BREASTSCREEN AOTEAROA

INDEPENDENT MONITORING REPORT:

TREATMENT OF WOMEN WITH BSA DETECTED CANCERS

(WOMEN SCREENED JULY 2007- JUNE 2009)

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 Representative
To be advised	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
To be advised	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 July 2007 - June 2009 and trend data from programme inception to June 2009 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 22.2% (target range 10-25%).

Invasive cancer detection rate
The BSA biennial invasive cancer detection for women aged 50-69 years was 7.1 per 1,000 women screened for initial screens (achieving the target of ≥ 6.1 per 1,000), and 4.3 per 1,000 for subsequent screens (achieving the target of ≥ 3.45 per 1,000). This represented 1,364 invasive cancers detected by BSA for the 2-year period. The overall proportion of node negative cancers (of all invasive cancers) was 72.5% for initial screens and 77.6% 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 27.9% for initial screens and 40.1% for subsequent screens. The corresponding detection rates per 10,000 women screened for invasive cancers ≤10mm were above the target at 19.9 for initial screens (target ≥ 15.2 per 10,000 screens) and 17.2 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 41.5% for initial screens and 58.6% for subsequent screens. The corresponding detection rates per 10,000 women screened for invasive cancers <15mm were on target at 29.6 for initial screens (target >30.5 per 10,000 screens) and 25.2 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 July 2007 to June 2009). BreastScreen Aotearoa: Wellington 2010.

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 83.9%, and for invasive cancers having BCS was 76.3%, 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 97.6%, which was on target (target value of 95%).

The overall proportion of women diagnosed with invasive cancer, who had breast conserving surgery (BCS), and went on to have radiotherapy, was 96.0%, 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 60.8%. This target is not being met by any of the Lead Providers, and declines are particularly evident for BSCM, BSHC and BSC.

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 (67.0%, 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 and <15mm) in women attending for a subsequent screen, the percentage of women with node negative invasive cancers for subsequent screens and the percentage of women with DCIS having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (25.2%, target 90%), continuing a decreasing trend from previous reporting periods, and the percentage of women with invasive cancer having radiotherapy (85.3% target value, 95%).

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 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 (67.4%, 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 (58.8%, 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 having breast conserving surgery. The target was not achieved for the percentage of women receiving surgical treatment within 20 working days (66.2%, 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 (57.0%, 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 (68.2%, target 90%).

BreastScreen Health Care
BSHC was on target for most biennial indicators for women in the target age range of 50-69 years. Targets were not achieved for the percentage of invasive cancers <15mm for initial screens (15.4%, target value 50%), invasive cancer detection (<15mm) in women attending for an initial screen (7.6, target value 30.5 per 10,000 women screened), and the percentage of women receiving surgical treatment within 20 working days (64.2%, 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. Treatment Data Completeness

The BSA Advisory group is pleased to note that treatment data completeness is at a high level.

2. First Surgical Treatment

It is noted that the target for first surgical treatment within 20 days (5e) is still not being met by any of the Lead Providers. Moreover, for BSCM, BSHC and BSC the situation is deteriorating. These data are affected by inclusion of non-working days due to NZ National Statutory Holidays, which will be rectified in the next report.

There was an 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 include: women's choice (13%), reconstructive surgery (10%) and delays in MRI or further imaging (6%).

Further Lead Provider feedback concerning delays for first surgical treatment has been obtained but this information is incomplete and different categories were used by Lead Providers who did supply information on reasons for delay which precluded aggregation of data. Issues raised included: increasing use of MRI to better characterise lesions before surgery (with waiting times), extended hospital closures over the Christmas and New Year break, and personal choice, including the need for family consultation. It was suggested that these reasons may be categorised as medical avoidable, medical unavoidable and personal choice.

Further investigation of this issue could be production of data showing median and inter-quartile ranges after non-working days due to NZ National Statutory Holidays, are subtracted from the data.

3. Percentage of women with invasive cancer having radiotherapy

BSCM has not met the target for the percentage of women with invasive cancer having radiotherapy (4g) (85.3% target value, 95%). This finding requires investigation to determine the reasons for the recorded performance since all other Lead Providers are on target.

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 23 May 2011.

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 (CIs)

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%.

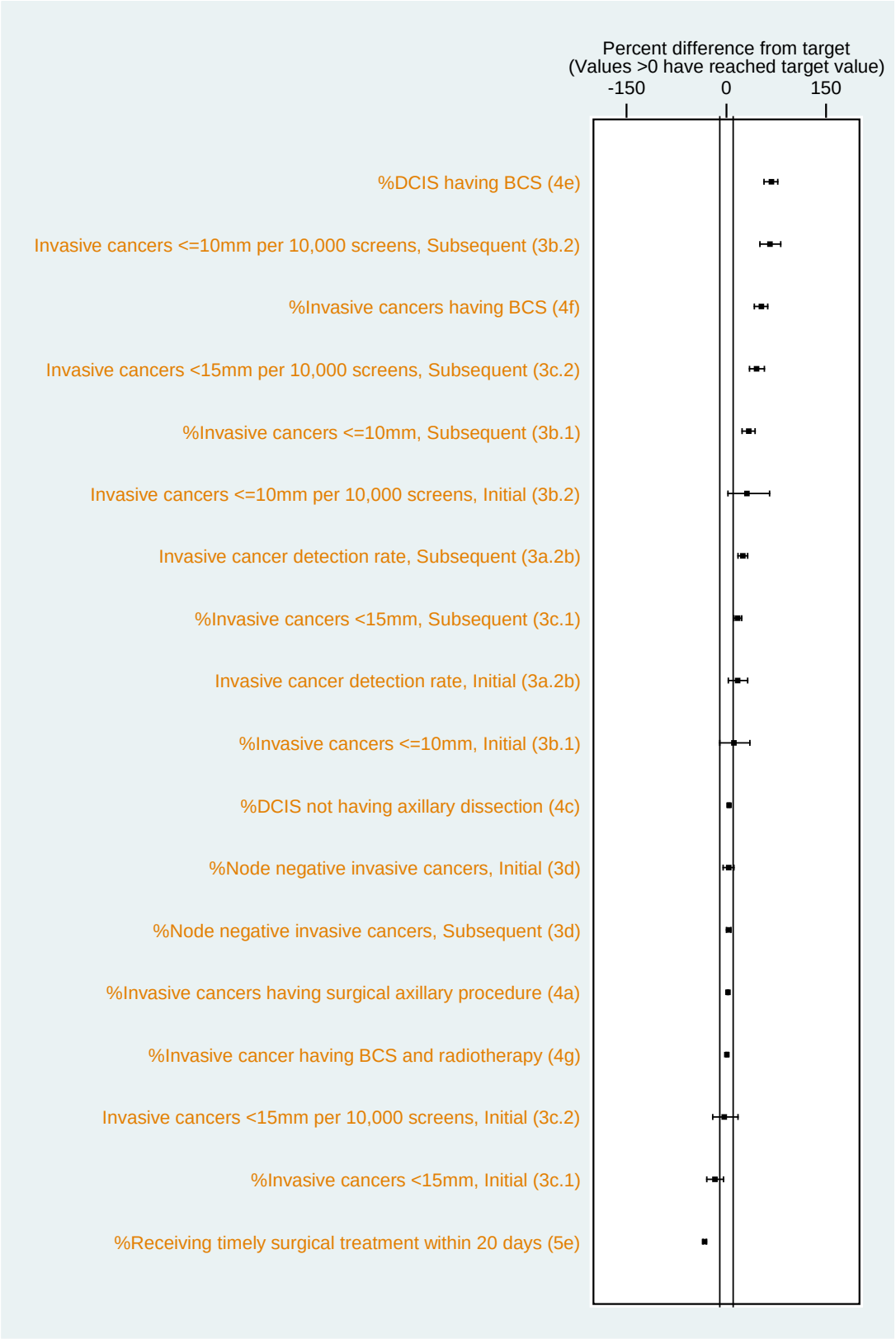
Target values relate only to biennial rates for women in the target age-group (50-69 years) for all indicators.

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.

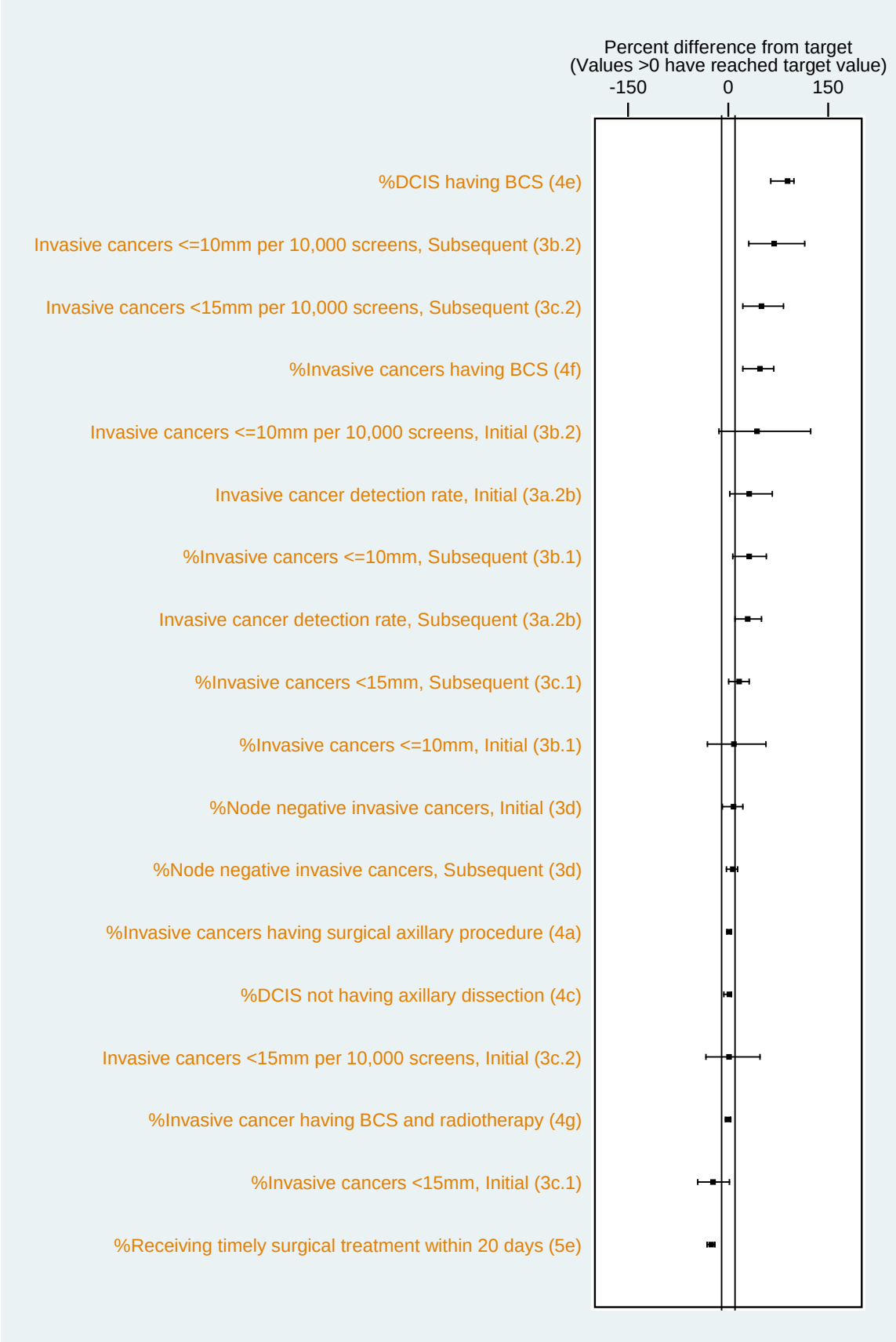
AT A GLANCE: BIENNIAL INDICATORS FOR WOMEN 50-69 YEARS

