

**Interval cancers in
BreastScreen Aotearoa
1999–2002**

Final

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for

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Foreword

This report has been prepared at the request of the National Screening Unit of the Ministry of Health (NSU) by the BreastScreen Aotearoa Independent Monitoring Group (IMG) at the School of Population Health, University of Queensland (Australia). The IMG is contracted to produce regular independent monitoring reports that compare New Zealand breast screen data against national indicators and targets. Under the terms of this contract, the NSU can also request *ad hoc* reports on particular topic areas. This report has been prepared under these terms and focuses on interval breast cancers within the screened population of New Zealand.

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1. Introduction

Interval breast cancers are cancers diagnosed after a mammographic screen with a normal result but before the next scheduled screen. Consistently low interval cancer rates correlate with significant reductions in breast cancer mortality in screened populations¹. Interval cancer rates are used, therefore, as one measure of the effectiveness of screening programmes.

Interval breast cancers can be classified by diagnosis: after the initial (prevalent) or a subsequent (incident) screen, in the first or subsequent year after a normal mammogram; as well as by age and period (both indexed to the date of the screen).

In some studies interval breast cancers can also be categorised by characteristics of the mammographic process: missed (present but not recognised at a screen), occult (mammographically invisible) and true (those that developed to become mammographically visible after a screen). The distribution of cancers in these categories is reported to be about 30% missed, 10% occult and 60% true¹⁻³, although the proportion of these vary with screening interval and method of mammogram review .

Stratification of interval breast cancers by occurrence in the first or subsequent year after a normal mammogram is important. Those that occur in the first year are more likely to be cancers missed by the mammographic process, whereas those that occur in the second or subsequent year are more likely to be true interval cancers. This statement, of course, must be qualified by the rate at which the cancer progresses from incidence to clinical indication, which in the case of cancer of the breast is known to vary with age; breast cancers in the elderly progress at much slower rates than those in younger women, largely due to hormonal influences.

Stratification of interval breast cancers by age at screen, therefore, is also important. Rates of interval cancers in the first year after a normal mammogram are likely to decrease with increasing age, whereas in subsequent years after a normal mammogram the reverse is more likely.

The purpose of this report is to present information on 2 year interval breast cancers from the BreastScreen Aotearoa (BSA) mammographic screening programme and to compare this with published results from other services.

2. Methods

2.1 Screening

The study population consists of women who attended for mammography screening at BSA during 2001–2002. BSA has offered government funded biennial mammography screening for all NZ women aged 50–64 years since 1999 and for women aged between 45 and 69 since 2004. Women who attend for screening undergo bilateral two view mammography and all films are read independently by two radiologists. If agreement cannot be reached about a recommendation of either routine re-screen or recall for assessment, a final recommendation is made based on either a consensus opinion of two or more radiologists, or the recommendation of a third radiologist, or both.

2.2 Interval cancers

The definition of primary cancer of the breast used for this report includes invasive cancer, but excludes ductal carcinoma *in situ* (DCIS) and lobular carcinoma *in situ* (LCIS) (Table 1). Interval cancers are defined as cases of primary breast cancer diagnosed up to 24 months after a screening mammogram. This definition includes invasive cancers diagnosed at early review (that is, at a repeat assessment following an equivocal assessment visit).

Matching

Identification of interval breast cancer cases was carried out through the matching of BreastScreen Aotearoa data with New Zealand Cancer Registry (NZCR) data.

The NSU provided an extract containing all women screened in the specified time period, but excluded those rescreened and diagnosed with cancer by BSA between 20 and 24 months. The NSU extract contained ‘NHI’ and ‘date of birth’ fields.

The NZCR matched the NSU ‘NHI’ field against all possible parent and child ‘NHI’ fields contained in the NHI database to match the maximum possible combinations. The NZCR then provided an extract containing all demographic and breast cancer records contained in the NZCR matched against all parent and child ‘NHI’ fields, to create a list of possible interval cancers.

Confirmation of diagnosis

Once matches were made between the BSA database and the NZCR, a list of BSA screened women with provisional interval cancers was created. To confirm that this list was accurate, a spreadsheet containing a list of these women, complete with all variables, was sent to the appropriate Lead Providers. Lead Providers checked the data contained against their own records to ensure that for BSA screen detected cancers:

- the woman really did develop a cancer,
- the histological diagnosis was correct,
- the site, size and grade were correct, and

- the dates in the NZCR were correct.

Lead providers manually reviewed each exact and possible match using the data available from the NSU, and any other data source available e.g. the lead provider database, the woman’s GP, hospitals or the treating doctor in order to confirm that women without BSA detected cancers:

- were screened in BSA;
- if screened, the screen dates were correct; and
- if they had a BSA biopsy matching the NCR record date, the NCR diagnosis was correct.

Lead providers also had the last opportunity to add extra interval cancers that were not recorded by the NZCR.

These records were then reviewed by the clinical leader of BSA, and those women who had: BSA screen detected cancers, BSA benign biopsies (eg LCIS) or who had cancers diagnosed 24 months or more from the date of the last screen were excluded. There were no additional cancers that were not already on the NCR identified by the providers for the period examined.

Interval breast cancer rates per 10,000 women screened were calculated for the following age groups: 50–54, 55–59, 60–64, 50–59 and 50–64 years. The 95% confidence intervals (CIs) were calculated using the exact method assuming a Poisson distribution. Interval cancer rates are presented for the period 1999–2002, both as annual rates and as aggregate rates for this period. Annual rates per 10,000 women screened for all age groups were standardised using the direct method to the age distribution of screens for the period 1999–2002. Temporal trends were not examined at the level of local providers due to small numbers.

Table 1: Case definition for invasive breast cancer

Histopathology	Included
High-grade DCIS with or without necrosis	No
Invasive cribriform	Yes
Invasive duct not otherwise specified	Yes
Invasive lobular classical	Yes
Invasive lobular variant	Yes
Invasive medullary	Yes
Invasive mucinous	Yes
Invasive tubular	Yes
Lobular carcinoma in situ LCIS	No
Mixed Invasive ductal/lobular	Yes
Non-high grade DCIS with necrosis	No
Non-high grade DCIS without necrosis	No
Other DCIS	No
Other primary invasive malignancy	Yes

Source: Everington et al 1999

2.3 Sensitivity

Programme sensitivity is defined as the number of screen detected cancers expressed as a proportion of total cancer incidence (screen detected plus interval cancers) in women screened. Sensitivity was calculated for the BSA programme for each of the age groups defined above. The 95% CIs were calculated using the exact method assuming a binomial distribution. Temporal trends were not examined at the level of local providers due to small numbers.

2.4 Proportional incidence

Proportional incidence is the number of interval invasive breast cancers expressed as a proportion of the number of cancers expected in the absence of screening. This last figure was derived from the IMG report entitled “Estimates and Projections of ‘Underlying’ Breast Cancer Incidence in New Zealand”. Proportional incidence was calculated for the BSA programme for each of the age groups defined above. The 95% CIs were calculated using the exact method assuming a binomial distribution. Temporal trends were not examined at the level of local providers due to small numbers. Table 2 summarises the IMG estimates of underlying incidence of invasive breast cancer in women by age and local provider used in this analysis.

Table 2: Underlying incidence of invasive breast cancer in women by age and local provider, New Zealand, 1999 to 2002

Age group	Year			
	1999	2000	2001	2002
BSA				
50-54	2.1	2.4	2.4	2.4
55-59	2.3	2.6	2.7	2.7
60-64	2.6	3.0	3.1	3.0
BSAL				
50-54	2.3	2.5	2.5	2.4
55-59	2.5	2.8	2.8	2.7
60-64	2.7	3.0	3.0	2.9
BSC				
50-54	2.4	2.7	3.3	2.7
55-59	2.9	3.4	4.2	3.5
60-64	3.1	3.6	4.6	4.0
BSC2C				
50-54	1.9	2.4	2.3	2.7
55-59	2.1	2.7	2.5	3.0
60-64	2.6	3.5	3.2	3.7
BSHC				
50-54	1.8	2.2	2.0	1.8
55-59	2.0	2.4	2.2	2.0
60-64	2.1	2.6	2.2	1.9
BSM				
50-54	1.8	1.9	2.3	2.3
55-59	1.9	2.0	2.3	2.4
60-64	2.1	2.3	2.7	2.7
BSSL				
50-54	2.2	2.5	2.4	2.3
55-59	2.6	2.9	2.8	2.6
60-64	2.9	3.3	3.2	3.1

Source: IMG analysis (Page and Taylor)

2.4 International comparisons

International studies that examined interval cancer rates, program sensitivity or proportional incidence over the period 1989 to 2007 were identified through an electronic search of Medline. Studies that examined at least one of these parameters or that allowed the calculation of one of these parameters from the information presented were included in the analysis. Since a wide variety of age groupings are used to report this information in the literature, only studies that allowed that calculation of interval cancer rates, program sensitivity or proportional incidence for women aged 50–59 or 50–64 years were used. Table 3 summarises each of the studies included in the comparisons presented in this report.

Table 3: International studies identified as having assessed interval cancer rates (IC), program sensitivity (PS) and proportional incidence (PI)

Author(s)	Population	Period	Age group	0 to <12 months						12 to <24months						
				Initial			Subsequent			Initial			Subsequent			
				IC	PS	PI	IC	PS	PI	IC	PS	PI	IC	PS	PI	
AIHW 2006 ⁴	Australia	1999-2001	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AIHW 2006 ⁴	NSW	1999-2001	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AIHW 2006 ⁴	Qld	1999-2001	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AIHW 2006 ⁴	SA	1999-2001	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AIHW 2006 ⁴	Vic	1999-2001	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AIHW 2006 ⁴	WA	1999-2001	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Alexander et al 1994 ⁵	Edinburgh trial	1991	50-64	x	x	x	✓	x	✓	x	x	x	✓	x	✓	
Brekelmans et al 1992 ⁶	Utrecht,	1981	50-64	✓	✓	✓	x	x	x	✓	✓	✓	x	x	x	
	Netherlands															
Day et al 1995 ⁷	East Anglia region	1994	50-64	x	x	x	✓	x	✓	x	x	x	✓	x	✓	
Everington et al 1999 ⁸	Scotland	1991-1994	50-64	✓	x	✓	x	x	x	✓	x	✓	x	x	x	
Frachenboud et al 1999 ⁹	Netherlands	1990-1993	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Frachenboud et al 1999 ⁹	Netherlands	1990-1993	50-64	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Gao et al 2002 ¹⁰	Singapore	1994	50-64	✓	✓	✓	x	x	x	✓	✓	✓	x	x	x	
Kavanagh et al 1999 ¹¹	Victoria	1994	50-59	✓	✓	✓	x	x	x	✓	✓	✓	x	x	x	
Liston 2000 ¹²	Leeds	1991-1996	50-64	x	x	x	✓	✓	✓	x	x	x	✓	✓	✓	
Peeters et al 1989 ¹³	Nijmegen,	1975-1976	50-64	✓	✓	✓	x	x	x	✓	✓	✓	x	x	x	
	Netherlands															
Peeters et al 1989 ¹³	Nijmegen,	1977-1984	50-64	x	x	x	✓	✓	✓	x	x	x	✓	✓	✓	
Netherlands																
Taylor et al 2002 ¹⁴	NSW	1995-1997	50-59	✓	x	✓	✓	x	✓	x	x	x	x	x	x	
Taylor et al 2004 ¹⁵	NSW	1995-1998	50-59	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Tornberg et al 2005 ¹⁶	Coimbra	1990-1992	50-64	✓	x	x	x	x	x	✓	x	x	x	x	x	
Tornberg et al 2005 ¹⁶	Dublin	1989-1992	50-64	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Tornberg et al 2005 ¹⁶	Turin	1992-1993	50-59	✓	✓	✓	x	x	x	✓	✓	✓	x	x	x	
Woodman et al 1995 ¹⁷	North Western Region, UK	1988-1992	50-64	✓	x	✓	x	x	x	✓	x	✓	x	x	x	

3. Interval cancers

3.1 New Zealand

Table 4: First-year (0 to <12 months) interval breast cancers after an initial or subsequent screen by age-group and year, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)
1999									
50-54	18	26,659	6.8 (4.0-10.7)	2	2,827	7.1 (0.9-25.6)	20	29,486	6.8 (4.1-10.5)
55-59	10	19,699	5.1 (2.4-9.3)	4	4,678	8.6 (2.3-21.9)	14	24,377	5.7 (3.1-9.6)
60-64	10	17,709	5.6 (2.7-10.4)	1	3,650	2.7 (0.1-15.3)	11	21,359	5.2 (2.6-9.2)
All ages ^(a)	38	64,067	6.1 (4.1-8.0)	7	11,155	6.2 (1.6-10.8)	45	75,222	6.0 (4.3-7.8)
2000									
50-54	11	30,785	3.6 (1.8-6.4)	2	3,347	6.0 (0.7-21.6)	13	34,132	3.8 (2.0-6.5)
55-59	16	19,343	8.3 (4.7-13.4)	2	5,218	3.8 (0.5-13.8)	18	24,561	7.3 (4.3-11.6)
60-64	7	15,065	4.6 (1.9-9.6)	3	4,913	6.1 (1.3-17.8)	10	19,978	5.0 (2.4-9.2)
All ages ^(a)	34	65,193	5.1 (3.4-6.8)	7	13,478	5.2 (1.3-9.1)	41	78,671	5.3 (3.6-6.9)
2001									
50-54	11	20,319	5.4 (2.7-9.7)	6	16,354	3.7 (1.3-8.0)	17	36,673	4.6 (2.7-7.4)
55-59	1	7,766	1.3 (0.0-7.2)	16	21,890	7.3 (4.2-11.9)	17	29,656	5.7 (3.3-9.2)
60-64	0	5,954	0.0 (0.0-6.2)	17	20,427	8.3 (4.8-13.3)	17	26,381	6.4 (3.8-10.3)
All ages ^(a)	12	34,039	3.1 (1.3-4.8)	39	58,671	6.6 (4.5-8.7)	51	92,710	5.5 (4.0-7.0)
2002									
50-54	16	18,740	8.5 (4.9-13.9)	17	20,895	8.1 (4.7-13.0)	33	39,635	8.3 (5.7-11.7)
55-59	4	5,079	7.9 (2.1-20.2)	15	25,810	5.8 (3.3-9.6)	19	30,889	6.2 (3.7-9.6)
60-64	1	3,685	2.7 (0.1-15.1)	8	22,283	3.6 (1.5-7.1)	9	25,968	3.5 (1.6-6.6)
All ages ^(a)	21	27,504	7.1 (3.9-10.3)	40	68,988	5.7 (4.0-7.5)	61	96,492	6.3 (4.7-7.9)
1999-2002									
50-54	56	96,503	5.8 (4.4-7.5)	27	43,423	6.2 (4.1-9.0)	83	139,926	5.9 (4.7-7.4)
55-59	31	51,887	6.0 (4.1-8.5)	37	57,596	6.4 (4.5-8.9)	68	109,483	6.2 (4.8-7.9)
60-64	18	42,413	4.2 (2.5-6.7)	29	51,273	5.7 (3.8-8.1)	47	93,686	5.0 (3.7-6.7)
All ages ^(a)	105	190,803	5.5 (4.5-6.6)	93	152,292	6.1 (4.9-7.3)	198	343,095	5.8 (5.0-6.6)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

