BREAST CANCER SCREENING

THE BREAST CANCER SCREENING PROGRAMME IN FINLAND

ANNUAL REVIEW 2021

There is much variation in the indicators of the breast cancer screening programme by region and population group. Developing national guidelines is important. Looking ahead, research data is needed on whether regional and demographic inequalities in screening programmes can be reduced in the context of the social and health care reform that has been launched in our country.

SUMMARY

A total of 369,000 invitations were sent out in 2019 under the breast cancer screening programme. Altogether 301,000 women (82%) participated in the programme. Between 2015 to 2019 participation rates varied by hospital district from 74–87%, by language group from 63–83%, by education level from 69–85% and by socio-economic status from 61–87%. Coverage of non-programme mammograms was highest in the pre-screening age and post-screening age groups. Within the screening target age group, mammogram coverage outside the screening programme was about 7%. In the 2000s, about half of all breast cancers were diagnosed in screening age groups and about a third of all breast cancers were diagnosed as screened cancers.

Finnish Cancer Registry

1. INTRODUCTION

This annual review of breast cancer screening contains data on the latest screening statistics for 2019 and the results of the Finnish Cancer Registry's current research and development projects on breast cancer screening. The performance of screening, such as participation, referral and detection rates, is compared in time series from 1991. Data is tabulated nationally, by region and by population group. The regional overview is based on 21 hospital districts. Population groups are divided into mother tongue, level of education and socio-economic status. Because the age structure of regions and population groups is generally dissimilar, these figures were age-standardised.

The Mass Screening Registry also collected data on services outside the screening programme. For the first time, this annual review presents large-scale individual-level survey data on testing outside the screening programme in Finland.

In addition to indicators on screening performance, it is important to develop indicators on the benefits and harms. One example of this is the indicators developed using registry linkage to describe the detection of breast cancers within or outside the screening programme (Anttila et al. 2015). The annual review presents this detection approach for breast cancer and breast carcinoma *in situ* in the 2000s. In the future, similar tabulation may be incorporated as part of routine registration.

The outbreak of the coronavirus epidemic since 2019 has to some extent hampered cancer screening and reduced screening uptake. It may also have made it harder to carry out follow up examinations and treatment. Although the coronavirus epidemic had not yet broken out in the country during the latest statistical year, the results presented in this annual review will also be relevant in assessing the impact of the coronavirus epidemic in the future.

2. BREAST CANCER SCREENING IN FINLAND

The national breast cancer screening programme was launched in Finland in 1987 and expanded to the current target group of women aged 50–69 in 2015–2016. The target population is invited for screening every two years in accordance with the government decree. The screening protocol – screening interval, screening age groups and test – has been selected based on national and international research evidence.

Municipalities organise screening. They select the screening provider, which may be the municipality itself or a private operator tendered by the municipality. The units conducting the screening send out screening invitations and perform the mammography examinations and, if required, confirmatory examinations (i.e., further assessment required for a referral to diagnostic confirmation to the specialized care). Diagnostic confirmation of breast cancer and surgical procedures are performed under specialised medical care. Mammography and confirmatory examinations in the screening units are free of charge for those invited. Patient fees are charged for treatments and examinations performed under specialised care, and the municipality is charged for the costs in accordance with the hospital's pricing.

Individual data on all stages of screening are submitted electronically to the Finnish Cancer Registry's Mass Screening Registry for quality and effectiveness evaluation. Comprehensive data capture also allows for the detection and rectification of programme deficiencies and problems.

THE SCREENING PROCESS

Screening includes a personal invitation, a mammogram as the primary screening test and, if necessary, confirmatory examinations in the screening unit (additional mammography, ultrasound, and needle biopsy) and a referral to specialist care. Mammograms are taken from two directions on both breasts. The images are interpreted by two radiologists working independently. If cancer is suspected in either breast, a co-reading is performed. The results of the screening are communicated by personal letter. If necessary, a personal invitation to a confirmatory examination is sent.

MAIN FINDINGS 2019

The coverage of screening invitations in 2019 was 100% (Table 1), meaning that all municipalities invited women aged 50–69 over a two-year period. The Mass Screening Registry thereby contains breast cancer screening data from all municipalities. A total of 369,000 invitations were sent out under the screening programme, and 301,000 women (82%, Table 2) took part in it. Of those screened, 97% received a normal screening result and 3% were recommended for a recall to the screening units for confirmatory examinations. There were about 2,500 (0.8% of those screened) (Table 3) referrals for diagnostic confirmation by surgery orother examinations in specialized medical care. In total, 1,982 cases of breast cancer or breast carcinoma *in situ* (0.7% of those screened) were detected in the programme, about 7 cases per 1,000 women screened. In addition, 13 other cancers were found at screening. About 1% of those referred for surgery lack a definitive, histologically confirmed diagnosis (n = 22). As inadequate diagnoses were also confirmed by the Cancer Registry, it is likely that the majority of inadequate diagnoses were benign.

