BREASTSCREEN AOTEAROA

INDEPENDENT MONITORING REPORT:

TREATMENT OF WOMEN WITH BSA DETECTED CANCERS

(WOMEN SCREENED JANUARY 2007-DECEMBER 2008)

Dr Andrew Page
School of Population Health
University of Queensland

Professor Richard Taylor
School of Public Health and Community Medicine
University of New South Wales

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MEMBERS OF THE BSA ADVISORY GROUP

Pru Wood	BreastCare Nurse
Barbara Holland	Consumer Reference Group Representative
Scott McWilliams	Data Manager
Prof Richard Taylor	Epidemiologist
Dr Mary Obele	GP Representative
To be advised	Health Promoter
Joan Miles	Lead Provider Manager
Jeremy Nicoll	Medical Physicist
Brendawyn Leeves	Medical Radiation Technologist
Dr Juliet Walker	Pacific Representative
Dr Reena Ramsaroop	Pathologist
Dr Glyn Thomas	Radiologist
Mr David Moss	Surgeon
Margreet Simpson	Treatment Data Collector

EXECUTIVE SUMMARY

This report presents cross-sectional data for the 2 year period January 2006 - December 2008 and trend data from programme inception to December 2008 for BreastScreen Aotearoa treatment indicators. Screening and assessment indicators are located in a companion report.[1] BreastScreen Aotearoa (BSA) has offered government funded biennial mammography screening for all NZ women aged 50-64 years since 1999. In July 2004 the target age group was extended to include women aged 45-49 years and 65-69 years.

For the period covered in this report data relating to women aged 50-69 years are presented. Trend data for key indicators are presented for women aged 50-64 years, however, a times-series has also been established for the aggregated target age group of women aged 50-69 years in the period following age extension. Some indicators in this report have 'expected' and 'desirable' targets. In the text of this Executive Summary quoted targets relate to 'expected' target values. Both the magnitude of differences, and their statistical significance, are used to assess the relation of observed to target values. Differences of <5% in magnitude from the target value and/or differences which are not significantly different from the target value are considered 'on target' (see 'Technical notes for interpreting this report').

As the BSA screening program matures the proportion of visits for initial screening diminish and the proportion of subsequent visits increases, and age profile of new entrants to the program becomes younger. Since the breast cancer incidence rate in younger women is lower than older women, the cancer detection rate from screening will decrease as the age profile of the initial screens becomes younger. The above should be borne in mind when interpreting cancer detection rates from initial screens (see 'Technical notes for interpreting this report')

Treatment of women with BSA detected cancers is not carried out by BSA Lead Providers. Surgery is performed by 21 District Health Board (DHB) Services and private providers. Oncology services are provided by 6 Cancer Treatment Centres and private providers.

1. Early detection of DCIS or invasive breast cancer

DCIS
The proportion of DCIS of all cancers (invasive and DCIS) for women aged 50-69 years over the biennium was 22.4% (target range 10-25%).

Invasive cancer detection rate
The BSA biennial invasive cancer detection for women aged 50-69 years was 7.2 per 1,000 women screened for initial screens (achieving the target of ≥ 6.1 per 1,000), and 4.2 per 1,000 for subsequent screens (achieving the target of ≥ 3.45 per 1,000). This represented 1,291 invasive cancers detected by BSA for the 2-year period. The overall proportion of node negative cancers (of all invasive cancers) was 73.8% for initial screens and 77.5% for subsequent screens.

For women 50-69 years, the overall proportion of screen detected invasive cancers ≤10mm in size for the 2-year period was 27.4% for initial screens and 41.1% for subsequent screens. The corresponding detection rates per 10,000 women screened for invasive cancers ≤10mm were above the target at 19.8 for initial screens (target ≥ 15.2 per 10,000 screens) and 17.1 for subsequent screens (target ≥ 10.45 per 10,000 screens).

For women 50-69 years, the overall proportion of screen detected invasive cancers <15mm in size for the 2-year period was 43.0% for initial screens and 60.6% for subsequent screens. The corresponding detection rates per 10,000 women screened for invasive cancers <15mm were on target at 31.1 for initial screens (target >30.5 per 10,000 screens) and 25.3 significantly above target for subsequent screens (target ≥ 17.3 per 10,000 screens).

[1] Page A, Taylor R. BreastScreen Aotearoa: Independent Monitoring Report - Screening and assessment report of women attending BSA (Women screened January 2007 to December 2008). BreastScreen Aotearoa: Wellington 2009.

2. Treatment

Target values were exceeded for DCIS cases and for invasive cases ≤ 20 mm having breast conserving surgery (BCS). The overall proportion of screen detected DCIS having BCS for women aged 50-69 years was 82.0%, and for invasive cancers having BCS was 74.1%, both of which were greater than the target value of >50%.

The overall proportion of invasive cancers having a surgical axillary procedure for women aged 50-69 years was 98.3%, which was on target (target value of 95%). The overall proportion of women aged 50-69 years who had surgery for DCIS, who did not have an axillary dissection, was 98.8%, which was also on target (target value >95%).

The overall proportion of women diagnosed with invasive cancer, who had breast conserving surgery (BCS), and went on to have radiotherapy, was 96.5%, which was on target (target value of ≥ 95%).

3. Provision of an appropriate and acceptable service

There is only one indicator in this section of the treatment report. The overall proportion of women receiving first surgical treatment within 20 workings days was well below the target value of 90%. The biennial estimate for women 50-69 years was 62.2%. Trend data for this indicator show a continued decrease relative to earlier periods of the programme for all Lead Providers, with the exception of BSAL, BSM and BSHC where an increasing, or stable, trend is apparent.

4. Specific summary comments for each Lead Provider

For the following summary comments, indicators for each Lead Provider are included where targets were significantly exceeded and also for targets not achieved. Specifically, indicators are noted if: (i) Lead Providers significantly exceeded targets for biennial indicators (i.e. exceeded the target by ≥10% and was statistically significant) or (ii) Lead Providers were significantly below target (≥5% difference in magnitude, and statistically significant).

BreastScreen Waitemata and North
BSWN was either on target or exceeded targets for almost all biennial indicators for women in the target age range of 50-69 years. In particular, BSWN significantly exceeded targets for invasive cancer detection (≤10 mm and <15mm) in women attending for a subsequent screen, and the proportion of women with DCIS or invasive cancers having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (66.7%, target 90%), continuing a decreasing trend from previous reporting periods.

BreastScreen Counties Manukau
BSCM was either on target or exceeded targets for almost all biennial indicators for women in the target age range of 50-69 years. In particular, BSCM significantly exceeded targets for invasive cancer detection (≤10 mm) in women attending for a subsequent screen. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (28.0%, target 90%), continuing a decreasing trend from previous reporting periods.

BreastScreen Auckland Limited
BSAL was either on target or exceeded targets for almost all biennial indicators for women in the target age range of 50-69 years. In particular, BSAL significantly exceeded targets for invasive cancer detection (≤10mm) for initial and subsequent screens, and the percentage of women with DCIS or invasive cancers having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (69.3%, target 90%).

BreastScreen Midland
BSM was either on target or exceeded targets for most biennial indicators for women in the target age range of 50-69 years. In particular, BSM significantly exceeded targets for invasive cancer detection (≤10 mm and <15mm) in

women attending for a subsequent screen and the percentage of women with DCIS or invasive cancers having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (61.1%, target 90%).

BreastScreen Coast to Coast
BSCtoC was either on target or exceeded targets for almost all biennial indicators for women in the target age range of 50-69 years. In particular, BSCtoC exceeded targets for the percentage of women with DCIS or invasive cancers having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (66.4%, target 90%).

BreastScreen Central
BSC was either on target or exceeded targets for almost all biennial indicators for women in the target age range of 50-69 years. In particular, BSC exceeded targets for invasive cancer detection (≤10 mm and <15mm) in women attending for a subsequent screen, and the percentage of women with DCIS or invasive cancers having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (60.8%, target 90%), continuing a decreasing trend from previous reporting periods.

BreastScreen South Limited
BSSL was either on target or exceeded targets for almost all biennial indicators for women in the target age range of 50-69 years. In particular, BSSL significantly exceeded targets for invasive cancer detection in women attending for subsequent screens (invasive cancers ≤10 mm and <15mm), and the percentage of women with DCIS or invasive cancers having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (68.4%, target 90%).

BreastScreen Health Care
BSHC were either on target or exceeded targets for most biennial indicators for women in the target age range of 50-69 years. In particular, BSHC significantly exceeded targets for invasive cancer detection (≤10mm) in women attending for a subsequent screen. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (68.3%, target 90%).

5. Conclusion

Overall, targets for key treatment indicators are being exceeded, or are close to being achieved. There is variation for some indicators across Lead Providers. Areas where target values were not met by BSA in the period covered in this report, and where differences between observed and expected values were of greatest magnitude, included:

- Percentage receiving first surgical treatment within 20 working days (5e)

BSA ADVISORY GROUP COMMENTS AND RECOMMENDATIONS

1. Data Completeness

The BSA Advisory group is pleased to note that data completeness is improving.

2. First Surgical Treatment

It is noted that the target for first surgical treatment within 20 days is still not being met by any of the Lead Providers.

There has previously been analysis of Lead Provider feedback of reasons for delays in surgical timeliness for women screened from January 2006 to December 2007. In the majority of cases the reason for delay is the surgery waiting list (52%). Other reasons included: women's choice (13%), reconstructive surgery (10%) and delays in MRI or further imaging (6%).

FOREWORD: BSA MONITORING PROCESS

Data are sent monthly from the eight BreastScreen Aotearoa Lead Providers (LPs) to the Information Directorate of the Ministry of Health. The data are checked by the Information Directorate, amalgamated into a single file, and sent to the National Screening Unit (NSU). The NSU runs further checks and produces performance indicator tables by Lead Provider for the preceding 6 months and preceding 2 years of the reporting period.

The tables are sent to the BSA Independent Monitoring Group (IMG) at the University of New South Wales (UNSW), School of Public Health and Community Medicine (SPHCM), Sydney, Australia. The IMG produces an Independent Monitoring Report (IMR) including calculations of confidence intervals (CI's), time trend graphs, an analysis of data against national indicators and targets, explanatory notes and commentary. The IMG can request additional tabulations where it is felt appropriate. The IMG sends the first draft of IMR to NSU for verification and review, after which the IMR is updated.

The updated IMR draft is sent to members of the BSA Advisory Group (AG) prior to a collective meeting, where multidisciplinary and consumer context is added to comments regarding outliers. The draft report is then circulated to LPs for comment and a final version is produced. The NSU publishes the final report on the NSU website.

This BSA Independent Monitoring Report was reviewed by the BSA Advisory Group on 18 November 2010 at the Sunderland Room, Wellington Airport Conference Centre.

TECHNICAL NOTES FOR INTERPRETING THIS REPORT

Developments in presentation of age extension data

A biennium has elapsed since BSA began collecting data for women aged 45-49 and 65-69 years. Interpreting trends in this report should take into consideration that indicators for a comparable age group are not available for periods prior to Jan 2005 - Dec, 2006. Trend data are presented for women age 50-64 years for the programme from the first reporting period in 2001 to the June 2006, after which time-series data are broken and a new series has been established for women aged 50-69 years.

Changes to BSA Lead Providers

BreastScreen Auckland and North was split into 3 separate Lead Providers during the previous reporting period: BSAL, BSCM, BSWN. The following table provides a listing of Lead Providers clarifying these changes.

Lead Provider	Abbreviation	Inception and period of programme
BreastScreen Auckland and North	BSAN	1999-June 2005
BreastScreen Auckland Limited	BSAL	July, 2005-Present
BreastScreen Counties Manukau	BSCM	October, 2005-Present
BreastScreen Waitemata and North	BSWN	February, 2006-Present
BreastScreen Midland	BSM	1999-Present
BreastScreen Coast to Coast	BSCtoC	1999-Present
BreastScreen Central	BSC	1999-Present
BreastScreen South Limited	BSSL	1999-Present
BreastScreen HealthCare	BSHC	1999-Present

Confidence Intervals (CI's)

95% CI's have been reported for all indicators in this report. From the Central Limit Theorem, the estimate for a particular indicator - for example, invasive cancer detection rate for the 2 year period - is assumed to come from a hypothetical distribution of values for that indicator. The overall average value of this hypothetical distribution is the universal or 'true' invasive cancer detection rate for the population being studied. The 95% confidence interval indicates that there is a 1 in 20 chance that the 'true' population rate (or proportion, or mean) lies outside the range of values contained by the 95% confidence interval. Thus, the wider the 95% confidence interval, the less precise the estimate is to the true population parameter. Additionally, different statistical distributions provide more accurate and appropriate estimations of the 95% confidence intervals, and depend upon the type of indicator being studied, and the frequency of the event. For this report, 95% confidence intervals for rare events occurring in a population have been calculated using the Poisson distribution. For indicators with small numbers where proportions represent cases and non-cases the 95% confidence interval is based on the Exact Binomial distribution.

Differences between observed and target values

Both the magnitude of differences, and their statistical significance, are used to assess the relation of observed to target values.

The magnitude of the difference between the observed value and the target value is important in the interpretation of each indicator. In this report, differences of ≥ 5% in magnitude that are statistically significantly different from the target value, based on 95% confidence intervals, are noted as important differences, and are indicated by '✓✓' if better than the target, or '**xx**' if worse than the target. Differences of ≥ 10% that are statistically significant (from the target value) are indicated by '✓✓✓' if better than the target, or '**xxx**' if worse than the target. Differences of <5%

in magnitude from the target value and/or differences which are not significantly different from the target value are indicated by '✓' and are considered 'on target'.

For each indicator, differences in magnitude between the observed value and the target value need to be interpreted in the context and meaning of the indicator under investigation. If the standard is 80% then a 10% difference in magnitude would contain values ranging from 72%-88%. If the standard is 10%, then a 10% difference in magnitude would contain values ranging from 9%-11%. As a guide, slight differences can be considered to be of a relative magnitude of 0-4%, moderate differences of 5-9%, and large differences >10%.