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)



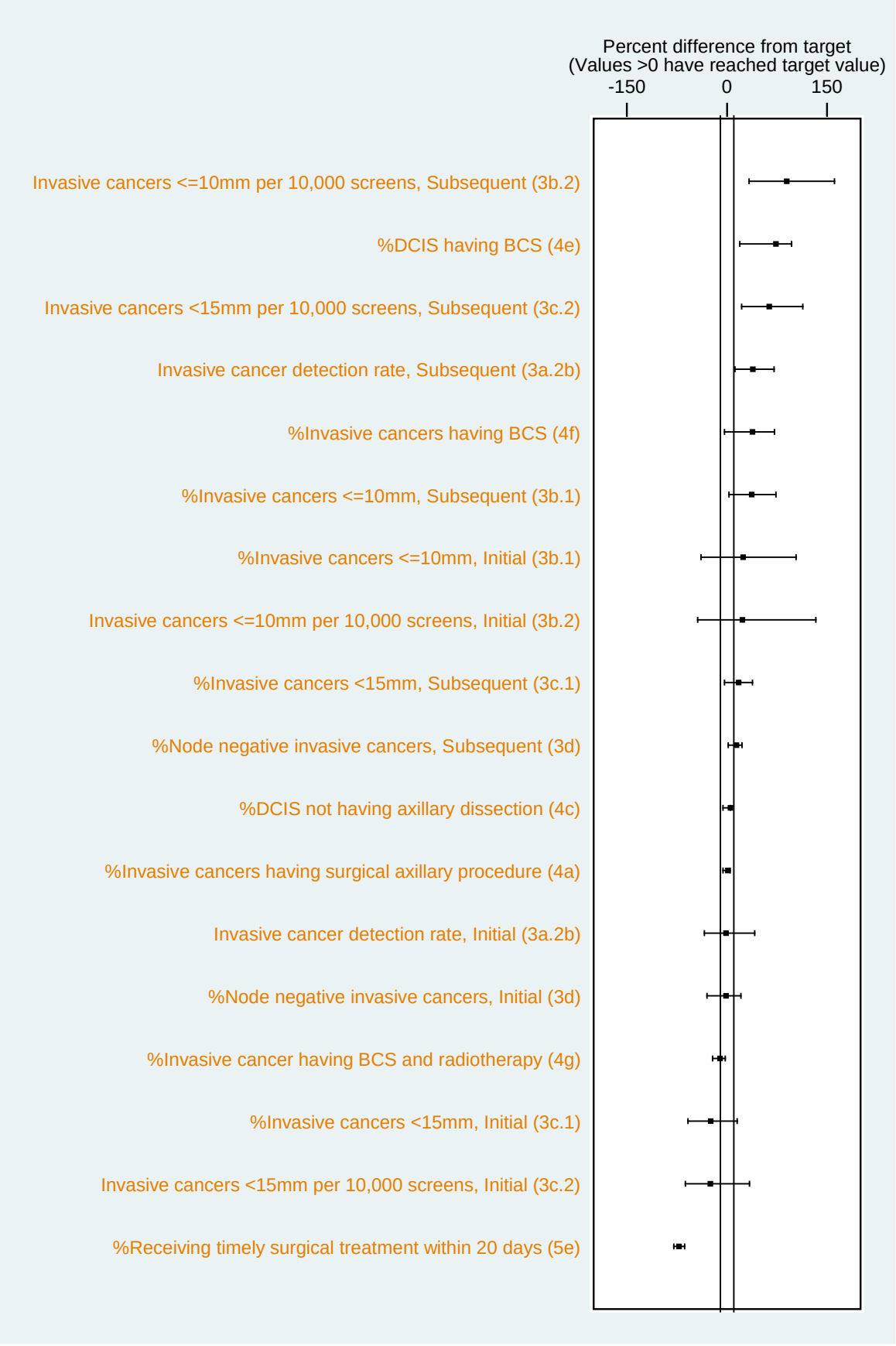
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 2: Biennial indicators women 50-69 years: '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)



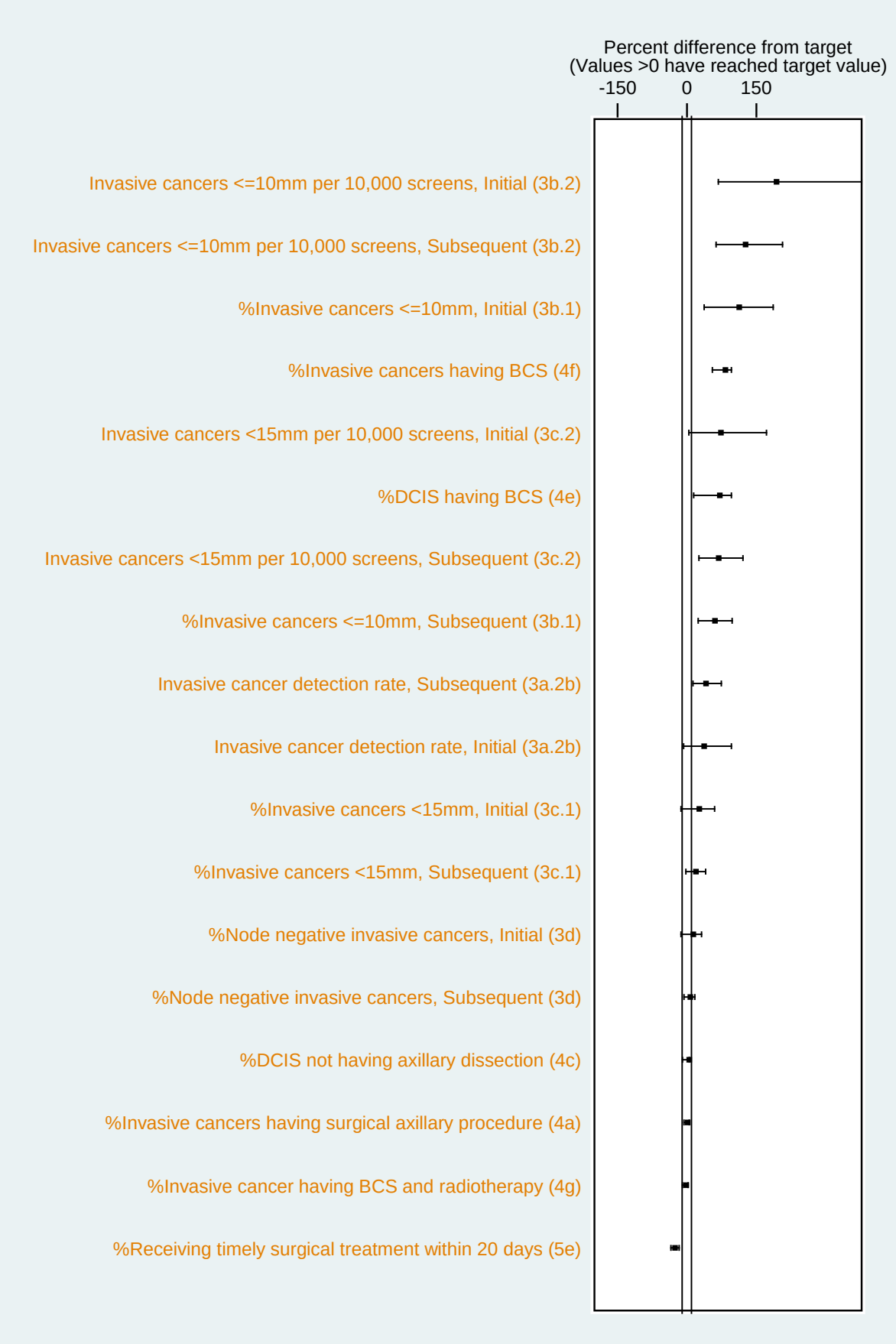
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 3: Biennial indicators women 50-69 years: '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)



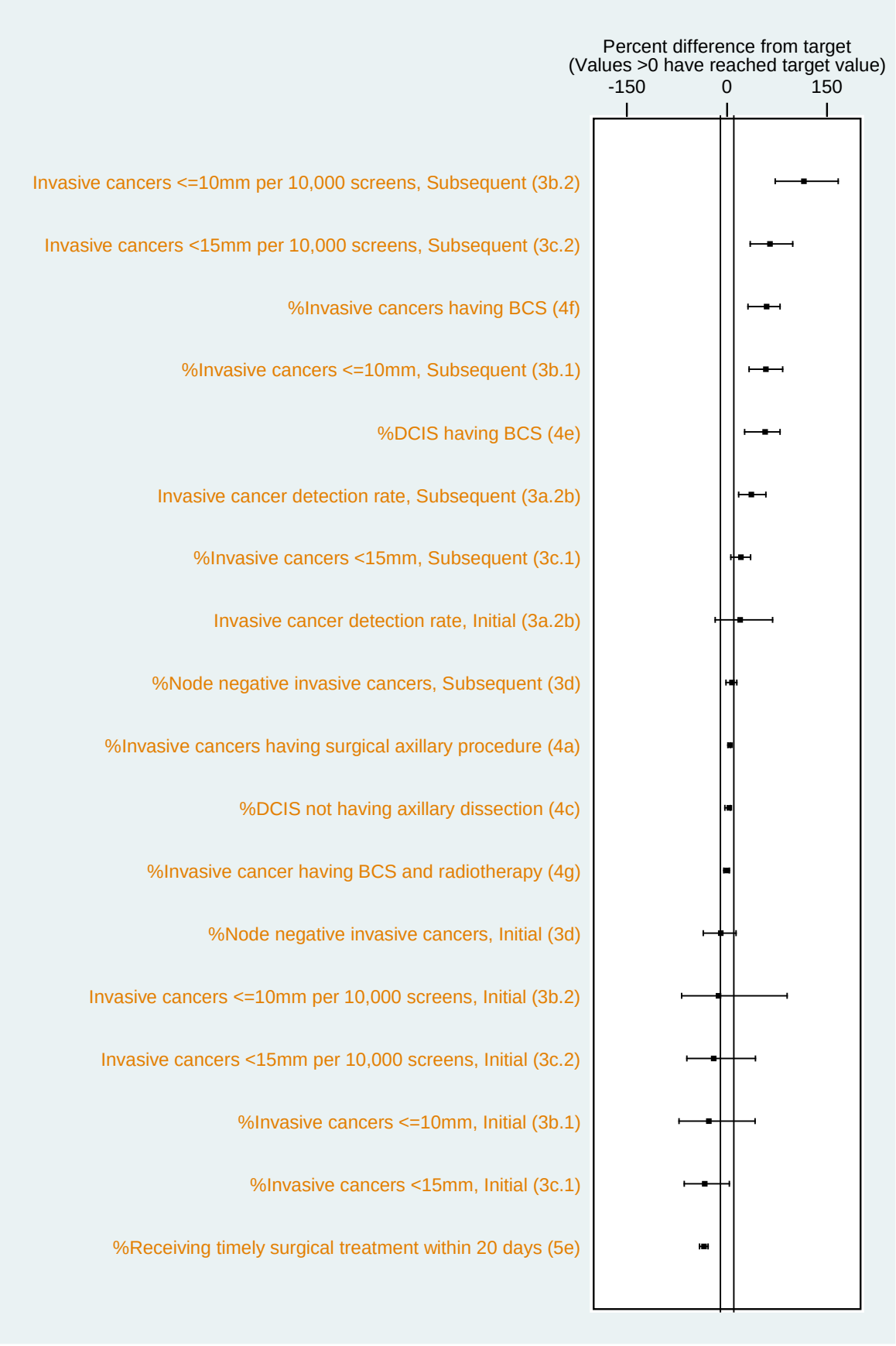
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 4: Biennial indicators women 50-69 years: '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)