COMPARISON WITH PREVIOUS YEARS

The expansion of the breast cancer screening target population to all 50–69-year-olds started in 2007 and was fully realised in 2016. Invitation coverage thus increased in the female population aged over 60 until 2016, when virtually everyone in the target population was invited for breast cancer screening every two years (Figure 1).

Screening participation, on the other hand, has declined from about 87% in 1992 to 82% in 2019 (Figure 1). There is no precise data on the reasons for the decline in participation. However, the drop in participation rates has been similar across all age groups.

Rates of screening and cancer detection have remained at the same level as in previous years in the 2010s. However, the increase in target age is reflected in the total number of breast cancers detected by screening, which peaked in 2015 and 2016.

3. BREAST CANCER SCREENING BY HOSPITAL DISTRICT

Participation in screening varies quite a lot from one hospital district to another. From 2015 to 2019, the age-standardised participation rate ranged from 74% to 87%

(Figure 2, Table 4). Participation is known to be lower in large cities than in the rest of the country. As in previous years, the lowest participation rate in 2019 was in Helsinki, where only 73% of those invited attended screening.

There has also been variation in screening results between hospital districts (Figure 3, Figure 4, Table 5). Between 2015 and 2019, the proportion of people recalledfor confirmatory examinations in the screening units ranged from 1.7–4.8%, the proportion of referrals to surgery and other examinations in the specialized medical care from 0.5–1.1% and the proportion of cancer and *in situ* findings from 0.4–0.8%. Regional differences are due to variations in the background risk of breast cancer and differences in procedures and the quality of diagnostics.

4. BREAST CANCER SCREENING BY POPULATION GROUP

Breast cancer screening statistics were also produced by population group for the years 2018–2019, with the variables examined being mother tongue, socio-economic status, and educational level, based on data from the Digital and Population Data Services Agency and Statistics Finland.

Invitees for breast cancer screening were classified into two groups according to mother tongue. The domestic languages were Finnish, Swedish and Sami. Inadequate data on mother tongue were excluded from the analysis.

Data on socio-economic status and educational attainment were determined according to data prior to the invitation year. Persons whose socio-economic group could not be determined were considered to be of unknown socio-economic status. Information on educational qualifications was only available from secondary level upwards, so the basic level and missing educational data were classified in the same group.

LANGUAGE GROUPS

The age-standardised participation rate in screening was clearly lower in the non-domestic language population group (63%) than in the domestic language group (83%) (Table 6). This language group also had slightly lower rates of breast cancer detection (0.5% vs. 0.7% of participants), probably due to differences in breast cancer risk factors between population groups.

SOCIOECONOMIC STATUS

There are worrying differences in participation rates between women outside the labour force (students, long-term unemployed, pensioners, socio-economic status unknown) and women in the labour force (entrepreneurs, white-collar employees, workers) (61–87%, Table 7). There were only small differences between these population groups in the proportion of women referred for follow up examinations, referred for specialised care and diagnosed with breast cancer.

LEVEL OF EDUCATION

There were also differences in age-standardised screening participation according to level of education: the higher the level of education, the higher the participation rate (69–85%, Table 8). There was no corresponding difference in referral and detection rates.

5. IMAGING OUTSIDE BREAST CANCER SCREENING

For the first time, the Finnish Cancer Registry collected data on breast imaging studies outside the screening programme for this annual review. The data was mainly obtained from six private health service provider organisations and 19 hospital districts from 1999 onwards. The data includes imaging performed in both primary and specialised care. The availability of the data was influenced in particular by the timing of the introduction of the electronic health record system and the integration of individual municipalities into a common system with the central hospital. To improve data coverage, they were supplemented with data from the benefits register of the Social Insurance Institution. Due to the timing of the data collection, coverage is at its peak in 2018.

For the purposes of this review, the data included information on the date and procedure code of the survey, the age of the person and possible date of death or emigration.

