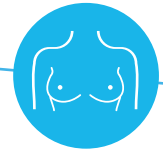


national monitoring of the breast cancer screening programme in the Netherlands 2020/2021



	2019	2020	2021
invited	1,310,693	757,523	1,221,792
participated	996,447	539,261	885,937
percentage invited	97.1%	55.1%	87.6%
participation rate	76.0%	71.2%	72.5%
next routine invitation within 24 (± 2) months	62.6%	15.2%	1.3%
next routine invitation between ≥ 30 and < 36 months	unknown	45.1%	82.6%
screening interval < 2.5 years	93.0%	54.2%	14.7%
referral rate	2.39%	2.74%	2.60%

most important results

In 2021 the percentage invited women was **87.6%**, **72.5%** of the invited women participated in the national breast cancer screening programme. Due to the COVID-19 pandemic, the percentage invited women was **55.1%** in 2020. Participation rate was **71.2%** in 2020.

In 2021, **82.6%** of the women received their next routine invitation within 30-35 months, due to the temporarily extension of the screening interval at the end of 2020.

The percentage of women invited for their next routine invitation within 24 ± 2 months decreased to **1.3%**.

Due to renewals in the ICT-infrastructure of the screening organisation, data regarding the results from 2020 onwards are delayed and not yet available. This data should be completed in order to correctly monitor the effects of the breast cancer screening programme.

introduction

The main aim of the Netherlands breast cancer screening programme is to detect breast cancer in an early stage, which can lead to better prognosis. Women 50 to 75 years of age are invited biennially for a mammography. The breast cancer screening programme is coordinated by the National Institute of Public Health and the Environment (RIVM). The RIVM has commissioned the Netherlands Comprehensive Cancer Organisation (IKNL) to carry out an annual national monitoring of the breast cancer screening programme. Monitoring ensures the quality of the breast cancer screening programme and identifies trends and bottlenecks.

Monitoring is conducted using data based on a predefined set of indicators. The current monitoring report presents the results regarding participation in the national breast cancer screening programme (up to 2021). The results from 2020 onwards were based on data from the breast cancer screening programme (reference date 10 August 2022). Results up to 2019 were derived from the datawarehouse breast cancer of IKNL (reference date 1 June 2022). Data on breast cancer

incidence were derived from the Netherlands Cancer Registry, data on mortality from Statistics Netherlands (both with reference date 1 June 2022).

In 2019 the ICT-infrastructure of the breast cancer screening programme was renewed on a large scale, which led to the usage of a new data source. This might have resulted in a break in trends for some results. Additionally, due to an altered method of collecting follow-up from the hospitals by the screening organisation, data regarding outcomes from 2020 onwards were delayed and not yet available. In 2020 the breast cancer screening programme was temporarily halted due to the COVID-19 pandemic. Mid-June the programme was restarted with limited capacity. In autumn 2020 the capacity was around 80%, which increased to 100% from the spring 2021 onwards. Furthermore, in autumn 2020 the Ministry of Health, Welfare and Sport allowed the screening organisation to extend the screening interval up to a maximum of 3 years due to the COVID-19 pandemic and a shortage in the screening workforce. This situation also existed in 2021.

table 1 screening process

	2019	2020	2021
net target population ¹	1,349,710	1,373,981	1,394,918
of which invited	1,310,693 (97.1%)	757,523 (55.1%)	1,221,792 (87.6%)
of which participated ²	996,447 (76.0%)	539,261 (71.2%)	885,937 (72.5%)
screening examinations in year ³	923,724	530,722	878,566
of which referred	22,079 (2.39%)	14,551 (2.74%)	22,851 (2.60%)
false positive	15,717 (71.2%)		
breast cancer	6,362 (28.8%)		
- of which invasive breast cancer	5,043 (79.3%)		
- of which DCIS	1,319 (20.7%)		

¹ Net target population is based on the biennial screening interval. ² Participation could have been in the following year.