Table 5: Second-year (12 to <24 months) interval breast cancers after an initial or subsequent screen by age-group and year, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)
1999									
50-54	42	26,659	15.8 (11.4-21.3)	6	2,827	21.2 (7.8-46.2)	48	29,486	16.3 (12.0-21.6)
55-59	37	19,699	18.8 (13.2-25.9)	3	4,678	6.4 (1.3-18.7)	40	24,377	16.4 (11.7-22.3)
60-64	23	17,709	13.0 (8.2-19.5)	3	3,650	8.2 (1.7-24.0)	26	21,359	12.2 (8.0-17.8)
All ages ^(a)	102	64,067	16.0 (12.8-19.1)	12	11,155	11.2 (4.9-17.6)	114	75,222	15.2 (12.4-18.0)
2000									
50-54	40	30,785	13.0 (9.3-17.7)	5	3,347	14.9 (4.9-34.9)	45	34,132	13.2 (9.6-17.6)
55-59	27	19,343	14.0 (9.2-20.3)	8	5,218	15.3 (6.6-30.2)	35	24,561	14.3 (9.9-19.8)
60-64	19	15,065	12.6 (7.6-19.7)	7	4,913	14.2 (5.7-29.4)	26	19,978	13.0 (8.5-19.1)
All ages ^(a)	86	65,193	13.2 (10.4-16.0)	20	13,478	14.9 (8.3-21.4)	106	78,671	13.5 (10.9-16.0)
2001									
50-54	22	20,319	10.8 (6.8-16.4)	14	16,354	8.6 (4.7-14.4)	36	36,673	9.8 (6.9-13.6)
55-59	13	7,766	16.7 (8.9-28.6)	27	21,890	12.3 (8.1-17.9)	40	29,656	13.5 (9.6-18.4)
60-64	7	5,954	11.8 (4.7-24.2)	25	20,427	12.2 (7.9-18.1)	32	26,381	12.1 (8.3-17.1)
All ages ^(a)	42	34,039	12.6 (8.8-16.5)	66	58,671	11.2 (8.5-13.9)	108	92,710	11.6 (9.4-13.8)
2002									
50-54	13	18,740	6.9 (3.7-11.9)	18	20,895	8.6 (5.1-13.6)	31	39,635	7.8 (5.3-11.1)
55-59	9	5,079	17.7 (8.1-33.6)	24	25,810	9.3 (6.0-13.8)	33	30,889	10.7 (7.4-15.0)
60-64	3	3,685	8.1 (1.7-23.8)	24	22,283	10.8 (6.9-16.0)	27	25,968	10.4 (6.9-15.1)
All ages ^(a)	25	27,504	10.1 (5.9-14.3)	66	68,988	9.6 (7.3-11.9)	91	96,492	9.4 (7.5-11.4)
1999-2002									
50-54	117	96,503	12.1 (10.0-14.5)	43	43,423	9.9 (7.2-13.3)	160	139,926	11.4 (9.7-13.4)
55-59	86	51,887	16.6 (13.3-20.5)	62	57,596	10.8 (8.3-13.8)	148	109,483	13.5 (11.4-15.9)
60-64	52	42,413	12.3 (9.2-16.1)	59	51,273	11.5 (8.8-14.8)	111	93,686	11.8 (9.7-14.3)
All ages ^(a)	255	190,803	13.4 (11.7-15.0)	164	152,292	10.8 (9.1-12.4)	419	343,095	12.2 (11.0-13.4)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

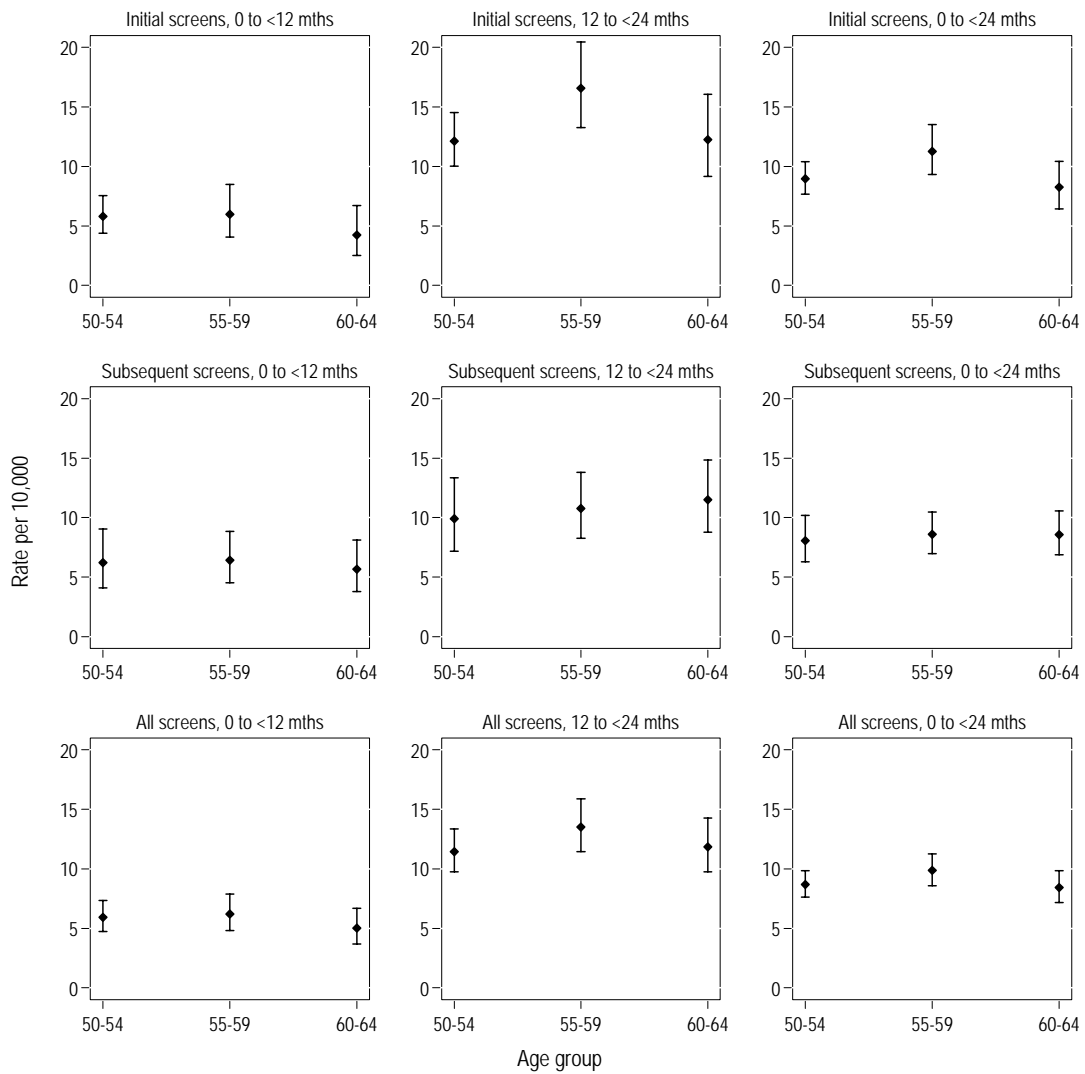


Figure 1: First-year (0 to <12 months) and second-year (12 to <24 months) interval breast cancers (per 10,000 women screened) after an initial or subsequent screen by age-group, BSA program, 1999–2002

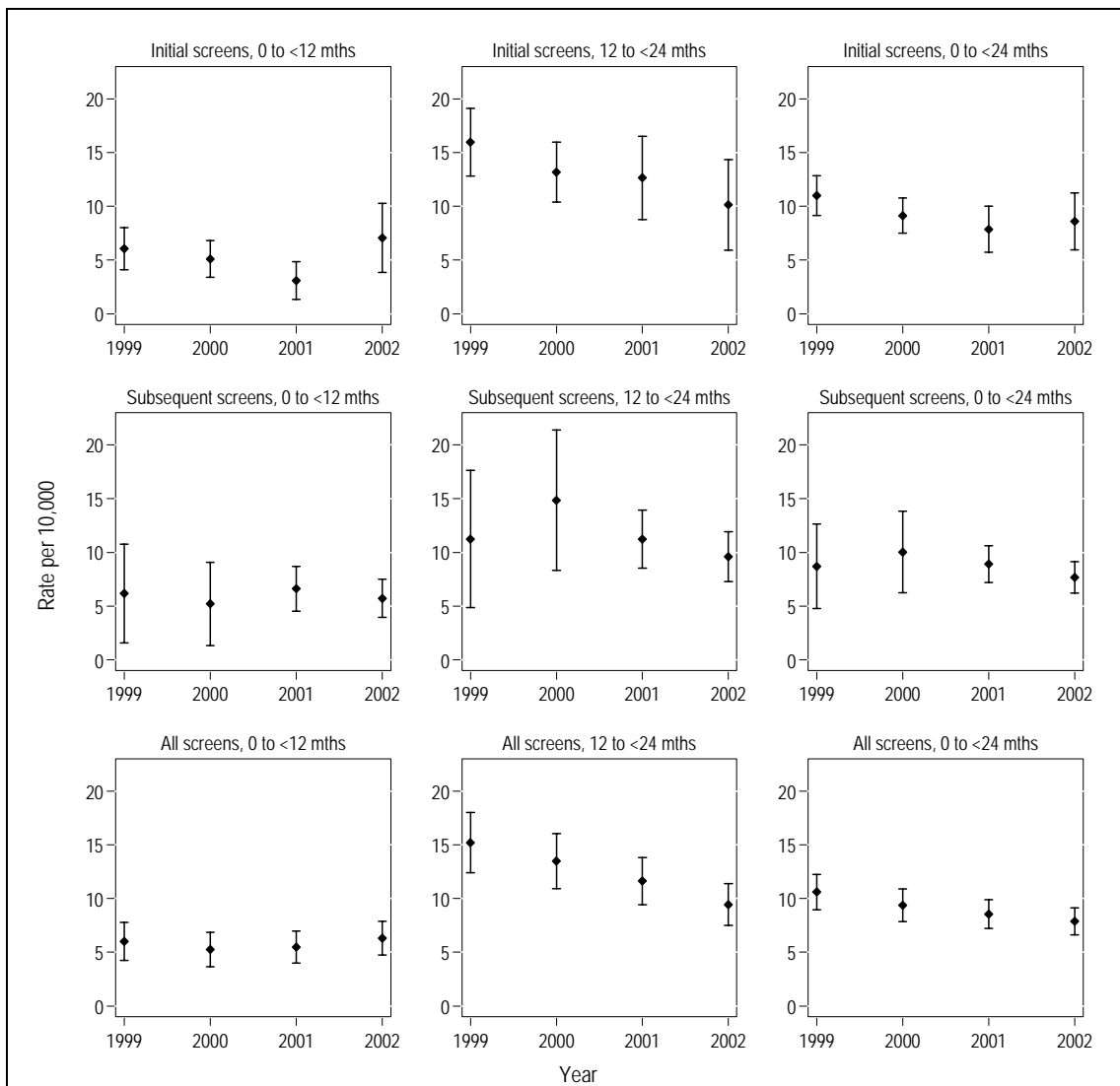


Figure 2: First-year (0 to <12 months) and second-year (12 to <24 months) interval breast cancers (per 10,000 women screened) in women aged 50–64 after an initial or subsequent screen by year, BSA program, 1999–2002

Note: standardised to the age distribution of women screened in the BSA program for the period 1999-2002

3.2 International comparisons

Table 6: First-year (0 to <12 months) interval breast cancers after an initial or subsequent screen in 50–59 and 50–64 year old women, BSA program in 1999–2002 and selected other services and trials

Author	Population, year	Initial screens			Subsequent screens		
		Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)
<i>50-59 year olds</i>							
IMG analysis	NZ, 1999-2002	87	148,390	5.9 (4.7-7.2)	64	101,019	6.3 (4.9-8.1)
IMG analysis	Australia, 1999-2001	148	180,886	8.2 (6.9-9.6)	631	763,942	8.3 (7.6-8.9)
IMG analysis	NSW, 1999-2001	43	56,171	7.7 (5.5-10.3)	188	244,912	7.7 (6.6-8.9)
IMG analysis	Vic, 1999-2001	40	49,079	8.2 (5.8-11.1)	163	192,683	8.5 (7.2-9.9)
IMG analysis	Qld, 1999-2001	35	37,213	9.4 (6.6-13.1)	130	140,139	9.3 (7.8-11.0)
IMG analysis	WA, 1999-2001	8	13,176	6.1 (2.6-12.0)	47	73,777	6.4 (4.7-8.5)
IMG analysis	SA, 1999-2001	12	17,546	6.8 (3.5-11.9)	66	71,939	9.2 (7.1-11.7)
Frachenboud et al 1999	Netherlands, 1990-1993	205	311,048	6.6 (5.7-7.6)	61	103,812	5.9 (4.5-7.5)
Kavanagh et al 1999	Victoria, 1994	56	86,822	6.5 (4.9-8.4)			
Taylor et al 2002	NSW, 1995-1997	82	116,088	7.1 (5.6-8.8)	98	129,235	7.6 (6.2-9.2)
Taylor et al 2004	NSW, 1995-1998	102	141,703	7.2 (5.9-8.7)	171	178,329	9.6 (8.2-11.1)
Tomberg et al 2005	Turin, 1992-1993	5	8,968	5.6 (1.8-13.0)			
<i>50-64 year olds</i>							
IMG analysis	NZ, 1999-2002	105	190,803	5.5 (4.5-6.7)	93	152,292	6.1 (4.9-7.5)
Alexander et al 1994	Edinburgh trial, 1991				2	10,000	2.0 (0.2-7.2)
Brekelmans et al 1992	Utrecht, Netherlands, 1981	9	15,767	5.7 (2.6-10.8)			
Day et al 1995	East Anglia region, 1994				45	86,131	5.2 (3.8-7.0)
Everington et al 1999	Scotland, 1991-1994	139	292,005	4.8 (4.0-5.6)			
Frachenboud et al 1999	Netherlands, 1990-1993	278	445,947	6.2 (5.5-7.0)	86	161,289	5.3 (4.3-6.6)
Gao et al 2002	Singapore, 1994	6	28,099	2.1 (0.8-4.6)			
Liston 2000	Leeds, 1991-1996				53	96,681	5.5 (4.1-7.2)
Peeters et al 1989	Nijmegen, Netherlands, 1977-1984				25	30,067	8.3 (5.4-12.3)
Peeters et al 1989	Nijmegen, Netherlands, 1975-1976	4	9,578	4.2 (1.1-10.7)			
Tomberg et al 2005	Dublin, 1989-1992	19	18,903	10.1 (6.1-15.7)	11	16,256	6.8 (3.4-12.1)
Tomberg et al 2005	Coimbra, 1990-1992	4	18,589	2.2 (0.6-5.5)			
Woodman et al 1995	North Western Region, UK, 1988-1992	79	137,421	5.7 (4.6-7.2)			

Table 7: Second-year (12 to <24 months) interval breast cancers after an initial or subsequent screen in 50–59 and 50–64 year old women, BSA program in 1999–2002 and selected other services and trials

Author	Population, year	Initial screens			Subsequent screens		
		Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)
<i>50-59 year olds</i>							
IMG analysis	NZ, 1999-2002	203	148,390	13.7 (11.9-15.7)	105	101,019	10.4 (8.5-12.6)
IMG analysis	Australia, 1999-2001	243	180,886	13.4 (11.8-15.2)	946	763,942	12.4 (11.6-13.2)
IMG analysis	NSW, 1999-2001	74	56,171	13.2 (10.3-16.5)	289	244,912	11.8 (10.5-13.2)
IMG analysis	Vic, 1999-2001	59	49,079	12.0 (9.2-15.5)	239	192,683	12.4 (10.9-14.1)
IMG analysis	Qld, 1999-2001	59	37,213	15.9 (12.1-20.5)	204	140,139	14.6 (12.6-16.7)
IMG analysis	WA, 1999-2001	17	13,176	12.9 (7.5-20.7)	78	73,777	10.6 (8.4-13.2)
IMG analysis	SA, 1999-2001	25	17,546	14.2 (9.2-21.0)	91	71,939	12.6 (10.2-15.5)
Frachenboud et al 1999	Netherlands, 1990-1993	351	311,048	11.3 (10.1-12.5)	125	103,812	12.0 (10.0-14.3)
Kavanagh et al 1999	Victoria, 1994	66	51,522	12.8 (9.9-16.3)			
Taylor et al 2004	NSW, 1995-1998	172	133,903	12.8 (11.0-14.9)	259	180,778	14.3 (12.6-16.2)
Tomberg et al 2005	Turin, 1992-1993	9	8,968	10.0 (4.6-19.1)			
<i>50-64 year olds</i>							
IMG analysis	NZ, 1999-2002	255	190,803	13.4 (11.8-15.1)	164	152,292	10.8 (9.2-12.5)
Alexander et al 1994	Edinburgh trial, 1991				7	9,859	7.1 (2.9-14.6)
Brekelmans et al 1992	Utrecht, Netherlands, 1981	26	15,767	16.5 (10.8-24.2)			
Day et al 1995	East Anglia region, 1994				61	47,562	12.8 (9.8-16.5)
Everington et al 1999	Scotland, 1991-1994	231	191,068	12.1 (10.6-13.8)			
Frachenboud et al 1999	Netherlands, 1990-1993	524	445,947	11.8 (10.8-12.8)	203	161,289	12.6 (10.9-14.4)
Gao et al 2002	Singapore, 1994	29	28,099	10.3 (6.9-14.8)			
Liston 2000	Leeds, 1991-1996				85	96,681	8.8 (7.0-10.9)
Peeters et al 1989	Nijmegen, Netherlands, 1977-1984				38	30,067	12.6 (8.9-17.3)
Peeters et al 1989	Nijmegen, Netherlands, 1975-1976	11	9,578	11.5 (5.7-20.5)			
Tomberg et al 2005	Dublin, 1989-1992	20	18,903	10.6 (6.5-16.3)	18	16,256	11.1 (6.6-17.5)
Tomberg et al 2005	Coimbra, 1990-1992	4	18,589	2.2 (0.6-5.5)			
Woodman et al 1995	North Western Region, UK, 1988-1992	75	78,640	9.5 (7.5-12.0)			

