

Indicator 3: Sensitivity

3a. Interval cancer rate

The interval cancer rate is the rate of invasive breast cancers detected during an interval between two screening rounds per 10,000 women-years. It is stratified by 10-year age groups (40–49, 50–59, 60–69, 70+ years), time since screen (0–12 months, 13–24 months, and 0–24 months) and screening round (first or subsequent).

3b. Program sensitivity

The program sensitivity rate is the percentage of women with screen-detected invasive breast cancer among all Program-screened women diagnosed with invasive breast cancer during the screening interval (screen-detected and interval cancers). It is stratified by 10-year age groups (40–49, 50–59, 60–69, 70+ years), time since screen (0–12 months, 0–24 months) and screening round (first or subsequent).

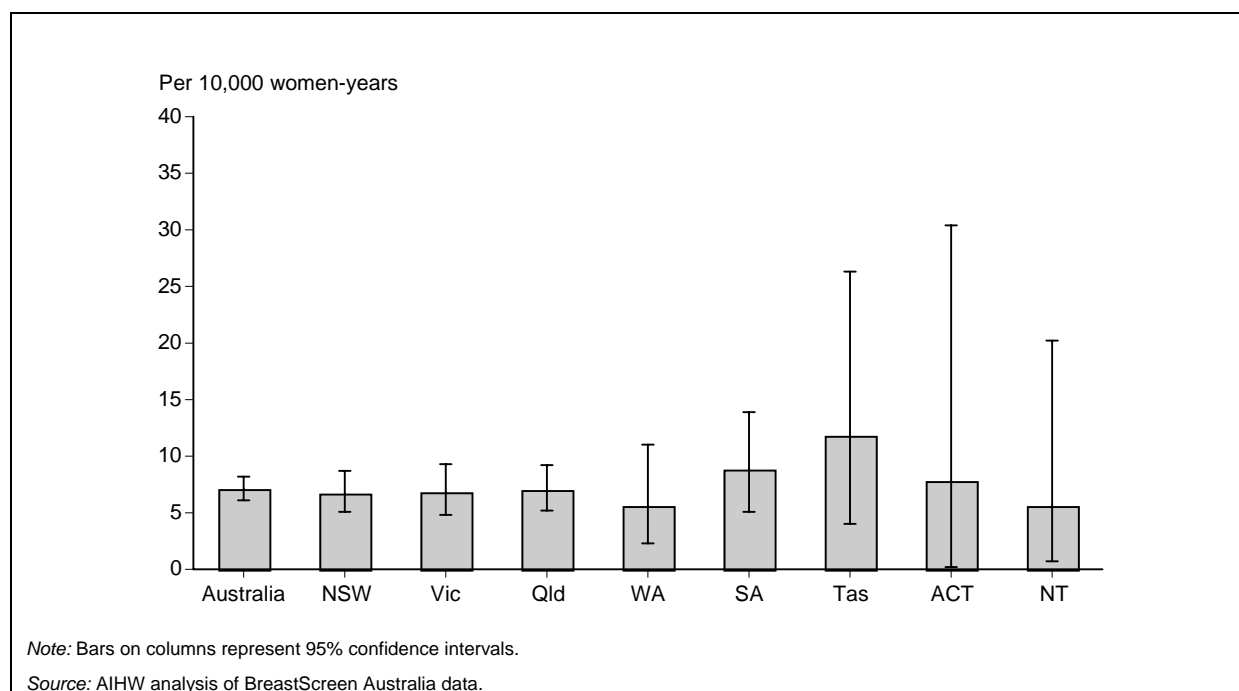
The sensitivity indicator

An interval cancer is an invasive breast cancer that is diagnosed after a screening episode that detected no cancer and before the next scheduled screening episode. The interval cancer rate is expressed per 10,000 women-years at risk (see the glossary for definitions of 'women-years at risk' and 'interval cancer'). It measures how effective the BreastScreen Australia Program is at detecting the presence of breast cancer in well women. A low interval cancer rate is one measure of the effectiveness of the screening process.

Program sensitivity measures the ability of the Program to detect invasive breast cancers in women attending for screening. The Program needs to achieve a high sensitivity in order to be effective. Program sensitivity is the proportion of invasive breast cancers that are detected within the BreastScreen Australia Program out of all invasive breast cancers (interval cancers plus screen-detected cancers) diagnosed in Program-screened women in the screening interval.

In this chapter data for the years 1998, 1999 and 2000 are combined. This aggregation improves the stability of rates, especially those of the small states and territories.

Interval cancer rate for women aged 50–69 years, screened during years 1998, 1999 and 2000, first screening round, 0–12 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate	7.1	6.7	6.8	7.0	5.6	8.8	11.8	7.8	5.6
95% CI	6.1–8.2	5.1–8.7	4.8–9.3	5.2–9.2	2.4–11.0	5.1–13.9	4.0–26.3	0.2–30.4	0.7–20.1

Notes

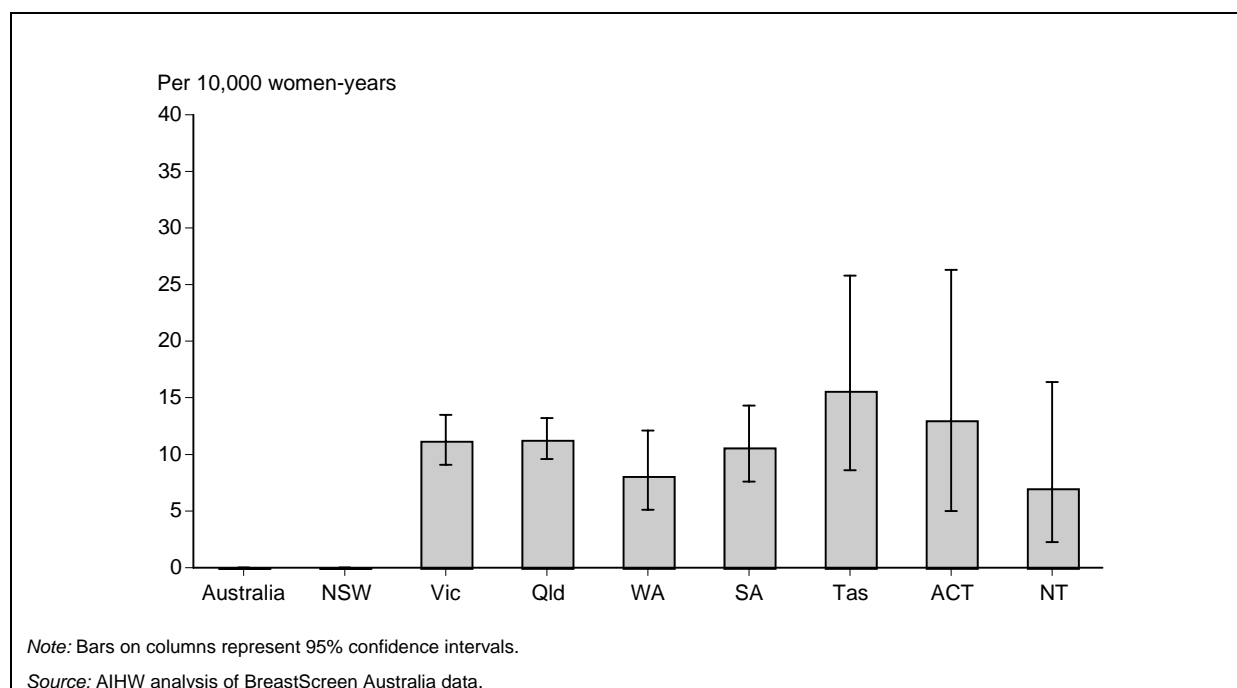
1. Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.
3. None of the rates was significantly different from the all-Australia rate.