³ The number screened in the reporting year.

terminology

- **BI-RADS** = Breast Imaging Reporting and Data System, radiological classification system. BI-RADS 0: incomplete, further imaging or information required; BI-RADS 4: suspicious abnormality; BI-RADS 5: highly suggestive of malignancy
- **initial screen** = screening examination of women who attend the programme for the first time
- **invited** = number of invited women from the target population
- **next routine invitation** = proportion of women invited for the current screening examination within a certain period after their previous screening examination
- **non-participants** = invited women who actively opt out of screening
- **non-responders** = invited women who did not respond
- **participation rate** =

- proportion of women who participated in the screening program after receiving an invitation in the reporting year. The screening examination does not have to be performed in the reporting year
- **referral rate** = proportion of participants whose mammogram has an unfavourable result
- **subsequent screen** = screening examination of women who attended the programme at least once before
- **re-participation** = proportion of participants in the current screening round of all women who participated in the previous screening round
- **results of screening examination** = proportion of letters containing the result of the screening examination sent within 10 working days after the examination.

table 2 main results until 2021 with regard to participation

compared with previous years

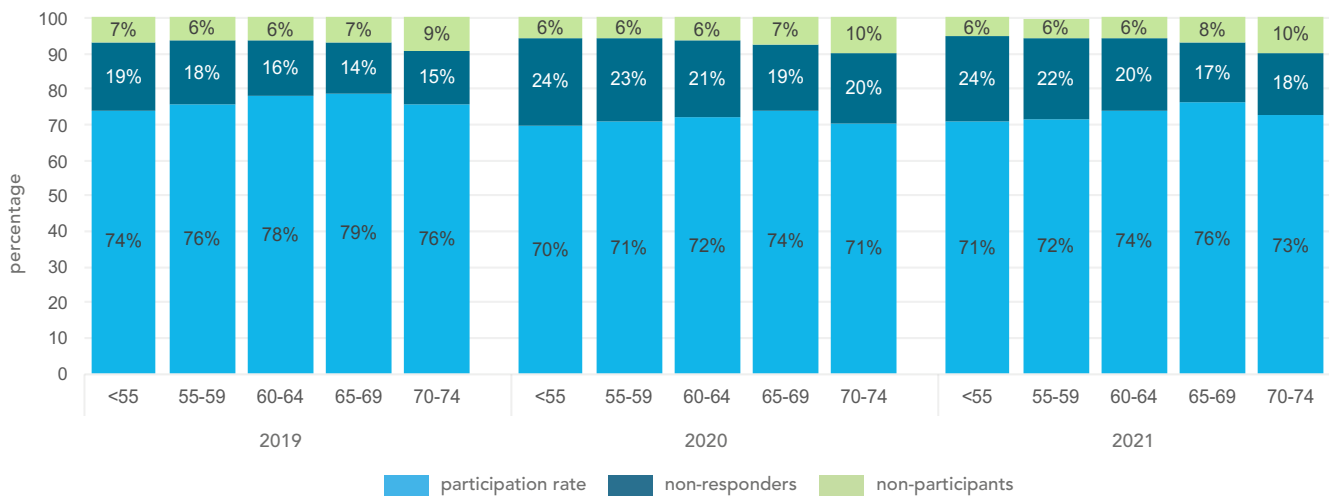
	2016	2017	2018	2019	2020	2021
target population per year ¹	1,388,080	1,408,655	1,428,692	1,431,368	1,451,382	1,469,728
net target population per year	1,317,396	1,333,197	1,348,986	1,349,710	1,373,981	1,394,918
invited	1,320,411	1,338,397	1,273,529	1,310,693	757,523	1,221,792
percentage invited	100.2%	100.4%	94.4%	97.1%	55.1%	87.6%
participated	1,021,388	1,029,097	978,833	996,447	539,261	885,937
participation rate	77.4%	76.9%	76.9%	76.0%	71.2%	72.5%
- participation initial invitations	75.4%	74.6%	74.6%	73.0%	60.9%	60.1%
- participation reminder	16.5%	17.3%	17.2%	17.4%	32.9%	35.8%
re-participation ²	91.1%	91.4%	91.6%	91.2%	85.5%	87.1%
proportion women over 51 at first invitation	4.1%	4.7%	5.6%	7.1%	11.4%	23.5%
referral rate	2.43%	2.30%	2.23%	2.39%	2.74%	2.60%
- referral with BI-RADS 5	0.16%	0.16%	0.15%	0.13%	0.17%	0.18%
- referral with BI-RADS 4	1.04%	1.01%	0.98%	0.99%	1.10%	1.10%
- referral with BI-RADS 0	1.23%	1.13%	1.10%	1.26%	1.47%	1.32%
mean individual screening interval (months)	-	-	-	-	29.3	32.2
next routine invitation within 24 ± 2 months	84.7%	85.8%	78.0%	62.6%	15.2%	1.3%
next routine invitation					32.8%	10.5%
within ≥ 26 and < 30 months	-	-	-	-		
next routine invitation					45.1%	82.6%
within ≥ 30 and < 36 months	-	-	-	-		
next routine invitation ≥ 36 maanden	-	-	-	-	3.6%	4.3%
screening interval < 2.5 years	95.1%	94.7%	94.5%	93.0%	54.2%	14.7%
screening interval < 3 years	-	-	-	-	92.8%	89.2%
results of screening examination						
< 10 working days	99.1%	99.7%	99.7%	99.8%	99.8%	99.9%
non-responders	13.9%	14.6%	14.9%	16.8%	21.7%	20.5%
non-participants	8.7%	8.6%	8.2%	7.2%	7.1%	7.0%

