

New Brunswick Breast Cancer Screening Services

**Report on Program Performance
1996 - 2009**



Message from the New Brunswick Cancer Network (NBCN) Co-CEOs

The New Brunswick Cancer Network is pleased to provide the *New Brunswick Breast Cancer Screening Services (NBBCSS) Program Performance Report 1996-2009*. This is the first report on the NBBCSS program produced by NBCN, the division of the New Brunswick Department of Health responsible for the development and implementation of evidence-based provincial strategies for all elements of cancer care. This report provides information about the organized breast cancer screening services in New Brunswick which will be useful for the public, health professionals, educational institutions and governments. This report also furthers our understanding of the impact of population-based cancer control and surveillance activities, particularly in the area of breast cancer where the NBBCSS program has been well established in the province since 1995.

Screening information has been collected from the 16 fixed breast cancer screening sites across NB. Thanks to the efforts of *CGI (contracted to manage the NB Breast Cancer Screening Services database)*, the staff who operate the screening sites in each health region, and NBCN's epidemiological team, we were able to collect, analyze and report on breast cancer screening activities and program performance.

We are particularly pleased with the high participation rate which reflects the fact that many women in New Brunswick have been actively participating in the organized breast screening program. NBCN will utilize the information in this report to assist with ongoing planning to ensure that high quality screening services are provided to the residents of New Brunswick.

We look forward to seeing further progress in cancer screening through the development and implementation of cervical and colon cancer screening programs, which will complement our breast cancer screening program.

Message from the New Brunswick Cancer Network (NBCN) Co-CEOs

We extend our thanks to our epidemiologist, Dr. Bin Zhang, for his leadership in preparing this report. We would welcome any comments or recommendations you may have for improvement. An evaluation form is included for feedback.



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Executive Summary

Breast cancer is by far the most frequently diagnosed cancer and the second leading cause of cancer death among women in New Brunswick with an estimated 550 new cases and 110 deaths in 2012.¹ Between 1996 and 2009, the number of new breast cancer cases increased by 28.2%; however, the number of deaths decreased by 12.1% in this period. Early detection through participation in organized breast cancer screening, along with more effective treatment, are likely contributors to this evident decline in mortality.

Organized breast cancer screening programs ensure that eligible women have regular access to high quality mammography screening in accordance with Canadian guidelines. Since 2008, the New Brunswick Breast Cancer Screening Services (NBBCSS) program has been under the leadership of the New Brunswick Cancer Network (NBCN). The monitoring and evaluation of the NBBCSS program provides an opportunity for stakeholders to understand the impact of early detection on reducing morbidity and mortality from breast cancer. This report provides an overview of how well the program is achieving these goals, as well as identifying potential areas of opportunity for program enhancement. In this report, the recommended performance indicators have been analyzed at both *Provincial* and *Health Zone* levels. The Geographic Information Systems (GIS) has also been used to interpret and visualize the results across different geographic areas in the province.

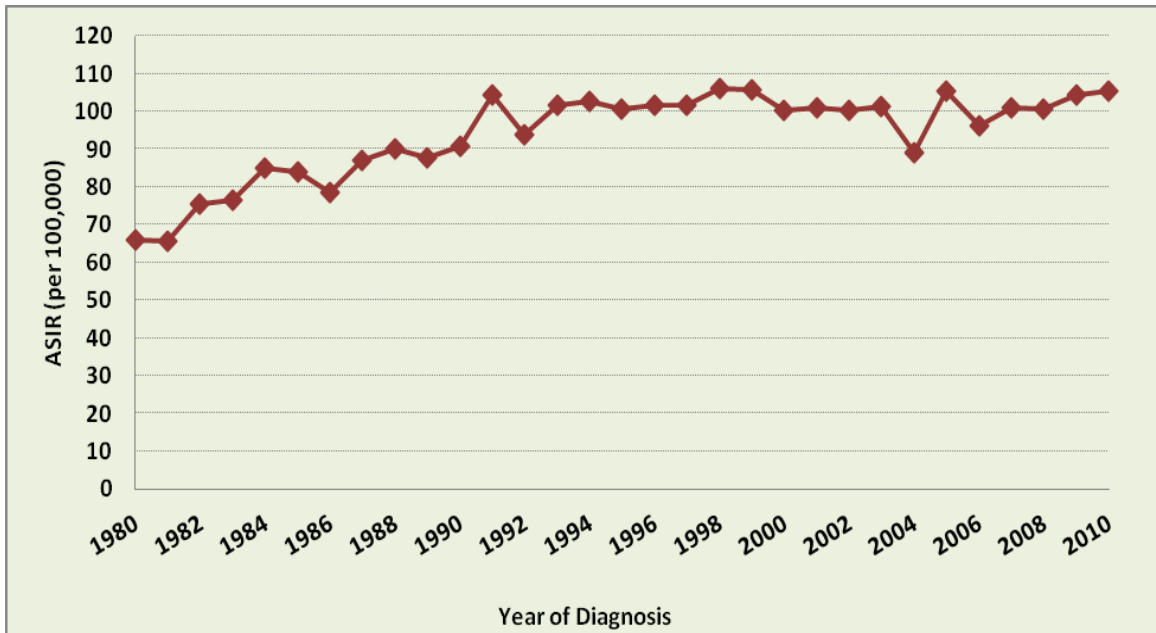
Participation rate is reported over a 24-month time period to align with the published national breast cancer performance indicator reports produced by the Public Health Agency of Canada (PHAC). During the period 1996 to 2009, the biennial participation rate in New Brunswick ranged from a low of 32.6% to a high of 55.5% (*Appendix D - D12*). All health regions showed an increasing participation rate over this period. Since 2001, as reported by PHAC, New Brunswick has had the highest or the second highest biennial participation rate in Canada over multiple reporting periods, well above the corresponding national average.^{2,3,4} Ten other performance indicators are also analyzed using the recommended national definitions. Details are presented in the *Results* section that follows (*Appendix D – D15, D19, D23, D27, D31, D35, D39, D43, D47 and D51*).

Through this exercise, the New Brunswick Cancer Network has evaluated the breast cancer screening services using the administrative data from 1996 to 2009. The information contained in this report will help to guide the future development and enhancement of the NBBCSS program.

Chapter 1: Introduction

Breast cancer is the most frequently diagnosed and the second leading cancer cause of death among New Brunswick (NB) women with an estimated 550 new cases and 110 deaths in 2012.¹ NB Cancer Registry data shows that the number of breast cancer cases has been steadily increasing from 235 in 1980 to 578 cases in 2010 (*Appendix D – D1* hereafter referred to as D1). The age-standardized incidence rate of breast cancer had risen from 1980 to the early 1990’s and has reached a plateau in recent years (Figure 1 and D2). However, the age-standardized mortality rate of breast cancer has decreased at an average annual rate of 2.4% between 1989 and 2006.⁵ This decrease in mortality (Figure 2 and D3-D4) is attributed to both increased participation in breast cancer screening and improved breast cancer treatment.^{4,6} In NB, the five-year relative survival ratio of breast cancer for women aged 50-74 has increased from 87.1% in 1997-2001 to 90.5% in 2002-2006 time periods.⁵

Figure 1: Age-standardized incidence rates (ASIR) for female breast cancer in NB, 1980-2010



Rates are standardized to the 1991 Canadian population estimates.

Figure 2: Age-standardized mortality rates (ASMR) for female breast cancer in NB, 1980-2010



Rates are standardized to the 1991 Canadian population estimates.

The operation of the New Brunswick Breast Cancer Screening Services (NBBCSS) program is a shared responsibility between the Regional Health Authorities (RHAs: *Vitalité Health Network* and *Horizon Health Network*) and the New Brunswick Cancer Network (NBCN). NBCN, a division of the Department of Health, is responsible for the development and implementation of an evidence-based provincial strategy for all elements of cancer care, including prevention, screening, treatment, follow-up care, palliative care, education and research.

Since the establishment of the NBBCSS program in 1995, systematic monitoring and evaluation of the program has never been reported at finer geographic levels (i.e., Health Zones) using the nationally recommended performance indicators such as *participation rate*, *retention rate* and *post-screen invasive cancer rate*. The RHAs and NBCN have expressed a strong desire for a comprehensive evaluation to ensure that NB women have access to a high-quality breast cancer screening program. NBCN will use the information from the existing NBBCSS database to enhance the effectiveness and efficiency of breast cancer screening services, as well as the possible

integration and implementation of the three different provincial screening programs (breast, cervical and colon cancers).

This report evaluates the performance of the organized breast cancer screening program in NB for the calendar years 1996 to 2009 using data from 7 Health Regions (8 Health Zones where Health Region 1 includes both Health Zone 1 *Beauséjour* and Health Zone 1 *Southeast*) and 16 fixed screening sites (Map 1). By comparing the national performance indicator benchmarks⁴ to NB results, this report offers scientific evidence to guide future planning and policy-making for provincial screening programs. In addition, it provides quality information to screening program managers, health professionals and other breast cancer stakeholders to enhance organized screening services across NB.

1.1 New Brunswick Breast Cancer Screening Services Program

The primary objective of an organized breast cancer screening program is to detect breast cancer at an early stage and reduce deaths due to breast cancer. The NBBCSS program was established in 1995 and has since provided bilateral, two-view screening mammography biennially to eligible women throughout the province. The target population is defined as asymptomatic women between the ages of 50 to 69 years without prior diagnosis of breast cancer. Women aged 40-49 or greater than 69 require a physician or nurse practitioner's referral to the program.

NBCN has established breast cancer screening services as one of its priorities and wants to ensure that the program meets the national performance benchmarks. Policies and standards for the program are in place and have been used as guidelines for service delivery in the RHAs.

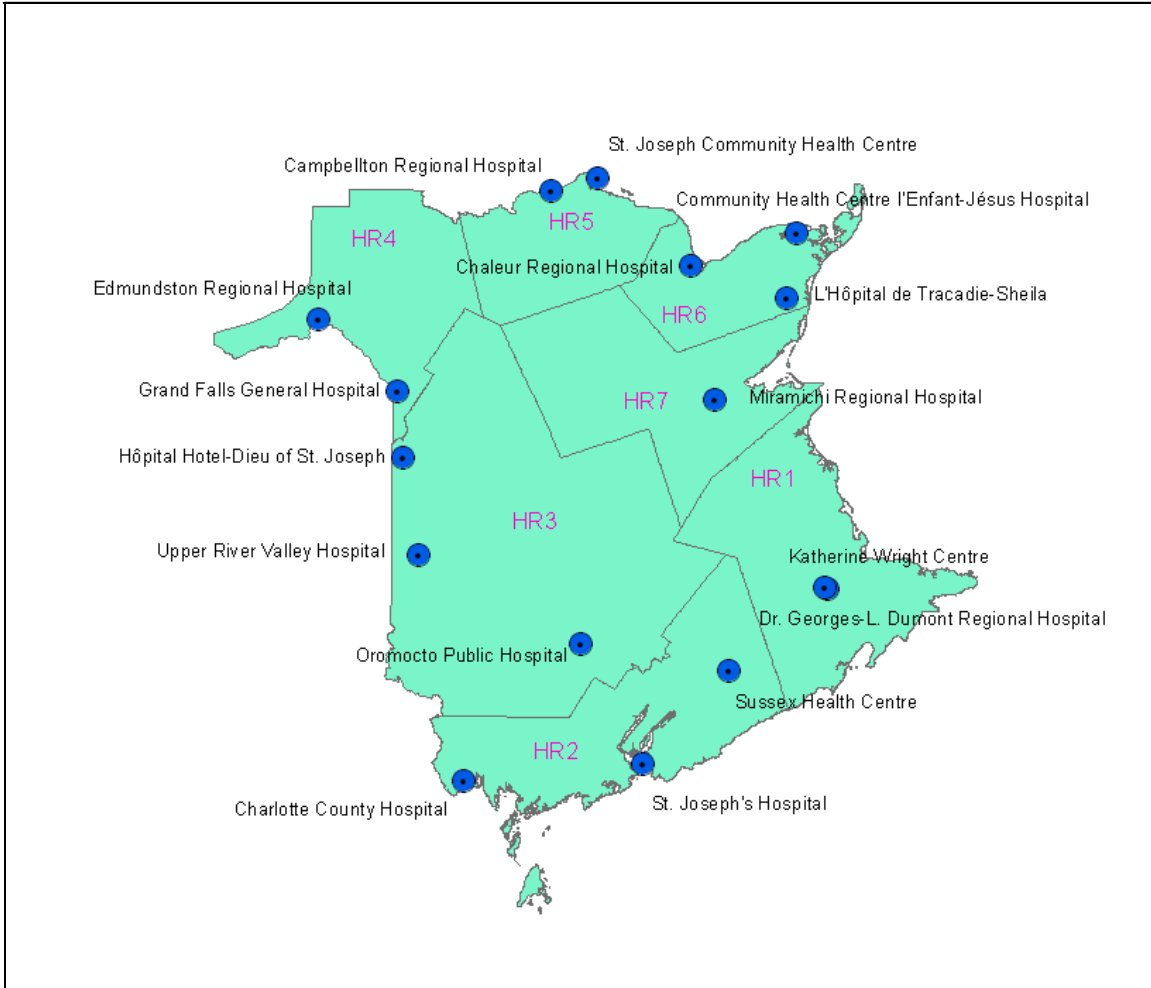
1.1.1 New Brunswick Breast Cancer Screening Services Committee

A review of the NBBCSS program was conducted in 1997. The purpose of this review was to evaluate the program's compliance with policies and standards as well as to review the overall quality of service delivery. One result was the formation of the NBBCSS Steering Committee in 1998. The goal of this committee is to provide a provincial forum to ensure uniform and consistent delivery of breast cancer screening services in NB, to act as a provincial network to review, discuss and plan strategies on Breast Cancer Screening Services initiatives, and to bridge the gap between NB and national organizations. The membership of this multidisciplinary group includes representation from each RHA, the Canadian Cancer Society (NB Division), the Section of Radiology, the Section of Family Medicine/General Practice of the NB Medical Society and NBCN. The Terms of Reference of the Committee are included in *Appendix A*.

1.1.2 Screening Sites in New Brunswick

As shown in Map 1, sixteen fixed screening sites existing in the 8 Health Zones (HZs) of NB offer a bilateral, two-view screening mammogram every two years to women 50 to 69 years of age. Fourteen out of sixteen sites perform screening and diagnostic mammography, while two sites (Katherine Wright Center and Oromocto Public Hospital) perform only screening mammography. Screening sites also provide mammography screening services to women aged 40-49 and greater than 69 upon a physician or nurse practitioner's referral. The RHAs are responsible for the delivery of breast cancer screening services. *Appendix B* lists the location and contact information of the 16 fixed screening sites and their associated RHA and HZ.

**Map 1: New Brunswick Breast Cancer Screening Services
Screening Sites by Health Region (HR)**



1.2 The Screening Process

A screening process generally consists of the following 4 steps:

- Identify and invite women aged 50 to 69 for screening;
- Conduct screening examination;
- Investigate any abnormalities detected at screening; and,
- Recall after a normal or benign screening episode.

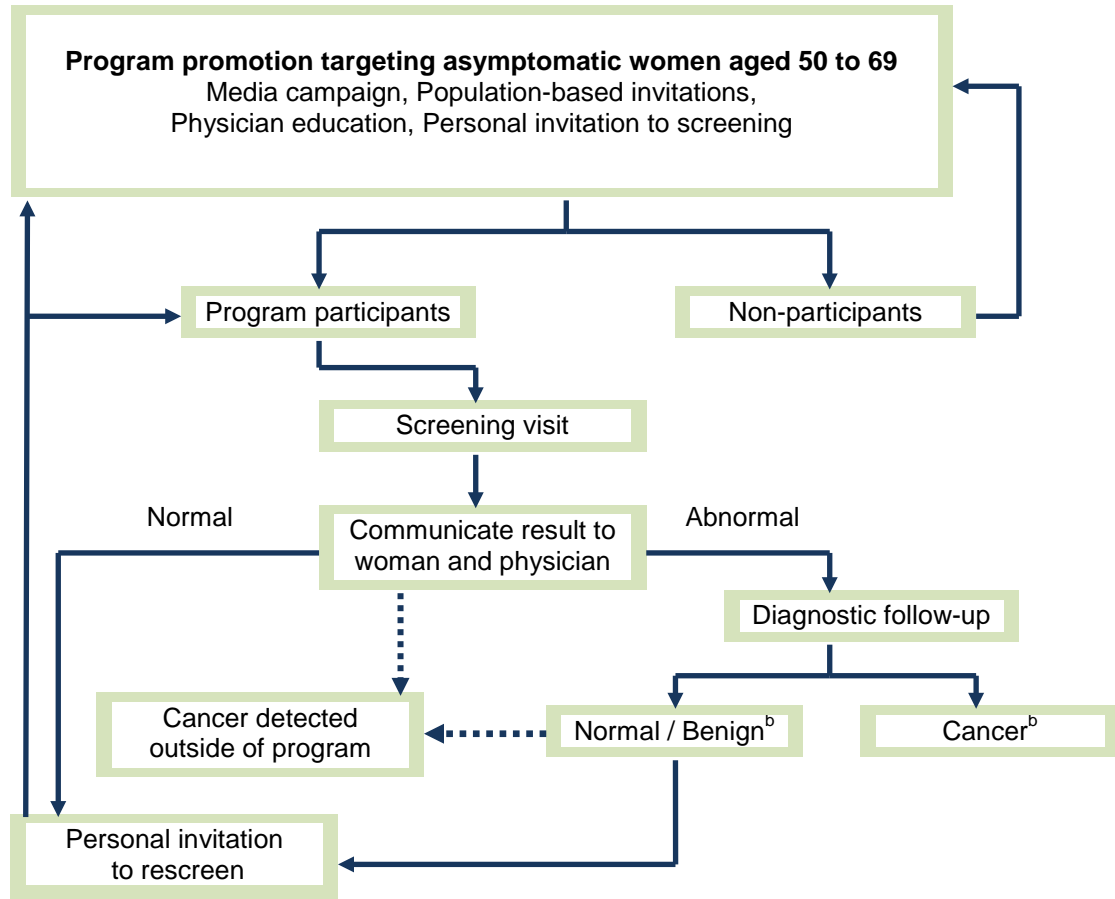
RHAs have put tremendous efforts into recruiting women to the screening program over the past 17 years. However, prior to the introduction of digital mammography machines in 2009, some screening sites were not actively inviting women to a screening examination due to limited machine capacity and excessive wait times.⁷ To address this, a number of recruiting strategies have been deployed by the RHAs:

- Invitation letters for new recruits and reminder letters for 2-year rescreens
- Reminder letter to women who did not respond to the first letter
- Reminder call to women 1 week prior to the appointment date
- Physician education
- Annual promotion of screening (participation) through Women's Health Programs and Breast Cancer Awareness Month; and,
- Media campaign and promotion.

Results of a screening mammogram are sent to the woman's physician or nurse practitioner. If the mammogram is normal, women are invited for subsequent screening through a letter of invitation. In general, the interval for women with normal screening mammogram is 24 months. Women with a normal screening mammogram are encouraged to follow-up with their family physician or nurse practitioner if they develop symptoms before their next scheduled screening visit.

If the screening mammogram is abnormal, both the woman and her family physician are informed. The family physician or the screening program then provides coordination of follow-up. A flow chart outlining the entire screening process is shown in Figure 3.

Figure 3- Pathway of the NB Breast Cancer Screening Program^a



^aAdapted from *Organized Breast Cancer Screening Programs in Canada-Report on Program Performance in 2005 and 2006*, Public Health Agency of Canada.

^bReported to New Brunswick Cancer Registry.

1.3 New Brunswick Breast Cancer Screening Database

The New Brunswick Breast Cancer Screening Database (NBBCSD) is an Oracle[®] database which stores data elements on screening events in New Brunswick. Data including demographic characteristics, screening services and results, diagnostic tests and cancer information are collected at each screening site and subsequently sent to the Department of Health on a quarterly basis. Annually, the Department of Health provides data extracts of the NBBCSD to the Public Health Agency of Canada (PHAC) for inclusion in the Canadian Breast Cancer Screening Database (CBCSD). Since 1995, PHAC has used provincial data to produce its annual performance indicators report for

evaluation and comparison as part of the Canadian Breast Cancer Screening Initiative (CBCSI).

1.4 Purpose of the Report

This report provides information on the NBBCSS program to the public, health-care professionals, researchers, administrators and policy-makers.

The objectives of this report are to:

- Report on the performance indicators as recommended by the national *Evaluation Indicators Working Group* at the provincial and health zone levels
- Examine trends in performance indicators
- Use Geographic Information Systems (GIS) to highlight and visualize variations in performance indicators at the health zone level
- Identify opportunities for enhancing the NBBCSS program in conjunction with the RHAs; and,
- Identify best practices in breast cancer screening and opportunities for the possible integration of cervical and colon cancer screening programs in NB.

Chapter 2: Methods

The *Evaluation Indicators Working Group*, a sub-committee of the Canadian Breast Cancer Screening Initiative, recommends performance indicators for program monitoring and evaluation. These indicators have been analyzed at the provincial and health zone levels and further stratified by 4 different age groups (50-54, 55-59, 60-64 and 65-69). *Percentage (%)* as a main measuring tool is reported for each individual performance indicator and the methodology for the calculation are outlined in Table 1. The results at the health zone level for certain performance indicators (e.g., invasive cancer detection rate) should be interpreted with caution due to small sample size. Calendar years from 1996 to 2009 are equally divided into 7 consecutive two-year intervals (e.g., 1996-1997, etc.) to align with the estimates contained in the 2005 and 2006 national performance indicators report,⁴ which was the most currently available version when this provincial report was produced. Screening data in 1995 is truncated due to incomplete implementation of the screening program across NB. This report is based on the data retrieved by CGI in August of 2011. All analyses are performed using SAS version 9.2.⁸

2.1 Definitions of Breast Cancer Screening Performance Indicators

Performance indicators developed by the *Evaluation Indicators Working Group*, are defined in Table 1 along with relevant targets.

Table 1: Performance measures for NBCSS program, women aged 50-69

Indicator	Definition	Target
1. Participation rate	Percentage of women who have a screening mammogram within 24 months as a proportion of the eligible population. ^a	≥ 70% of the eligible population within 24 months.
2. Retention rate	The percentage of women ^b age 50-67 who are rescreened within 30 months of their previous screen.	≥ 75% initial rescreen within 30 months; ≥ 90% subsequent rescreens within 30 months.
3. Abnormal call rate	Percentage of women screened who are referred for further testing because of abnormalities found with a program screen.	<10% (initial screen); <5% (subsequent screens).
4. Invasive cancer detection rate ^c	Number of invasive cancers detected per 1,000 screens.	>5 per 1,000 (initial screen); >3 per 1,000 (subsequent screens).
5. In situ cancer detection rate ^c	Number of ductal carcinoma in situ cancers (rather than invasive cancer) during a screening episode per 1,000 screens.	Surveillance and monitoring purposes only.
6. Diagnostic interval	Total duration from abnormal screen to resolution of abnormal screen. ^c	≥ 90% within 5 weeks if no tissue biopsy ^d performed; ≥ 90% within 7 weeks if tissue biopsy ^d performed.
7. Positive predictive value	Proportion of abnormal cases with completed follow-up found to have breast cancer (invasive or in situ) after diagnostic work-up. ^c	≥ 5% (initial screen); ≥ 6% (subsequent screens).
8. Benign open surgical biopsy ^e rate	The number of benign open surgical biopsies per 1,000 screens.	Surveillance and monitoring purposes only.
9. Benign core biopsy rate	The number of benign core biopsies per 1,000 screens.	Surveillance and monitoring purposes only.
10. Invasive cancer tumour size	Percentage of invasive cancers with tumour size of ≤10mm and ≤15mm in greatest diameter as determined by the best available evidence: 1) pathological report, 2) radiological and 3) clinical.	>25% ≤ 10mm; >50% ≤ 15mm.
11. Post-screen invasive cancer rate ^f	Number of women with a diagnosis of invasive breast cancer after a normal or benign screening episode within 12 and 24 months of the screen date.	<6 per 10,000 person-years (within 12 months); <12 per 10,000 person-years (within 24 months).

^a In the case of multiple screens, the first screen within the target population is used.

^b Eligible women age 50-67 who are rescreened up to age 69.

^c Resolution of an abnormal screen is set at a maximum of 6 months post screen.

^d Tissue biopsy does not include fine needle aspiration (FNA).

^e Open surgical biopsy includes cases that went directly to an open surgical biopsy as their primary diagnostic assessment and those who underwent an inconclusive or incorrect core biopsy prior to a definitive diagnosis by open surgical biopsy.

^f Calculated based on all women screened from their scheduled screen years who developed a post-screen cancer during their scheduled screen years plus 12 or 24 months of the screen date. Non-compliant cancers were not included in this calculation. Post-screen cancers include all invasive cancers diagnosed after a normal program screen (not referred) or screen detected (referred) cancers that took >6 months to diagnosis (beyond the 'normal screening episode'). Post-screen cancers also include cases referred for diagnostic follow-up with a benign result (calculation includes those missed at screening and at diagnosis).

Source: Adapted from Public Health Agency of Canada: Report from the Evaluation Indicators Working Group: Guidelines for Monitoring Breast Cancer Screening Program Performance: Second edition. Ottawa: Minister of Health, 2007.

2.2 Data Sources and Quality

The screening and demographic data used in this report were obtained from the following sources:

- New Brunswick Breast Cancer Screening Database (NBBCSD)
- New Brunswick Provincial Cancer Registry Database (NBPCRD)
- New Brunswick Medicare Registry; and,
- Statistics Canada.

The NBBCSD is an Oracle® database which was established in 1995. Data including demographic characteristics, risk factors, screening services and results, diagnostic tests and cancer information are collected at each screening event. The Department of Health conducts data quality validation on a quarterly basis, and additional cross-validation is also conducted at PHAC for the Canadian Breast Cancer Screening Database.

The following flat files are extracted from the NBBCSD: 1) Client Registry; 2) Inquiry Log; 3) Program Screens; 4) Diagnostic Tests; and 5) Cancers. These files provide information on socio-demographic characteristics and dates of screening and diagnosis.

The New Brunswick Provincial Cancer Registry Database (NBPCRD) was established in 1952. It is a Microsoft® SQL Server database which stores data elements about reportable cancers such as patient demographic information, date of diagnosis, and tumour and stage characteristics. A record linkage is conducted routinely with the NBBCSD and an extraction routine is run to provide the NBBCSD with breast cancer tumour information such as tumour size, histology, behavior, grade and stage. Data quality of the NBPCRD is assured through the Canadian Cancer Registry core edit system (*Appendix C*).

2.3 Geographic Information Systems Mapping

The Geographic Information Systems (GIS)⁹ is a powerful analytical and visual tool used to differentiate results at the health zone level. This tool maps the distribution of performance indicators across various geographic areas. Algorithms for the selection of multiple cutoff points for each performance indicator are included in individual map legends.

Chapter 3: Results

The New Brunswick Breast Cancer Screening Services (NBBCSS) was evaluated against 11 program performance indicators outlined in Table 1. This permits comparison of results with national standards. It should be noted that the results reflect screening conducted on the target population (i.e., women aged 50 to 69) within the program only; data on opportunistic breast cancer screening is not accessible for reporting purposes.

3.1 Number of screens, first screens and screen-detected breast cancers

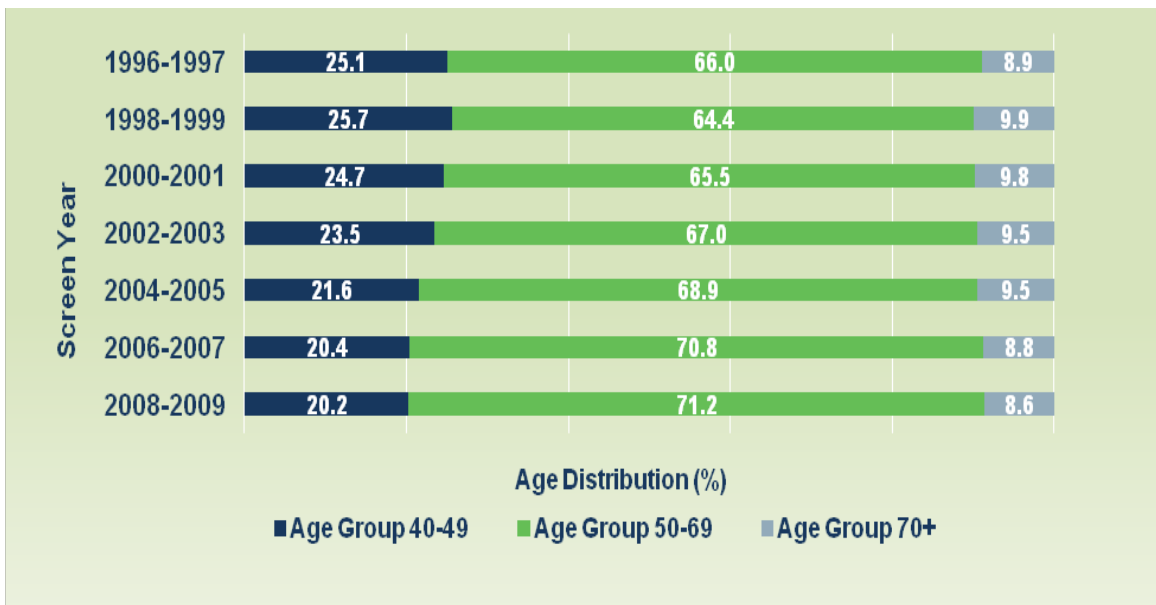
Appendix D – D5 (and D6) shows that the total *number of screens* in the NBBCSS has been steadily increasing over the past 14 years from 23,814 in 1996-1997 to 57,426 screens in 2008-2009. A similar increasing pattern is also observed for the total *number of screen-detected breast cancers* (D5 and D7) which has increased from 73 in 1996-1997 to 229 cases in 2008-2009. Furthermore, when the *number of screens* and *screen-detected breast cancers* are analyzed at the HZ level, larger health zones generally performed a higher volume of screens and consequently, more breast cancers were detected. For example, in 2008-2009, HZ2 performed 12,336 screens which represent 21.5% (12,336/57,426) of total screens in NB compared to 4.0% (2,299/57,426) performed in HZ5. Similarly, for *screen-detected breast cancers*, HZ2 detected 52 DCIS and invasive breast cancers which represent 22.7% (52/229) of total screen-detected cancers in NB compared to 7.4% (17/229) detected in HZ7.

