40-49	50-69	70+	
English	22 91.7%	11,046 87.6%	47,709 86.9%	3,435 88.2%	62,212 87.1%
Italian	0 0.0%	220 1.7%	1,805 3.3%	168 4.3%	2,193 3.1%
Chinese	0 0.0%	138 1.1%	535 1.0%	10 0.3%	683 1.0%
Croatian	0 0.0%	81 0.6%	385 0.7%	21 0.5%	487 0.7%
German	0 0.0%	40 0.3%	398 0.7%	45 1.2%	483 0.7%
Netherlandic	0 0.0%	24 0.2%	394 0.7%	50 1.3%	468 0.7%
Polish	0 0.0%	76 0.6%	293 0.5%	20 0.5%	389 0.5%
Vietnamese	0 0.0%	83 0.7%	233 0.4%	4 0.1%	320 0.4%
Cantonese	0 0.0%	82 0.7%	214 0.4%	2 0.1%	298 0.4%
Greek	0 0.0%	31 0.2%	247 0.5%	13 0.3%	291 0.4%
Spanish	0 0.0%	65 0.5%	195 0.4%	6 0.2%	266 0.4%
Aboriginal Languages	1 4.2%	55 0.4%	180 0.3%	28 0.7%	264 0.4%
French	0 0.0%	29 0.2%	218 0.4%	14 0.4%	261 0.4%
Macedonian	0 0.0%	35 0.3%	215 0.4%	8 0.2%	258 0.4%
Tagalog (Filipino)	0 0.0%	76 0.6%	141 0.3%	1 0.0%	218 0.3%
Other	1 4.2%	529 4.2%	1,716 3.1%	68 1.7%	2,314 3.2%
TOTAL	24 100%	12,610 100%	54,878 100%	3,893 100%	71,405 100%

Country of Birth

Table 9 shows the country of birth of women screened in 2001/2002. Forty percent of women were born outside of Australia, with the greatest proportion coming from England (16%), Italy (2.9%) and Scotland (2.2%).

Table 9: Attendance by age and country of birth, July 2001 to June 2002

Country of birth	Attendance by age group				All ages
	<40	40-49	50-69	70+	
Australia	16 66.7%	8,059 63.9%	32,148 58.6%	2,549 65.5%	42,772 59.9%
England	3 12.5%	1,545 12.3%	9,241 16.8%	572 14.7%	11,361 15.9%
Italy	0 0.0%	149 1.2%	1,762 3.2%	159 4.1%	2,070 2.9%
Scotland	0 0.0%	225 1.8%	1,247 2.3%	88 2.3%	1,560 2.2%
New Zealand	3 12.5%	400 3.2%	904 1.6%	29 0.7%	1,336 1.9%
Malaysia	0 0.0%	230 1.8%	756 1.4%	29 0.7%	1,015 1.4%
Netherlands	0 0.0%	53 0.4%	819 1.5%	66 1.7%	938 1.3%
Germany	0 0.0%	67 0.5%	728 1.3%	53 1.4%	848 1.2%
India	0 0.0%	91 0.7%	682 1.2%	35 0.9%	808 1.1%
South Africa	0 0.0%	172 1.4%	420 0.8%	22 0.6%	614 0.9%
Yugoslavia, Federal Republic of	0 0.0%	86 0.7%	409 0.7%	22 0.6%	517 0.7%
Singapore	1 4.2%	120 1.0%	352 0.6%	4 0.1%	477 0.7%
Ireland	0 0.0%	72 0.6%	349 0.6%	17 0.4%	438 0.6%
Vietnam	0 0.0%	101 0.8%	289 0.5%	4 0.1%	394 0.6%
Philippines	0 0.0%	128 1.0%	256 0.5%	1 0.0%	385 0.5%
Other	1 4.2%	1,112 8.8%	4,516 8.2%	243 6.2%	5,872 8.2%
TOTAL	24 100%	12,610 100%	54,878 100%	3,893 100%	71,405 100%

Personal History of Breast Cancer

Table 10 below shows the number of women screened who have previously had breast cancer. This may have been detected outside the BreastScreen WA program or been diagnosed at a previous screen within the program. Like all other women on the database, these women are routinely invited annually unless they notify the program otherwise. Of all women screened in 2001/2002, 1,112 (2%) had a personal history of breast cancer. The proportion with personal history was similar to that in 2000/2001 when it was 1.4%.

Table 10: Number of screens where women reported personal history of breast cancer by age group, July 2001 to June 2002

	<40		40-49		50-59		Age group 60-69		70-79		80+		50-69		All ages	
	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%
Personal history	1	4.2%	65	0.5%	353	1.1%	514	2.3%	154	4.3%	35	11.8%	867	1.6%	1,122	1.6%
No personal history	23	95.8%	12,543	99.5%	32,623	98.9%	21,390	97.7%	3,443	95.7%	261	88.2%	54,013	98.4%	70,283	98.4%
ALL WOMEN SCREENED	24	100%	12,608	100%	32,976	100%	21,904	100%	3,597	100%	296	100%	54,880	100%	71,405	100%

Family History of Breast Cancer

In 2001/2002 it was the policy of BreastScreen WA to routinely invite for annual screening all women with a family history of breast cancer in any first-degree relative. The protocols for screening women with a family history of breast cancer were updated in March 2006 to follow more closely the NH&MRC Clinical Practice Guidelines and standards set by BreastScreen Australia. Women who have only one first-degree relative with breast cancer, and where that cancer was diagnosed at age 50 or more, will be returned to biennial screening as they are deemed not to have a significant family history of breast cancer. The remainder will continue to be offered annual screening.

The first-degree relative may be a mother, sister, daughter, father, brother or son. Table 11 shows that 17% (12,277) of women reported some family history of breast cancer. This is unchanged from 2000/2001. It is anticipated that the change in the policy for annual screening of women with a family history of breast cancer will lower this portion of women to less than 10% of all screens.

Table 11: Number of screens where women reported a family history of breast cancer by age group, July 2001 to June 2002

	<40		40-49		50-59		Age group 60-69		70-79		80+		50-69		All ages	
	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%
Family history	20	83.3%	2,336	18.5%	5,103	15.5%	3,943	18.0%	810	22.5%	65	22.0%	9,046	16.5%	12,277	17.2%
No family history	4	16.7%	10,272	81.5%	27,873	84.5%	17,961	82.0%	2,787	77.5%	231	78.0%	45,834	83.5%	59,128	82.8%
ALL WOMEN SCREENED	24	100%	12,608	100%	32,976	100%	21,904	100%	3,597	100%	296	100%	54,880	100%	71,405	100%

Women Reporting Symptoms at Screen

The BreastScreen program is aimed at asymptomatic women. Those who indicate that they have a symptom at the time of booking are encouraged to visit their general practitioner first for a clinical examination. However, women who present at screening with a symptom will still be screened.

Only breast lumps and nipple discharge are classified as significant symptoms. Women with significant symptoms and a normal screen are followed up in the program to encourage investigation of the symptom. If the symptom has not been investigated by a GP, the woman may be offered an appointment at a program assessment centre to have the symptom investigated. Details of the symptom are sent to the woman's general practitioner and information is collected on these assessments.