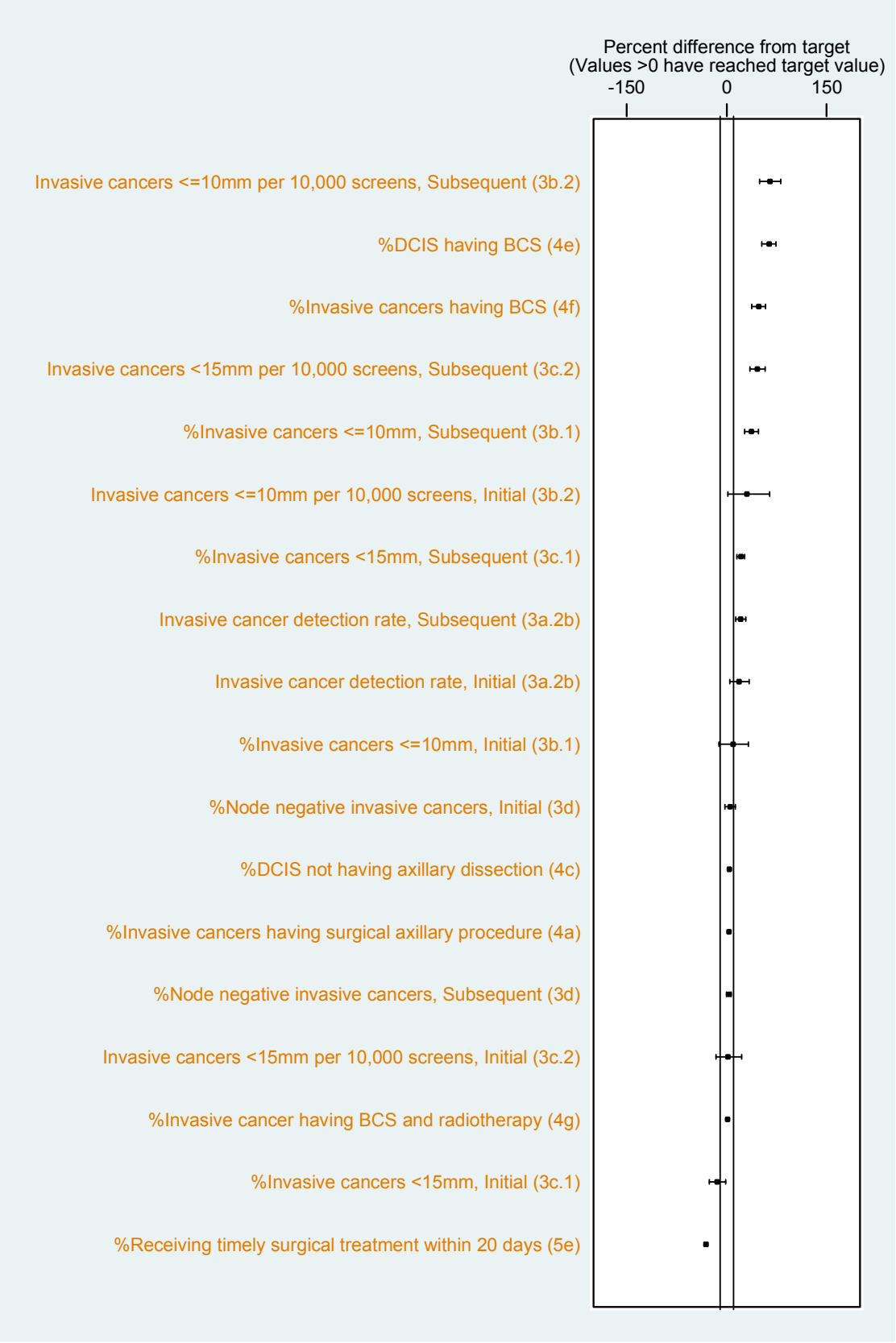
Target values relate only to biennial rates for women in the target age-group (50-69 years) for all indicators.

Initial cancer detection rates

As a mammographic screening program matures the proportion of visits for initial screening diminish and the proportion of subsequent visits increase. As well as a reduction in absolute numbers with maturity (thus widening 95% CIs of rates), the age profile of women changes from all age groups 50-69 years at the beginning of the program, to mostly younger age groups (new entrants to the program) at maturity. Since the breast cancer incidence rate in younger women is lower than older women, the cancer detection rate from screening will decrease as the age profile of the initial screens becomes younger. The above should be borne in mind when interpreting cancer detection rates from initial screens.

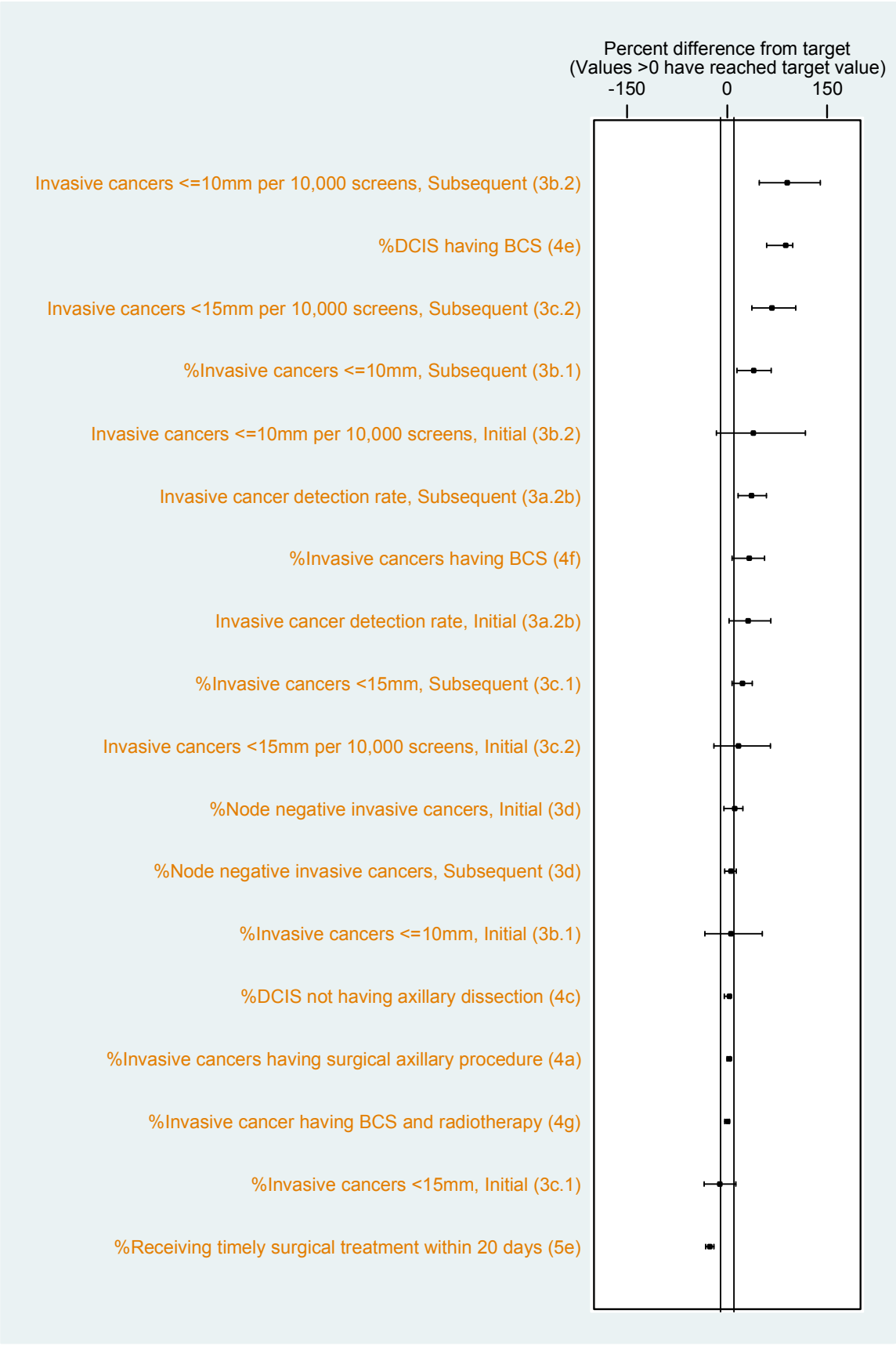
AT A GLANCE: BIENNIAL INDICATORS FOR WOMEN 50-69 YEARS

Figure 1: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSA as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets)



NB: The vertical line represent a ± 10% difference between the observed value and the target value.

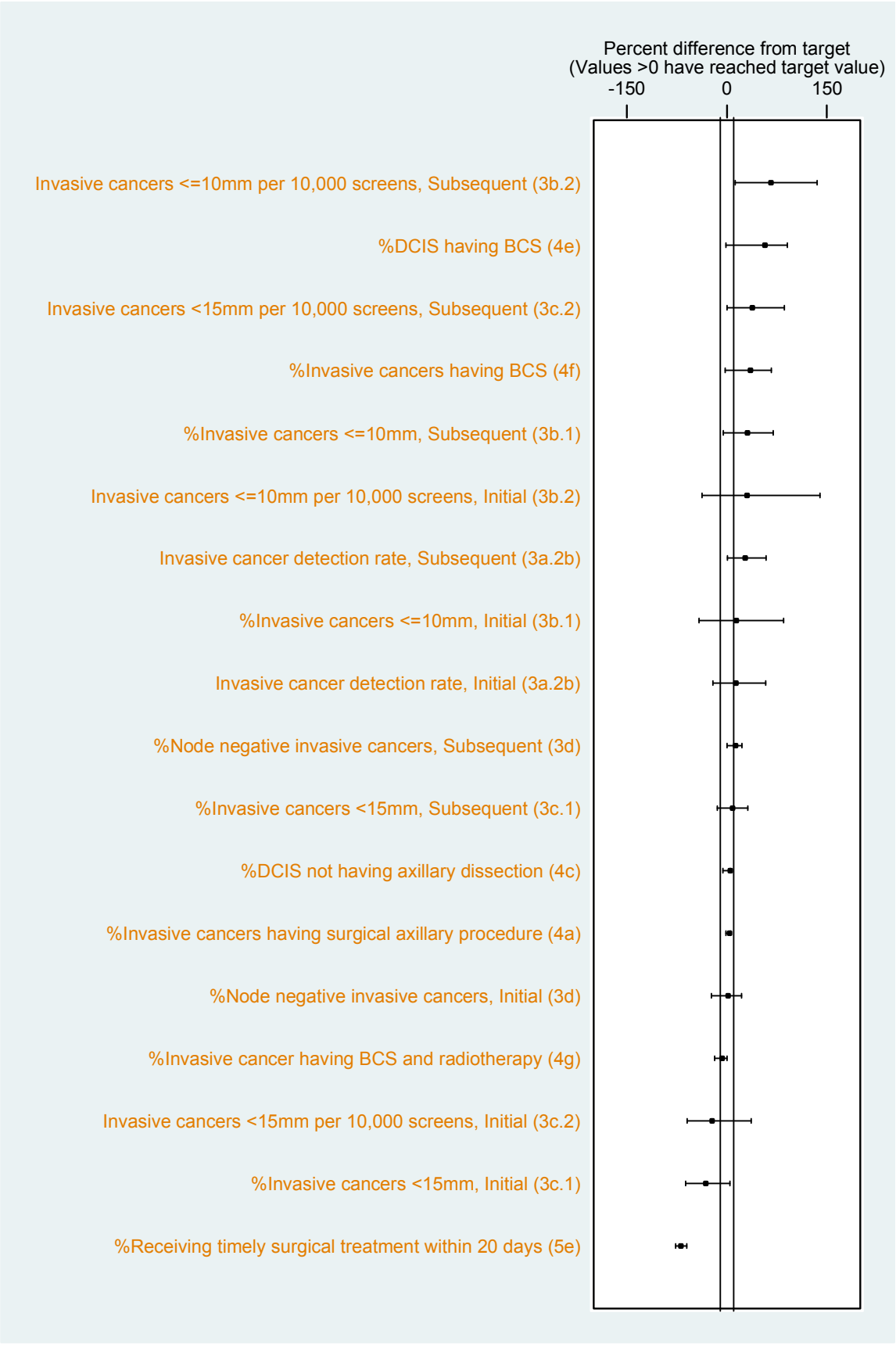
Figure 2: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSWN as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets).



NB: The vertical line represent a ± 10% difference between the observed value and the target value.

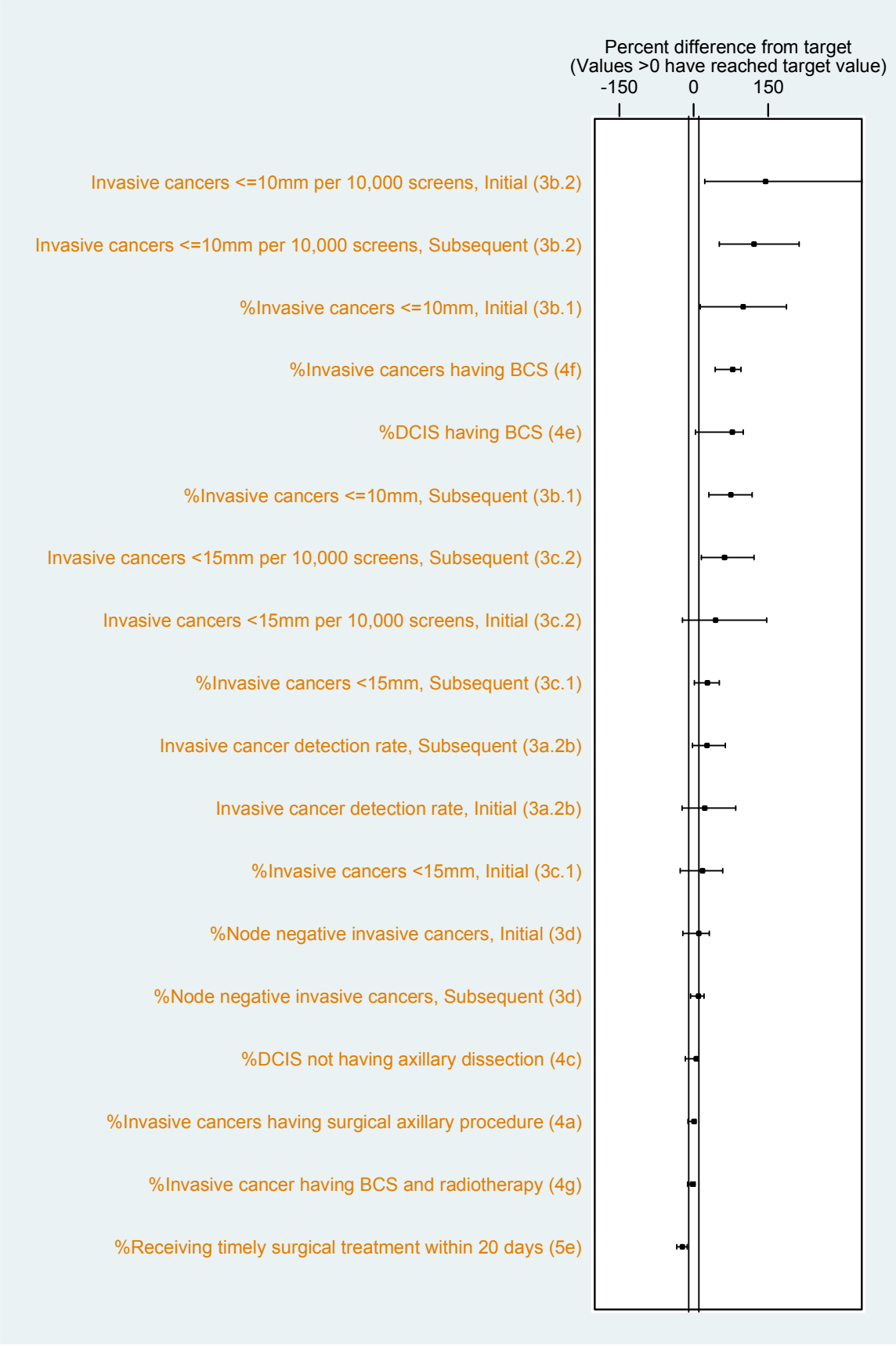
AT A GLANCE: BIENNIAL INDICATORS FOR WOMEN 50-69 YEARS

Figure 3: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSCM as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets)..



