BreastCheck Statistical Report 2021

An tSeirbhís Náisiúnta Scagthástála
National Screening Service

BreastCheck
An Clár Náisiúnta Scagthástála Cíoch
The National Breast Screening Programme

BreastCheck Women's Charter

Screening commitment

- All staff will respect your privacy, dignity, religion, race and cultural beliefs
- Services and facilities will be arranged so that everyone, including people with special needs, can use them
- Your screening records will be treated in the strictest confidence and you will be assured of privacy during your appointment
- Information relevant to your care will be available for relatives and friends in accordance with your wishes
- You will always have the opportunity to make your views known and to have them taken into account
- You will receive your first appointment within two years of becoming known to the programme
- Once you become known to the programme you will be invited for screening every two years while you are in the eligible age range
- You will be screened using high-quality, modern equipment which complies with Guidelines for Quality Assurance

We aim

- To give you at least 7 days' notice of your appointment
- To send you information about screening before your appointment
- To see you as promptly as possible to your appointment time
- To keep you informed about any unavoidable delays which occasionally occur
- To provide pleasant, comfortable surroundings during screening
- To ensure that we send results of your mammogram to you within three weeks

If re-call is required

We aim

- To ensure that you will be offered an appointment for an assessment clinic within two weeks of being notified of an abnormal result
- To ensure that you will be seen by a Consultant doctor who specialises in breast care
- To provide support from a breast care nurse
- To ensure you get your results from the Assessment Clinic within one week
- To keep you informed of any delays regarding your results

If breast cancer is diagnosed

We aim

- To tell you sensitively and with honesty
- To fully explain the treatment available to you
- To encourage you to share in decision-making about your treatment
- To include your partner, friend or relative in any discussions if you wish
- To give you the right to refuse treatment, obtain a second opinion or choose alternative treatment, without prejudice to your beliefs or chosen treatment
- To arrange for you to be admitted for treatment by specialised trained staff within three weeks of diagnosis
- To provide support from a breast care nurse before and during treatment
- To provide you with information about local and national cancer support groups and self-help groups

Tell us what you think

- Your views are important to us in monitoring the effectiveness of our services and in identifying areas where we can improve
- You have a right to make your opinion known about the care you received
- If you feel we have not met the standards of the Women's Charter, let us know by telling the people providing your care or in writing to the programme
- We would also like to hear from you if you feel you have received a good service. It helps us to know that we are providing the right kind of service - one that satisfies you
- Finally, if you have any suggestions on how our service can be improved, we would be pleased to see whether we can adopt them to further improve the way we care for you

You can help by

Keeping your appointment time

Giving at least three days' notice if you wish to change your appointment

Reading any information we send you

Being considerate to staff and to others using the service and the staff

Please try to be well informed about your health

Let us know

If you change your address

If you have special needs

If you already have an appointment

Tell us what you think - your views are important.

Freephone 1800 45 45 55
www.breastcheck.ie

BreastCheck
An Clár Náisiúnta Scagthástála Cioch
The National Breast Screening Programme

An tSeirbhís Náisiúnta Scagthástála
National Screening Service
Cuid d'Fheidhmeannacht na Seirbhíse Sláinte. Part of the Health Service Executive.

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Highlights of 2021

123,891

number of women attended for screening in a year

1,202

number of cancers detected in a year

6,115

number of women re-called for assessment

99.4%

results of mammograms sent within three weeks

76.6%

hospital admission offered within three weeks of breast cancer diagnosis

9.7

cancers detected per 1,000 women screened

Statistical Report

Background

This report outlines the performance of BreastCheck in 2021. Rising COVID-19 cases prompted a second pause in screening activity in January 2021 for 2 months. The impact of this and the previous year's seven month pause meant the normal two-year screening round essentially became a three-year round due to both programme pauses and slow resumption due to ongoing COVID-19 restrictions. The programme commenced with limited access in order to limit risks for the women attending for breast screening and staff delivering the service. The age cohort for BreastCheck is 50-69, consequently these women were potentially more vulnerable to the COVID-19 virus and therefore NPHET Guidelines & Government restrictions were strictly adhered to. Cancellations by the women themselves were also numerous.

We adhered to NPHET guidance and infection control guidelines in delivering the service through 2021. The risk remained for everyone and BreastCheck noted the clear government and public health message to stay at home as much as possible over January 2021. This impacted the number of women screened in 2021 and our effort to screen as many women as possible. There is a finite amount of healthcare staff nationwide and some of these staff were themselves affected by COVID-19. This further impacted service delivery. Text reminders and enhanced appointment management by text were used to space out appointments to deliver a safer service, but this further impacted service delivery by slowing the process. There was an increase in the number of women screened in 2021 versus 2020 but it was reduced compared to the number of women screened in 2019.