The number of screens at which women reported symptoms at the time of screening is shown in Table 12. The category 'Nipple discharge' includes blood stained, clear or non-specific discharge. The category 'Pain/other' includes new, prolonged and/or severe pain and any other symptoms reported. Ninety nine percent of all screens performed in 2001/2002 were in asymptomatic women. A total of 634 (0.9%) women reported a breast symptom at the time of screening and only 398 had a significant symptom. The proportion of women reporting significant symptoms has remained unchanged compared with the previous year. Women under the age of 50 reported the largest proportion of significant symptoms.

Table 12: Number of screens where women reported symptoms by age group, July 2001 to June 2002

	<40		40-49		50-59		Age group 60-69		70-79		80+		50-69		All ages	
	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%
SYMPTOMS REPORTED																
Breast lump	2		119		148		60		6		0		208		335	
Nipple discharge	0		19		30		11		1		0		41		61	
Breast lump + nipple discharge	0		2		0		0		0		0		0		2	
Sub-total	2	8.3%	140	1.1%	178	0.5%	71	0.3%	7	0.2%	0	0.0%	249	0.5%	398	0.6%
Pain / other	0	0.0%	61	0.5%	91	0.3%	64	0.3%	19	0.5%	1	0.3%	155	0.3%	236	0.3%
TOTAL SYMPTOMS	2		201		269		135		26		1		404		634	
NO SYMPTOMS REPORTED																
	22	91.7%	12,407	98.4%	32,707	99.2%	21,769	99.4%	3,571	99.3%	295	99.7%	54,476	99.3%	70,771	99.1%
ALL WOMEN SCREENED	24	100%	12,608	100%	32,976	100%	21,904	100%	3,597	100%	296	100%	54,880	100%	71,405	100%

Hormone Replacement Therapy Use

Information is collected at the time of screening on whether the woman has been taking hormone replacement therapy (HRT) during the last six months. Thirty two percent of all women reported current usage, whilst 36% of the women in the target age group were using HRT. In the 2000/2001 reporting year 30% of all women and 35% of women aged 50-69 were using HRT at the time of screening. HRT use was highest in the 50-59 year age group.

Table 13: Number of screens where women reported using HRT by age group, July 2001 to June 2002

	<40		40-49		50-59		Age group 60-69		70-79		80+		50-69		All ages	
	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%
HRT reported	0	0.0%	1,933	15.3%	12,281	37.2%	7,414	33.8%	858	23.9%	49	16.6%	19,695	35.9%	22,535	31.6%
No HRT reported	24	100%	10,675	84.7%	20,695	62.8%	14,490	66.2%	2,739	76.1%	247	83.4%	35,185	64.1%	48,870	68.4%
ALL WOMEN SCREENED	24	100%	12,608	100%	32,976	100%	21,904	100%	3,597	100%	296	100%	54,880	100%	71,405	100%

Women with Breast Implants

Because of their mammographic opacity, breast implants make it more difficult to detect early breast cancer on a mammogram and special compression techniques must be used and more views taken. Women are required to sign a special consent form in addition to the normal consent for screening to indicate that they understand the difficulties in screening and detecting abnormalities in breasts with implants. Women are sent a pamphlet containing information about mammography and breast implants prior to their screen. The result letter to the women and to their nominated general practitioner contains advice about regular clinical breast examination. Table 14 shows that there were 583 (0.8%) screens in women with breast implants.

Table 14: Number of screens where women had breast implants by age group, July 2001 to June 2002

	<40		40-49		50-59		Age group 60-69		70-79		80+		50-69		All ages	
	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%
Breast implants	1	4.2%	114	0.9%	365	1.1%	98	0.4%	4	0.1%	1	0.3%	463	0.8%	583	0.8%
No breast implants	23	95.8%	12,494	99.1%	32,611	98.9%	21,806	99.6%	3,593	99.9%	295	99.7%	54,417	99.2%	70,822	99.2%
ALL WOMEN SCREENED	24	100%	12,608	100%	32,976	100%	21,904	100%	3,597	100%	296	100%	54,880	100%	71,405	100%

Rescreen Rates

The rescreen rate indicates the proportion of women returning for a rescreen within the recommended screening period. The normal recommended interval is two years; those with a family history or personal history of breast cancer and those who have had a previous diagnosis of high-risk breast changes such as atypical hyperplasias were recommended for annual screening in 2001/2002. The Table below includes women who have either a yearly or 2-yearly rescreen recommendation. The rate is expressed as the number of women attending between July 1999 and June 2000 who returned for a rescreen in 27 months, this period being set to allow time for women to respond to their rescreen letters. The National Accreditation Standards require that at least 75% of women in the target age group screened for the first time, and at least 90% of women in the target age group participating in their second or subsequent screen, return for a rescreen within 27 months.

Table 15: Number of women who returned for a rescreen within 27 months of their 1999/2000 screening

Type of screening	Age group			Total
	40-49	50-69	70+	
FIRST SCREENS				
Number of women screened in 1999/00	5,353	4,876	467	10,696
Number of women attending rescreening	3,326	2,906	81	6,313
<i>% of women rescreened</i>	62.1%	59.6%	17.3%	59.0%
SUBSEQUENT SCREENS				
Number of women screened in 1999/00	7,132	42,884	2,911	52,927
Number of women attending rescreening	5,625	33,907	1,291	40,823
<i>% of women rescreened</i>	78.9%	79.1%	44.3%	77.1%
TOTAL				
Number of women screened in 1999/00	12,485	47,760	3,378	63,623
Number of women attending rescreening	8,951	36,813	1,372	47,136
<i>% of women rescreened</i>	71.7%	77.1%	40.6%	74.1%

Outcomes of Screening

At the conclusion of the screen reading there is a recommendation for the woman to either return for a routine rescreen or to be referred for assessment of a suspicious lesion or a significant symptom reported at screen that had not been previously investigated by the woman's general practitioner. A significant symptom is defined as a breast lump or a clear or bloody nipple discharge.

Table 16 shows screening outcomes for those with an assessment referral for a mammographic abnormality or a significant symptom. For women attending for their first screen, 10.4%, or 10.2% of target age women, had a mammographic abnormality identified and were referred for assessment. Of those women attending for their second or subsequent screen 3.6%, or 3.5% of target age women, were referred for assessment. Only 0.5% overall were referred for symptoms assessment. The National Accreditation Standards are that <10% of women aged 50-69 years who attend for their first screen and <5% of women aged 50-69 years who attend for their second or subsequent screen are recalled for assessment.

Table 16: Outcomes of screening by round by age group, July 2001 to June 2002

Outcomes of screening	Age group					50-69		All ages	
	<40	40-49	50-59	60-69	70+	No. screens	%	No. screens	%
FIRST SCREENS									
Routine rescreening	12	4,608	5,750	1,297	364	7,047	89.1%	12,031	88.7%
Referred for assessment (mammographic abnormality)	3	569	669	140	27	809	10.2%	1,408	10.4%
Referred for assessment (significant symptoms only)	2	69	48	9	0	57	0.7%	128	0.9%
Sub-total	17	5,246	6,467	1,446	391	7,913	100%	13,567	100%
SUBSEQUENT SCREENS									
Routine rescreening	7	6,988	25,473	19,695	3,360	45,168	96.2%	55,523	96.0%
Referred for assessment (mammographic abnormality)	0	322	931	714	137	1,645	3.5%	2,104	3.6%
Referred for assessment (significant symptoms only)	0	52	105	49	5	154	0.3%	211	0.4%
Sub-total	7	7,362	26,509	20,458	3,502	46,967	100%	57,838	100%
ALL SCREENS									
Routine rescreening	19	11,596	31,223	20,992	3,724	52,215	95.1%	67,554	94.6%
Referred for assessment (mammographic abnormality)	3	891	1,600	854	164	2,454	4.5%	3,512	4.9%
Referred for assessment (significant symptoms only)	2	121	153	58	5	211	0.4%	339	0.5%
TOTAL	24	12,608	32,976	21,904	3,893	54,880	100%	71,405	100%