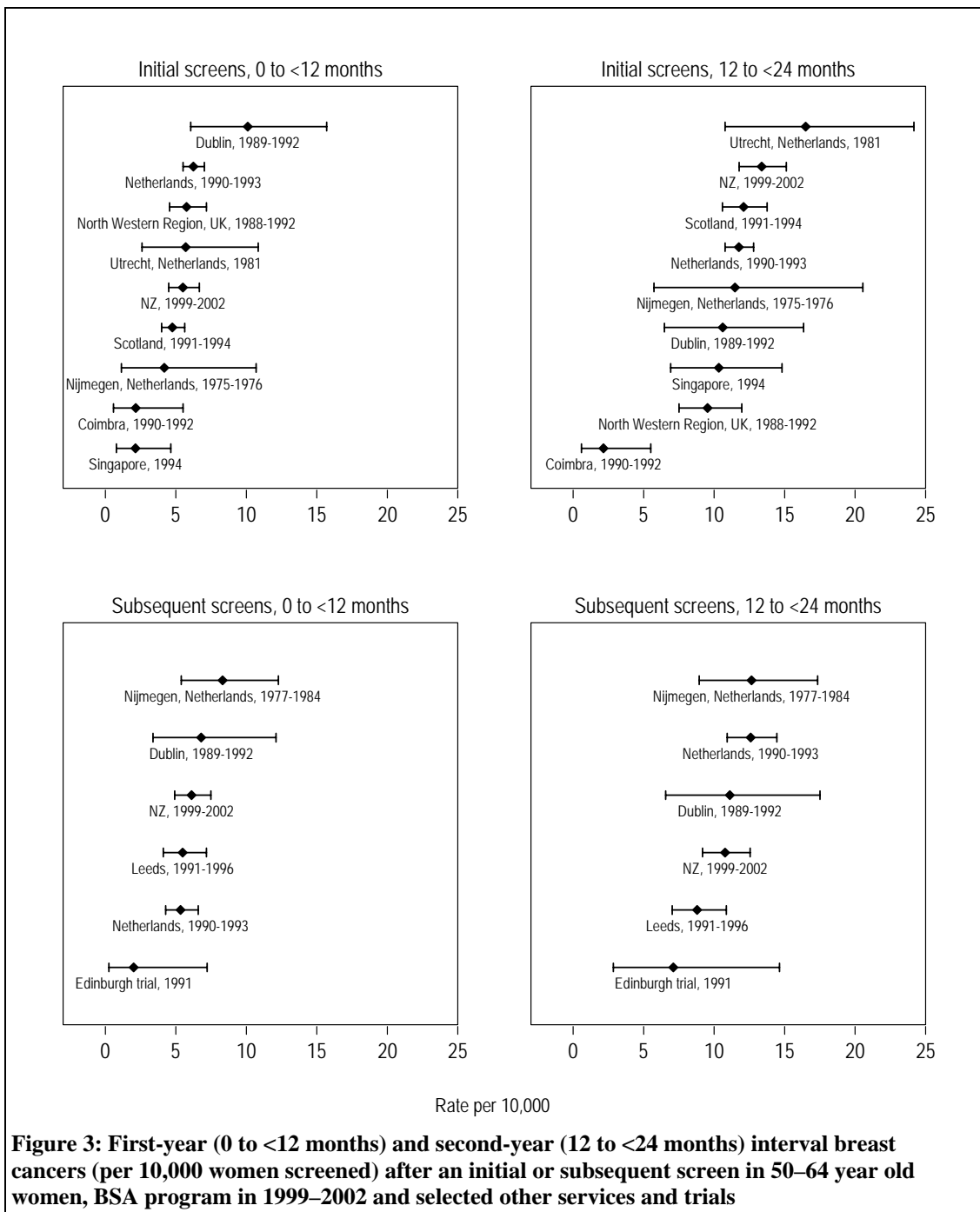
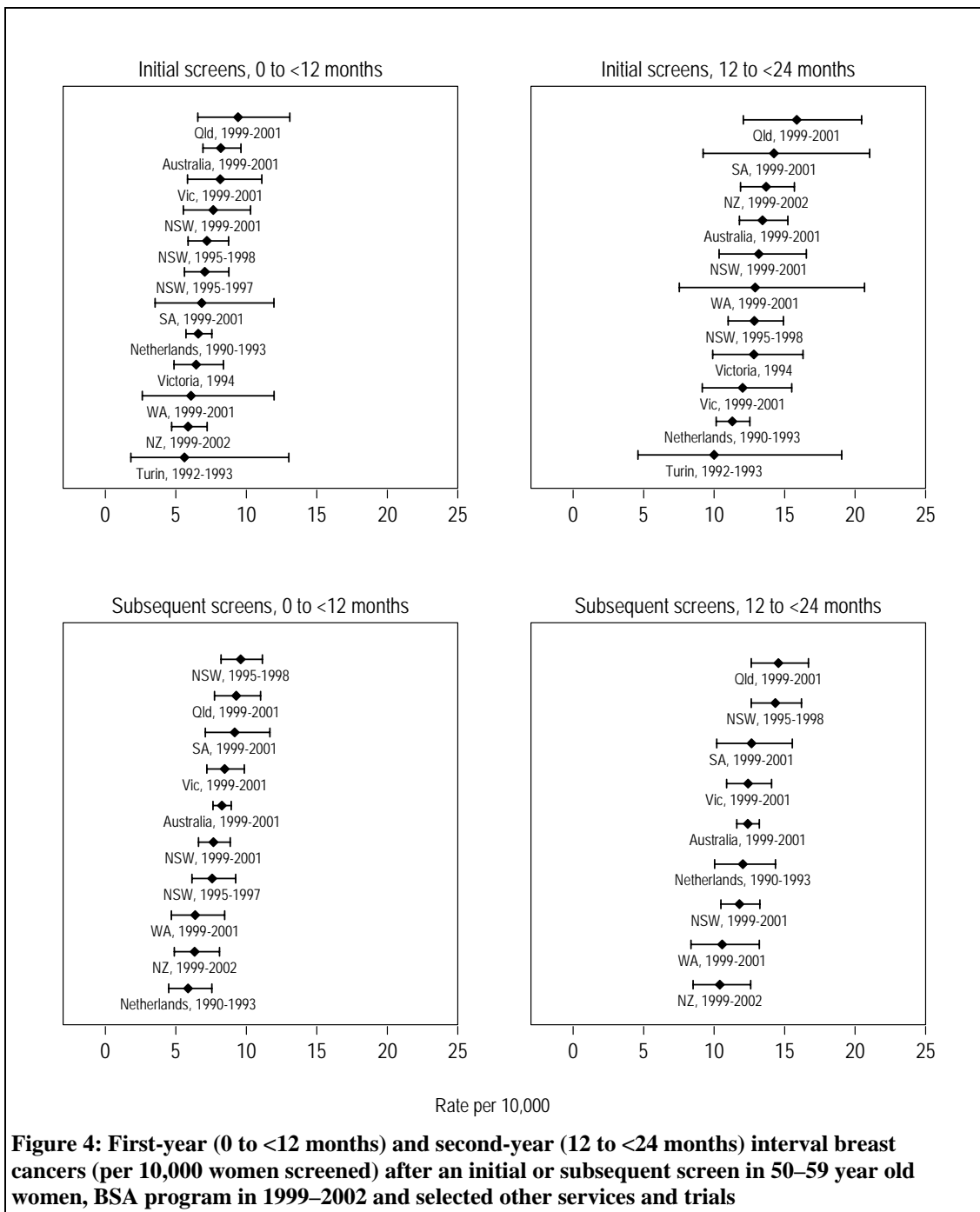


Figure 3: First-year (0 to <12 months) and second-year (12 to <24 months) interval breast cancers (per 10,000 women screened) after an initial or subsequent screen in 50–64 year old women, BSA program in 1999–2002 and selected other services and trials



3.3 Local providers

Table 12: First-year (0 to <12 months) interval breast cancers after an initial or subsequent screen by age-group and local provider, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)
BSAN									
50-54	19	30,700	6.2 (3.7-9.7)	6	11,299	5.3 (1.9-11.6)	25	41,999	6.0 (3.9-8.8)
55-59	5	18,240	2.7 (0.9-6.4)	9	13,267	6.8 (3.1-12.9)	14	31,507	4.4 (2.4-7.5)
60-64	6	14,281	4.2 (1.5-9.1)	4	11,203	3.6 (1.0-9.1)	10	25,484	3.9 (1.9-7.2)
All ages ^(a)	30	63,221	4.8 (3.1-6.5)	19	35,769	5.3 (2.9-7.7)	49	98,990	4.9 (3.5-6.3)
BSC									
50-54	10	10,539	9.5 (4.6-17.4)	2	4,151	4.8 (0.6-17.4)	12	14,690	8.2 (4.2-14.3)
55-59	4	6,465	6.2 (1.7-15.8)	6	5,097	11.8 (4.3-25.6)	10	11,562	8.6 (4.1-15.9)
60-64	0	4,916	0.0 (0.0-7.5)	4	4,149	9.6 (2.6-24.7)	4	9,065	4.4 (1.2-11.3)
All ages ^(a)	14	21,920	6.5 (3.1-9.9)	12	13,397	9.1 (3.9-14.2)	26	35,317	7.3 (4.5-10.1)
BSCtoC									
50-54	5	13,343	3.7 (1.2-8.7)	3	4,987	6.0 (1.2-17.6)	8	18,330	4.4 (1.9-8.6)
55-59	6	8,065	7.4 (2.7-16.2)	3	6,221	4.8 (1.0-14.1)	9	14,286	6.3 (2.9-12.0)
60-64	4	6,972	5.7 (1.6-14.7)	2	5,692	3.5 (0.4-12.7)	6	12,664	4.7 (1.7-10.3)
All ages ^(a)	15	28,380	5.2 (2.6-7.8)	8	16,900	4.7 (1.4-8.0)	23	45,280	5.1 (3.0-7.2)
BSHC									
50-54	1	5,979	1.7 (0.0-9.3)	3	6,256	4.8 (1.0-14.0)	4	12,235	3.3 (0.9-8.4)
55-59	1	586	17.1 (0.4-95.1)	5	9,445	5.3 (1.7-12.4)	6	10,031	6.0 (2.2-13.0)
60-64	0	407	0.0 (0.0-90.6)	4	8,469	4.7 (1.3-12.1)	4	8,876	4.5 (1.2-11.5)
All ages ^(a)	2	6,972	5.5 (0.0-14.7)	12	24,170	5.0 (2.1-7.8)	14	31,142	4.5 (2.1-6.8)
BSM									
50-54	8	12,194	6.6 (2.8-12.9)	6	7,800	7.7 (2.8-16.7)	14	19,994	7.0 (3.8-11.7)
55-59	5	5,333	9.4 (3.0-21.9)	10	12,676	7.9 (3.8-14.5)	15	18,009	8.3 (4.7-13.7)
60-64	2	4,569	4.4 (0.5-15.8)	9	12,347	7.3 (3.3-13.8)	11	16,916	6.5 (3.2-11.6)
All ages ^(a)	15	22,096	6.8 (3.4-10.3)	25	32,823	7.6 (4.6-10.6)	40	54,919	7.3 (5.0-9.6)
BSSL									
50-54	13	23,748	5.5 (2.9-9.4)	7	8,930	7.8 (3.2-16.2)	20	32,678	6.1 (3.7-9.5)
55-59	10	13,198	7.6 (3.6-13.9)	4	10,890	3.7 (1.0-9.4)	14	24,088	5.8 (3.2-9.8)
60-64	6	11,268	5.3 (2.0-11.6)	6	9,413	6.4 (2.3-13.9)	12	20,681	5.8 (3.0-10.1)
All ages ^(a)	29	48,214	6.0 (3.8-8.2)	17	29,233	5.8 (3.0-8.5)	46	77,447	5.9 (4.2-7.7)
BSA Total									
50-54	56	96,503	5.8 (4.4-7.5)	27	43,423	6.2 (4.1-9.0)	83	139,926	5.9 (4.7-7.4)
55-59	31	51,887	6.0 (4.1-8.5)	37	57,596	6.4 (4.5-8.9)	68	109,483	6.2 (4.8-7.9)
60-64	18	42,413	4.2 (2.5-6.7)	29	51,273	5.7 (3.8-8.1)	47	93,686	5.0 (3.7-6.7)
All ages ^(a)	105	190,803	5.5 (4.5-6.6)	93	152,292	6.1 (4.9-7.3)	198	343,095	5.8 (5.0-6.6)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

Table 13: Second-year (12 to <24 months) interval breast cancers after an initial or subsequent screen by age-group and local provider, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)	Interval cancers	Women screened	Rate/10,000 screens (95%CI)
BSAN									
50-54	35	30,700	11.4 (7.9-15.9)	9	11,299	8.0 (3.6-15.1)	44	41,999	10.5 (7.6-14.1)
55-59	26	18,240	14.3 (9.3-20.9)	16	13,267	12.1 (6.9-19.6)	42	31,507	13.3 (9.6-18.0)
60-64	12	14,281	8.4 (4.3-14.7)	8	11,203	7.1 (3.1-14.1)	20	25,484	7.8 (4.8-12.1)
All ages ^(a)	73	63,221	11.5 (8.9-14.2)	33	35,769	9.2 (6.1-12.4)	106	98,990	10.7 (8.6-12.7)
BSC									
50-54	9	10,539	8.5 (3.9-16.2)	1	4,151	2.4 (0.1-13.4)	10	14,690	6.8 (3.3-12.5)
55-59	12	6,465	18.6 (9.6-32.4)	8	5,097	15.7 (6.8-30.9)	20	11,562	17.3 (10.6-26.7)
60-64	7	4,916	14.2 (5.7-29.3)	2	4,149	4.8 (0.6-17.4)	9	9,065	9.9 (4.5-18.8)
All ages ^(a)	28	21,920	12.5 (7.9-17.2)	11	13,397	8.2 (3.4-13.1)	39	35,317	11.0 (7.6-14.5)
BSCtoC									
50-54	22	13,343	16.5 (10.3-25.0)	9	4,987	18.0 (8.3-34.3)	31	18,330	16.9 (11.5-24.0)
55-59	14	8,065	17.4 (9.5-29.1)	2	6,221	3.2 (0.4-11.6)	16	14,286	11.2 (6.4-18.2)
60-64	13	6,972	18.6 (9.9-31.9)	15	5,692	26.4 (14.7-43.5)	28	12,664	22.1 (14.7-32.0)
All ages ^(a)	49	28,380	17.2 (12.4-22.0)	26	16,900	15.2 (9.4-21.1)	75	45,280	16.5 (12.8-20.2)
BSHC									
50-54	2	5,979	3.3 (0.4-12.1)	6	6,256	9.6 (3.5-20.9)	8	12,235	6.5 (2.8-12.9)
55-59	1	586	17.1 (0.4-95.1)	8	9,445	8.5 (3.7-16.7)	9	10,031	9.0 (4.1-17.0)
60-64	0	407	0.0 (0.0-90.6)	8	8,469	9.4 (4.1-18.6)	8	8,876	9.0 (3.9-17.8)
All ages ^(a)	3	6,972	6.3 (0.0-15.7)	22	24,170	9.1 (5.3-12.9)	25	31,142	8.0 (4.9-11.1)
BSM									
50-54	22	12,194	18.0 (11.3-27.3)	11	7,800	14.1 (7.0-25.2)	33	19,994	16.5 (11.4-23.2)
55-59	10	5,333	18.8 (9.0-34.5)	16	12,676	12.6 (7.2-20.5)	26	18,009	14.4 (9.4-21.2)
60-64	4	4,569	8.8 (2.4-22.4)	10	12,347	8.1 (3.9-14.9)	14	16,916	8.3 (4.5-13.9)
All ages ^(a)	36	22,096	16.2 (10.9-21.5)	37	32,823	11.5 (7.8-15.3)	73	54,919	13.6 (10.5-16.7)
BSSL									
50-54	27	23,748	11.4 (7.5-16.5)	7	8,930	7.8 (3.2-16.2)	34	32,678	10.4 (7.2-14.5)
55-59	23	13,198	17.4 (11.0-26.1)	12	10,890	11.0 (5.7-19.2)	35	24,088	14.5 (10.1-20.2)
60-64	16	11,268	14.2 (8.1-23.1)	16	9,413	17.0 (9.7-27.6)	32	20,681	15.5 (10.6-21.8)
All ages ^(a)	66	48,214	13.6 (10.4-16.9)	35	29,233	12.1 (8.1-16.1)	101	77,447	13.1 (10.6-15.7)
BSA Total									
50-54	117	96,503	12.1 (10.0-14.5)	43	43,423	9.9 (7.2-13.3)	160	139,926	11.4 (9.7-13.4)
55-59	86	51,887	16.6 (13.3-20.5)	62	57,596	10.8 (8.3-13.8)	148	109,483	13.5 (11.4-15.9)
60-64	52	42,413	12.3 (9.2-16.1)	59	51,273	11.5 (8.8-14.8)	111	93,686	11.8 (9.7-14.3)
All ages ^(a)	255	190,803	13.4 (11.7-15.0)	164	152,292	10.8 (9.1-12.4)	419	343,095	12.2 (11.0-13.4)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