The number of people who had a mammogram or ultrasound scan increased until 2017 with the increase in data coverage (Figure 5). Imaging was concentrated by age group within the 5-year age category before and after screening (Figure 6).

Non-programme imaging was also most common in the population just before (45–49 years) and after (70–79 years) the screening age. In the two-year period 2017–2018, the proportion of people who had at least one mammogram or ultrasound scan increased steadily before the screening age (from 5% to 12%), decreased slightly at the beginning of the screening age (7%), increased again rapidly after the screening age and decreased steadily again afterwards (from 18% to 5%) (Figure 7).

Outside the screening programme, imaging is performed on the basis of symptoms, as follow-up after breast cancer treatment or because of hereditary risk of breast cancer. In addition, asymptomatic women may have imaging done for screening purposes. The Radiation Act, which came into force in 2018, requires a specific written justification for ionising radiation examinations, such as mammography, in asymptomatic individuals. It is therefore possible that the number of external imaging procedures will decrease in the future. However, ultrasound examinations are not affected by the Radiation Act.

In the future, data from non-screening programme examinations will be routinely collected as part of the Mass Screening Registry. This data will be used to publish studies on the extent of non-screening programme imaging and its role in the effectiveness and cost-effectiveness of breast cancer screening.

6. BREAST CANCER DETECTION THROUGH SCREENING

There are currently around 5,000 cases of breast cancer in the female population and around 630 cases of breast carcinoma *in situ* per year. About 880 women die of breast cancer each year (Finnish Cancer Registry 2021). Correspondingly, the screening programme detects about 2,000 cases of cancer or carcinoma *in situ* a year. Figure 8 shows breast cancer cases from 2000 to 2018 according to whether the cancer was detected in or outside the screening

programme. Cancers diagnosed outside the programme for those invited to the screening programme indicate whether the breast cancer was diagnosed in a screening non-participant or a screening participant between screening rounds. The data is based on a project combining data from the Mass Screening Registry and the Cancer Registry.

14% of breast cancers were diagnosed before the first screening invitation, just over half (52%) during the screening target age and about a third after the final screening invitation. The percentages of carcinoma *in situ* were 12%, 67% and 21% respectively. About a third of all breast cancers and just under half of carcinoma *in situ* of the breast were detected at screening (Figure 8).

Around 56% of breast cancers in screening age were found at screening and around 27% as interval cancers, and around 13% of breast cancers in screening non-participants. Thus, interval cancers in screened participants accounted for almost half of the number of screening cancers. Most interval cancers are fast-growing breast cancers that develop between screenings. In particular, the early detection of slow-growing breast cancers is facilitated by screening, which means that people with cancer live longer. Therefore, the impact of the expansion of screening in the 2010s on breast cancer mortality can only be reliably estimated after a relatively long period after the expansion of screening to new age groups.

A high level of overdiagnosis is thought to be associated with carcinoma *in situ* of the breast (IARC 2002, Ponti et al. 2019). The detection of carcinoma *in situ* in the 2000s may have been accompanied by diagnostic changes, such as the investigation of microcalcifications. The relatively high proportion of *in situ* findings between screening visits or in screening non-participants may also be related to the prevalence of non-programme mammograms.

7. RECOMMENDATIONS AND CONCLUSIONS

Decades of breast cancer screening in Finland have been proven to be effective (Heinävaara et al. 2016). A nationwide target group of women aged 50–69 years is invited for breast cancer screening every two years throughout the country. However, there are still relatively large differences in programme participation and screening results between regions and population groups. In addition to statistical data, more detailed research data will be needed in the future to see whether regional and demographic differences and inequalities in the screening programme can be reduced. Such information is also needed in the context of the ongoing reform of the social and health care system in our country – concerning whether this reform can bring new opportunities for reducing such inequalities.

Concerning screening, the reform of the social welfare system means that from the beginning of 2022, the responsibility for organising cancer screening will be transferred from municipalities and joint municipal authorities to 21 wellbeing services counties and the City of Helsinki (Government 2021). These providers will then be responsible for both primary health care and specialist health care services. The reform will also increase the need for monitoring inequalities both between and within regions, as well as for training new regional actors preparing the arrangement of screening.

Breast cancer screening participation has fallen in recent years from almost 90% to around 81–82%. The reasons for this change are not known. Efforts should be made to improve participation rates, particularly in areas where it is low, or for instance below the 85% target level. Likewise, efforts should be made to improve public awareness about screening benefits and harms, as well as about the practicalities of invitations. Care should also be taken to ensure that mammography screening is easily accessible and that, for instance, the distance from home or work to the place of screening is not too great. Further information on the possible links between the use of breast imaging services outside the screening programme and screening participation will also probably be available in the near future. Based on the data in this report, it does not appear that out-of-programme imaging does much to improve the coverage of all mammograms in the target age category of the screening programme, and thus does not level out regional or population group differences in test coverage.