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

Figure 5: Biennial indicators women 50-69 years: '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)

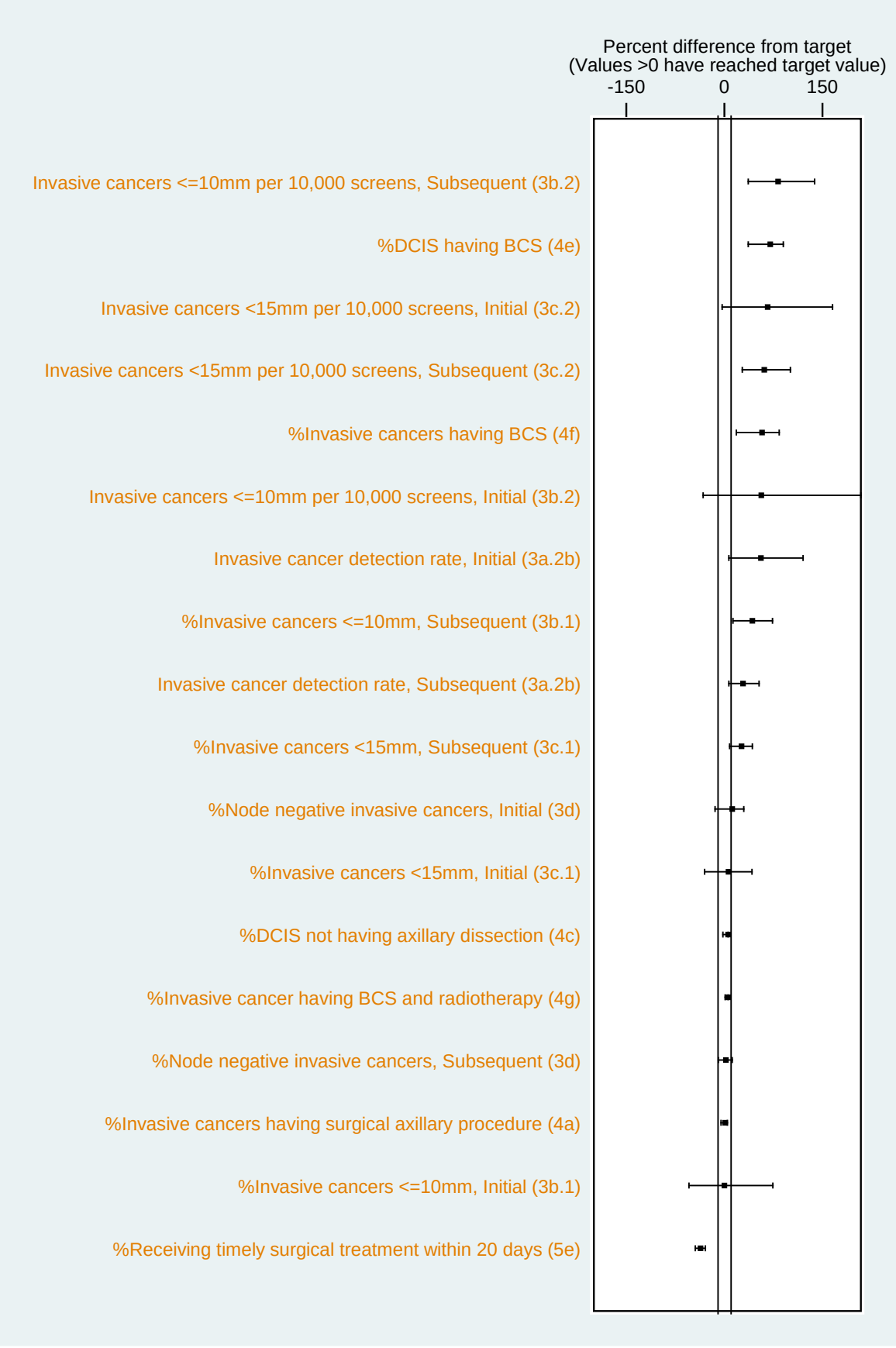


NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 6: Biennial indicators women 50-69 years: '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)

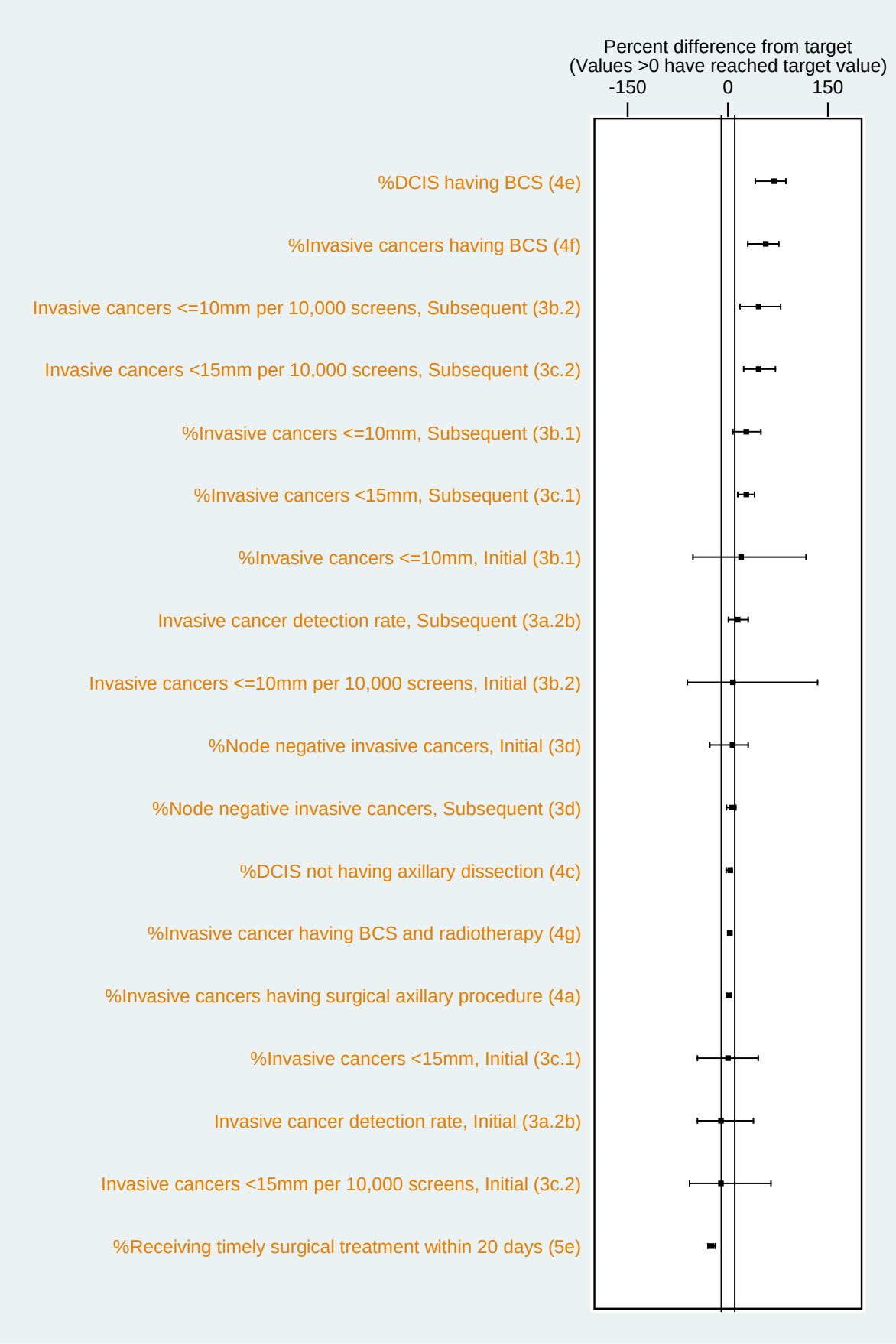
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 7: Biennial indicators women 50-69 years: '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)



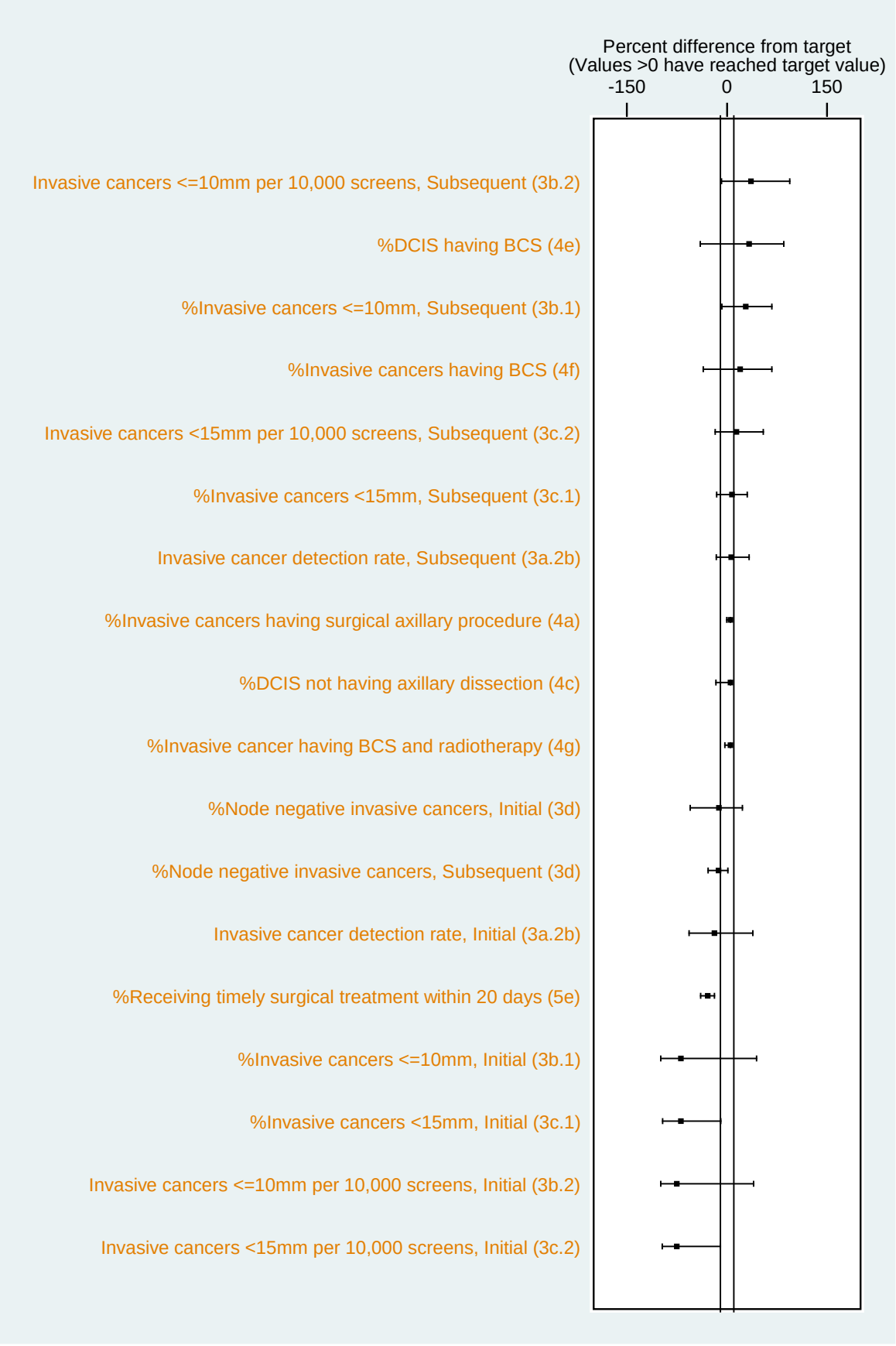
NB: The vertical line represent a ± 10% difference between the observed value and the target value.