¹ Source: Personal Records Database (BRP). ² Calculated over the last two screening rounds.

- The target population was based on a biennial screening interval.
- Due to the COVID-19 pandemic and the suspension of the breast cancer screening programme less women were invited to the screening programme in 2020 (55.1% of the net target population). The pandemic was probably also a reason for the lower participation rate (71.2%). In 2021 the percentage of invited women increased again (87.6%) and the participation rate increased slightly to 72.5%. Both participation rates were lower than the participation rate before the COVID-19 pandemic (76% or higher).
- In autumn 2020 the screening interval of 2 years was extended towards a maximum of 3 years due to the COVID-19 pandemic and a shortage in the screening workforce. This resulted in a strong decrease to 1.3% of women receiving

- their next routine initiation within 24 ± 2 months in 2021. The percentage of women with a screening interval of < 2.5 years decreased also: 54.2% in 2020 and 14.7% in 2021.
- Since 2020 the participation rate after the initial invitation was lower, while the participation rate after the reminder increased. This might be partly due to a change in the method of sending the invitations when the screening programme restarted in June 2020, which took the limitations due to COVID-19 into account. Invitations were sent to the women in which they were asked to make their own appointment, instead of receiving an invitation with a proposed timeslot. Reminders were sent at a shorter notice than in previous years.
- With a decreased participation rate, the percentage of non-responders increased.

figure 1 **participation rate** per age group for women invited in 2019-2021



- As in previous years the participation rate was highest in women aged 65-69 years. In 2020 and 2021 participation rate decreased in each age group. There were no signs that a particular age group participated less than others.

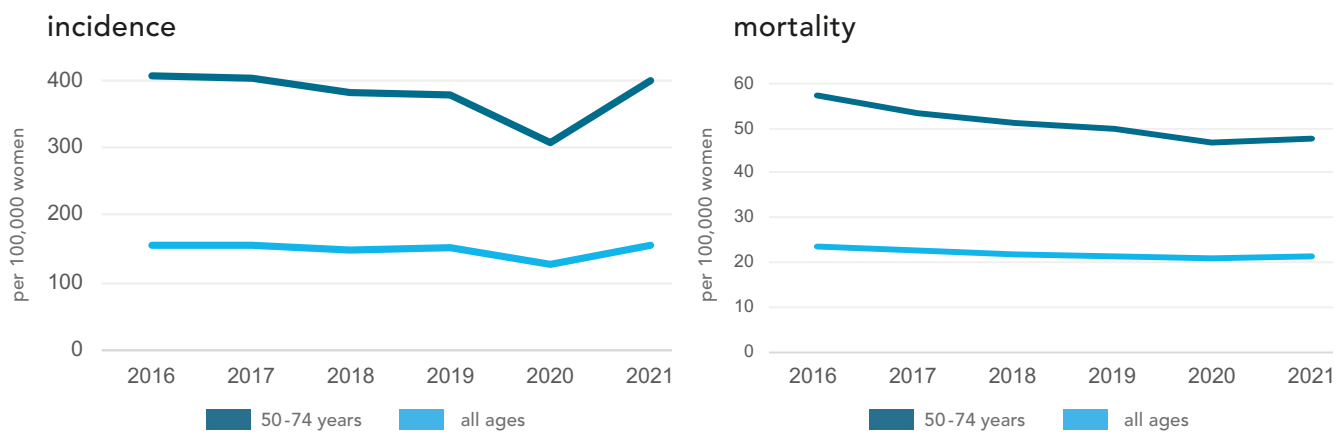
table 3 **referral rate** for initial and subsequent screens and BI-RADS results