Women's Charter targets regarding proportions of women re-invited within 2 years of a previous screen and women invited within 2 years of becoming known to the programme fell outside standard. Despite these challenges, the majority of the programme KPIs pertaining to cancer detection, small cancer detection and breast cancer treatment were met.

Screening activity overall

The figures reported relate to women invited by BreastCheck for screening between 01 January and 31 December 2021. Women invited in 2021 were screened or treated in 2021 and/or early 2022.

Programme standards, against which performance is measured, are based on the *European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis*[1] and the BreastCheck Guidelines for Quality Assurance in Mammography Screening[2].

During 2021, 166,176 women were invited by BreastCheck for screening (Table 1, Figure 1). Of these, 165,690 were eligible for screening and 123,891 women attended for screening (74.8 per cent), which is above the programme standard of 70 per cent.

The standardised detection ratio (SDR) is a useful composite score by which to measure the overall performance of a screening programme. The overall SDR for BreastCheck in 2021 was 1.75, surpassing the target of 0.75. This reflects continued high achievement in programme performance (Table 1).

Table 1: Screening activity overall 2021

Performance parameter	2021
Number of women invited	166,176
Number of eligible women invited*	165,690
Number of women who opted out of the programme	3,192
Number of women attended for screening	123,891
Eligible women uptake rate* (includes women who opted out of the programme)	74.8%
Number of women re-called for assessment	6,115
Number of open benign biopsies	210
Number of cancers detected	1,202
Cancers detected per 1,000 women screened	9.7
Number of invasive cancers	949
Number of ductal carcinoma in situ (DCIS)	253
Number; rate of invasive cancers < 15mm as % of invasive cancers detected	447; 47.1%
[3]Number; rate of Invasive cancers ≤10mm as % of invasive cancers detected	269; 28.3%
[3]Number; rate of Invasive cancers > 20mm as % of all women screened	249; 0.2%
Standardised detection ratio (SDR)^	1.75

* *Eligible refers to the known target population less those women excluded or suspended by the programme based on certain eligibility criteria.*

^ *Calculated for women aged 50-64*

Details of the ineligible categories

Excluded – Women in follow-up care for breast cancer; women who are not contactable by post; women who have a physical/mental disability (while BreastCheck attempts to screen all eligible women, certain forms of physical or mental disability may preclude screening); women with a terminal illness; or other reasons.

Suspended – Women on an extended holiday or working abroad; women who had a mammogram within the last year; women who opt to wait until the next round of screening; women who wished to defer their appointment; women who did not wish to reschedule their appointment; or other reasons.

The COVID-19 pandemic had a profound effect on the delivery of screening services in Ireland, and worldwide. In response to public health and government policies, we paused BreastCheck breast screening services for approximately 1 year (as outlined in Figure 1). In addition, our overall screening capacity was reduced on resumption of services as we adhered to ongoing COVID-19 restrictions.

On the resumption of screening in 2020 it was taking us longer to complete our screening rounds. To maximise our screening time we implemented new initiatives aimed at increasing efficiencies. Such changes included introducing a new way of scheduling invitations for women who did not attend their initial scheduled appointment, and for women who were previous non-attenders.

Prior to the pandemic, all women who received an invitation but did not attend were receiving a second scheduled invitation. However, uptake for second scheduled appointments was consistently low, meaning a loss of valuable mammography time. With the new initiative, women being invited for a second time after non-attendance were instead being offered an open invitation to call us and book their second appointment. The same method was applied to invites for previous non-attenders - women who did not attend their screening appointment in the previous round.