Outcomes of Assessment

Assessment Procedures

Within the BreastScreen WA program, procedures undertaken to assess a lesion or symptom range may include special magnified mammographic views, clinical examination, ultrasound, needle biopsy or surgical biopsies. After the recommendation for assessment, the woman is offered an appointment at one of the program's breast assessment centres or she may choose to be assessed privately. If further views of the breast area are required and the woman was screened outside the metropolitan area, she is offered the choice of having those views done on the mobile screening unit. Some of these women may then need to come to the assessment centre for further work up. All assessment outcomes were followed up, including those women who were assessed privately, to ensure a satisfactory outcome was achieved. The results in the following tables are for all women attending for assessment, whether through the program or privately.

Table 17 shows the range and combinations of assessment procedures undertaken by those women requiring assessment. There were 3,712 women (5.2% of screens) having some sort of post-screen procedure in 2001/2002. This number is not the same as the number referred for assessment, as some women chose not to be assessed or details were unable to be obtained, or one of the two readers had noted that a clinical examination was recommended. Some women went for assessment although their mammogram was normal but they had a non-significant symptom at screen they wished assessed.

A woman may be counted more than once if she had more than one procedure performed, or if she had more than one lesion to be assessed with different procedures undertaken for each lesion. The average number of procedures performed per woman was two. Most women who required assessment other than diagnostic further views had at least two other procedures, such as a clinical examination and ultrasound. Diagnostic further views for women who chose assessment outside the program were counted under 'other mammography' as the full details of these films, such as the number and type of views, could not be obtained. Other mammography may also include x-rays taken after an excisional or needle biopsy, or x-rays taken at an early review visit.

Table 17: Assessment procedures performed by round, July 2001 to June 2002

Procedure	First screens		Subsequent screens		All screens	
	No. procedures	%	No. procedures	%	No. procedures	%
Diagnostic Further Views	438	14.5%	793	17.8%	1,231	16.5%
Clinical examination	788	26.2%	1,135	25.5%	1,923	25.8%
Ultrasound	829	27.5%	1,094	24.6%	1,923	25.8%
Fine needle aspiration	306	10.2%	474	10.7%	780	10.5%
Core biopsy	484	16.1%	707	15.9%	1,191	16.0%
Other mammography	120	4.0%	142	3.2%	262	3.5%
Diagnostic open biopsy	47	1.6%	99	2.2%	146	2.0%
TOTAL PROCEDURES	3,012	100%	4,444	100%	7,456	100%
Total women attending for assessment	1,474		2,238		3,712	
Average number of investigations per woman	2.0		2.0		2.0	

Ultrasound and clinical examination remain the most common assessment procedures undertaken, performed on 52% of all women assessed and each making up 26% of all assessment procedures. The use of diagnostic further views has fallen as a proportion of all procedures (16.5% compared with 18.9% in 2000/2001) and in the proportion of all women assessed having them (33.2% compared with 35.9% in 2000/2001). The decrease in further views and the high use of ultrasounds reflect the greater attendance at program assessment centres, allowing the opportunity to take advantage of ultrasound facilities within the one visit.

Compared with the previous year, the proportion of assessed women having core biopsies increased by 2.5% and those having fine needle biopsies fell by 1.6%, probably due to the introduction of mammotome (vacuum assisted) core

biopsies in early 2001 and the use of same-day core biopsy results using core imprint techniques around this time. However, over the same time period there was a small increase in diagnostic open biopsies relative to other procedures (2.0% compared with 1.6% in 2000/2001).

The Definitive Diagnostic Procedure

A combination of procedures is usually required to reach a definitive decision at assessment, following strict protocols according to the type of lesion seen on the mammogram and the outcomes of each stage of the process. One third of assessed women (33.3%) needed only diagnostic views to achieve a recommendation to return to normal screening. Some (27.3%) also required a clinical examination or ultrasound for a benign outcome. Thus, 60.6% did not need to undergo an invasive procedure to reach a definitive outcome. A further 35.4% required a fine needle or a core biopsy to obtain a definitive diagnosis, whilst 3.9% required a diagnostic open biopsy before a definitive diagnosis of benign or malignant was reached.

Although there were 3,712 attending for assessment (Table 17), three of those women did not undergo any of the procedures listed below: one had a previous history of breast cancer and chose to have a mastectomy, one had nipple discharge cytology only, and one brought in her previous x-rays for comparison and did not require work-up of a suspicious area.

Table 18: Procedures giving a definitive diagnosis by round by age group, July 2001 to June 2002

Procedure	Age group															
	<40		40-49		50-59		60-69		70-79		80+		50-69		All ages	
	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%	No. screens	%
FURTHER VIEWS ONLY (FV)																
First screens	0		173		218		40		6		1		258		438	
Subsequent screens	0		143		359		258		35		3		617		798	
Sub-total	0	0.0%	316	32.6%	577	34.5%	298	33.3%	41	26.8%	4	26.7%	875	34.1%	1,236	33.3%
CLINICAL EXAMINATION (CE)																
+/- FV																
First screens	1		39		25		8		0		1		33		74	
Subsequent screens	0		23		35		26		7		0		61		91	
Sub-total	1	25.0%	62	6.4%	60	3.6%	34	3.8%	7	4.6%	1	6.7%	94	3.7%	165	4.4%
ULTRASOUND (US)																
+/- FV, CE																
First screens	0		186		156		29		5		3		185		379	
Subsequent screens	0		92		214		138		26		1		352		471	
Sub-total	0	0.0%	278	28.7%	370	22.1%	167	18.6%	31	20.3%	4	26.7%	537	20.9%	850	22.9%
FINE NEEDLE ASPIRATION (FNA)																
+/- FV, CE, US, OM																
First screens	1		57		63		15		0		0		78		136	
Subsequent screens	0		32		98		67		16		3		165		216	
Sub-total	1	25.0%	89	9.2%	161	9.6%	82	9.2%	16	10.5%	3	20.0%	243	9.5%	352	9.5%
CORE BIOPSY (CB)																
+/- FV, CE, US, OM, FNA																
First screens	2		135		201		49		11		0		250		398	
Subsequent screens	0		53		238		223		46		2		461		562	
Sub-total	2	50.0%	188	19.4%	439	26.2%	272	30.4%	57	37.3%	2	13.3%	711	27.7%	960	25.9%
DIAGNOSTIC OPEN BIOPSY (DOB)																
+/- any of the above procedures																
First screens	0		15		26		6		0		0		32		47	
Subsequent screens	0		20		40		37		1		1		77		99	
Sub-total	0	0.0%	35	3.6%	66	3.9%	43	4.8%	1	0.7%	1	6.7%	109	4.2%	146	3.9%
TOTAL																
First screens	4		605		689		147		22		5		836		1,472	
Subsequent screens	0		363		984		749		131		10		1,733		2,237	
ALL SCREENS	4	100%	968	100%	1,673	100%	896	100%	153	100%	15	100%	2,569	100%	3,709	100%

Recommendation after Assessment

At the completion of the clinical, radiological and needle biopsy stages of assessment the outcome may be benign, malignant or still uncertain. The women is given an overall recommendation to return to normal screening, to go on for surgical biopsy, to have definitive treatment of the malignancy or to return for a review of the lesion in 6 month's time. Some choose a therapeutic excision for a benign lesion, some do not complete their assessments, or others have a leaking prosthesis where they will be under the future care of the surgeon. These situations are classified as "other" in the accompanying Table 19.