As expected, a larger volume of *first* screens was seen at the inception of the breast cancer screening program. It gradually decreased from 19,301 in 1996-1997 to 4,787 in 2006-2007 but jumped to 5,160 screens in 2008-2009 (D5 and D8). This increase was likely a result of more aggressive strategies to recruit women aged 50 to 69 into the breast cancer screening program, along with the introduction of digital mammography in NB. The results from analyzing the *number of screens* and the *first* screen in screen year 2008-2009 by 4 different age groups (50-54, 55-59, 60-64 and 65-69) are also presented in D9.

To obtain a complete picture of program screening volumes, the *number of screens, first screens* and *screen-detected breast cancers* for outside the target age group (women aged 40-49 or aged 70+) are also reported in D10-D11. As stated previously, NB's organized breast cancer screening program accepts these women based on physician or nurse practitioner's referral.

When screening volumes are analyzed by age group over the last seven screening intervals, it is notable that the proportion of women screened in the target age group has increased from 64.4% in 1998-1999 to 71.2% in 2008-2009 (Figure 4). In contrast, the percentage of screening outside the target age group has decreased from 25.7% in 1998-1999 to 20.2% in 2008-2009 for women aged 40-49 and from 9.9% in 1998-1999 to 8.6% in 2008-2009 for women 70+ years of age.

Figure 4: Age distribution of program screens by screen year, NB



3.2 Participation and Retention by Health Zone

3.2.1 Participation Rate

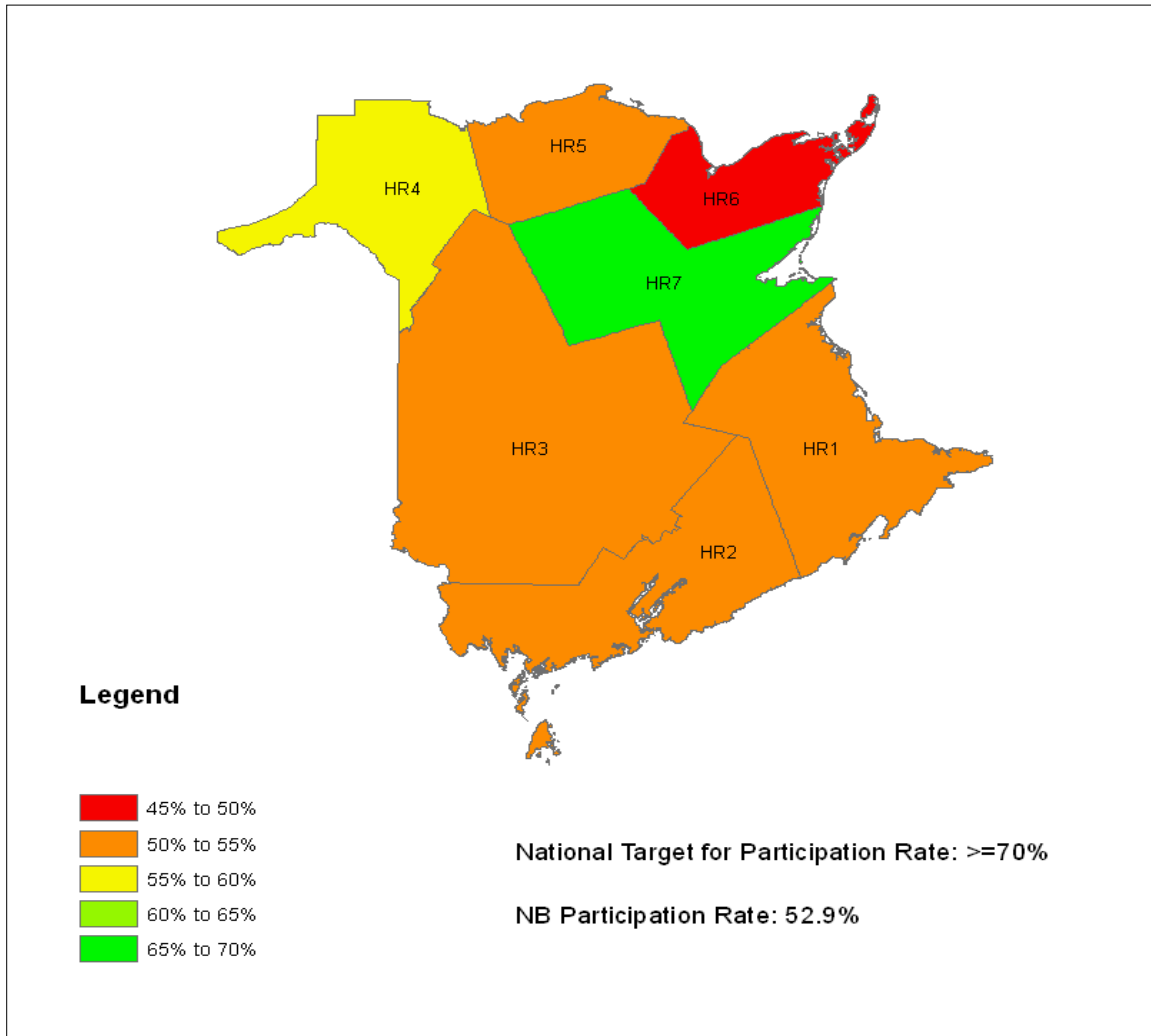
Regular participation in breast cancer screening is critical for reductions in mortality in the target population of women aged 50 to 69. The participation rate is calculated over a 24-month time period in order to facilitate comparison to the previous PHAC reports. The Canadian Breast Cancer Screening Initiative has a target participation rate of 70% for an organized breast cancer screening program. In this report, the participation rate is calculated according to the following definition:

The percentage of screen-eligible New Brunswick women (50 to 69 years of age) who have completed at least one screen in the NBBCSS in a two-year time period.

The total number of screen-eligible New Brunswick women aged 50 to 69 is obtained from the New Brunswick Medicare Registry. This information is stratified by Health Region. D12 (D13) shows the biennial participation rate for NB as a whole and individual health regions over seven screening intervals. Overall, the participation rate for NB women aged 50 to 69 has increased from 32.6% in 1996-1997 to 52.9% in 2008-2009, and achieved the highest value of 55.5% in 2002-2003 and 2004-2005 calendar years. HZ7 had the highest participation rate in the three most recent screen intervals (68.4% in 2004-2005; 67.6% in 2006-2007 and 68.4% in 2008-2009); whereas HZ6 had the lowest rate (39.7% in 2004-2005, 42.7% in 2006-2007 and 45.7% in 2008-2009).

Participation rate for NB (55.5% in 2004-2005 and 53.8% in 2006-2007) is significantly higher than the national average of 40.0% as reported by PHAC.⁴ Although NB's biennial participation rates are higher in relation to the other Canadian provinces or territories, the targeted program participation rate of 70% for women aged 50 to 69 remains the goal. D14 shows the biennial participation rate in screen year 2008-2009 by 4 different age groups (50-54, 55-59, 60-64 and 65-69) and Map 2 by health regions using a GIS map.

Map 2: NBBCSS Biennial Participation Rate by HR, 2008-2009



3.2.2 Retention Rate

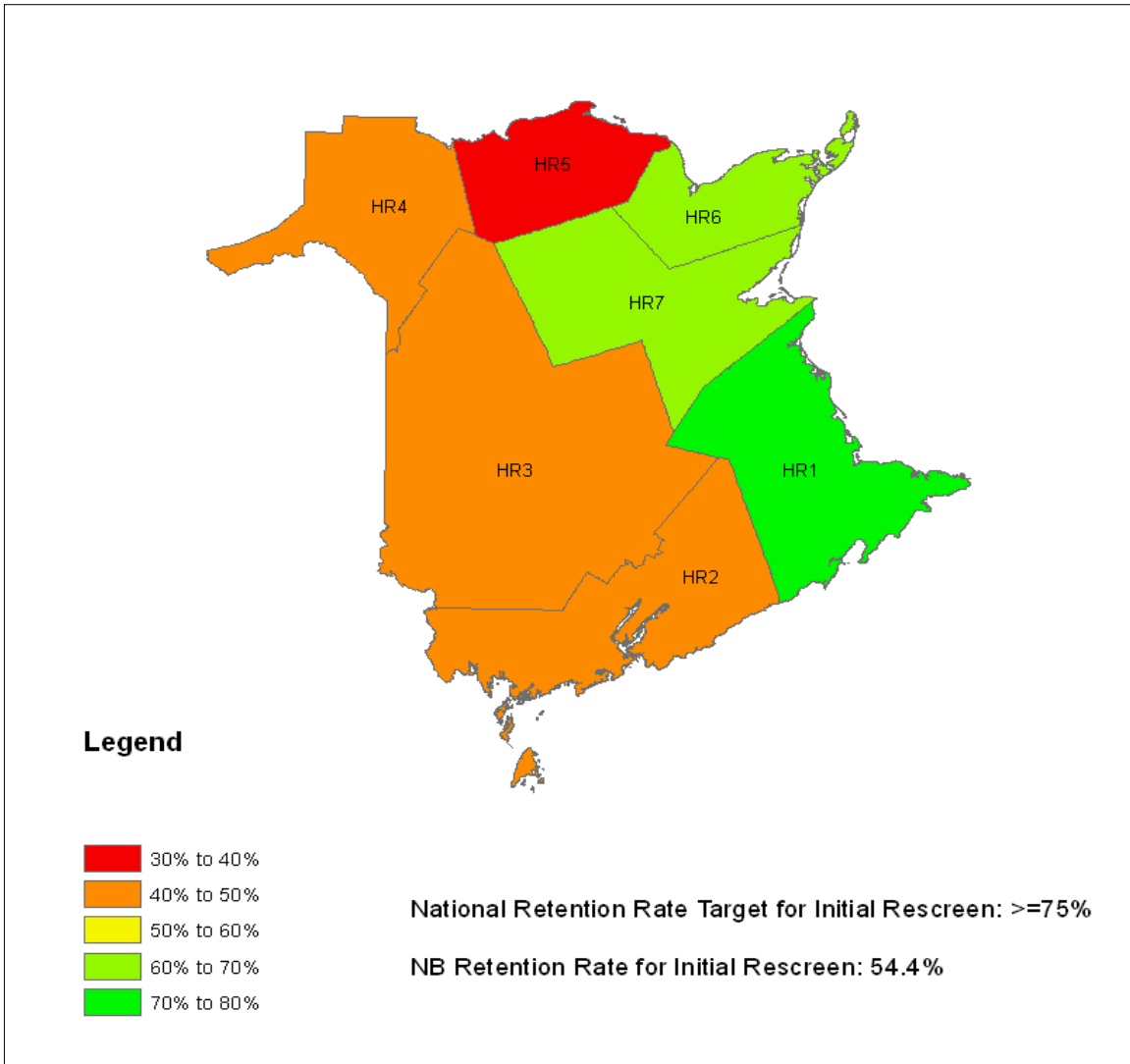
Retention rate is presented according to the following two scenarios: 1) for women undergoing their *initial* screening mammogram, the program target is 75% of women returning within 30 months; or 2) for women undergoing their *subsequent* screening mammogram, the program target is more than 90% returning within 30 months. The retention rate for women aged 50 to 67 excludes those who did not return due to death, breast cancer diagnosis, or age limit (greater than 67 years). The retention rate is calculated based on the following definition:

The percentage of screen-eligible women who were rescreened within 30 months of their previous program screen for initial and subsequent screens.

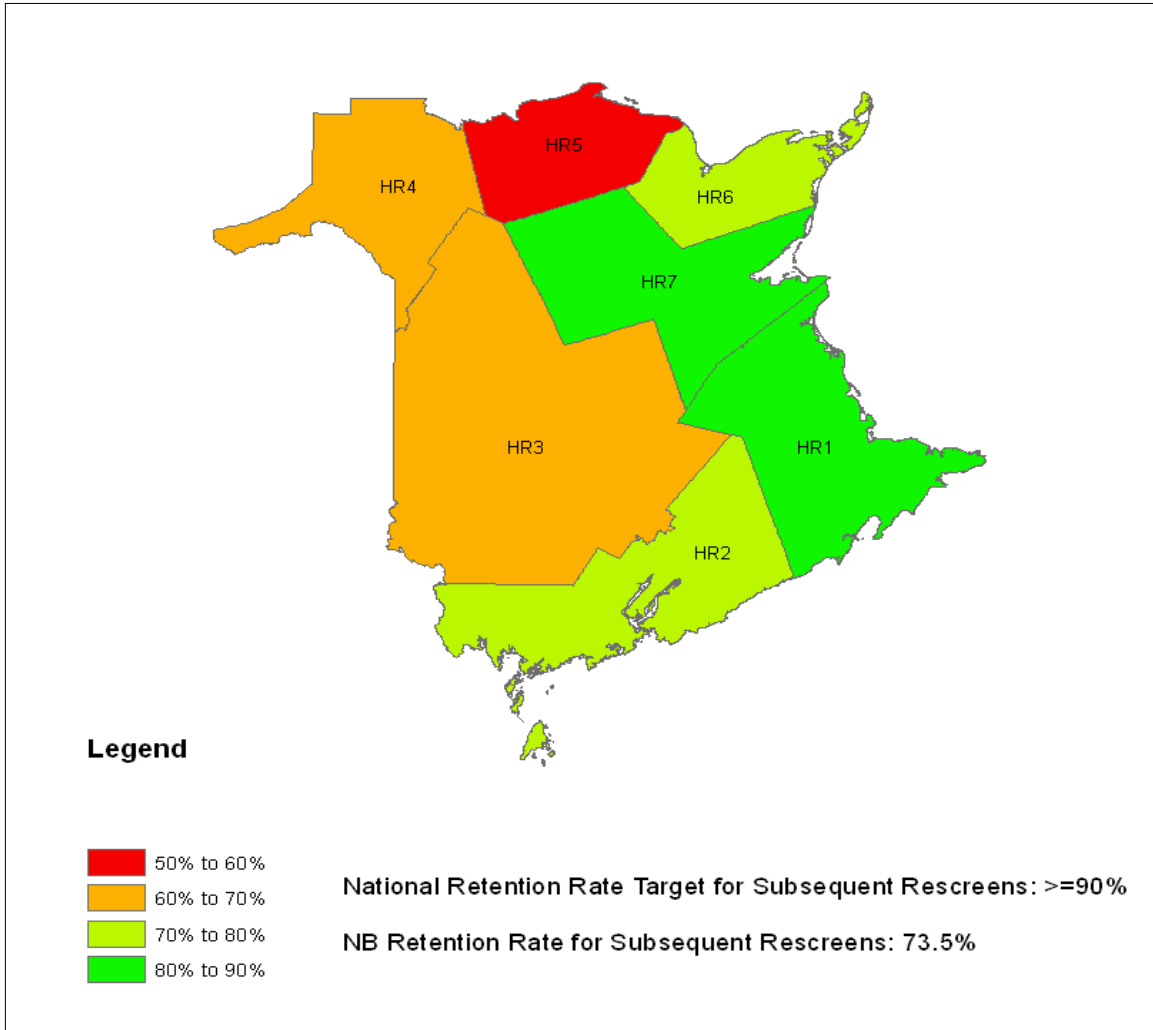
Between 1996 and 2007, the retention rates of *initial* rescreen and *subsequent* rescreen for New Brunswick women aged 50-67 were lower than the national targets (D15-D17). However, the retention rates of *initial* rescreen for HZ1SE (76.2%) and HZ7 (72.3%) in 2004-2005 were not only close to the recommended national target (75%) but higher than the national average (68.9% in 2005-2006).⁴ Interestingly, the retention rates of the *subsequent* rescreen for these two health zones (84.7% for HZ1SE and 87.5% for HZ7 in 2004-2005) are also higher than the national average of 81.3% in 2005-2006.⁴ Discrepancies associated with 4 different age groups (50-54, 55-59, 60-64 and 65-69) and health regions for *initial* rescreen and *subsequent* rescreen are also presented in D18 and Maps 3-4.

A higher retention rate indicates that women who have participated in the breast cancer screening program are more likely to return to the program for subsequent screening. Attainment of retention rates consistent with national targets ultimately improves program performance by earlier detection of breast cancers.

Map 3: NBBCSS Retention Rate for Initial Rescreen by HR, 2006-2007



Map 4: NBBCSS Retention Rate for Subsequent Rescreen by HR, 2006-2007



3.3 Results of Screening by Health Zone

3.3.1 Abnormal Call Rate

Abnormal Call Rate is defined as the percentage of screens that are referred for further testing due to an abnormal result from initial and subsequent screens.

The national target is $<10\%$ for women undergoing *initial* screen and $<5\%$ for women undergoing *subsequent* screens. Abnormal call rate measures how

well the program identifies asymptomatic women as potentially having breast cancer.

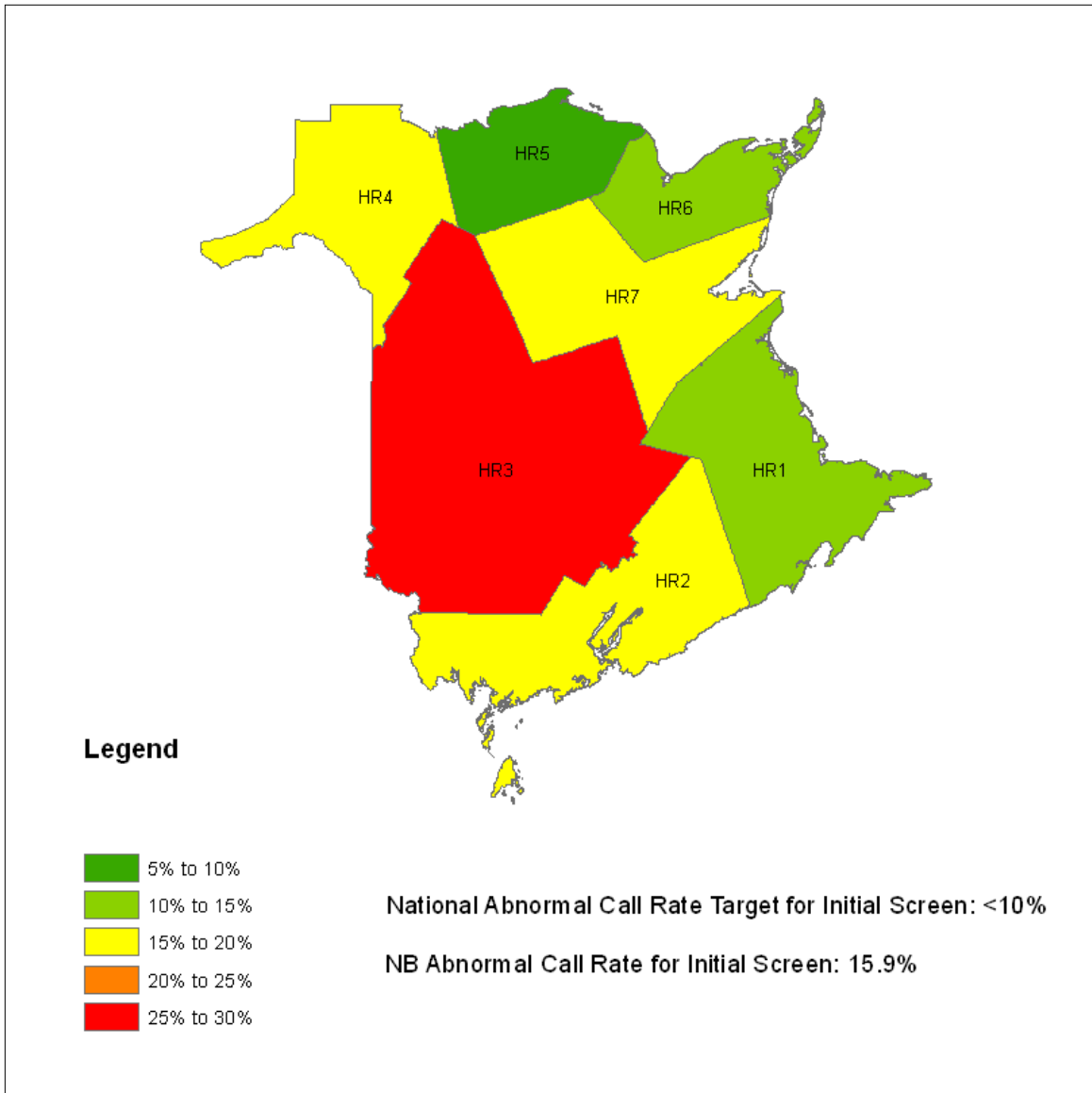
D19 (D20-D21) indicates that the abnormal call rates for NB, as a whole, are higher than the national targets over multiple screening intervals for both *initial* screen and *subsequent* screens except for *initial* screen in 1996-1997 (8.9%).

The abnormal call rates for both *initial* screen and *subsequent* screens in NB are close to the national averages (12.2% for *initial* screen and 6.0% for *subsequent* screens in 2005-2006).⁴

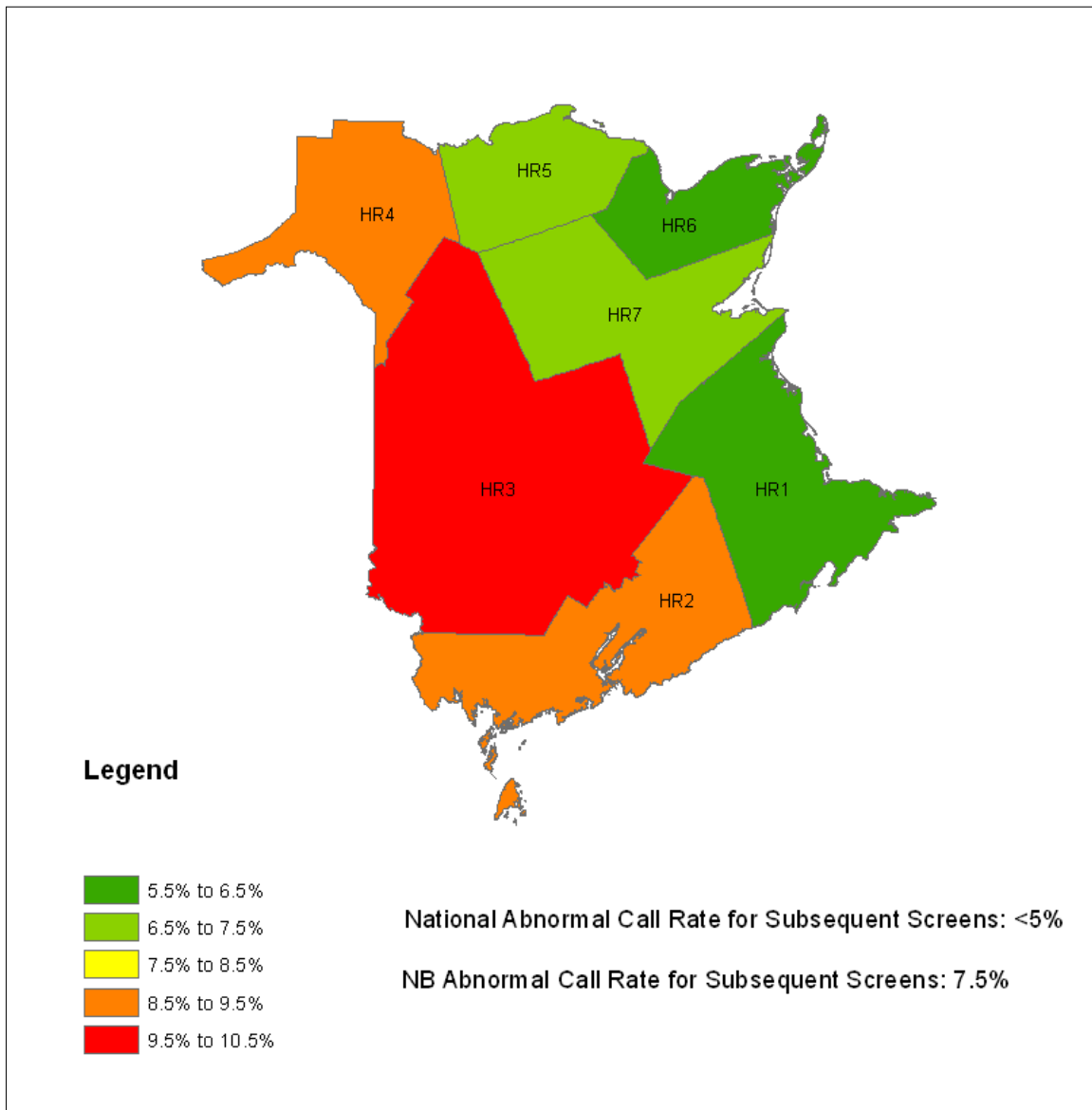
In HZ1SE, the abnormal call rates for both *initial* screen and *subsequent* screens are fairly close to the national targets except for the screen interval 2008-2009 (12.7% for *initial* screen and 6.3% for *subsequent* screens). HZ3 had the highest abnormal call rates for both *initial* screen (e.g., 29.1% in 2008-2009) and *subsequent* screens (10.5% in 2008-2009). Both are significantly higher than the national targets and other health zones. Differences in abnormal call rates (*initial* screen and *subsequent* screens) across health regions are presented in Maps 5-6.

Abnormal call rate in the 50-69 age group decreases with age from 17.2% to 13.4% for *initial* screen and from 8.1% to 7.5% for *subsequent* screens (D22). The abnormal call rate is considerably lower for older women who have had multiple mammograms. This is likely due to the fact that older women have been in the screening program for many years and the likelihood of being recalled with an abnormal result is significantly reduced.

Map 5: NBBCSS Abnormal Call Rate for Initial Screen by HR, 2008-2009



Map 6: NBBCSS Abnormal Call Rate for Rescreen by HR, 2008-2009



3.3.2 Positive Predictive Value

Positive predictive value is another performance indicator that offers insight into the accuracy of identifying asymptomatic women with breast cancer.⁴ The positive predictive value is defined as follows:

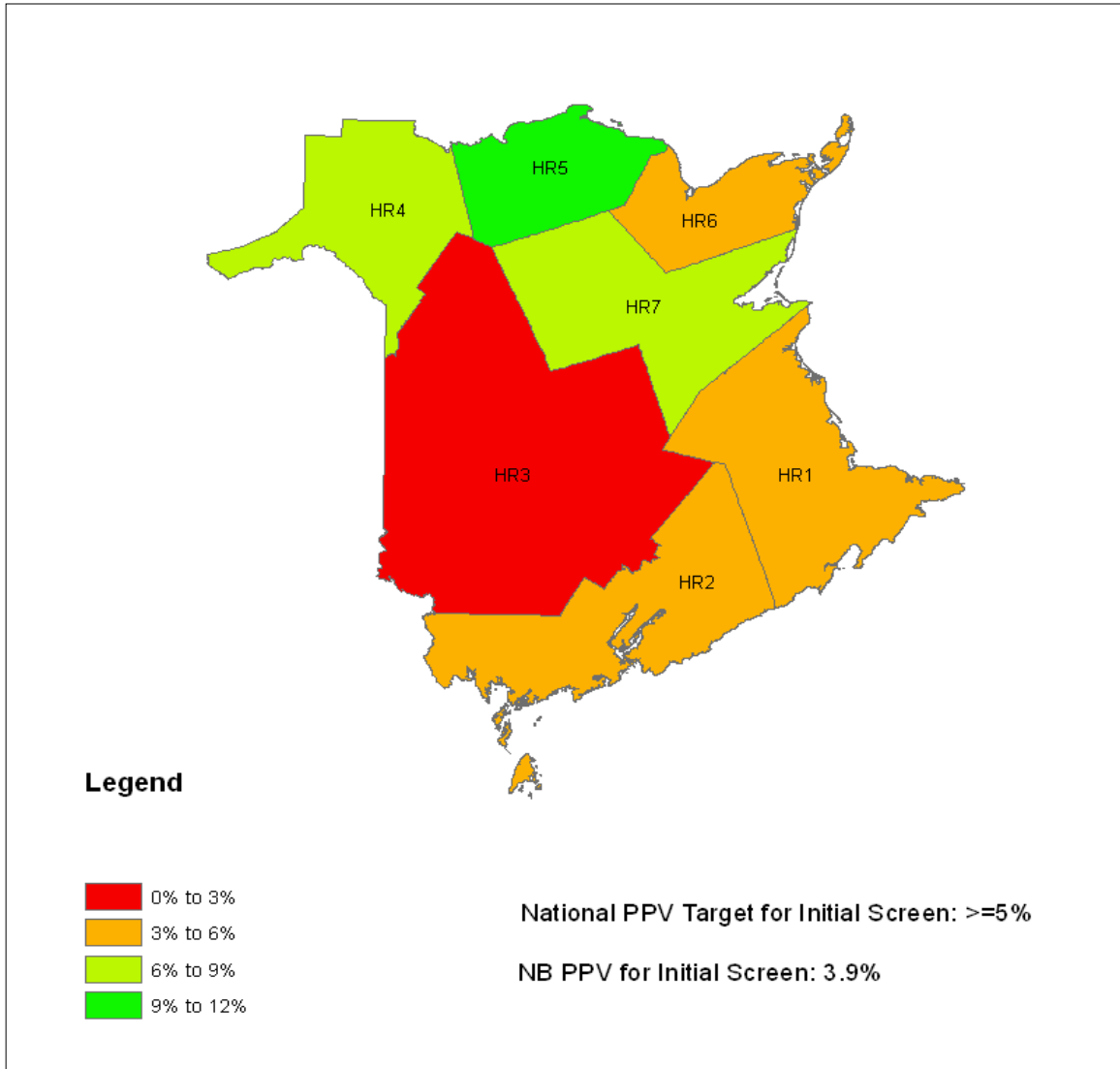
*The proportion of abnormal cases with completed follow-up found to have breast cancer (invasive or in situ) after diagnostic work-up.*⁴

The national target is $\geq 5\%$ for *initial* screen and $\geq 6\%$ for *subsequent* screens. A high positive predictive value indicates the minimization of unnecessary follow-up work.⁴

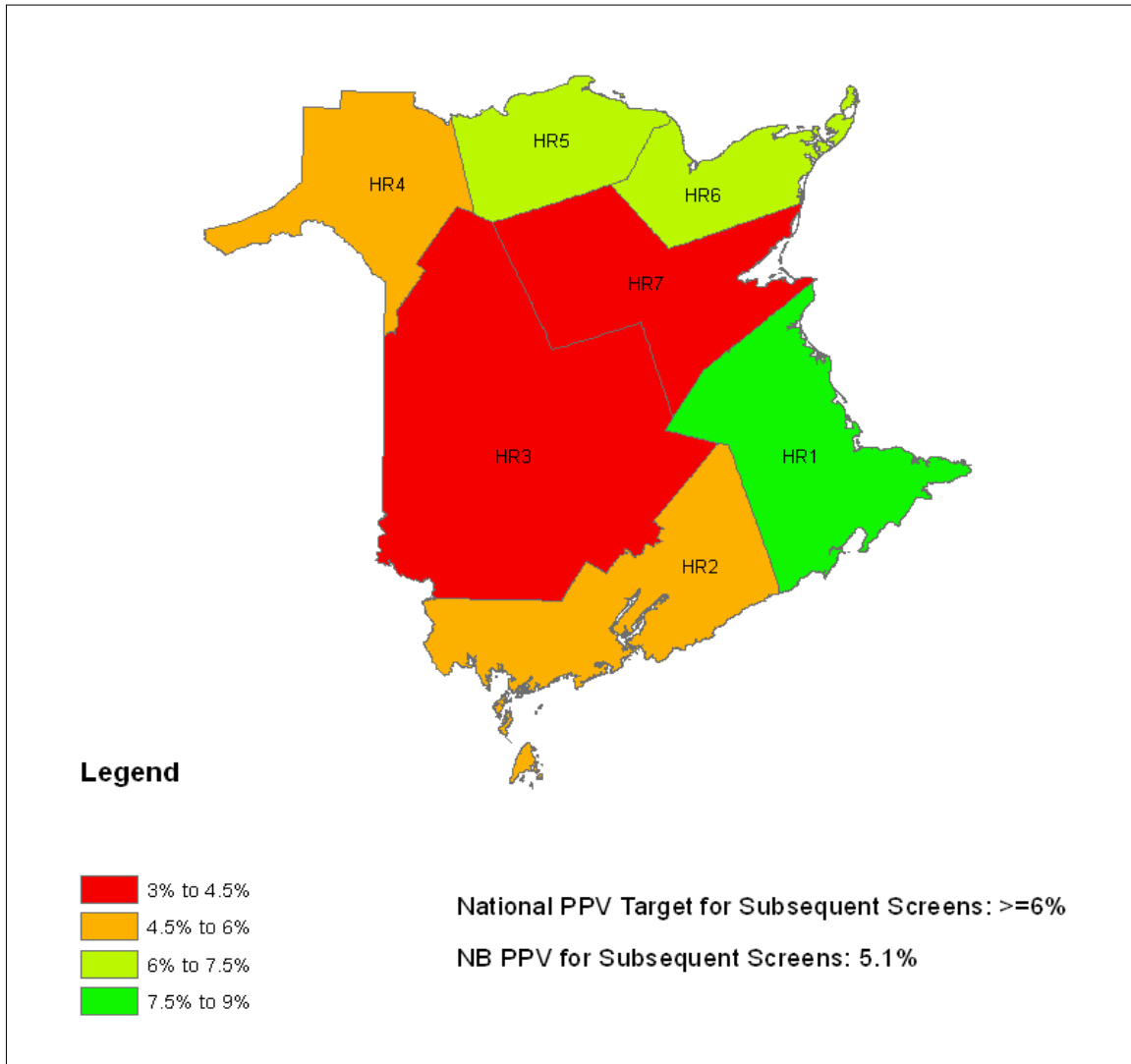
Since 1996, the positive predictive values in NB for *initial* screen and *subsequent* screens have been lower than the national targets (D23-D25) except for *initial* screen in 1996-1997 (5.2%). Due to the small number of breast cancer cases (ductal carcinoma in situ or invasive), the positive predictive value of *initial* screen and *subsequent* screens varies irregularly when analyzed at health zone level (D23). For *initial* screen in HZ4 and HZ7, the positive predictive values appear to be increasing over multiple screen intervals. For example, the positive predictive value of HZ7 increased from 6.0% in 2002-2003 to 7.5% in 2008-2009, which is achieving the national target value of 5%. For women who attended their *subsequent* screens, the positive predictive values of HZ1B and HZ1SE are consistently higher than the national target (6%) for the reported screen intervals, e.g., the positive predictive value of *subsequent* screens for HZ1SE ranged from a low of 6.7% in 1996-1997 to a high of 8.3% in 2008-2009. Maps 7-8 illustrate the differences in the positive predictive value across health regions by *initial* screen and *subsequent* screens.