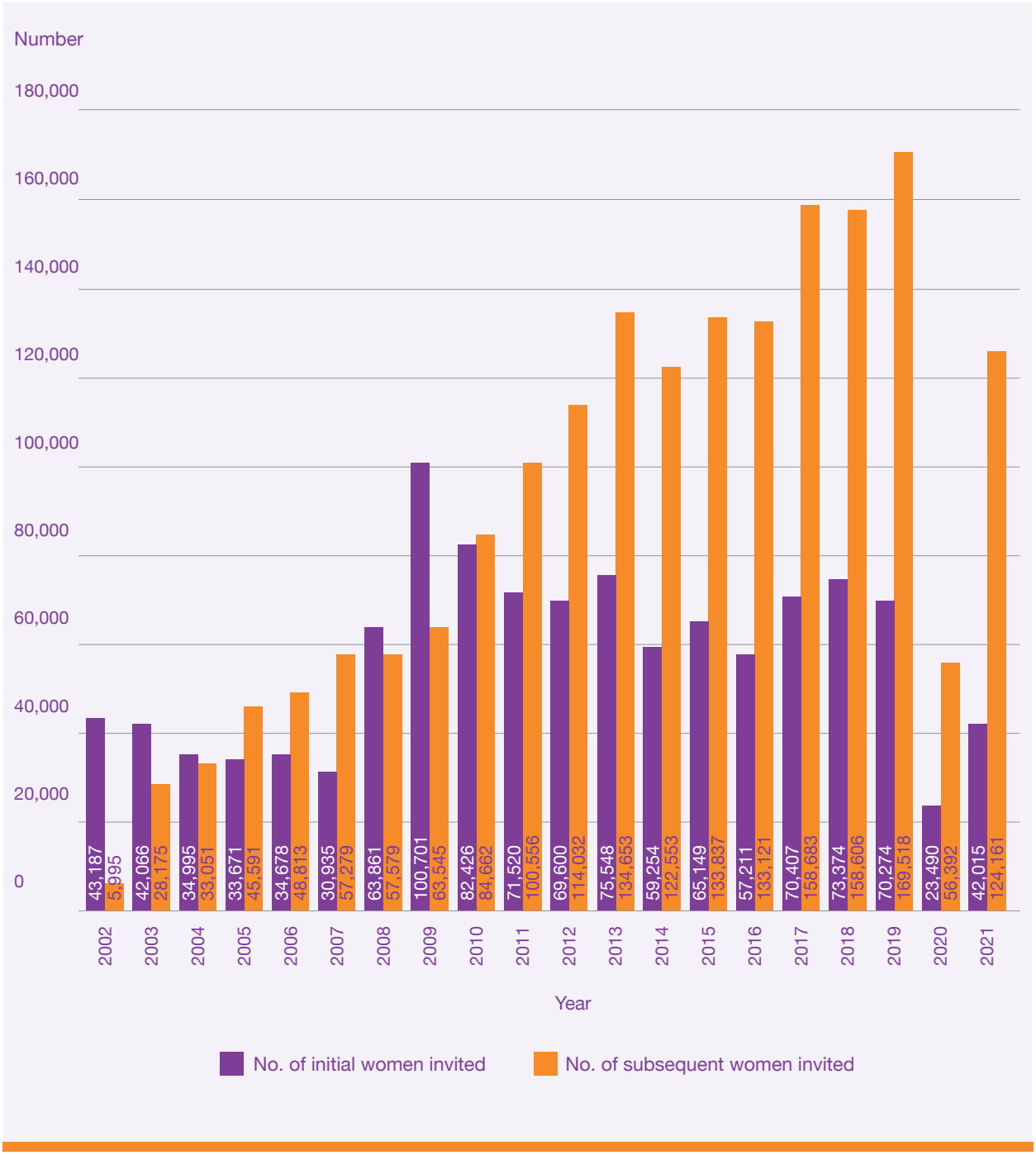
A similar type of intervention was trialled and reported by Fleming et. al in 2016[4]. This trial demonstrated that while uptake was lower for this open invitation strategy compared to offering a second scheduled appointment, this strategy reduced the number of missed appointments and therefore, the length of time between screens for screening participants. At time of writing we have begun a staged return to scheduling second appointments with the aim of returning all women to scheduled second appointments.

Figure 1: Impact of COVID-19 on BreastCheck operational screening.

Screening activity by screening invitation type

'Initial women' are those who have been invited to have their first BreastCheck mammogram (X-ray of the breast). 'Subsequent' women are women who have previously attended BreastCheck and are being invited for the second or subsequent time. In 2021, the number of both initial and subsequent women being invited increased from the previous year, as we resumed screening (Figure 2).

Figure 2: Numbers invited 2002-2021 – initial and subsequent women



In 2021 the eligible uptake rate for those invited for the first time was 68.4 per cent. This has increased from 48 per cent in 2020 and is below the standard of 70 per cent (Table 2). Those who have previously been invited but did not attend are known as previous non-attenders (PNAs). The uptake rate among PNAs is consistently low and 2021 is no exception at 9.8 per cent. This figure has decreased from 10.3 per cent in 2020. This is attributed to persistent non-attendance by some women who neither attend nor opt out of the programme, and so continue to be invited to have their first BreastCheck mammogram.

The uptake rates among those women who have previously attended and are re-invited for subsequent screening (86.5 per cent) has decreased from 2020 (87.3 per cent).