- The age-standardised interval cancer rate for women in the target age group 0–12 months after their first screen was 7.1%.
- Across the states and territories, the age-standardised rates of interval cancer ranged from 5.6 per 10,000 women-years in the Northern Territory and Western Australia to 11.8 per 10,000 women-years in Tasmania.

For more information, see:

Table 17

Interval cancer rate for women aged 50–69 years, screened during years 1998, 1999 and 2000, first screening round, 0–24 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate	n.a.	n.a.	11.2	11.3	8.1	10.6	15.6	13.0	7.0
95% CI	n.a.	n.a.	9.2–13.5	9.6–13.2	5.1–12.1	7.6–14.3	8.6–25.8	5.0–26.3	2.3–16.4

n.a. Not available

Notes

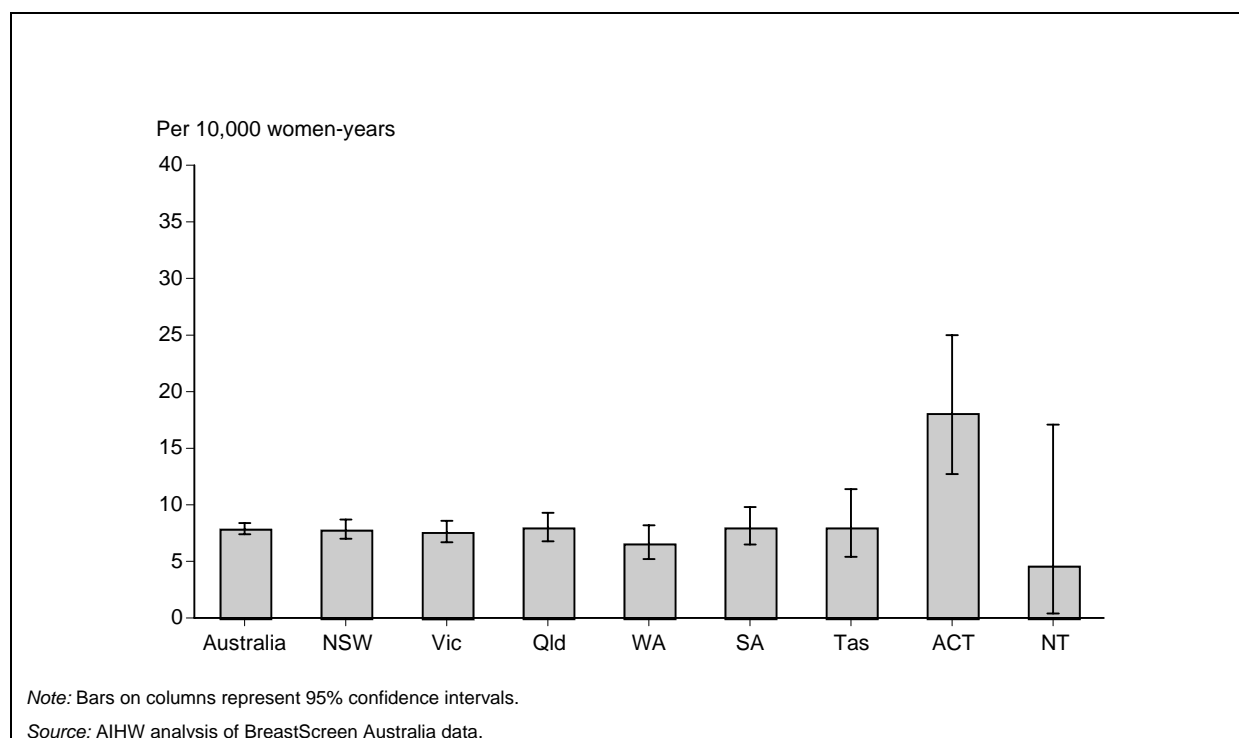
1. Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.
3. New South Wales data were unavailable at the time of publication.

- Across the states and territories with data available, the age-standardised rates of interval cancer for women in the target age group (50–69 years) 0–24 months after their first screen ranged from 7.0 per 10,000 women-years in the Northern Territory to 15.6 per 10,000 women-years in Tasmania.

For more information, see:

Table 19

Interval cancer rate for women aged 50–69 years, screened during years 1998, 1999 and 2000, subsequent screening round, 0–12 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate	7.9	7.8	7.6	8.0	6.6	8.0	8.0	18.1*	4.6
95% CI	7.4–8.4	7.0–8.7	6.7–8.6	6.8–9.4	5.3–8.3	6.4–9.8	5.4–11.4	12.7–25.0	0.4–17.1

* Significantly different from the all-Australia rate.

Notes

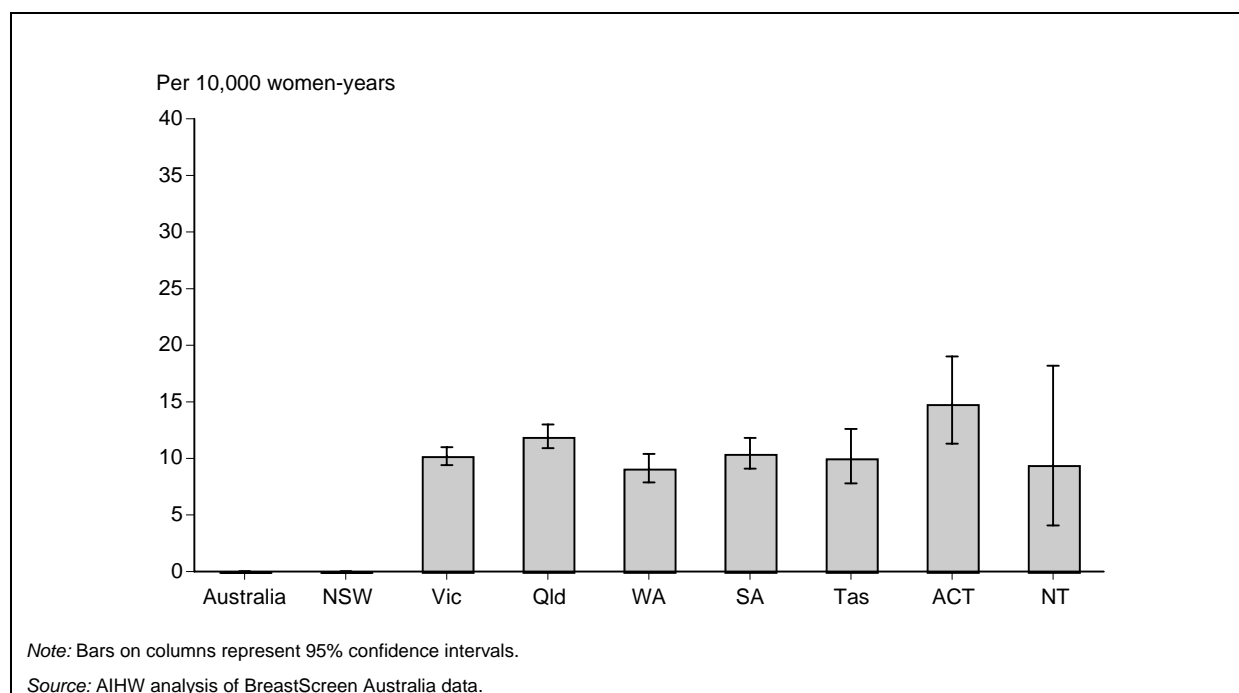
1. Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.