The outbreak of the coronavirus pandemic in early 2020 further underscores the need for comprehensive registry data. Because of the pandemic it may take considerably longer than normal to compile statistics for the year of screening. The problem is also likely to be reflected in the screening year 2021. Possibly lower participation in the coronavirus year in some regions or, for example, difficulties in implementing follow-up examinations and treatment may also be reflected in the cancer burden in future years. The Finnish Cancer Registry plans to issue a separate report on the impact of the pandemic.

The harmonisation of the national cancer screening programme also requires sufficiently detailed guidelines. A new national cancer screening steering group under the National Cancer Centre has been in place in Finland for some years. Unfortunately, the production of a binding quality manual for breast cancer screening has not yet been started due to lack of funding. This important quality assurance work needs to be started without delay.

Although our breast cancer screening programme is already well established, many changes in screening are expected in the future and therefore important developments need to be anticipated in screening guidance. The European Union's new quality assurance guidelines recommend that member states consider providing breast cancer screening not only for women aged 50–69 years, but also for women aged 45–49 and 70–74 years (European Commission 2021). In Finland, such consideration requires sufficiently reliable cost-effectiveness assessments to be conducted. In addition to population-based, universal screening it has been proposed to create screening practices that vary according to breast cancer risk. Breast cancer risk and screening eligibility can vary significantly based on factors such as breast density, specific breast symptoms or genetic predisposition (Puliti et al. 2018, Mavaddat et al. 2019, Singh et al. 2019, Anttila et al. 2020). More detailed planning of the screening programme reforms requires sufficient research data at the international level as well as corresponding modelling, including in different countries' own conditions. In addition to screening practices that vary according to risk, it is also important to study the use of services outside the programme, how well different service chains for early detection of breast cancer are implemented and what their effectiveness - benefits and harms - and cost-effectiveness are.

For example, for clients with dense breast tissue, current screening mammography is not sufficiently reliable (Puliti et al. 2018). However, the available research evidence to date does not permit alternative test methods to be recommended (European Commission 2021). Research into new methods in this area is therefore important. For example, computer-assisted interpretation of mammograms already seems to be the most suitable method for determining breast density. Such image interpretation can be used to develop new projects, as well as to improve the information shared with those screened.

AUTHORS

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LINKS AND PUBLICATIONS

FINNISH CANCER REGISTRY

https://cancerregistry.fi/

INTERACTIVE SCREENING STATISTICS 1992–2019

https://cancerregistry.fi/statistics/screening-statistics/

Anttila A, Lönnberg S, Ponti A, et al. (2015): Towards better implementation of cancer screening in Europe through improved monitoring and evaluation and greater engagement of cancer registries. Eur J Cancer 51: 241–251.

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Singh D, Malila N, Pitkäniemi J, Anttila A (2019): Cancer incidence and mortality patterns in women with breast symptoms in the mammography screening programme: A matched cohort analysis. Int J Cancer 144: 2928–2935.

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TERMINOLOGY

BIOPSY
Tissue sample (core needle or open biopsy) or cell sample (fine needle aspiration biopsy). Histological confirmation of the diagnosis is always made from a tissue sample. Surgical referral is usually based on a core-needle biopsy, but the final diagnosis of breast cancer is usually made by open biopsy.

CANCER INCIDENCE
The number of new cancer cases in relation to the population over a given period.

CONFIRMATORY TESTS
Breast cancer screening follow-up tests include additional mammography, ultrasound, pneumocystography, ductography, and fineneedle (cell sample) and core-needle (tissue sample) examination or a combination of these.

FALSE POSITIVE MAMMOGRAPHY RESULT
A false positive mammography test result is a result (usually after a co-reading) in which a woman is invited to a screening centre for confirmatory tests, but the result of confirmatory and other followup examinations is negative (no breast cancer or breast carcinoma *in situ*).

MALIGNANT FINDINGS IN BREAST CANCER SCREENING

CARCINOMA *IN SITU*
A tumour in which malignant cells have not penetrated deeper into the breast tissue but occur within the duct or lobule (ICD-10: D05).