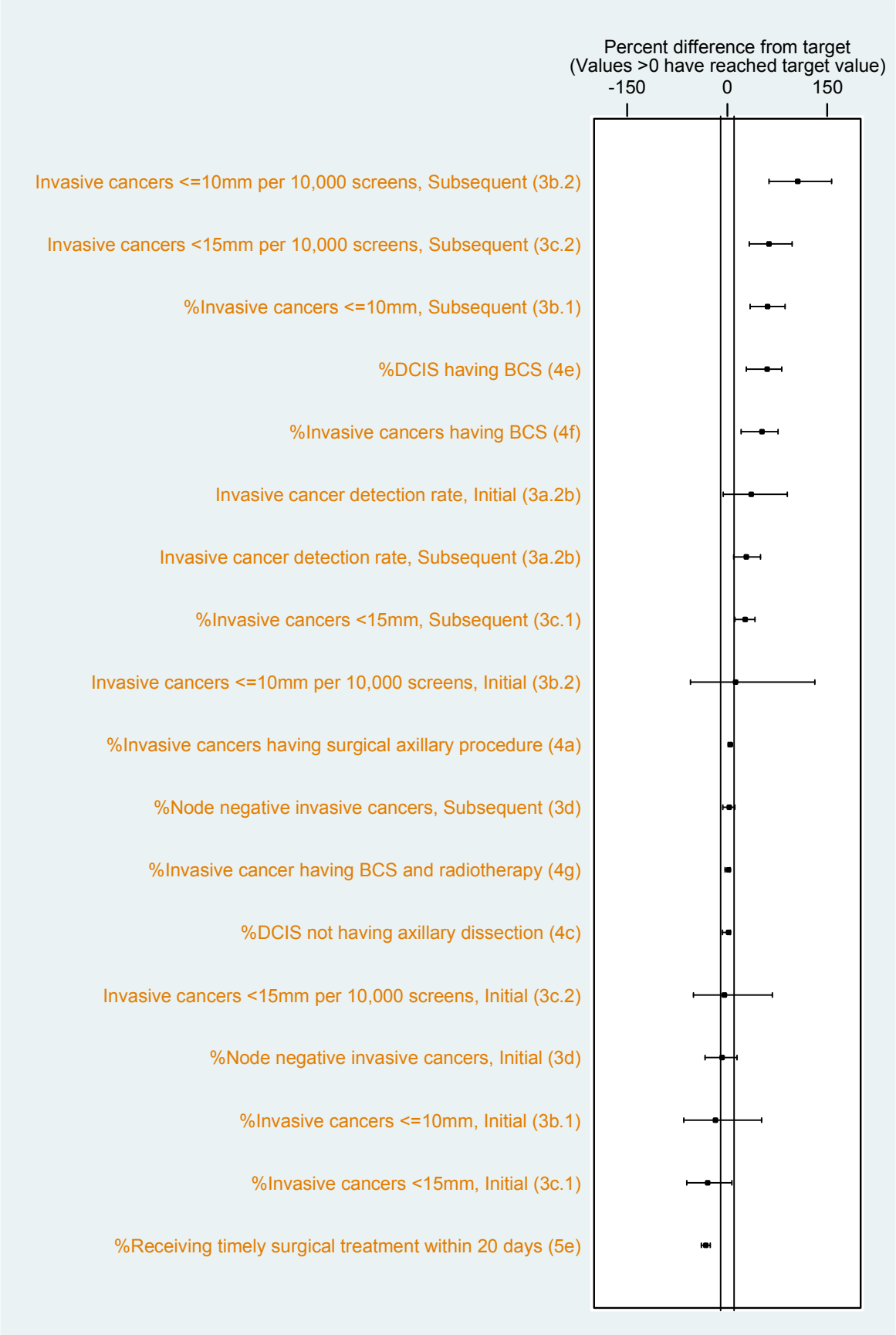
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 4: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSAL as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets).



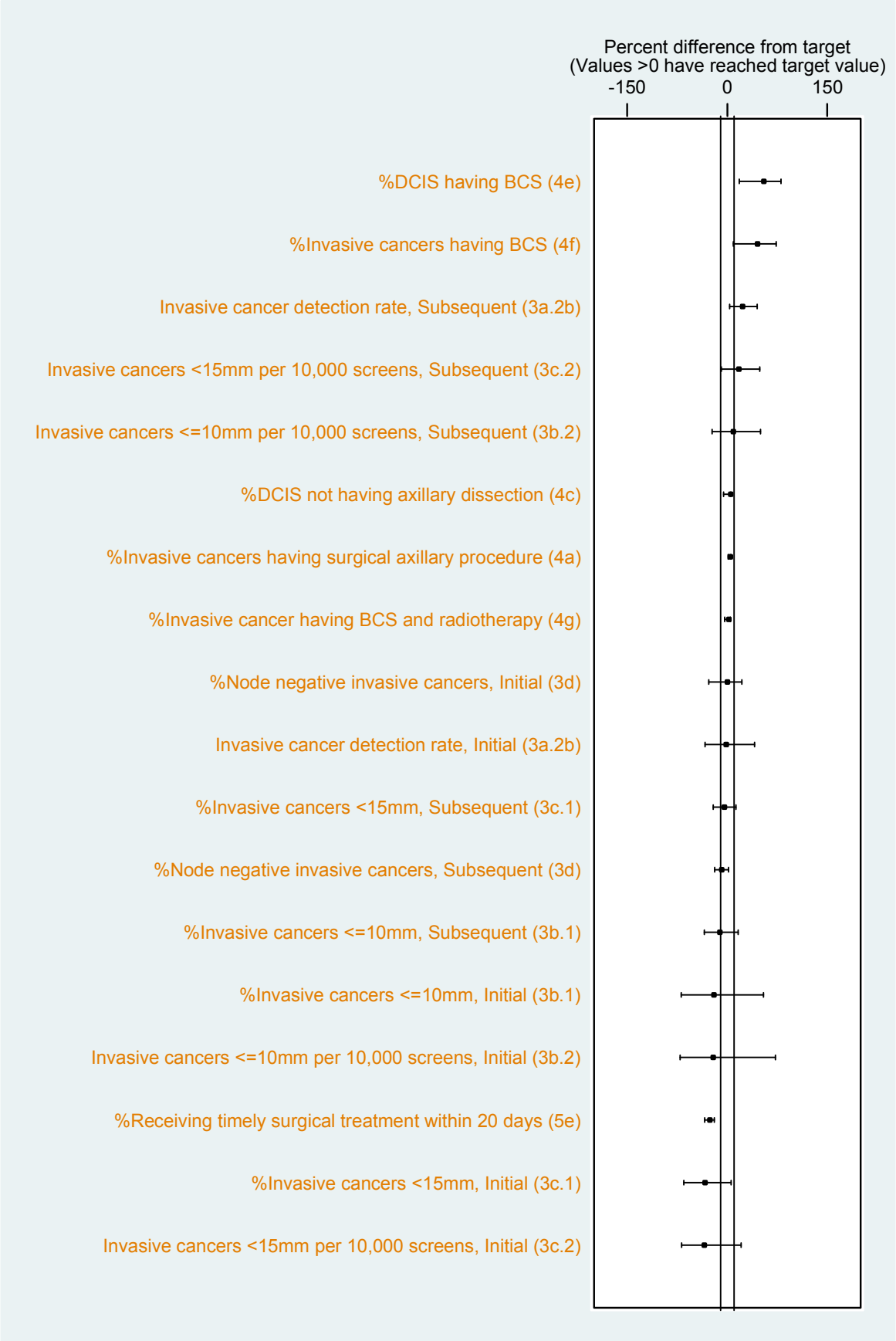
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 5: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSM as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets)



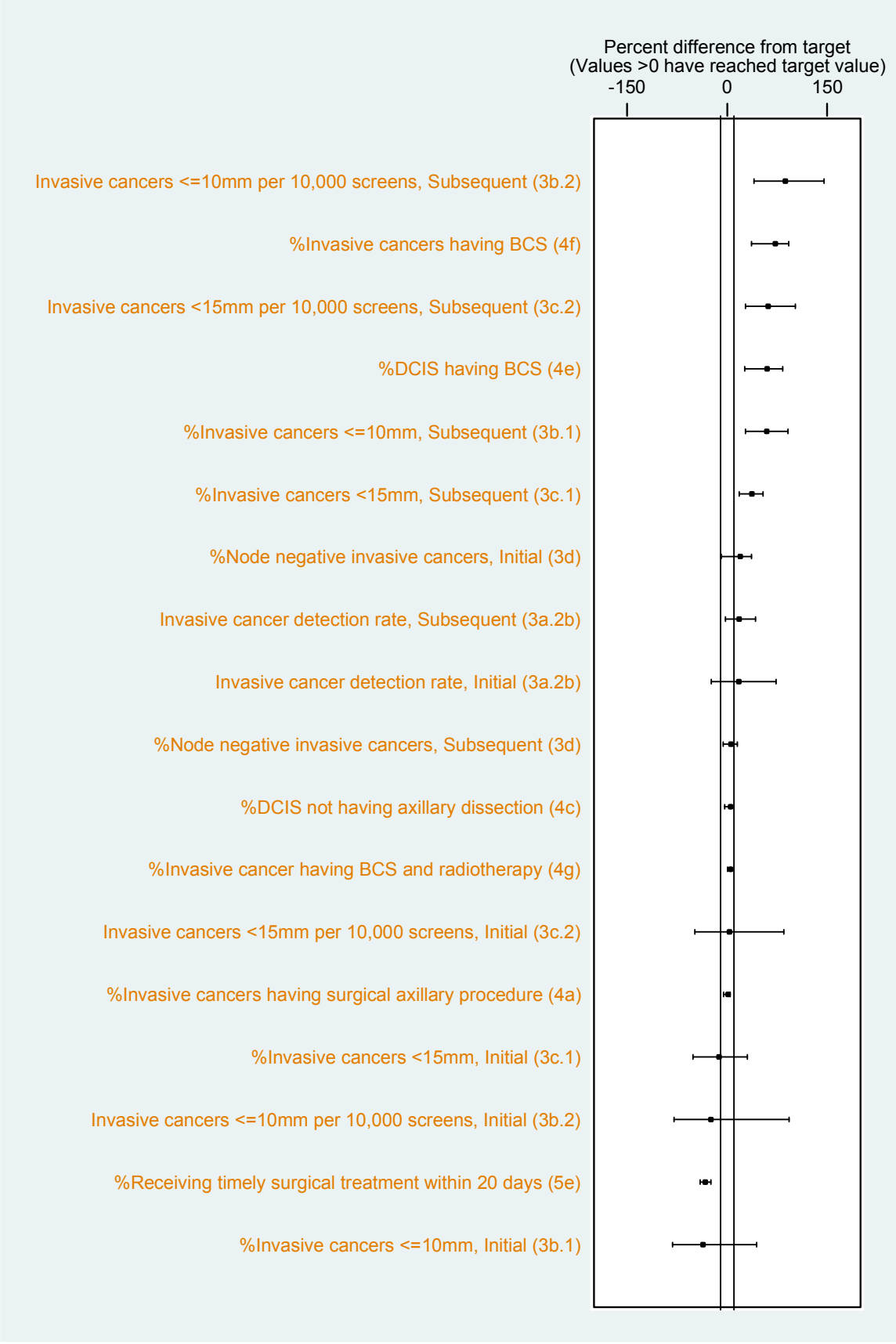
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 6: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSCtoC as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets)



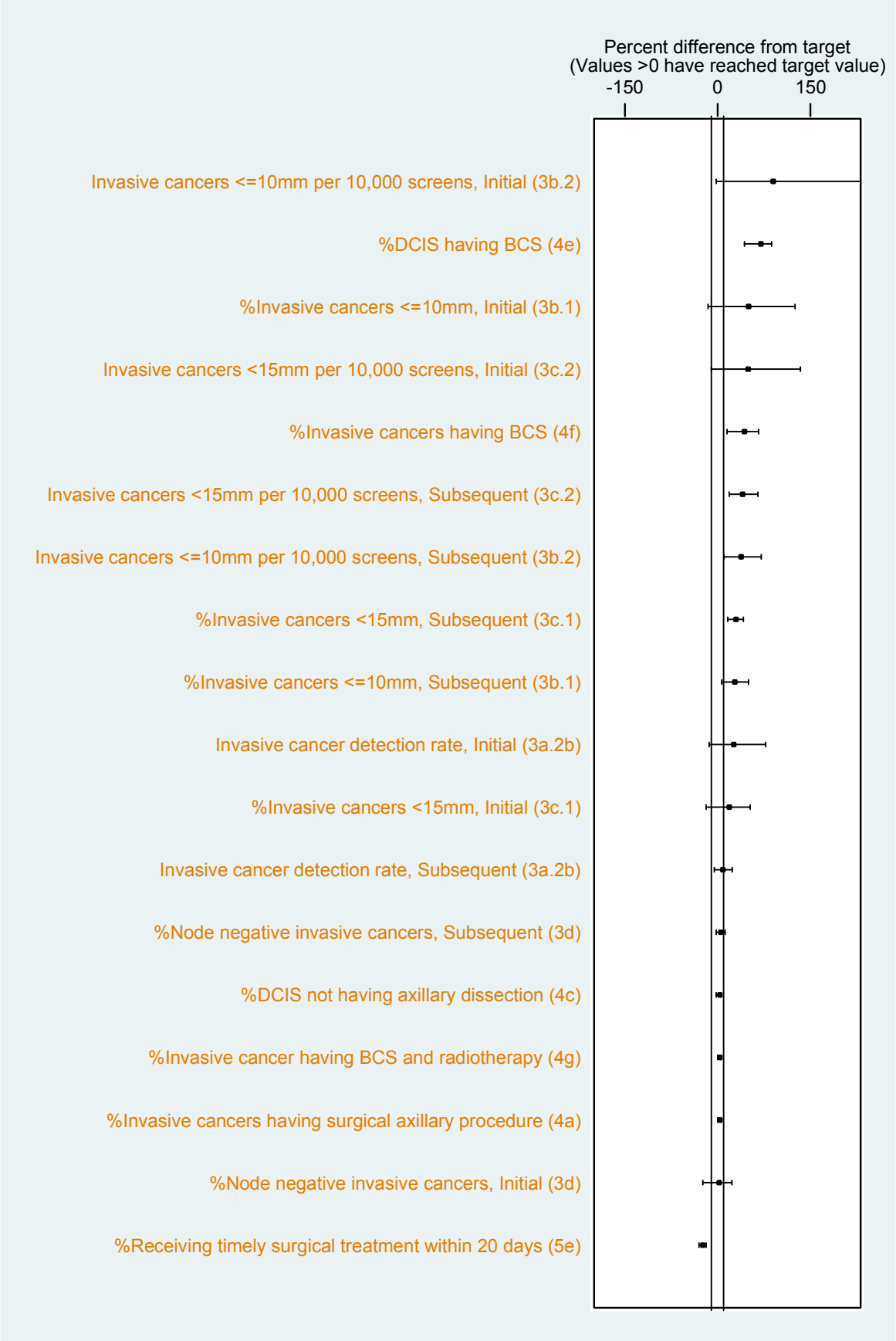
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 7: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSC as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets)



NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 8: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSSL as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets)



NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 9: Biennial indicators 'on target', 'better than target', or 'worse than target' for BSHC as measured by percent difference between observed and target value, and 95% confidence intervals (Table reference in brackets)

NB: The vertical line represent a ± 10% difference between the observed value and the target value.