Figure 8: Biennial indicators women 50-69 years: '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)



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

Figure 9: Biennial indicators women 50-69 years: '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)



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	77	98.7	98.7	98.7	98.7	98.7
BSCM	32	90.6	100.0	100.0	96.9	100.0
BSAL	46	100.0	100.0	100.0	100.0	100.0
BSM	64	100.0	100.0	100.0	100.0	100.0
BSCtoC	48	100.0	100.0	100.0	100.0	100.0
BSC	41	100.0	100.0	100.0	100.0	100.0
BSSL	83	97.6	100.0	100.0	100.0	100.0
BSHC	25	100.0	100.0	100.0	100.0	100.0
BSA Total	416	98.6	99.8	99.8	99.5	99.8
50-69 years						
BSWN	314	98.7	99.7	100.0	100.0	100.0
BSCM	165	94.5	98.2	94.5	94.5	97.6
BSAL	148	97.3	100.0	100.0	100.0	100.0
BSM	287	100.0	100.0	99.3	99.3	99.3
BSCtoC	205	100.0	100.0	99.5	100.0	100.0
BSC	209	100.0	100.0	100.0	100.0	100.0
BSSL	338	99.7	100.0	99.7	100.0	100.0
BSHC	109	100.0	100.0	100.0	100.0	100.0
BSA Total	1,775	99.0	99.8	99.3	99.4	99.7

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		98.3	100.0	95.2	100.0	91.9	100.0
1999 Jul-Dec	*Dec-04*			100.0	100.0	100.0	100.0	93.0	100.0
2000 Jan-Jun	*Jun-05*			99.2	97.1	100.0	100.0	98.7	100.0
2000 Jul-Dec	*Dec-05*			98.6	100.0	96.6	96.3	96.1	100.0
2001 Jan-Jun	*Jun-06*			100.0	100.0	100.0	97.8	96.8	100.0
2001 Jul-Dec	*Dec-06*			100.0	94.7	100.0	97.5	96.5	94.4
2002 Jan-Jun	*Jun-07*			96.4	97.7	96.6	96.3	96.9	95.0
2002 Jul-Dec	*Dec-07*			98.9	97.7	100.0	90.9	97.5	78.3
2003 Jan-Jun	*Jun-08*			100.0	97.5	97.0	82.1	100.0	83.3
2003 Jul-Dec	*Dec-08*			97.2	88.1	100.0	88.9	96.9	83.3
2004 Jan-Jun	*Jun-09*			98.9	65.6	91.4	78.4	94.0	92.3
2004 Jul-Dec	*Dec-09*			94.7	57.6	94.2	96.8	59.8	84.6
2005 Jan-Jun	*Jun-10*			81.6	44.3	28.9	37.0	31.5	100.0
2005 Jul-Dec	*Dec-10*			15.9	19.5	20.8	20.5	3.5	33.3

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	40	11,022	3.6 (2.6-4.9)			13	4,864	2.7 (1.4-4.6)		
BSCM	16	6,530	2.5 (1.4-4.0)			3	1,633	1.8 (0.4-5.4)		
BSAL	26	4,838	5.4 (3.5-7.9)			2	2,635	0.8 (0.1-2.7)		
BSM	30	6,397	4.7 (3.2-6.7)			11	4,883	2.3 (1.1-4.0)		
BSCtoC	24	7,266	3.3 (2.1-4.9)			10	4,571	2.2 (1.0-4.0)		
BSC	20	5,277	3.8 (2.3-5.9)			12	4,065	3.0 (1.5-5.2)		
BSSL	36	11,142	3.2 (2.3-4.5)			25	12,873	1.9 (1.3-2.9)		
BSHC	12	5,196	2.3 (1.2-4.0)			7	2,494	2.8 (1.1-5.8)		
BSA Total	204	57,668	3.5 (3.1-4.1)			83	38,018	2.2 (1.7-2.7)		
50-69 years										
BSWN	70	8,722	8.0 (6.3-10.1)	✓✓✓	*	170	38,168	4.5 (3.8-5.2)	✓✓✓	*
BSCM	29	4,820	6.0 (4.0-8.6)	✓	ns	90	18,787	4.8 (3.9-5.9)	✓✓✓	*
BSAL	30	3,581	8.4 (5.7-12.0)	✓	ns	87	17,805	4.9 (3.9-6.0)	✓✓✓	*
BSM	33	4,518	7.3 (5.0-10.3)	✓	ns	179	37,949	4.7 (4.1-5.5)	✓✓✓	*
BSCtoC	31	4,855	6.4 (4.3-9.1)	✓	ns	138	34,865	4.0 (3.3-4.7)	✓	ns
BSC	32	3,363	9.5 (6.5-13.4)	✓✓✓	*	124	28,021	4.4 (3.7-5.3)	✓✓✓	*
BSSL	20	3,670	5.4 (3.3-8.4)	✓	ns	240	60,548	4.0 (3.5-4.5)	✓✓✓	*
BSHC	13	2,624	5.0 (2.6-8.5)	✓	ns	78	21,224	3.7 (2.9-4.6)	✓	ns
BSA Total	258	36,153	7.1 (6.3-8.1)	✓✓✓	*	1,106	257,367	4.3 (4.0-4.6)	✓✓✓	*

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	10	40	25.0 (12.7-41.2)			4	13			
BSCM	2	16	12.5 (1.6-38.3)			2	3			
BSAL	6	26	23.1 (9.0-43.6)			1	2			
BSM	8	30	26.7 (12.3-45.9)			2	11			
BSCtoC	8	24	33.3 (15.6-55.3)			2	10			
BSC	4	20	20.0 (5.7-43.7)			6	12			
BSSL	11	36	30.6 (16.3-48.1)			4	25			
BSHC	3	12	25.0 (5.5-57.2)			0	7			
BSA Total	52	204	25.5 (19.7-32.0)			21	83			
50-69 years										
BSWN	19	70	27.1 (17.2-39.1)	✓	ns	67	170	39.4 (32.0-47.2)	✓✓✓	*
BSCM	9	29	31.0 (15.3-50.8)	✓	ns	37	90	41.1 (30.8-52.0)	✓✓✓	*
BSAL	16	30	53.3 (34.3-71.7)	✓✓✓	*	42	87	48.3 (37.4-59.2)	✓✓✓	*
BSM	6	33	18.2 (7.0-35.5)	✓	ns	85	179	47.5 (40.0-55.1)	✓✓✓	*
BSCtoC	7	31	22.6 (9.6-41.1)	✓	ns	37	138	26.8 (19.6-35.0)	✓	ns
BSC	8	32	25.0 (11.5-43.4)	✓	ns	53	124	42.7 (33.9-51.9)	✓✓✓	*
BSSL	6	20	30.0 (11.9-54.3)	✓	ns	92	240	38.3 (32.2-44.8)	✓✓✓	*
BSHC	1	13	7.7 (0.2-36.0)	✓	ns	30	78	38.5 (27.7-50.2)	✓	ns
BSA Total	72	258	27.9 (22.5-33.8)	✓	ns	443	1106	40.1 (37.2-43.0)	✓✓✓	*

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	10	11,022	9.1 (4.4-16.7)			4	4,864			
BSCM	2	6,530	3.1 (0.4-11.1)			2	1,633			
BSAL	6	4,838	12.4 (4.6-27.0)			1	2,635			
BSM	8	6,397	12.5 (5.4-24.6)			2	4,883			
BSCtoC	8	7,266	11.0 (4.8-21.7)			2	4,571			
BSC	4	5,277	7.6 (2.1-19.4)			6	4,065			
BSSL	11	11,142	9.9 (4.9-17.7)			4	12,873			
BSHC	3	5,196	5.8 (1.2-16.9)			0	2,494			
BSA Total	52	57,668	9.0 (6.7-11.8)			21	38,018			
50-69 years										
BSWN	19	8,722	21.8 (13.1-34.0)	✓	ns	67	38,168	17.6 (13.6-22.3)	✓✓✓	*
BSCM	9	4,820	18.7 (8.5-35.4)	✓	ns	37	18,787	19.7 (13.9-27.1)	✓✓✓	*
BSAL	16	3,581	44.7 (25.5-72.6)	✓✓✓	*	42	17,805	23.6 (17.0-31.9)	✓✓✓	*
BSM	6	4,518	13.3 (4.9-28.9)	✓	ns	85	37,949	22.4 (17.9-27.7)	✓✓✓	*
BSCtoC	7	4,855	14.4 (5.8-29.7)	✓	ns	37	34,865	10.6 (7.5-14.6)	✓	ns
BSC	8	3,363	23.8 (10.3-46.9)	✓	ns	53	28,021	18.9 (14.2-24.7)	✓✓✓	*
BSSL	6	3,670	16.3 (6.0-35.6)	✓	ns	92	60,548	15.2 (12.2-18.6)	✓✓✓	*
BSHC	1	2,624	3.8 (0.1-21.2)	✓	ns	30	21,224	14.1 (9.5-20.2)	✓	ns
BSA Total	72	36,153	19.9 (15.6-25.1)	✓✓✓	*	443	257,367	17.2 (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	17	40	42.5 (27.0-59.1)			8	13			
BSCM	3	16	18.8 (4.0-45.6)			3	3			
BSAL	10	26	38.5 (20.2-59.4)			1	2			
BSM	13	30	43.3 (25.5-62.6)			3	11			
BSCtoC	10	24	41.7 (22.1-63.4)			6	10			
BSC	8	20	40.0 (19.1-63.9)			7	12			
BSSL	16	36	44.4 (27.9-61.9)			8	25			
BSHC	5	12	41.7 (15.2-72.3)			0	7			
BSA Total	82	204	40.2 (33.4-47.3)			36	83			
50-69 years										
BSWN	27	70	38.6 (27.2-51.0)	✓	ns	99	170	58.2 (50.4-65.7)	✓✓✓	*
BSCM	11	29	37.9 (20.7-57.7)	✓	ns	53	90	58.9 (48.0-69.2)	✓	ns
BSAL	19	30	63.3 (43.9-80.1)	✓	ns	52	87	59.8 (48.7-70.1)	✓	ns
BSM	11	33	33.3 (18.0-51.8)	✓	ns	108	179	60.3 (52.8-67.6)	✓✓✓	*
BSCtoC	10	31	32.3 (16.7-51.4)	✓	ns	63	138	45.7 (37.2-54.3)	✓	ns
BSC	17	32	53.1 (34.7-70.9)	✓	ns	78	124	62.9 (53.8-71.4)	✓✓✓	*
BSSL	10	20	50.0 (27.2-72.8)	✓	ns	153	240	63.7 (57.3-69.8)	✓✓✓	*
BSHC	2	13	15.4 (1.9-45.4)	xxx	*	42	78	53.8 (42.2-65.2)	✓	ns
BSA Total	107	258	41.5 (35.4-47.7)	xxx	*	648	1106	58.6 (55.6-61.5)	✓✓✓	*