- The age-standardised interval cancer rate for women in the target age group 0–12 months after their second or subsequent screen was 7.9%.
- Across the states and territories, the age-standardised rates of interval cancer ranged from 4.6 per 10,000 women-years in the Northern Territory to 18.1 per 10,000 women-years in the Australian Capital Territory.

For more information, see:

Table 20

Interval cancer rate for women aged 50–69 years, screened during years 1998, 1999 and 2000, subsequent screening round, 0–24 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate	n.a.	n.a.	10.2	11.9	9.1	10.4	10.0	14.8	9.4
95% CI	n.a.	n.a.	9.5–11.1	10.9–13.0	7.9–10.5	9.1–11.8	7.8–12.6	11.3–19.0	4.0–18.2

n.a. Not available.

Notes

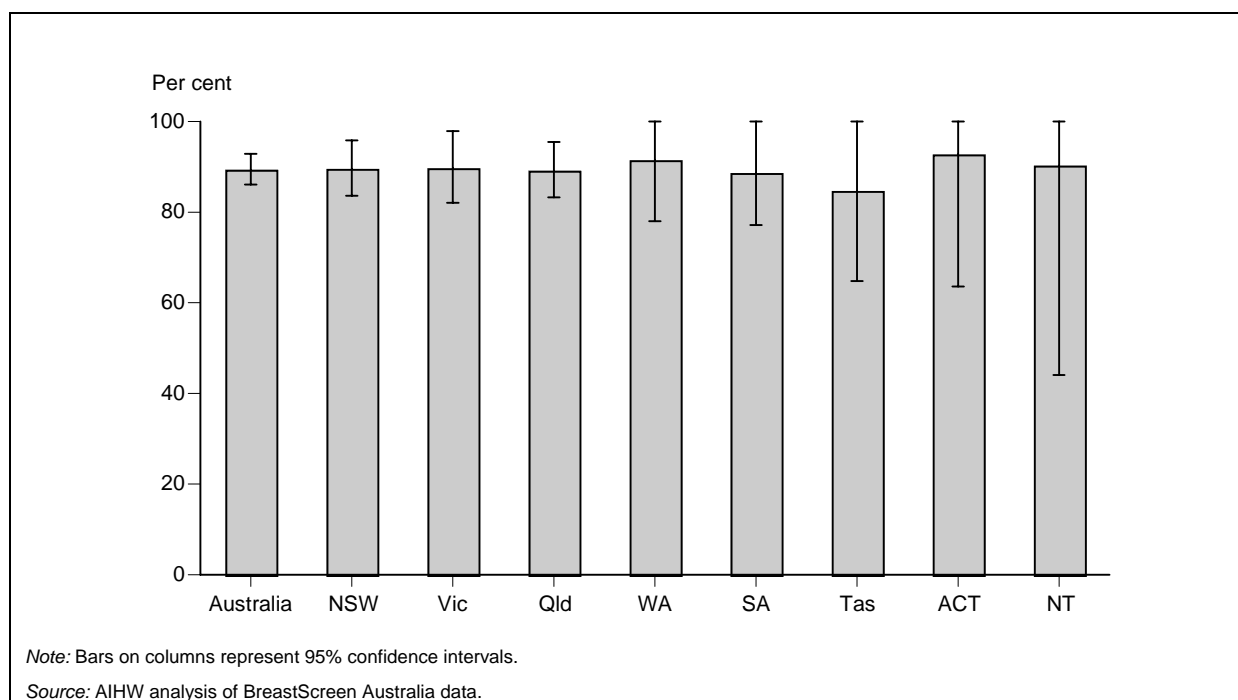
1. Rates are the number of interval cancers detected per 10,000 women-years and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.
3. New South Wales data were unavailable at the time of publication.

- Across the states and territories with data available, the age-standardised rates of interval cancer for women in the target age group (50–69 years) 0–24 months after their second or subsequent screen ranged from 9.1 per 10,000 women-years in Western Australia to 14.8 per 10,000 women-years in the Australian Capital Territory.

For more information, see:

Table 22

Program sensitivity for women aged 50–69 years, screened during years 1998, 1999 and 2000, first screening round, 0–12 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	89.4	89.6	89.7	89.2	91.5	88.7	84.7	92.8	90.3
95% CI	86.1–92.9	83.7–96.0	82.0–97.9	83.3–95.5	77.9–100.0	77.2–100.0	64.7–100.0	63.6–100.0	44.1–100.0

Notes

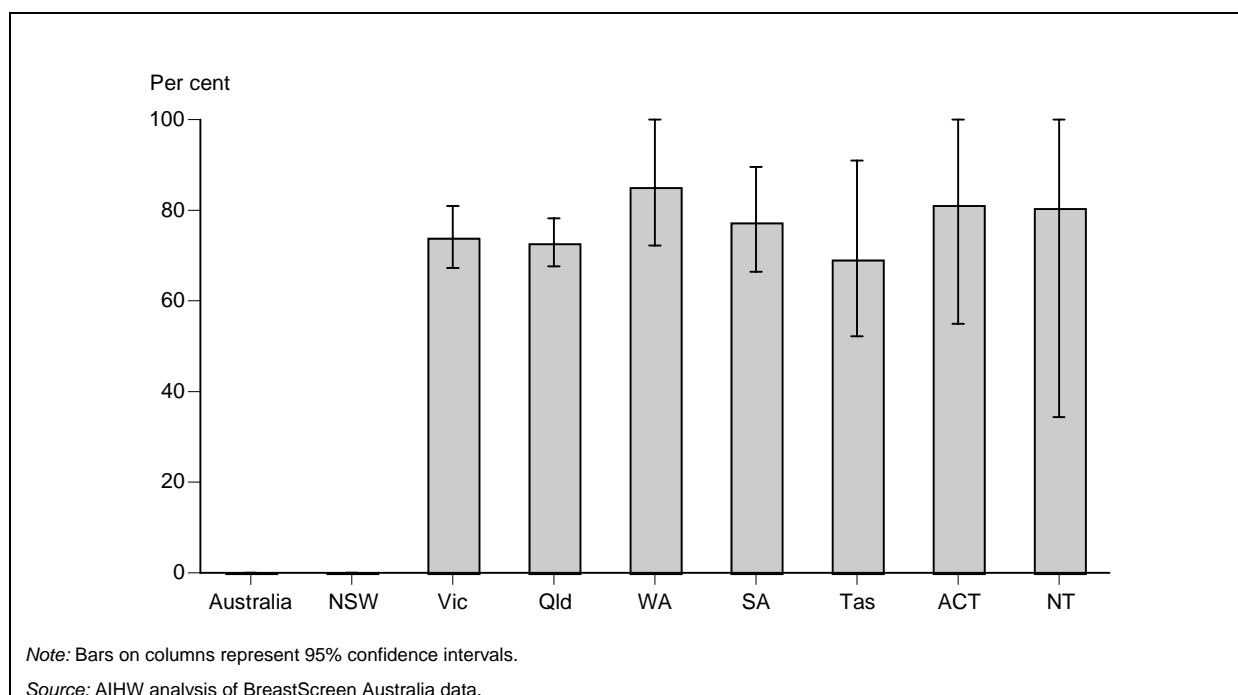
1. Rates are the number of screen-detected cancers as a percentage of all cancers (screen-detected and interval cancers) and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.
3. None of the rates was significantly different from the all-Australia rate.