3. EARLY DETECTION OF DCIS OR INVASIVE BREAST CANCER

3.a.3. Treatment data completeness, 2 years

Description:
Lead Providers have 9 months to complete treatment data entry for women referred to treatment.
Target:
≥ 90%

Table 3a.3: Treatment data completeness

	Women referred for Treatment	% Staging Complete	% Surgical Complete	% Endocrine Complete	% Radiotherapy Complete	% Chemotherapy Complete
45-49 years						
BSWN	75	98.7	98.7	98.7	98.7	98.7
BSCM	34	97.1	100.0	100.0	100.0	100.0
BSAL	40	100.0	100.0	100.0	100.0	100.0
BSM	54	100.0	100.0	100.0	100.0	100.0
BSCtoC	44	93.2	100.0	100.0	100.0	100.0
BSC	37	100.0	100.0	100.0	100.0	100.0
BSSL	76	94.7	100.0	100.0	100.0	100.0
BSHC	23	100.0	100.0	100.0	100.0	100.0
BSA Total	383	97.7	99.7	99.7	99.7	99.7
50-69 years						
BSWN	307	99.3	99.7	100.0	100.0	100.0
BSCM	159	96.2	98.1	96.9	96.9	98.7
BSAL	105	96.2	100.0	100.0	100.0	100.0
BSM	265	99.6	99.6	99.6	99.6	99.6
BSCtoC	213	99.5	100.0	99.5	100.0	100.0
BSC	187	100.0	100.0	100.0	100.0	100.0
BSSL	342	99.1	100.0	100.0	100.0	100.0
BSHC	105	100.0	100.0	100.0	100.0	100.0
BSA Total	1,683	99.0	99.7	99.6	99.6	99.8

Description:
Follow-up data is collected on all BSA women who have had treatment. This must occur within minimum 5-year interval following treatment.

Table 3a.4: Data collection completeness for patient status records, women 50-69 years

6 Month Period	*Data Collection Due by*	BSWN	BSCM	BSAL	BSM	BSCtoC	BSC	BSSL	BSHC
50-69 years									
1999 Jan-Jun	*Jun-04*	Data not yet available			100.0	95.2	100.0	91.9	100.0
1999 Jul-Dec	*Dec-04*				100.0	100.0	100.0	93.0	100.0
2000 Jan-Jun	*Jun-05*				97.1	100.0	100.0	98.7	96.6
2000 Jul-Dec	*Dec-05*				100.0	96.6	96.3	96.1	100.0
2001 Jan-Jun	*Jun-06*				100.0	100.0	97.8	96.8	100.0
2001 Jul-Dec	*Dec-06*				94.7	100.0	97.5	96.5	94.4
2002 Jan-Jun	*Jun-07*				86.0	96.6	96.3	96.9	95.0
2002 Jul-Dec	*Dec-07*				84.1	100.0	90.9	97.5	78.3
2003 Jan-Jun	*Jun-08*				87.5	97.0	78.6	100.0	83.3
2003 Jul-Dec	*Dec-08*				76.2	100.0	86.7	96.9	83.3
2004 Jan-Jun	*Jun-09*				27.9	91.4	78.4	92.5	92.3
2004 Jul-Dec	*Dec-09*				22.7	78.8	87.1	57.7	84.6
2005 Jan-Jun	*Jun-10*				13.1	11.1	6.5	21.8	46.7

Please note that data for BSAL in the table above has been excluded because there is a known data issue that is being investigated.

3.a.2b. Invasive cancer detection, 2 years

Description:

The number of women who have invasive breast cancer detected within BSA, expressed as a rate per 1000 women screened.

This is influenced by the background incidence of cancer in the population in the absence of screening. All other things being equal, the higher the cancer incidence, the higher the cancer detection rate will be.

Target:

Initial (Prevalent) round: ≥ 6.1 per 1000 women screened

Subsequent (Incident) round: ≥ 3.45 per 1000 women screened.

Table 3a.2b: Invasive cancers (2 years) for initial and subsequent screens, women 45-69 years

	Initial					Subsequent				
	Number	Women screened	Rate per 1,000 (95%CI)			Number	Women screened	Rate per 1,000 (95%CI)		
45-49 years										
BSWN	45	11,341	4.0 (2.9-5.3)			7	3,479	2.0 (0.8-4.1)		
BSCM	21	7,161	2.9 (1.8-4.5)			2	761	2.6 (0.3-9.5)		
BSAL	26	3,856	6.7 (4.4-9.9)			2	1,723	1.2 (0.1-4.2)		
BSM	29	5,875	4.9 (3.3-7.1)			7	4,544	1.5 (0.6-3.2)		
BSCtoC	19	7,232	2.6 (1.6-4.1)			10	3,723	2.7 (1.3-4.9)		
BSC	18	5,210	3.5 (2.0-5.5)			13	3,478	3.7 (2.0-6.4)		
BSSL	35	11,998	2.9 (2.0-4.1)			17	10,156	1.7 (1.0-2.7)		
BSHC	12	4,108	2.9 (1.5-5.1)			7	2,492	2.8 (1.1-5.8)		
BSA Total	205	56,781	3.6 (3.1-4.1)			65	30,356	2.1 (1.7-2.7)		
50-69 years										
BSWN	72	8,985	8.0 (6.3-10.1)	✓✓✓	*	169	35,917	4.7 (4.0-5.5)	✓✓✓	*
BSCM	35	5,046	6.9 (4.8-9.6)	✓	ns	79	17,966	4.4 (3.5-5.5)	✓✓✓	*
BSAL	22	2,950	7.5 (4.7-11.3)	✓	ns	61	13,900	4.4 (3.4-5.6)	✓	ns
BSM	34	4,100	8.3 (5.7-11.6)	✓	ns	164	36,900	4.4 (3.8-5.2)	✓✓✓	*
BSCtoC	30	4,984	6.0 (4.1-8.6)	✓	ns	142	33,456	4.2 (3.6-5.0)	✓✓✓	*
BSC	25	3,491	7.2 (4.6-10.6)	✓	ns	111	27,184	4.1 (3.4-4.9)	✓	ns
BSSL	32	4,162	7.7 (5.3-10.9)	✓	ns	227	60,527	3.8 (3.3-4.3)	✓	ns
BSHC	13	2,606	5.0 (2.7-8.5)	✓	ns	75	20,842	3.6 (2.8-4.5)	✓	ns
BSA Total	263	36,324	7.2 (6.4-8.2)	✓✓✓	*	1,028	246,692	4.2 (3.9-4.4)	✓✓✓	*

Poisson 95% Confidence Intervals presented

* Statistically different from target value, ns: not significant

✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from target

✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant

✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant

xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant

xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

3.b. Detection of invasive cancers ≤ 10 mm, 2 years

Description:

Proportion and rate of primary invasive breast cancer of diameter ≤ 10 mm.

Target:

Initial (Prevalent) round: ≥ 25%, which gives a rate of ≥ 15.2 per 10,000 screens

Subsequent (Incident) round: ≥ 30%, which gives a rate of ≥ 10.45 per 10,000 screens

Table 3b.1: Proportion of invasive cancers less than or equal to 10 mm in women aged 45-69 years, 2 years

	Initial					Subsequent				
	Invasive cancers ≤10 mm	Total invasive cancers	% (95%CI)			Invasive cancers ≤10 mm	Total invasive cancers	% (95%CI)		
45-49 years										
BSWN	13	45	28.9 (16.4-44.3)			3	7			
BSCM	4	21	19.0 (5.4-41.9)			1	2			
BSAL	6	26	23.1 (9.0-43.6)			1	2			
BSM	5	29	17.2 (5.8-35.8)			2	7			
BSCtoC	8	19	42.1 (20.3-66.5)			2	10			
BSC	4	18	22.2 (6.4-47.6)			4	13			
BSSL	12	35	34.3 (19.1-52.2)			2	17			
BSHC	3	12	25.0 (5.5-57.2)			0	7			
BSA Total	55	205	26.8 (20.9-33.4)			15	65			
50-69 years										
BSWN	19	72	26.4 (16.7-38.1)	✓	ns	71	169	42.0 (34.5-49.8)	✓✓✓	*
BSCM	10	35	28.6 (14.6-46.3)	✓	ns	31	79	39.2 (28.4-50.9)	✓	ns
BSAL	11	22	50.0 (28.2-71.8)	✓✓✓	*	32	61	52.5 (39.3-65.4)	✓✓✓	*
BSM	7	34	20.6 (8.7-37.9)	✓	ns	79	164	48.2 (40.3-56.1)	✓✓✓	*
BSCtoC	6	30	20.0 (7.7-38.6)	✓	ns	38	142	26.8 (19.7-34.8)	✓	ns
BSC	4	25	16.0 (4.5-36.1)	✓	ns	53	111	47.7 (38.2-57.4)	✓✓✓	*
BSSL	12	32	37.5 (21.1-56.3)	✓	ns	87	227	38.3 (32.0-45.0)	✓✓✓	*
BSHC	3	13	23.1 (5.0-53.8)	✓	ns	32	75	42.7 (31.3-54.6)	✓✓✓	*
BSA Total	72	263	27.4 (22.1-33.2)	✓	ns	423	1028	41.1 (38.1-44.2)	✓✓✓	*

Exact Binomial 95% Confidence Intervals presented

* Statistically different from target value, ns: not significant

✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from target

✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant

✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant

xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant

xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

Table 3b.2: Invasive cancers, less than or equal to 10 mm in women aged 45-69 years, per 10,000 screens, 2 years

	Initial					Subsequent				
	Invasive cancers ≤10 mm	Women screened	Rate per 10,000 (95%CI)			Invasive cancers ≤10 mm	Women screened	Rate per 10,000 (95%CI)		
45-49 years										
BSWN	13	11,341	11.5 (6.1-19.6)			3	3,479			
BSCM	4	7,161	5.6 (1.5-14.3)			1	761			
BSAL	6	3,856	15.6 (5.7-33.9)			1	1,723			
BSM	5	5,875	8.5 (2.8-19.9)			2	4,544			
BSCtoC	8	7,232	11.1 (4.8-21.8)			2	3,723			
BSC	4	5,210	7.7 (2.1-19.7)			4	3,478			
BSSL	12	11,998	10.0 (5.2-17.5)			2	10,156			
BSHC	3	4,108	7.3 (1.5-21.3)			0	2,492			
BSA Total	55	56,781	9.7 (7.3-12.6)			15	30,356			
50-69 years										
BSWN	19	8,985	21.1 (12.7-33.0)	✓	ns	71	35,917	19.8 (15.4-24.9)	✓✓✓	*
BSCM	10	5,046	19.8 (9.5-36.4)	✓	ns	31	17,966	17.3 (11.7-24.5)	✓✓✓	*
BSAL	11	2,950	37.3 (18.6-66.7)	✓✓✓	*	32	13,900	23.0 (15.7-32.5)	✓✓✓	*
BSM	7	4,100	17.1 (6.9-35.2)	✓	ns	79	36,900	21.4 (16.9-26.7)	✓✓✓	*
BSCtoC	6	4,984	12.0 (4.4-26.2)	✓	ns	38	33,456	11.4 (8.0-15.6)	✓	ns
BSC	4	3,491	11.5 (3.1-29.3)	✓	ns	53	27,184	19.5 (14.6-25.5)	✓✓✓	*
BSSL	12	4,162	28.8 (14.9-50.4)	✓	ns	87	60,527	14.4 (11.5-17.7)	✓✓✓	*
BSHC	3	2,606	11.5 (2.4-33.6)	✓	ns	32	20,842	15.4 (10.5-21.7)	✓✓✓	*
BSA Total	72	36,324	19.8 (15.5-25.0)	✓✓✓	*	423	246,692	17.1 (15.6-18.9)	✓✓✓	*

Poisson 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from target
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

3.c. Detection of invasive cancers <15 mm

3.c.1. Proportion of invasive cancers <15 mm, women aged 45-69 years, 2 years

Description:
Proportion and rate of primary invasive breast cancer of diameter <15 mm
Target:
Initial (Prevalent) round: >50%, which gives a rate of >30.5 per 10,000 screens
Subsequent (Incident) round: >50%, which gives a rate of ≥ 17.3 per 10,000 screens