Most women had a benign outcome of assessment and were returned to normal screening. Proportionally more first screen women recalled for assessment are returned to routine screening (86.3% vs. 78.3% of subsequent screens). A smaller proportion of women assessed after their first screen have pre-surgical diagnosis of malignancies (6.2%) compared with subsequent screens (14.1%). The recommendation to go on for a surgical biopsy was similar for both screening groups (3.3% and 4.4%, respectively).

Of the 3,712 women attending for assessment, 3% were required to return for a 6-month review of their lesion. It is desirable that women receive a definitive outcome of assessment at their first visit and that assessment is completed within 14 days. The National Accreditation Standards state that no more than 0.2% of women who attend for screening are recommended for early review; the 112 women represented 0.16% of all screens. A request to return for an early review is generally because nothing suspicious was noted at work-up but there was still concern that the lesion needed watching. Most had only another breast x-ray when they returned for review.

For all the assessment recommendations, similar patterns were observed for the target age women and for all women assessed.

Table 19: Recommendation after assessment by round by age group, July 2001 to June 2002

Recommendation	Age group						50-69		All ages	
	<40	40-49	50-59	60-69	70-79	80+	Screens	%	Screens	%
FIRST SCREENS										
Definitive Treatment for Cancer	1	12	48	23	7	0	71	8.5%	91	6.2%
Diagnostic Open Biopsy	0	16	25	8	0	0	33	3.9%	49	3.3%
Early Review	0	21	26	3	0	0	29	3.5%	50	3.4%
Other	0	7	2	3	0	0	5	0.6%	12	0.8%
Return to routine screening	3	550	589	110	15	5	699	83.5%	1,272	86.3%
Sub-total	4	606	690	147	22	5	837	100%	1,474	100%
SUBSEQUENT SCREENS										
Definitive Treatment for Cancer	0	12	119	145	35	4	264	15.2%	315	14.1%
Diagnostic Open Biopsy	0	21	40	35	1	1	75	4.3%	98	4.4%
Early Review	0	7	32	17	6	0	49	2.8%	62	2.8%
Other	0	3	4	4	0	0	8	0.5%	11	0.5%
Return to routine screening	0	320	789	549	89	5	1,338	77.2%	1,752	78.3%
Sub-total	0	363	984	750	131	10	1,734	100%	2,238	100%
ALL SCREENS										
Definitive Treatment for Cancer	1	24	167	168	42	4	335	13.0%	406	10.9%
Diagnostic Open Biopsy	0	37	65	43	1	1	108	4.2%	147	4.0%
Early Review	0	28	58	20	6	0	78	3.0%	112	3.0%
Other	0	10	6	7	0	0	13	0.5%	23	0.6%
Return to routine screening	3	870	1,378	659	104	10	2,037	79.2%	3,024	81.5%
TOTAL	4	969	1,674	897	153	15	2,571	100%	3,712	100%

The Definitive Diagnosis

Of the 3,712 women who attended assessment, 3,250 (87.6%) were given a benign diagnosis, while 447 (12%) had a diagnosis of cancer. Two of the latter had non-breast cancers.

Table 20 shows the proportion of women having benign or malignant outcomes after all examinations, including surgical biopsy if required. Those with benign outcomes have been stratified by those having only diagnostic further views, either on the mobile unit or at the assessment centre, and those having further assessment procedures. Thirty eight percent of assessed women required only further views (2% less than in 2000/2001), whilst the remainder required ultrasound or biopsy, to determine a benign diagnosis. Within this outcome group, a higher proportion of subsequent screens (42%) than first screens (32%) required only further views.

Overall, 12% of all assessed women were diagnosed with cancer, with 7% of those 447 women having had their first screen and 15% having subsequent screens.

Table 20: Outcome of assessment by round, July 2001 to June 2002

Outcome	First screens			Subsequent screens			All screens		
	No. assessments	% of outcome	% of total	No. assessments	% of outcome	% of total	No. assessments	% of outcome	% of total
BENIGN OUTCOMES									
After further views	438	32.2%		793	42.0%		1,231	37.9%	
After further assessment	924	67.8%		1,095	58.0%		2,019	62.1%	
Total	1,362	100%	92.4%	1,888	100%	84.4%	3,250	100%	87.6%
MALIGNANT OUTCOMES									
Malignant - breast	103	100%		342	99.4%		445	99.6%	
Malignant - other	0	0.0%		2	0.6%		2	0.4%	
Total	103	100%	7.0%	344	100%	15.4%	447	100%	12.0%
INCOMPLETE / UNKNOWN	9		0.6%	6		0.3%	15		0.4%
TOTAL OUTCOMES	1,474		100%	2,238		100%	3,712		100%

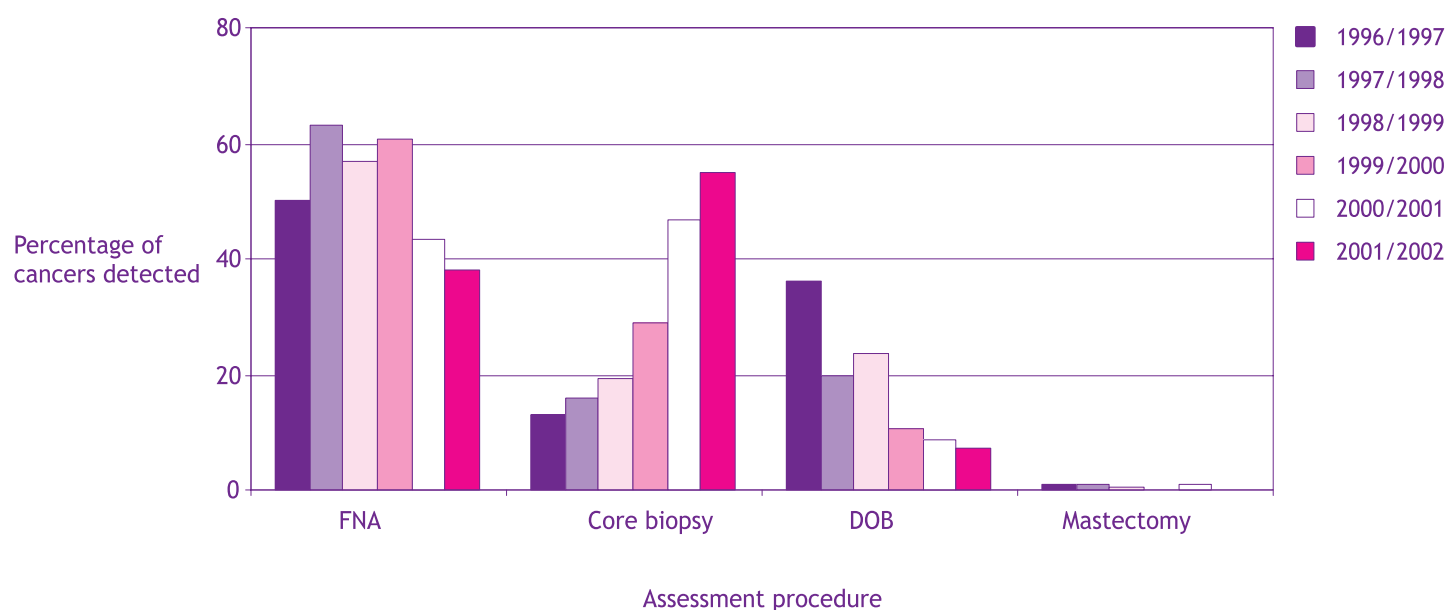
Procedure Yielding Pathological Diagnosis