- The age-standardised Program sensitivity rate for women in the target age group 0–12 months after their first screen was 89.4%.
- Across the states and territories, the Program sensitivity rate ranged from 84.7% in Tasmania to 92.8% in the Australian Capital Territory.

For more information, see:

Table 23

Program sensitivity for women aged 50–69 years, screened during years 1998, 1999 and 2000, first screening round, 0–24 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	n.a.	n.a.	73.9	72.7	85.1	77.3	69.1	81.2	80.5
95% CI	n.a.	n.a.	67.3–81.0	67.6–78.1	72.2–100.0	66.4–89.6	52.2–91.0	54.9–100.0	34.4–100.0

n.a. Not available.

Notes

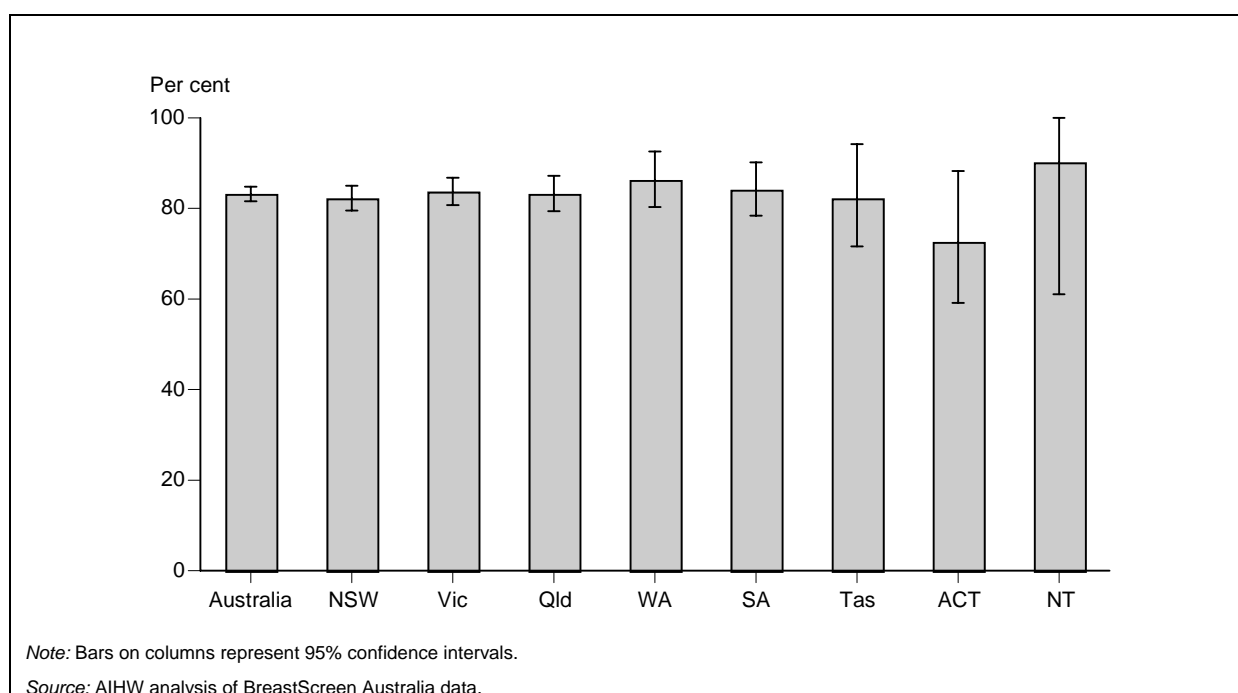
1. Rates are the number of screen-detected cancers as a percentage of all cancers (screen-detected and interval cancers) and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.
3. New South Wales data were unavailable at the time of publication.

- Across the states and territories with data available, the Program sensitivity rate for women in the target age group 0–24 months after their first screen ranged from 69.1% in Tasmania to 85.1% in Western Australia.

For more information, see:

Table 24

Program sensitivity for women aged 50–69 years, screened during years 1998, 1999 and 2000, subsequent screening round, 0–12 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	83.2	82.2	83.7	83.2	86.3	84.1	82.2	72.6	90.2
95% CI	81.6–84.8	79.5–85.0	80.7–86.8	79.4–87.2	80.3–92.6	78.4–90.2	71.6–94.2	59.1–88.2	61.0–100.0

Notes

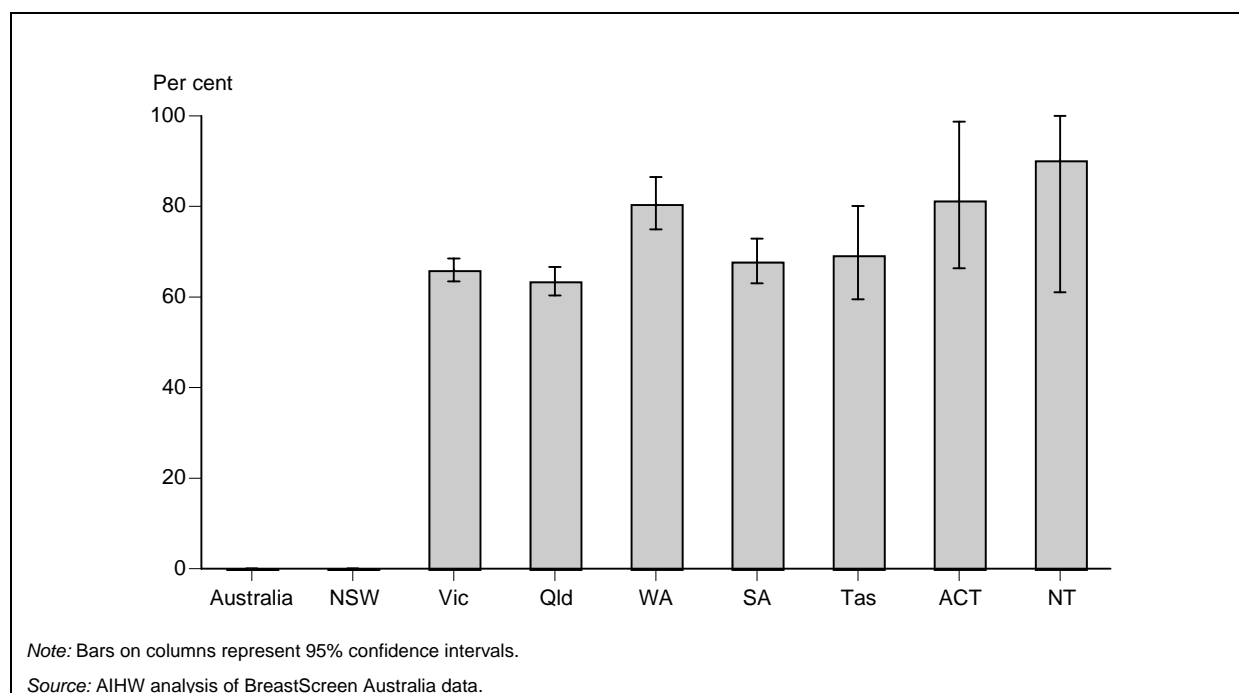
1. Rates are the number of screen-detected cancers as a percentage of all cancers (screen-detected and interval cancers) and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.
3. None of the rates was significantly different from the all-Australia rate.