D26 shows that the positive predictive value is greater for women over 65 years of age for both *initial* screen and *subsequent* screens. Possible explanations for this observation is that breast cancer incidence generally increases with age and older women tend to have less dense breasts than younger women, resulting in easier detection.¹⁰

Map 7: NBBCSS Positive Predictive Value (PPV) Rate for Initial Screen by HR, 2008-2009



Map 8: NBBCSS Positive Predictive Value (PPV) Rate for Rescreen by HR, 2008-2009



3.4 Diagnostic Process used in NBBCSS by Health Zone

3.4.1 Diagnostic Interval

Diagnostic Interval refers to the duration (in weeks) from abnormal screen to its resolution. The national target is defined as $\geq 90\%$ of abnormal screens should be resolved within 5 weeks if no tissue biopsy is required and $\geq 90\%$ within 7 weeks if a tissue biopsy is required during diagnostic follow-up.

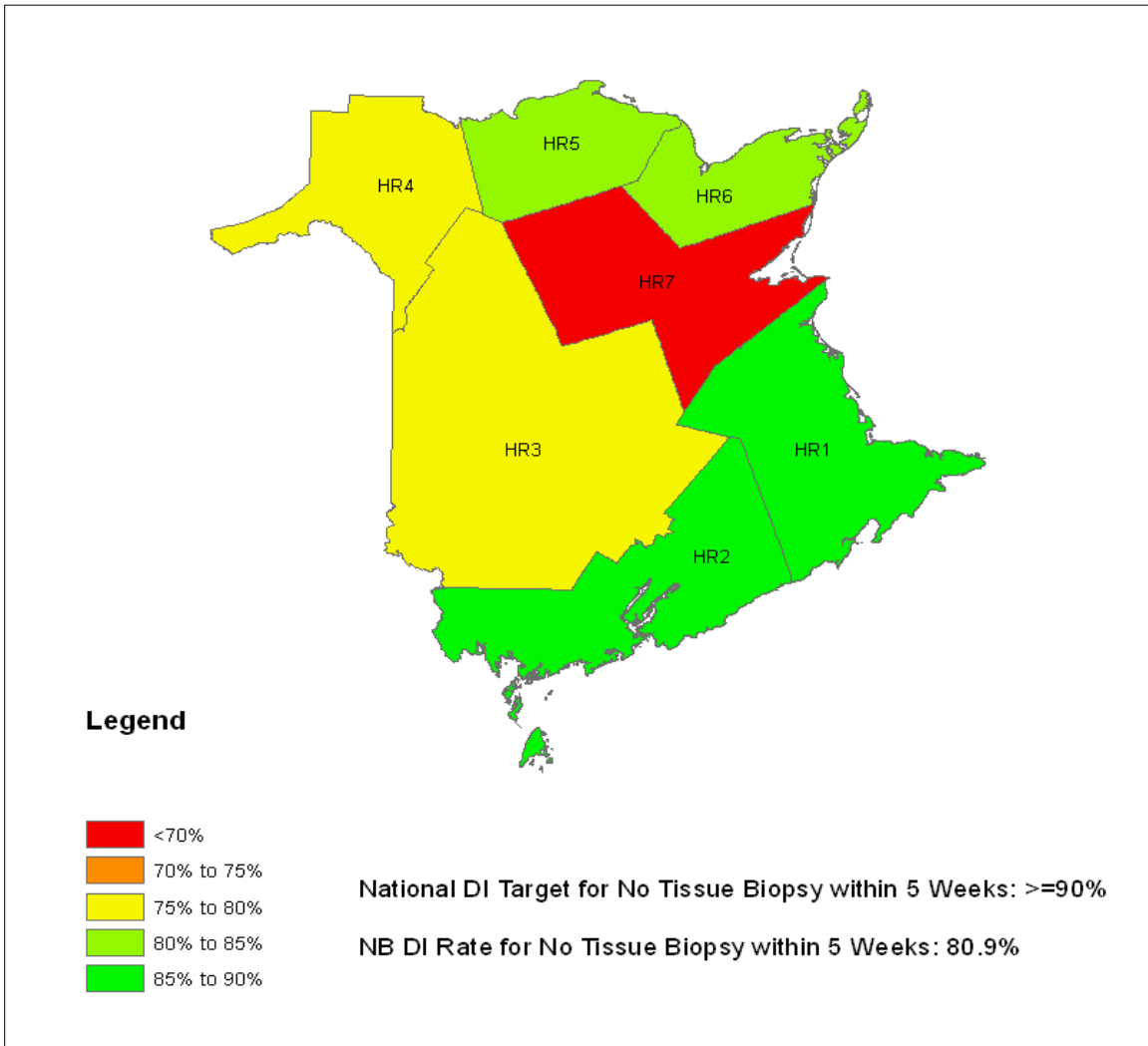
Most women with abnormal screen results, as suggested by the positive predictive value, do not actually have breast cancer; however, additional assessment is required for a definitive diagnosis. Diagnostic assessment includes additional radiological or surgical assessment including diagnostic mammography, ultrasonography, fine needle aspiration, core and/or open surgical biopsy.

Since 1996-1997, the percentage of NB women diagnosed within 5 weeks who did not require a tissue biopsy has generally been over 80% with the exception of the screen interval 2000-2001 (D27-D28). The highest value observed was 89.5% in 2004-2005, which is fairly close to the national target (90%). The percentages of women diagnosed within 7 weeks who did require a tissue biopsy has increased to 50.4% in 2008-2009 (D27 and D29), which is higher than the national average of 46.7% in 2005-2006.⁴

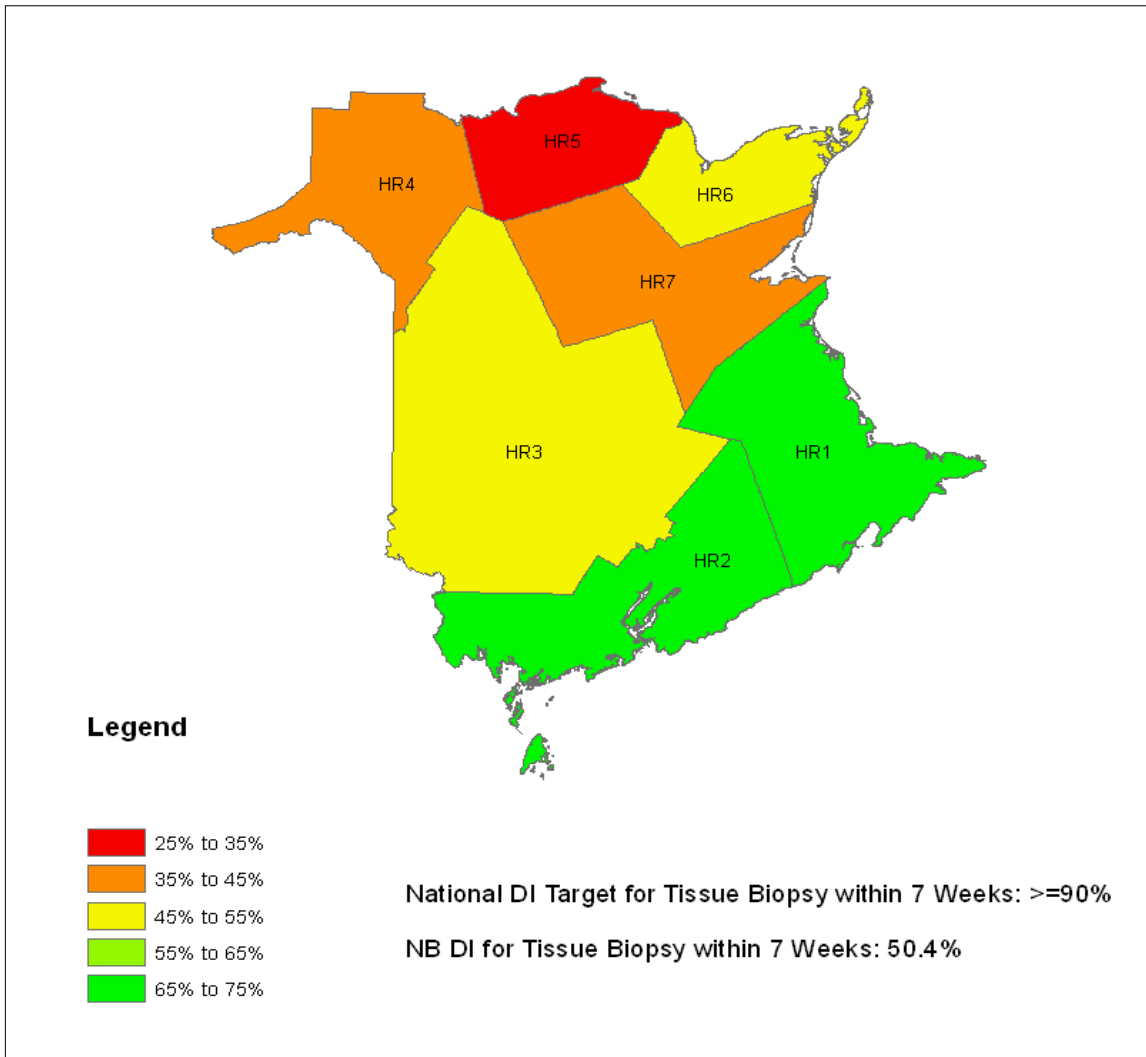
D27 also shows that HZ1B, HZ1SE and HZ2 had a higher percentage of women diagnosed within 5 weeks who did not need a tissue biopsy. For example, in 2004-2005, the percentage of women diagnosed within 5 weeks was 90.7% for HZ1B, 91.8% for HZ1SE and 91.6% for HZ2, respectively. For women diagnosed within 7 weeks who did require a tissue biopsy, HZ2 had the highest values of 75.7% in 2002-2003 and 80.5% in 2004-2005. Diagnostic interval across health regions are also presented in Maps 9-10.

A greater proportion of women aged 60 to 69 ($>81\%$) had the resolution of abnormal screen in 2008-2009 if no tissue biopsy was required within 5 weeks. Also, a higher proportion of women aged 55 to 59 (56%) had the resolution if tissue biopsy was required within 7 weeks (D30).

Map 9: NNBCSS Diagnostic Interval (DI) for Women without Tissue Biopsy (< 5 weeks) by HR, 2008-2009



Map 10: NBBCSS Diagnostic Interval (DI) for Women with Tissue Biopsy (< 7 weeks) by HR, 2008-2009



3.4.2 Benign Open Surgical Biopsy Rate

Although a target has not been set for this indicator, benign open surgical biopsy includes cases that went directly to an open surgical biopsy as their primary diagnostic assessment and those who underwent a core biopsy prior to a definitive diagnosis by open surgical biopsy.

Since 1996-1997, the benign open surgical biopsy rate in NB for initial screen has ranged from 4.6 to 9.4 per 1000 screens, while the national average was 3.4 per 1,000 screens in 2005-2006 (D31-D32). The benign open surgical biopsy rate in NB for *subsequent* screens has decreased from 6.0 in 1996-1997 to 1.5 per 1,000 screens in 2008-2009 (D31 and D33). The rate in NB for *subsequent* screens in 2006-2007 (2.5 per 1,000 screens) was similar to the national average in 2005-2006 (2.1 per 1,000 screens).⁴

HZ1B (17.4 in 2008-2009), HZ3 (22.9 in 2004-2005) and HZ7 (21.6 per 1,000 screens in 1996-1997) had higher benign open surgical biopsy rates for *initial* screen when compared with other health zones during the same periods (D32). The rates of the majority of health zones (except for HZ1B and HZ4) for *subsequent* screens follow a decreasing pattern similar to NB as a whole. D34 shows the differences in benign open surgical rate by 4 different age groups (50-54, 55-59, 60-64 and 65-69).

Since 2004, the benign open surgical biopsy rate for NB has shown a decreasing trend in both *initial* screen and *subsequent* screens (D31). This indicates that the use of the open surgical biopsy procedure may be declining in New Brunswick.

3.4.3 Benign Core Biopsy Rate

“The rate of benign core biopsy can provide an indication of the quality of pre-surgical assessment but no target has been set for this indicator”.⁴

Overall, the benign core biopsy rate in NB for *initial* screen has increased from 2.7 in 1996-1997 to 10.9 per 1,000 screens in 2008-2009, with the highest rate seen in the

2006-2007 screening interval (12.5 per 1,000 screens, D35-D36). The rate of *initial* screen for HZ1B (3.1 to 12.5), HZ2 (6.4 to 14.6), HZ3 (0.0 to 20.3) and HZ7 (2.2 to 12.0 per 1,000 screens) has also increased over multiple screening intervals. These rates are comparable to the national average rate of 13.0 per 1,000 screens in 2005-2006.⁴

The benign core biopsy rate in NB for *subsequent* screens has been stable with a slight increase starting from the 2002-2003 screening interval (D35 and D37). The rates of benign core biopsy for *subsequent* screens are similar to the national average rate of 4.8 per 1,000 screens in 2005-2006.⁴ Between 1996 and 2009, the majority of health zones have shown an increase in the rate. For example, the benign core biopsy rate of HZ3 for *subsequent* screens has increased from 0.0 in 1996-1997 to 4.9 per 1,000 screens in 2008-2009, while the rates in HZ2 rose from 6.1 to 6.5 for the same periods (D35 and D37). Age variations in benign core biopsy rate are also reported in D38.

As shown, the benign core biopsy rates in NB for both *initial* screen and *subsequent* screens have increased since 2002. This suggests an increasing trend towards use of core biopsy in New Brunswick (D35).

3.5 Cancer Detection by Health Zone

3.5.1 In Situ Cancer Detection Rate

In situ cancer detection rate is defined as the number of ductal carcinoma in situ (DCIS) cancers detected (rather than invasive cancers) per 1,000 screens. Due to lack of evidence of the transition of DCIS to invasive cancer and increasing accuracies of screening techniques, no target has been set for in situ cancer detection rate in Canada.⁴

D39 shows that the overall in situ cancer detection rate in NB for *initial* screen ranges from a low of 0.3 in 1996-1997 to a high of 1.3 per 1,000 screens in 2006-2007 in comparison to the national average of 1.2 per 1,000 screens.⁴ The rates for *subsequent* screens vary from a low of 0.2 in 1996-1997 to a high of 1.0 per 1,000 screens in 2002-2003. The national average was 0.9 per 1,000 screens in 2005-2006.⁴

In situ cancer detection rates, stratified by health zone and 4 different age groups (50-54, 55-59, 60-64 and 65-69) for *initial* screen and *subsequent* screens, are reported in D39-D42. As mentioned in the *Method* section, caution should be exercised in the interpretation of these results due to the small number of DCIS breast cancers.

3.5.2 Invasive Cancer Detection Rate

Invasive cancer detection rate is the number of invasive breast cancers detected per 1,000 screens. The national target for invasive cancer detection rate is >5 per 1,000 screens for *initial* screen and >3 per 1,000 for *subsequent* screens.

The invasive cancer detection rate in NB for *initial* screen ranged from 2.7 in 1996-1997 to 5.2 per 1,000 screens in 2008-2009 (D43-D44) in contrast to the national average of 4.6 cases per 1,000 screens in 2005-2006.⁴ The rate in NB for *subsequent* screens is slightly lower than the national average of 3.7 per 1,000 screens in 2005-2006.⁴ Since 1996, it has been stable at around 3.0 per 1,000 screens over 7 screening intervals.

HZ4, HZ5 and HZ7 have a relatively higher invasive cancer detection rate for *initial* screen (D44); whereas HZ1SE, HZ4 and HZ6 have a higher detection rate on *subsequent* screens than other NB health zones (D45). Age variations in invasive cancer detection rate are presented in D46. Similar to the national trends in invasive cancer detection rate,^{2, 3, 4} D43 shows that the invasive cancer detection rate for *initial* screens is higher than for *subsequent* screens in New Brunswick.

3.5.3 Invasive Cancer Tumour Size

Data has shown that patients diagnosed with an earlier stage cancer (i.e., smaller tumour size) tend to have a better survival. The national target for invasive tumour size ≤ 10 mm is >25% and for invasive tumour size ≤ 15 mm is >50%.

D47 illustrates that the percentage of invasive tumours ≤ 10 mm for NB ranged from a low of 25.7% in 2006-2007 to a high of 48.4% in 1996-1997, which achieves the national

target (>25%). Similarly, the percentage of invasive tumours ≤ 15 mm ranged from 56.5% in 2002-2003 to 70.3% in 1996-1997, both of which achieved the national target (>50%).

Overall, the provincial averages of invasive tumour size are fairly close to the national averages (34.1% for ≤ 10 mm and 61.8% for ≤ 15 mm in 2005-2006)⁴ across multiple screening intervals.

Both HZ4 (37.5%) and HZ5 (50.0%) had higher percentages of invasive tumour size ≤ 10 mm in 2006-2007 when compared with other health zones. A higher percentage of tumour size ≤ 15 mm was also observed in HZ4 (75.0%) and HZ7 (72.7%) in the same period (D47-D49). Differences in invasive cancer tumour size for ≤ 10 mm and for ≤ 15 mm by 4 different age groups (50-54, 55-59, 60-64 and 65-69) are examined in D50.

3.6 Post-Screen Invasive Cancers by Health Zone

Post-screen cancers are cancers that develop after a normal screening episode but before the next screen. Post-screen invasive cancers include interval cancers (women who become symptomatic prior to the next regular screen) and non-compliant cancers (women who do not return for their regular annual or biennial screen after a recommended screen episode). The national target is for less than 6 women per 10,000 person-years to be diagnosed with a post-screen cancer within 12 months, and less than 12 women per 10,000 person-years diagnosed within 24 months of screening. Women with a benign screening result who later develop breast cancer are included in the numerator and their contributed person times are also included in the denominator for the post-screen invasive cancer rate calculation. For example, the 1996-1997 post-screen invasive cancer rate is computed based on all women screened from 1996 to 1997 who developed an interval cancer during 1998 to 1999.

Since 1996, the post-screen invasive cancer rate in NB within 12 months has decreased from 9.3 in 1996-1997 to 4.2 women per 10,000 person-years in 2008-2009, with the highest value of 9.9 women per 10,000 person-years observed in the 2000-2001 screen interval (D51-D53). The same applies for the rate in NB within 24 months which has

decreased from 12.2 in 1996-1997 to 5.0 women per 10,000 person-years in 2008-2009. Most post-screen rates for NB are slightly higher than the national average in 2005-2006 (6.3 within 12 months and 7.4 per 10,000 person-years within 24 months).⁴ D54 shows the differences in post-screen invasive cancer by 4 different age groups (50-54, 55-59, 60-64 and 65-69).

Significant variations in post-screen invasive cancer have been observed across health zones. This is due to the small number of post-screen invasive cancer cases, especially for smaller health zones with lower female populations aged 50 to 69 years (D51-D53). For example, the post-screen invasive cancer rate within 12 months for HZ2 in 2000-2001 was 10.7 women per 10,000 person-years but it was 0.0 in HZ4 and HZ5.

Chapter 4: Conclusions and Future Considerations

The primary goal of breast cancer screening is to reduce breast cancer mortality through early detection. Organized screening programs have the potential to achieve higher participation and retention rates than opportunistic screening. Based on the information provided by the Public Health Agency of Canada, the New Brunswick Breast Cancer Screening Services (NBBCSS) program has the second highest biennial participation rate in Canada at 53.0% for women aged 50 to 69 between 2005 and 2006.⁴ Overall, the biennial participation rate in 2008-2009 across health regions varied from a low of 45.7% to a high of 68.4% (*Appendix D – D12*) which is very close to the national target of 70%.

Observed variations in performance indicators across health regions could be due to the small numbers involved in the calculation process as indicated in the *Method* section. Further studies with larger sample size may be required to address this issue, especially for health regions with smaller eligible screening populations.

Future considerations for enhancement of the screening program have also been identified. As stated in our provincial cancer report,⁵ there remains a large proportion of women diagnosed with breast cancer who have never participated in organized breast cancer screening. This appears to include those who live in small communities, remote rural areas or those who have difficulty accessing the program. Efforts should be made to encourage regular participation in the provincial breast cancer screening program especially for these women who are seldom or never screened.

Many other health planning strategies may be utilized to improve the efficiency of the breast cancer screening program, as well as monitoring cost-effectiveness. These include routine reminders of next screening test, enhanced procedures to ensure follow-up after abnormal test results, regular monitoring and evaluation of the screening program, as well as promoting and encouraging our program to participate in local or national research initiatives that impact on breast cancer (e.g., *the Public Health Agency of Canada Breast Cancer Mortality Project*).

Increased emphasis on cancer prevention is also crucial to reducing the burden of illness due to cancer in New Brunswick. The Department of Health encourages positive lifestyle behaviors such as physical activity, healthy eating, smoking cessation and limited alcohol consumption. In the future, NBCN hopes to build a solid foundation for cancer screening programs by possibly integrating New Brunswick's three different screening services (breast, cervical and colon cancers) with the goal of enhancing screening activities province-wide.

Appendix A: NBBCSS Committee: Terms of Reference

NB Department of Health (New Brunswick Cancer Network)

NB Breast Cancer Screening Services Advisory Committee

TERMS OF REFERENCE

Mandate:

An advisory committee of the New Brunswick Cancer Network (NBCN)

- To ensure a standardized provincial and consistent approach to breast cancer screening
- To provide a provincial forum and network to review, discuss and recommend strategies to optimize breast cancer screening services and achieve performance measures; and,
- To ensure linkages with national organizations and initiatives.

Functions:

- Review breast cancer screening program performance measures and indicators and identify specific issues related to breast cancer screening that would benefit from collaborative provincial action
- Make recommendations to the NBCN regarding strategies and actions aimed at service improvement and best practices in the provision of breast cancer screening
- Decide on uniform data variables suitable for inclusion into the NB Breast Cancer Screening database, in partnership with recommendations from the national organization, and to review the utilization of data from the provincial database
- Facilitate the exchange of information and promote consistency of service delivery; and,
- Recommend revisions of the NB Breast Cancer Screening Services Policy and Standards, as needed.

The NBBCSS Advisory Committee may establish ad hoc sub-committees or working groups, as required, in order to carry out specific functions/tasks.

Membership:

- Regional Health Authorities (10 members - 5 per RHA). From each RHA:
 - Administrative Lead with responsibility for breast cancer screening services
 - One representative of breast cancer screening services from each Health Zone
- NB Department of Health (4 members):
 - NBCN Coordinator – Cancer Screening (Chair of the Committee)
 - NBCN Epidemiologist or Biostatistician responsible for breast cancer screening
 - NBCN Coordinator – Quality Management and Accountability
 - Administrator/Analyst of the NB Breast Cancer Screening database
 - NBCN Co-CEOs
- One representative from the Section of Radiology, NB Medical Society
- One representative from the Section of Family Medicine / General Practice, NB Medical Society; and,
- One representative from the Canadian Cancer Society - NB Division.

Other individuals may be selected as resource persons and attend meetings as required.

Duration of terms:

- The term is 2 years. Individuals may be reappointed.
- There is no limit to the number of terms a person may serve.

Frequency of meetings:

- At least two meetings annually.

Reporting relationship:

The committee shall report to the NBCN, a Division of the NB Department of Health.

Revised: December, 2011
Updated: May 2007, November 2002
June 1998.

Appendix B: NBBCSS Sites (1995-2009)

New Brunswick Breast Cancer Screening Services Sites	
Vitalité Health Network Zone 1	Horizon Health Network Zone 1
Dr. Georges-L. Dumont Regional Hospital Radiology (Diagnostic Imaging) Department 330 University Avenue Moncton, NB E1C 2Z3 Mammograms: 506-862-4090	Katherine Wright Centre (K.W.C.) 100 Arden Street, Suite 100 Moncton, NB E1C 6Z8 Mammograms: 506-855-2010
Horizon Health Network Zone 2	
St. Joseph's Hospital St. Joseph's Women's Health Centre 130 Bayard Drive Saint John, NB E2L 3L6 Mammograms: 506-632-5566	Charlotte County Hospital Diagnostic Imaging Department 4 Garden Street St. Stephen, NB E3L 2L9 Mammograms: 506-465-4450
Sussex Health Centre Diagnostic Imaging Department 75 Leonard Drive Sussex, NB E4E 2P7 Mammograms: 506-432-3431	
Horizon Health Network Zone 3	
Oromocto Public Hospital Diagnostic Imaging Department 103 Winnebago Street Oromocto, NB E2V 1C6 Mammograms: 506-357-4745 / 1-800-656-7575	Upper River Valley Hospital Diagnostic Imaging Department 14462 Route 2 Waterville, NB E7P 2T5 Mammograms: 506-325-6700 / 1-800-656-7575
Hôpital Hotel-Dieu of St. Joseph Diagnostic Imaging Department 10 Woodland Hill Perth-Andover, NB E7H 5H5 Mammograms: 506-273-7181 / 1-800-656-7575	
Vitalité Health Network Zone 4	
Edmundston Regional Hospital Diagnostic Imaging Department 275 Hébert Boulevard, Edmundston, NB E3V 4E4 Mammograms: 506-739-7346 or 1-877-739-7346	Grand Falls General Hospital Diagnostic Imaging Department 625 Évérard H. Daigle Boulevard, Box 7061, Grand Falls, NB E3Z 2R9 Mammograms: 506-739-7346 or 1-877-739-7346
Vitalité Health Network Zone 5	
Campbellton Regional Hospital Diagnostic Imaging Department 189 Lily Lake Road P.O. Box 880 Campbellton, NB E3N 3H3 Mammograms: 506-789-5188	St. Joseph Community Health Centre Diagnostic Imaging Department 280 Victoria Street, Unit # 1 Dalhousie, NB E8C 2R6 Mammograms: 506-789-5188
Vitalité Health Network Zone 6	
Chaleur Regional Hospital Diagnostic Imaging Department 1750 Sunset Drive Bathurst, NB E2A 4L7 Mammograms: 1-866-931-4400	L'Hôpital de Tracadie-Sheila Diagnostic Imaging Department 400, rue des Hospitalières C.P. 3180, succ. Bureau-chef Tracadie-Sheila, NB E1X 1G5 Mammograms: 506-726-2194 or 1-866-931-4400
Community Health Centre l'Enfant-Jésus Hospital Diagnostic Imaging Department 1 St. Pierre Boulevard West, P.O. Box 900 Caraquet, NB E1W 1B6 Mammograms: 506-726-2194 or 1-866-931-4400	
Horizon Health Network Zone 7	
Miramichi Regional Hospital Diagnostic Imaging Department 500 Water Street Miramichi, NB E1V 3G5 Mammograms: 506-623-6140	

Appendix C: An example of NB Cancer Registry Data Quality Report (2002-2006)

New Brunswick Cancer Registry Data Quality Report¹ from Canadian Cancer Registry (CCR), 2002-2006

	Indicator Name and Description	Metric	Optimal Value	Data Quality Report				
				2002	2003	2004	2005	2006
Accuracy	1. Completeness of Case Ascertainment	% ratio	≥ 90 2.60:1	98.9 N/A	97.2 2.23:1	98.9 2.14:1	97.2 2.23:1	94.4 2.33:1
	2. Records Rejected by Edit System	%	< 1	1.4	0.7	1.4	0.7	0.9
	3. Microscopically Confirmed Cases	%	≥ 93	92.3	92.0	92.3	92.0	92.9
	4. Death Certificates Only	%	0 to 3	0.2	0.0	0.0	0.0	0.1
	5. Unknown Primary Site of Cancer	%	< 2.3	1.6	0.9	1.6	0.9	1.1
	6. Missing Information	%						
	Postal Code	%	< 1	0.0	0.0	0.0	0.0	0.0
Month of diagnosis	%	< 1	0.0	0.0	0.0	0.0	0.0	
Month of birth	%	< 1	0.0	0.0	0.0	0.0	0.0	
Death registration number	%	< 10	0.2	0.0	0.2	0.6	1.1	
Comparability	7. Reporting of Staging Data using the Collaborative Staging System	Yes/No	Yes	No	No	No	No	No
	8. Reporting of Cancer Records using ICD-O-3²	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes
	9. Reporting of Multiple Primaries (CCR rules)	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes
Timeliness	10. Data Submission Delay Data Submission within one month of deadline.	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes
Usability	11. Cancer Incidence Fully Reported	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes

¹ Source: Statistics Canada.