INVASIVE BREAST CANCER
Breast cancer (ICD-10: C50).

MAMMOGRAPHY
X-ray imaging of the breasts.

MORTALITY
The number of deaths in a given period relative to the population.

OVERDIAGNOSIS OF BREAST CANCER SCREENING
Diagnosis of a latent breast cancer or carcinoma *in situ* that untreated would not affect the person's health during her lifetime.

SCREENING CHAIN
The progress of the screening process from the identification of the target population and the sending of invitations to testing and possible follow-up examinations, treatments and posttreatment follow-up.

SCREENING COVERAGE
Proportion of the target population invited for screening (invitation coverage) or percentage of the target population screened (inspection coverage)

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FIGURE 1: **Participation in breast cancer screening (%) and invitation coverage (%) 1992–2019.**

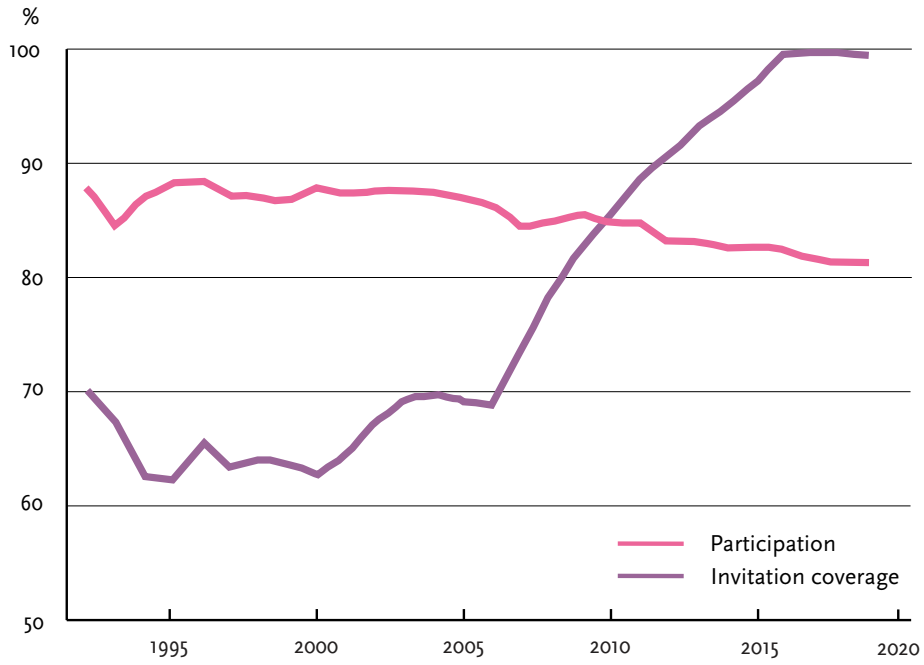
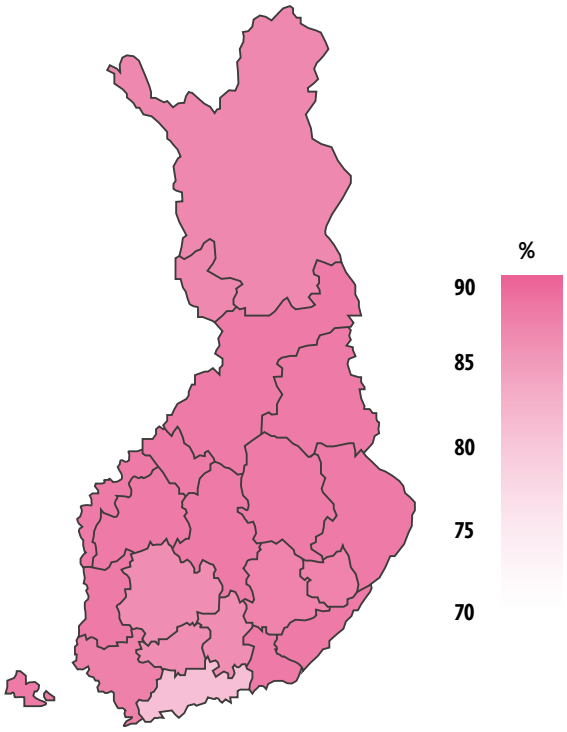
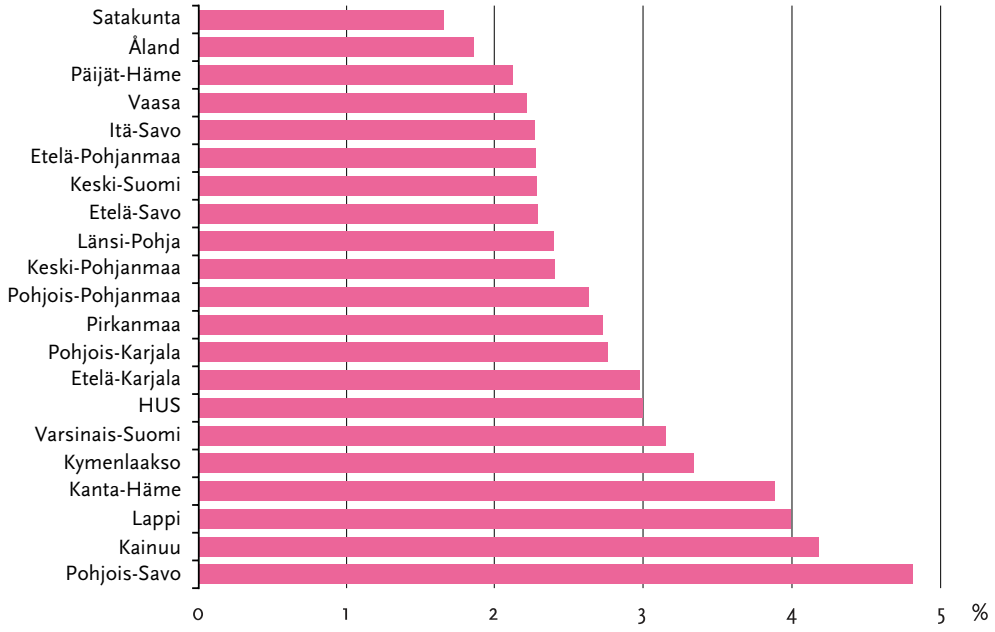