- The Program sensitivity rate for women in the target age group 0–12 months after their second or subsequent screen was 83.2%.
- Across the states and territories, the Program sensitivity rate ranged from 72.6% in the Australian Capital Territory to 90.2% in the Northern Territory.

For more information, see:

Table 25

Program sensitivity for women aged 50–69 years, screened during years 1998, 1999 and 2000, subsequent screening round, 0–24 months follow-up



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	n.a.	n.a.	65.9	63.4	80.5	67.8	69.2	81.3	90.2
95% CI	n.a.	n.a.	63.4–68.5	60.3–66.6	74.9–86.5	63.0–72.9	59.5–80.1	66.3–98.7	61.0–100.0

n.a. Not available.

Notes

1. Rates are the number of screen-detected cancers as a percentage of all cancers (screen-detected and interval cancers) and age-standardised to the population of women attending a BreastScreen Australia service in 1998.
2. The data include both symptomatic and asymptomatic women.
3. New South Wales data were unavailable at the time of publication.

- Across the states and territories with data available, the Program sensitivity rate for women in the target age group 0–24 months after their second or subsequent screen ranged from 63.4% in Queensland to 90.2% in the Northern Territory.

For more information, see:

Table 26

Indicator 4: Detection of ductal carcinoma in situ

Ductal carcinoma in situ detection rate

The ductal carcinoma in situ (DCIS) detection rate is the rate of women with DCIS per 10,000 women screened by 10-year age groups (40–49, 50–59, 60–69, 70+ years) and for the target age group (50–69 years).

The DCIS detection indicator

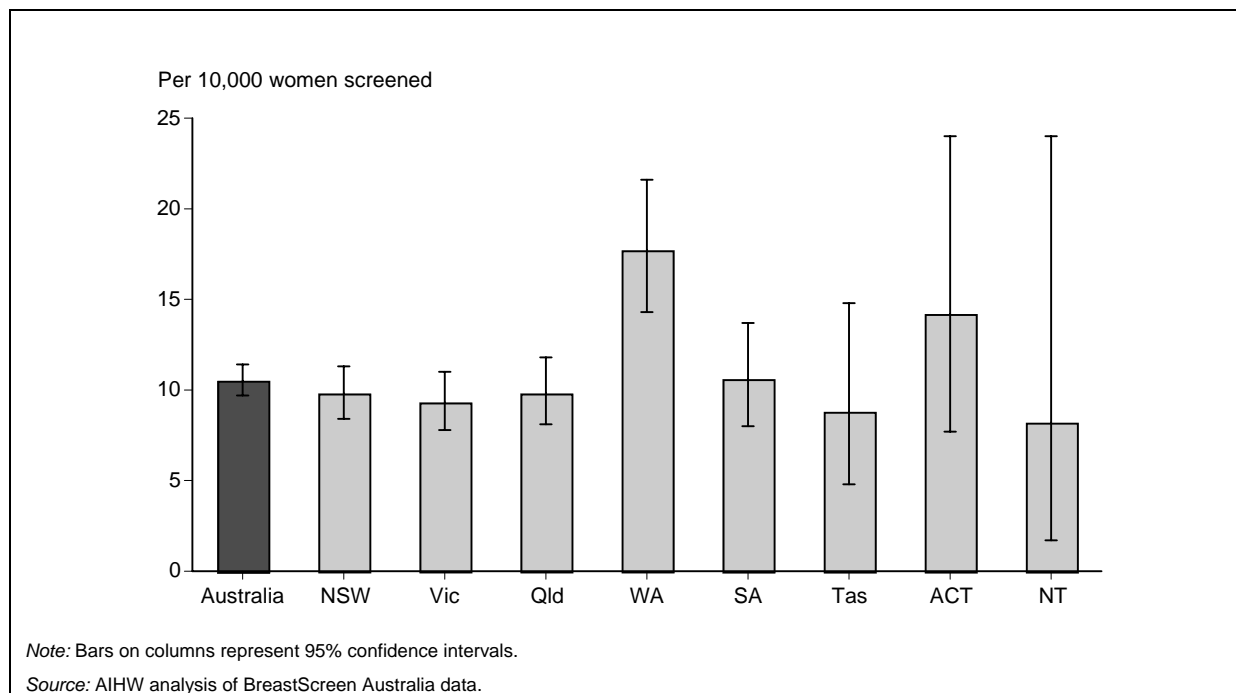
The DCIS indicator measures the rate of DCIS diagnosed in women attending a BreastScreen Australia service. This is expressed as the number of women with DCIS detected for every 10,000 women screened. DCIS is a disease that involves changes in the cells in the lining of the ducts of the breast. Although the changes are like those seen in breast cancer, DCIS has not spread beyond the ducts (NBCC et al. 2000). The natural history of DCIS is still not well understood, although women with the condition are at increased risk of subsequent development of invasive breast cancer (NQMC unpublished).

DCIS is asymptomatic in the majority of cases and is usually detected as a change on a mammogram or as a chance finding on a breast biopsy for another condition. Before the introduction of nationwide mammographic screening in Australia in 1991, DCIS was rarely found. Since then, screening mammography has increased the detection rate for DCIS (NBCC et al. 2000).

Early detection of high-grade DCIS through screening, and its subsequent treatment, is likely to prevent deaths from breast cancer (NQMC unpublished). The ability to detect DCIS can also be seen as an indicator of the quality of the screening process, since it reflects good-quality imaging and screen-film reading.

In 2002, the national age-standardised rate of DCIS detection was 10.0 women with DCIS per 10,000 women aged 40 and over. This is slightly lower than the detection rate for 2001, at 10.5 per 10,000 women screened, but the difference is not statistically significant.

Ductal carcinoma in situ detection in women aged 50–69 years, 2002



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate	10.5	9.8	9.3	9.8	17.7*	10.6	8.8	14.2	8.2
95% CI	9.7–11.4	8.4–11.3	7.8–11.0	8.0–11.8	14.3–21.6	8.0–13.8	4.8–14.8	7.7–24.0	1.7–24.0

* Significantly different from the all-Australia rate.

Note: Rates are the number of cases of DCIS per 10,000 women screened and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

- DCIS was detected in 849 women participating in the BreastScreen Australia Program in 2002, including 603 cases in women in the target age group. The age-standardised DCIS detection rate was 10.5 per 10,000 women screened for women in the target age group, and 10.0 per 10,000 women screened for all women aged 40 and over.
- The age-standardised rate of DCIS detection for women in the target age group ranged from 8.2 per 10,000 women screened in the Northern Territory to 17.7 per 10,000 women screened in Western Australia.

For more information, see:

Tables 27 and 28

Indicator 5: Recall to assessment

Recall to assessment rate

The recall to assessment rate is the proportion of all women screened in the calendar year 2002 who were recalled for assessment by five-year age groups (40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, and 85+ years) and for the target age group (50–69 years).

The recall to assessment indicator

The recall to assessment indicator measures the rate of women who are recalled for assessment following attendance for a routine screening at a BreastScreen Australia service. In most cases, the recall is made because a woman's screening mammogram shows signs that there may be breast cancer. Women may also be recalled for other non-mammographic reasons. During assessment, a woman might undergo further tests, such as additional mammography, physical examination, ultrasound and, if required, a fine needle aspiration or a core biopsy.