Table 3c.1: Proportion of invasive cancers <15 mm, 2 years

	Initial					Subsequent				
	Invasive cancers <15 mm	Total invasive cancers	% (95%CI)			Invasive cancers <15 mm	Total invasive cancers	% (95%CI)		
45-49 years										
BSWN	18	45	40.0 (25.7-55.7)			4	7			
BSCM	4	21	19.0 (5.4-41.9)			1	2			
BSAL	10	26	38.5 (20.2-59.4)			1	2			
BSM	10	29	34.5 (17.9-54.3)			4	7			
BSCtoC	10	19	52.6 (28.9-75.6)			6	10			
BSC	8	18	44.4 (21.5-69.2)			8	13			
BSSL	18	35	51.4 (34.0-68.6)			6	17			
BSHC	5	12	41.7 (15.2-72.3)			0	7			
BSA Total	83	205	40.5 (33.7-47.5)			30	65			
50-69 years										
BSWN	32	72	44.4 (32.7-56.6)	✓	ns	104	169	61.5 (53.8-68.9)	✓✓✓	*
BSCM	12	35	34.3 (19.1-52.2)	✓	ns	43	79	54.4 (42.8-65.7)	✓	ns
BSAL	13	22	59.1 (36.4-79.3)	✓	ns	39	61	63.9 (50.6-75.8)	✓✓✓	*
BSM	12	34	35.3 (19.7-53.5)	✓	ns	104	164	63.4 (55.5-70.8)	✓✓✓	*
BSCtoC	10	30	33.3 (17.3-52.8)	✓	ns	68	142	47.9 (39.4-56.4)	✓	ns
BSC	11	25	44.0 (24.4-65.1)	✓	ns	76	111	68.5 (59.0-77.0)	✓✓✓	*
BSSL	19	32	59.4 (40.6-76.3)	✓	ns	147	227	64.8 (58.2-71.0)	✓✓✓	*
BSHC	4	13	30.8 (9.1-61.4)	✓	ns	42	75	56.0 (44.1-67.5)	✓	ns
BSA Total	113	263	43.0 (36.9-49.2)	×××	*	623	1028	60.6 (57.5-63.6)	✓✓✓	*

Exact Binomial 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate and 95% Confidence Interval not statistically different from target
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

Table 3c.2: Invasive cancers <15 mm, per 10,000 screens, 2years

	Initial					Subsequent				
	Invasive cancers <15 mm	Women screened	Rate per 10,000 (95%CI)			Invasive cancers <15 mm	Women screened	Rate per 10,000 (95%CI)		
45-49 years										
BSWN	18	11,341	15.9 (9.4-25.1)			4	3,479			
BSCM	4	7,161	5.6 (1.5-14.3)			1	761			
BSAL	10	3,856	25.9 (12.4-47.7)			1	1,723			
BSM	10	5,875	17.0 (8.2-31.3)			4	4,544			
BSCtoC	10	7,232	13.8 (6.6-25.4)			6	3,723			
BSC	8	5,210	15.4 (6.6-30.3)			8	3,478			
BSSL	18	11,998	15.0 (8.9-23.7)			6	10,156			
BSHC	5	4,108	12.2 (4.0-28.4)			0	2,492			
BSA Total	83	56,781	14.6 (11.6-18.1)			30	30,356	9.9 (6.7-14.1)		
50-69 years										
BSWN	32	8,985	35.6 (24.4-50.3)	✓	ns	104	35,917	29.0 (23.7-35.1)	✓✓✓	*
BSCM	12	5,046	23.8 (12.3-41.5)	✓	ns	43	17,966	23.9 (17.3-32.2)	✓✓✓	*
BSAL	13	2,950	44.1 (23.5-75.4)	✓	ns	39	13,900	28.1 (20.0-38.4)	✓✓✓	*
BSM	12	4,100	29.3 (15.1-51.1)	✓	ns	104	36,900	28.2 (23.0-34.1)	✓✓✓	*
BSCtoC	10	4,984	20.1 (9.6-36.9)	✓	ns	68	33,456	20.3 (15.8-25.8)	✓	ns
BSC	11	3,491	31.5 (15.7-56.4)	✓	ns	76	27,184	28.0 (22.0-35.0)	✓✓✓	*
BSSL	19	4,162	45.7 (27.5-71.3)	✓	ns	147	60,527	24.3 (20.5-28.5)	✓✓✓	*
BSHC	4	2,606	15.3 (4.2-39.3)	✓	ns	42	20,842	20.2 (14.5-27.2)	✓	ns
BSA Total	113	36,324	31.1 (25.6-37.4)	✓	ns	623	246,692	25.3 (23.3-27.3)	✓✓✓	*

Poisson 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
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xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

Figure 3c.1: Proportion invasive cancers < 15 mm, initial screens, 2 years

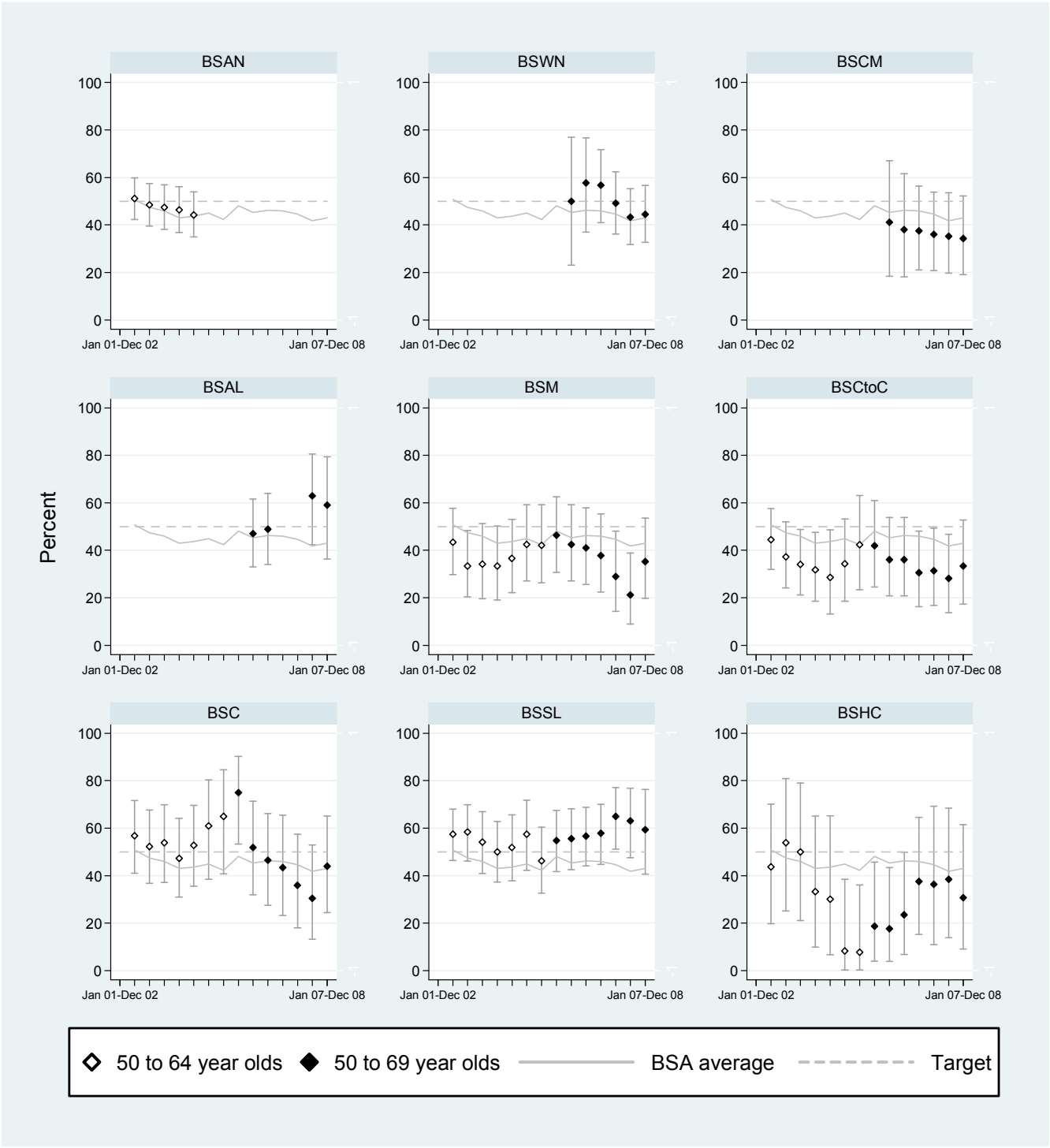


Figure 3c.1: Proportion invasive cancers < 15 mm, subsequent screens, 2 years

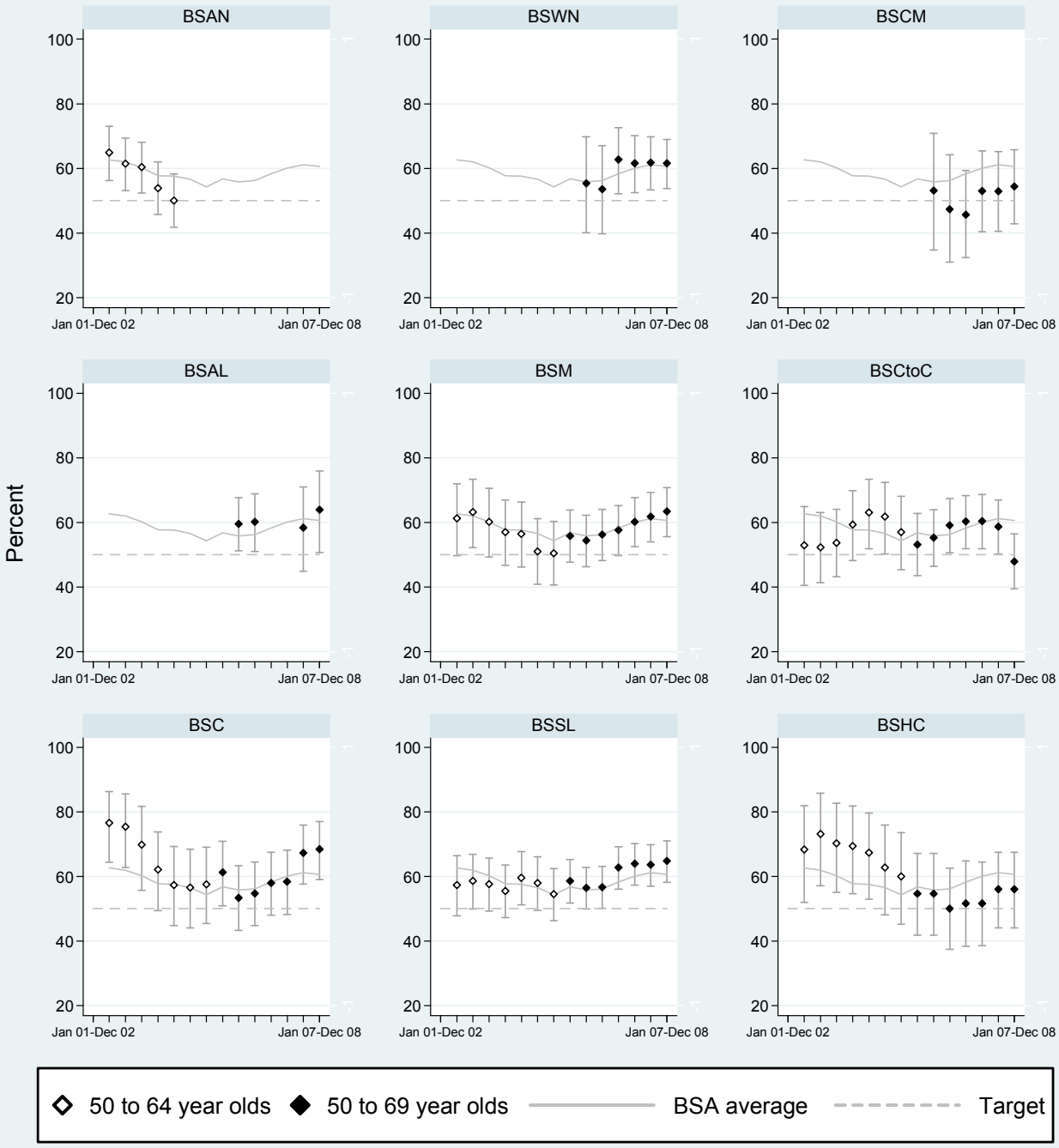


Figure 3c.2: Invasive cancers < 15 mm per 10,000 women screened, initial screens, 2 years