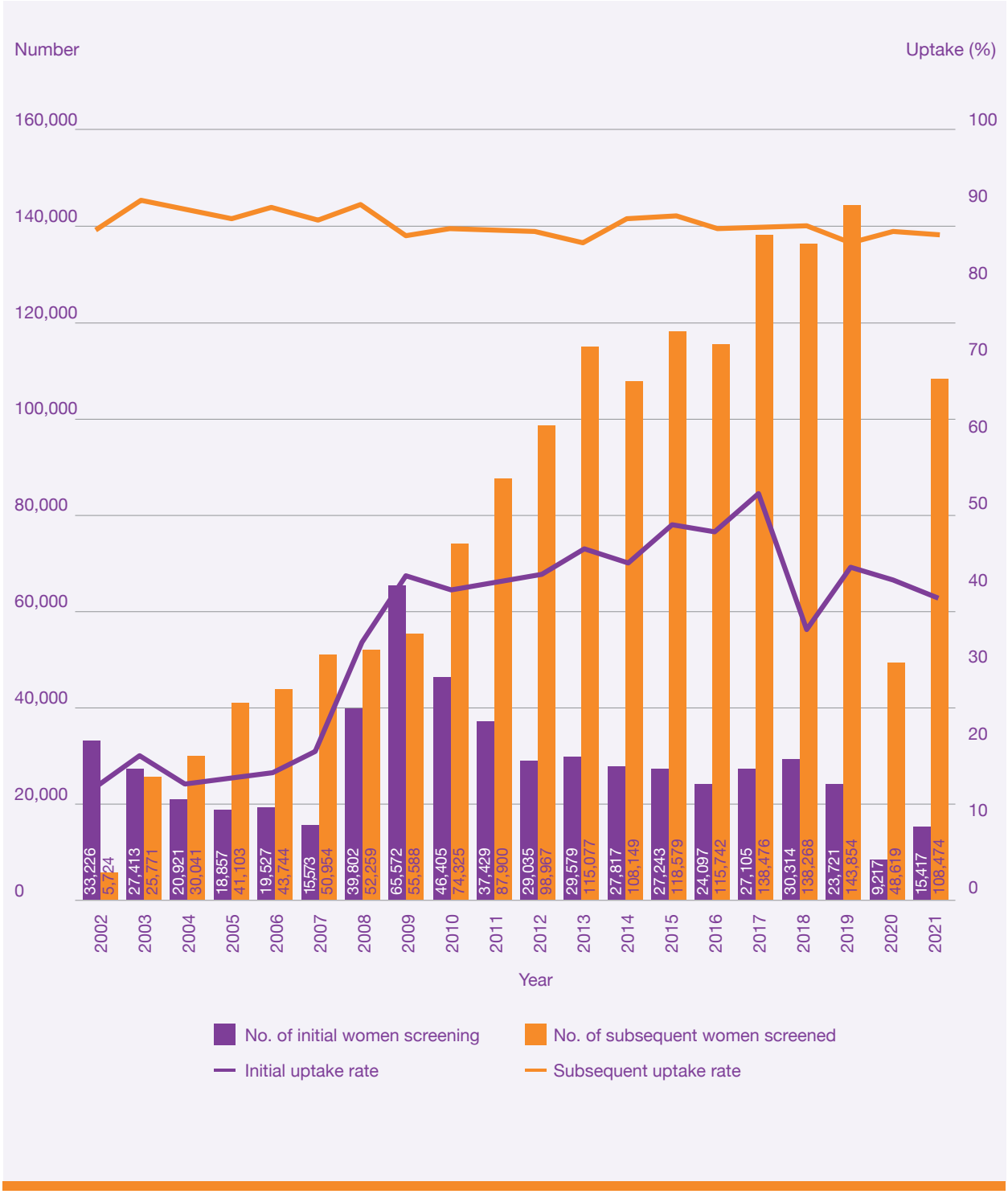
Table 2: Screening activity by screening invitation type 2021

Performance parameter	First invited population	Previous non-attenders	Subsequent population
Number of women invited	21,237	20,778	124,161
Number of eligible women invited	19,565	20,775	125,350
Number of women who opted out of the programme	35	-	3,157*
Number of women screened	13,389	2,028	108,474
Eligible women uptake rate (including women who opted out of the programme)	68.4%	9.8%	86.5%

** Opted out of the programme in a previous round but remain in the target population*

In 2021 the number of initial and subsequent women screened has increased compared to the previous year (Figure 3). Once again this is a result of programme re-opening post-COVID-19.

Figure 3: Numbers screened and uptake rates 2002-2021 – initial and subsequent women



Screening activity by age group

Among women invited for the first time, uptake remains highest in younger women aged 50 to 54, with smaller numbers and rates in higher age groups (Table 3). This finding has been a feature of the programme since its inception.

Table 3: First invited population 2021*

Performance parameter	Age group				
	50-54	55-59	60-64	65-69	Total
Number of women invited	17,176	1,561	1,535	943	21,215
Number of eligible women invited	16,199	1,260	1,305	783	19,547
Number of women who opted out of the programme	21	6	7	4	38
Number of women screened	12,299	610	304	158	13,371
Eligible women uptake rate (including women who opted out of the programme)	75.9%	48.4%	23.3%	20.2%	68.4%

* *Women over and under the eligible age range excluded from age-group tables*

The age gradient is marked among previous non-attenders, reflecting not only a difference due to age but also the effect of persistent non-attenders in the calculation of rates in the older age groups (Table 4).