BreastScreen Australia aims to maximise the number of cancers detected – in particular, the number of small cancers – while minimising the number of unnecessary investigations. Most women recalled to assessment are found not to have breast cancer (BreastScreen SA 1999; BreastScreen Queensland 2000).

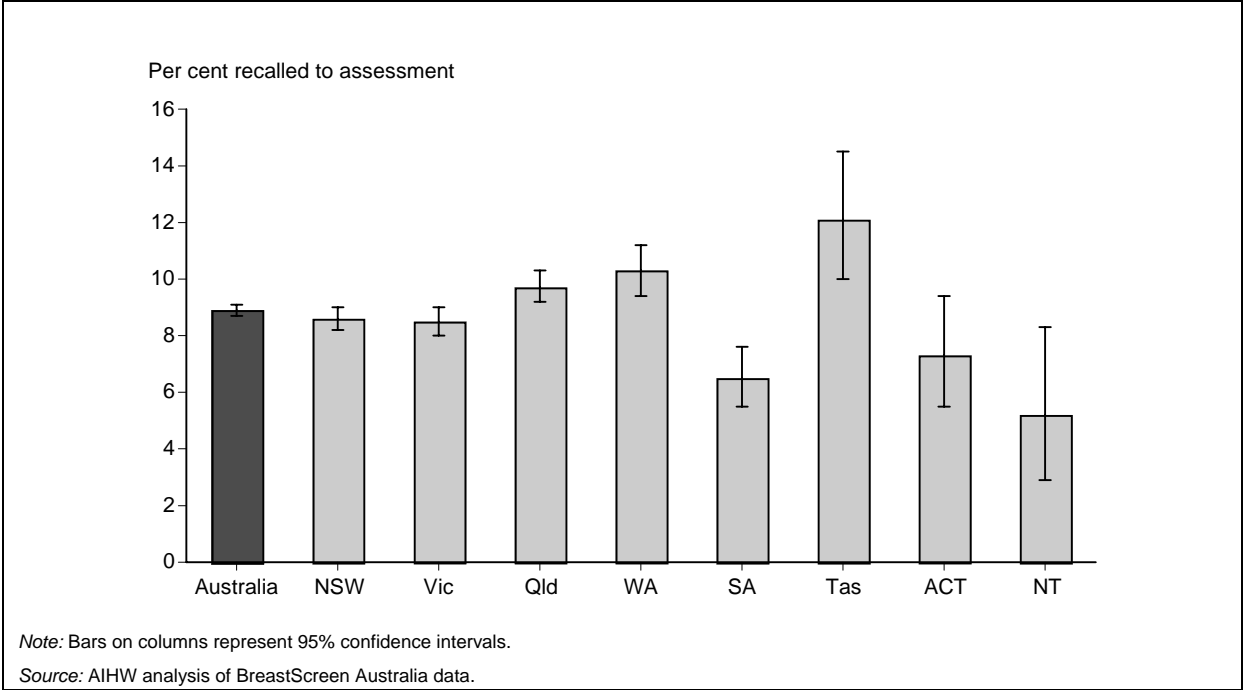
Women attending the program for the first time have a higher all-size cancer detection rate than those who have previously been screened. This is reflected in a higher recall to assessment rate for women who attend for their first screening round compared with those who attend for a subsequent round. The table below shows recall to assessment rates by screening round for 2001 and 2002.

Age-standardised recall to assessment rates for women aged 40 and over, 2001 and 2002

	First screening round	Subsequent screening rounds
2001 rate (%)	8.3	4.0
95% CI	8.1–8.5	4.0–4.1
2002 rate (%)	8.7	4.2
95% CI	8.5–8.9	4.1–4.2

Source: AIHW analysis of BreastScreen Australia data.

Recall to assessment rate for women aged 50–69 years, mammographic reasons, first screening round, 2002



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	8.9	8.6	8.5	9.7	10.3*	6.5*	12.1*	7.3	5.2*
95% CI	8.6–9.1	8.3–9.0	7.9–9.0	9.1–10.2	9.4–11.2	5.5–7.6	10.0–14.5	5.5–9.4	2.9–8.4

* Significantly different from the all-Australia rate.

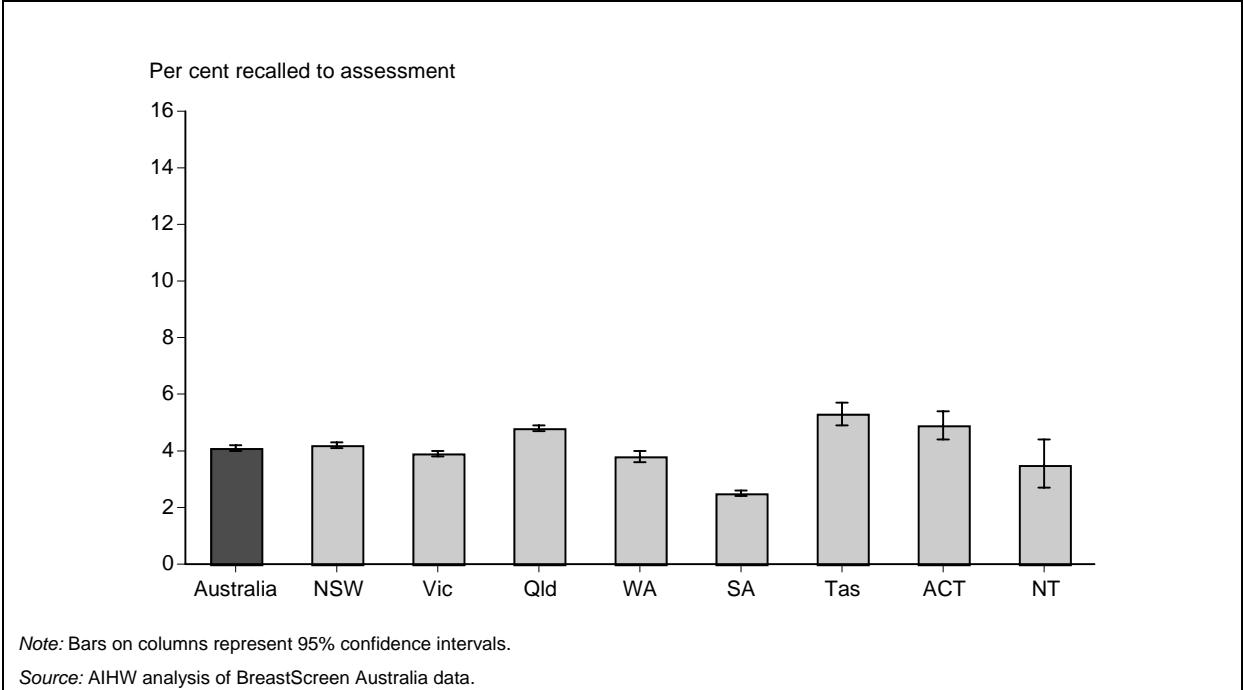
Note: Rates are the number of women recalled for assessment as a percentage of women screened and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

- In 2002, 8.9% (age-standardised) of women in the target age group attending their first screen were recalled for assessment due to an abnormal mammogram result.
- Age-standardised rates of recall for assessment for women in the target age group ranged from 5.2% in the Northern Territory to 12.1% in Tasmania. South Australia, at 6.5%, and the Northern Territory, at 5.2%, both had recall rates significantly lower than the national rate. Western Australia, at 10.3%, and Tasmania, 12.1%, had recall rates significantly higher than the national rate.