² ICD-O-3= International Classification of Diseases for Oncology, Third Edition.

NOTE: Data quality report refers to only invasive tumours (behavior code 3).

Appendix D: Tables and Figures

Note: The geographic definition of Health Region (or Health Zone), in this report, is defined as: Health Region 1 (HR1) includes both Health Zone1 *Beauséjour* (HZ1B) and Health Zone 1 *Southeast* (HZ1SE), HR2=HZ2, HR3=HZ3, HR4=HZ4, HR5=HZ5, HR6=HZ6 and HR7=HZ7.

D1: Number of new female breast cancer cases by year of diagnosis and Health Region (HR), NB

Year of Diagnosis	NB	HR1	HR2	HR3	HR4	HR5	HR6	HR7
1980	235	59	64	57	10	9	25	11
1981	239	54	78	59	12	11	12	13
1982	272	68	78	57	14	15	23	17
1983	279	75	84	57	16	12	16	19
1984	308	89	77	57	19	18	29	19
1985	306	79	100	53	17	16	26	15
1986	286	78	89	67	7	7	23	15
1987	319	77	86	72	25	18	24	17
1988	338	84	89	77	18	16	30	24
1989	340	85	96	84	16	11	33	15
1990	354	83	88	90	26	21	23	23
1991	418	103	115	97	21	13	45	24
1992	380	97	98	78	27	21	31	28
1993	430	110	95	105	25	17	48	30
1994	431	100	129	76	36	18	47	25
1995	427	101	106	90	33	15	52	30
1996	447	108	106	123	30	14	46	20
1997	459	105	127	104	19	17	54	33
1998	479	130	118	100	31	18	51	31
1999	486	121	118	112	39	22	47	27
2000	470	106	124	108	34	16	59	23
2001	487	139	133	103	26	22	40	24
2002	486	141	105	120	26	18	47	29
2003	507	136	118	106	31	21	52	43
2004	459	106	110	110	24	18	64	27
2005	550	147	136	116	32	23	58	38
2006	513	131	130	98	41	13	68	32
2007	541	174	133	96	37	19	54	28
2008	546	163	123	105	31	23	72	29
2009	573	191	113	116	42	18	65	28
2010	578	178	138	113	40	20	63	26
Total	12,943	3,418	3,304	2,806	805	520	1,327	763

New Brunswick Breast Cancer Screening Performance Indicators Report

D2: Age-standardized incidence rates* (ASIRs) for female breast cancer by year and Health Region (HR), NB

Year of Diagnosis	NB ASIR (95% CI)	HR1 ASIR (95% CI)	HR2 ASIR (95% CI)	HR3 ASIR (95% CI)	HR4 ASIR (95% CI)	HR5 ASIR (95% CI)	HR6 ASIR (95% CI)	HR7 ASIR (95% CI)
1980	65.9 (57.4-74.3)	68.2 (50.8-85.6)	66.9 (50.5-83.3)	76.3 (56.5-96.1)	42.4 (16.1-68.7)	50.4 (17.5-83.3)	69.1 (42.0-96.2)	44.6 (18.2-70.9)
1981	65.8 (57.5-74.2)	60.7 (44.5-76.9)	80.6 (62.7-98.5)	79.0 (58.8-99.1)	45.0 (19.5-70.4)	60.1 (24.6-95.6)	32.5 (14.1-50.8)	58.0 (26.5-89.5)
1982	75.5 (66.6-84.5)	75.9 (57.9-93.9)	84.8 (66.0-103.6)	75.0 (55.5-94.5)	54.0 (25.7-82.3)	84.2 (41.6-126.8)	62.4 (36.9-87.9)	71.9 (37.7-106.1)
1983	76.7 (67.7-85.7)	82.8 (64.1-101.5)	89.6 (70.4-108.7)	73.5 (54.4-92.6)	65.7 (33.5-97.9)	65.6 (28.5-102.8)	43.8 (22.3-65.3)	82.8 (45.6-120.1)
1984	85.2 (75.7-94.7)	99.5 (78.8-120.1)	85.1 (66.1-104.1)	74.3 (55.0-93.6)	80.4 (44.2-116.5)	103.2 (55.5-150.9)	78.9 (50.2-107.6)	76.9 (42.3-111.4)
1985	84.0 (74.6-93.4)	86.1 (67.1-105.1)	106.6 (85.7-127.5)	69.0 (50.4-87.6)	68.5 (35.9-101.1)	90.0 (45.9-134.1)	70.8 (43.6-98.1)	66.0 (32.6-99.5)
1986	78.6 (69.5-87.8)	86.5 (67.3-105.7)	95.8 (75.9-115.7)	89.7 (68.2-111.1)	27.6 (7.1-48.0)	35.5 (9.2-61.8)	62.3 (36.8-87.7)	61.1 (30.2-92.0)
1987	87.2 (77.6-96.8)	84.5 (65.6-103.4)	91.9 (72.5-111.3)	93.6 (72.0-115.2)	94.9 (57.7-132.1)	102.8 (55.3-150.2)	63.5 (38.1-88.9)	69.4 (36.4-102.5)
1988	90.0 (80.4-99.6)	92.5 (72.7-112.2)	88.8 (70.4-107.3)	97.8 (76.0-119.7)	69.7 (37.5-101.9)	87.2 (44.5-130.0)	78.1 (50.1-106.0)	95.5 (57.3-133.7)
1989	87.6 (78.3-96.9)	87.1 (68.6-105.6)	98.2 (78.5-117.8)	101.9 (80.1-123.7)	59.0 (30.1-87.9)	55.1 (22.6-87.7)	82.8 (54.5-111.0)	62.0 (30.6-93.3)
1990	90.8 (81.3-100.2)	85.3 (67.0-103.7)	89.4 (70.7-108.1)	109.3 (86.7-131.9)	93.8 (57.7-129.8)	109.6 (62.7-156.4)	56.3 (33.3-79.3)	94.3 (55.7-132.8)
1991	104.4 (94.4-114.4)	106.4 (85.9-127.0)	113.3 (92.6-134.0)	112.3 (90.0-134.7)	74.2 (42.4-105.9)	71.8 (32.8-110.9)	107.8 (76.3-139.3)	92.0 (55.2-128.8)
1992	94.0 (84.5-103.4)	96.3 (77.1-115.5)	93.7 (75.2-112.3)	91.9 (71.5-112.3)	94.9 (59.1-130.8)	112.2 (64.2-160.1)	71.5 (46.4-96.7)	105.7 (66.5-144.8)
1993	101.7 (92.0-111.3)	103.8 (84.4-123.2)	89.6 (71.6-107.6)	118.7 (96.0-141.4)	83.5 (50.8-116.3)	82.5 (43.3-121.8)	106.8 (76.6-137.1)	109.4 (70.3-148.6)
1994	102.8 (93.1-112.6)	97.3 (78.2-116.3)	121.2 (100.3-142.1)	86.9 (67.3-106.4)	121.9 (82.1-161.7)	93.0 (50.0-135.9)	101.2 (72.3-130.2)	95.2 (57.9-132.6)
1995	100.8 (91.2-110.3)	93.2 (75.0-111.3)	100.7 (81.6-119.9)	100.7 (79.9-121.5)	111.8 (73.6-149.9)	75.8 (37.5-114.2)	111.6 (81.2-141.9)	116.4 (74.8-158.1)
1996	101.8 (92.4-111.2)	101.1 (82.0-120.1)	99.0 (80.2-117.9)	130.9 (107.7-154.0)	91.8 (58.9-124.6)	64.3 (30.6-97.9)	96.2 (68.4-123.9)	71.9 (40.4-103.4)
1997	101.7 (92.4-111.0)	91.8 (74.2-109.3)	116.9 (96.6-137.3)	108.5 (87.6-129.3)	60.6 (33.3-87.8)	80.5 (42.2-118.8)	103.9 (76.2-131.7)	117.3 (77.3-157.4)
1998	106.0 (96.5-115.5)	111.7 (92.5-130.9)	111.4 (91.3-131.5)	103.9 (83.5-124.3)	96.0 (62.2-129.8)	83.5 (45.0-122.1)	98.6 (71.5-125.6)	106.3 (68.9-143.8)
1999	105.6 (96.2-115.0)	102.3 (84.0-120.5)	106.5 (87.3-125.7)	114.9 (93.6-136.2)	117.7 (80.7-154.6)	103.0 (59.9-146.0)	91.6 (65.4-117.8)	91.6 (57.0-126.1)
2000	100.3 (91.3-109.4)	89.6 (72.5-106.6)	109.3 (90.1-128.6)	109.3 (88.7-129.9)	102.7 (68.2-137.3)	68.8 (35.1-102.5)	112.8 (84.0-141.6)	76.1 (45.0-107.1)
2001	101.0 (92.0-110.0)	114.8 (95.7-133.9)	118.0 (97.9-138.0)	98.7 (79.7-117.8)	77.2 (47.5-106.9)	97.1 (56.5-137.7)	68.7 (47.4-90.0)	78.9 (47.3-110.4)
2002	100.2 (91.3-109.1)	113.9 (95.1-132.7)	92.1 (74.4-109.7)	116.5 (95.6-137.3)	76.3 (47.0-105.6)	78.8 (42.4-115.3)	81.9 (58.5-105.3)	93.0 (59.2-126.9)
2003	101.3 (92.5-110.1)	103.7 (86.2-121.1)	99.3 (81.4-117.3)	100.5 (81.3-119.6)	95.4 (61.8-128.9)	91.3 (52.3-130.4)	91.4 (66.5-116.2)	132.9 (93.2-172.6)
2004	89.2 (81.0-97.3)	79.2 (64.1-94.3)	92.6 (75.3-109.9)	99.9 (81.2-118.6)	60.1 (36.1-84.2)	79.7 (42.9-116.6)	107.6 (81.2-134.0)	85.6 (53.3-117.9)
2005	105.3 (96.5-114.1)	107.1 (89.8-124.4)	115.5 (96.1-134.9)	102.5 (83.9-121.2)	82.0 (53.6-110.4)	103.3 (61.1-145.5)	97.2 (72.2-122.2)	111.4 (75.9-146.8)
2006	96.1 (87.8-104.4)	92.6 (76.7-108.4)	107.7 (89.2-126.2)	85.9 (65.6-98.5)	102.2 (70.9-133.5)	52.3 (23.9-80.8)	111.0 (84.6-137.3)	97.7 (63.8-131.5)
2007	101.2 (92.6-109.7)	127.2 (108.3-146.1)	105.5 (87.6-123.5)	82.0 (65.6-98.5)	99.9 (67.7-132.1)	71.8 (39.5-104.0)	89.9 (65.9-113.8)	80.0 (50.4-109.6)
2008	100.7 (92.3-109.2)	117.4 (99.4-135.4)	97.5 (80.3-114.7)	90.5 (73.2-107.8)	78.1 (50.6-105.6)	91.8 (54.3-129.3)	116.5 (89.6-143.4)	75.0 (47.7-102.3)
2009	104.5 (96.0-113.1)	130.1 (111.7-148.6)	92.2 (75.2-109.2)	100.6 (82.3-118.9)	113.7 (79.3-148.1)	65.2 (35.1-95.3)	93.0 (70.4-115.6)	90.4 (56.9-123.9)
2010	105.3 (96.5-114.7)	121.1 (103.3-141.4)	112.1 (93.4-133.6)	93.5 (76.6-113.4)	107.1 (74.5-150.9)	83.4 (50.1-137.2)	99.6 (75.1-130.8)	75.5 (48.4-114.6)

*Rates are per 100,000 population and are age-standardized to the 1991 Canadian population estimates.

D3: Number of female breast cancer deaths by year of death and Health Region (HR), NB

Year of Death	NB	HR1	HR2	HR3	HR4	HR5	HR6	HR7
1980	89	18	29	19	<10	<10	<10	<10
1981	94	17	28	22	<10	<10	12	<10
1982	104	24	25	32	<10	<10	12	<10
1983	101	26	37	17	<10	<10	<10	<10
1984	95	26	27	21	<10	<10	<10	<10
1985	112	35	37	15	<10	<10	<10	<10
1986	129	31	41	22	<10	<10	10	12
1987	115	30	27	32	<10	<10	11	<10
1988	117	34	32	22	<10	<10	<10	<10
1989	127	31	39	25	<10	<10	13	<10
1990	115	25	32	30	<10	<10	<10	<10
1991	113	34	27	26	<10	<10	15	<10
1992	134	35	39	32	<10	<10	13	<10
1993	123	40	23	24	<10	<10	12	14
1994	121	31	26	24	<10	<10	17	<10
1995	133	33	40	31	<10	<10	10	<10
1996	149	44	32	24	11	<10	25	<10
1997	119	29	32	23	10	<10	10	<10
1998	158	45	41	30	<10	<10	16	12
1999	107	21	20	27	<10	<10	19	<10
2000	127	27	34	39	<10	<10	10	<10
2001	108	26	24	21	<10	<10	20	<10
2002	124	28	37	21	<10	<10	20	<10
2003	127	28	33	31	11	<10	<10	<10
2004	113	32	27	30	<10	<10	<10	<10
2005	120	39	23	18	<10	<10	20	<10
2006	121	22	33	32	<10	<10	13	<10
2007	99	24	27	23	<10	<10	11	<10
2008	117	34	28	26	11	<10	13	<10
2009	131	35	24	24	<10	<10	22	10
2010	117	24	25	32	<10	<10	14	12
Total	3,659	928	949	795	223	157	400	206

In this table, counts are suppressed when less than ten deaths were reported for the specific year and health zone.

D4: Age-standardized mortality rates* (ASMRs) for female breast cancer by year and Health Region (HR), NB

Year of Death	NB ASMR (95%CI)	HR1 ASMR (95%CI)	HR2 ASMR (95%CI)	HR3 ASMR (95%CI)	HR4 ASMR (95%CI)	HR5 ASMR (95%CI)	HR6 ASMR (95%CI)	HR7 ASMR (95%CI)
1980	23.7 (18.8-28.7)	20.0 (10.7-29.2)	29.2 (18.6-39.8)	24.3 (13.4-35.2)	11.4 (0.0-24.4)	26.1 (3.2-48.9)	21.3 (6.5-36.0)	29.2 (7.6-50.8)
1981	25.3 (20.2-30.4)	18.5 (9.7-27.2)	28.5 (17.9-39.0)	28.2 (16.4-40.0)	27.2 (7.1-47.4)	29.1 (3.6-54.6)	32.5 (14.1-50.9)	12.0 (0.0-25.6)
1982	28.5 (23.0-33.9)	26.7 (16.0-37.4)	25.3 (15.4-35.3)	42.8 (28.0-57.6)	19.0 (2.3-35.6)	5.2 (0.0-15.5)	32.5 (14.1-50.9)	21.3 (2.6-40.1)
1983	27.1 (21.8-32.3)	28.3 (17.4-39.2)	38.3 (26.0-50.6)	20.7 (10.9-30.6)	28.1 (7.3-48.9)	10.4 (0.0-24.7)	24.7 (8.6-40.9)	13.0 (0.0-27.7)
1984	25.5 (20.4-30.6)	27.7 (17.0-38.3)	27.2 (16.9-37.4)	27.8 (15.9-39.7)	19.1 (2.4-35.8)	15.9 (0.0-33.9)	19.0 (4.9-33.0)	26.0 (5.2-46.8)
1985	30.5 (24.8-36.1)	38.0 (25.4-50.6)	39.2 (26.6-51.9)	18.8 (9.3-18.3)	30.4 (7.9-52.9)	24.6 (0.5-48.8)	18.8 (4.9-32.8)	30.4 (7.9-52.9)
1986	34.0 (28.1-39.9)	33.1 (21.5-44.8)	41.2 (28.6-53.7)	28.3 (16.5-40.1)	21.2 (2.6-39.8)	40.8 (12.5-69.0)	26.8 (10.2-43.3)	47.7 (20.7-74.7)
1987	30.9 (25.2-36.5)	33.7 (21.6-45.7)	27.6 (17.2-38.0)	40.1 (26.2-54.1)	16.3 (0.3-32.2)	27.6 (3.4-51.8)	27.6 (11.3-43.9)	23.7 (4.7-42.7)
1988	29.8 (24.4-35.1)	34.5 (22.9-46.1)	30.1 (19.7-40.5)	27.3 (15.9-38.8)	33.8 (11.7-55.9)	35.6 (7.1-64.0)	20.0 (6.2-33.9)	23.9 (4.8-43.0)
1989	32.2 (26.6-37.8)	30.9 (20.0-41.8)	39.6 (27.2-52.0)	30.4 (18.5-42.3)	32.1 (11.1-53.0)	30.5 (6.1-55.0)	32.3 (14.7-49.8)	15.4 (0.3-30.4)
1990	27.9 (22.8-33.0)	24.8 (15.0-34.5)	29.3 (19.2-39.5)	33.6 (21.6-45.6)	34.6 (12.0-57.2)	31.6 (6.3-56.8)	17.2 (4.5-30.0)	22.7 (4.5-40.9)
1991	26.7 (21.8-31.7)	32.0 (21.2-42.8)	25.4 (15.8-35.0)	27.2 (16.8-37.7)	29.9 (10.4-49.4)	5.2 (0.0-15.5)	36.6 (18.1-55.2)	4.3 (0.0-12.6)
1992	31.8 (26.5-37.2)	33.4 (22.4-44.5)	36.9 (25.3-48.5)	36.0 (23.5-48.5)	23.0 (6.0-40.1)	31.1 (6.2-56.0)	29.5 (13.5-45.6)	6.7 (0.0-15.9)
1993	28.4 (23.4-33.4)	37.6 (26.0-49.3)	20.1 (11.9-28.3)	27.7 (16.6-38.7)	17.9 (2.2-33.6)	24.6 (3.0-46.2)	23.8 (10.3-37.2)	49.4 (23.5-75.3)
1994	27.4 (22.5-32.2)	27.7 (17.9-37.4)	23.1 (14.2-32.0)	25.9 (15.5-36.3)	29.4 (10.2-48.7)	30.3 (6.0-54.5)	33.6 (17.6-49.5)	29.9 (9.2-50.6)
1995	29.6 (24.6-34.7)	29.1 (19.2-39.1)	35.9 (24.8-47.0)	33.0 (21.4-44.6)	19.7 (3.9-35.4)	18.7 (0.4-37.0)	21.2 (8.0-34.3)	32.2 (11.1-53.2)
1996	33.0 (27.7-38.3)	38.7 (27.3-50.2)	28.4 (18.5-38.2)	24.7 (14.8-34.5)	36.1 (14.8-57.4)	25.2 (3.1-47.4)	48.6 (29.6-67.7)	28.6 (8.8-48.4)
1997	25.0 (20.5-29.5)	24.7 (15.7-33.7)	27.3 (17.8-36.8)	21.3 (12.6-30.0)	30.9 (11.7-50.0)	41.3 (14.3-68.3)	18.5 (7.0-29.9)	23.2 (4.6-41.7)
1998	32.4 (27.3-37.5)	37.0 (26.2-47.8)	34.0 (23.6-44.5)	29.5 (18.9-40.0)	22.1 (6.8-37.4)	25.2 (5.0-45.4)	31.0 (15.8-46.1)	40.5 (17.6-63.5)
1999	21.9 (17.8-26.1)	16.8 (9.6-23.9)	17.8 (10.0-25.6)	26.9 (16.7-37.0)	20.2 (6.2-34.2)	20.4 (2.5-38.2)	34.0 (18.7-49.2)	24.0 (6.2-41.8)
2000	26.0 (21.5-30.5)	21.5 (13.4-29.6)	29.3 (19.4-39.1)	36.7 (25.2-48.3)	18.7 (4.8-32.5)	30.2 (6.0-54.4)	20.1 (7.6-32.5)	11.2 (0.2-22.2)
2001	20.6 (16.7-24.5)	19.2 (11.8-26.5)	18.2 (10.9-25.4)	19.7 (11.2-28.1)	13.6 (1.7-25.4)	14.1 (0.3-27.9)	36.3 (20.4-52.3)	25.2 (7.7-42.6)
2002	23.1 (19.0-27.2)	20.7 (13.0-28.3)	27.4 (18.6-36.2)	20.8 (11.9-29.7)	17.7 (4.6-30.8)	21.3 (4.2-38.3)	33.9 (19.0-48.7)	12.6 (1.6-23.7)
2003	23.5 (19.4-27.6)	19.0 (12.0-26.0)	24.3 (16.0-32.6)	27.8 (18.0-37.6)	32.0 (13.1-51.0)	26.5 (6.9-46.1)	15.0 (5.2-24.8)	25.2 (7.7-42.7)
2004	19.3 (15.7-22.9)	20.8 (13.6-28.1)	18.4 (11.4-25.3)	24.4 (15.6-33.1)	17.0 (3.4-30.5)	9.1 (0.0-21.7)	9.8 (2.5-17.0)	26.7 (9.2-44.1)
2005	21.0 (17.3-24.8)	27.1 (18.6-35.6)	17.7 (10.4-24.9)	14.8 (8.0-21.7)	16.3 (4.2-28.4)	18.3 (2.3-34.4)	30.4 (17.1-43.7)	21.0 (6.4-35.5)
2006	21.1 (17.3-24.8)	14.5 (8.4-20.6)	23.8 (15.7-31.9)	27.1 (17.7-36.5)	22.6 (7.8-37.4)	31.1 (9.6-52.7)	21.5 (9.8-33.2)	9.3 (0.2-18.4)
2007	16.4 (13.2-19.7)	14.3 (8.6-20.0)	19.4 (12.1-26.7)	17.6 (10.4-24.8)	12.0 (1.5-22.5)	23.1 (4.6-41.6)	17.3 (7.1-27.4)	8.6 (0.0-18.2)
2008	20.8 (16.8-24.3)	21.7 (14.4-29.0)	22.5 (14.2-30.8)	20.5 (12.6-28.4)	27.5 (11.3-43.8)	10.9 (0.0-25.9)	21.3 (9.7-32.8)	7.8 (0.0-16.7)
2009	22.1 (18.3-25.9)	22.8 (15.2-30.3)	17.7 (10.6-24.8)	19.7 (11.8-27.6)	21.8 (7.6-36.1)	22.5 (5.8-39.2)	30.4 (17.7-43.1)	24.8 (9.4-40.3)
2010	19.1 (15.6-23.2)	14.6 (9.1-22.6)	17.7 (11.1-27.3)	23.5 (15.9-34.0)	7.4 (1.5-26.9)	22.2 (8.0-59.9)	19.5 (10.2-36.1)	32.3 (15.7-61.6)

*Rates are per 100,000 and are age-standardized to the 1991 Canadian population estimates.

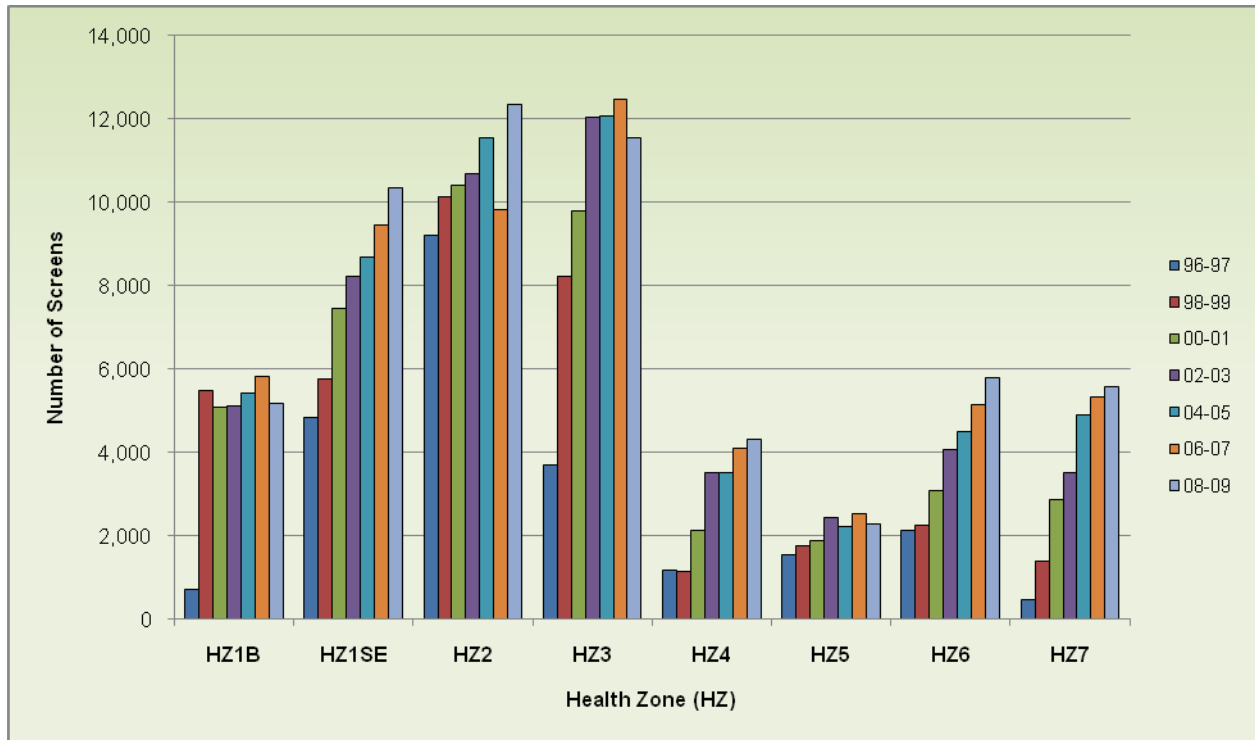
D5: Number of screens, first screens and screen-detected breast cancers[†] for women aged 50-69 by screen year and Health Zone (HZ), NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Number of Screens									
1996-1997	23,814	729	4,839	9,218	3,713	1,187	1,534	2,130	464
1998-1999	36,160	5,485	5,764	10,138	8,217	1,137	1,749	2,266	1,404
2000-2001	42,744	5,097	7,450	10,404	9,807	2,143	1,896	3,081	2,866
2002-2003	49,585	5,121	8,228	10,678	12,054	3,515	2,426	4,059	3,504
2004-2005	52,929	5,422	8,685	11,565	12,065	3,533	2,234	4,512	4,913
2006-2007	54,703	5,840	9,448	9,842	12,462	4,097	2,548	5,139	5,327
2008-2009	57,426	5,183	10,347	12,336	11,543	4,317	2,299	5,809	5,592
Number of First Screens									
1996-1997	19,301	719	4,200	5,917	3,655	963	1,369	2,014	464
1998-1999	16,170	3,877	1,929	2,125	4,823	334	696	1,273	1,113
2000-2001	10,439	864	1,305	1,045	2,979	1,010	422	1,300	1,514
2002-2003	7,890	516	902	746	1,897	1,530	386	1,308	605
2004-2005	5,447	453	693	1,005	1,265	575	227	750	479
2006-2007	4,787	495	784	631	1,029	536	232	740	340
2008-2009	5,160	499	803	1,099	983	516	187	823	250
Number of Screen-Detected Breast Cancers									
1996-1997	73	<13	<13	44	<13	0	<13	<13	<13
1998-1999	150	18	18	46	37	<13	<13	13	<13
2000-2001	187	18	24	48	61	<13	<13	<13	13
2002-2003	222	<13	33	49	71	14	<13	16	20
2004-2005	211	<13	37	52	62	15	<13	19	15
2006-2007	215	<13	62	44	42	19	<13	18	14
2008-2009	229	<13	54	52	38	25	<13	24	17

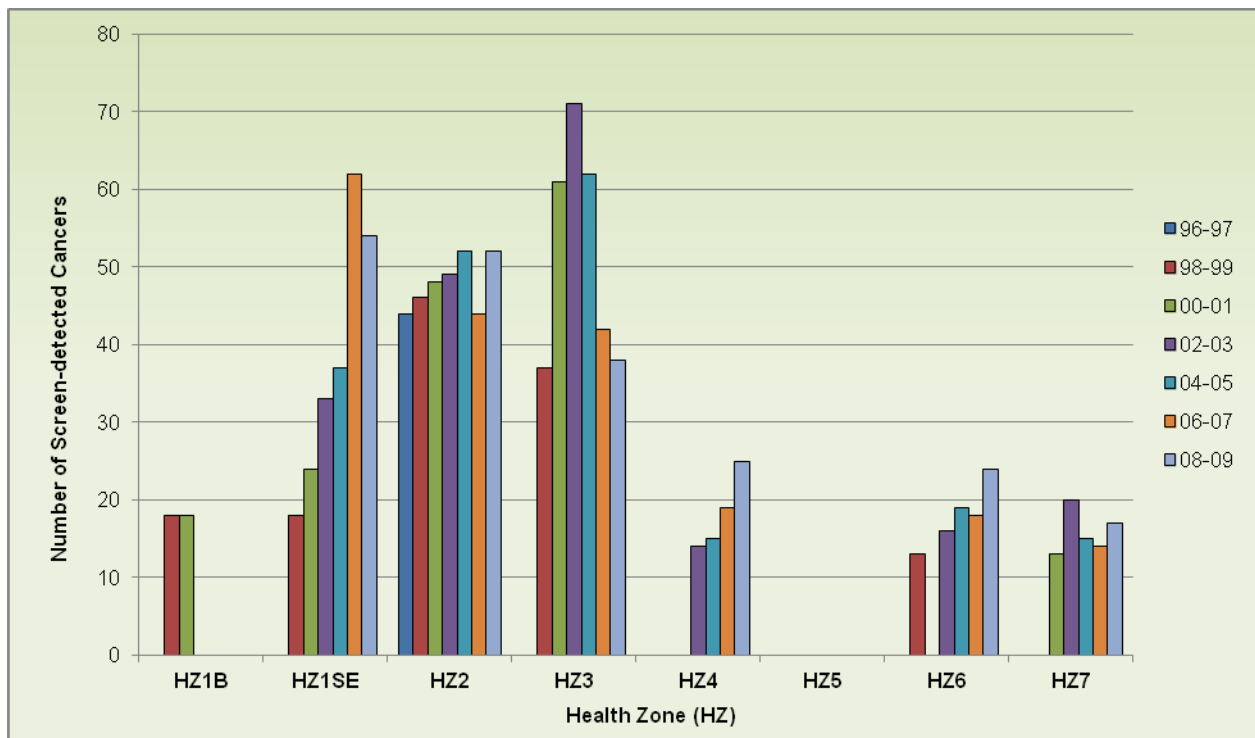
In this table, counts are suppressed when less than thirteen screen-detected breast cancers were reported for the specific year and health zone.