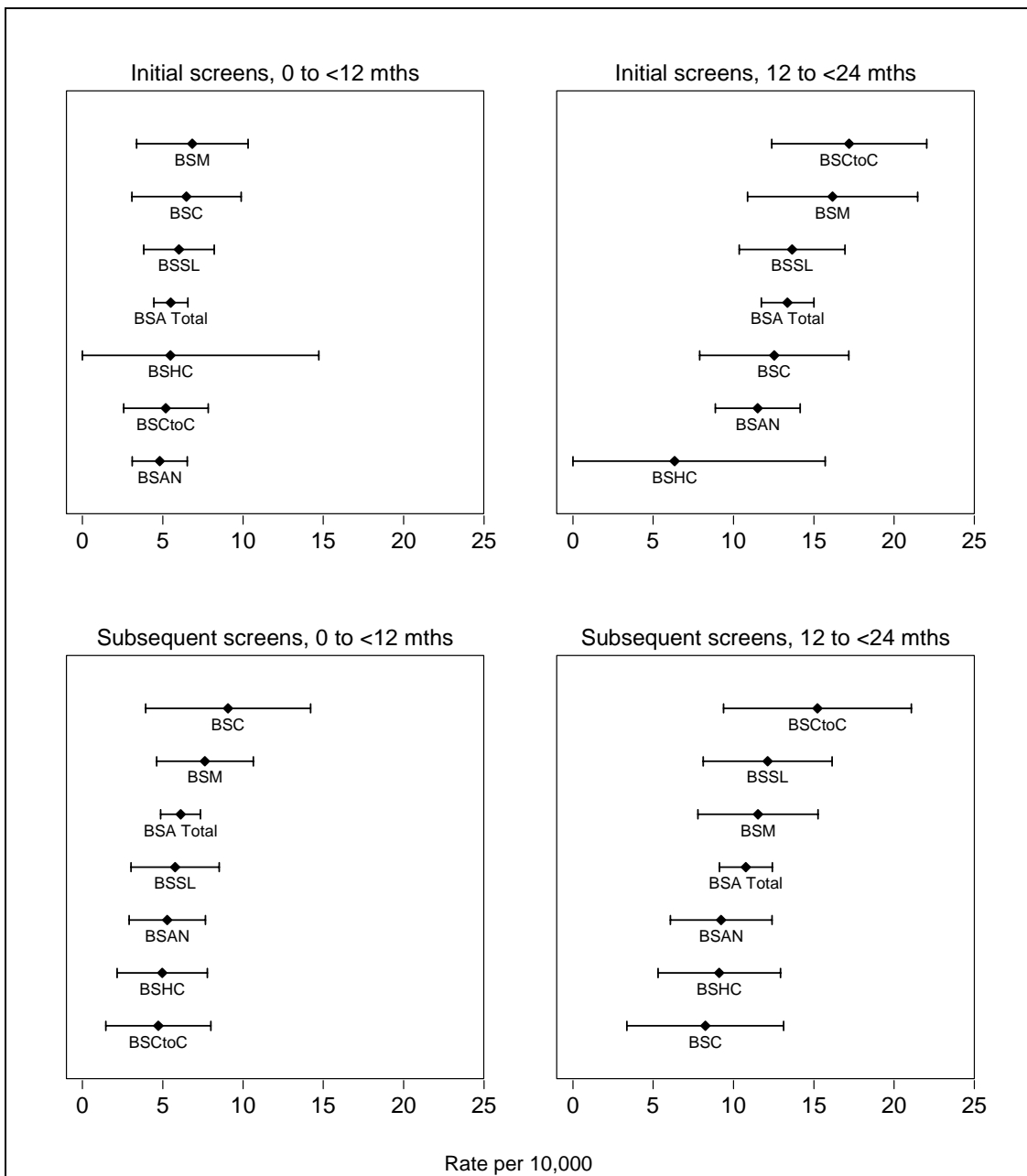


Figure 5: First-year (0 to <12 months) and second-year (12 to <24 months) interval breast cancers (per 10,000 women screened) in women aged 50–64 after an initial or subsequent screen by local provider, BSA program, 1999–2002

Note: standardised to the age distribution of women screened in the BSA program for the period 1999-2002

4. Sensitivity

4.1 New Zealand

Table 8: First-year (0 to <12 months) sensitivity after an initial or subsequent screen by age-group and year, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)
1999									
50-54	18	119	86.9 (80.0-92.0)	2	9	81.8 (48.2-97.7)	20	128	86.5 (79.9-91.5)
55-59	10	109	91.6 (85.1-95.9)	4	18	81.8 (59.7-94.8)	14	127	90.1 (83.9-94.5)
60-64	10	125	92.6 (86.8-96.4)	1	13	92.9 (66.1-99.8)	11	138	92.6 (87.2-96.3)
All ages ^(a)	38	353	89.4 (86.1-92.7)	7	40	85.5 (75.5-95.5)	45	393	89.3 (86.3-92.3)
2000									
50-54	11	140	92.7 (87.3-96.3)	2	11	84.6 (54.6-98.1)	13	151	92.1 (86.8-95.7)
55-59	16	128	88.9 (82.6-93.5)	2	22	91.7 (73.0-99.0)	18	150	89.3 (83.6-93.5)
60-64	7	122	94.6 (89.1-97.8)	3	22	88.0 (68.8-97.5)	10	144	93.5 (88.4-96.8)
All ages ^(a)	34	390	92.1 (89.4-94.8)	7	55	88.4 (80.2-96.6)	41	445	91.6 (89.1-94.1)
2001									
50-54	11	82	88.2 (79.8-93.9)	6	74	92.5 (84.4-97.2)	17	156	90.2 (84.7-94.2)
55-59	1	67	98.5 (92.1-100.0)	16	89	84.8 (76.4-91.0)	17	156	90.2 (84.7-94.2)
60-64	0	60	100.0 (94.0-100.0)	17	105	86.1 (78.6-91.7)	17	165	90.7 (85.5-94.5)
All ages ^(a)	12	209	93.6 (90.2-97.0)	39	268	87.4 (83.7-91.1)	51	477	90.3 (87.7-92.9)
2002									
50-54	16	97	85.8 (78.0-91.7)	17	57	77.0 (65.8-86.0)	33	154	82.4 (76.1-87.5)
55-59	4	35	89.7 (75.8-97.1)	15	111	88.1 (81.1-93.2)	19	146	88.5 (82.6-92.9)
60-64	1	40	97.6 (87.1-99.9)	8	123	93.9 (88.3-97.3)	9	163	94.8 (90.3-97.6)
All ages ^(a)	21	172	89.5 (85.2-93.8)	40	291	86.9 (83.2-90.6)	61	463	87.7 (84.8-90.6)
1999-2002									
50-54	56	438	88.7 (85.5-91.3)	27	151	84.8 (78.7-89.8)	83	589	87.6 (84.9-90.0)
55-59	31	339	91.6 (88.3-94.2)	37	240	86.6 (82.1-90.4)	68	579	89.5 (86.9-91.7)
60-64	18	347	95.1 (92.3-97.1)	29	263	90.1 (86.0-93.2)	47	610	92.8 (90.6-94.7)
All ages ^(a)	105	1,124	90.9 (89.2-92.6)	93	654	87.3 (84.9-89.7)	198	1,778	89.7 (88.3-91.0)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

Table 9: Second-year (12 to <24 months) sensitivity after an initial or subsequent screen by age-group and year, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)
1999									
50-54	42	119	73.9 (66.4-80.5)	6	9	60.0 (32.3-83.7)	48	128	72.7 (65.5-79.2)
55-59	37	109	74.7 (66.8-81.5)	3	18	85.7 (63.7-97.0)	40	127	76.0 (68.8-82.3)
60-64	23	125	84.5 (77.6-89.9)	3	13	81.3 (54.4-96.0)	26	138	84.1 (77.6-89.4)
All ages ^(a)	102	353	76.5 (72.3-80.6)	12	40	76.9 (65.8-88.0)	114	393	76.9 (73.2-80.6)
2000									
50-54	40	140	77.8 (71.0-83.6)	5	11	68.8 (41.3-89.0)	45	151	77.0 (70.5-82.7)
55-59	27	128	82.6 (75.7-88.2)	8	22	73.3 (54.1-87.7)	35	150	81.1 (74.7-86.5)
60-64	19	122	86.5 (79.8-91.7)	7	22	75.9 (56.5-89.7)	26	144	84.7 (78.4-89.8)
All ages ^(a)	86	390	81.0 (77.3-84.7)	20	55	72.9 (62.6-83.1)	106	445	80.4 (77.1-83.8)
2001									
50-54	22	82	78.8 (69.7-86.2)	14	74	84.1 (74.8-91.0)	36	156	81.3 (75.0-86.5)
55-59	13	67	83.8 (73.8-91.1)	27	89	76.7 (68.0-84.1)	40	156	79.6 (73.3-85.0)
60-64	7	60	89.6 (79.7-95.7)	25	105	80.8 (72.9-87.2)	32	165	83.8 (77.8-88.6)
All ages ^(a)	42	209	82.6 (77.7-87.4)	66	268	80.2 (75.9-84.5)	108	477	81.4 (78.2-84.6)
2002									
50-54	13	97	88.2 (80.6-93.6)	18	57	76.0 (64.7-85.1)	31	154	83.2 (77.1-88.3)
55-59	9	35	79.5 (64.7-90.2)	24	111	82.2 (74.7-88.3)	33	146	81.6 (75.1-87.0)
60-64	3	40	93.0 (80.9-98.5)	24	123	83.7 (76.7-89.3)	27	163	85.8 (80.0-90.4)
All ages ^(a)	25	172	86.9 (82.1-91.7)	66	291	80.9 (76.7-85.1)	91	463	83.4 (80.2-86.6)
1999-2002									
50-54	117	438	78.9 (75.3-82.2)	43	151	77.8 (71.3-83.5)	160	589	78.6 (75.5-81.5)
55-59	86	339	79.8 (75.6-83.5)	62	240	79.5 (74.5-83.9)	148	579	79.6 (76.5-82.5)
60-64	52	347	87.0 (83.3-90.1)	59	263	81.7 (77.0-85.7)	111	610	84.6 (81.8-87.2)
All ages ^(a)	255	1,124	80.9 (78.8-83.1)	164	654	79.7 (77.0-82.5)	419	1,778	80.6 (78.9-82.3)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

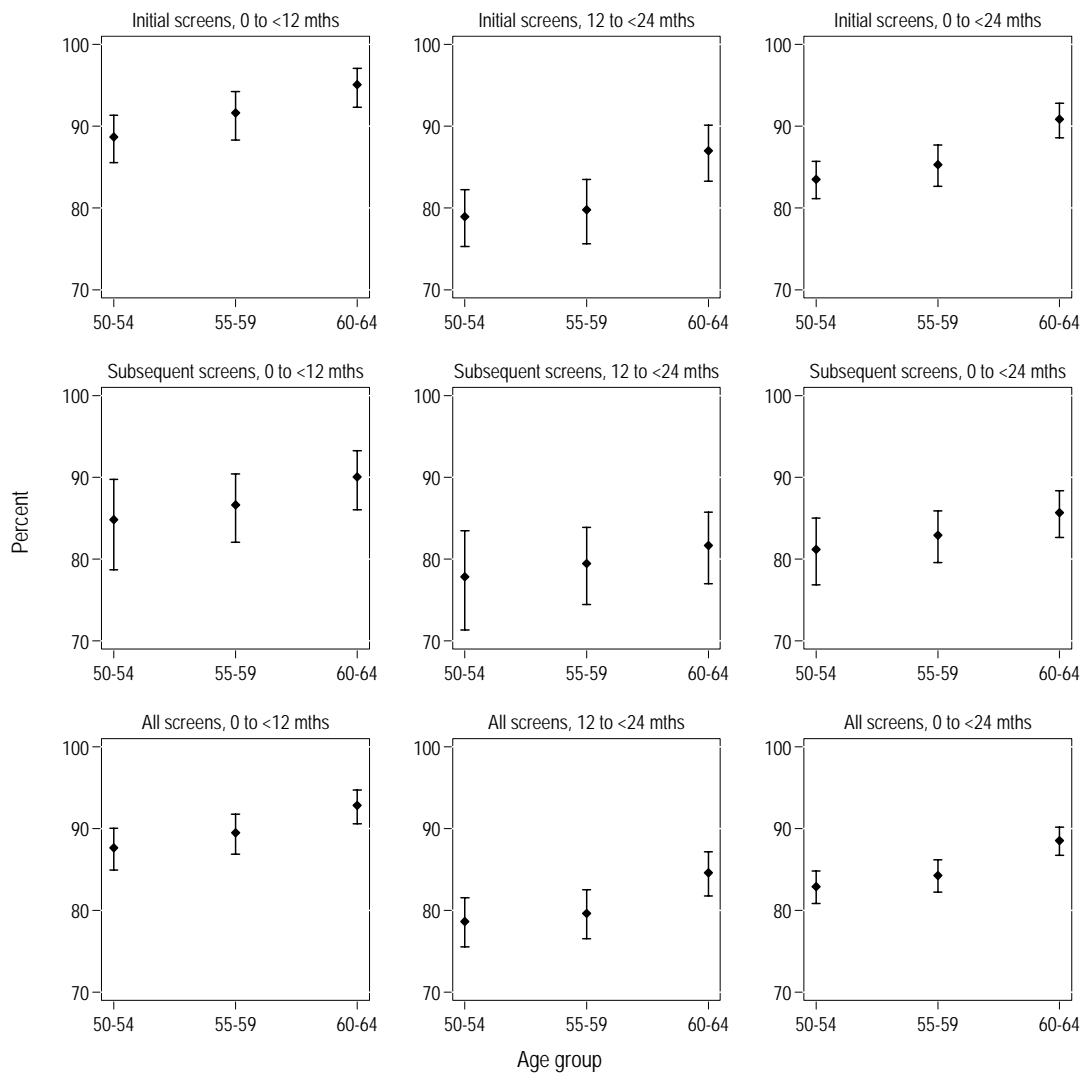


Figure 6: First-year (0 to <12 months) and second-year (12 to <24 months) sensitivity (percent) after an initial or subsequent screen by age-group, BSA program, 1999–2002

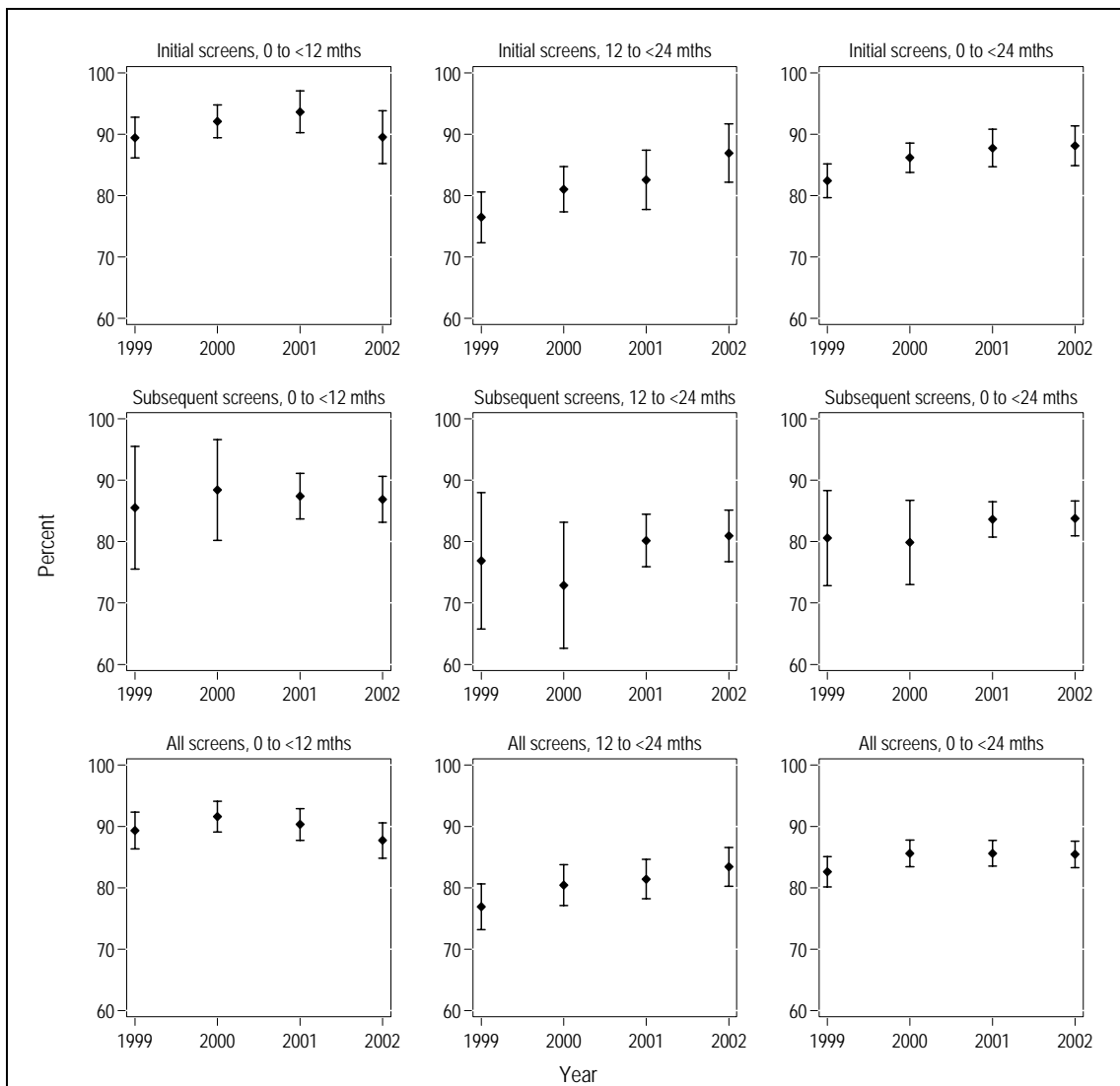


Figure 7: First-year (0 to <12 months) and second-year (12 to <24 months) sensitivity (percent) in women aged 50–64 after an initial or subsequent screen by year, BSA program, 1999–2002