For more information, see:

Tables 29 and 30

Recall to assessment rate for women aged 50–69 years, mammographic reasons, subsequent screening round, 2002



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	4.1	4.2	3.9	4.8*	3.8*	2.5*	5.3*	4.9*	3.5
95% CI	4.0–4.1	4.1–4.3	3.8–4.0	4.7–4.9	3.6–3.9	2.4–2.7	4.9–5.7	4.4–5.4	2.7–4.4

* Significantly different from the all-Australia rate.

Note: Rates are the number of women recalled for assessment as a percentage of women screened and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

- Of women in the target age group who were screened for a second or subsequent time in 2002, 4.1% (age-standardised) were recalled for assessment due to an abnormal mammogram result. This is significantly lower than the rate for women attending for their first screen (Table 30).
- Age-standardised rates of recall for assessment for women in the target age group screened for a second or subsequent time ranged from 2.5% in the South Australia to 5.3% in Tasmania.

For more information, see:

Tables 31 and 32

Indicator 6: Rescreening

Rescreen rate

The rescreen rate is the proportion of all women screened in 2000 whose screening outcome was a recommendation to return for screening in two years who returned for a screen within 27 months. This rate is reported by five-year age groups (40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, and 85+ years) and for the target age group (50–67 years). Although the BreastScreen Australia target age group is 50–69 years, only women aged 50–67 years are reported for the rescreen indicator. This is because women aged 68–69 years in the index year were outside the target age group 27 months after their index screen and, therefore, were not expected to return for screening.

The rescreen indicator

The rescreen indicator measures the proportion of women who return for screening in the program within the recommended screening interval. 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, thus eliminating the advantage of screening. A high rescreen rate is also important for maintaining the participation rate. The anticipated reductions in mortality can be achieved only if a high proportion of women in the target age group attend for screening every two years. By having a mammogram every two years, a woman can reduce her chance of dying from breast cancer by up to 40% (Duffy et al. 1991; Fletcher et al. 1993; Feig 1998). The recommended interval of 27 months includes an additional 3 months to allow for potential delays in screening availability.

Women in the target age group are re-invited biennially. Some states and territories have a policy of re-inviting a proportion of women annually, for example, women with a strong family history of breast cancer. The data for this indicator include women who are recommended for annual screening as well as those screened biennially.

The proportion of women who returned for screening within the recommended screening interval increased with the number of screens a woman had previously attended. As can be seen in the table below, the rescreen rate is greater for women who have attended for two previous screens than for women who have been screened only once before, and greater still for women who have previously attended three or more screening episodes.

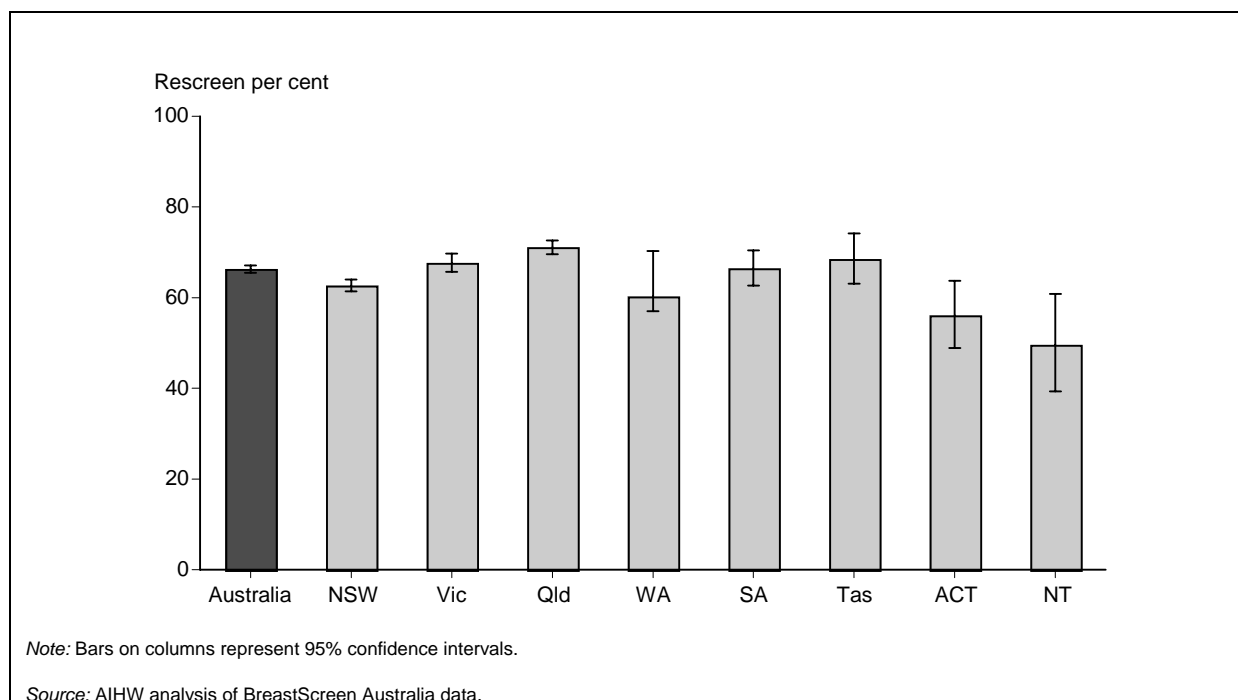
One of the objectives of the BreastScreen Australia Program is 'To rescreen all women in the Program at two-yearly intervals' (BSANAC & DHAC 2000).

Age-standardised rescreen rates for women aged 40 years and over, screened during 2000, Australia

	First screening round	Second screening round	Subsequent screening rounds
Rate (%)	61.8	72.0	80.6
95% CI	61.3–62.3	71.6–72.4	80.3–81.0

Source: AIHW analysis of BreastScreen Australia data.

Rescreen rate for women aged 50–67 years, screened during 2000, first screening round



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	66.3	62.7*	67.7	71.1*	60.3*	66.5	68.5	56.1*	49.6*
95% CI	65.5–67.1	61.4–64.0	65.8–69.7	69.6–72.6	57.0–63.8	62.7–70.4	63.1–74.1	48.9–63.7	39.2–60.8

* Significantly different from the all-Australia rate.