[†]Includes invasive and DCIS breast cancers.

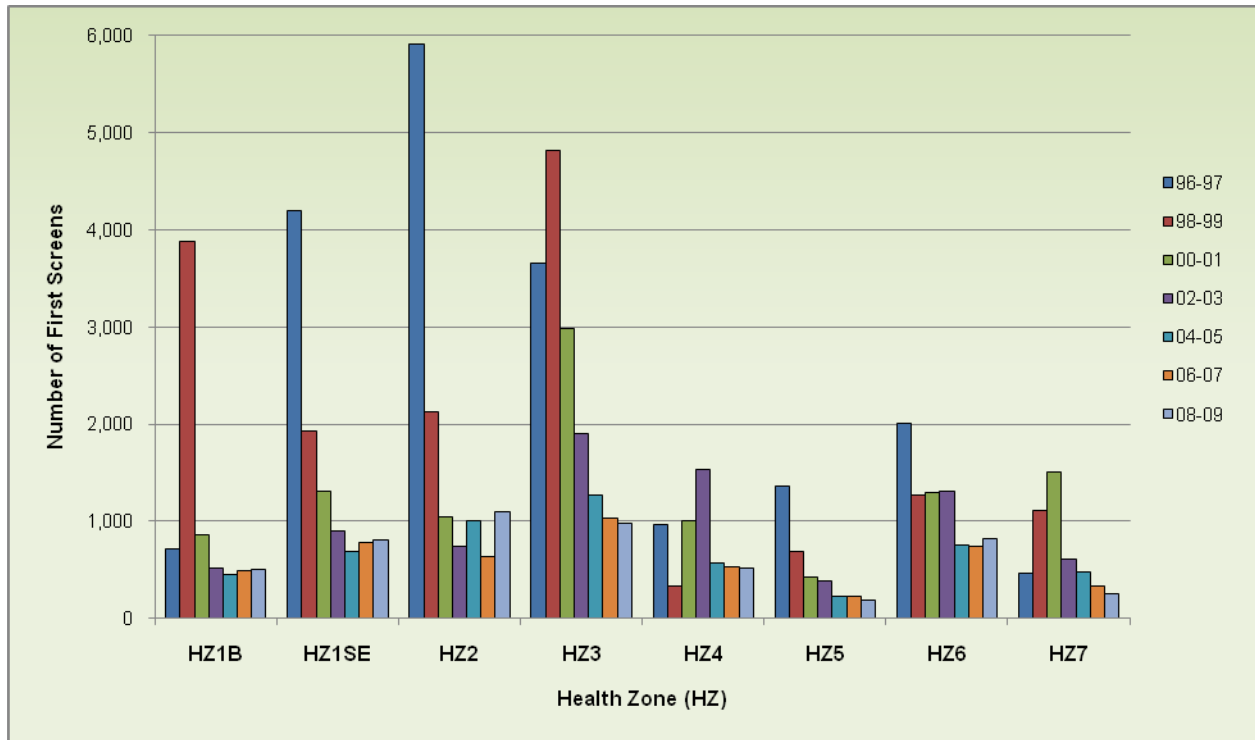
D6: Number of screens for women aged 50-69 by screen year and Health Zone (HZ), NB



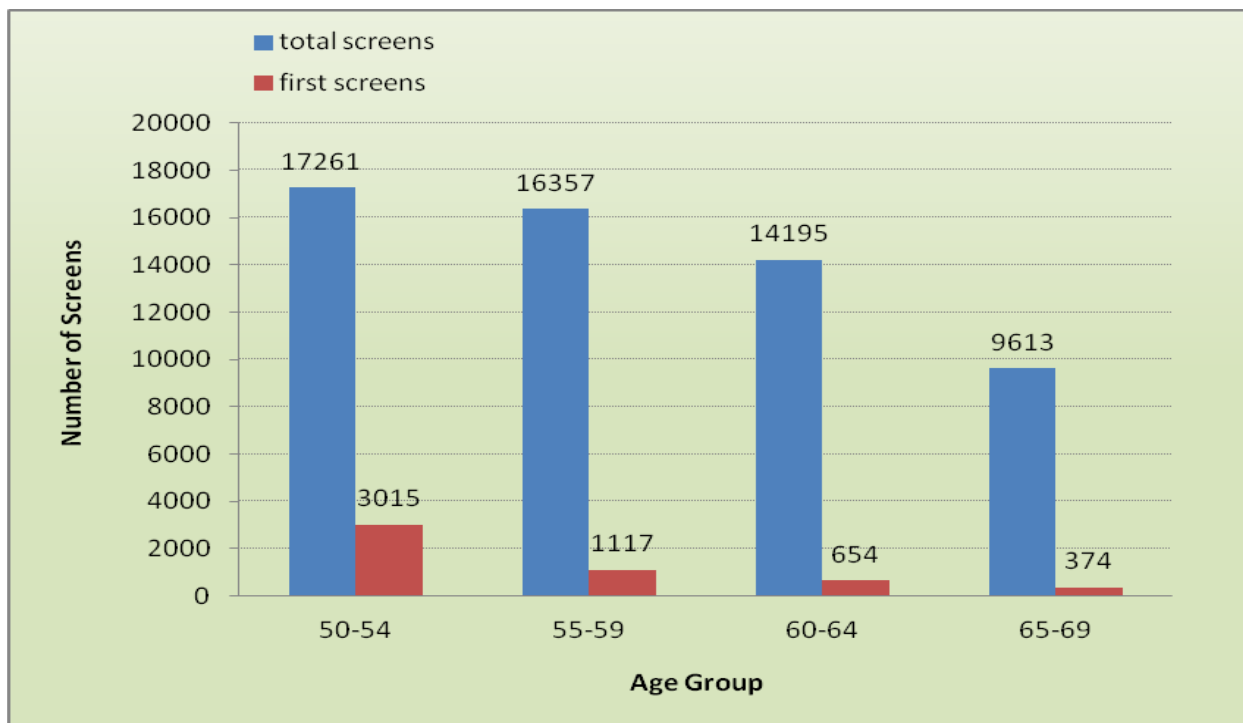
D7: Number of Screen-detected breast cancers for women aged 50-69 by screen year and HZ, NB



D8: Number of first screens for women aged 50-69 by screen year and HZ, NB



D9: Number of screens in New Brunswick Breast Cancer Screening Services (NBCSS) women aged 50-69 by age group, 2008-2009



D10: Number of screens, first screens and screen-detected breast cancers[†] for women aged 40-49 by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Number of Screens									
1996-1997	9,039	270	2,181	4,399	1,199	105	315	570	0
1998-1999	14,428	2,300	2,245	4,514	3,053	84	753	851	628
2000-2001	16,108	2,078	2,385	4,455	3,473	594	758	904	1,461
2002-2003	17,401	2,049	2,312	4,184	4,021	1,110	736	1,490	1,499
2004-2005	16,605	2,110	1,970	3,824	4,036	1,006	558	1,198	1,903
2006-2007	15,755	1,849	2,161	3,002	3,957	1,099	585	1,139	1,963
2008-2009	16,309	1,802	2,965	3,489	3,151	912	532	1,399	2,059
Number of First Screens									
1996-1997	8,164	270	2,098	3,644	1,194	99	307	552	0
1998-1999	10,206	1,930	1,416	2,424	2,484	26	612	709	605
2000-2001	8,694	890	1,086	1,780	2,105	550	475	660	1,148
2002-2003	7,789	742	960	1,411	1,809	819	370	964	714
2004-2005	6,472	750	692	1,257	1,567	567	271	655	713
2006-2007	5,946	553	737	1,141	1,514	525	270	595	611
2008-2009	6,197	658	788	1,486	1,212	389	272	798	594
Number of Screen-Detected Breast Cancers									
1996-1997	12	0	<6	9	<6	0	0	0	0
1998-1999	29	<6	<6	13	<6	0	<6	<6	<6
2000-2001	34	<6	<6	11	8	<6	<6	<6	<6
2002-2003	31	<6	<6	9	8	<6	0	<6	<6
2004-2005	29	<6	<6	8	10	<6	0	<6	<6
2006-2007	32	0	6	<6	11	<6	<6	<6	<6
2008-2009	32	<6	<6	8	11	<6	0	<6	<6

In this table, counts are suppressed when less than six screen-detected breast cancers were reported for the specific year and health zone.

[†]*Includes invasive and DCIS breast cancers.*

D11: Number of screens, first screens and screen-detected breast cancers[†] for women aged 70+ by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Number of Screens									
1996-1997	3,225	72	655	1,849	399	39	37	174	0
1998-1999	5,571	717	767	2,298	1,028	63	226	235	237
2000-2001	6,417	841	804	2,151	1,325	262	248	273	513
2002-2003	7,040	948	847	1,947	1,501	529	280	404	584
2004-2005	7,312	1,114	813	1,794	1,472	565	291	368	895
2006-2007	6,769	574	967	1,348	1,525	625	337	421	972
2008-2009	6,925	51	1,287	1,742	1,374	621	304	503	1,043
Number of First Screens									
1996-1997	2,543	71	617	1,236	391	25	37	166	0
1998-1999	2,603	566	370	483	667	3	153	161	200
2000-2001	1,722	155	156	230	488	152	84	145	312
2002-2003	1,101	72	95	104	245	252	44	136	153
2004-2005	660	55	60	111	104	109	36	70	115
2006-2007	394	12	75	41	76	66	27	57	40
2008-2009	308	1	42	61	59	45	15	48	37
Number of Screen-Detected Breast Cancers									
1996-1997	21	0	<7	15	<7	0	0	<7	0
1998-1999	42	<7	<7	18	11	0	<7	0	<7
2000-2001	52	<7	10	15	11	<7	<7	<7	<7
2002-2003	45	<7	10	9	14	<7	<7	<7	<7
2004-2005	49	0	8	15	13	<7	<7	<7	7
2006-2007	60	0	<7	16	11	9	<7	<7	8
2008-2009	62	0	22	16	14	<7	<7	<7	<7

In this table, counts are suppressed when less than seven screen-detected breast cancers were reported for the specific year and health zone.

[†]Includes invasive and DCIS breast cancer.

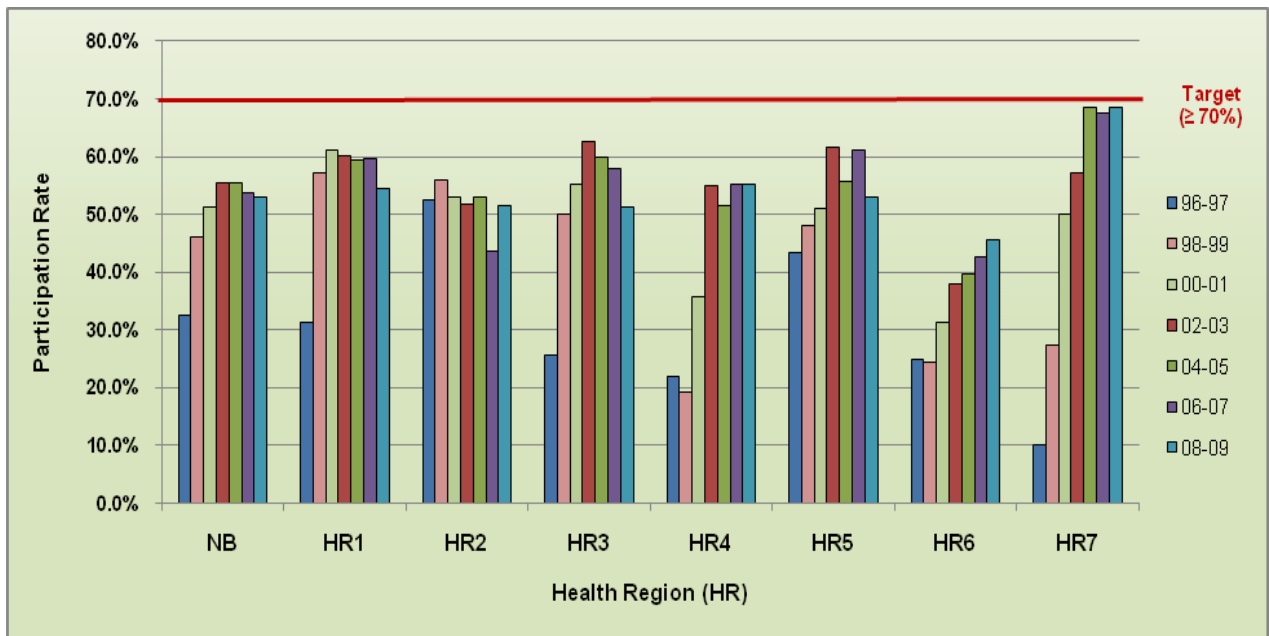
D12: Biennial Participation Rates for women aged 50-69 by screen year and Health Region (HR), NB

Screen Year	NB (%)	HR1 (%)	HR2 (%)	HR3 (%)	HR4 (%)	HR5 (%)	HR6 (%)	HR7 (%)
1996-1997	32.6	31.2	52.5	25.6	22.0	43.3	24.9	10.1
1998-1999	46.2	57.3	55.8	50.1	19.2	47.9	24.3	27.3
2000-2001	51.3	61.2	53.0	55.2	35.8	50.9	31.3	50.0
2002-2003	55.5	60.0	51.6	62.5	54.9	61.7	38.0	57.1
2004-2005	55.5	59.4	53.0	59.8	51.5	55.7	39.7	68.4
2006-2007	53.8	59.7	43.5	57.8	55.3	61.1	42.7	67.6
2008-2009	52.9	54.4	51.6	51.3	55.1	52.9	45.7	68.4

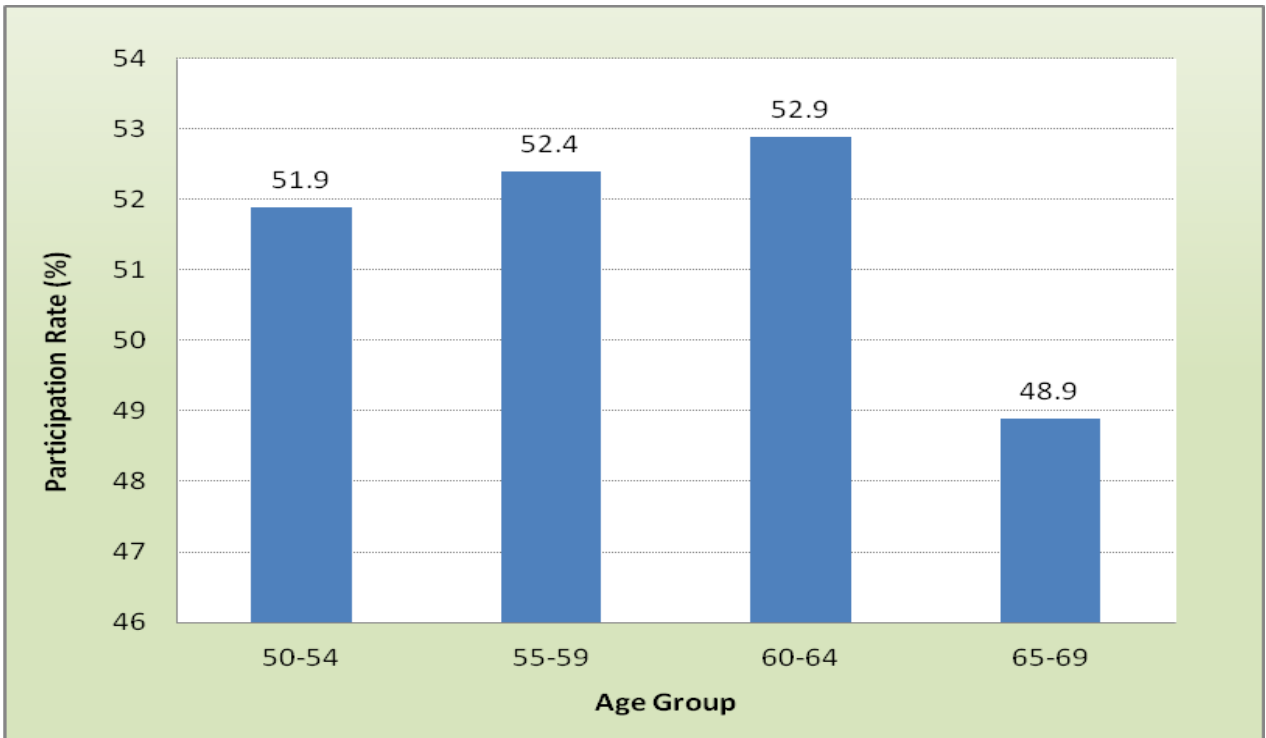
The national target for breast cancer screening participation is $\geq 70\%$.

†The population used in the participation rate calculation was obtained from the NB Medicare Registry Database.

D13: Biennial Participation Rates for women aged 50-69 by screen year and Health Region (HR), NB



D14: Participation Rate in NBBCSS women aged 50-69 by age group, 2008-2009



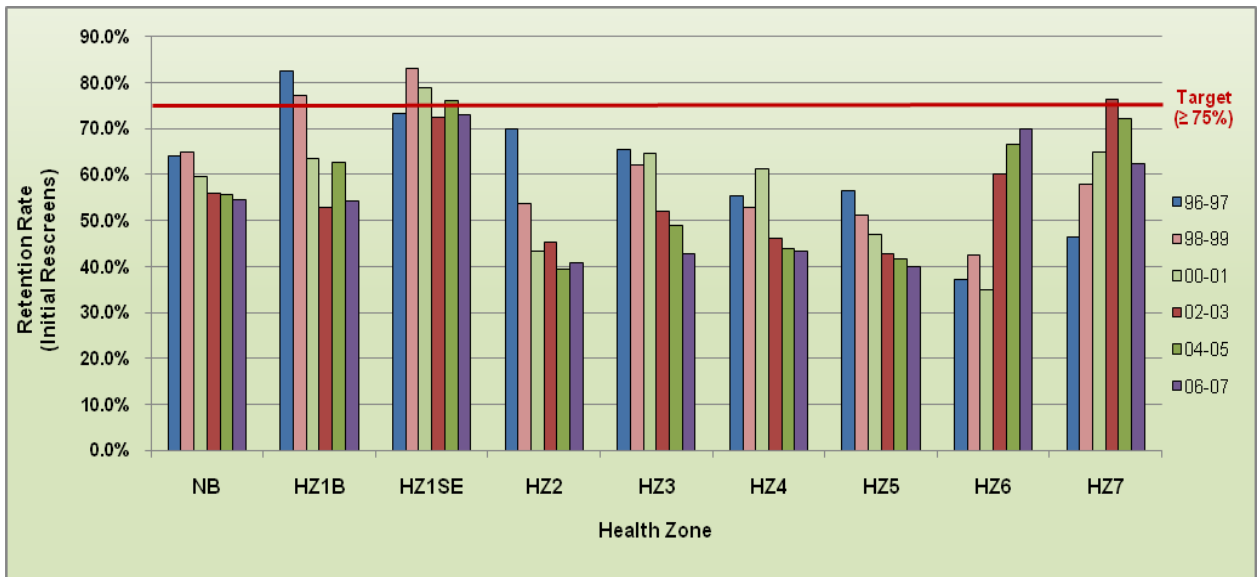
D15: Retention Rates for women aged 50-67 by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Initial Rescreen (% within 30 months)									
1996-1997	64.0	82.5	73.4	69.9	65.4	55.3	56.6	37.1	46.4
1998-1999	65.0	77.3	83.2	53.8	62.2	52.9	51.2	42.5	57.8
2000-2001	59.7	63.5	78.8	43.4	64.7	61.3	47.1	34.8	64.9
2002-2003	55.8	52.9	72.4	45.4	52.0	46.0	42.8	60.0	76.4
2004-2005	55.6	62.6	76.2	39.4	49.0	43.9	41.5	66.5	72.3
2006-2007	54.4	54.3	73.1	40.8	42.8	43.3	39.9	69.8	62.4
Subsequent Rescreen (% within 30 months)									
1996-1997	92.3	100.0	97.6	90.2	93.9	93.4	93.3	95.1	-
1998-1999	80.7	92.6	90.9	78.8	75.5	79.5	70.3	60.6	78.0
2000-2001	78.8	79.3	87.7	73.6	82.6	78.9	74.6	53.3	81.2
2002-2003	78.3	75.3	87.1	74.3	77.7	71.7	67.5	72.9	88.5
2004-2005	75.3	74.9	84.7	63.1	77.0	71.3	66.6	74.4	87.5
2006-2007	73.5	68.0	83.1	70.2	67.3	68.8	58.7	79.7	86.1

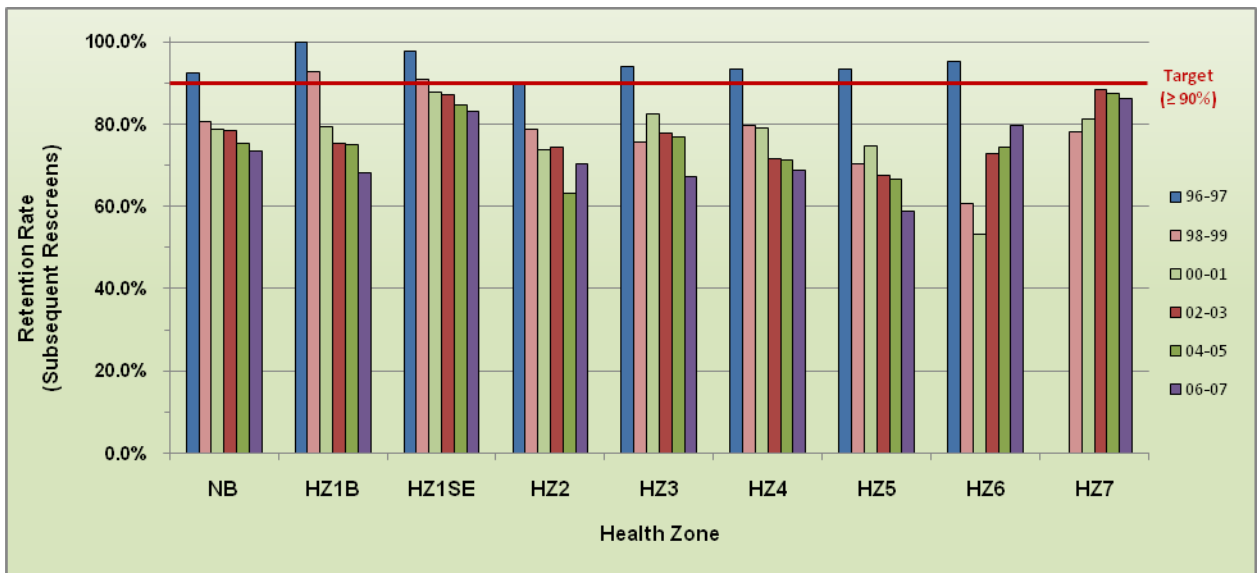
The national benchmark for retention rate is $\geq 75\%$ for initial screens and $\geq 90\%$ for subsequent rescreens.

:No individual women were rescreened.

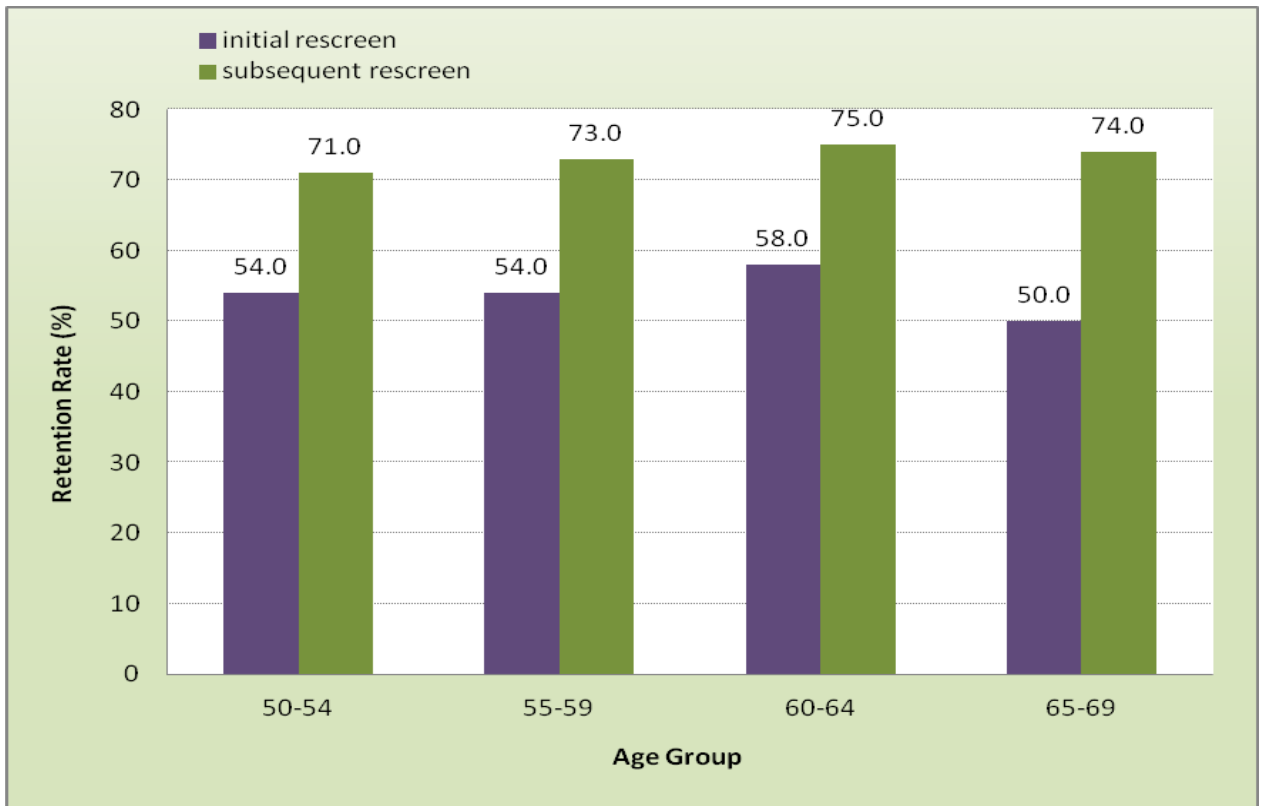
D16: Retention rates (within 30 months) of initial rescreens for women aged 50-67 by screen year and HZ, NB



D17: Retention rates (within 30 months) of subsequent rescreens for women aged 50-67 by screen year and HZ, NB



D18: Retention Rate in NBBCSS women aged 50-69 by screen type and age group, 2006-2007