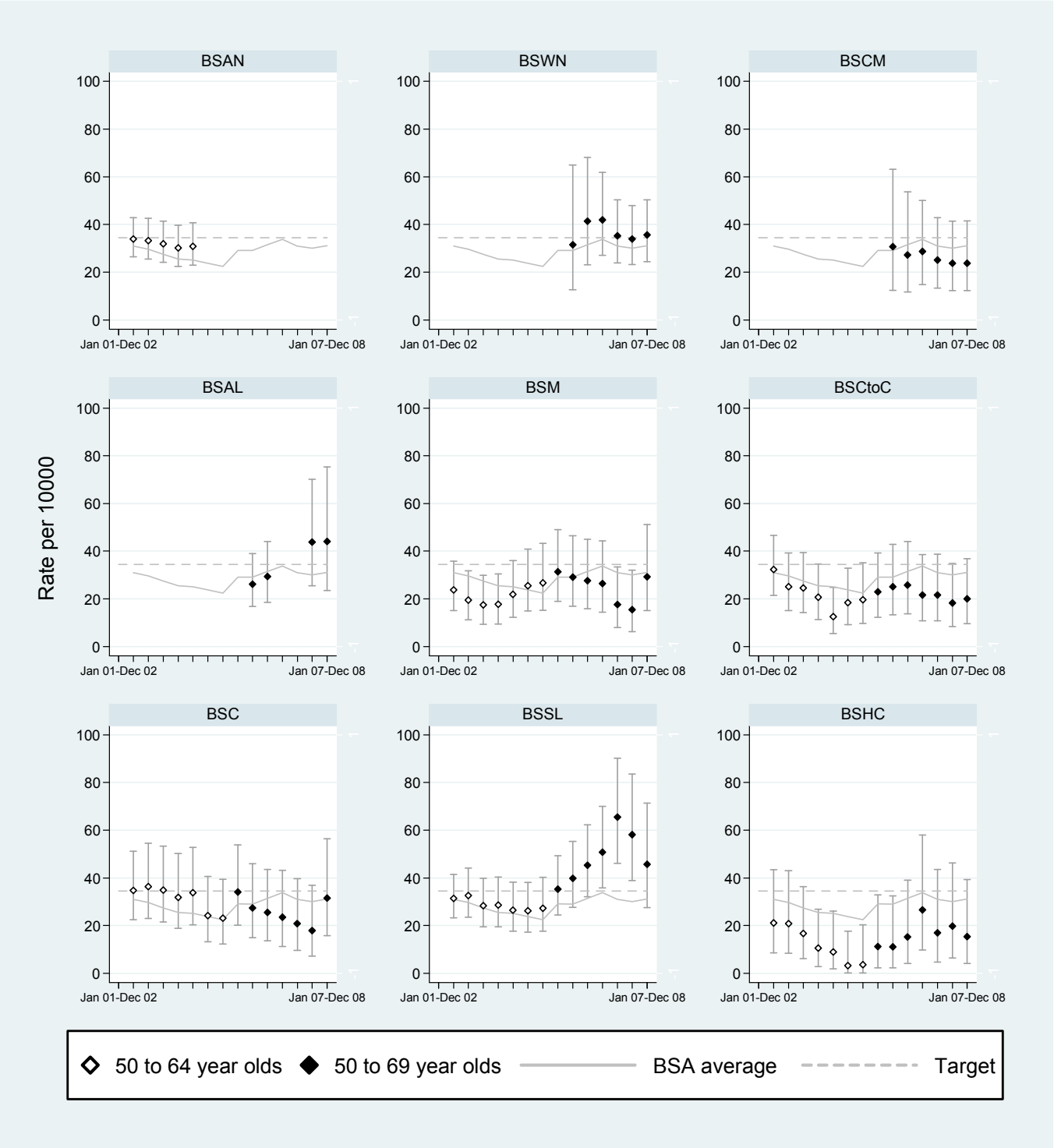
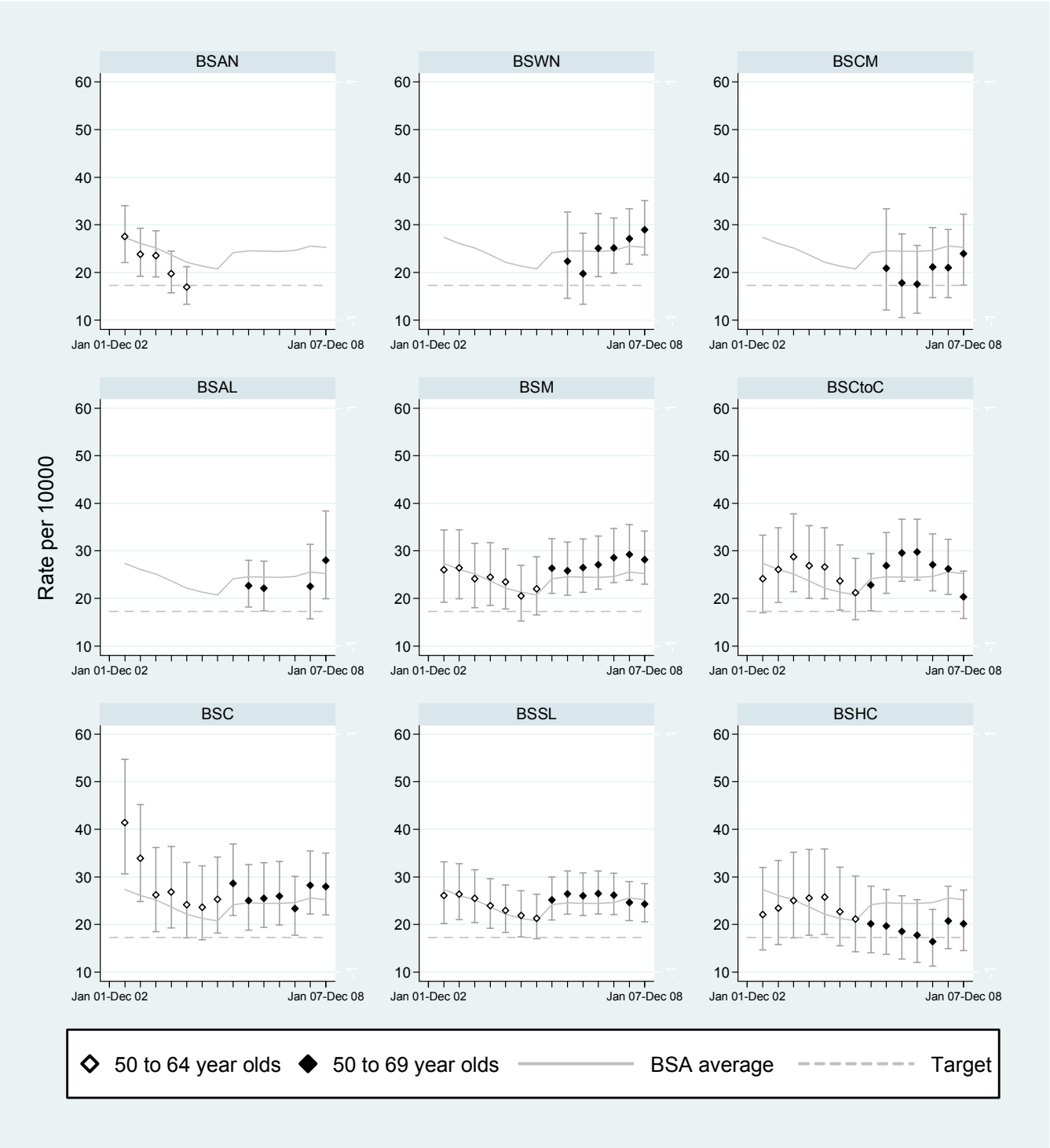


Figure 3c.2: Invasive cancers < 15 mm per 10,000 women screened, subsequent screens, 2 years



3.d. Nodal involvement

Description:

The proportion of women with invasive screen detected breast cancer who do not have nodal involvement.
Note: This is calculated as 1 minus the proportion of women with invasive screen detected breast cancer who do have nodal involvement.

Target:

Initial (Prevalent) round: >70%
Subsequent (Incident) round: >75%

3.d. Proportion of node negative invasive cancers women aged 45-69 years

Table 3d: Proportion of node negative invasive cancers women aged 45-69 years, 2 years

	Initial					Subsequent				
	Invasive cancers, node negative	Total invasive cancers	% (95%CI)			Invasive cancers, node negative	Total invasive cancers	% (95%CI)		
45-49 years										
BSWN	30	45	66.7 (51.0-80.0)			4	7			
BSCM	14	21	66.7 (43.0-85.4)			1	2			
BSAL	19	26	73.1 (52.2-88.4)			2	2			
BSM	19	29	65.5 (45.7-82.1)			5	7			
BSCtoC	12	19	63.2 (38.4-83.7)			5	10			
BSC	12	18	66.7 (41.0-86.7)			7	13			
BSSL	24	35	68.6 (50.7-83.1)			9	17			
BSHC	7	12	58.3 (27.7-84.8)			3	7			
BSA Total	137	205	66.8 (59.9-73.2)			36	65			
50-69 years										
BSWN	56	72	77.8 (66.4-86.7)	✓	ns	134	169	79.3 (72.4-85.1)	✓	ns
BSCM	25	35	71.4 (53.7-85.4)	✓	ns	67	79	84.8 (75.0-91.9)	✓	ns
BSAL	17	22	77.3 (54.6-92.2)	✓	ns	50	61	82.0 (70.0-90.6)	✓	ns
BSM	22	34	64.7 (46.5-80.3)	✓	ns	127	164	77.4 (70.3-83.6)	✓	ns
BSCtoC	21	30	70.0 (50.6-85.3)	✓	ns	98	142	69.0 (60.7-76.5)	✓	ns
BSC	21	25	84.0 (63.9-95.5)	✓	ns	88	111	79.3 (70.5-86.4)	✓	ns
BSSL	23	32	71.9 (53.3-86.3)	✓	ns	180	227	79.3 (73.4-84.4)	✓	ns
BSHC	9	13	69.2 (38.6-90.9)	✓	ns	53	75	70.7 (59.0-80.6)	✓	ns
BSA Total	194	263	73.8 (68.0-79.0)	✓	ns	797	1028	77.5 (74.9-80.0)	✓	ns

Exact Binomial 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

3.e. DCIS diagnosis

Description:

The percentage of all women with screen detected cancer, who are diagnosed as having ductal carcinoma *in situ* (DCIS) as their primary lesion.

Target:

10-25% of all cancers detected by the programme are DCIS.

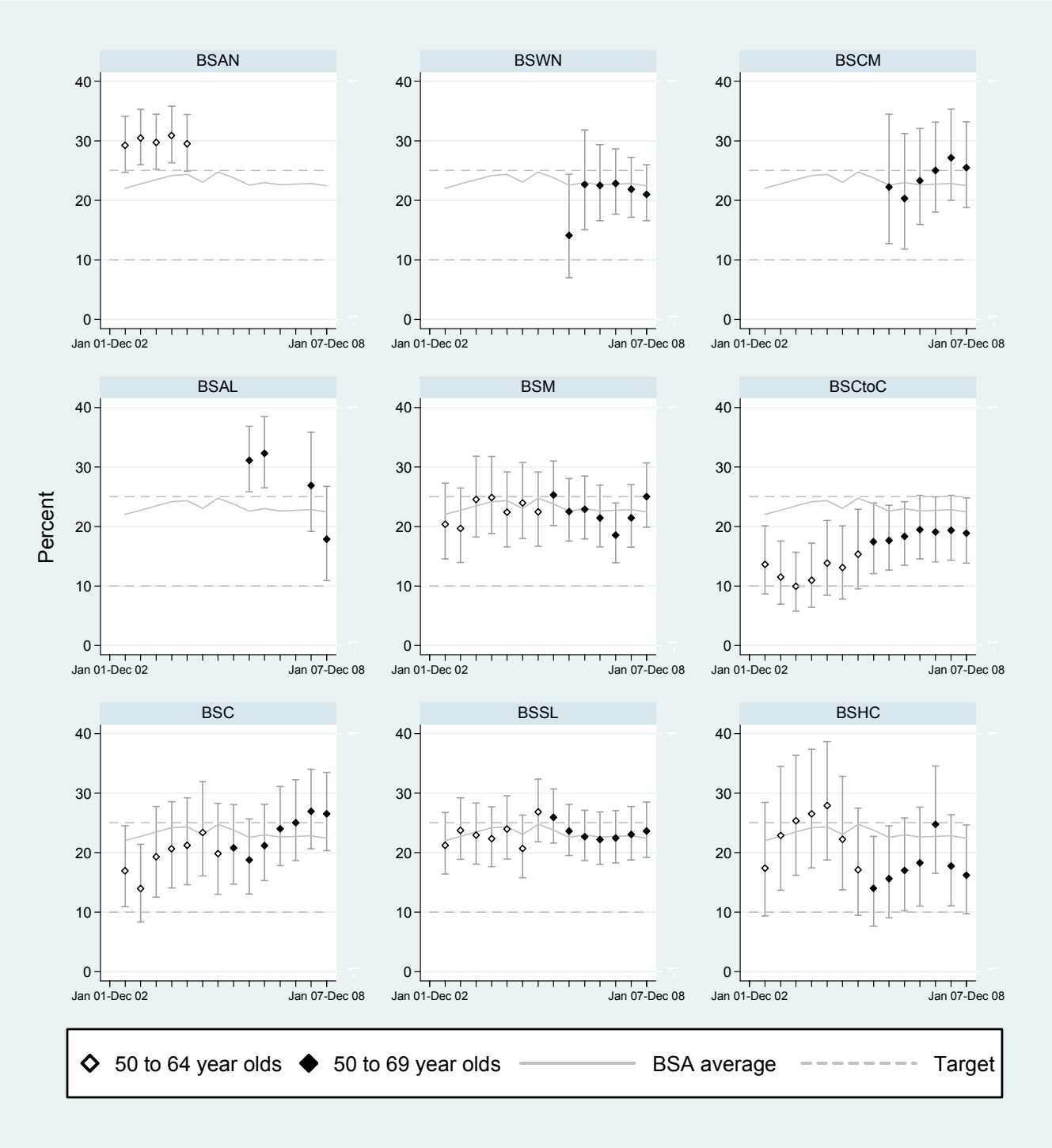
3.e. DCIS, women aged 45-69 years

Table 3e: Women with DCIS as a percentage of all screen detected cancers, 2 years

	DCIS	Total cancers	% (95%CI)
45-49 years			
BSWN	22	74	29.7 (19.7-41.5)
BSCM	10	33	30.3 (15.6-48.7)
BSAL	11	39	28.2 (15.0-44.9)
BSM	18	54	33.3 (21.1-47.5)
BSCtoC	12	41	29.3 (16.1-45.5)
BSC	5	36	13.9 (4.7-29.5)
BSSL	20	72	27.8 (17.9-39.6)
BSHC	4	23	17.4 (5.0-38.8)
BSA Total	102	372	27.4 (22.9-32.3)
50-69 years			
BSWN	64	305	21.0 (16.6-26.0)
BSCM	39	153	25.5 (18.8-33.2)
BSAL	18	101	17.8 (10.9-26.7)
BSM	66	264	25.0 (19.9-30.7)
BSCtoC	40	212	18.9 (13.8-24.8)
BSC	49	185	26.5 (20.3-33.5)
BSSL	80	339	23.6 (19.2-28.5)
BSHC	17	105	16.2 (9.7-24.7)
BSA Total	373	1,664	22.4 (20.4-24.5)

Note: Only completed treatment data is included in the Staging and Grading / Treatment section of this report. Some data may be incomplete at report date (please refer to table 3a4), or some woman diagnosed with cancer may decline treatment and therefore will not be included in staging and grading data.
Exact Binomial 95% Confidence Intervals presented

Figure 3e: Women with DCIS as a percentage of all screen detected cancers, 2 years



4. TREATMENT

4.a. Women with invasive cancer > 1 mm, having a surgical axillary procedure

Description:

Percentage of all women who are operated on for a screen detected invasive cancer, over 1 mm in size, who have a surgical axillary procedure.

Target:

95% of women operated on for invasive cancer over 1 mm in size, should normally have a surgical axillary procedure.