Table 4: Previous non-attenders population 2021*

Performance parameter	Age group				
	50-54	55-59	60-64	65-69	Total
Number of previous non-attenders invited	4,975	7,748	4,545	3,507	20,775
Number of women screened	1,035	706	186	101	2,028
Eligible population uptake rate	20.8%	9.1%	4.1%	2.9%	9.8%

* *Women over and under the eligible age range excluded from age-group tables*

Among those invited for subsequent screening, there are continuing high uptake rates in all age groups (Table 5).

Table 5: Subsequent invited population 2021*

Performance parameter	Age group				
	50-54	55-59	60-64	65-69	Total
Number of women invited	13,431	41,093	36,966	32,655	124,145
Number of eligible women invited	13,328	40,813	37,008	34,186	125,335
Number of women who opted out of the programme**	142	345	547	2,123	3,157
Number of women screened	11,862	36,396	32,211	27,992	108,461
Eligible women acceptance rate (including women who opted out of the programme)	89.0%	89.2%	87.0%	81.9%	86.5%

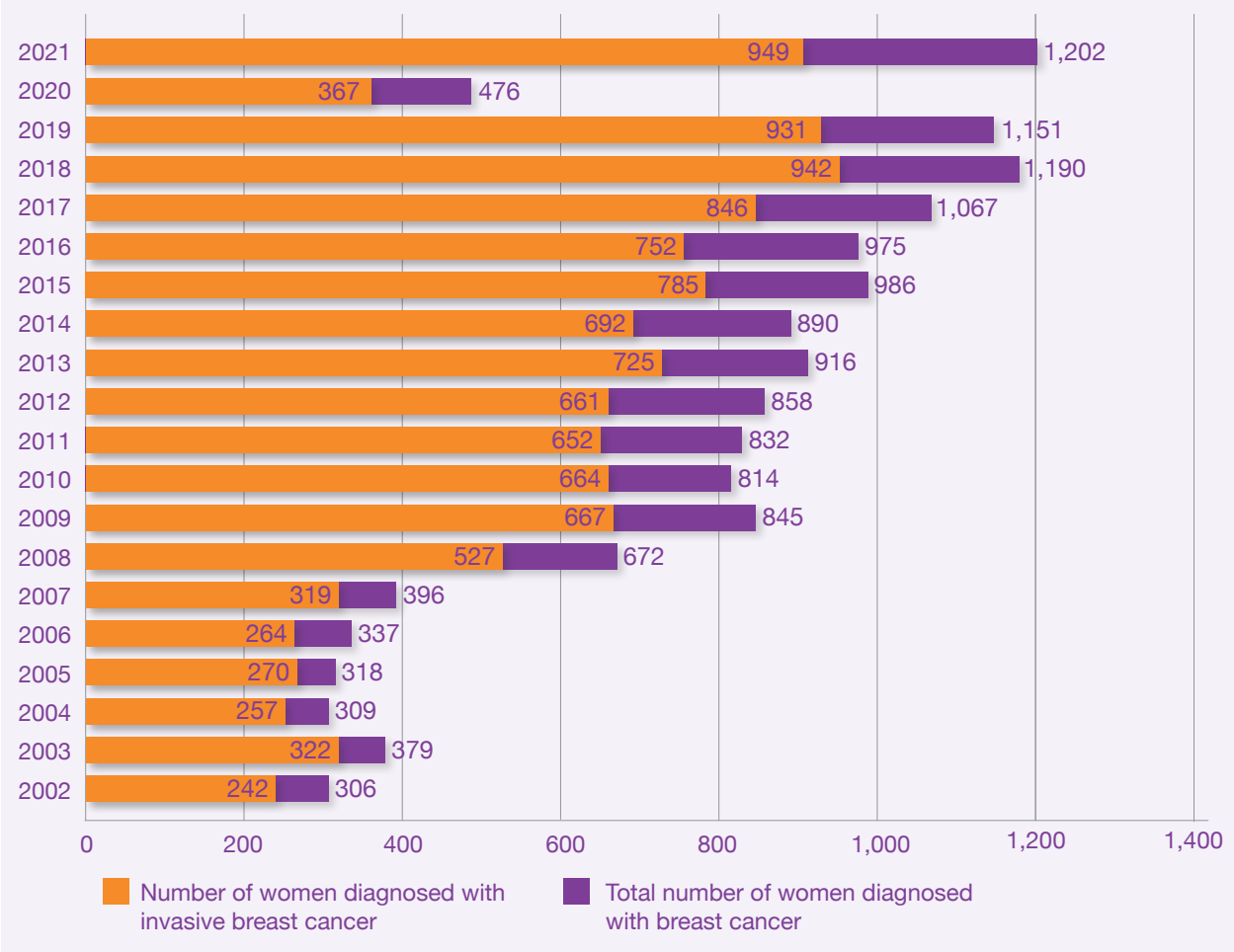
* *Women over and under the eligible age range excluded from age-group tables*