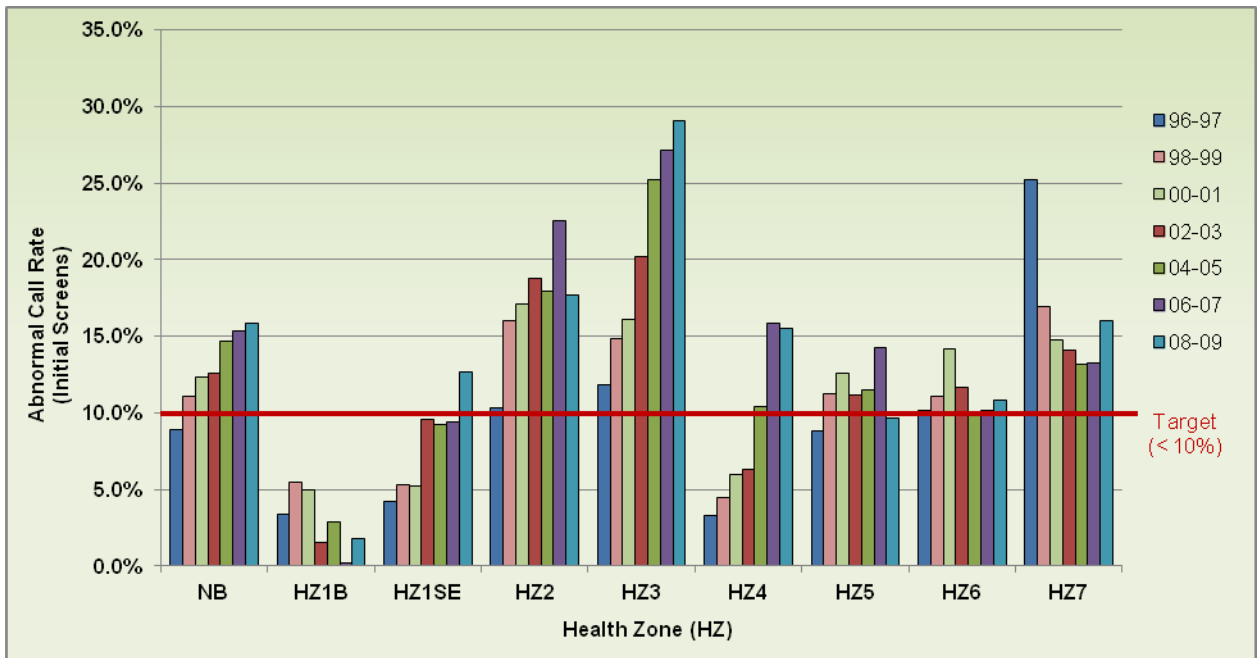
D19: Abnormal Call Rates detected by mammography for women aged 50-69 by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
	Initial Screen (%)								
1996-1997	8.9	3.4	4.2	10.3	11.8	3.3	8.8	10.2	25.2
1998-1999	11.1	5.5	5.3	16.0	14.8	4.5	11.2	11.1	16.9
2000-2001	12.4	5.0	5.2	17.1	16.1	5.9	12.6	14.2	14.7
2002-2003	12.6	1.6	9.5	18.8	20.2	6.3	11.1	11.6	14.0
2004-2005	14.7	2.9	9.2	17.9	25.2	10.4	11.5	9.9	13.2
2006-2007	15.3	0.2	9.4	22.5	27.1	15.9	14.2	10.1	13.2
2008-2009	15.9	1.8	12.7	17.7	29.1	15.5	9.6	10.8	16.0
	Rescreen (%)								
1996-1997	9.3	20.0	3.9	10.6	37.9	2.2	4.8	8.6	-
1998-1999	7.9	4.5	2.9	10.6	10.0	3.6	7.0	8.2	11.7
2000-2001	7.5	3.1	3.0	9.2	11.5	4.2	6.6	9.4	11.8
2002-2003	7.5	0.9	3.6	9.4	11.5	4.5	8.5	8.5	7.8
2004-2005	6.9	0.9	4.6	9.2	9.6	4.3	6.9	6.6	7.5
2006-2007	6.7	0.7	5.4	8.3	9.6	5.6	7.9	7.2	6.1
2008-2009	7.5	1.4	6.3	8.9	10.5	9.2	7.0	6.1	6.6

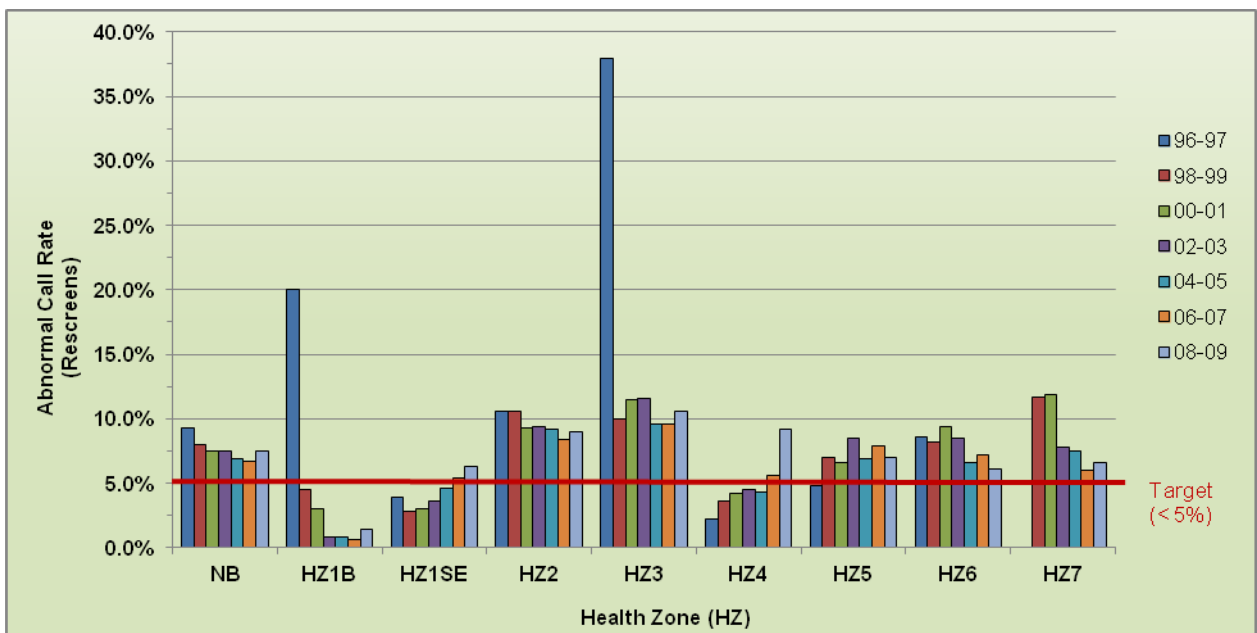
The national benchmark for abnormal call rates is <10% for initial screens and < 5% for rescreens.

:No individual women were rescreened.

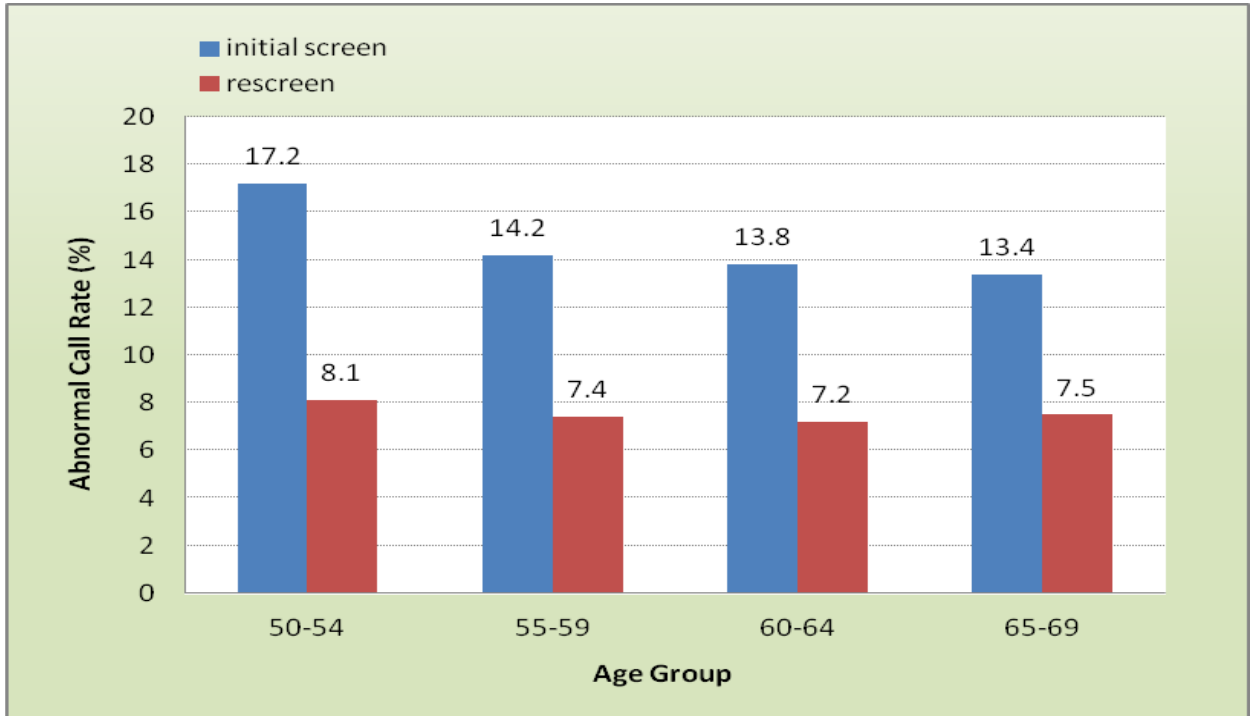
D20: Abnormal Call Rates detected by mammography of initial screen for women aged 50-69 by screen year and HZ, NB



D21: Abnormal Call Rates detected by mammography of rescreen for women aged 50-69 by screen year and HZ, NB



D22: Abnormal Call Rate in NNBCSS women aged 50-69 by age group, 2008-2009



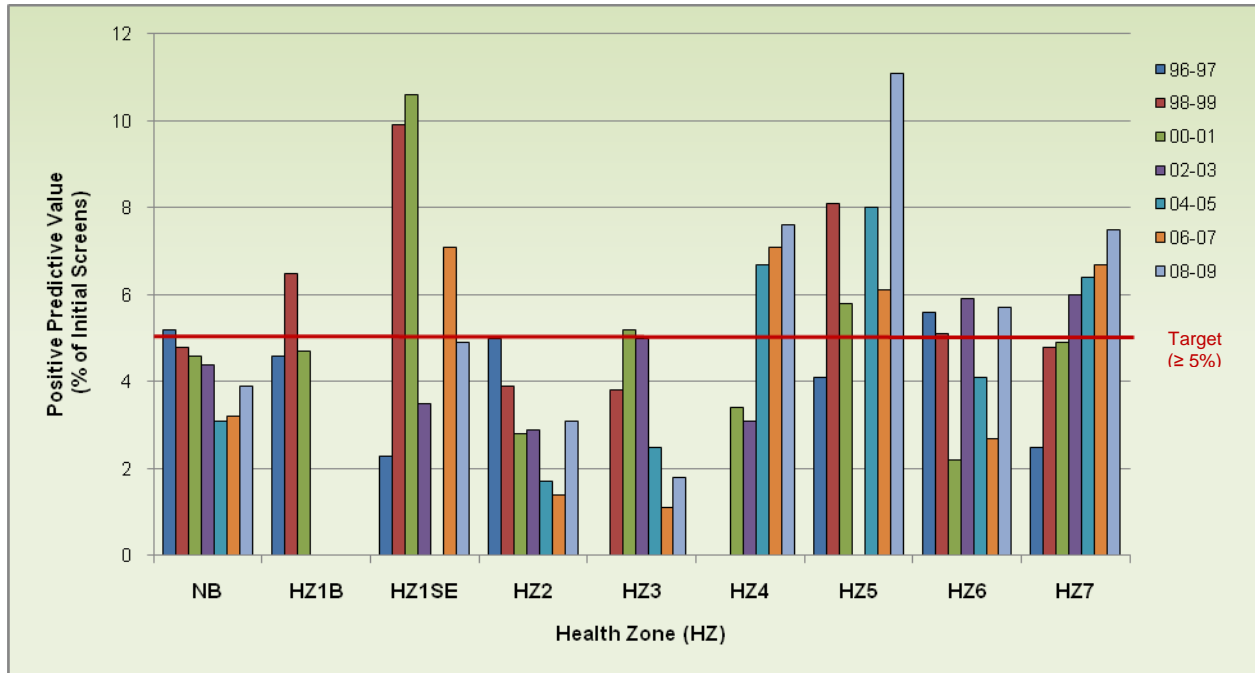
D23: Positive Predictive Value detected by mammography for women aged 50-69 by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Initial Screen (%)									
1996-1997	5.2	4.6	2.3	5.0	100.0	0.0	4.1	5.6	2.5
1998-1999	4.8	6.5	9.9	3.9	3.8	0.0	8.1	5.1	4.8
2000-2001	4.6	4.7	10.6	2.8	5.2	3.4	5.8	2.2	4.9
2002-2003	4.4	0.0	3.5	2.9	5.0	3.1	0.0	5.9	6.0
2004-2005	3.1	0.0	0.0	1.7	2.5	6.7	8.0	4.1	6.4
2006-2007	3.2	0.0	7.1	1.4	1.1	7.1	6.1	2.7	6.7
2008-2009	3.9	0.0	4.9	3.1	1.8	7.6	11.1	5.7	7.5
Rescreen (%)									
1996-1997	3.9	0.0	6.7	4.1	0.0	0.0	0.0	0.0	-
1998-1999	4.3	6.9	7.3	3.9	3.0	3.5	4.1	7.9	3.7
2000-2001	5.3	13.2	9.4	5.0	4.7	2.1	5.2	4.8	1.3
2002-2003	5.8	24.2	11.4	4.8	4.5	12.4	6.4	3.0	6.7
2004-2005	5.8	9.5	10.1	5.1	5.2	8.7	3.6	6.5	3.3
2006-2007	5.9	11.8	12.3	5.5	3.8	6.6	5.5	5.4	4.0
2008-2009	5.1	12.5	8.3	4.6	3.0	5.8	6.2	6.3	4.0

The national benchmark for Positive Predictive Value is $\geq 5\%$ for initial screens and $\geq 6\%$ for rescreens.

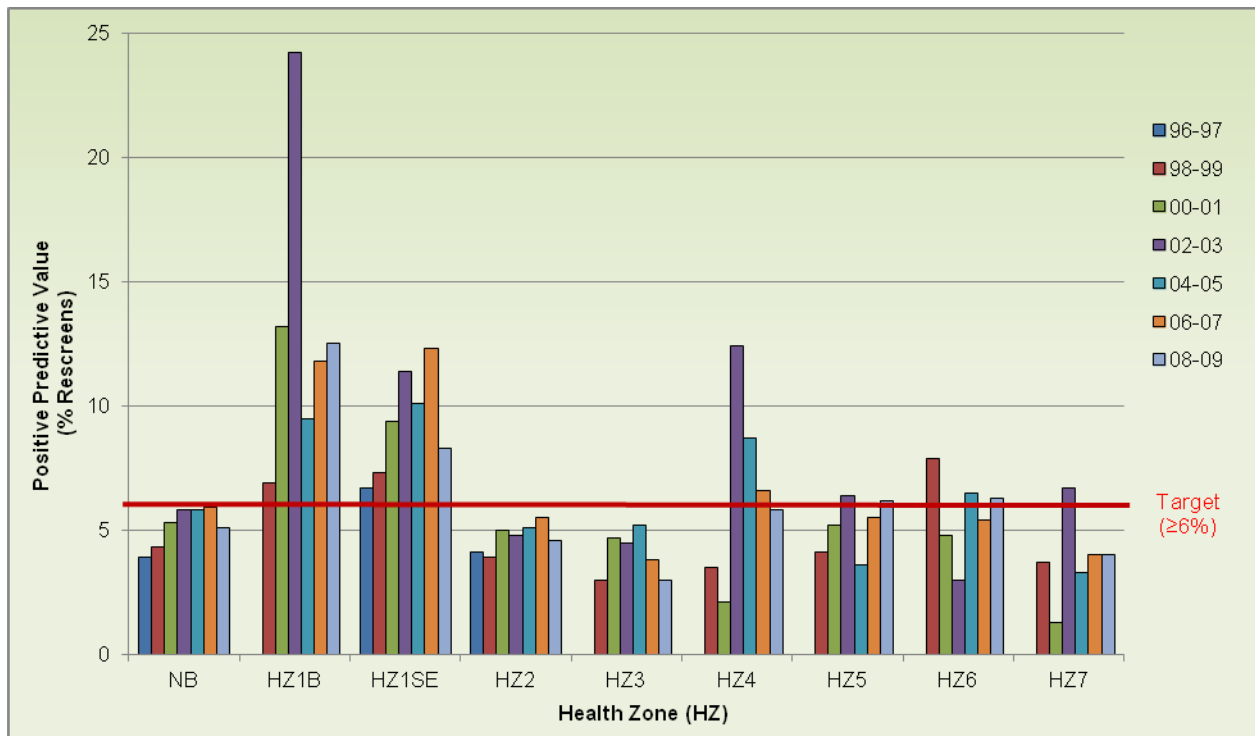
:No individual women were rescreened.

D24: Positive Predictive Value detected by mammography of initial screen for women aged 50-69 by screen year and HZ*, NB

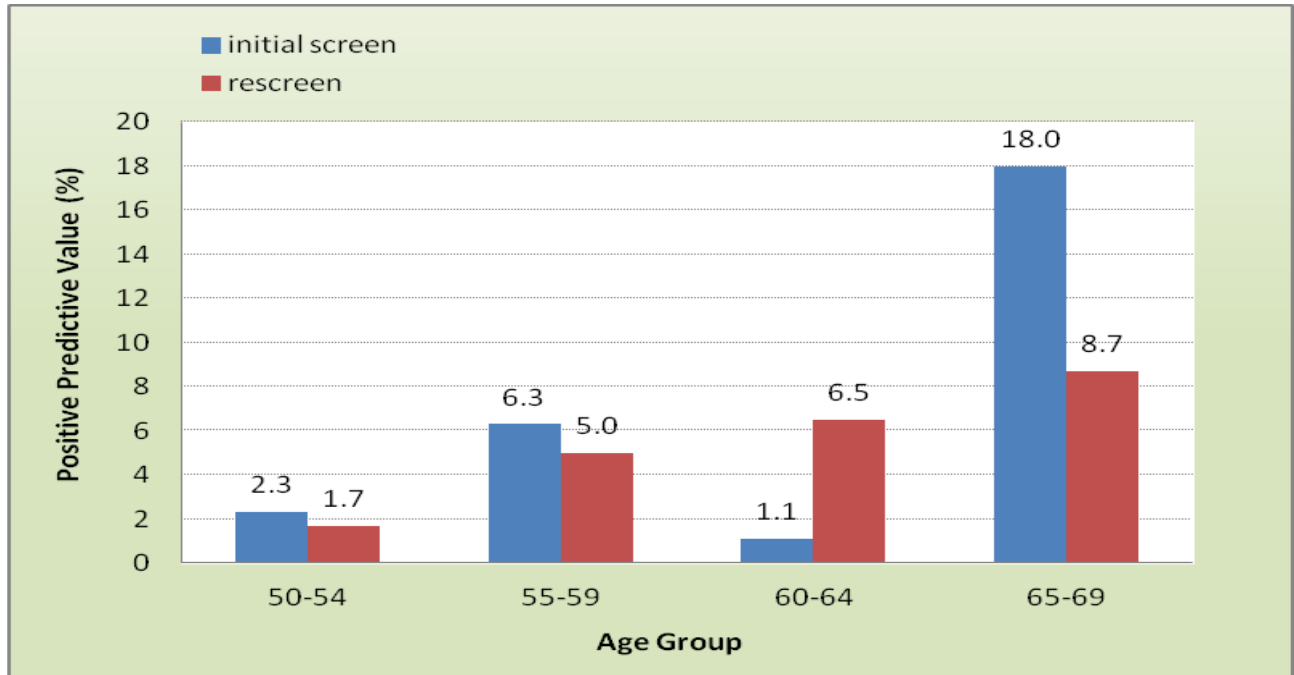


* HZ3 had a positive predictive value of 100.0% in 1996-1997.

D25: Positive Predictive Value detected by mammography of rescreen for women aged 50-69 by screen year and HZ, NB



D26: Positive Predictive Value in NBBCSS women aged 50-69 by screen type and age group, 2008-2009



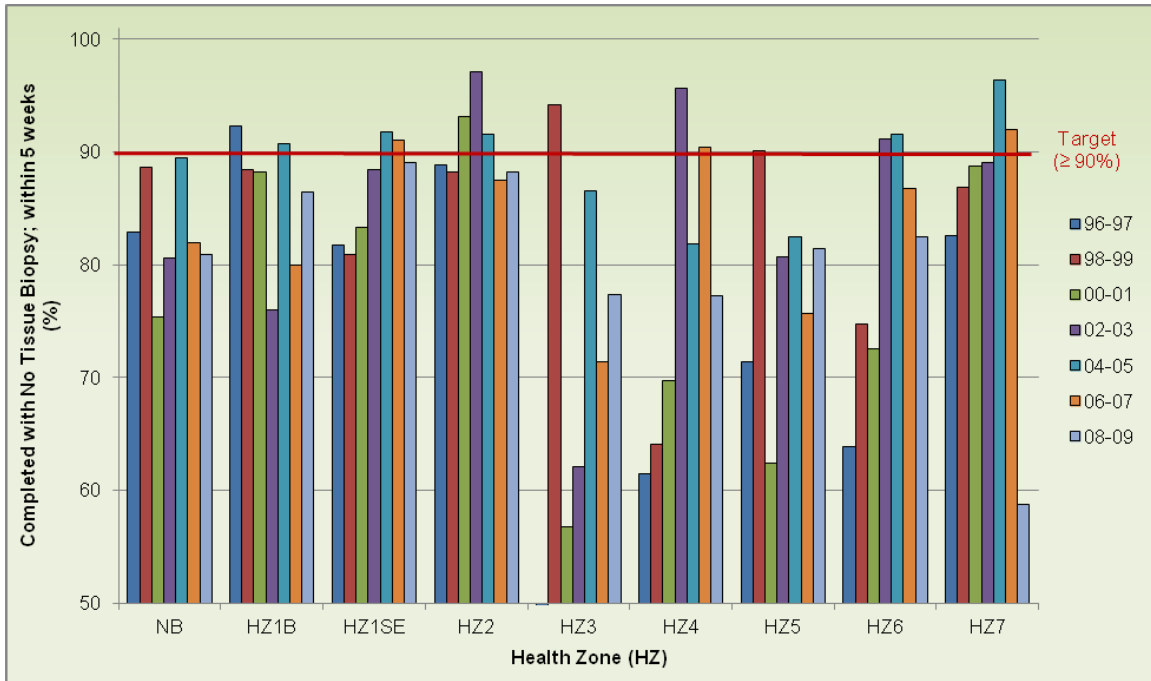
D27: Diagnostic Interval of biopsies[†] for women aged 50-69 by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Completed with no tissue biopsy, within 5 weeks (%)									
1996-1997	82.9	92.3	81.7	88.9	0.0	64.5	71.4	63.9	82.6
1998-1999	88.6	88.4	80.9	88.2	94.2	64.1	90.1	74.7	86.9
2000-2001	75.4	88.2	83.3	93.1	56.8	69.7	62.4	72.5	88.8
2002-2003	80.6	76.0	88.4	97.1	62.1	95.6	80.7	91.2	89.1
2004-2005	89.5	90.7	91.8	91.6	86.6	81.9	82.5	91.6	96.4
2006-2007	82.0	80.0	91.0	87.5	71.4	90.4	75.7	86.8	92.0
2008-2009	80.9	86.4	89.1	88.2	77.4	77.3	81.4	82.5	58.7
Completed with tissue biopsy, within 7 weeks (%)									
1996-1997	46.4	100.0	37.0	45.0	44.4	75.0	53.3	40.6	90.0
1998-1999	46.0	36.2	32.1	51.5	44.8	100.0	59.3	40.6	48.8
2000-2001	45.3	20.0	43.8	70.6	32.2	55.6	43.5	43.8	38.0
2002-2003	48.2	18.8	42.5	75.7	39.3	56.0	33.3	31.7	40.9
2004-2005	47.5	50.0	34.4	80.5	33.1	43.4	28.6	34.3	55.3
2006-2007	45.1	73.3	35.3	70.3	34.8	43.8	17.1	37.5	62.9
2008-2009	50.4	65.5	41.0	70.8	49.6	39.1	26.1	49.1	43.6

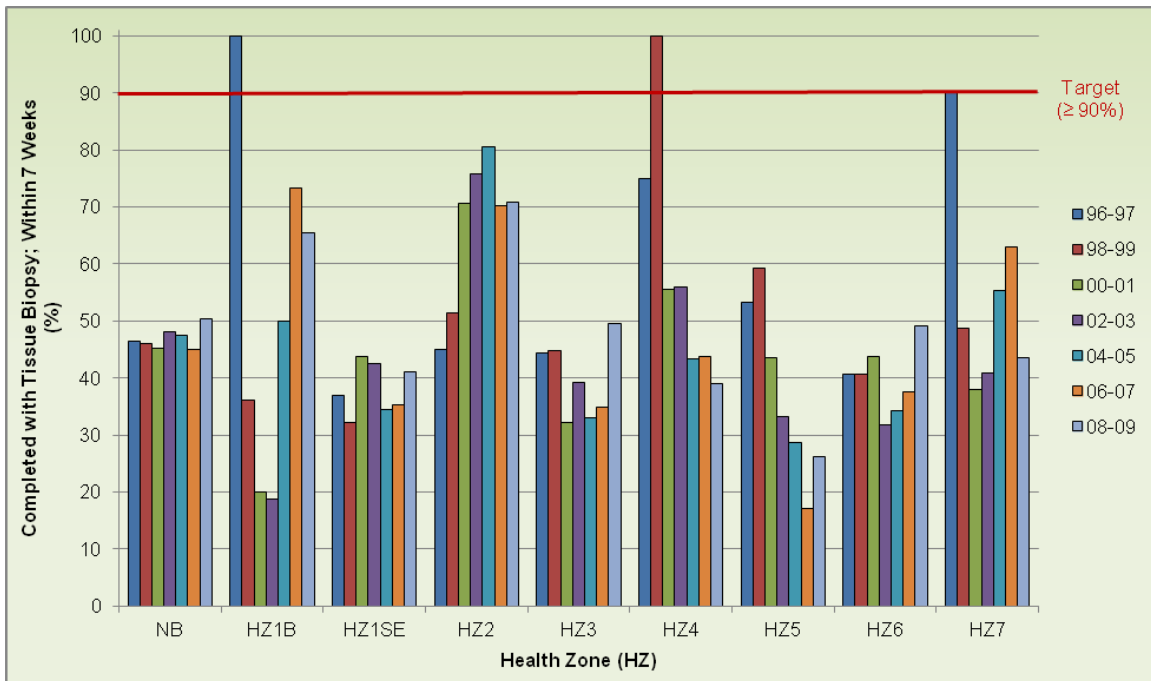
The national target for diagnostic interval is for ≥ 90% of biopsies without tissue to be completed within 5 weeks and for ≥ 90% of tissue biopsies to be completed within 7 weeks.

[†]Tissue biopsy does not include fine needle aspiration (FNA). Time to diagnosis is based on the date of the first pathological biopsy result of breast cancer (excludes FNA and all inconclusive or incorrect procedures) or the date of the last benign test or pathological biopsy.