Note: standardised to the age distribution of women screened in the BSA program for the period 1999-2002

4.2 International comparisons

Table 9: First-year (0 to <12 months) sensitivity after an initial or subsequent screen in 50–59 and 50–64 year old women, BSA program in 1999–2002 and selected other services and trials

Author	Population, year	Initial screens			Subsequent screens		
		Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)
<i>50-59 year olds</i>							
IMG analysis	NZ, 1999-2002	87	777	89.9 (87.7-91.9)	64	391	85.9 (82.4-89.0)
IMG analysis	Australia, 1999-2001	148	956	86.6 (84.4-88.5)	631	2,708	81.1 (79.7-82.4)
IMG analysis	NSW, 1999-2001	43	300	87.5 (83.5-90.8)	188	813	81.2 (78.7-83.6)
IMG analysis	Vic, 1999-2001	40	248	86.1 (81.6-89.9)	163	635	79.6 (76.6-82.3)
IMG analysis	Qld, 1999-2001	35	211	85.8 (80.8-89.9)	130	522	80.1 (76.8-83.1)
IMG analysis	WA, 1999-2001	8	69	89.6 (80.6-95.4)	47	289	86.0 (81.8-89.5)
IMG analysis	SA, 1999-2001	12	97	89.0 (81.6-94.2)	66	286	81.3 (76.8-85.2)
Frachenboud et al 1999	Netherlands, 1990-1993	205	1,535	88.2 (86.6-89.7)	61	311	83.6 (79.4-87.2)
Kavanagh et al 1999	Victoria, 1994	56	341	85.9 (82.1-89.2)			
Taylor et al 2004	NSW, 1995-1998	102	644	86.3 (83.7-88.7)	171	625	78.5 (75.5-81.3)
Tornberg et al 2005	Turin, 1992-1993	5	28	84.9 (68.1-94.9)			
<i>50-64 year olds</i>							
IMG analysis	NZ, 1999-2002	105	1,124	91.5 (89.8-93.0)	93	654	87.6 (85.0-89.8)
Brekelmans et al 1992	Utrecht, Netherlands, 1981	9	67	88.2 (78.7-94.4)			
Frachenboud et al 1999	Netherlands, 1990-1993	278	2,522	90.1 (88.9-91.2)	86	510	85.6 (82.5-88.3)
Gao et al 2002	Singapore, 1994	6	132	95.7 (90.8-98.4)			
Liston 2000	Leeds, 1991-1996				53	362	87.2 (83.6-90.3)
Peeters et al 1989	Nijmegen, Netherlands, 1977-1984				25	95	79.2 (70.8-86.0)
Peeters et al 1989	Nijmegen, Netherlands, 1975-1976	4	53	93.0 (83.0-98.1)			
Tornberg et al 2005	Dublin, 1989-1992	19	56	74.7 (62.3-83.1)	11	20	64.4 (45.4-80.8)

Table 10: Second year (12 to <24 months) sensitivity after an initial or subsequent screen in 50–59 and 50–64 year old women, BSA program in 1999–2002 and selected other services and trials

Author	Population, year	Initial screens			Subsequent screens		
		Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)
<i>50-59 year olds</i>							
IMG analysis	NZ, 1999-2002	203	777	79.3 (76.6-81.8)	105	391	78.8 (75.0-82.3)
IMG analysis	Australia, 1999-2001	243	956	79.7 (77.3-82.0)	946	2,708	74.1 (72.7-75.5)
IMG analysis	NSW, 1999-2001	74	300	80.2 (75.8-84.1)	289	813	73.8 (71.1-76.4)
IMG analysis	Vic, 1999-2001	59	248	80.8 (75.9-85.0)	239	635	72.7 (69.6-75.6)
IMG analysis	Qld, 1999-2001	59	211	78.1 (72.7-82.9)	204	522	71.9 (68.5-75.1)
IMG analysis	WA, 1999-2001	17	69	80.2 (70.2-88.0)	78	289	78.7 (74.2-82.8)
IMG analysis	SA, 1999-2001	25	97	79.5 (71.3-86.3)	91	286	75.9 (71.2-80.1)
Frachenboud et al 1999	Netherlands, 1990-1993	351	1,535	81.4 (79.6-83.1)	125	311	71.3 (66.8-75.5)
Kavanagh et al 1999	Victoria, 1994	66	144	68.6 (61.8-74.8)			
Taylor et al 2004	NSW, 1995-1998	172	644	78.9 (76.0-81.7)	259	625	70.7 (67.6-73.7)
Tornberg et al 2005	Turin, 1992-1993	9	28	75.8 (58.8-88.2)			
<i>50-64 year olds</i>							
IMG analysis	NZ, 1999-2002	255	1,124	81.5 (79.4-83.5)	164	654	80.0 (77.0-82.6)
Brekelmans et al 1992	Utrecht, Netherlands, 1981	26	67	72.0 (61.8-80.9)			
Frachenboud et al 1999	Netherlands, 1990-1993	524	2,522	82.8 (81.4-84.1)	203	510	71.5 (68.1-74.8)
Gao et al 2002	Singapore, 1994	29	132	82.0 (75.2-87.6)			
Liston 2000	Leeds, 1991-1996				85	362	81.0 (77.0-84.5)
Peeters et al 1989	Nijmegen, Netherlands, 1977-1984				38	95	71.4 (63.0-78.9)
Peeters et al 1989	Nijmegen, Netherlands, 1975-1976	11	53	82.8 (71.3-91.1)			
Tornberg et al 2005	Dublin, 1989-1992	20	56	73.8 (62.3-83.1)	18	20	52.6 (35.8-69.0)

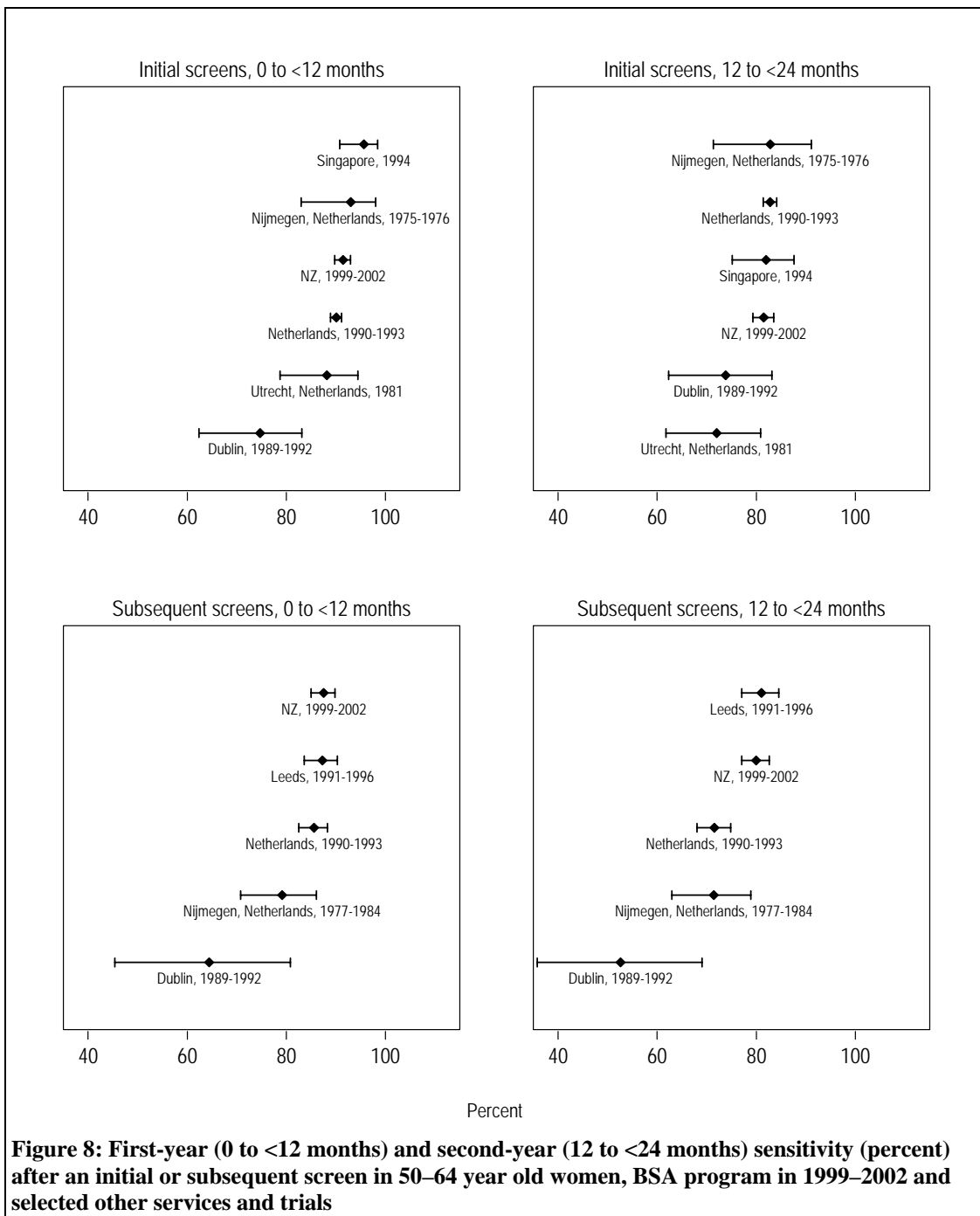
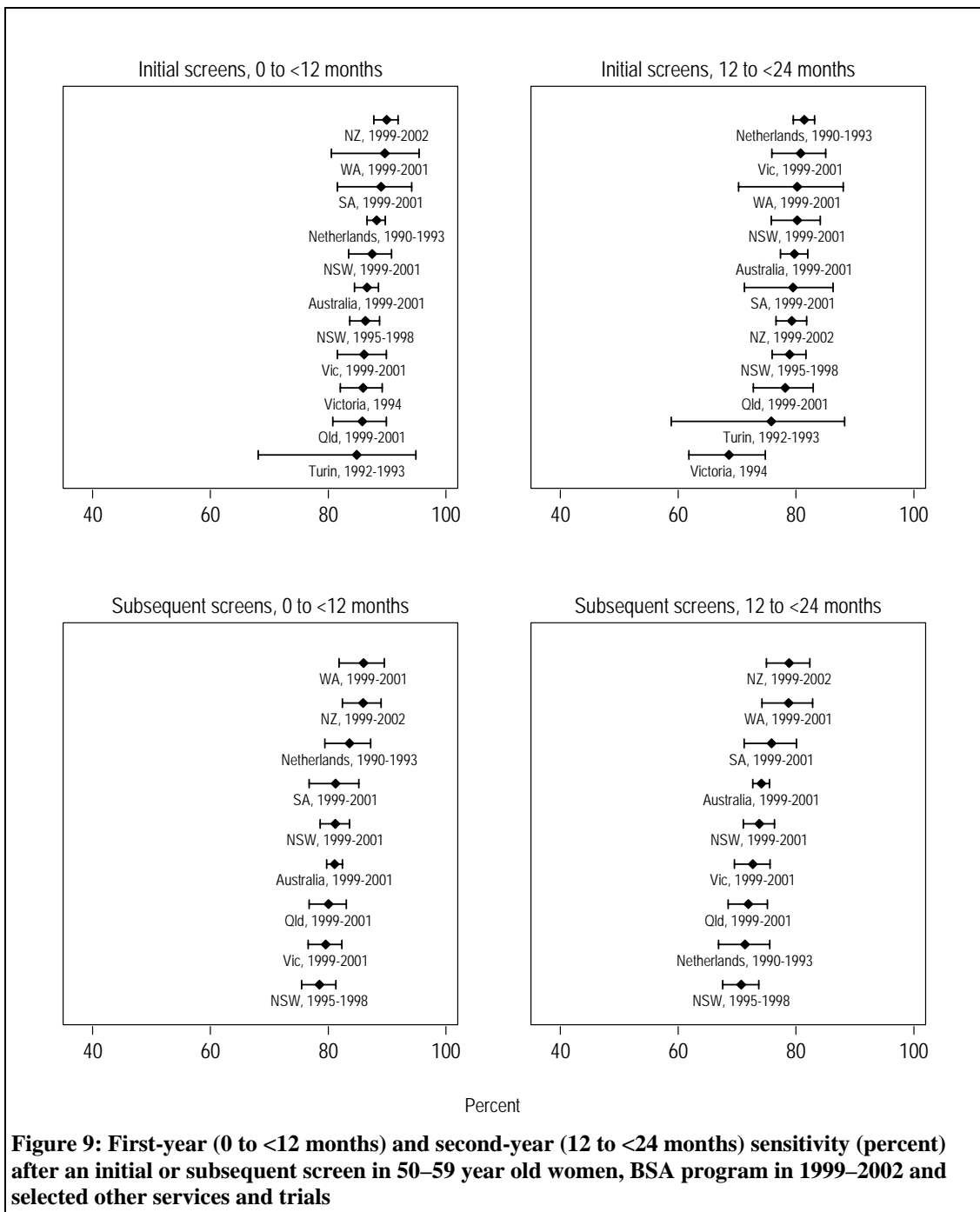


Figure 8: First-year (0 to <12 months) and second-year (12 to <24 months) sensitivity (percent) after an initial or subsequent screen in 50–64 year old women, BSA program in 1999–2002 and selected other services and trials



4.3 Local providers

Table 14: First-year (0 to <12 months) sensitivity after an initial or subsequent screen by age-group and local provider, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)
BSAN									
50-54	19	148	88.6 (82.8-93.0)	6	37	86.0 (72.1-94.7)	25	185	88.1 (82.9-92.1)
55-59	5	130	96.3 (91.6-98.8)	9	60	87.0 (76.7-93.9)	14	190	93.1 (88.8-96.2)
60-64	6	121	95.3 (90.0-98.2)	4	56	93.3 (83.8-98.2)	10	177	94.7 (90.4-97.4)
All ages ^(a)	30	399	92.2 (89.5-94.9)	19	153	88.8 (84.1-93.6)	49	552	91.5 (89.2-93.8)
BSC									
50-54	10	47	82.5 (70.1-91.3)	2	17	89.5 (66.9-98.7)	12	64	84.2 (74.0-91.6)
55-59	4	42	91.3 (79.2-97.6)	6	25	80.6 (62.5-92.5)	10	67	87.0 (77.4-93.6)
60-64	0	44	100.0 (92.0-100.0)	4	23	85.2 (66.3-95.8)	4	67	94.4 (86.2-98.4)
All ages ^(a)	14	133	88.8 (83.3-94.2)	12	65	84.7 (76.7-92.7)	26	198	87.9 (83.5-92.2)
BSCtoC									
50-54	5	50	90.9 (80.0-97.0)	3	16	84.2 (60.4-96.6)	8	66	89.2 (79.8-95.2)
55-59	6	60	90.9 (81.3-96.6)	3	24	88.9 (70.8-97.6)	9	84	90.3 (82.4-95.5)
60-64	4	67	94.4 (86.2-98.4)	2	41	95.3 (84.2-99.4)	6	108	94.7 (88.9-98.0)
All ages ^(a)	15	177	91.7 (87.2-96.1)	8	81	89.7 (82.9-96.5)	23	258	91.1 (87.4-94.7)
BSHC									
50-54	1	26	96.3 (81.0-99.9)	3	14	82.4 (56.6-96.2)	4	40	90.9 (78.3-97.5)
55-59	1	4	80.0 (28.4-99.5)	5	42	89.4 (76.9-96.5)	6	46	88.5 (76.6-95.6)
60-64	0	6	100.0 (54.1-100.0)	4	37	90.2 (76.9-97.3)	4	43	91.5 (79.6-97.6)
All ages ^(a)	2	36	92.7 (82.5-100.0)	12	93	87.7 (80.8-94.5)	14	129	90.3 (85.3-95.2)
BSM									
50-54	8	63	88.7 (79.0-95.0)	6	36	85.7 (71.5-94.6)	14	99	87.6 (80.1-93.1)
55-59	5	21	80.8 (60.6-93.4)	10	41	80.4 (66.9-90.2)	15	62	80.5 (69.9-88.7)
60-64	2	33	94.3 (80.8-99.3)	9	49	84.5 (72.6-92.7)	11	82	88.2 (79.8-93.9)
All ages ^(a)	15	117	87.8 (82.0-93.6)	25	126	83.3 (77.3-89.3)	40	243	85.5 (81.3-89.7)
BSSL									
50-54	13	104	88.9 (81.7-93.9)	7	31	81.6 (65.7-92.3)	20	135	87.1 (80.8-91.9)
55-59	10	82	89.1 (80.9-94.7)	4	48	92.3 (81.5-97.9)	14	130	90.3 (84.2-94.6)
60-64	6	76	92.7 (84.8-97.3)	6	57	90.5 (80.4-96.4)	12	133	91.7 (86.0-95.7)
All ages ^(a)	29	262	89.8 (86.2-93.4)	17	136	88.6 (83.6-93.7)	46	398	89.4 (86.5-92.3)
BSA Total									
50-54	56	438	88.7 (85.5-91.3)	27	151	84.8 (78.7-89.8)	83	589	87.6 (84.9-90.0)
55-59	31	339	91.6 (88.3-94.2)	37	240	86.6 (82.1-90.4)	68	579	89.5 (86.9-91.7)
60-64	18	347	95.1 (92.3-97.1)	29	263	90.1 (86.0-93.2)	47	610	92.8 (90.6-94.7)
All ages ^(a)	105	1,124	90.9 (89.2-92.6)	93	654	87.3 (84.9-89.7)	198	1,778	89.7 (88.3-91.0)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