Ninety three percent of all definitive diagnoses of cancer were provided by pre-surgical procedures. Core biopsy was the procedure in more than half the cases, with fine needle biopsy the remainder (Table 21). Of 443 women diagnosed with breast cancer, only 31 women (7%) required surgical biopsy to confirm a diagnosis of cancer. The shift towards significantly more pre-operative diagnosis is demonstrated in Figure 5, which shows the four-fold increase in core biopsies as the definitive diagnostic tool over the six years since 1996/1997 and a five-fold decrease in the role of surgical biopsy from 36% in 1996/1997 to 7% in 2001/2002.

Table 21: Procedure yielding the definitive pathological diagnosis of breast cancer, by round, July 2001 to June 2002

Procedure	First screens		Subsequent screens		All screens	
	No. cancers	%	No. cancers	%	No. cancers	%
BENIGN OUTCOMES						
Fine needle aspiration	28	27.5%	140	41.1%	168	37.9%
Core biopsy	64	62.7%	180	52.8%	244	55.1%
Diagnostic open biopsy	10	9.8%	21	6.2%	31	7.0%
Mastectomy	0	0.0%	0	0.0%	0	0.0%
Other	0	0.0%	0	0.0%	0	0.0%
TOTAL BREAST CANCERS	102	100%	341	100%	443	100%

Figure 5: Method of pathological diagnosis 1996/1997 to 2001/2002



Diagnostic Open Biopsy Outcomes

As indicated in Figure 5, there has been a steady decline over the past 5 years in the use of diagnostic open biopsy (DOB) as a diagnostic tool as expertise with core and needle biopsies has improved. BreastScreen WA provides this diagnostic surgery at either Royal Perth Hospital or Sir Charles Gairdner Hospital. Table 22 shows the number of women having open biopsy, either within the program or privately, and the outcome by age group.

Of the women having an open biopsy 78.1%, or 77.1% of those aged 50-69 years, were found to have benign lesions. This represents 3% of all women assessed, or 2.5% of first screens assessed and 3.3% of subsequent screens assessed. The National Accreditation Standards require that < 4% of women assessed after their first screen and < 3.2% of women assessed after their subsequent screen are found not to have a malignancy after a diagnostic open biopsy.

Table 22: Outcomes of diagnostic open biopsy (DOB) procedures by round by age group, July 2001 to June 2002

Outcomes of DOB	Age group													
	40-49		50-59		60-69		70-79		80+		50-69		All ages	
	No. DOBs	%	No. DOBs	%	No. DOBs	%	No. DOBs	%	No. DOBs	%	No. DOBs	%	No. DOBs	%
BENIGN OUTCOMES														
First screens	11		21		5		0		0		26		37	
Subsequent screens	18		33		25		1		0		58		77	
Sub-total	29	82.9%	54	81.8%	30	69.8%	1	100%	0	0.0%	84	77.1%	114	78.1%
MALIGNANT OUTCOMES														
First screens	4		5		1		0		0		6		10	
Subsequent screens	2		7		12		0		1		19		22	
Sub-total	6	17.1%	12	18.2%	13	30.2%	0	0.0%	1	100%	25	22.9%	32	21.9%
TOTAL DOBs PERFORMED														
First screens	15		26		6		0		0		32		47	
Subsequent screens	20		40		37		1		1		77		99	
TOTAL	35	100%	66	100%	43	100%	1	100%	1	100%	109	100%	146	100%

Breast Cancer Detection

Cancer Detection Rates

Cancer detection rates are key performance indicators of the screening program. For women in the target age group the program aims to detect more than 50 invasive cancers per 10,000 first screens and more than 35 per 10,000 subsequent screens. Table 23 shows the number of both invasive cancers and ductal cancers *in situ* (DCIS) detected in first and subsequent screens, by age group, and the rates per 10,000 screens.

Of the 447 cancers detected through the program only the 441 breast cancers are shown on Table 23. Of the remaining six, two were classified as interval cancers as they were detected at early review, two were non-breast cancers, one was of unknown pathology (inflammatory breast disease and no surgery performed) and one was detected in a woman under the age of 40 years.

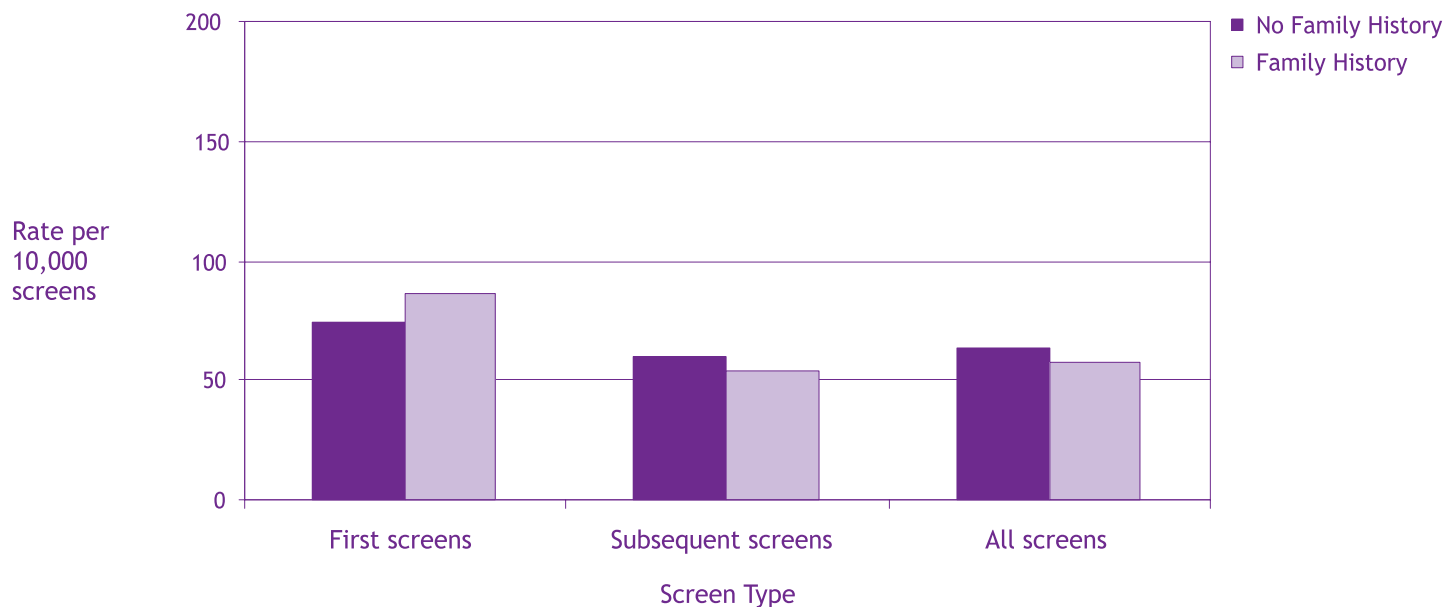
Invasive cancers made up 73.7%, or 74.5% in women aged 50-69 years. In this target age group, the invasive cancer detection rate in women having their first screen was 63 per 10,000, and for subsequent screens it was 47 per 10,000. Invasive breast cancer detection rates were highest in the over-70 years age group whilst *in situ* cancers detection rates were highest in the over-80 years age group.