FIGURE 2: **Participation in breast cancer screening (%) by hospital district 2015–2019.**



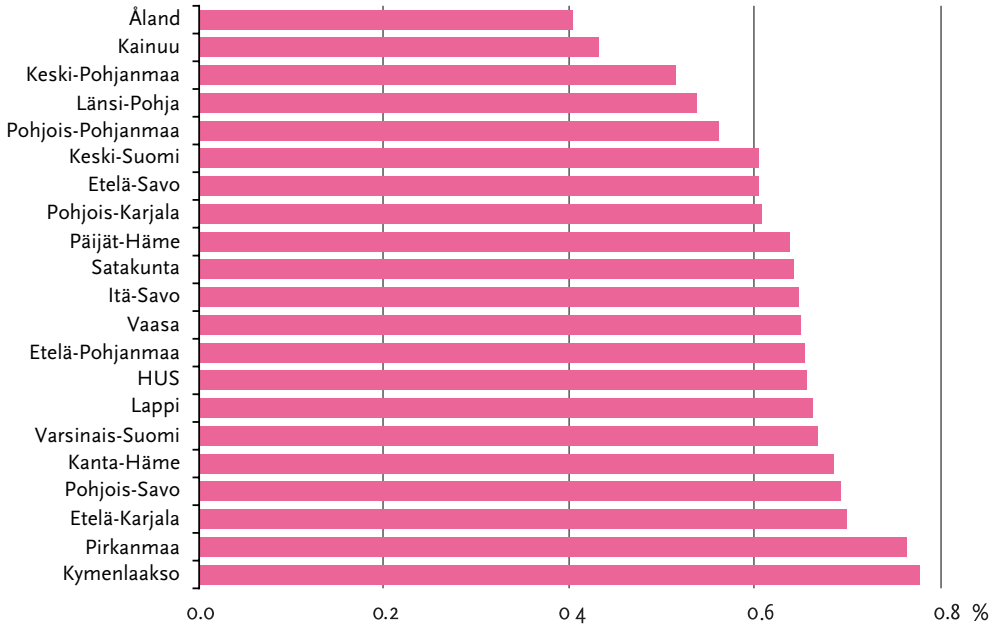
* age-standardised, Finland 2014

FIGURE 3: **Breast cancer screening recalls (%) by hospital district in 2015–2019**



* age-standardised, Finland 2014

FIGURE 4: **Malignant findings of breast cancer screening (%) by hospital district 2015–2019**



* age-standardised, Finland 2014

FIGURE 5: **Number of mammography and ultrasound examinations per year (one examination per woman per year) 1999–2019**