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 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	17	11,022	15.4 (9.0-24.7)			8	4,864			
BSCM	3	6,530	4.6 (0.9-13.4)			3	1,633			
BSAL	10	4,838	20.7 (9.9-38.0)			1	2,635			
BSM	13	6,397	20.3 (10.8-34.8)			3	4,883			
BSCtoC	10	7,266	13.8 (6.6-25.3)			6	4,571			
BSC	8	5,277	15.2 (6.5-29.9)			7	4,065			
BSSL	16	11,142	14.4 (8.2-23.3)			8	12,873			
BSHC	5	5,196	9.6 (3.1-22.5)			0	2,494			
BSA Total	82	57,668	14.2 (11.3-17.6)			36	38,018	9.5 (6.6-13.1)		
50-69 years										
BSWN	27	8,722	31.0 (20.4-45.0)	✓	ns	99	38,168	25.9 (21.1-31.6)	✓✓✓	*
BSCM	11	4,820	22.8 (11.4-40.8)	✓	ns	53	18,787	28.2 (21.1-36.9)	✓✓✓	*
BSAL	19	3,581	53.1 (31.9-82.9)	✓✓✓	*	52	17,805	29.2 (21.8-38.3)	✓✓✓	*
BSM	11	4,518	24.3 (12.2-43.6)	✓	ns	108	37,949	28.5 (23.3-34.4)	✓✓✓	*
BSCtoC	10	4,855	20.6 (9.9-37.9)	✓	ns	63	34,865	18.1 (13.9-23.1)	✓	ns
BSC	17	3,363	50.6 (29.4-80.9)	✓	ns	78	28,021	27.8 (22.0-34.7)	✓✓✓	*
BSSL	10	3,670	27.2 (13.1-50.1)	✓	ns	153	60,548	25.3 (21.4-29.6)	✓✓✓	*
BSHC	2	2,624	7.6 (0.9-27.5)	×××	*	42	21,224	19.8 (14.3-26.7)	✓	ns
BSA Total	107	36,153	29.6 (24.3-35.8)	✓	ns	648	257,367	25.2 (23.3-27.2)	✓✓✓	*

Poisson 95% Confidence Intervals presented
* Statistically different from target value, ns: not significant
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✓✓✓ 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 3c.1: Proportion invasive cancers < 15 mm, initial screens, 2 years

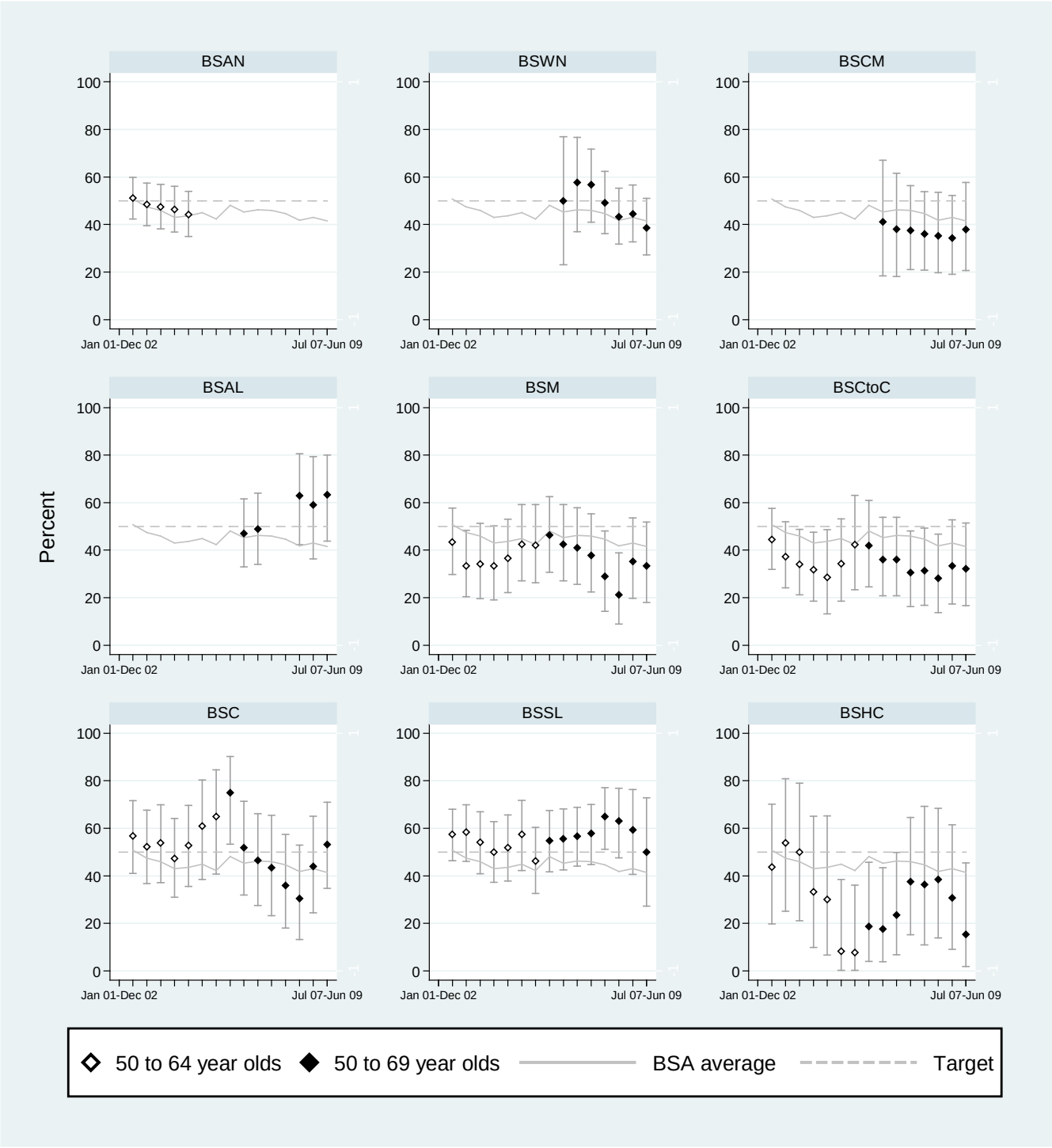


Figure 3c.1: Proportion invasive cancers < 15 mm, subsequent screens, 2 years

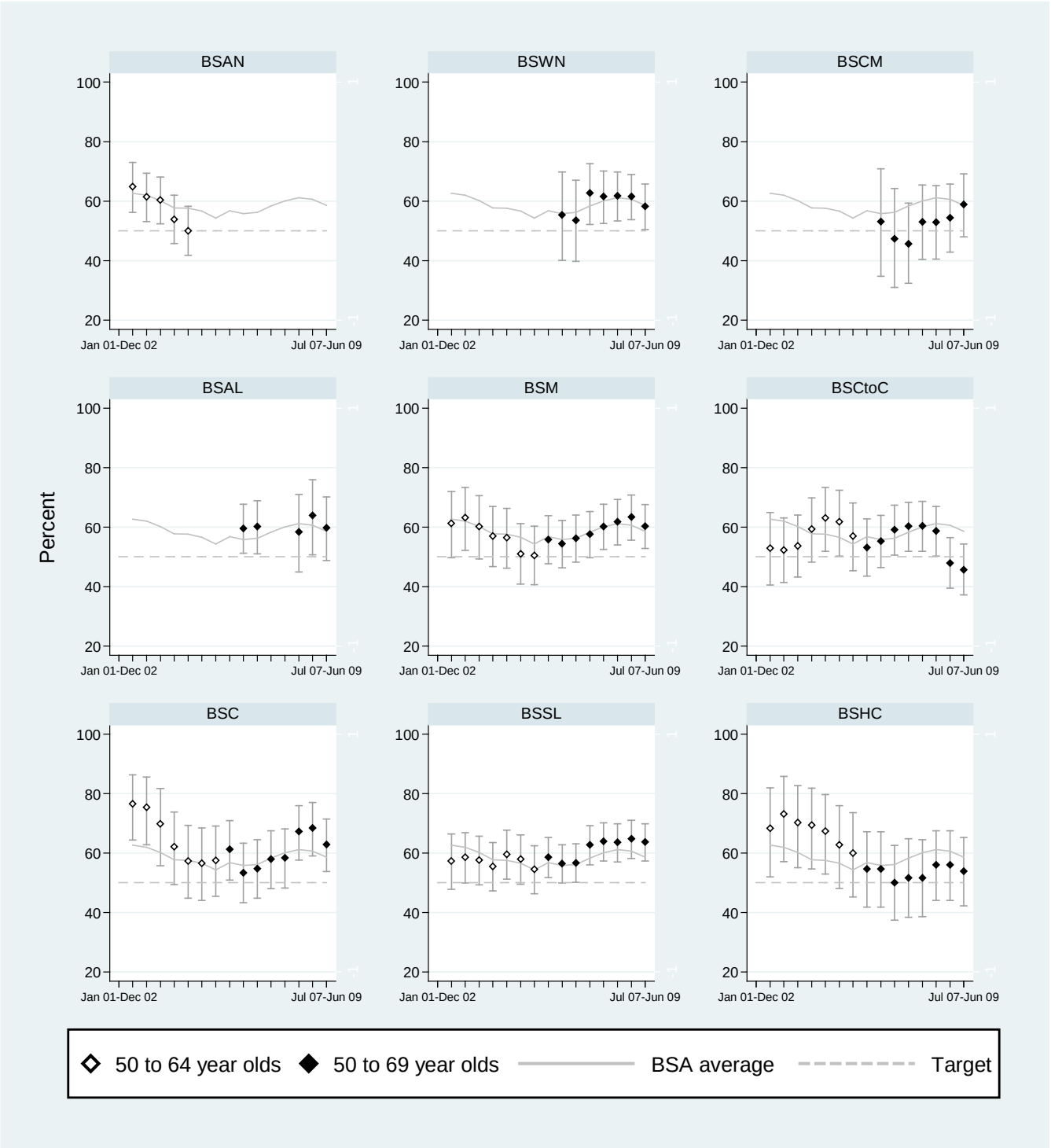


Figure 3c.2: Invasive cancers < 15 mm per 10,000 women screened, initial screens, 2 years