Table 23: Breast cancer numbers and detection rates by round and by age group, July 2001 to June 2002

Type of cancers	Age group													
	40-49		50-59		60-69		70-79		80+		50-69		All ages	
	No. cancers	%	No. cancers	%	No. cancers	%	No. cancers	%	No. cancers	%	No. cancers	%	No. cancers	%
INVASIVE CANCERS														
First screens	10		34		16		6		0		50		66	
Subsequent screens	7		101		118		29		4		219		259	
Sub-total	17	51.5%	135	75.0%	134	74.0%	35	83.3%	4	80.0%	269	74.5%	325	73.7%
DCIS														
First screens	7		19		8		1		0		27		35	
Subsequent screens	9		26		39		6		1		65		81	
Sub-total	16	48.5%	45	25.0%	47	26.0%	7	16.7%	1	20.0%	92	25.5%	116	26.3%
ALL BREAST CANCERS														
First screens	17		53		24		7		0		77		101	
Subsequent screens	16		127		157		35		5		284		340	
TOTAL	33	100%	180	100%	181	100%	42	100%	5	100%	361	100%	441	100%
RATE PER 10,000 SCREENS														
Invasive														
First screens	19.1		52.6		110.7		185.8		0.0		63.2		48.7	
Subsequent screens	9.5		38.1		57.7		88.6		175.4		46.6		44.8	
All screens	13.5		40.9		61.2		97.3		135.1		49.0		45.5	
DCIS														
First screens	13.3		29.4		55.3		31.0		0.0		34.1		25.8	
Subsequent screens	12.2		9.8		19.1		18.3		43.9		13.8		14.0	
All screens	12.7		13.6		21.5		19.5		33.8		16.8		16.3	
All Breast Cancers														
First screens	32.4		82.0		166.0		216.7		0.0		97.3		74.5	
Subsequent screens	21.7		47.9		76.7		106.9		219.3		60.5		58.8	
All screens	26.2		54.6		82.6		116.8		168.9		65.8		61.8	

Figure 6 shows the cancer detection rates by family history of breast cancer. Rates of breast cancer detection were higher in first screen women having a family history of breast cancer than in those with no family history (86 per 10,000 cf. 74 per 10,000). The reverse was the case for subsequent screens, with 54 cancers per 10,000 women with family history compared with 60 per 10,000 for those with no family history. The rates for all screens were 58 and 63 per 10,000 respectively.

Figure 6: Breast cancer detection rates by family history status, July 2001 to June 2002



Histologic Type of Breast Cancers

Table 24 lists the pathology types of invasive and *in situ* breast cancers detected by screening round for all screens. Seventy four percent (326) of all breast cancers detected were invasive; of these, the majority (75.5%) was ductal NOS. Comedo/non-comedo types were the most common *in situ* cancers. There were two non-breast cancers, one a metastatic cancer of unknown origin, the other a secondary from a previously detected cancer.

Table 24: Number of screen-detected cancers by histology by round, July 2001 to June 2002

Type of cancer	First screens		Subsequent screens		All screens	
	No. cancers	%	No. cancers	%	No. cancers	%
INVASIVE CANCERS						
Invasive Ductal not otherwise specified	47	70.1%	199	76.8%	246	75.5%
Tubular	9	13.4%	16	6.2%	25	7.7%
Cribriform	0	0.0%	2	0.8%	2	0.6%
Mucinous (Colloid)	2	3.0%	5	1.9%	7	2.1%
Medullary	0	0.0%	0	0.0%	0	0.0%
Lobular Classical	5	7.5%	18	6.9%	23	7.1%
Lobular Variant	1	1.5%	6	2.3%	7	2.1%
Mixed Ductal/Lobular	3	4.5%	13	5.0%	16	4.9%
Total invasive cancers	67	100%	259	100%	326	100%
NON-INVASIVE CANCERS						
Comedo DCIS	13	37.1%	37	45.7%	50	43.1%
Non-comedo DCIS	18	51.4%	29	35.8%	47	40.5%
Mixed DCIS	4	11.4%	11	13.6%	15	12.9%
Other DCIS	0	0.0%	4	4.9%	4	3.4%
Total non-invasive cancers	35	100%	81	100%	116	100%
NON-BREAST CANCERS	0		2		2	
UNKNOWN PATHOLOGY	0		1		1	
TOTAL CANCERS	102		343		445	

Size of Breast Cancer

Table 25 shows the invasive breast cancers grouped by size and screening round, and Table 26 shows these cancers grouped by size and age group. The rate of small invasive cancer detection, defined as invasive cancers ≤ 15 mm, is a key performance indicator. In accordance with the National Accreditation Standards, the service should detect at least 25 small invasive cancers per 10,000 screens in the target age group. BreastScreen WA's small invasive cancer rate in the target age group was 33 per 10,000 screens. This rate was similar to that in 2000/2001 when it was 31 per 10,000. The small cancer detection rate for all age groups was 30 per 10,000 screens.

More than half of all invasive cancers were ≤ 15 mm, regardless of screening round (58.2% of first screens and 68% of subsequent screens).

Table 25: Number of invasive breast cancers by size by round, July 2001 to June 2002

Type of cancer	First screens		Subsequent screens		All cancers		Rate per 10,000 screens
	No. cancers	%	No. cancers	%	No. cancers	%	
INVASIVE CANCERS							
≤ 15 mm	39	58.2%	176	68.0%	215	66.0%	30
16-25 mm	17	25.4%	58	22.4%	75	23.0%	11
26-50 mm	9	13.4%	23	8.9%	32	9.8%	4
>50 mm	2	3.0%	2	0.8%	4	1.2%	1
Size unknown	0	0.0%	0	0.0%	0	0.0%	0
TOTAL	67	100%	259	100%	326	100%	46

The breakdown of cancers by size was similar across most age groups although women 40-49 years had a larger proportion of cancers 16-25mm in diameter.

Table 26: Number of invasive breast cancers by size by age group, July 2001 to June 2002

Type of cancer	Age Group										50-69		All ages		Rate per 10,000 screens in 50-69 yr agegroup	
	40-49		50-59		60-69		70-79		80+		No.	%	No.	%	Rate per 10,000 screens	
INVASIVE CANCERS																
≤ 15 mm	8	47.1%	90	66.7%	89	66.4%	23	65.7%	4	100%	179	66.5%	214	65.8%	30	33
16-25 mm	7	41.2%	31	23.0%	28	20.9%	9	25.7%	0	0.0%	59	21.9%	75	23.1%	11	11
26-50 mm	1	5.9%	12	8.9%	16	11.9%	3	8.6%	0	0.0%	28	10.4%	32	9.8%	4	5
>50 mm	1	5.9%	2	1.5%	1	0.7%	0	0.0%	0	0.0%	3	1.1%	4	1.2%	1	1
Size unknown	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0
TOTAL	17	100%	135	100%	134	100%	35	100%	4	100%	269	100%	325	100%	46	49

Nodal Status

Table 27 shows the number of cases where lymph nodes were removed during treatment for invasive or non-invasive screen-detected cancers, and the number of cases where lymph nodes showed evidence of metastasis.