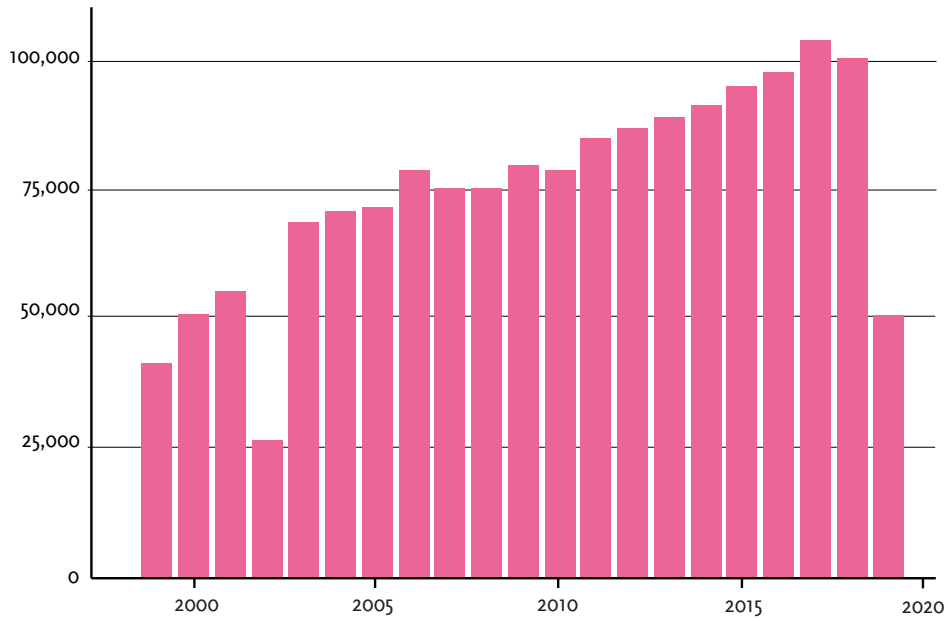


FIGURE 6: **Number of mammography and ultrasound examinations by age group (one examination per woman per year) 1999–2019**

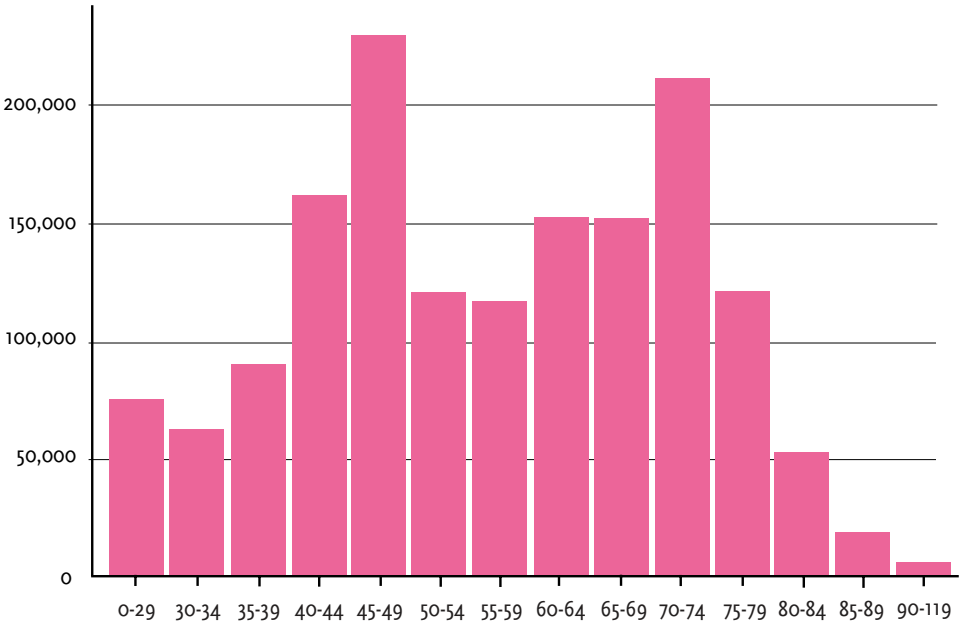


FIGURE 7: **Proportion of women of the same age group who had a mammogram or ultrasound scan at least once in 2017–2018, by 5-year age category**