Table 15: Second-year (12 to <24 months) sensitivity after an initial or subsequent screen by age-group and local provider, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)	Interval cancers	Screen detected	Sensitivity (95%CI)
BSAN									
50-54	35	148	80.9 (74.4-86.3)	9	37	80.4 (66.1-90.6)	44	185	80.8 (75.1-85.7)
55-59	26	130	83.3 (76.5-88.8)	16	60	78.9 (68.1-87.5)	42	190	81.9 (76.3-86.6)
60-64	12	121	91.0 (84.8-95.3)	8	56	87.5 (76.8-94.4)	20	177	89.8 (84.8-93.7)
All ages ^(a)	73	399	83.8 (80.3-87.3)	33	153	82.3 (76.8-87.7)	106	552	83.6 (80.8-86.5)
BSC									
50-54	9	47	83.9 (71.7-92.4)	1	17	94.4 (72.7-99.9)	10	64	86.5 (76.5-93.3)
55-59	12	42	77.8 (64.4-88.0)	8	25	75.8 (57.7-88.9)	20	67	77.0 (66.8-85.4)
60-64	7	44	86.3 (73.7-94.3)	2	23	92.0 (74.0-99.0)	9	67	88.2 (78.7-94.4)
All ages ^(a)	28	133	82.8 (76.7-88.9)	11	65	86.6 (79.3-93.8)	39	198	83.9 (79.2-88.6)
BSCtoC									
50-54	22	50	69.4 (57.5-79.8)	9	16	64.0 (42.5-82.0)	31	66	68.0 (57.8-77.1)
55-59	14	60	81.1 (70.3-89.3)	2	24	92.3 (74.9-99.1)	16	84	84.0 (75.3-90.6)
60-64	13	67	83.8 (73.8-91.1)	15	41	73.2 (59.7-84.2)	28	108	79.4 (71.6-85.9)
All ages ^(a)	49	177	75.8 (69.6-82.0)	26	81	77.8 (70.1-85.5)	75	258	76.2 (71.4-81.0)
BSHC									
50-54	2	26	92.9 (76.5-99.1)	6	14	70.0 (45.7-88.1)	8	40	83.3 (69.8-92.5)
55-59	1	4	80.0 (28.4-99.5)	8	42	84.0 (70.9-92.8)	9	46	83.6 (71.2-92.2)
60-64	0	6	100.0 (54.1-100.0)	8	37	82.2 (67.9-92.0)	8	43	84.3 (71.4-93.0)
All ages ^(a)	3	36	90.9 (80.3-100.0)	22	93	79.4 (71.6-87.3)	25	129	83.7 (77.7-89.7)
BSM									
50-54	22	63	74.1 (63.5-83.0)	11	36	76.6 (62.0-87.7)	33	99	75.0 (66.7-82.1)
55-59	10	21	67.7 (48.6-83.3)	16	41	71.9 (58.5-83.0)	26	62	70.5 (59.8-79.7)
60-64	4	33	89.2 (74.6-97.0)	10	49	83.1 (71.0-91.6)	14	82	85.4 (76.7-91.8)
All ages ^(a)	36	117	75.7 (68.9-82.6)	37	126	77.0 (70.5-83.5)	73	243	76.4 (71.7-81.1)
BSSL									
50-54	27	104	79.4 (71.4-86.0)	7	31	81.6 (65.7-92.3)	34	135	79.9 (73.0-85.6)
55-59	23	82	78.1 (69.0-85.6)	12	48	80.0 (67.7-89.2)	35	130	78.8 (71.8-84.8)
60-64	16	76	82.6 (73.3-89.7)	16	57	78.1 (66.9-86.9)	32	133	80.6 (73.7-86.3)
All ages ^(a)	66	262	79.8 (75.3-84.2)	35	136	79.8 (73.7-85.9)	101	398	79.7 (76.2-83.3)
BSA Total									
50-54	117	438	78.9 (75.3-82.2)	43	151	77.8 (71.3-83.5)	160	589	78.6 (75.5-81.5)
55-59	86	339	79.8 (75.6-83.5)	62	240	79.5 (74.5-83.9)	148	579	79.6 (76.5-82.5)
60-64	52	347	87.0 (83.3-90.1)	59	263	81.7 (77.0-85.7)	111	610	84.6 (81.8-87.2)
All ages ^(a)	255	1,124	80.9 (78.8-83.1)	164	654	79.7 (77.0-82.5)	419	1,778	80.6 (78.9-82.3)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

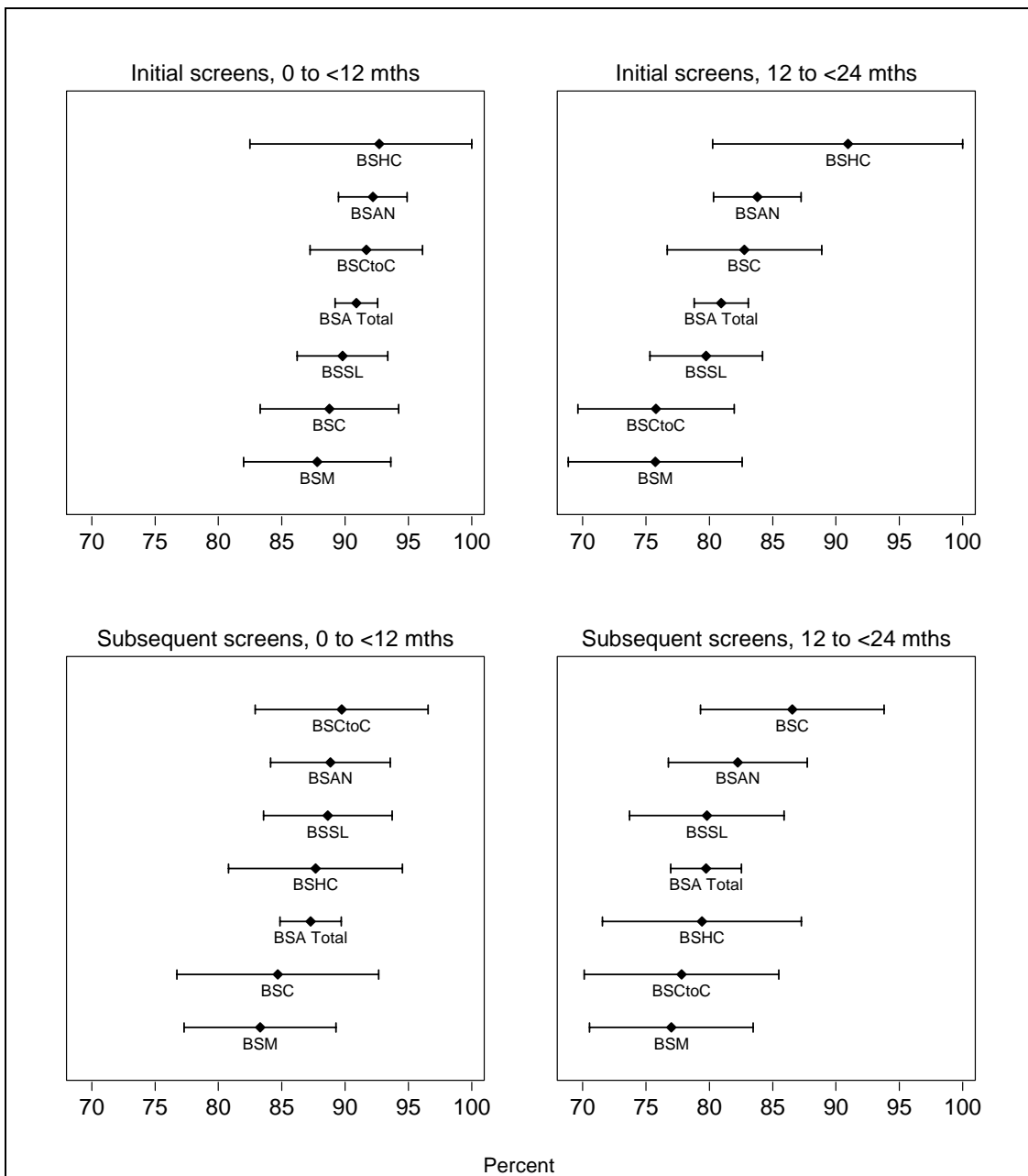


Figure 10: First-year (0 to <12 months) and second-year (12 to <24 months) sensitivity (percent) in women aged 50–64 after an initial or subsequent screen by local provider, BSA program, 1999–2002

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

5. Proportional Incidence

5.1 New Zealand

Table 10: First-year (0 to <12 months) proportional incidence after an initial or subsequent screen by age-group and year, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)
1999									
50-54	18	57	31.3 (19.9-45.2)	2	5	39.1 (5.3-85.3)	20	63	32.0 (20.6-44.7)
55-59	10	48	20.9 (10.5-35.0)	4	9	43.8 (13.7-78.8)	14	57	24.6 (14.1-37.8)
60-64	10	48	20.8 (10.5-35.0)	1	8	12.9 (0.3-52.7)	11	56	19.7 (10.2-32.4)
All ages ^(a)	38	153	26.2 (18.9-33.4)	7	22	32.1 (13.2-51.0)	45	175	26.3 (19.7-32.8)
2000									
50-54	11	75	14.7 (7.6-24.7)	2	7	28.5 (3.7-71.0)	13	82	15.9 (8.7-25.6)
55-59	16	53	30.0 (18.3-44.3)	2	11	17.5 (2.3-51.8)	18	65	27.8 (17.3-40.2)
60-64	7	48	14.6 (6.1-27.8)	3	12	24.8 (5.5-57.2)	10	60	16.7 (8.3-28.5)
All ages ^(a)	34	176	18.8 (13.1-24.5)	7	31	23.1 (8.0-38.2)	41	207	19.9 (14.5-25.3)
2001									
50-54	11	50	22.0 (11.5-36.0)	6	40	14.9 (5.7-29.8)	17	90	18.8 (11.4-28.5)
55-59	1	22	4.6 (0.1-22.8)	16	60	26.5 (16.1-39.7)	17	82	20.7 (12.6-31.1)
60-64	0	19	0.0 (0.0-17.6)	17	63	26.8 (16.6-39.7)	17	83	20.6 (12.4-30.8)
All ages ^(a)	12	91	12.4 (6.1-18.7)	39	164	23.3 (16.9-29.7)	51	255	19.9 (15.0-24.8)
2002									
50-54	16	45	35.9 (21.9-51.2)	17	50	34.2 (21.2-48.8)	33	94	35.0 (25.5-45.6)
55-59	4	14	28.5 (8.4-58.1)	15	69	21.9 (12.7-33.3)	19	83	23.0 (14.4-33.4)
60-64	1	12	8.5 (0.2-38.5)	8	67	12.0 (5.3-22.2)	9	79	11.5 (5.3-20.5)
All ages ^(a)	21	70	27.8 (17.6-38.1)	40	185	22.1 (16.2-28.0)	61	255	24.8 (19.5-30.0)
1999-2002									
50-54	56	227	24.7 (19.2-30.8)	27	102	26.4 (18.2-36.1)	83	329	25.2 (20.6-30.3)
55-59	31	137	22.6 (15.9-30.6)	37	150	24.7 (18.0-32.4)	68	287	23.7 (18.9-29.0)
60-64	18	127	14.2 (8.6-21.5)	29	150	19.3 (13.3-26.6)	47	277	17.0 (12.7-21.9)
All ages ^(a)	105	491	21.8 (18.1-25.5)	93	402	23.4 (19.2-27.6)	198	893	22.5 (19.7-25.2)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

Table 11: Second-year (12 to <24 months) proportional incidence after an initial or subsequent screen by age-group and year, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)
1999									
50-54	42	57	73.1 (60.3-84.5)	6	5	117.3 (0.0-0.0)	48	63	76.7 (63.8-86.0)
55-59	37	48	77.3 (62.7-88.0)	3	9	32.8 (7.5-70.1)	40	57	70.2 (56.6-81.6)
60-64	23	48	47.9 (33.3-62.8)	3	8	38.8 (8.5-75.5)	26	56	46.6 (33.0-60.3)
All ages ^(a)	102	153	68.6 (61.3-76.0)	12	22	58.9 (47.0-70.9)	114	175	66.4 (59.7-73.1)
2000									
50-54	40	75	53.5 (41.4-64.9)	5	7	71.3 (29.0-96.3)	45	82	55.0 (43.5-65.9)
55-59	27	53	50.6 (36.8-64.9)	8	11	69.9 (39.0-94.0)	35	65	54.0 (41.0-66.3)
60-64	19	48	39.7 (25.8-54.7)	7	12	57.9 (27.7-84.8)	26	60	43.3 (30.6-56.8)
All ages ^(a)	86	176	49.6 (42.2-57.1)	20	31	66.3 (49.5-83.0)	106	207	51.5 (44.7-58.3)
2001									
50-54	22	50	44.0 (30.0-58.7)	14	40	34.7 (20.6-51.7)	36	90	39.9 (29.8-50.9)
55-59	13	22	59.4 (36.4-79.3)	27	60	44.7 (32.1-58.4)	40	82	48.6 (37.6-60.1)
60-64	7	19	36.4 (16.3-61.6)	25	63	39.4 (27.6-52.8)	32	83	38.7 (28.1-49.9)
All ages ^(a)	42	91	46.5 (36.4-56.6)	66	164	40.1 (32.6-47.6)	108	255	42.3 (36.3-48.4)
2002									
50-54	13	45	29.2 (16.4-44.3)	18	50	36.2 (22.9-50.8)	31	94	32.9 (23.6-43.4)
55-59	9	14	64.2 (35.1-87.2)	24	69	35.0 (23.7-47.2)	33	83	40.0 (29.2-51.1)
60-64	3	12	25.6 (5.5-57.2)	24	67	35.9 (24.5-48.5)	27	79	34.4 (23.9-45.7)
All ages ^(a)	25	70	37.9 (26.8-49.0)	66	185	35.7 (28.7-42.6)	91	255	35.6 (29.7-41.4)
1999-2002									
50-54	117	227	51.6 (44.8-58.2)	43	102	42.1 (32.4-52.3)	160	329	48.6 (43.1-54.2)
55-59	86	137	62.7 (54.1-70.9)	62	150	41.5 (33.4-49.7)	148	287	51.6 (45.6-57.5)
60-64	52	127	41.0 (32.3-50.0)	59	150	39.3 (31.5-47.6)	111	277	40.1 (34.3-46.1)
All ages ^(a)	255	491	52.3 (47.9-56.6)	164	402	40.9 (36.1-45.7)	419	893	47.3 (44.0-50.5)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