Table 4a: Percentage of women with invasive cancer having a surgical axillary procedure in women aged 45-69 years, 2 years

	Number having surgical axillary procedure for invasive cancers >1 mm	Number having an operation for invasive cancers >1 mm	% (95%CI)		
45-49 years					
BSWN	34	35	97.1 (85.1-99.9)		
BSCM	19	19	100.0 (82.4-100.0)		
BSAL	19	19	100.0 (82.4-100.0)		
BSM	31	31	100.0 (88.8-100.0)		
BSCtoC	23	23	100.0 (85.2-100.0)		
BSC	25	26	96.2 (80.4-99.9)		
BSSL	39	39	100.0 (91.0-100.0)		
BSHC	16	16	100.0 (79.4-100.0)		
BSA Total	206	208	99.0 (96.6-99.9)		
50-69 years					
BSWN	158	161	98.1 (94.7-99.6)	✓	ns
BSCM	81	82	98.8 (93.4-100.0)	✓	ns
BSAL	40	42	95.2 (83.8-99.4)	✓	ns
BSM	139	140	99.3 (96.1-100.0)	✓	*
BSCtoC	135	136	99.3 (96.0-100.0)	✓	*
BSC	79	82	96.3 (89.7-99.2)	✓	ns
BSSL	178	181	98.3 (95.2-99.7)	✓	*
BSHC	63	64	98.4 (91.6-100.0)	✓	ns
BSA Total	873	888	98.3 (97.2-99.1)	✓	*

Exact Binomial 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

4.b. Women with invasive cancer having a single excision

Description:

The proportion of women with invasive cancer, who have a single excision breast treatment procedure.

Target:

No target

Table 4b: Women with invasive cancer having a single excision breast treatment procedure in women aged 45-69 years, 2 years

	Number having a single excisional procedure for invasive cancer	Number of invasive cancers having surgical breast procedure	% (95%CI)
45-49 years			
BSWN	43	52	82.7 (69.7-91.8)
BSCM	21	23	91.3 (72.0-98.9)
BSAL	25	27	92.6 (75.7-99.1)
BSM	33	36	91.7 (77.5-98.2)
BSCtoC	22	29	75.9 (56.5-89.7)
BSC	23	31	74.2 (55.4-88.1)
BSSL	43	51	84.3 (71.4-93.0)
BSHC	18	19	94.7 (74.0-99.9)
BSA Total	228	268	85.1 (80.2-89.1)
50-69 years			
BSWN	217	241	90.0 (85.5-93.5)
BSCM	107	112	95.5 (89.9-98.5)
BSAL	77	83	92.8 (84.9-97.3)
BSM	160	197	81.2 (75.1-86.4)
BSCtoC	140	171	81.9 (75.3-87.3)
BSC	109	135	80.7 (73.1-87.0)
BSSL	225	259	86.9 (82.1-90.7)
BSHC	77	87	88.5 (79.9-94.3)
BSA Total	1112	1,285	86.5 (84.5-88.4)

Exact Binomial 95% Confidence Intervals presented

4.c. Proportion of women with DCIS where no axillary dissection was carried out

Description:

The proportion of women who have surgery for DCIS, and do not have immediate reconstruction, who do not have axillary dissection

Target:

> 95 %

Table 4c: Proportion of DCIS women not having axillary dissection, 2 years

	Number having surgery for DCIS who do not have an axillary dissection	Number having surgery for DCIS	% (95%CI)		
45-49 years					
BSWN	17	17			
BSCM	6	6			
BSAL	6	6			
BSM	12	12			
BSCtoC	9	9			
BSC	2	2			
BSSL	18	18			
BSHC	4	4			
BSA Total	74	74	100.0 (95.1-100.0)		
50-69 years					
BSWN	57	58	98.3 (90.8-100.0)	✓	ns
BSCM	32	32	100.0 (89.1-100.0)	✓	ns
BSAL	16	16	100.0 (79.4-100.0)	✓	ns
BSM	57	59	96.6 (88.3-99.6)	✓	ns
BSCtoC	35	35	100.0 (90.0-100.0)	✓	ns
BSC	42	42	100.0 (91.6-100.0)	✓	ns
BSSL	74	75	98.7 (92.8-100.0)	✓	ns
BSHC	14	14	100.0 (76.8-100.0)	✓	ns
BSA Total	327	331	98.8 (96.9-99.7)	✓	*

Exact Binomial 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from the target
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

Table 4c: Detailed information concerning surgery for DCIS, 2 years

	Type of axillary surgery performed					
	No Axillary Surgery	Sampling	Axillary Level 1, 2 or 3	Sentinel Node Surgery Only	Not Available / Unknown / Unsure	**Number having surgery for DCIS (less immediate reconstruction)**
45-49 years						
BSWN	8	0	0	9	0	**17**
BSCM	4	0	0	2	0	**6**
BSAL	6	0	0	0	0	**6**
BSM	11	0	0	1	0	**12**
BSCtoC	7	0	0	2	0	**9**
BSC	1	0	0	1	0	**2**
BSSL	16	0	0	2	0	**18**
BSHC	2	0	0	2	0	**4**
BSA Total	55	0	0	19	0	**74**
50-69 years						
BSWN	47	0	1	10	0	**58**
BSCM	20	0	0	12	0	**32**
BSAL	9	0	0	7	0	**16**
BSM	49	0	2	8	0	**59**
BSCtoC	27	0	0	8	0	**35**
BSC	36	0	0	6	0	**42**
BSSL	62	0	1	12	0	**75**
BSHC	9	1	0	4	0	**14**
BSA Total	259	1	4	67	0	**331**

4.e. Women with DCIS having breast conserving surgery

Description:

The proportion of women diagnosed with DCIS of pathological diameter ≤ 20 mm who have Breast Conserving Surgery (BCS).

Target:

The majority (>50%) of screen-detected DCIS ≤ 20 mm are treated by BCS

Table 4e: Proportion of women aged 45-69 years with DCIS having breast conserving surgery (BCS), 2 years

	DCIS ≤ 20 mm having BCS	Total DCIS ≤ 20 mm having operation	% (95%CI)		
45-49 years					
BSWN	10	10			
BSCM	3	5			
BSAL	3	3			
BSM	7	8			
BSCtoC	4	6			
BSC	0	0			
BSSL	8	9			
BSHC	1	2			
BSA Total	36	43	83.7 (69.3-93.2)		
50-69 years					
BSWN	31	33	93.9 (79.8-99.3)	✓✓✓	*
BSCM	11	14	78.6 (49.2-95.3)	✓	ns
BSAL	8	9	88.9 (51.8-99.7)	✓✓✓	*
BSM	32	40	80.0 (64.4-90.9)	✓✓✓	*
BSCtoC	24	31	77.4 (58.9-90.4)	✓✓✓	*
BSC	28	35	80.0 (63.1-91.6)	✓✓✓	*
BSSL	40	47	85.1 (71.7-93.8)	✓✓✓	*
BSHC	4	8	50.0 (15.7-84.3)	✓	ns
BSA Total	178	217	82.0 (76.3-86.9)	✓✓✓	*

Exact Binomial 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from the target
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

4.f. Women with invasive cancer ≤ 20 mm having breast conserving surgery

Description:

The proportion of women diagnosed with invasive cancer without a DCIS component, of pathological diameter ≤ 20 mm, who have Breast Conserving Surgery (BCS).

Target:

The majority (>50%) of screen-detected cancers ≤ 20 mm are treated by BCS

Table 4f: Proportion of women aged 45-69 years with invasive cancer having breast conserving surgery (BCS), 2 years

	Invasive cancers ≤20 mm having BCS	Total invasive cancers ≤20 mm having operation	% (95%CI)		
45-49 years					
BSWN	5	6			
BSCM	0	2			
BSAL	1	1			
BSM	3	3			
BSCtoC	5	6			
BSC	2	3			
BSSL	2	4			
BSHC	0	3			
BSA Total	18	28	64.3 (44.1-81.4)		
50-69 years					
BSWN	42	63	66.7 (53.7-78.0)	✓✓✓	*
BSCM	21	31	67.7 (48.6-83.3)	✓	ns
BSAL	25	28	89.3 (71.8-97.7)	✓✓✓	*
BSM	32	42	76.2 (60.5-87.9)	✓✓✓	*
BSCtoC	24	33	72.7 (54.5-86.7)	✓✓✓	*
BSC	25	29	86.2 (68.3-96.1)	✓✓✓	*
BSSL	38	53	71.7 (57.7-83.2)	✓✓✓	*
BSHC	11	15	73.3 (44.9-92.2)	✓	ns
BSA Total	218	294	74.1 (68.7-79.1)	✓✓✓	*

Exact Binomial 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from the target
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

4.g. Proportion of women with invasive cancer having radiotherapy

Description:

The proportion of women diagnosed with invasive cancer, who have breast conserving surgery (BCS), who go on to have Radiotherapy.

Target:

≥ 95 %

Table 4g: Proportion of women aged 45-69 years with invasive cancer having breast conserving surgery (BCS) who had radiotherapy, 2 years

	Invasive cancers having BCS who had radiotherapy	Invasive cancers having BCS	% (95%CI)		
45-49 years					
BSWN	32	33	97.0 (84.2-99.9)		
BSCM	8	10	80.0 (44.4-97.5)		
BSAL	13	15	86.7 (59.5-98.3)		
BSM	23	23	100.0 (85.2-100.0)		
BSCtoC	19	19	100.0 (82.4-100.0)		
BSC	10	12	83.3 (51.6-97.9)		
BSSL	29	30	96.7 (82.8-99.9)		
BSHC	8	8	100.0 (63.1-100.0)		
BSA Total	142	150	94.7 (89.8-97.7)		
50-69 years					
BSWN	154	161	95.7 (91.2-98.2)	✓	ns
BSCM	53	60	88.3 (77.4-95.2)	✓	ns
BSAL	62	67	92.5 (83.4-97.5)	✓	ns
BSM	120	124	96.8 (91.9-99.1)	✓	ns
BSCtoC	99	102	97.1 (91.6-99.4)	✓	ns
BSC	86	86	100.0 (95.8-100.0)	✓✓	*
BSSL	148	150	98.7 (95.3-99.8)	✓	*
BSHC	46	46	100.0 (92.3-100.0)	✓	ns
BSA Total	768	796	96.5 (95.0-97.7)	✓	ns

Exact Binomial 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from the target
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant
xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant
xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

4.h. Proportion of women with DCIS having radiotherapy

Description:

The proportion of women diagnosed solely with DCIS, who have breast conserving surgery (BCS), who go on to have Radiotherapy

Target:

No target

Table 4h: Proportion of women aged 45-69 years with DCIS having breast conserving surgery (BCS) who had radiotherapy, 2 years

	DCIS having BCS who had radiotherapy	DCIS having BCS	% (95%CI)
45-49 years			
BSWN	12	13	
BSCM	1	4	
BSAL	4	6	
BSM	10	10	
BSCtoC	1	6	
BSC	1	1	
BSSL	13	14	
BSHC	1	1	
BSA Total	43	55	78.2 (65.0-88.2)
50-69 years			
BSWN	35	48	72.9 (58.2-84.7)
BSCM	10	19	52.6 (28.9-75.6)
BSAL	5	14	35.7 (12.8-64.9)
BSM	29	43	67.4 (51.5-80.9)
BSCtoC	9	25	36.0 (18.0-57.5)
BSC	15	35	42.9 (26.3-60.6)
BSSL	36	53	67.9 (53.7-80.1)
BSHC	4	6	66.7 (22.3-95.7)
BSA Total	143	243	58.8 (52.4-65.1)

Exact binomial 95% Confidence Intervals presented

4.i. Proportion of women with invasive cancer having chemotherapy

Description:

The proportion of women diagnosed with Invasive Cancer who have Chemotherapy, reported by disease character groups

Target:

No target.

Table 4i: Proportion of women aged 45-49 years with invasive cancer who had chemotherapy by disease character groups, 2 years

	Invasive Cancers, having chemotherapy	Invasive cancers	% (95%CI)
Group 1: Node positive, ER and PR negative			
BSWN	1	2	
BSCM	0	0	
BSAL	0	0	
BSM	3	3	
BSCtoC	1	1	
BSC	1	1	
BSSL	0	0	
BSHC	0	0	
BSA Total	6	7	
Group 2: Node negative, high risk, and ER and PR negative			
BSWN	2	3	
BSCM	2	2	
BSAL	0	0	
BSM	0	0	
BSCtoC	0	0	
BSC	0	0	
BSSL	2	2	
BSHC	1	1	
BSA Total	7	8	
Group 3: Node positive, either ER or PR positive			
BSWN	13	17	76.5 (50.1-93.2)
BSCM	7	8	87.5 (47.3-99.7)
BSAL	6	8	75.0 (34.9-96.8)
BSM	5	9	55.6 (21.2-86.3)
BSCtoC	10	11	90.9 (58.7-99.8)
BSC	8	11	72.7 (39.0-94.0)
BSSL	18	19	94.7 (74.0-99.9)
BSHC	9	9	100.0 (66.4-100.0)
BSA Total	76	92	82.6 (73.3-89.7)
Group 4: Node negative, high risk, either ER or PR positive			
BSWN	3	13	23.1 (5.0-53.8)
BSCM	2	8	25.0 (3.2-65.1)
BSAL	4	12	33.3 (9.9-65.1)
BSM	5	13	38.5 (13.9-68.4)
BSCtoC	4	7	57.1 (18.4-90.1)
BSC	4	12	33.3 (9.9-65.1)
BSSL	7	19	36.8 (16.3-61.6)
BSHC	3	6	50.0 (11.8-88.2)
BSA Total	32	90	35.6 (25.7-46.3)

Exact binomial 95% Confidence Intervals presented

NB: A high risk tumour is one that has either a pathological tumour size ≥ 2cm and/or is grade 2-3 (histologic and/or nuclear grade)

Table 4i: Proportion of women aged 50-69 years with invasive cancer who had chemotherapy by disease character groups, 2 years

	Invasive Cancers, having chemotherapy	Invasive cancers	% (95%CI)
Group 1: Node positive, ER and PR negative			
BSWN	8	11	72.7 (39.0-94.0)
BSCM	5	5	100.0 (47.8-100.0)
BSAL	3	3	100.0 (29.2-100.0)
BSM	1	1	100.0 (2.5-100.0)
BSCtoC	5	5	100.0 (47.8-100.0)
BSC	4	5	80.0 (28.4-99.5)
BSSL	4	4	100.0 (39.8-100.0)
BSHC	2	2	100.0 (15.8-100.0)
BSA Total	32	36	88.9 (73.9-96.9)
Group 2: Node negative, high risk, and ER and PR negative			
BSWN	17	20	85.0 (62.1-96.8)
BSCM	6	12	50.0 (21.1-78.9)
BSAL	5	6	83.3 (35.9-99.6)
BSM	6	9	66.7 (29.9-92.5)
BSCtoC	3	8	37.5 (8.5-75.5)
BSC	4	10	40.0 (12.2-73.8)
BSSL	11	19	57.9 (33.5-79.7)
BSHC	9	12	75.0 (42.8-94.5)
BSA Total	61	96	63.5 (53.1-73.1)
Group 3: Node positive, either ER or PR positive			
BSWN	15	41	36.6 (22.1-53.1)
BSCM	8	17	47.1 (23.0-72.2)
BSAL	5	13	38.5 (13.9-68.4)
BSM	23	48	47.9 (33.3-62.8)
BSCtoC	20	48	41.7 (27.6-56.8)
BSC	12	22	54.5 (32.2-75.6)
BSSL	26	52	50.0 (35.8-64.2)
BSHC	20	24	83.3 (62.6-95.3)
BSA Total	129	265	48.7 (42.5-54.9)
Group 4: Node negative, high risk, either ER or PR positive			
BSWN	5	80	6.3 (2.1-14.0)
BSCM	5	47	10.6 (3.5-23.1)
BSAL	4	28	14.3 (4.0-32.7)
BSM	8	79	10.1 (4.5-19.0)
BSCtoC	8	78	10.3 (4.5-19.2)
BSC	3	58	5.2 (1.1-14.4)
BSSL	12	120	10.0 (5.3-16.8)
BSHC	4	27	14.8 (4.2-33.7)
BSA Total	49	517	9.5 (7.1-12.3)