** *Identified as ineligible in previous round of screening or in this round, but remain in the target population*

Cancers detected

Of those women invited in 2021 for either the first or a subsequent time, 1,202 were diagnosed with a cancer, of which 949 were invasive (Figure 4). These numbers are in line with previous years, with the exception of 2020 where the effect of COVID-19 measures is evident; however, the rates of cancers detected amongst screened women remains stable.

Figure 4: Number of women diagnosed with breast cancer overall and the proportion with an invasive breast cancer 2002-2021



Screening quality

Programme standards for screening quality are based on the *European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis*[1] and the *BreastCheck Guidelines for Quality Assurance in Mammography Screening*[2] which govern aspects of the screening process as well as diagnosis, pathology and surgery.

Among women screened for the first time, the re-call rate remains above the standard at 11.8 per cent. The benign open biopsy rate is above the programme standard for women being screened for the first time at 5.6 (standard is less than 3.6 per 1,000 women screened). The invasive cancer detection rates for women aged 50 to 51 years, and 52 to 64 years, are well above the required standards. Just under 40 per cent of all invasive cancers detected in this first screened group are small (less than 15mm). The percentage of ductal carcinoma in situ (DCIS) as a proportion of all cancers among women screened for the first time at 27 per cent is outside the expected range of 10 to 20 per cent of cancers detected. The SDR is above the expected standard for first screening (Table 6).

Table 6: Screening quality: first screen

Performance parameter	2021	Standard
Number of women screened for first time	15,417	
Number of women re-called for assessment	1,813	
Re-call rate	11.8%	<7%
Number of benign open biopsies	87	
Benign open biopsy rate per 1,000 women screened	5.6	<3.6
Number of women diagnosed with cancer	196	
Cancer detection rate per 1,000 women screened	12.7	> 7
Number of women with ductal carcinoma in situ (DCIS)	53	
Pure DCIS detection rate per 1,000 women screened	3.4	
Number of women diagnosed with DCIS as % of all women diagnosed with cancer*	27.0%	10-20%
Number of women diagnosed with invasive cancer	143	
Invasive cancer detection rate per 1,000 women screened	9.3	
Invasive cancer detection rate per 1,000 women screened for women aged 50-51	6.87	>2.9
Invasive cancer detection rate per 1,000 women screened for women aged 52-64	10.44	>5.2
Number of women with invasive cancers <15 mm	56	
Women with invasive cancers <15 mm as % of all women with invasive cancers	39.2%	≥40%
[3]Rate of Invasive cancers ≤10mm % of all women with invasive cancers	23.8%	≥20%
[3]Rate of Invasive cancers >20mm as % of all women screened	0.3%	
Standardised detection ratio (SDR)^	1.81	0.75

** See Table 8 for details of DCIS grade*

^Calculated for 50-64 years

Among women attending for subsequent screening, the re-call rate is lower at 4 per cent, which is as expected (Table 7). Almost 50 per cent of invasive cancers detected amongst these women are less than 15mm. The percentage of ductal carcinoma in situ (DCIS) as a proportion of all cancers among women attending for subsequent screening is within the standard at 19.9 per cent. The rate of benign open biopsy is within the programme standards for women at subsequent screening. The SDR is above the expected standard for subsequent screening (Table 7).

Table 7: Screening quality: Subsequent screen

Performance parameter	2021	Standard
Number of women returning for subsequent screen	108,474	
Number of women re-called for assessment	4,302	
Re-call rate	4.0%	<5%
Number of benign open biopsies	123	
Benign open biopsy rate per 1,000 women screened	1.1	<2
Number of women diagnosed with cancer	1,006	
Cancer detection rate per 1,000 women screened	9.3	≥3.5
Number of women with ductal carcinoma in situ (DCIS)	200	
Pure DCIS detection rate per 1,000 women screened	1.8	
Number of women diagnosed with DCIS as % of all women diagnosed with cancer*	19.9%	10-20%
Number of women diagnosed with invasive cancer	806	
Invasive cancer detection rate per 1,000 women screened	7.4	
Number of women with invasive cancers <15mm	391	
Women with invasive cancers <15 mm as % of all women with invasive cancers	48.5%	≥40%
[3]Rate of Invasive cancers ≤10mm as % of all women with invasive cancers	29.2%	≥25%
[3]Rate of Invasive cancers > 20mm as % of all women screened	0.2%	
Standardised detection ratio^	1.74	0.75

** See Table 8 for details of DCIS grade*

^Calculated for 50-64 years

Ductal carcinoma in situ (DCIS)

DCIS is an early form of breast cancer where the cancer cells are inside the milk ducts and have not spread within or outside the breast. DCIS can also be described as pre-cancerous, pre-invasive, non-invasive or intraductal. If DCIS is not treated, the cells may spread from the ducts into the surrounding breast tissue and become an invasive cancer (one that can spread to other parts of the body). DCIS can be low-, intermediate-, or high-grade.