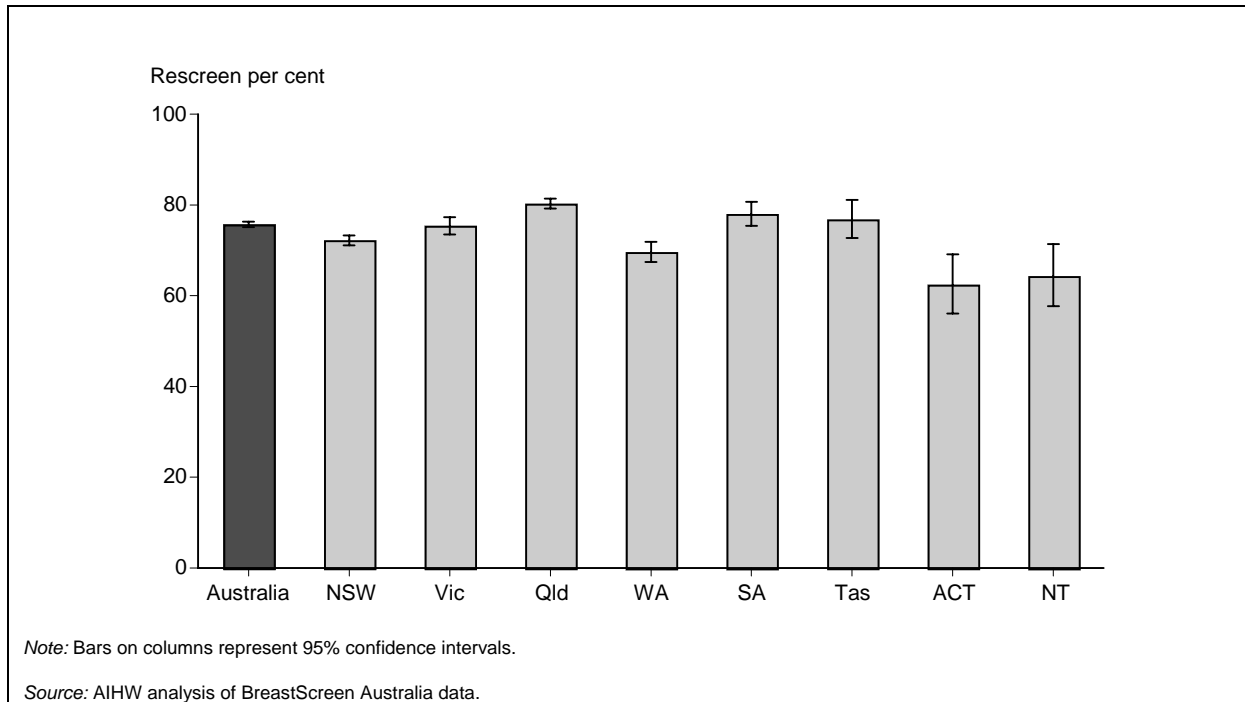
Note: Rates are the number of women attending for rescreening as a percentage of women screened and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

- The age-standardised national rescreen rate for women aged 50–67 years returning for screening within 27 months of attending a BreastScreen Australia service in 2000 for the first time was 66.3%. Of all women aged 40 and over, 61.8% returned for screening.
- Across the states and territories, the age-standardised rescreen rates for women in the target age group ranged from 49.6% in the Northern Territory to 71.1% in Queensland. The rate for Queensland was significantly higher than the national rate.

For more information, see:

Tables 37 and 38

Rescreen rate for women aged 50–67 years, screened during 2000, second screening round



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	75.7	72.2*	75.4	80.3*	69.6*	78.0	76.8	62.4*	64.3*
95% CI	75.1–76.3	71.1–73.3	73.5–77.3	79.2–81.3	67.4–71.9	75.4–80.7	72.7–81.0	56.1–69.1	57.6–71.3

* Significantly different from the all-Australia rate.

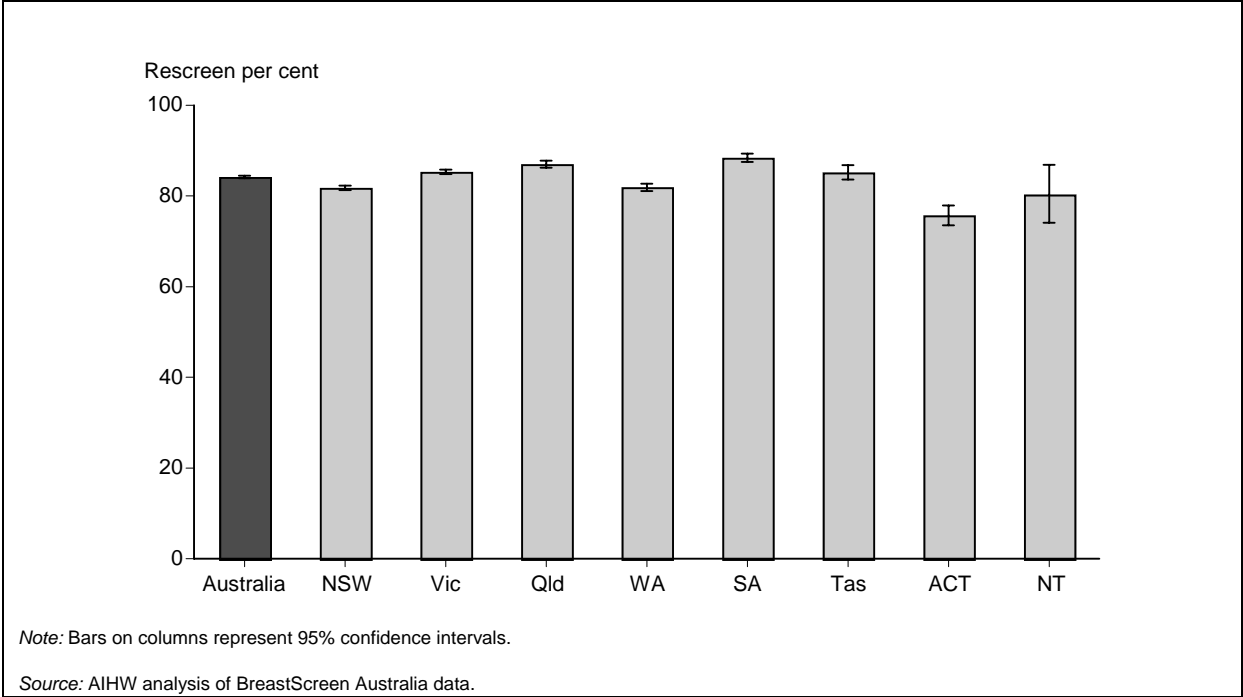
Note: Rates are the number of women attending for rescreening as a percentage of women screened and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

- The age-standardised national rescreen rate for women aged 50–67 years returning for screening within 27 months of attending a BreastScreen Australia service in 2000 for the second time was 75.7%. This is significantly higher than the rate for women attending for their first visit.
- Across the states and territories, the age-standardised rescreen rates for the target age group ranged from 62.4% in the Australian Capital Territory to 80.3% in Queensland. The rate for Queensland was significantly higher than the national rate.

For more information, see:

Tables 39 and 40

Rescreen rate for women aged 50–67 years, screened during 2000, third and subsequent screening rounds



	Australia	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Rate (%)	84.2	81.8*	85.3*	87.0*	81.9*	88.4*	85.2	75.7*	80.3
95% CI	83.9–84.4	81.3–82.3	84.8–85.7	86.2–87.8	81.1–82.7	87.6–89.3	83.6–86.8	73.5–78.0	74.1–86.8

* Significantly different from the all-Australia rate.

Note: Rates are the number of women attending for rescreening as a percentage of women screened and age-standardised to the population of women attending a BreastScreen Australia service in 1998.

- The age-standardised national rescreen rate for women aged 50–67 years returning for screening within 27 months of attending a BreastScreen Australia service in 2000 for their third or subsequent visit was 84.2%. This is significantly higher than the rate for women attending for their second visit.
- Across the states and territories, the age-standardised rescreen rates for the target age group ranged from 75.7% in the Australian Capital Territory to 88.4% in South Australia. Rescreen rates in Victoria, Queensland and South Australia were significantly higher than the national rate.

For more information, see:

Tables 41 and 42