	2019	2020	2021
initial screen			
- referral rate	5.89%	6.84%	5.93%
- referral rate with BI-RADS 5	0.18%	0.19%	0.20%
- referral rate with BI-RADS 4	2.11%	2.38%	2.13%
- referral rate with BI-RADS 0	3.60%	4.26%	3.60%
subsequent screen			
- referral rate	1.94%	2.18%	2.06%
- referral rate with BI-RADS 5	0.13%	0.16%	0.18%
- referral rate with BI-RADS 4	0.85%	0.93%	0.94%
- referral rate with BI-RADS 0	0.96%	1.09%	0.95%

- Referral rate after initial screens was approximately 6%, which is comparable to previous years.
- Since 2020, referral rate after subsequent screens was above 2%.

figure 2 incidence and mortality rates

by year (source: Netherlands Cancer Registry (incidence rates) and CBS (mortality rates))



- The incidence and mortality rates of breast cancer were calculated for the total female population and for women 50-74 years of age.
- The incidence in women 50-74 years of age is higher compared to the total female population, because breast cancer occurs more often in this age group and because this age group is invited for the breast cancer screening programme.
- The mortality rate in women 50-74 is higher as well. This is caused by the higher incidence, causing more women to be at risk of dying from breast cancer.
- In 2020, the incidence of invasive breast cancer and in situ breast cancer decreased. This decrease was caused by the COVID-19 pandemic, during which the screening programme was temporarily halted, and the number of women visiting their general practitioner decreased. In 2021, incidence was comparable with previous years.
- In 2021, breast cancer mortality decreased compared to previous years, except 2020. In 2020 breast cancer mortality rate might have been influenced by the pandemic.

table 4 incidence and mortality rates

by year (source: Netherlands Cancer Registry (incidence rates) and CBS (mortality rates))

	2016	2017	2018	2019	2020	2021
incidence of breast cancer /100,000 (ESR) 50-74 years						
incidence invasive breast cancer	336.6	335.1	319.3	317.1	261.2	334.2
incidence in situ breast cancer	71.1	67.5	62.9	63.5	46.2	66.9
incidence of breast cancer /100,000 (ESR) all ages						
incidence invasive breast cancer	131.7	133.1	129.4	130.2	112.5	134.5
incidence in situ breast cancer	23.0	21.8	20.5	20.9	15.9	21.8
breast cancer mortality /100,000 (ESR) 50-74 years						
breast cancer mortality /100,000 (ESR) all ages	57.4	53.3	51.3	49.7	46.6	47.8
breast cancer mortality /100,000 (ESR) all ages						
breast cancer mortality compared with 1986/1988						
50-74 years	-39.0%	-43.4%	-45.5%	-47.2%	-50.5%	-49.3%
55-79 years ¹	-39.0%	-40.1%	-42.8%	-43.5%	-46.3%	-44.7%

¹ Taking lag time into account. ESR = European standardized rate. The rates of 2021 are preliminary and therefore in italic.

This monitor is available on: www.iknl.nl/en/screening and on: www.rivm.nl/en/breast-cancer-screening-programme

Disclaimer: the information in this monitor has been carefully compiled. Data up to 2019 has been based on data from the datawarehouse breast cancer of IKNL. Data from 2020 onwards has been based on the management report system of the national breast cancer screening programme. This might have led to a possible break in trends.