Not every woman with DCIS will develop an invasive cancer. It is not possible to safely indicate upfront which DCIS will develop into an invasive cancer. As a result, some women will get treatment for a DCIS that would never have become an invasive cancer.

Evidence has shown that intermediate- and high-grade DCIS are more likely to progress to invasive cancers over time if left untreated; the majority of DCIS detected by BreastCheck are in these categories.

The total DCIS diagnosed in 2021 accounted for 21 per cent of total cancers detected, or 2.0 per 1,000 women screened. Low-grade DCIS, which is the category least likely to develop into an invasive cancer, represents 9.5 per cent of the total DCIS diagnosed in 2021.

Table 8: Grade of DCIS 2021

Tumour Grade	First screen	Subsequent screen	Total
Low N (%)	8 (15.1%)	16 (8.0%)	24 (9.5%)
Intermediate (%)	16 (30.2%)	45 (22.5%)	61 (24.1%)
High (%)	28 (52.8%)	136 (68.0%)	164 (64.8%)
Not assessable (%)	1 (1.9%)	3 (1.5%)	4 (1.6%)
Total	53	200	253

Screening outcome by age group

In women screened both for the first time and for a subsequent time, the overall cancer detection rate generally rises with increasing age, reflecting the fact that age is an important risk factor for breast cancer. However, the small number of women over 60 screened for the first time distorts rates in the older age groups (Table 9).

Benign open biopsy rates are highest among younger women screened for the first time (Table 9).

Table 9: Screening outcome: First screen by age group 2021

Performance parameter	Age group				
	50-54	55-59	60-64	65-69	Total
Number of women screened	13,334	1,316	490	259	15,399
Percentage of women re-called for assessment	11.7%	12.0%	12.2%	9.7%	11.8%
Benign open biopsy rate per 1,000 women screened	6.0	3.8	4.1	0.0	5.6
Overall cancer detection rate per 1,000 women screened	12.4	15.2	16.3	7.7	12.7

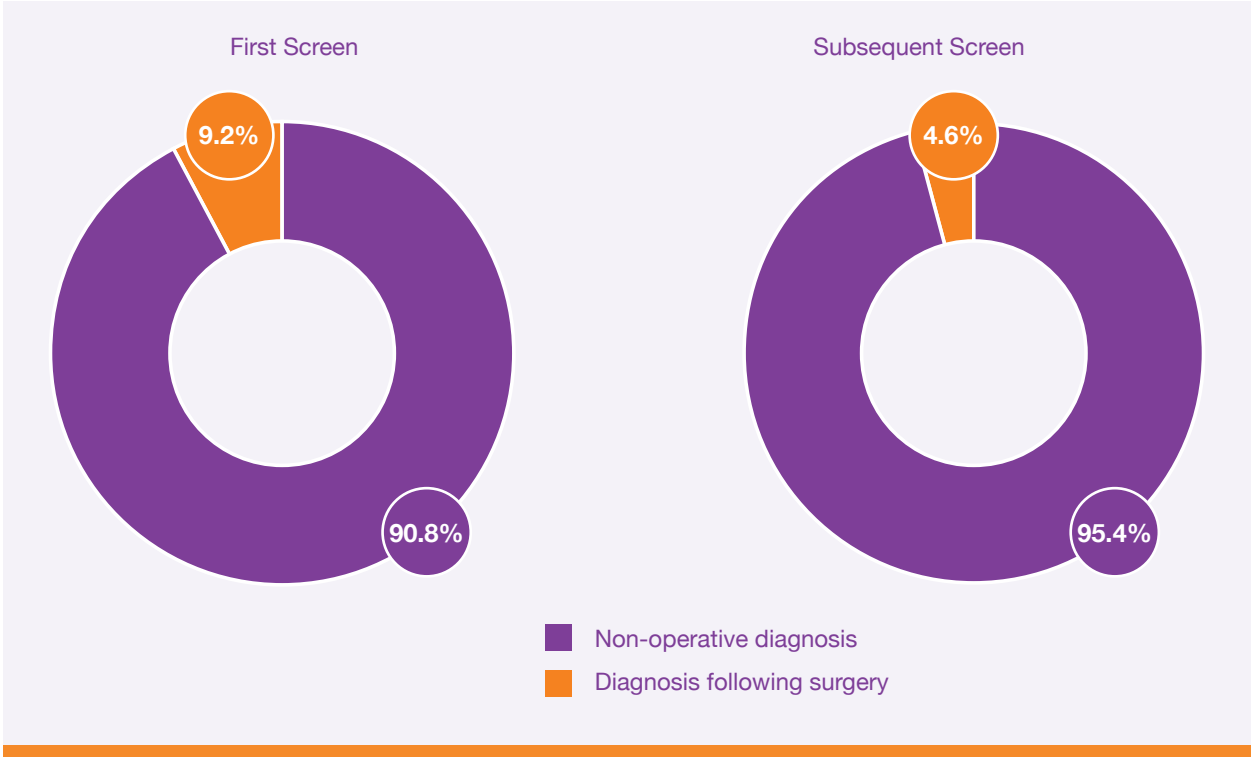
Table 10: Screening outcome: Subsequent screen by age group 2021