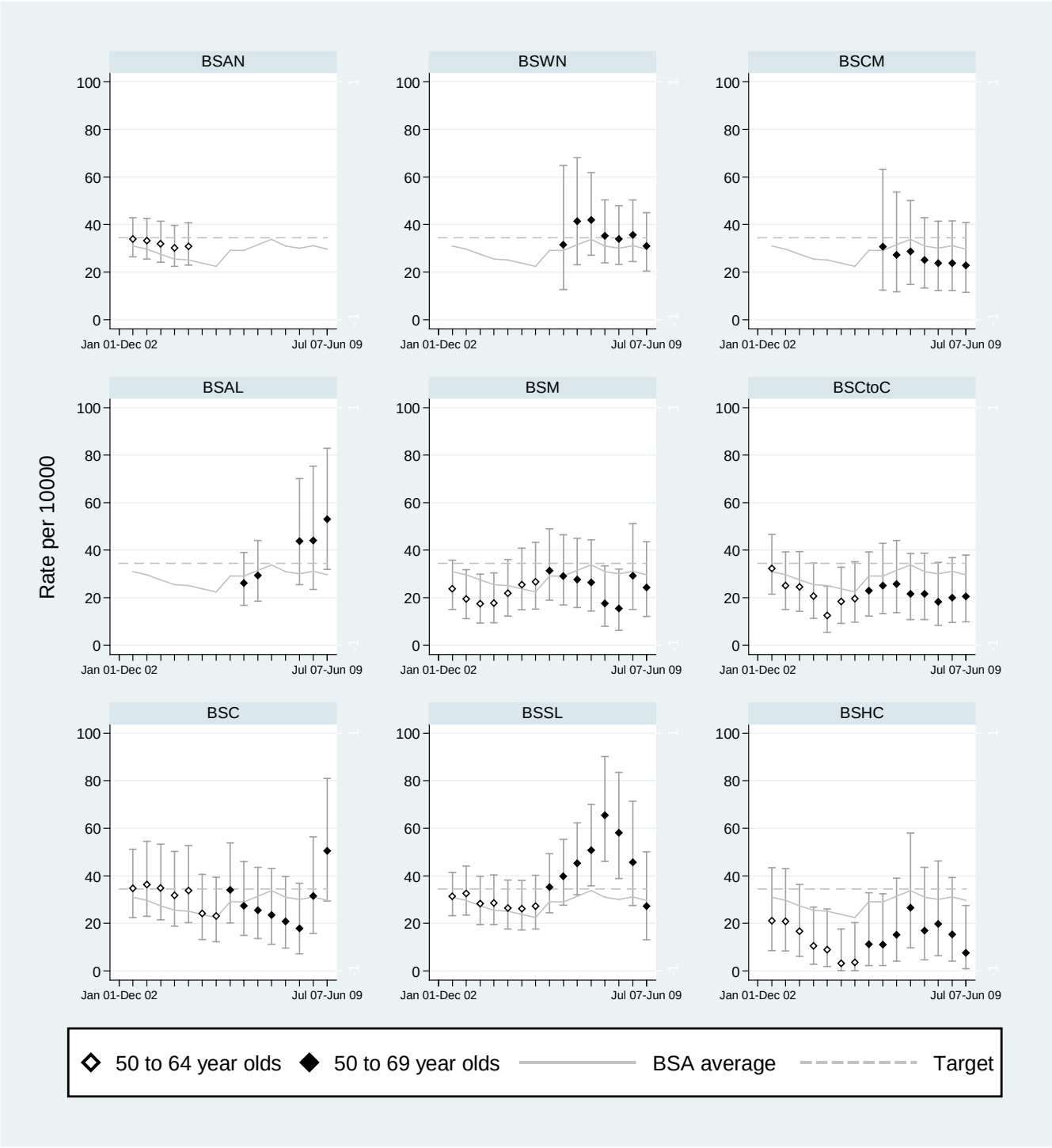
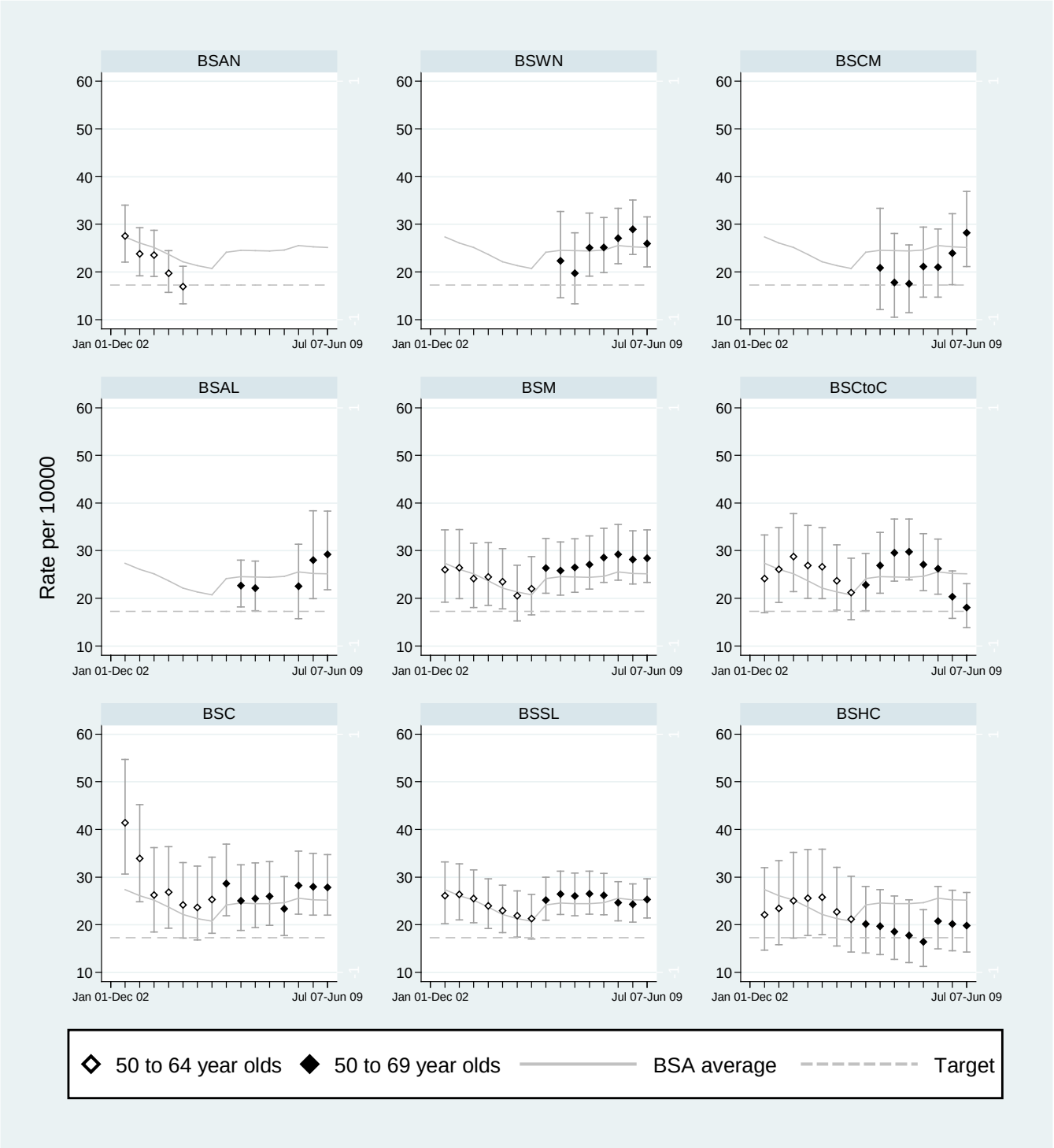


Figure 3c.2: Invasive cancers < 15 mm per 10,000 women screened, subsequent screens, 2 years



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	29	40	72.5 (56.1-85.4)			9	13			
BSCM	11	16	68.8 (41.3-89.0)			2	3			
BSAL	19	26	73.1 (52.2-88.4)			2	2			
BSM	22	30	73.3 (54.1-87.7)			7	11			
BSCtoC	15	24	62.5 (40.6-81.2)			6	10			
BSC	13	20	65.0 (40.8-84.6)			8	12			
BSSL	22	36	61.1 (43.5-76.9)			15	25			
BSHC	7	12	58.3 (27.7-84.8)			4	7			
BSA Total	138	204	67.6 (60.8-74.0)			53	83			
50-69 years										
BSWN	53	70	75.7 (64.0-85.2)	✓	ns	136	170	80.0 (73.2-85.7)	✓	ns
BSCM	20	29	69.0 (49.2-84.7)	✓	ns	77	90	85.6 (76.6-92.1)	✓✓✓	*
BSAL	24	30	80.0 (61.4-92.3)	✓	ns	70	87	80.5 (70.6-88.2)	✓	ns
BSM	21	33	63.6 (45.1-79.6)	✓	ns	144	179	80.4 (73.9-86.0)	✓	ns
BSCtoC	21	31	67.7 (48.6-83.3)	✓	ns	95	138	68.8 (60.4-76.4)	✓	ns
BSC	25	32	78.1 (60.0-90.7)	✓	ns	95	124	76.6 (68.2-83.7)	✓	ns
BSSL	15	20	75.0 (50.9-91.3)	✓	ns	190	240	79.2 (73.5-84.1)	✓	ns
BSHC	8	13	61.5 (31.6-86.1)	✓	ns	51	78	65.4 (53.8-75.8)	✓	ns
BSA Total	187	258	72.5 (66.6-77.8)	✓	ns	858	1106	77.6 (75.0-80.0)	✓	*

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.