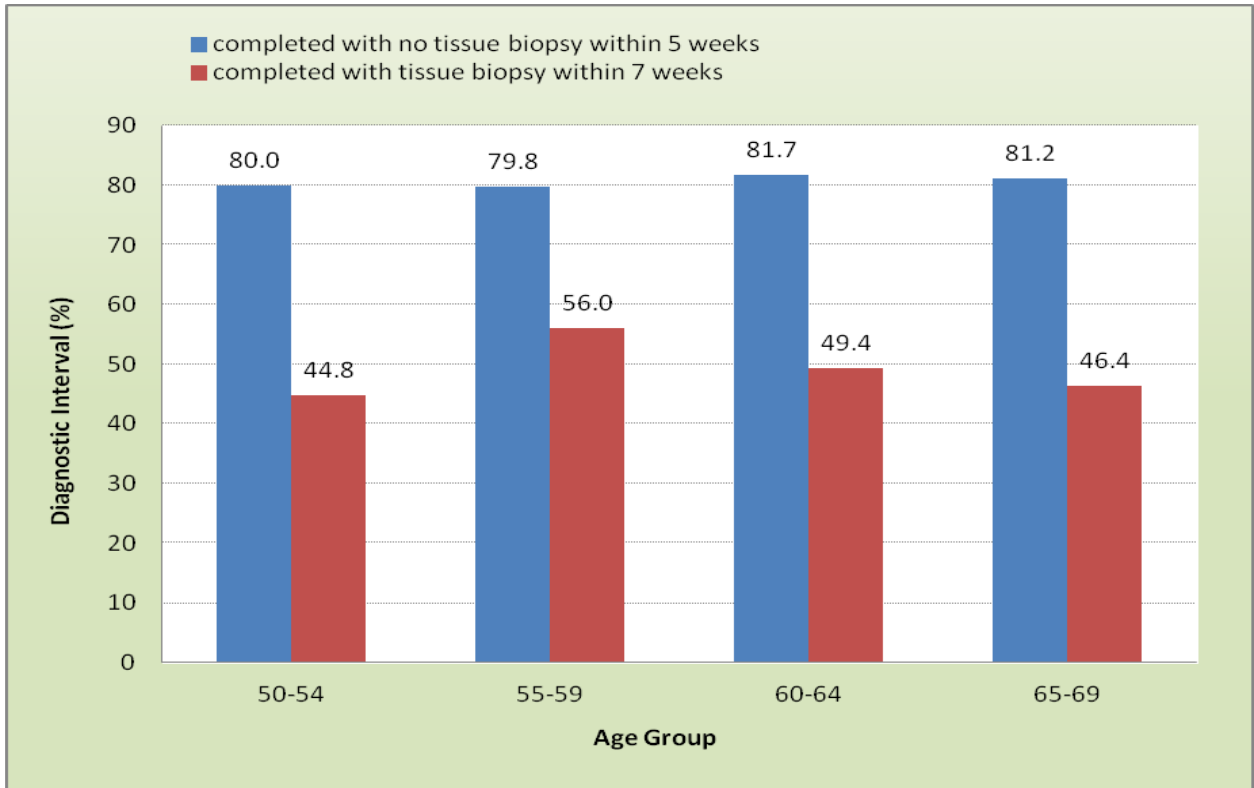
D28: Percentage of diagnostics completed with no tissue biopsy within 5 weeks for women aged 50-69 by screen year and HZ, NB



D29: Percentage of diagnostics completed with tissue biopsy within 7 weeks for women aged 50-69 by screen year and HZ, NB



D30: Diagnostic Interval in NBBCSS women aged 50-69 by completion time and age group, 2008-2009



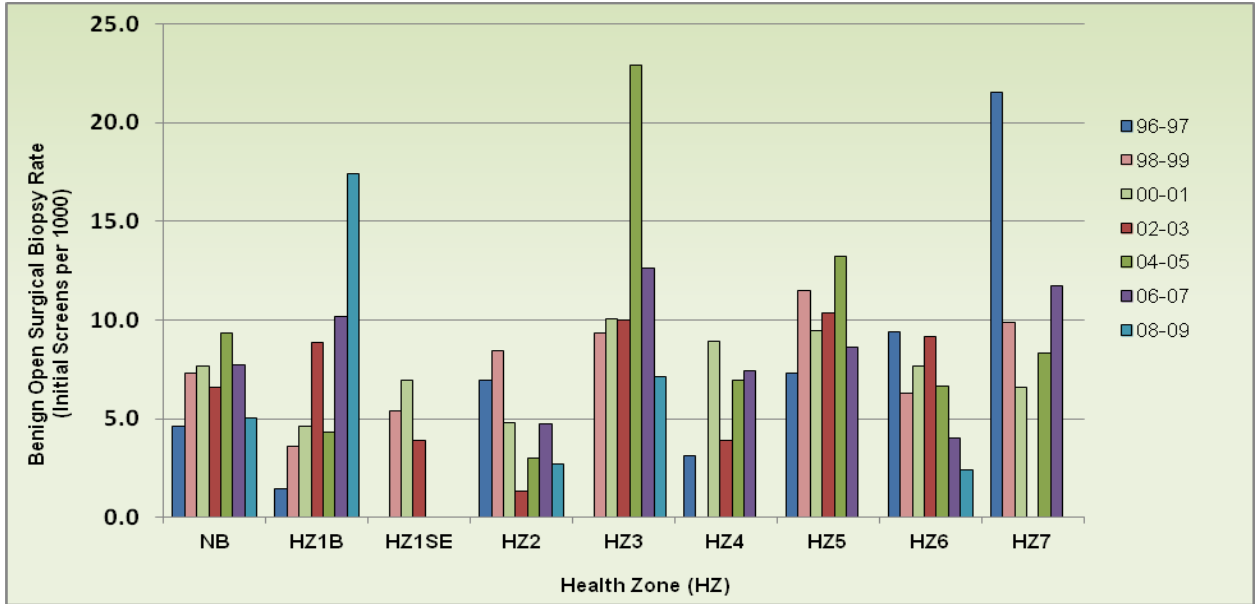
D31: Benign Open Surgical Biopsy Rate (per 1,000 screens) by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Initial Screen									
1996-1997	4.6	1.4	0.0	6.9	0.0	3.1	7.3	9.4	21.6
1998-1999	7.3	3.6	5.4	8.5	9.3	0.0	11.5	6.3	9.9
2000-2001	7.7	4.6	6.9	4.8	10.1	8.9	9.5	7.7	6.6
2002-2003	6.6	8.9	3.9	1.3	10.0	3.9	10.4	9.2	0.0
2004-2005	9.4	4.3	0.0	3.0	22.9	7.0	13.2	6.7	8.4
2006-2007	7.7	10.2	0.0	4.8	12.6	7.5	8.6	4.1	11.8
2008-2009	5.0	17.4	0.0	2.7	7.1	0.0	0.0	2.4	0.0
Rescreen									
1996-1997	6.0	1.6	0.0	7.3	0.0	4.5	0.0	8.6	-
1998-1999	3.7	1.8	2.5	3.9	3.2	1.2	9.5	7.0	6.9
2000-2001	3.7	1.5	3.8	2.6	7.2	4.4	4.1	3.9	3.7
2002-2003	3.2	2.6	0.9	1.7	6.0	2.5	2.5	4.0	3.8
2004-2005	2.7	3.3	0.8	0.8	5.1	3.0	3.0	2.1	2.9
2006-2007	2.5	5.3	0.0	1.4	3.2	1.7	2.6	1.8	1.4
2008-2009	1.5	3.4	0.2	0.5	2.0	2.6	0.9	1.2	0.0

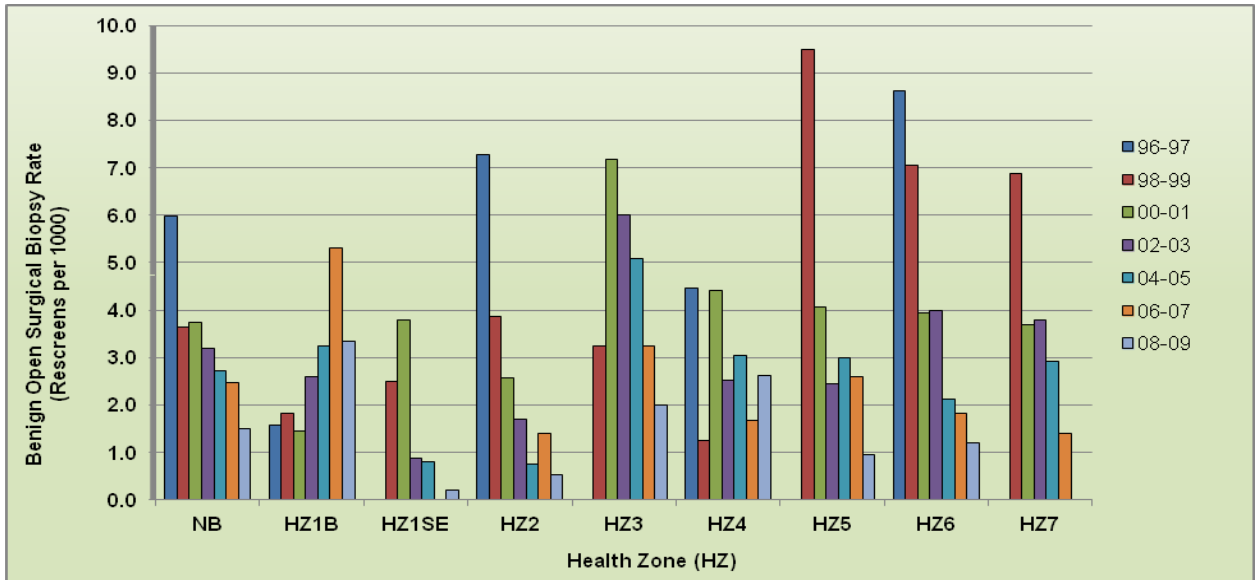
No national target has been established.

:No individual women were rescreened.

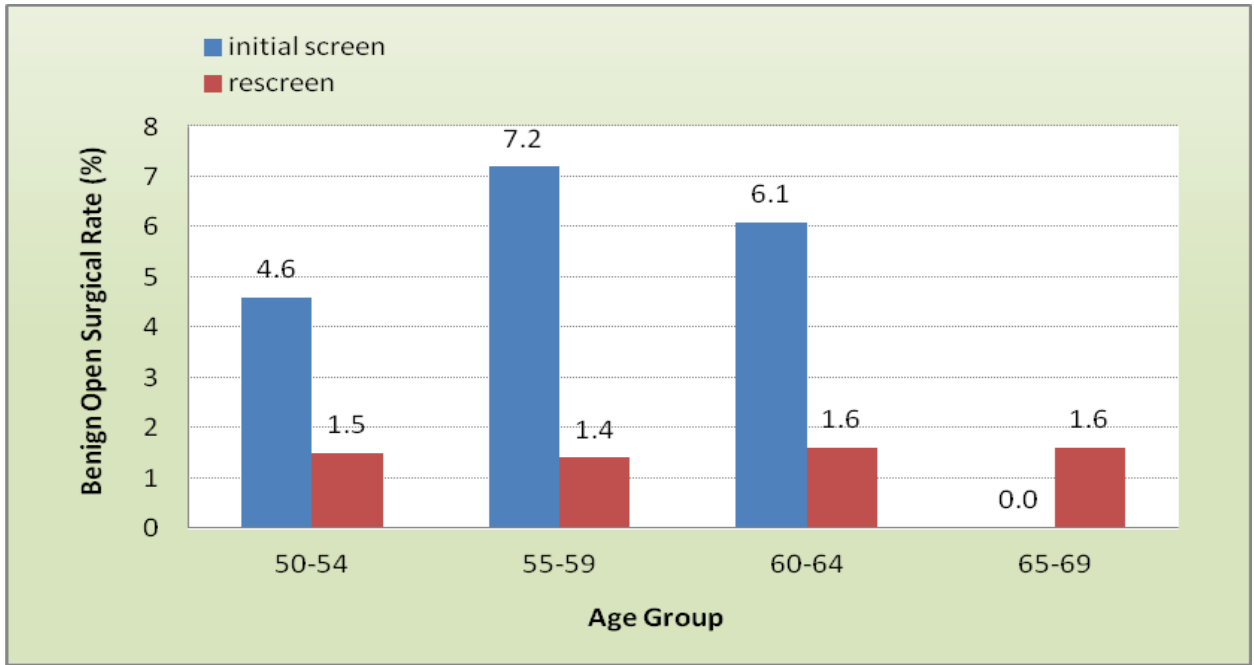
D32: Benign Open Surgical Biopsy Rate (per 1,000 screens) for initial screen by screen year and HZ, NB



D33: Benign Open Surgical Biopsy Rate (per 1,000 screens) for rescreen by screen year and HZ, NB



D34: Benign Open Surgical Biopsy Rate (per 1,000 screens) in NBBCCSS women aged 50-69 by screen type and age group, 2008-2009

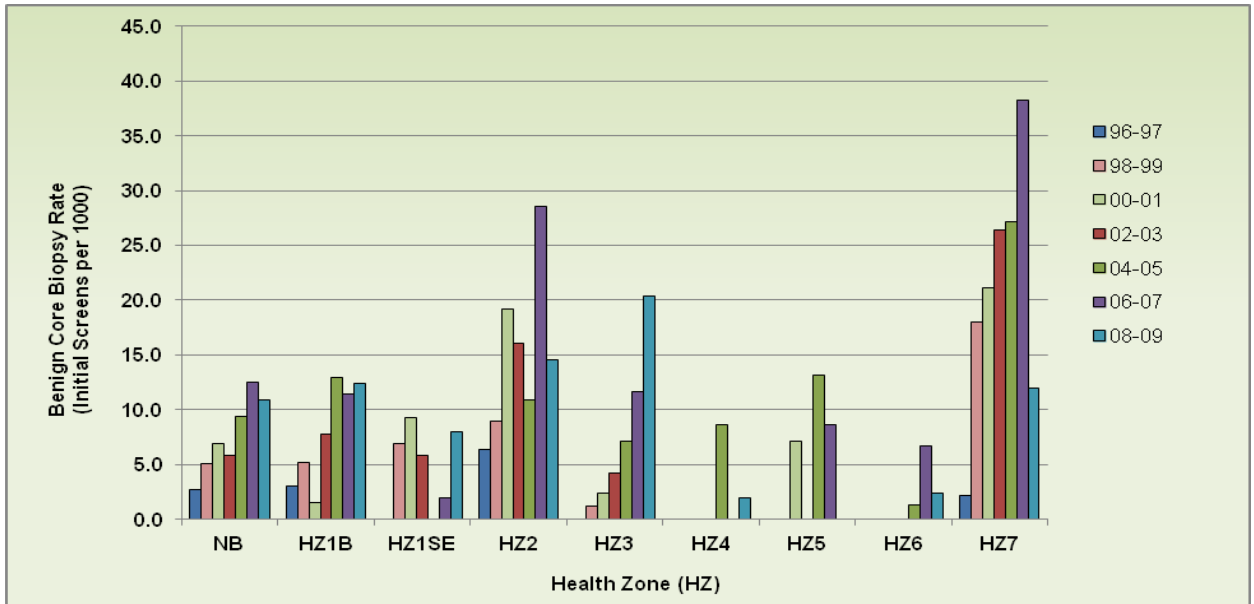


D35: Benign Core Biopsy Rate (per 1,000 screens) by screen year and HZ, NB

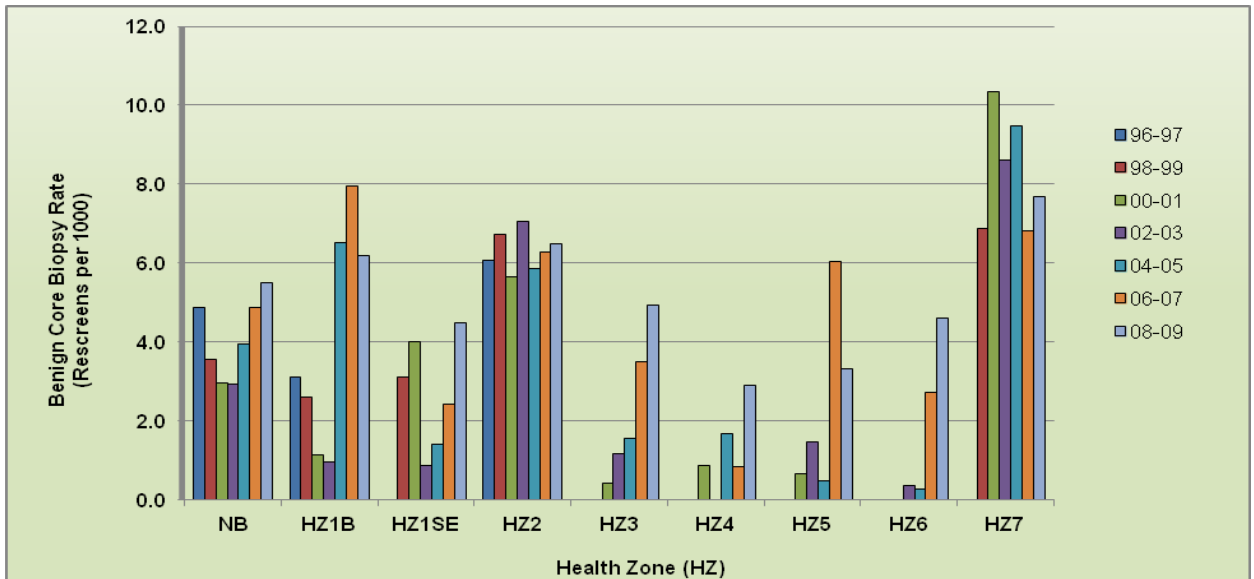
Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
<i>Initial Screen</i>									
1996-1997	2.7	3.1	0.0	6.4	0.0	0.0	0.0	0.0	2.2
1998-1999	5.1	5.2	7.0	8.9	1.2	0.0	0.0	0.0	18.0
2000-2001	6.9	1.5	9.3	19.1	2.3	0.0	7.1	0.0	21.1
2002-2003	5.8	7.8	5.8	16.1	4.2	0.0	0.0	0.0	26.4
2004-2005	9.4	13.0	0.0	10.9	7.1	8.7	13.2	1.3	27.1
2006-2007	12.5	11.5	2.0	28.5	11.7	0.0	8.6	6.8	38.2
2008-2009	10.9	12.5	8.0	14.6	20.3	1.9	0.0	2.4	12.0
<i>Rescreen</i>									
1996-1997	4.9	3.1	0.0	6.1	0.0	0.0	0.0	0.0	0.0
1998-1999	3.6	2.6	3.1	6.7	0.0	0.0	0.0	0.0	6.9
2000-2001	3.0	1.1	4.0	5.7	0.4	0.9	0.7	0.0	10.4
2002-2003	2.9	1.0	0.9	7.0	1.2	0.0	1.5	0.4	8.6
2004-2005	3.9	6.5	1.4	5.9	1.6	1.7	0.5	0.3	9.5
2006-2007	4.9	8.0	2.4	6.3	3.5	0.8	6.0	2.7	6.8
2008-2009	5.5	6.2	4.5	6.5	4.9	2.9	3.3	4.6	7.7

No national target has been established.

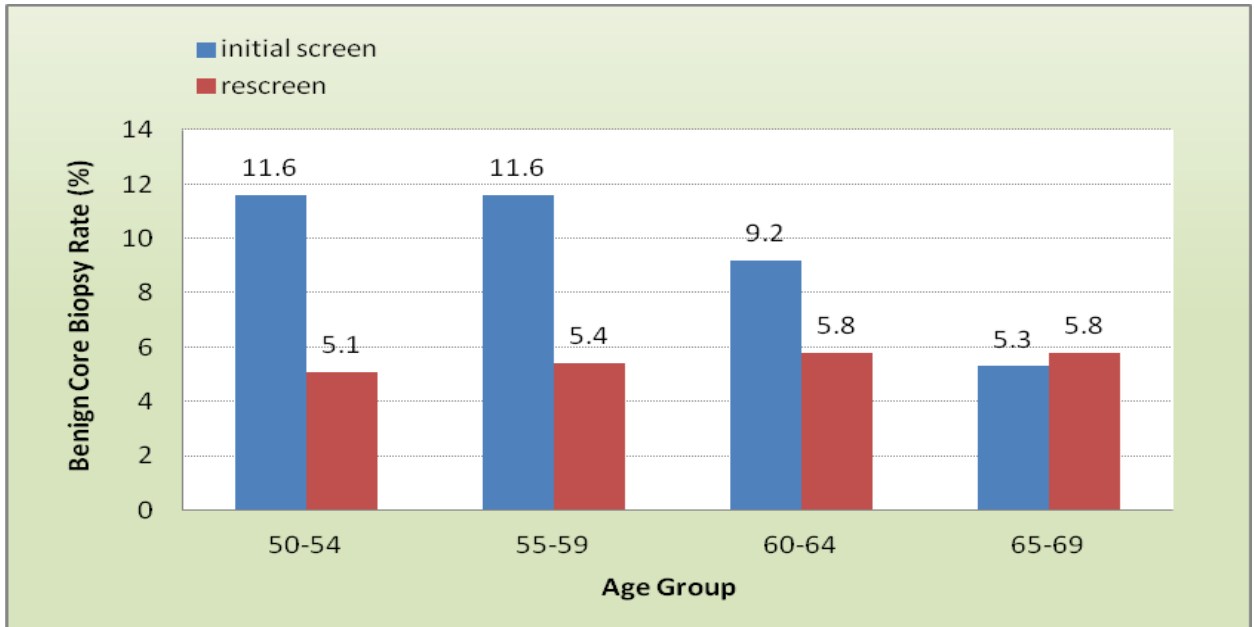
D36: Benign Core Biopsy Rate (per 1,000 screens) for initial screen by screen year and HZ, NB



D37: Benign Core Biopsy Rate (per 1,000 screens) for rescreen by screen year and HZ, NB



D38: Benign Core Biopsy Rate (per 1,000 screens) in NBBCSS women aged 50-69 by screen type and age group, 2008-2009



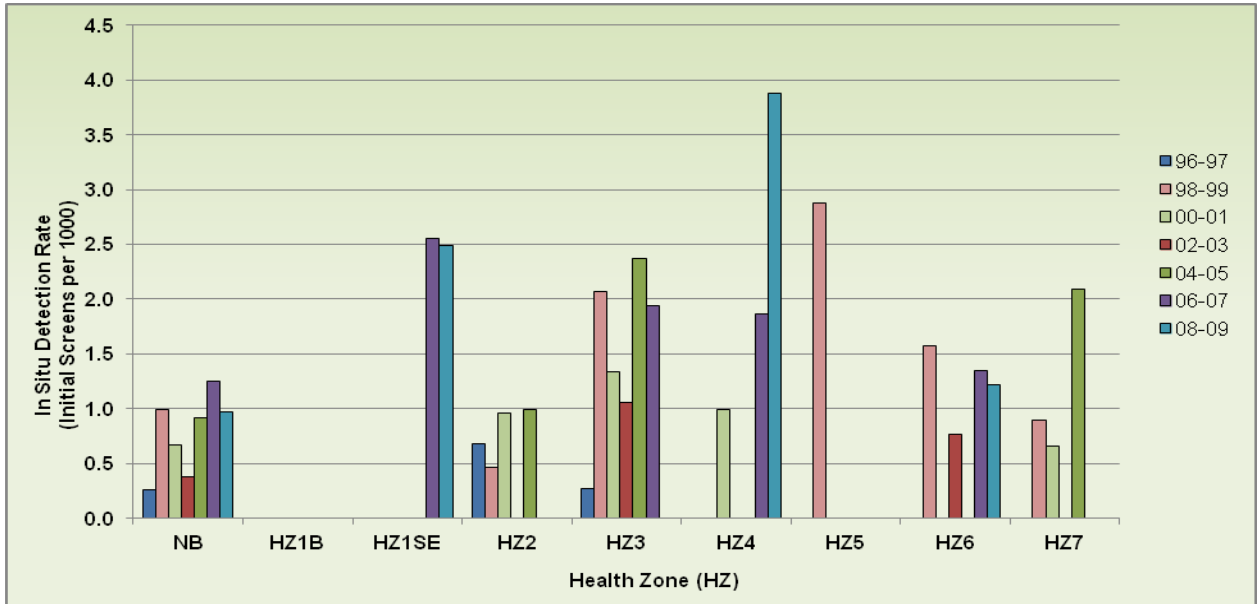
D39: In Situ Cancer Detection Rate (per 1,000 screens) for women aged 50-69 by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
<i>Initial Screen</i>									
1996-1997	0.3	0.0	0.0	0.7	0.3	0.0	0.0	0.0	0.0
1998-1999	1.0	0.0	0.0	0.5	2.1	0.0	2.9	1.6	0.9
2000-2001	0.7	0.0	0.0	1.0	1.3	1.0	0.0	0.0	0.7
2002-2003	0.4	0.0	0.0	0.0	1.1	0.0	0.0	0.8	0.0
2004-2005	0.9	0.0	0.0	1.0	2.4	0.0	0.0	0.0	2.1
2006-2007	1.3	0.0	2.6	0.0	1.9	1.9	0.0	1.4	0.0
2008-2009	1.0	0.0	2.5	0.0	0.0	3.9	0.0	1.2	0.0
<i>Rescreen</i>									
1996-1997	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.0	-
1998-1999	0.6	0.6	0.0	1.1	0.3	0.0	0.0	0.0	0.0
2000-2001	0.7	0.9	0.5	0.8	0.7	0.0	1.4	1.1	0.0
2002-2003	1.0	0.7	0.8	1.2	1.0	0.5	1.5	1.1	0.7
2004-2005	0.7	0.2	1.0	0.3	1.0	0.3	0.5	0.8	0.7
2006-2007	0.9	0.2	1.7	0.9	1.0	0.0	2.2	0.5	0.4
2008-2009	0.8	0.2	1.8	0.4	0.5	1.1	1.9	1.2	0.6

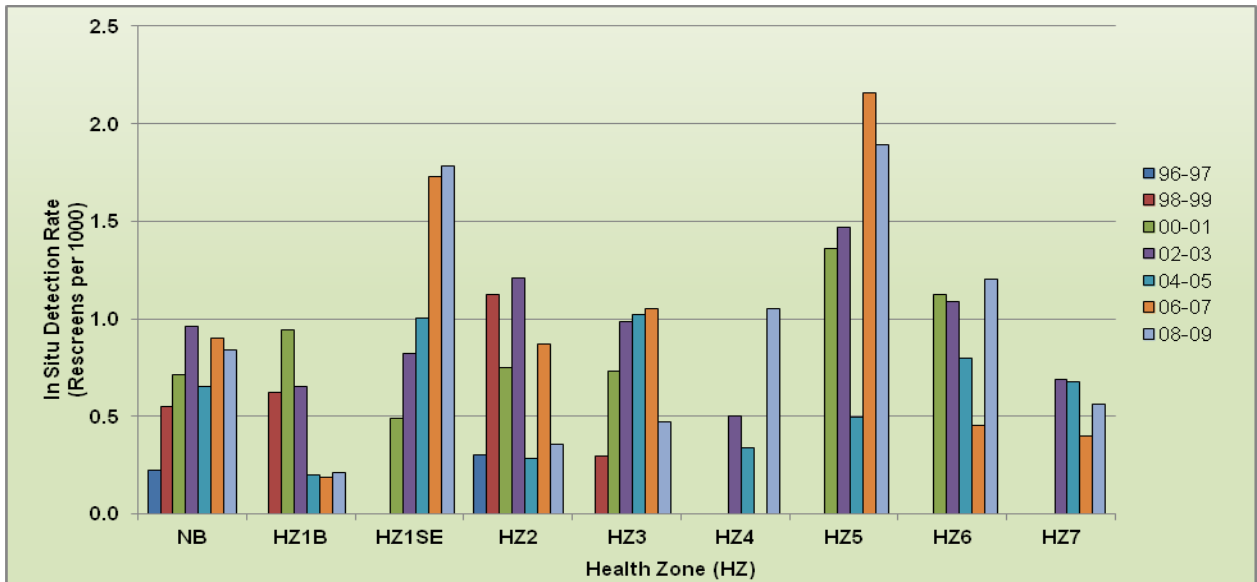
No national target has been established.

-: No individual women were rescreened.

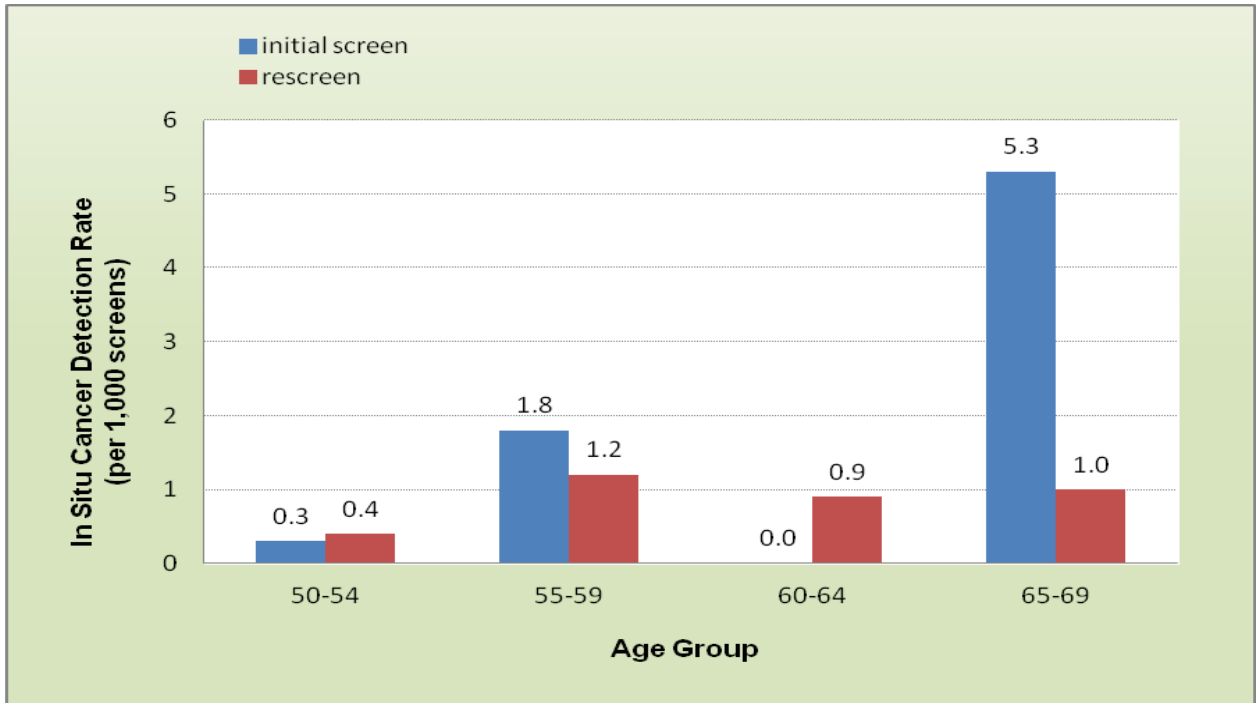
D40: In Situ Detection Rate (per 1,000 screens) of initial screen for women aged 50-69 by screen year and HZ, NB



D41: In Situ Detection Rate (per 1,000 screens) of rescreen for women aged 50-69 by screen year and HZ, NB



D42: In Situ Detection Rate (per 1,000 screens) in NBBCCS women aged 50-69 by screen type and age group, 2008-2009



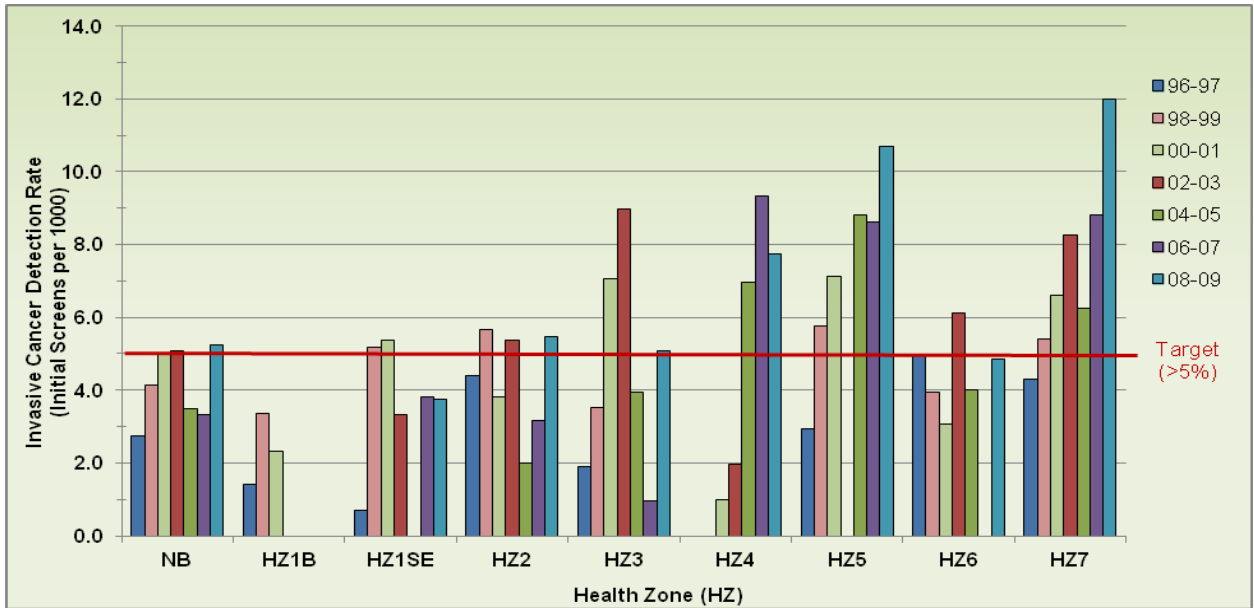
D43: Invasive Cancer Detection Rate (per 1,000 screens) detected by mammography for women aged 50-69 by screen year and HZ, NB

Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Initial Screen									
1996-1997	2.7	1.4	0.7	4.4	1.9	0.0	2.9	5.0	4.3
1998-1999	4.1	3.4	5.2	5.6	3.5	0.0	5.7	3.9	5.4
2000-2001	5.0	2.3	5.4	3.8	7.0	1.0	7.1	3.1	6.6
2002-2003	5.1	0.0	3.3	5.4	9.0	2.0	0.0	6.1	8.3
2004-2005	3.5	0.0	0.0	2.0	4.0	7.0	8.8	4.0	6.3
2006-2007	3.3	0.0	3.8	3.2	1.0	9.3	8.6	0.0	8.8
2008-2009	5.2	0.0	3.7	5.5	5.1	7.8	10.7	4.9	12.0
Rescreen									
1996-1997	3.1	0.0	1.6	3.9	0.0	0.0	0.0	0.0	-
1998-1999	2.8	2.5	2.1	3.0	2.7	1.2	2.8	6.0	3.4
2000-2001	3.3	2.8	2.3	3.8	4.5	0.9	2.0	3.4	1.5
2002-2003	3.3	1.1	3.3	3.3	4.1	5.0	3.9	1.5	4.5
2004-2005	3.3	0.6	3.6	4.4	4.0	3.4	2.0	3.5	1.8
2006-2007	3.0	0.6	4.8	3.7	2.4	3.7	2.2	3.4	1.8
2008-2009	2.9	1.5	3.4	3.7	2.7	3.9	2.4	2.6	2.1

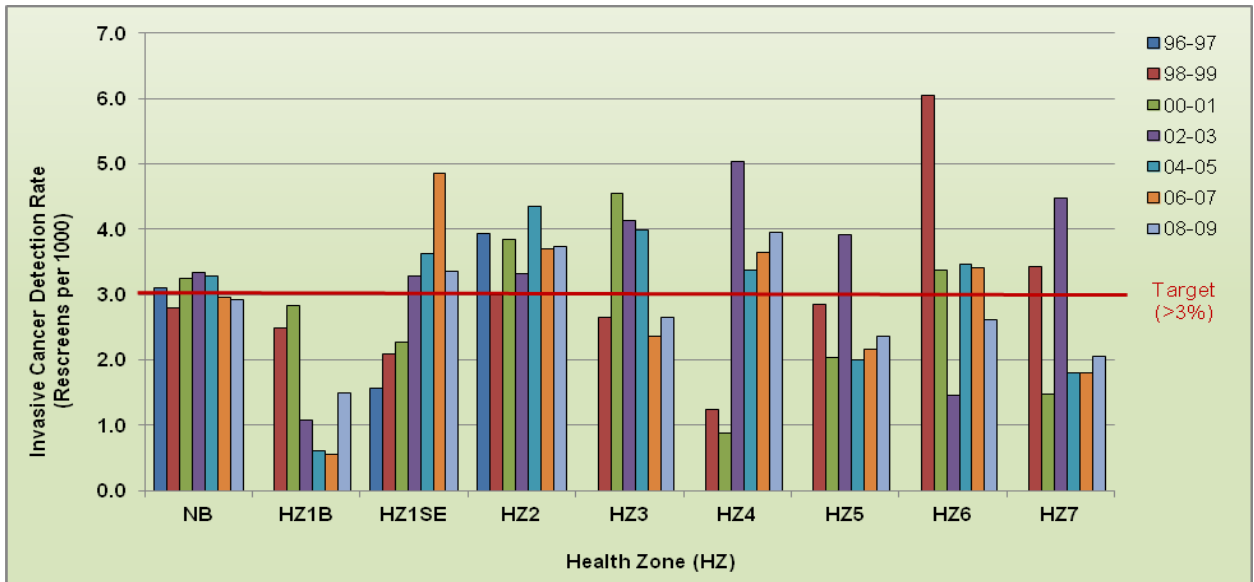
The national target for invasive cancer detection rate is > 5% for initial screens and > 3% for rescreens.