Of 116 women with DCIS, 11.2% had lymph nodes removed of which none showed spread of cancerous cells beyond the breast tissue. Most women (80.4%) with invasive cancer had at least one lymph node excised and, of these, 24.4% had metastases. In general, the larger the cancer, the higher the proportion having a lymph node excised for examination. Metastases were also correlated with cancer size, with the largest cancers having the highest rates of metastasis in the nodes.

Table 27: Lymph node removal and metastatic status, July 2001 to June 2002

Type of cancer	No. of cancers (A)	No. where lymph nodes were excised (B)	% of cancers where lymph nodes were excised (B / A)	No. where lymph nodes had metastasis (C)	% of cancers where lymph nodes had metastasis (C / B)
NON-INVASIVE CANCERS					
Ductal Cancer in situ (DCIS)	116	13	11.2%	0	0.0%
INVASIVE CANCERS					
<=15 mm	215	165	76.7%	20	12.1%
16-25 mm	75	67	89.3%	21	31.3%
26-50 mm	32	28	87.5%	22	78.6%
>50 mm	4	2	50.0%	1	50.0%
Size unknown	0	0	0.0%	0	0.0%
Total invasive breast cancers	326	262	80.4%	64	24.4%
NON-BREAST CANCERS	2	2	100%	2	100%
UNKNOWN PATHOLOGY	1	0	0.0%	0	0.0%
TOTAL CANCERS	445	277	62.2%	66	23.8%

Grade of Cancers

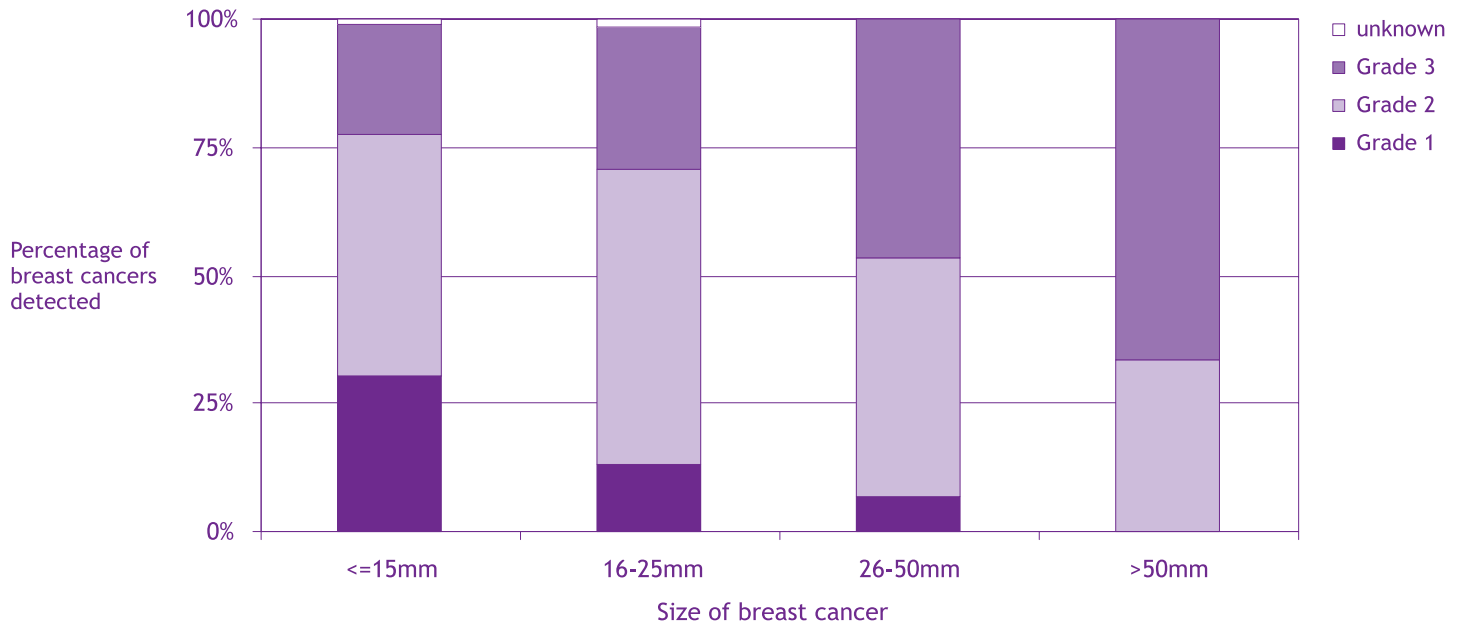
Table 28 shows the cancers listed by grade and by size. In 7 of the 326 invasive cancers the grade was unknown as the woman either did not have surgical treatment or the pathology was from FNA only. Of these, the size was known for only 3 and was generally taken from the imaging investigations. The grade is assigned according to the degree of differentiation of the cells: grade 1 is well differentiated, grade 2 is moderately differentiated and whilst grade 3 is poorly differentiated.

For cancers of known grade, 50% were classified as grade 2, one quarter were grade 1 and one quarter grade 3. More of the larger cancers had higher grades, for example, 66.7% of those >50mm, but only 21.3% of those <15mm, were grade 3. Figure 7 demonstrates the association between the size of cancer and its grade.

Table 28: Number of invasive breast cancers by histological grade by size, July 2001 to June 2002

Histological grade	Size of invasive breast cancer									
	<=15mm		16-25mm		26-50mm		>50mm		Total	
	No. cancers	%	No. cancers	%	No. cancers	%	No. cancers	%	No. cancers	%
Grade 1	64	30.3%	10	13.3%	2	6.7%	0	0.0%	76	23.8%
Grade 2	100	47.4%	43	57.3%	14	46.7%	1	33.3%	158	49.5%
Grade 3	45	21.3%	21	28.0%	14	46.7%	2	66.7%	82	25.7%
Unknown	2	0.9%	1	1.3%	0	0.0%	0	0.0%	3	0.9%
TOTAL INVASIVE BREAST CANCERS	211	100%	75	100%	30	100%	3	100%	319	100%

Figure 7: Proportion of invasive breast cancers by histological grade by size, July 2001 to June 2002



Management of Breast Cancer

Breast Cancer Treatment

Although treatment is not part of the screening program, BreastScreen WA collects treatment details for all cases of screen-detected breast cancer. In 2001/2002, 61.9% of women chose breast-conserving surgery, 36.6% had a mastectomy and 1.6% (7 women) had only non-surgical treatment such as chemotherapy (Table 29).

Table 29: Number of surgical procedures for breast cancer treatment by round, July 2001 to June 2002

Surgical procedure for treatment	First screens		Subsequent screens		All screens	
	No. procedures	%	No. procedures	%	No. procedures	%
Breast conserving surgery	60	58.8%	214	62.8%	274	61.9%
Mastectomy	38	37.3%	124	36.4%	162	36.6%
No surgery / unknown	4	3.9%	3	0.9%	7	1.6%
TOTAL BREAST CANCERS	102	100%	341	100%	443	100%

The type of breast cancer (*in situ* or invasive) made no difference to the treatment; the percentage of women undergoing breast conserving surgery or mastectomy was the same in both cancer types (Table 30). Excluded is one case where the pathology was unknown. In the previous reporting year, mastectomy was 3.5% more common for DCIS.