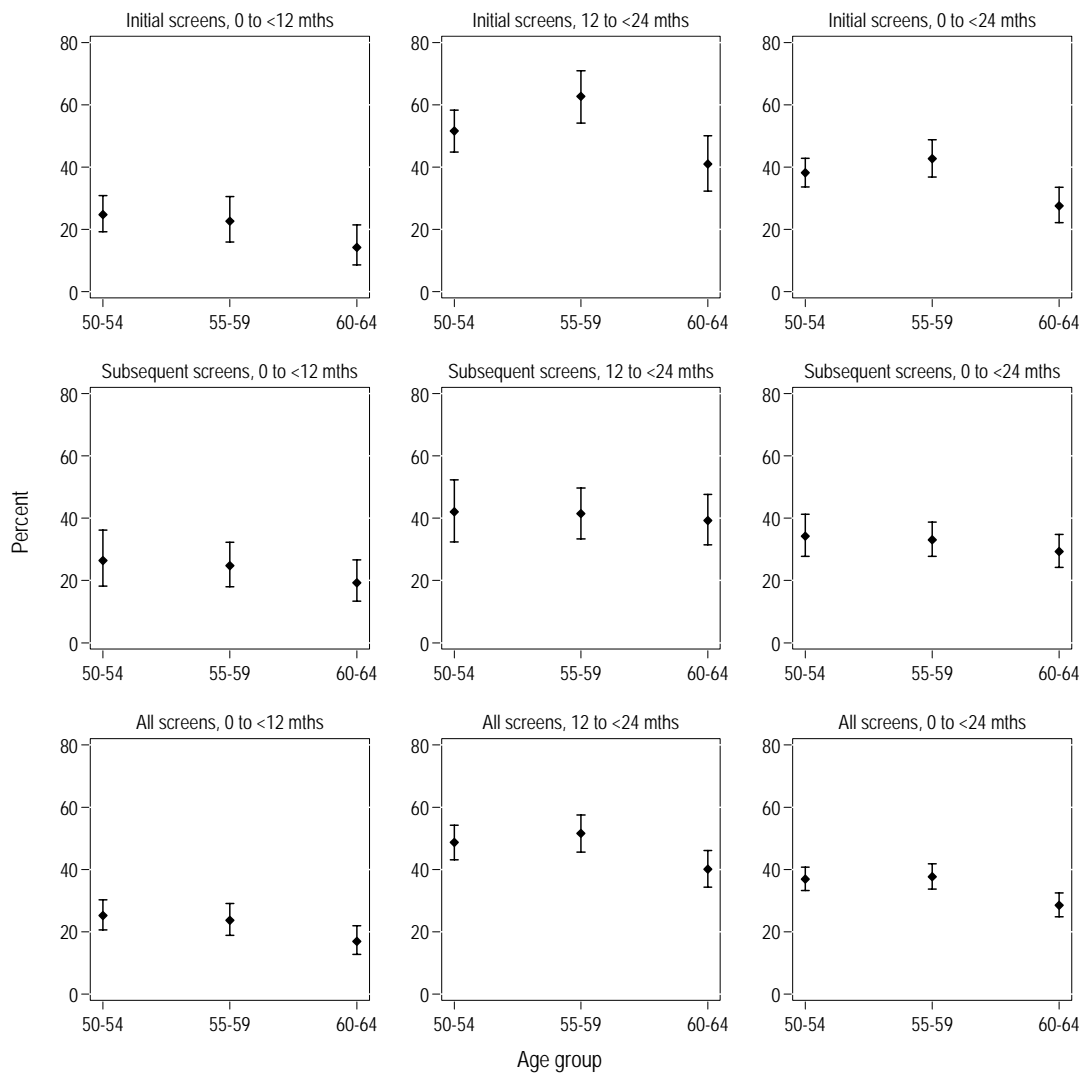


Figure 11: First-year (0 to <12 months) and second-year (12 to <24 months) proportional incidence (percent) after an initial or subsequent screen by age-group, BSA program, 1999–2002

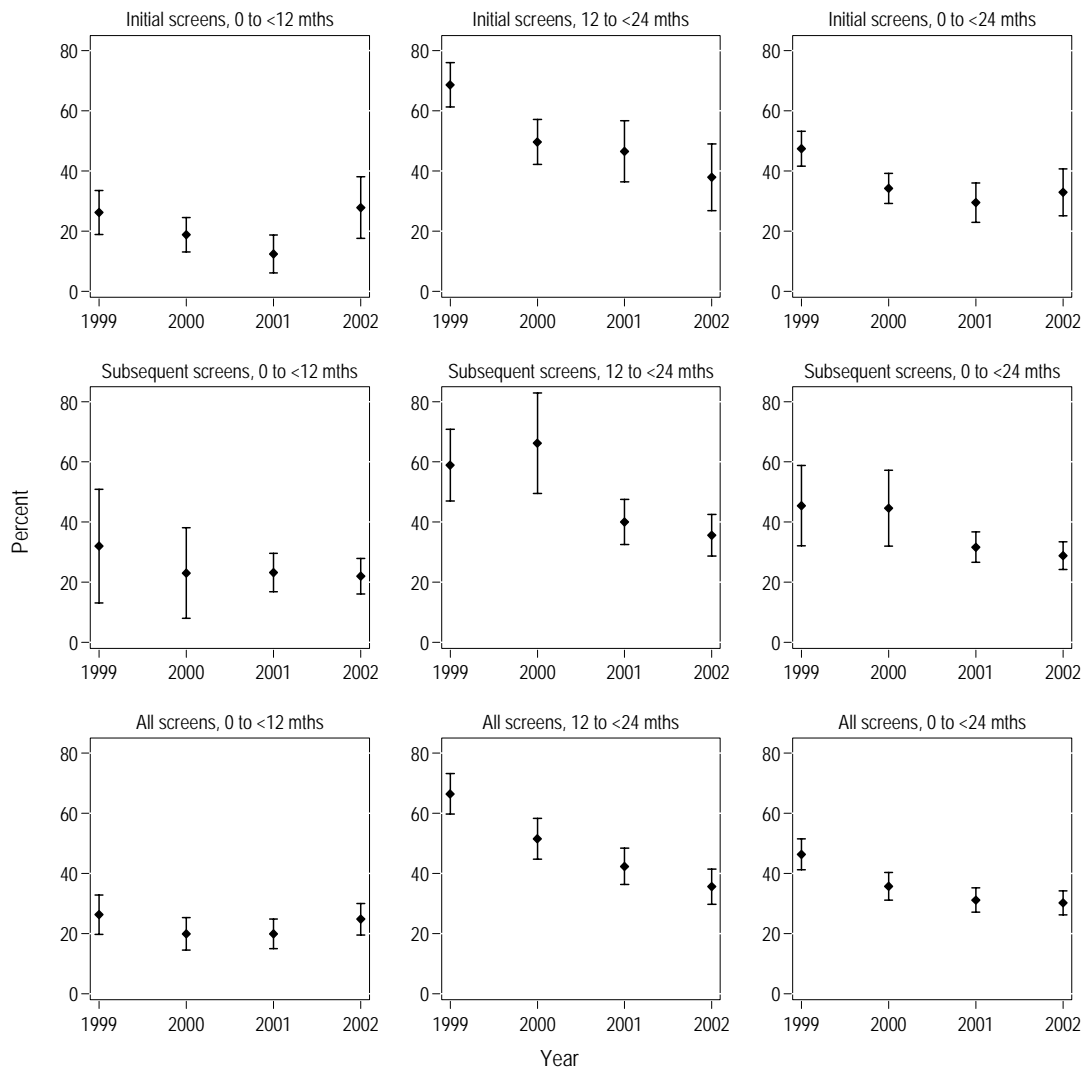


Figure 12: First-year (0 to <12 months) and second-year (12 to <24 months) proportional incidence (percent) after an initial or subsequent screen by year, BSA program, 1999–2002

Note: standardised to the age distribution of women screened in the BSA program for the period 1999-2002

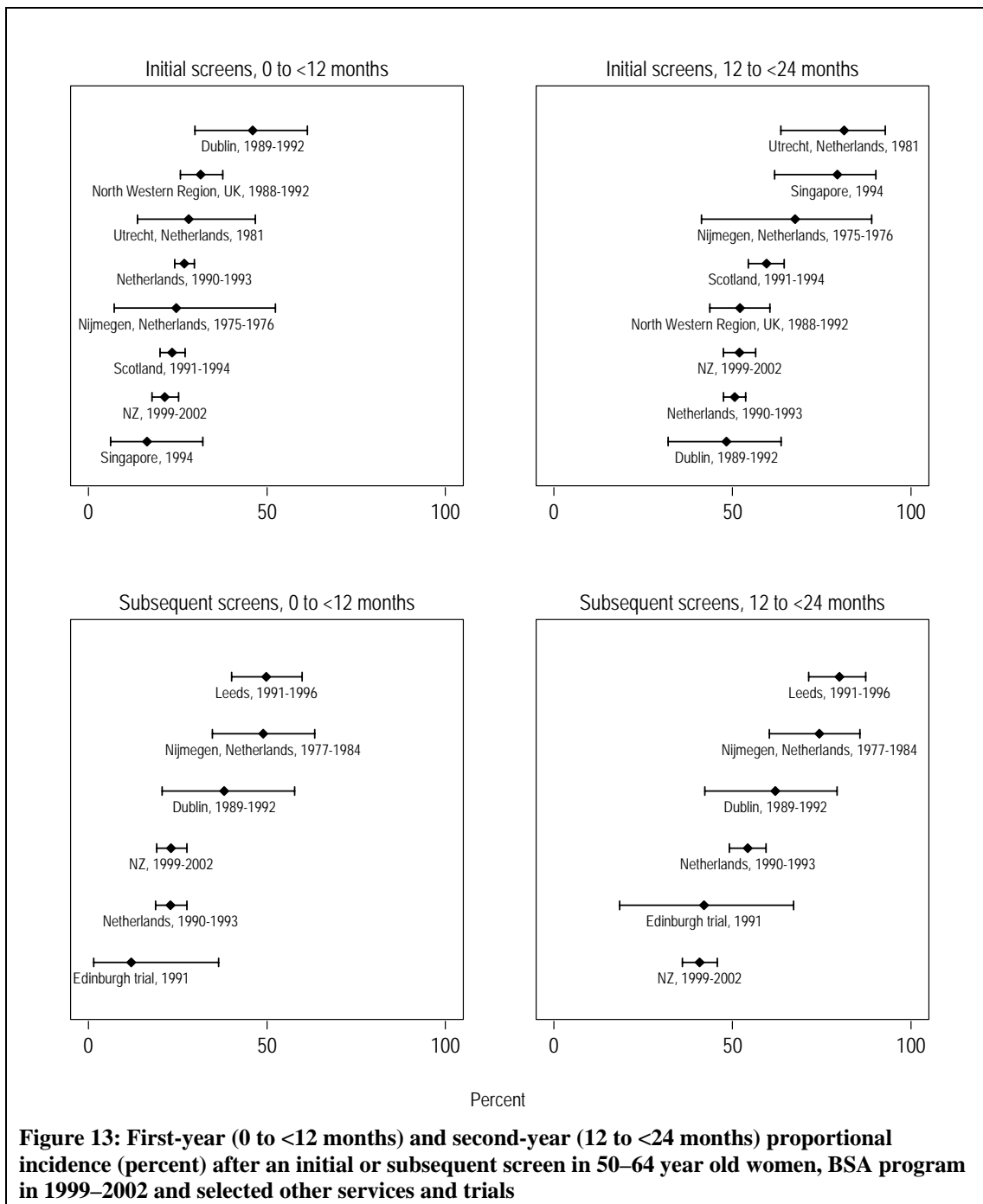
5.2 International comparisons

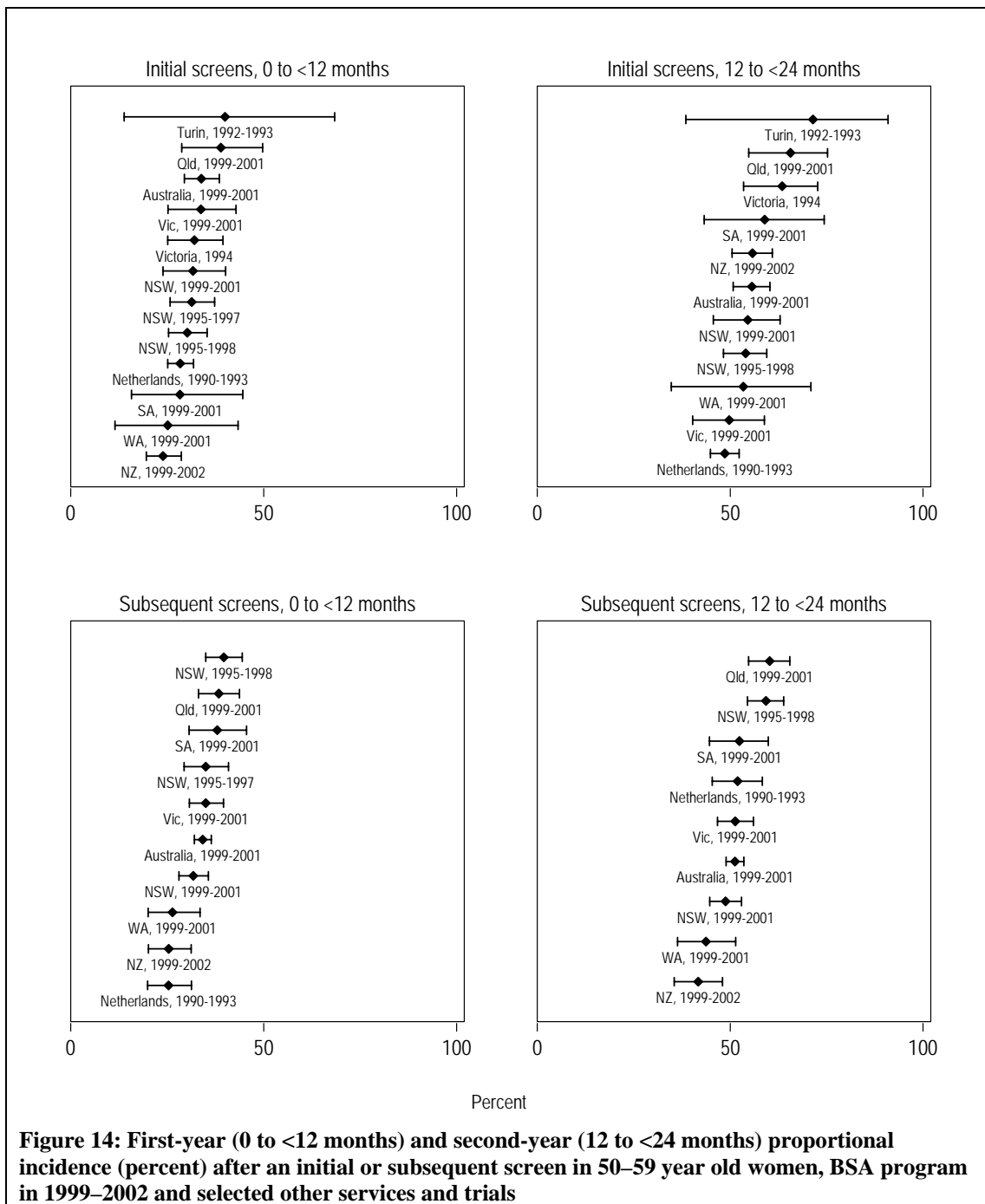
Table 12: Initial and subsequent interval breast cancers and proportional incidence after an initial or subsequent screen in women, selected other services and trials

Author	Population, year	Initial screens			Subsequent screens		
		Interval cancers	Expected cancers	Prop. Inc (95%CI)	Interval cancers	Expected cancers	Prop. Inc (95%CI)
<i>50-59 year olds</i>							
IMG analysis	NZ, 1999-2002	87	364	23.9 (19.6-28.6)	64	252	25.4 (20.1-31.2)
IMG analysis	Australia, 1999-2001	148	437	33.9 (29.4-38.5)	631	1,845	34.2 (32.0-36.4)
IMG analysis	NSW, 1999-2001	43	136	31.7 (23.9-40.1)	188	592	31.8 (28.0-35.7)
IMG analysis	Vic, 1999-2001	40	119	33.7 (25.2-42.8)	163	465	35.0 (30.7-39.6)
IMG analysis	Qld, 1999-2001	35	90	38.9 (28.8-49.7)	130	339	38.4 (33.1-43.8)
IMG analysis	WA, 1999-2001	8	32	25.1 (11.5-43.4)	47	178	26.4 (20.1-33.5)
IMG analysis	SA, 1999-2001	12	42	28.3 (15.7-44.6)	66	174	38.0 (30.7-45.6)
Frachenboud et al 1999	Netherlands, 1990-1993	205	722	28.4 (25.1-31.8)	61	241	25.3 (19.9-31.3)
Kavanagh et al 1999	Victoria, 1994	56	175	32.0 (25.2-39.5)			
Taylor et al 2002	NSW, 1995-1997	82	262	31.3 (25.7-37.3)	98	280	35.0 (29.4-40.9)
Taylor et al 2004	NSW, 1995-1998	102	338	30.2 (25.3-35.4)	171	431	39.7 (35.0-44.5)
Tornberg et al 2005	Turin, 1992-1993	5	13	40.0 (13.9-68.4)			
<i>50-64 year olds</i>							
IMG analysis	NZ, 1999-2002	105	491	21.4 (17.8-25.3)	93	402	23.1 (19.1-27.6)
Alexander et al 1994	Edinburgh trial, 1991				2	17	12.0 (1.5-36.4)
Brekelmans et al 1992	Utrecht, Netherlands, 1981	9	32	28.1 (13.7-46.7)			
Day et al 1995	East Anglia region, 1994				45	189	23.7 (17.9-30.5)
Everington et al 1999	Scotland, 1991-1994	139	593	23.4 (20.1-27.1)			
Frachenboud et al 1999	Netherlands, 1990-1993	278	1,035	26.9 (24.2-29.7)	86	374	23.0 (18.8-27.6)
Gao et al 2002	Singapore, 1994	6	37	16.4 (6.2-32.0)			
Liston 2000	Leeds, 1991-1996				53	106	49.8 (40.1-59.9)
Peeters et al 1989	Nijmegen, Netherlands, 1977-1984				25	51	48.9 (34.8-63.4)
Peeters et al 1989	Nijmegen, Netherlands, 1975-1976	4	16	24.6 (7.3-52.4)			
Tornberg et al 2005	Dublin, 1989-1992	19	42	46.0 (29.8-61.3)	11	29	38.0 (20.7-57.7)
Woodman et al 1995	North Western Region, UK, 1988-1992	79	251	31.4 (25.8-37.6)			