Performance parameter	Age group				
	50-54	55-59	60-64	65-69	Total
Number of women screened	11,862	36,396	32,211	27,992	108,461
Percentage of women re-called for assessment	4.9%	3.9%	3.7%	3.9%	3.9%
Benign open biopsy rate per 1,000 women screened	1.7	1.2	1.1	0.9	1.1
Overall cancer detection rate per 1,000 women screened	7.3	8.0	9.5	11.5	9.3

Cancers with non-operative diagnosis

Over 90 per cent of first-screened and 95 per cent of subsequently-screened women with cancer were diagnosed by core biopsy performed by radiologists at the assessment clinic prior to any surgery (Figure 5). This is well above the standard of greater than or equal to 70 per cent. A non-operative diagnosis means that a woman will know her diagnosis prior to any surgical intervention and can plan her surgical treatment in advance with the breast cancer surgeon. This has been an important feature of BreastCheck since its inception, highlighting the quality and expertise of both the radiology and pathology functions of the programme.

Figure 5: Cancers with non-operative diagnosis 2021



BreastCheck Women's Charter

We seek to achieve or surpass all standards outlined in our Women's Charter, which is underpinned by the Guidelines for Quality Assurance in Mammography Screening[2]. The recovery period from COVID-19 required a phased re-introduction of screening with careful planning of invitations and screening capacity. This meant the normal 2-year screening round has taken 3 years to complete. Despite these challenges we performed well against many Charter commitments during 2021.

Most women received 7 days' notice of an appointment and received their mammogram results within 3 weeks. Over 82 per cent of women re-called for assessment following a screening mammogram were offered an assessment appointment within 2 weeks of an abnormal mammogram result (Table 11). The percentage of women with cancer offered hospital admission within three weeks of diagnosis at 76.6 per cent is below the standard of 90 per cent.

The impact of the COVID-19 pandemic can be seen in the invites issued by the programme, with 6.9 per cent of women being re-invited within 2 years of their previous round invite. However, 62 per cent were re-invited within 36 months and over 90 per cent re-invited within 40 months of having been invited in the previous round. The proportion of eligible women invited for screening within 2 years of becoming known to the programme is 43.7 per cent, which is below the programme standard. However, almost 78 per cent of women in this category were invited within 36 months and over 90 per cent invited within 41 months.

Table 11: BreastCheck Women's Charter parameters

Performance parameter	2021	Women's Charter Standard
Women who received seven days' notice of appointment	96.6%	≥90%
Women who were sent results of mammogram within three weeks	99.4%	≥90%
Women offered an appointment for Assessment Clinic within two weeks of notification of abnormal mammographic result	82.2%	≥90%
Women given results from Assessment Clinic within one week	86.2%	≥90%
Women offered hospital admission for treatment within three weeks of diagnosis of breast cancer	76.6%	≥90%
Women re-invited for screening within 24 months of invitation at previous round	6.9%	≥90%
Women re-invited for screening within 36 months of invitation at previous round	62.0%	N/A
Women eligible for screening invited for screening within two years of becoming known to the programme	43.7%	≥90%
Women eligible for screening invited for screening within 36 months of becoming known to the programme	77.9%	N/A

References

1. *European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis,* Fourth Edition, European Commission, Belgium; 2006.
2. *Guidelines for Quality Assurance in Mammography Screening, Fourth Edition, BreastCheck, Dublin; 2015.*
3. Muratov et al. Monitoring and evaluation of breast cancer screening programmes: selecting candidate performance indicators BMC Cancer (2020) 20:795, https://doi.org/10.1186/s12885-020-07289-z.
4. Fleming P, Mooney T, Wilson L, Fitzpatrick P. Intervention trial of previous nonattender invitation for breast screening. Eur J Cancer Prev. (2016) Nov;25(6):533-7. doi: 10.1097/CEJ.0000000000000210. PMID: 26642321.