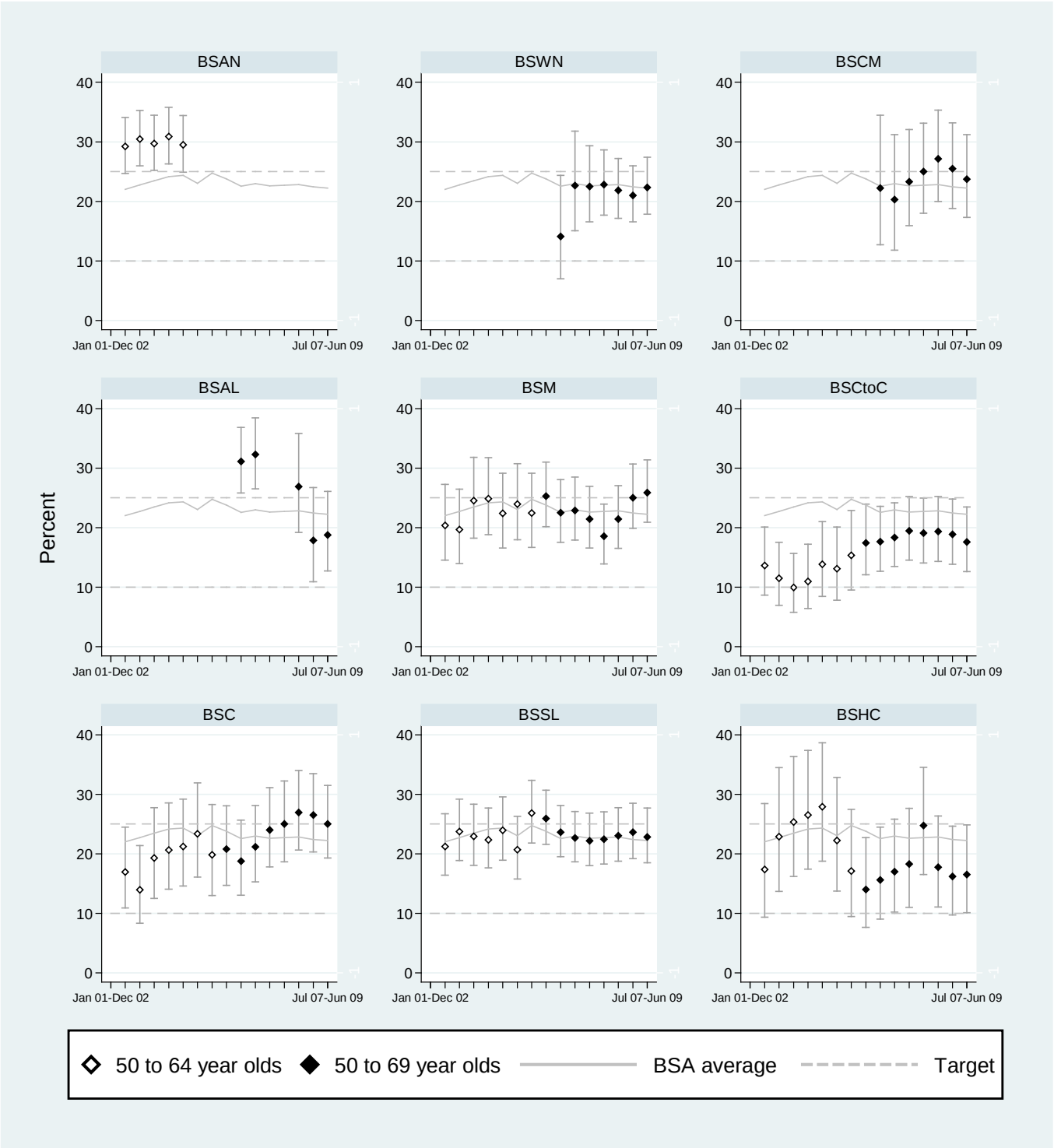
3.e. DCIS, women aged 45-69 years

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

	DCIS	Total cancers	% (95%CI)
45-49 years			
BSWN	23	76	30.3 (20.2-41.9)
BSCM	10	29	34.5 (17.9-54.3)
BSAL	17	45	37.8 (23.8-53.5)
BSM	23	64	35.9 (24.3-48.9)
BSCtoC	13	47	27.7 (15.6-42.6)
BSC	8	40	20.0 (9.1-35.6)
BSSL	20	81	24.7 (15.8-35.5)
BSHC	6	25	24.0 (9.4-45.1)
BSA Total	120	407	29.5 (25.1-34.2)
50-69 years			
BSWN	69	309	22.3 (17.8-27.4)
BSCM	37	156	23.7 (17.3-31.2)
BSAL	27	144	18.8 (12.7-26.1)
BSM	74	286	25.9 (20.9-31.4)
BSCtoC	36	205	17.6 (12.6-23.5)
BSC	52	208	25.0 (19.3-31.5)
BSSL	77	337	22.8 (18.5-27.7)
BSHC	18	109	16.5 (10.1-24.8)
BSA Total	390	1,754	22.2 (20.3-24.3)

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	36	38	94.7 (82.3-99.4)		
BSCM	16	16	100.0 (79.4-100.0)		
BSAL	19	19	100.0 (82.4-100.0)		
BSM	32	32	100.0 (89.1-100.0)		
BSCtoC	28	28	100.0 (87.7-100.0)		
BSC	25	25	100.0 (86.3-100.0)		
BSSL	47	47	100.0 (92.5-100.0)		
BSHC	16	16	100.0 (79.4-100.0)		
BSA Total	219	221	99.1 (96.8-99.9)		
50-69 years					
BSWN	164	169	97.0 (93.2-99.0)	✓	ns
BSCM	78	81	96.3 (89.6-99.2)	✓	ns
BSAL	61	63	96.8 (89.0-99.6)	✓	ns
BSM	145	146	99.3 (96.2-100.0)	✓	*
BSCtoC	129	131	98.5 (94.6-99.8)	✓	ns
BSC	94	98	95.9 (89.9-98.9)	✓	ns
BSSL	177	183	96.7 (93.0-98.8)	✓	ns
BSHC	68	68	100.0 (94.7-100.0)	✓	ns
BSA Total	916	939	97.6 (96.3-98.4)	✓	*

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	44	53	83.0 (70.2-91.9)
BSCM	16	19	84.2 (60.4-96.6)
BSAL	25	27	92.6 (75.7-99.1)
BSM	36	40	90.0 (76.3-97.2)
BSCtoC	24	34	70.6 (52.5-84.9)
BSC	26	32	81.3 (63.6-92.8)
BSSL	50	60	83.3 (71.5-91.7)
BSHC	17	19	89.5 (66.9-98.7)
BSA Total	238	284	83.8 (79.0-87.9)
50-69 years			
BSWN	214	240	89.2 (84.5-92.8)
BSCM	112	118	94.9 (89.3-98.1)
BSAL	109	117	93.2 (87.0-97.0)
BSM	176	210	83.8 (78.1-88.5)
BSCtoC	138	168	82.1 (75.5-87.6)
BSC	132	154	85.7 (79.2-90.8)
BSSL	229	260	88.1 (83.5-91.8)
BSHC	77	91	84.6 (75.5-91.3)
BSA Total	1187	1,358	87.4 (85.5-89.1)

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	13	13			
BSCM	8	8			
BSAL	11	11			
BSM	18	18			
BSCtoC	9	9			
BSC	4	4			
BSSL	15	15			
BSHC	5	5			
BSA Total	83	83	100.0 (95.7-100.0)		
50-69 years					
BSWN	59	61	96.7 (88.7-99.6)	✓	ns
BSCM	33	33	100.0 (89.4-100.0)	✓	ns
BSAL	24	24	100.0 (85.8-100.0)	✓	ns
BSM	65	66	98.5 (91.8-100.0)	✓	ns
BSCtoC	31	31	100.0 (88.8-100.0)	✓	ns
BSC	48	48	100.0 (92.6-100.0)	✓	ns
BSSL	69	70	98.6 (92.3-100.0)	✓	ns
BSHC	16	16	100.0 (79.4-100.0)	✓	ns
BSA Total	345	349	98.9 (97.1-99.7)	✓	*

Note: Additional data relating to detailed information concerning surgery for DCIS are unavailable for this reporting period

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	8	8			
BSCM	4	4			
BSAL	5	5			
BSM	11	13			
BSCtoC	4	7			
BSC	2	2			
BSSL	8	9			
BSHC	1	4			
BSA Total	43	52	82.7 (69.7-91.8)		
50-69 years					
BSWN	35	37	94.6 (81.8-99.3)	✓✓✓	*
BSCM	13	15	86.7 (59.5-98.3)	✓✓✓	*
BSAL	12	14	85.7 (57.2-98.2)	✓✓✓	*
BSM	33	42	78.6 (63.2-89.7)	✓✓✓	*
BSCtoC	18	23	78.3 (56.3-92.5)	✓✓✓	*
BSC	28	33	84.8 (68.1-94.9)	✓✓✓	*
BSSL	38	45	84.4 (70.5-93.5)	✓✓✓	*
BSHC	6	9	66.7 (29.9-92.5)	✓	ns
BSA Total	183	218	83.9 (78.4-88.6)	✓✓✓	*

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 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	3			
BSAL	1	1			
BSM	4	5			
BSCtoC	4	5			
BSC	4	5			
BSSL	2	3			
BSHC	1	4			
BSA Total	21	32	65.6 (46.8-81.4)		
50-69 years					
BSWN	45	61	73.8 (60.9-84.2)	✓✓✓	*
BSCM	18	26	69.2 (48.2-85.7)	✓	ns
BSAL	33	36	91.7 (77.5-98.2)	✓✓✓	*
BSM	39	49	79.6 (65.7-89.8)	✓✓✓	*
BSCtoC	20	30	66.7 (47.2-82.7)	✓	ns
BSC	22	28	78.6 (59.0-91.7)	✓✓✓	*
BSSL	43	55	78.2 (65.0-88.2)	✓✓✓	*
BSHC	9	15	60.0 (32.3-83.7)	✓	ns
BSA Total	229	300	76.3 (71.1-81.0)	✓✓✓	*

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	30	32	93.8 (79.2-99.2)		
BSCM	7	9	77.8 (40.0-97.2)		
BSAL	13	15	86.7 (59.5-98.3)		
BSM	26	26	100.0 (86.8-100.0)		
BSCtoC	19	19	100.0 (82.4-100.0)		
BSC	13	14	92.9 (66.1-99.8)		
BSSL	32	34	94.1 (80.3-99.3)		
BSHC	9	9	100.0 (66.4-100.0)		
BSA Total	149	158	94.3 (89.5-97.4)		
50-69 years					
BSWN	151	158	95.6 (91.1-98.2)	✓	ns
BSCM	58	68	85.3 (74.6-92.7)	×××	*
BSAL	85	91	93.4 (86.2-97.5)	✓	ns
BSM	125	131	95.4 (90.3-98.3)	✓	ns
BSCtoC	97	99	98.0 (92.9-99.8)	✓	ns
BSC	94	94	100.0 (96.2-100.0)	✓✓	*
BSSL	152	155	98.1 (94.4-99.6)	✓	ns
BSHC	45	45	100.0 (92.1-100.0)	✓	ns
BSA Total	807	841	96.0 (94.4-97.2)	✓	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	9	10	
BSCM	2	6	
BSAL	6	11	
BSM	13	15	
BSCtoC	0	5	
BSC	1	3	
BSSL	12	12	
BSHC	1	1	
BSA Total	44	63	69.8 (57.0-80.8)
50-69 years			
BSWN	38	53	71.7 (57.7-83.2)
BSCM	11	21	52.4 (29.8-74.3)
BSAL	10	21	47.6 (25.7-70.2)
BSM	31	46	67.4 (52.0-80.5)
BSCtoC	10	23	43.5 (23.2-65.5)
BSC	21	37	56.8 (39.5-72.9)
BSSL	38	51	74.5 (60.4-85.7)
BSHC	5	7	71.4 (29.0-96.3)
BSA Total	164	259	63.3 (57.1-69.2)

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	2	2	
BSCtoC	3	3	
BSC	1	1	
BSSL	0	0	
BSHC	0	0	
BSA Total	7	8	
Group 2: Node negative, high risk, and ER and PR negative			
BSWN	3	5	
BSCM	2	2	
BSAL	0	0	
BSM	0	0	
BSCtoC	2	2	
BSC	0	0	
BSSL	3	3	
BSHC	1	1	
BSA Total	11	13	
Group 3: Node positive, either ER or PR positive			
BSWN	11	14	78.6 (49.2-95.3)
BSCM	4	6	66.7 (22.3-95.7)
BSAL	6	8	75.0 (34.9-96.8)
BSM	6	10	60.0 (26.2-87.8)
BSCtoC	9	10	90.0 (55.5-99.7)
BSC	9	10	90.0 (55.5-99.7)
BSSL	22	24	91.7 (73.0-99.0)
BSHC	8	8	100.0 (63.1-100.0)
BSA Total	75	90	83.3 (74.0-90.4)
Group 4: Node negative, high risk, either ER or PR positive			
BSWN	5	18	27.8 (9.7-53.5)
BSCM	2	8	25.0 (3.2-65.1)
BSAL	4	12	33.3 (9.9-65.1)
BSM	6	19	31.6 (12.6-56.6)
BSCtoC	6	9	66.7 (29.9-92.5)
BSC	4	14	28.6 (8.4-58.1)
BSSL	7	21	33.3 (14.6-57.0)
BSHC	3	8	37.5 (8.5-75.5)
BSA Total	37	109	33.9 (25.1-43.6)