Table 13: Initial and subsequent interval breast cancers and proportional incidence after an initial or subsequent screen in women, selected other services and trials

Author	Population, year	Initial screens			Subsequent screens		
		Interval cancers	Expected cancers	Prop. Inc (95%CI)	Interval cancers	Expected cancers	Prop. Inc (95%CI)
<i>50-59 year olds</i>							
IMG analysis	NZ, 1999-2002	203	364	55.8 (50.5-60.9)	105	252	41.7 (35.5-48.0)
IMG analysis	Australia, 1999-2001	243	437	55.6 (50.8-60.3)	946	1,845	51.3 (49.0-53.6)
IMG analysis	NSW, 1999-2001	74	136	54.5 (45.7-63.0)	289	592	48.9 (44.7-52.9)
IMG analysis	Vic, 1999-2001	59	119	49.8 (40.3-58.9)	239	465	51.3 (46.8-56.0)
IMG analysis	Qld, 1999-2001	59	90	65.6 (54.8-75.3)	204	339	60.3 (54.7-65.4)
IMG analysis	WA, 1999-2001	17	32	53.4 (34.7-70.9)	78	178	43.8 (36.4-51.4)
IMG analysis	SA, 1999-2001	25	42	59.0 (43.3-74.4)	91	174	52.4 (44.6-59.9)
Frachenboud et al 1999	Netherlands, 1990-1993	351	722	48.6 (44.9-52.3)	125	241	51.9 (45.4-58.3)
Kavanagh et al 1999	Victoria, 1994	66	104	63.5 (53.4-72.7)			
Taylor et al 2004	NSW, 1995-1998	172	319	54.0 (48.3-59.5)	259	437	59.3 (54.5-63.9)
Tornberg et al 2005	Turin, 1992-1993	9	13	71.4 (38.6-90.9)			
<i>50-64 year olds</i>							
IMG analysis	NZ, 1999-2002	255	491	52.0 (47.4-56.4)	164	402	40.8 (36.0-45.8)
Alexander et al 1994	Edinburgh trial, 1991				7	17	42.0 (18.4-67.1)
Brekelmans et al 1992	Utrecht, Netherlands, 1981	26	32	81.2 (63.6-92.8)			
Day et al 1995	East Anglia region, 1994				61	105	58.3 (48.1-67.7)
Everington et al 1999	Scotland, 1991-1994	231	388	59.6 (54.5-64.5)			
Frachenboud et al 1999	Netherlands, 1990-1993	524	1,035	50.6 (47.5-53.7)	203	374	54.3 (49.1-59.4)
Gao et al 2002	Singapore, 1994	29	37	79.3 (61.8-90.2)			
Liston 2000	Leeds, 1991-1996				85	106	79.9 (71.3-87.3)
Peeters et al 1989	Nijmegen, Netherlands, 1977-1984				38	51	74.3 (60.4-85.7)
Peeters et al 1989	Nijmegen, Netherlands, 1975-1976	11	16	67.6 (41.3-89.0)			
Tornberg et al 2005	Dublin, 1989-1992	20	42	48.3 (32.0-63.6)	18	29	62.0 (42.3-79.3)
Woodman et al 1995	North Western Region, UK, 1988-1992	75	144	52.1 (43.6-60.5)			





5.3 Local providers

Table 14: First-year (0 to <12 months) proportional incidence after an initial or subsequent screen by age-group and local provider, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)
BSAN									
50-54	19	75	25.3 (16.0-36.7)	6	28	21.4 (8.3-41.0)	25	103	24.2 (16.4-33.7)
55-59	5	48	10.4 (3.5-22.7)	9	36	25.0 (12.1-42.2)	14	84	16.7 (9.4-26.4)
60-64	6	41	14.6 (5.6-29.2)	4	33	12.0 (3.4-28.2)	10	75	13.4 (6.6-23.2)
All ages ^(a)	30	164	18.9 (12.9-24.9)	19	97	19.6 (11.8-27.4)	49	262	18.9 (14.1-23.6)
BSC									
50-54	10	28	35.2 (18.6-55.9)	2	12	16.3 (2.1-48.4)	12	41	29.5 (16.1-45.5)
55-59	4	21	18.8 (5.4-41.9)	6	19	30.8 (12.6-56.6)	10	41	24.6 (12.4-40.3)
60-64	0	17	0.0 (0.0-19.5)	4	18	22.4 (6.4-47.6)	4	35	11.3 (3.2-26.7)
All ages ^(a)	14	67	22.9 (13.0-32.9)	12	50	23.8 (12.1-35.6)	26	117	23.0 (15.3-30.6)
BSCtoC									
50-54	5	30	16.5 (5.6-34.7)	3	12	24.3 (5.5-57.2)	8	43	18.8 (8.4-33.4)
55-59	6	19	30.9 (12.6-56.6)	3	17	17.8 (3.8-43.4)	9	36	24.8 (12.1-42.2)
60-64	4	21	18.8 (5.4-41.9)	2	20	10.2 (1.2-31.7)	6	41	14.7 (5.6-29.2)
All ages ^(a)	15	71	20.9 (11.5-30.4)	8	49	17.1 (6.4-27.8)	23	120	19.6 (12.4-26.8)
BSHC									
50-54	1	12	8.6 (0.2-38.5)	3	12	24.7 (5.5-57.2)	4	24	16.9 (4.7-37.4)
55-59	1	1	80.1 (2.5-100.0)	5	20	24.8 (8.7-49.1)	6	21	28.1 (11.3-52.2)
60-64	0	1	0.0 (0.0-97.5)	4	19	21.4 (6.1-45.6)	4	20	20.5 (5.7-43.7)
All ages ^(a)	2	14	26.2 (5.4-46.9)	12	51	23.7 (11.9-35.4)	14	65	21.4 (11.5-31.4)
BSM									
50-54	8	25	31.4 (14.9-53.5)	6	17	36.1 (14.2-61.7)	14	42	33.3 (19.6-49.5)
55-59	5	11	45.2 (16.7-76.6)	10	28	36.1 (18.6-55.9)	15	39	38.7 (23.4-55.4)
60-64	2	11	18.8 (2.3-51.8)	9	31	28.8 (14.2-48.0)	11	42	26.3 (13.9-42.0)
All ages ^(a)	15	47	32.4 (19.2-45.6)	25	76	33.6 (22.8-44.5)	40	123	33.1 (24.7-41.5)
BSSL									
50-54	13	56	23.2 (13.0-36.4)	7	21	33.8 (14.6-57.0)	20	77	26.1 (16.6-37.2)
55-59	10	36	27.6 (14.2-45.2)	4	29	13.6 (3.9-31.7)	14	66	21.3 (12.1-33.0)
60-64	6	35	16.9 (6.6-33.6)	6	29	20.4 (8.0-39.7)	12	65	18.5 (9.9-30.0)
All ages ^(a)	29	128	23.0 (15.6-30.4)	17	80	21.6 (12.7-30.6)	46	207	22.5 (16.8-28.2)
BSA Total									
50-54	56	227	24.7 (19.2-30.8)	27	102	26.4 (18.2-36.1)	83	329	25.2 (20.6-30.3)
55-59	31	137	22.6 (15.9-30.6)	37	150	24.7 (18.0-32.4)	68	287	23.7 (18.9-29.0)
60-64	18	127	14.2 (8.6-21.5)	29	150	19.3 (13.3-26.6)	47	277	17.0 (12.7-21.9)
All ages ^(a)	105	491	21.8 (18.1-25.5)	93	402	23.4 (19.2-27.6)	198	893	22.5 (19.7-25.2)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

Table 15: Second-year (12 to <24 months) proportional incidence after an initial or subsequent screen by age-group and local provider, BSA program, 1999–2002

Age group	Initial screens			Subsequent screens			All screens		
	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)	Interval cancers	Expected cancers	Prop. Inc. (95%CI)
BSAN									
50-54	35	75	46.6 (35.1-58.6)	9	28	32.1 (15.9-52.4)	44	103	42.6 (33.0-52.8)
55-59	26	48	54.2 (39.2-68.6)	16	36	44.4 (27.9-61.9)	42	84	50.0 (38.9-61.1)
60-64	12	41	29.1 (16.1-45.5)	8	33	23.9 (11.1-42.3)	20	75	26.8 (17.1-38.1)
All ages ^(a)	73	164	44.8 (37.2-52.3)	33	97	34.0 (24.8-43.3)	106	262	40.7 (34.8-46.5)
BSC									
50-54	9	28	31.7 (15.9-52.4)	1	12	8.2 (0.2-38.5)	10	41	24.6 (12.4-40.3)
55-59	12	21	56.5 (34.0-78.2)	8	19	41.1 (20.3-66.5)	20	41	49.1 (32.9-64.9)
60-64	7	17	40.1 (18.4-67.1)	2	18	11.2 (1.4-34.7)	9	35	25.5 (12.5-43.3)
All ages ^(a)	28	67	40.3 (28.7-51.9)	11	50	21.6 (11.1-32.2)	39	117	32.7 (24.4-40.9)
BSCtoC									
50-54	22	30	72.8 (54.1-87.7)	9	12	72.8 (42.8-94.5)	31	43	72.8 (56.3-84.7)
55-59	14	19	72.1 (48.8-90.9)	2	17	11.9 (1.5-36.4)	16	36	44.1 (27.9-61.9)
60-64	13	21	61.1 (38.4-81.9)	15	20	76.8 (50.9-91.3)	28	41	68.6 (51.9-81.9)
All ages ^(a)	49	71	70.0 (59.3-80.7)	26	49	51.1 (40.0-62.3)	75	120	62.5 (54.1-71.0)
BSHC									
50-54	2	12	17.3 (2.1-48.4)	6	12	49.4 (21.1-78.9)	8	24	33.7 (15.6-55.3)
55-59	1	1	80.1 (2.5-100.0)	8	20	39.8 (19.1-63.9)	9	21	42.1 (21.8-66.0)
60-64	0	1	0.0 (0.0-97.5)	8	19	42.9 (20.3-66.5)	8	20	41.0 (19.1-63.9)
All ages ^(a)	3	14	30.5 (8.5-52.5)	22	51	43.6 (29.9-57.2)	25	65	38.4 (26.5-50.2)
BSM									
50-54	22	25	86.5 (68.8-97.5)	11	17	66.2 (38.3-85.8)	33	42	78.5 (63.2-89.7)
55-59	10	11	90.4 (58.7-99.8)	16	28	57.7 (37.2-75.5)	26	39	67.0 (49.8-80.9)
60-64	4	11	37.6 (10.9-69.2)	10	31	32.0 (16.7-51.4)	14	42	33.5 (19.6-49.5)
All ages ^(a)	36	47	76.7 (66.2-87.1)	37	76	51.5 (40.5-62.5)	73	123	62.5 (54.6-70.5)
BSSL									
50-54	27	56	48.2 (34.7-62.0)	7	21	33.8 (14.6-57.0)	34	77	44.3 (32.8-55.9)
55-59	23	36	63.6 (46.2-79.2)	12	29	40.8 (23.5-61.1)	35	66	53.4 (40.3-65.4)
60-64	16	35	45.2 (28.8-63.4)	16	29	54.4 (35.7-73.6)	32	65	49.3 (36.6-61.9)
All ages ^(a)	66	128	51.7 (43.0-60.4)	35	80	43.4 (32.6-54.1)	101	207	48.6 (41.8-55.4)
BSA Total									
50-54	117	227	51.6 (44.8-58.2)	43	102	42.1 (32.4-52.3)	160	329	48.6 (43.1-54.2)
55-59	86	137	62.7 (54.1-70.9)	62	150	41.5 (33.4-49.7)	148	287	51.6 (45.6-57.5)
60-64	52	127	41.0 (32.3-50.0)	59	150	39.3 (31.5-47.6)	111	277	40.1 (34.3-46.1)
All ages ^(a)	255	491	52.3 (47.9-56.6)	164	402	40.9 (36.1-45.7)	419	893	47.3 (44.0-50.5)

Note: (a) standardised to the age distribution of women screened in the BSA program for the period 1999-2002

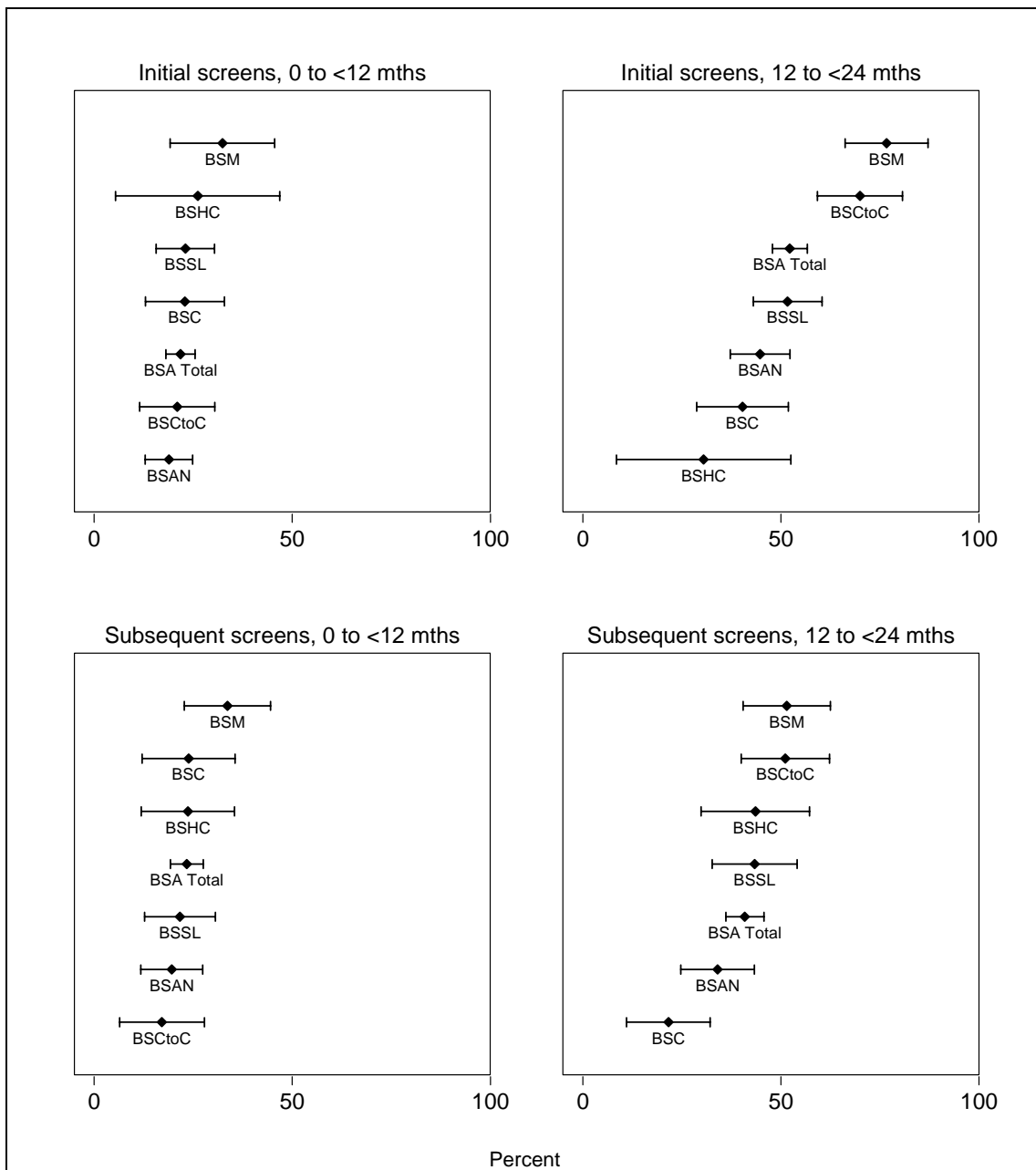


Figure 15: First-year (0 to <12 months) and second-year (12 to <24 months) proportional incidence (percent) in women aged 50–64 after an initial or subsequent screen by local provider, BSA program, 1999–2002

Note: standardised to the age distribution of women screened in the BSA program for the period 1999-2002

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