-:No individual women were rescreened.

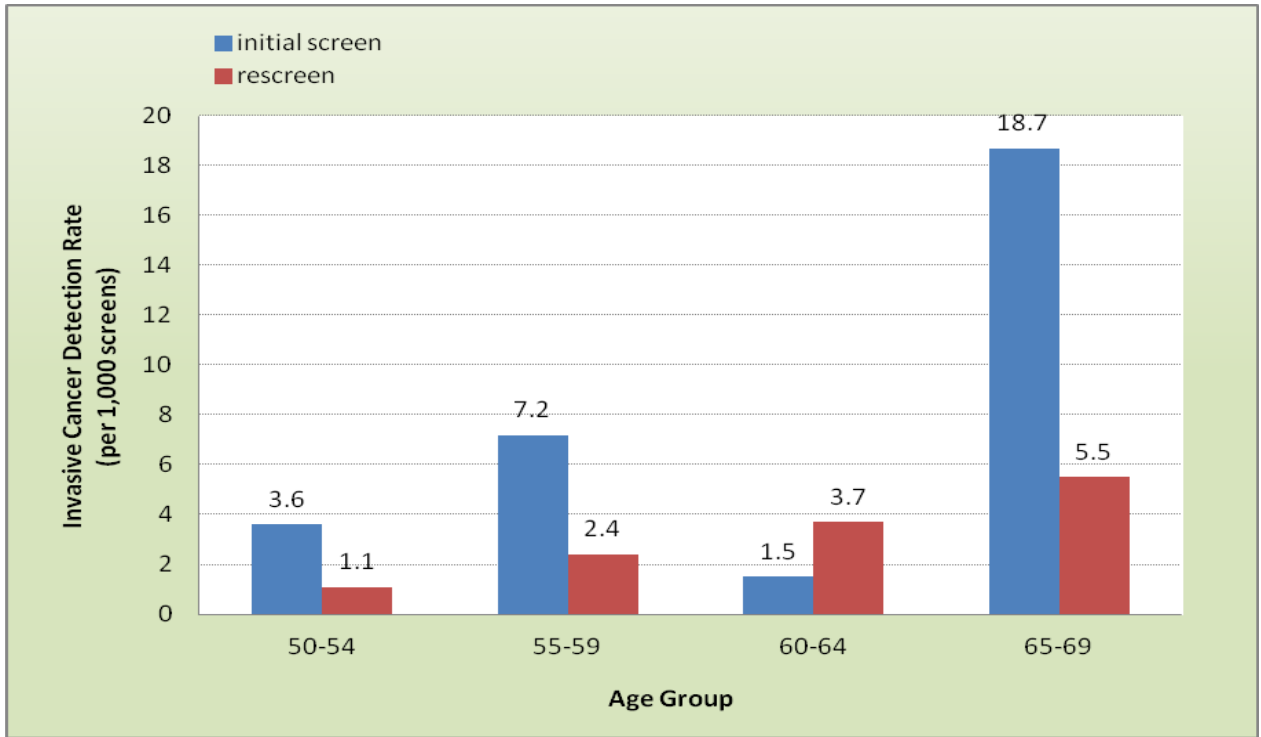
D44: Invasive Cancer Detection Rate (per 1,000 screens) detected by mammography of initial screen for women aged 50-69 by screen year and HZ, NB



D45: Invasive Cancer Detection Rate (per 1,000 screens) detected by mammography of rescreen for women aged 50-69 by screen year and HZ, NB



D46: Invasive Cancer Detection Rate (per 1,000 screens) in NBBCSS women aged 50-69 by screen type and age group, 2008-2009



D47: Invasive Cancer Tumour Size[†] for women aged 50-69 by screen year and HZ, NB

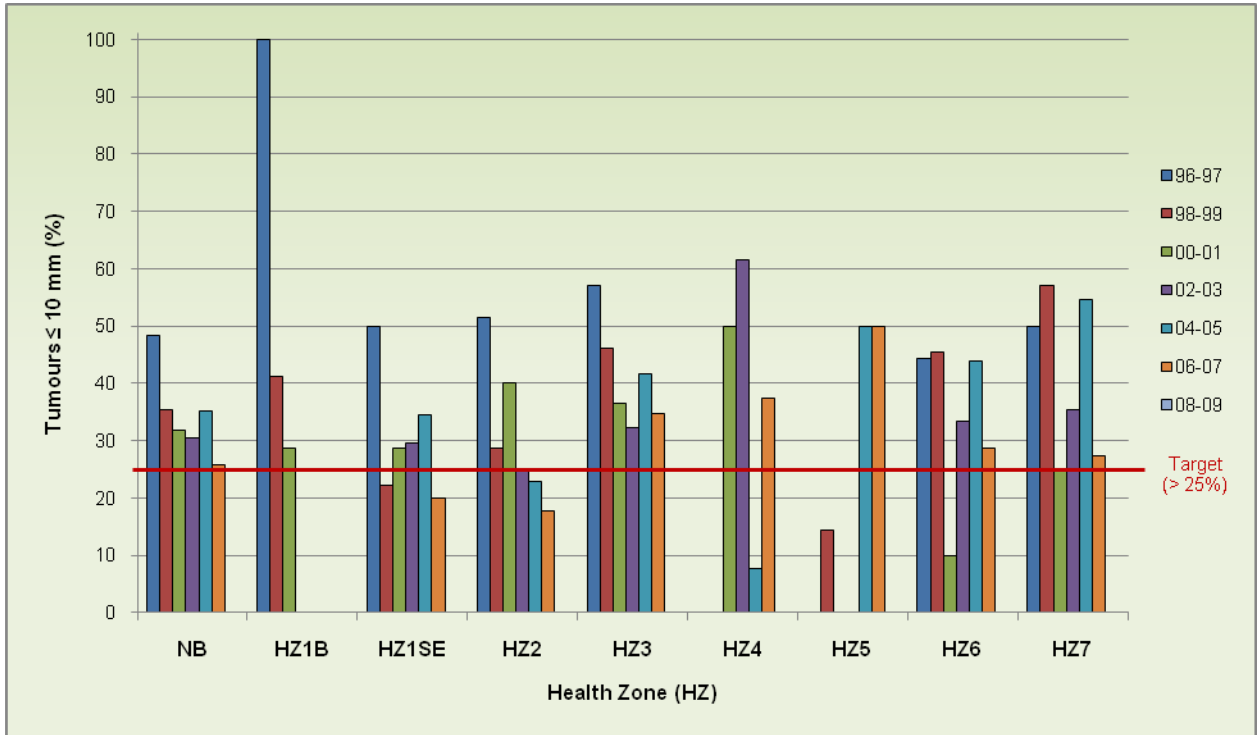
Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
Percentage of Tumours ≤ 10mm									
1996-1997	48.4	100.0	50.0	51.4	57.1	0.0	0.0	44.4	50.0
1998-1999	35.3	41.2	22.2	28.6	46.2	0.0	14.3	45.5	57.1
2000-2001	31.9	28.6	28.6	40.0	36.5	50.0	0.0	10.0	25.0
2002-2003	30.5	0.0	29.6	25.0	32.2	61.5	0.0	33.3	35.3
2004-2005	35.1	0.0	34.5	23.0	41.7	7.7	50.0	43.8	54.6
2006-2007	25.7	0.0	20.0	17.7	34.8	37.5	50.0	28.6	27.3
2008-2009	*	*	*	*	*	*	*	*	*
Percentage of Tumours ≤ 15 mm									
1996-1997	70.3	100.0	75.0	70.3	100.0	0.0	25.0	66.7	50.0
1998-1999	66.4	88.2	50.0	60.0	73.1	0.0	57.1	72.7	71.4
2000-2001	60.5	57.1	52.4	65.0	63.5	50.0	50.0	60.0	58.3
2002-2003	56.5	60.0	59.3	50.0	52.5	76.9	25.0	66.7	70.6
2004-2005	63.2	66.7	55.2	62.5	60.4	69.2	83.3	62.5	81.8
2006-2007	60.5	33.3	53.3	52.9	69.6	75.0	66.7	64.3	72.7
2008-2009	*	*	*	*	*	*	*	*	*

The national target is for > 25% of invasive tumours to be ≤ 10mm and for > 50% of invasive tumours to be ≤ 15mm.

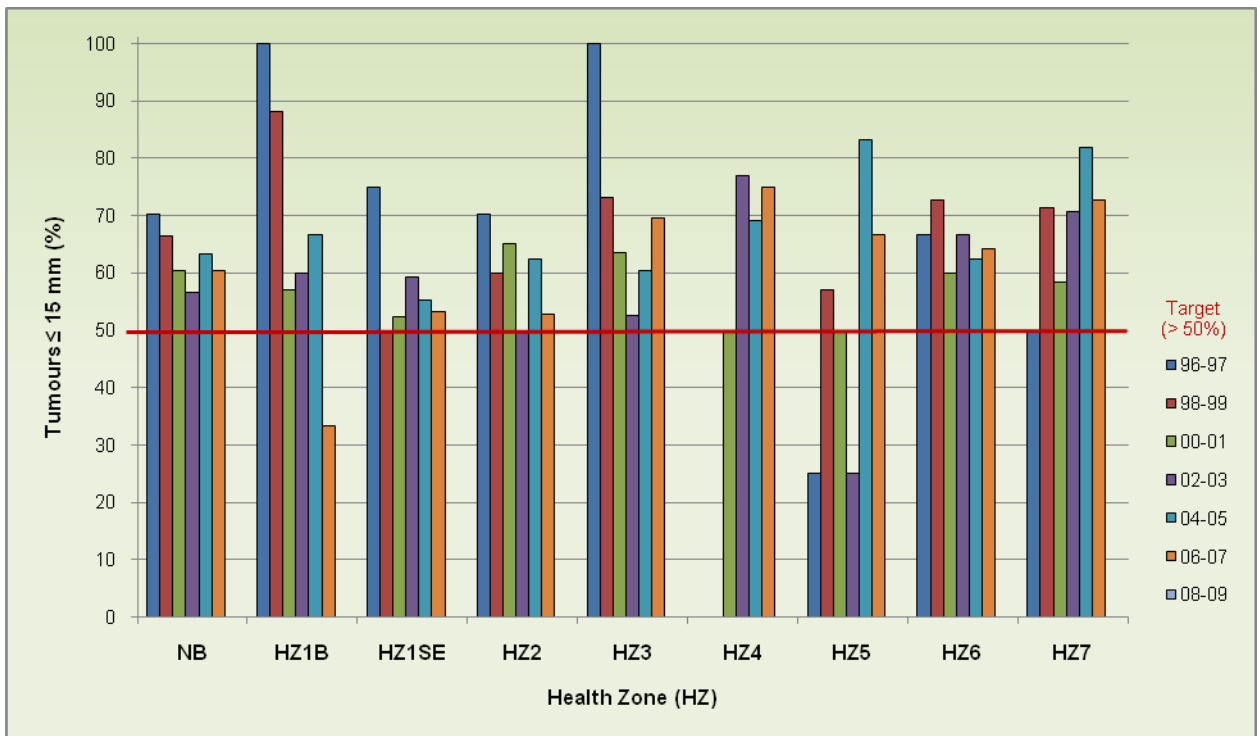
[†]Missing values are excluded from calculations. Expressed as a proportion of screen detected invasive cancers with complete data on tumour size.

*Since 2008, the New Brunswick Cancer Registry has used Collaborative Staging instead of AJCC TNM Staging System for breast cancer. To provide consistent information, in this table we have reported the breast tumour size information only from 1996 to 2007.

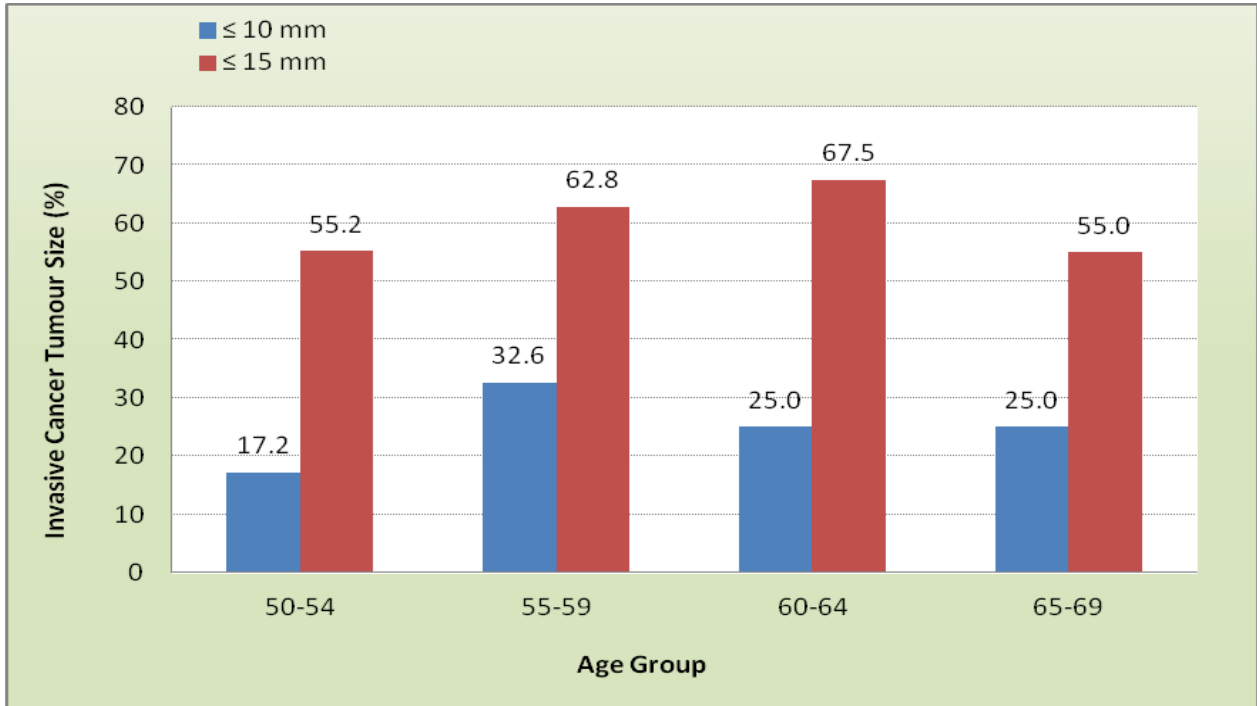
D48: Percentage of invasive cancer tumours ≤ 10 mm for women aged 50-69 by screen year and HZ, NB



D49: Percentage of invasive cancer tumours ≤ 15 mm for women aged 50-69 by screen year and HZ, NB



D50: Invasive Cancer Tumour Size in NBBCSS women aged 50-69 by age group, 2006-2007

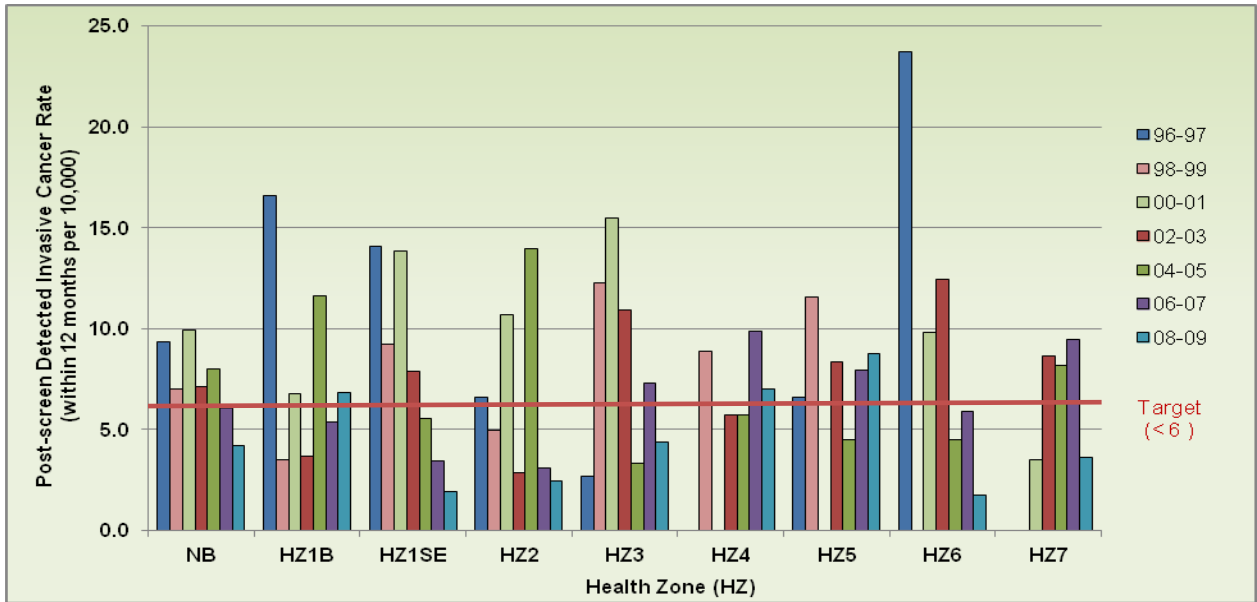


D51: Post-screen Invasive Cancer Rate (per 10,000 person-years) by screen year and HZ, NB

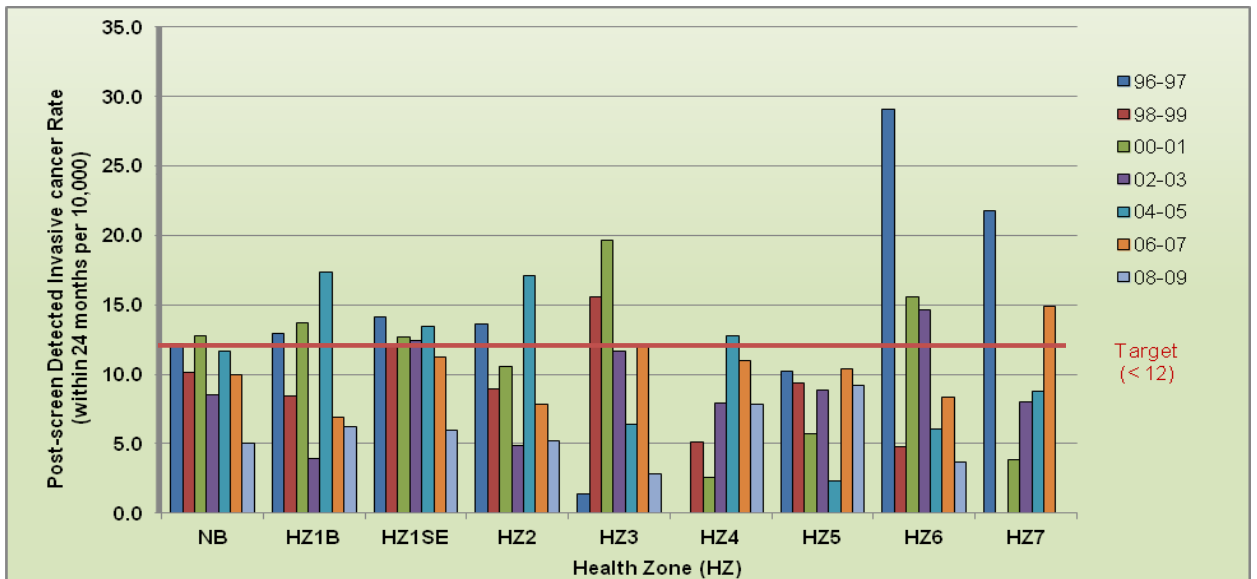
Screen Year	NB	HZ1B	HZ1SE	HZ2	HZ3	HZ4	HZ5	HZ6	HZ7
<i>Within 12 months</i>									
1996-1997	9.3	16.6	14.1	6.6	2.7	0.0	6.6	23.7	0.0
1998-1999	7.0	3.5	9.2	5.0	12.3	8.9	11.6	0.0	0.0
2000-2001	9.9	6.8	13.9	10.7	15.5	0.0	0.0	9.8	3.5
2002-2003	7.1	3.7	7.9	2.8	10.9	5.7	8.3	12.4	8.6
2004-2005	8.0	11.6	5.6	14.0	3.3	5.7	4.5	4.5	8.2
2006-2007	6.1	5.4	3.4	3.1	7.3	9.9	7.9	5.9	9.4
2008-2009	4.2	6.8	1.9	2.5	4.4	7.0	8.8	1.7	3.6
<i>Within 24 months</i>									
1996-1997	12.2	13.0	14.1	13.6	1.4	0.0	10.2	29.1	21.7
1998-1999	10.2	8.4	12.0	9.0	15.5	5.1	9.3	4.8	0.0
2000-2001	12.8	13.7	12.7	10.6	19.7	2.6	5.7	15.6	3.8
2002-2003	8.6	3.9	12.4	4.8	11.7	7.9	8.9	14.6	8.0
2004-2005	11.7	17.3	13.5	17.1	6.4	12.7	2.3	6.0	8.8
2006-2007	10.0	6.9	11.3	7.8	12.0	11.0	10.4	8.3	14.9
2008-2009	5.0	6.2	5.9	5.2	2.8	7.8	9.2	3.7	3.5

The national target for within 12 months is < 6 and <12 per 10,000 person-years for within 24 months.

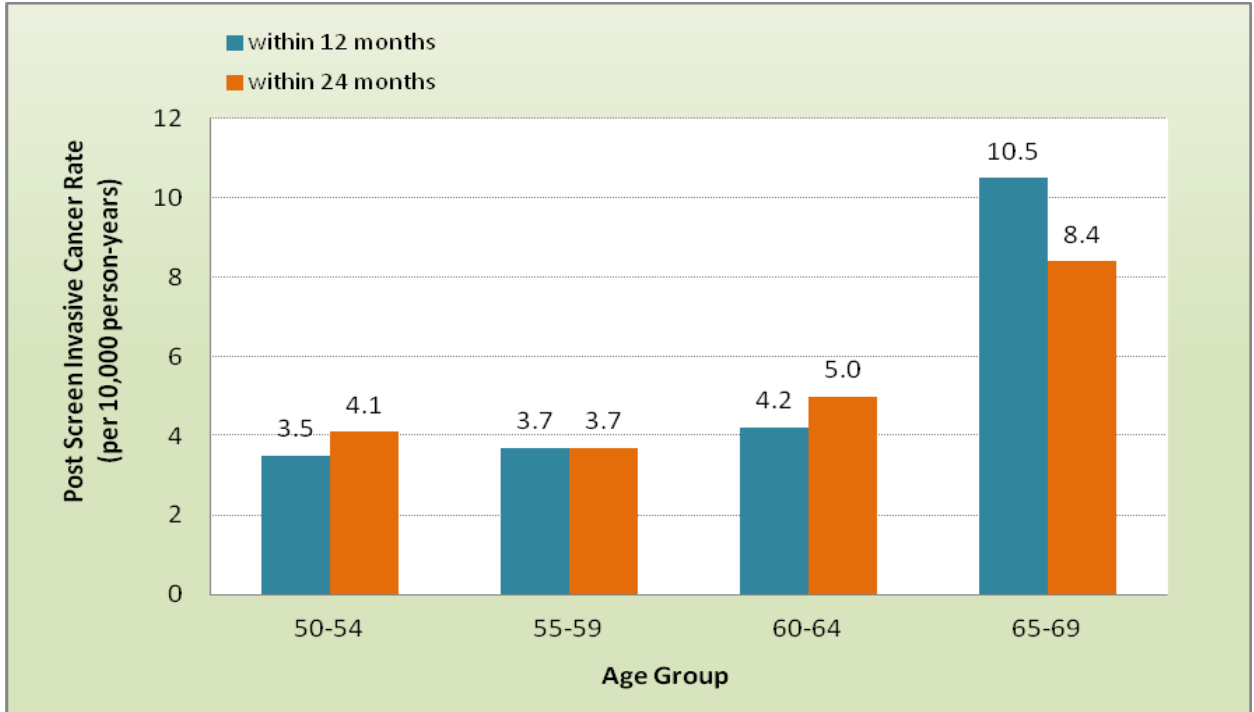
D52: Post-screen Invasive Cancer Rate (per 10,000 person-years) within 12 months after a normal program screen by screen year and HZ, NB



D53: Post-screen Invasive Cancer Rate (per 10,000 person-years) within 24 months after a normal program screen by screen year and HZ, NB



D54: Post-screen Invasive Cancer Rate (per 10,000 person-years) in NBBCSS women aged 50-69 by age group, 2008-2009



Glossary

Asymptomatic

A woman who does not report symptoms and appears without signs of disease.

Biopsy

Removal of a piece of tissue to be examined microscopically to diagnose disease.

Breast Cancer

Includes malignant invasive and ductal carcinoma in situ (DCIS) of the breast.

Core biopsy

A less-invasive biopsy where local anesthetic can be used and the biopsy can be done on an out-patient basis. A small sample of tissue is removed with the assistance of guided imaging for microscopic analysis.

Definitive diagnosis

Definitive diagnosis of cancer is the first core or open surgical biopsy that confirms cancer. On rare occasions fine needle aspiration (FNA) biopsy may also be used as a definitive diagnosis of cancer. Definitive diagnosis of benign cases is the last benign test up to 6 months following an abnormal screen.

Ductal carcinoma in situ (DCIS)

A non-invasive tumour of the breast, arising from cells that involve the lining of a breast duct. The cells have not spread outside the duct to other tissues in the breast. DCIS is also referred to as stage 0 cancer.

Fine-needle aspiration biopsy

A needle is inserted into a lesion and cells are drawn out using a syringe. The cells are stained and examined by a cytologist in a laboratory to determine the presence of malignant cells.

Initial screen

The first screening mammogram provided to a woman by New Brunswick organized breast screening services program.

Interval cancer

Any invasive breast cancer diagnosed during the interval between a normal screen or benign diagnostic test and before the next scheduled screening examination.

Invasive breast cancer

Disease in which breast cancer cells have penetrated (invaded) surrounding breast tissue. Invasive cancer includes stages I to IV.

Malignant

Cancer or carcinoma.

Mammogram

A specific x-ray of the breast that uses compression and radiation in order to assess internal breast tissue.

Normal screening episode

A screening episode that concludes with normal (non-cancer) findings. This includes both a normal screening mammogram and an abnormal screening mammogram with a normal (non-cancer) finding.

Open surgical biopsy

Surgical removal of a breast abnormality under local anesthesia for subsequent microscopic examination by a pathologist.

Person-years at risk

Within a 12 or 24-month period after a negative (normal) screening episode, women are considered at risk for post-screen detected cancer. Women contribute a count in the denominator for each year or fraction of a year within the period of interest before a post-screen detected cancer or the next regular program screen.

Post-screen cancer

Cancers that occur after the recommended 12 or 24 months in women who do not return for their regular annual or biennial screen respectively (non-compliant cancers) or women who become symptomatic before their next regular screen (interval cancer).

Prevalent cancer

The proportion of the population with cancer at a given point in time.

Rescreen (Subsequent screen)

Subsequent screening after the initial (first) screening under New Brunswick Breast Cancer Services program. This includes women who return after missing a scheduled round of screening.

Screening mammography

The x-ray breast examination of asymptomatic women in an attempt to detect cancer when it is small, non-palpable and confined to the breast.

Screen-detected cancer

Cancer detected as a result of a positive (abnormal) test with histological confirmation attributed to the screening findings of the program.

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