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	6	9	66.7 (29.9-92.5)
BSCM	3	3	100.0 (29.2-100.0)
BSAL	3	3	100.0 (29.2-100.0)
BSM	2	2	100.0 (15.8-100.0)
BSCtoC	3	3	100.0 (29.2-100.0)
BSC	3	5	60.0 (14.7-94.7)
BSSL	5	5	100.0 (47.8-100.0)
BSHC	2	2	100.0 (15.8-100.0)
BSA Total	27	32	84.4 (67.2-94.7)
Group 2: Node negative, high risk, and ER and PR negative			
BSWN	16	21	76.2 (52.8-91.8)
BSCM	9	16	56.3 (29.9-80.2)
BSAL	5	6	83.3 (35.9-99.6)
BSM	7	12	58.3 (27.7-84.8)
BSCtoC	5	8	62.5 (24.5-91.5)
BSC	3	8	37.5 (8.5-75.5)
BSSL	15	25	60.0 (38.7-78.9)
BSHC	7	10	70.0 (34.8-93.3)
BSA Total	67	106	63.2 (53.3-72.4)
Group 3: Node positive, either ER or PR positive			
BSWN	18	43	41.9 (27.0-57.9)
BSCM	8	19	42.1 (20.3-66.5)
BSAL	7	21	33.3 (14.6-57.0)
BSM	22	45	48.9 (33.7-64.2)
BSCtoC	23	50	46.0 (31.8-60.7)
BSC	17	31	54.8 (36.0-72.7)
BSSL	28	50	56.0 (41.3-70.0)
BSHC	23	30	76.7 (57.7-90.1)
BSA Total	146	289	50.5 (44.6-56.4)
Group 4: Node negative, high risk, either ER or PR positive			
BSWN	4	85	4.7 (1.3-11.6)
BSCM	6	47	12.8 (4.8-25.7)
BSAL	5	39	12.8 (4.3-27.4)
BSM	11	86	12.8 (6.6-21.7)
BSCtoC	11	73	15.1 (7.8-25.4)
BSC	7	67	10.4 (4.3-20.3)
BSSL	13	113	11.5 (6.3-18.9)
BSHC	4	29	13.8 (3.9-31.7)
BSA Total	61	539	11.3 (8.8-14.3)

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	13	14	92.9 (66.1-99.8)
BSCM	6	6	100.0 (54.1-100.0)
BSAL	6	8	75.0 (34.9-96.8)
BSM	10	10	100.0 (69.2-100.0)
BSCtoC	10	10	100.0 (69.2-100.0)
BSC	9	10	90.0 (55.5-99.7)
BSSL	21	24	87.5 (67.6-97.3)
BSHC	8	8	100.0 (63.1-100.0)
BSA Total	83	90	92.2 (84.6-96.8)
Group 2: Node negative, high risk, and ER or PR positive			
BSWN	15	18	83.3 (58.6-96.4)
BSCM	5	8	62.5 (24.5-91.5)
BSAL	9	12	75.0 (42.8-94.5)
BSM	16	19	84.2 (60.4-96.6)
BSCtoC	7	9	77.8 (40.0-97.2)
BSC	14	14	100.0 (76.8-100.0)
BSSL	16	21	76.2 (52.8-91.8)
BSHC	7	8	87.5 (47.3-99.7)
BSA Total	89	109	81.7 (73.1-88.4)
Group 3: Node negative, low risk and ER or PR positive			
BSWN	16	30	53.3 (34.3-71.7)
BSCM	5	11	45.5 (16.7-76.6)
BSAL	11	18	61.1 (35.7-82.7)
BSM	25	29	86.2 (68.3-96.1)
BSCtoC	12	17	70.6 (44.0-89.7)
BSC	20	20	100.0 (83.2-100.0)
BSSL	19	33	57.6 (39.2-74.5)
BSHC	7	10	70.0 (34.8-93.3)
BSA Total	115	168	68.5 (60.8-75.4)

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	41	43	95.3 (84.2-99.4)
BSCM	19	19	100.0 (82.4-100.0)
BSAL	19	21	90.5 (69.6-98.8)
BSM	43	45	95.6 (84.9-99.5)
BSCtoC	49	50	98.0 (89.4-99.9)
BSC	31	31	100.0 (88.8-100.0)
BSSL	46	50	92.0 (80.8-97.8)
BSHC	29	30	96.7 (82.8-99.9)
BSA Total	277	289	95.8 (92.9-97.8)
Group 2: Node negative, high risk, and ER or PR positive			
BSWN	67	85	78.8 (68.6-86.9)
BSCM	22	47	46.8 (32.1-61.9)
BSAL	26	39	66.7 (49.8-80.9)
BSM	82	86	95.3 (88.5-98.7)
BSCtoC	48	73	65.8 (53.7-76.5)
BSC	59	67	88.1 (77.8-94.7)
BSSL	58	113	51.3 (41.7-60.8)
BSHC	17	29	58.6 (38.9-76.5)
BSA Total	379	539	70.3 (66.3-74.1)
Group 3: Node negative, low risk and ER or PR positive			
BSWN	83	165	50.3 (42.4-58.2)
BSCM	22	79	27.8 (18.3-39.1)
BSAL	29	85	34.1 (24.2-45.2)
BSM	138	148	93.2 (87.9-96.7)
BSCtoC	61	104	58.7 (48.6-68.2)
BSC	94	107	87.9 (80.1-93.4)
BSSL	75	175	42.9 (35.4-50.5)
BSHC	20	48	41.7 (27.6-56.8)
BSA Total	522	911	57.3 (54.0-60.5)

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	54	76	71.1 (59.5-80.9)		
BSCM	9	29	31.0 (15.3-50.8)		
BSAL	27	45	60.0 (44.3-74.3)		
BSM	33	63	52.4 (39.4-65.1)		
BSCtoC	32	48	66.7 (51.6-79.6)		
BSC	24	41	58.5 (42.1-73.7)		
BSSL	56	80	70.0 (58.7-79.7)		
BSHC	17	25	68.0 (46.5-85.1)		
BSA Total	252	407	61.9 (57.0-66.7)		
50-69 years					
BSWN	207	309	67.0 (61.4-72.2)	×××	*
BSCM	39	155	25.2 (18.5-32.8)	×××	*
BSAL	97	144	67.4 (59.1-74.9)	×××	*
BSM	167	284	58.8 (52.8-64.6)	×××	*
BSCtoC	135	204	66.2 (59.2-72.6)	×××	*
BSC	118	207	57.0 (50.0-63.8)	×××	*
BSSL	230	337	68.2 (63.0-73.2)	×××	*
BSHC	70	109	64.2 (54.5-73.2)	×××	*
BSA Total	1,063	1,749	60.8 (58.4-63.1)	×××	*

.

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

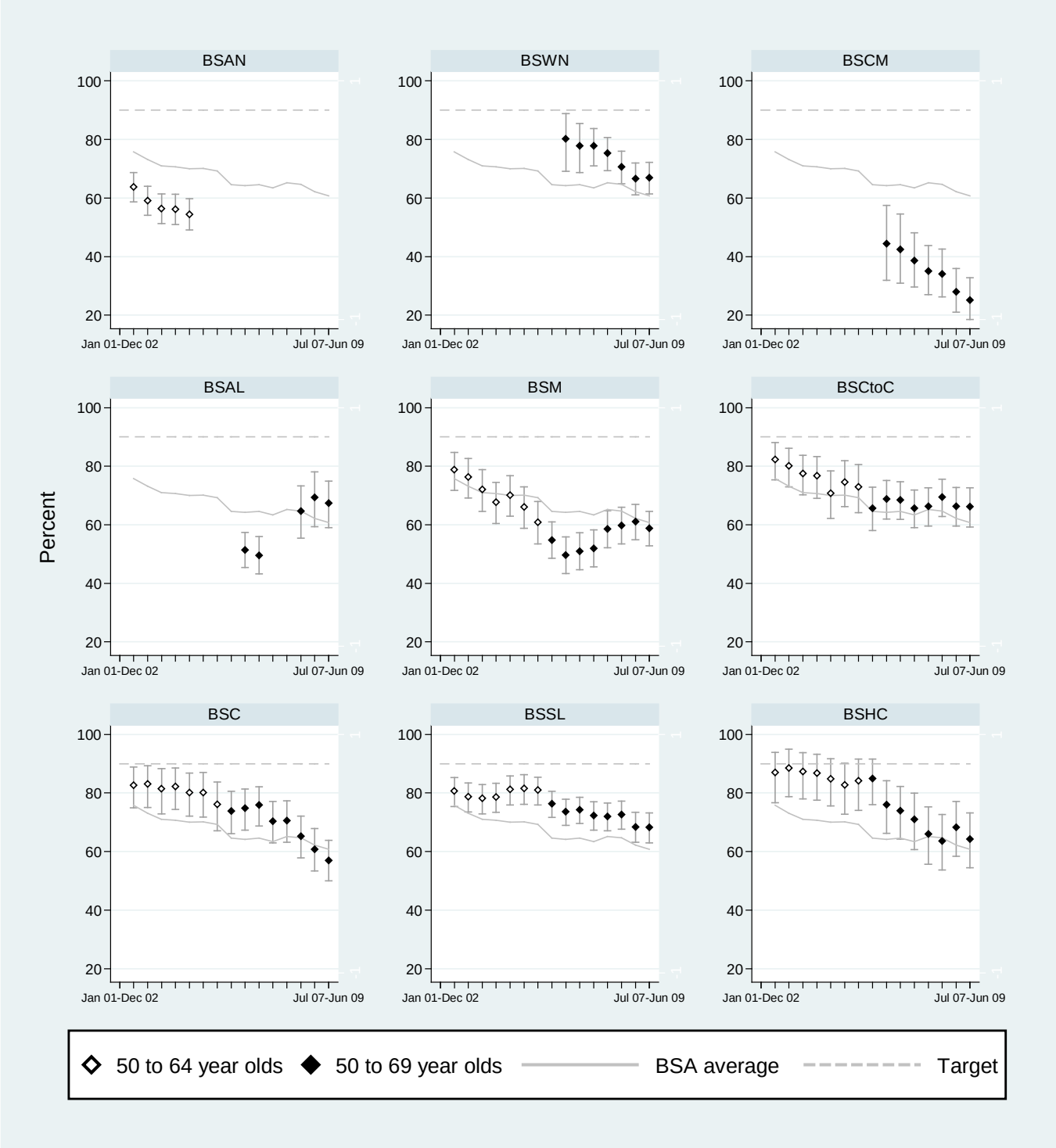
✓✓✓ Difference of ≥ 10% magnitude better than target value and statistically significant

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

Please note that data in the table above does not take into consideration NZ National Statutory Holidays. Future data will have working day calculations adjusted for NZ National Statutory Holidays.

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)

ns
Not significant (statistically) from the target value as determined by 95% confidence limits

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