Table 30: Number of surgical procedures for breast cancer treatment by type of cancer, July 2001 to June 2002

Surgical procedure for treatment	Invasive cancers		DCIS		All cancers	
	No. procedures	%	No. procedures	%	No. procedures	%
Breast conserving surgery	202	62.0%	72	62.1%	274	62.0%
Mastectomy	118	36.2%	44	37.9%	162	36.7%
No surgery / unknown	6	1.8%	0	0.0%	6	1.4%
TOTAL BREAST CANCERS	326	100%	116	100%	442	100%

In 2001/2002 there was little difference between metropolitan and country residents with regard to their choice of cancer treatment (Table 31). For all residents, 61.9% chose breast conserving surgery (62.0% metro, 61.5% country) and the remainder underwent a mastectomy (36.8% metro, 35.9% country). In previous reporting years 1999/2000 and 2000/2001, a higher proportion of country women had a mastectomy than metropolitan women.

Table 31: Number of surgical procedures for breast cancer treatment by place of residence, July 2001 to June 2002

Surgical procedure for treatment	Metropolitan		Country		Total	
	No. procedures	%	No. procedures	%	No. procedures	%
Breast conserving surgery	202	62.0%	72	61.5%	274	61.9%
Mastectomy	120	36.8%	42	35.9%	162	36.6%
No surgery / unknown	4	1.2%	3	2.6%	7	1.6%
TOTAL BREAST CANCERS	326	100%	117	100%	443	100%

Adjuvant Therapy

The majority of women with breast cancer had adjuvant therapy, with radiotherapy, chemotherapy or Tamoxifen alone or in combination. Eighty nine percent of women with invasive cancers had adjuvant therapy, as did 41% of those with DCIS. For those with DCIS, the use of adjuvant therapy has been similar for the past few years - 38.2% in 2000/2001 and 40.5% in 1999/2000. Radiotherapy alone or together with Tamoxifen was the most common post-surgical therapy.

Table 32: Adjuvant therapy for treatment of breast cancer, by type of cancer, July 2001 to June 2002

Adjuvant therapy	Invasive		DCIS		Total	
	No. procedures	%	No. procedures	%	No. procedures	%
Chemotherapy	11	3.4%	0	0.0%	11	2.5%
Radiotherapy	26	8.0%	29	25.0%	55	12.4%
Tamoxifen	52	16.0%	5	4.3%	57	12.9%
Chemotherapy & Radiotherapy	21	6.4%	0	0.0%	21	4.8%
Chemotherapy & Tamoxifen	9	2.8%	0	0.0%	9	2.0%
Radiotherapy & Tamoxifen	110	33.7%	14	12.1%	124	28.1%
Chemotherapy & Radiotherapy & Tamoxifen	24	7.4%	0	0.0%	24	5.4%
Chemotherapy & Other	2	0.6%	0	0.0%	2	0.5%
Radiotherapy & Other	0	0.0%	0	0.0%	0	0.0%
Tamoxifen & Other	21	6.4%	0	0.0%	21	4.8%
Radiotherapy & Tamoxifen & Other	14	4.3%	0	0.0%	14	3.2%
Chemotherapy & Tamoxifen & Other	0	0.0%	0	0.0%	0	0.0%
Chemotherapy & Radiotherapy & Other	1	0.3%	0	0.0%	1	0.2%
Chemotherapy & Radiotherapy & Tamoxifen & Other	1	0.3%	0	0.0%	1	0.2%
Other	1	0.3%	0	0.0%	1	0.2%
None/Unknown	33	10.1%	68	58.6%	101	22.9%
TOTAL BREAST CANCERS	326	100%	116	100%	442	100%

Interval Cancers

Interval cancers are invasive breast cancers that are diagnosed in the interval following a negative screening episode and before the next scheduled screening episode. Interval cancers are ascertained through a process of data matching between the WA Cancer Registry and BreastScreen WA databases, and through notification by surgeons or general practitioners. Women are considered at risk of interval cancer for differing periods post screen, depending on risk factors such as a personal or a family history of breast cancer. Those with a family or personal history of breast cancer, or those who have had a high-risk breast change such as atypical hyperplasias detected at a previous screen, are screened at one year intervals in the BreastScreen WA program and are 'at risk' for 12 months after their last normal screen. They are only included in the interval cancer count for those first 12 months. Conversely, those recommended for 2-yearly screening are included in the interval cancer count for both the first 12-month period as well as the 13 to 24 month period post-screening. Interval cancers rates per 10,000 screens for 0 to 12 months and 13 to 24 months are calculated as the number of interval breast cancers divided by the number of women years at risk.

Table 33: Interval cancer rates for screens from January to December 2000 by round by age group

Screen type and time since last screen	Age group					Total
	40-49	50-59	60-69	70+	50-69	
FIRST SCREENS						
Cancers detected between 0-12 months						
Number of interval cancers	3	2	1	0	3	6
Number of women years at risk	5,197	4,110	1,146	452	5,256	10,905
Interval Cancer Rate	5.8	4.9	8.7	0.0	5.7	5.5
Cancers detected between 13-24 months						
Number of interval cancers	4	5	0	0	5	9
Number of women years at risk	4,661	3,734	1,006	389	4,740	9,790
Interval Cancer Rate	8.6	13.4	0.0	0.0	10.5	9.2
SUBSEQUENT SCREENS						
Cancers detected between 0-12 months						
Number of interval cancers	5	14	15	0	29	34
Number of women years at risk	6,619	25,084	18,966	3,147	44,050	53,816
Interval Cancer Rate	7.6	5.6	7.9	0.0	6.6	6.3
Cancers detected between 13-24 months						
Number of interval cancers	8	22	24	3	46	57
Number of women years at risk	5,185	21,241	15,627	2,460	36,868	44,513
Interval Cancer Rate	15.4	10.4	15.4	12.2	12.5	12.8
ALL SCREENS						
Cancers detected between 0-12 months						
Number of interval cancers	8	16	16	0	32	40
Number of women years at risk	11,816	29,194	20,112	3,599	49,306	64,721
Interval Cancer Rate	6.8	5.5	8.0	0.0	6.5	6.2
Cancers detected between 13-24 months						
Number of interval cancers	12	27	24	3	51	66
Number of women years at risk	9,846	24,975	16,633	2,849	41,608	54,303
Interval Cancer Rate	12.2	10.8	14.4	10.5	12.3	12.2

In March 2006, the BreastScreen WA program changed its family history policy to reflect National Breast Cancer Centre guidelines and current best practice with regard to frequency of screening. Only women with a significant family history will be offered annual screening. For such purposes, significant family history is defined as a first-degree relative (mother, sister, daughter, father, son, brother) with breast cancer diagnosed before the age of 50; a first-degree relative with bilateral breast cancer (diagnosed at any age); or two or more first-degree relatives with breast cancer (diagnosed at any age). All other women will be screened two-yearly. For interval cancer purposes, for screens

from 2004 onwards these women at low risk for family history will be counted as 'at risk' for up to 24 months after their screen.

The interval cancer rate for cancers detected up to 12 months in women aged 50-69 years was 6.5 per 10,000 screens. This overall rate meets the National Accreditation Standard for target age women, which requires that for every 10,000 screened women aged 50-69, no more than 7 will develop breast cancer in the 12 months following a negative screening episode.