Exact binomial 95% Confidence Intervals presented
NB: A high risk tumour is one that has either a pathological tumour size ≥ 2cm and/or is grade 2-3 (histologic and/or nuclear grade)

4.j. Proportion of women with invasive cancer having endocrine therapy

Description:

The proportion of women diagnosed with Invasive Cancer who have Endocrine therapy reported by disease characteristic groups

Target:

No target

Table 4j: Proportion of women aged 45-49 years diagnosed with invasive cancer who had endocrine therapy by disease character groups, 2 years

	Invasive Cancers, having endocrine therapy	Invasive cancers	% (95%CI)
Group 1: Node positive, and ER or PR positive			
BSWN	15	17	88.2 (63.6-98.5)
BSCM	8	8	100.0 (63.1-100.0)
BSAL	6	8	75.0 (34.9-96.8)
BSM	9	9	100.0 (66.4-100.0)
BSCtoC	11	11	100.0 (71.5-100.0)
BSC	10	11	90.9 (58.7-99.8)
BSSL	17	19	89.5 (66.9-98.7)
BSHC	9	9	100.0 (66.4-100.0)
BSA Total	85	92	92.4 (84.9-96.9)
Group 2: Node negative, high risk, and ER or PR positive			
BSWN	10	13	76.9 (46.2-95.0)
BSCM	6	8	75.0 (34.9-96.8)
BSAL	9	12	75.0 (42.8-94.5)
BSM	11	13	84.6 (54.6-98.1)
BSCtoC	5	7	71.4 (29.0-96.3)
BSC	12	12	100.0 (73.5-100.0)
BSSL	14	19	73.7 (48.8-90.9)
BSHC	5	6	83.3 (35.9-99.6)
BSA Total	72	90	80.0 (70.2-87.7)
Group 3: Node negative, low risk and ER or PR positive			
BSWN	12	28	42.9 (24.5-62.8)
BSCM	6	13	46.2 (19.2-74.9)
BSAL	11	18	61.1 (35.7-82.7)
BSM	21	24	87.5 (67.6-97.3)
BSCtoC	10	15	66.7 (38.4-88.2)
BSC	18	18	100.0 (81.5-100.0)
BSSL	17	30	56.7 (37.4-74.5)
BSHC	6	9	66.7 (29.9-92.5)
BSA Total	101	155	65.2 (57.1-72.6)

Exact binomial 95% Confidence Intervals presented

NB: A low risk tumour is one that has a pathological tumour size < 2cm and is grade 1 (histologic and/or nuclear grade).
A high risk tumour is one that has either a pathological tumour size ≥ 2cm and/or is grade 2-3 (histologic and/or nuclear grade)

Table 4j: Proportion of women aged 50-69 years diagnosed with invasive cancer who had endocrine therapy by disease character groups, 2 years

	Invasive Cancers, having endocrine therapy	Invasive cancers	% (95%CI)
Group 1: Node positive, and ER or PR positive			
BSWN	38	41	92.7 (80.1-98.5)
BSCM	16	17	94.1 (71.3-99.9)
BSAL	11	13	84.6 (54.6-98.1)
BSM	46	48	95.8 (85.7-99.5)
BSCtoC	47	48	97.9 (88.9-99.9)
BSC	22	22	100.0 (84.6-100.0)
BSSL	48	52	92.3 (81.5-97.9)
BSHC	24	24	100.0 (85.8-100.0)
BSA Total	252	265	95.1 (91.8-97.4)
Group 2: Node negative, high risk, and ER or PR positive			
BSWN	64	80	80.0 (69.6-88.1)
BSCM	21	47	44.7 (30.2-59.9)
BSAL	19	28	67.9 (47.6-84.1)
BSM	73	79	92.4 (84.2-97.2)
BSCtoC	50	78	64.1 (52.4-74.7)
BSC	54	58	93.1 (83.3-98.1)
BSSL	63	120	52.5 (43.2-61.7)
BSHC	15	27	55.6 (35.3-74.5)
BSA Total	359	517	69.4 (65.3-73.4)
Group 3: Node negative, low risk and ER or PR positive			
BSWN	80	167	47.9 (40.1-55.8)
BSCM	21	76	27.6 (18.0-39.1)
BSAL	21	59	35.6 (23.6-49.1)
BSM	123	136	90.4 (84.2-94.8)
BSCtoC	64	109	58.7 (48.9-68.1)
BSC	85	96	88.5 (80.4-94.1)
BSSL	77	177	43.5 (36.1-51.1)
BSHC	19	48	39.6 (25.8-54.7)
BSA Total	490	868	56.5 (53.1-59.8)

Exact binomial 95% Confidence Intervals presented

NB: A low risk tumour is one that has a pathological tumour size < 2cm and is grade 1 (histologic and/or nuclear grade).
A high risk tumour is one that has either a pathological tumour size ≥ 2cm and/or is grade 2-3 (histologic and/or nuclear grade)

5. PROVISION OF AN APPROPRIATE AND ACCEPTABLE SERVICE

5.e. First surgical treatment within 20 working days

Description:

The time from when a woman receives her final diagnostic results to the date of her first surgical treatment

Target:

90% of women should normally receive their first surgical treatment within 20 working days of receiving their final diagnostic results.

Table 5.e: First surgical treatment within 20 working days in women aged 45-69 years, 2 years

	First surgical treatment within 20 working days	Total having surgery	% (95%CI)		
45-49 years					
BSWN	55	74	74.3 (62.8-83.8)		
BSCM	7	33	21.2 (9.0-38.9)		
BSAL	25	39	64.1 (47.2-78.8)		
BSM	28	54	51.9 (37.8-65.7)		
BSCtoC	30	41	73.2 (57.1-85.8)		
BSC	24	37	64.9 (47.5-79.8)		
BSSL	50	71	70.4 (58.4-80.7)		
BSHC	17	23	73.9 (51.6-89.8)		
BSA Total	236	372	63.4 (58.3-68.3)		
50-69 years					
BSWN	202	303	66.7 (61.1-72.0)	×××	*
BSCM	42	150	28.0 (21.0-35.9)	×××	*
BSAL	70	101	69.3 (59.3-78.1)	×××	*
BSM	160	262	61.1 (54.9-67.0)	×××	*
BSCtoC	140	211	66.4 (59.5-72.7)	×××	*
BSC	113	186	60.8 (53.3-67.8)	×××	*
BSSL	232	339	68.4 (63.2-73.4)	×××	*
BSHC	71	104	68.3 (58.4-77.1)	×××	*
BSA Total	1,030	1,656	62.2 (59.8-64.5)	×××	*

.

Exact Binomial 95% Confidence Intervals presented

* Statistically different from target value, ns: not significant

✓ On target, difference of <5% better or worse than target value based on point estimate or 95% Confidence Interval not significantly different from the target

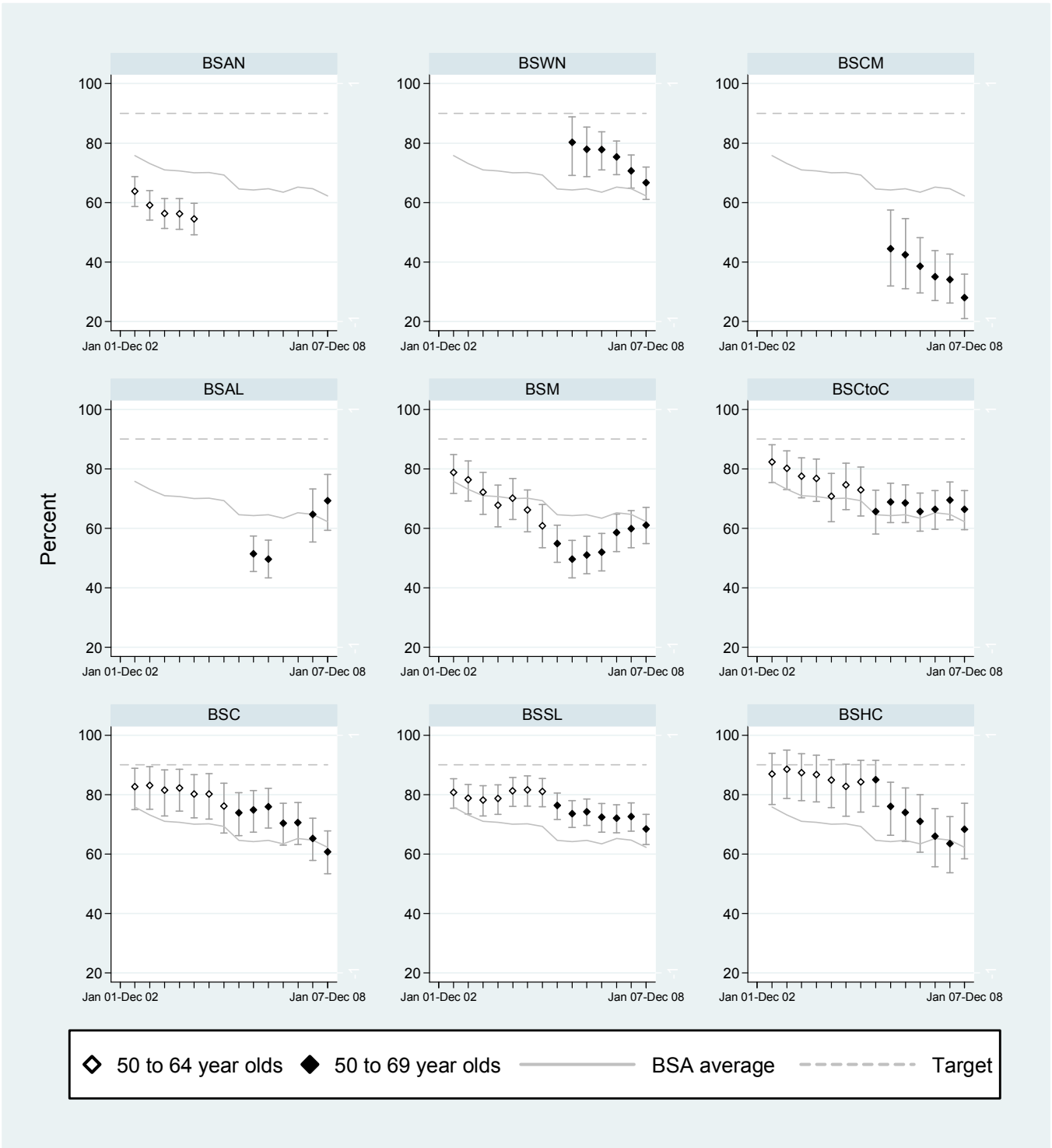
✓✓ Difference of ≥ 5-9% magnitude better than target value and statistically significant

✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant

xx Difference of ≥ 5-9% magnitude worse than target value and statistically significant

xxx Difference of ≥ 10% magnitude worse than target value and statistically significant

Figure 5e: Proportion of women receiving timely surgical treatment, 2 years



APPENDIX A: GLOSSARY OF TERMS

Assessment
Follow-up investigations if something of concern is seen on a mammogram.

Assessment rate
Number of women referred to assessment as a percentage of all women screened

Asymptomatic
Women who do not have symptoms of breast cancer

Axillary dissection
A formal dissection of the axilla that removes lymph nodes for examination in the staging of breast cancer to determine if further treatment is required.

Biopsy
A sample of a breast abnormality, or the whole abnormality, is removed and examined under a microscope by a pathologist to determine whether it is cancer

Benign biopsy weight
The weight of the open biopsy specimen presented to the pathologist

Benign biopsy rate
Number of open biopsies that turn out to be benign lesions, expressed as a proportion of women screened

BSA
BreastScreen Aotearoa

Coverage
Population-based measure of the percentage of women in the target age group (45-49, 50-69 years) who have had a screening mammogram in the programme

Initial screen
A woman's first screening mammogram at any BSA Lead Provider

False negative
A negative screening test result in a woman who does have cancer at the time the screening is conducted.

False positive result
The proportion of women who are recalled to assessment, but after assessment are found not to have cancer

High risk invasive breast cancer
Having at least one of the following features:

a. pT>2cm (pathological tumour size

and/or

b. Grade 2-3 (histologic and/or nuclear grade)

Lead Provider
A service provider who contracts with the National Screening Unit to provide services purchased as a result of the *Request for Proposal*. This term encompasses those individuals or organisations who act as a nominee, agent or subcontracted provider to a Lead Provider.

Low risk invasive breast cancer
A pathological tumour size <2cm and is grade 1 (histologic and/or nuclear grade)

Positive predictive value
The proportion of women screened positive who are ultimately diagnosed as having cancer

Pre-operative diagnosis rate
Number of women in which a needle biopsy provides the definitive diagnosis (pre-operative diagnosis), as a percentage of all women diagnosed with breast cancer in the programme

Rescreen
A screening mammogram undertaken two years after the previous screen. In this report, rescreen refers to women who returned for screening within 27 months following their previous screen.

Sensitivity
The proportion of truly diseased persons in the screened population who are identified as diseased by the screening test. Sensitivity is a measure of the probability of correctly diagnosing a case, or the probability that any given case will be identified by the test.

Specificity
The proportion of women without breast cancer at screening who have a negative screen result. This is estimated by expressing the number of women who have a negative screen result as a percentage of all women screened excluding the women screened positive with cancer.

Subsequent screen
A woman's screening mammogram at a BSA Lead Provider when she has previously attended BSA.

Technical recall rate
Number of women who have to return to a screening unit (either Fixed or Mobile) for further films to complete their screening episode, expressed as a percentage of the number screened

Technical reject rate
Number of films rejected as a percentage of the number of films taken, calculated separately for women who are screened in a fixed unit and a mobile unit

APPENDIX B: Map of BSA Lead Provider Regions