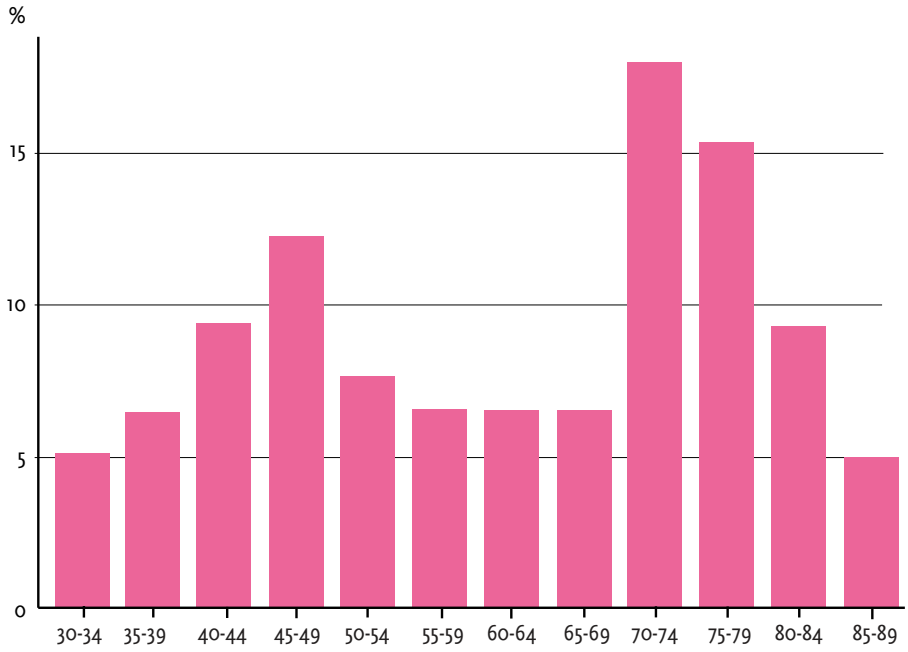


FIGURE 8: **Detection of breast cancer in women in connection with or outside the screening programme, 2000–2018**

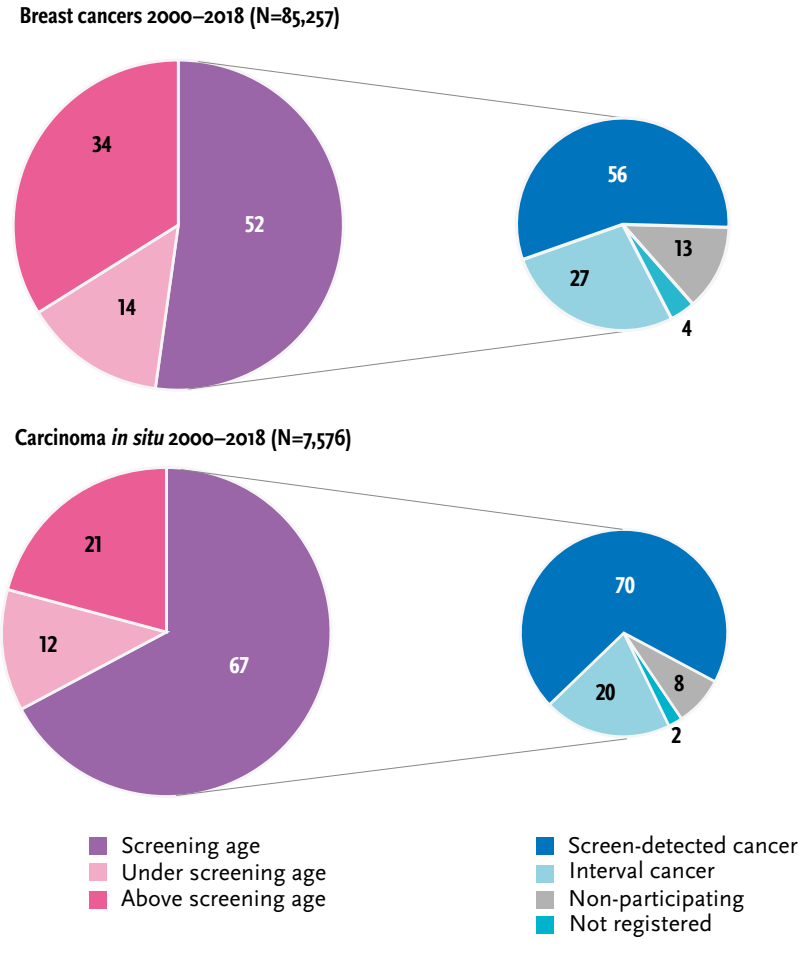


TABLE 1: **Coverage of breast cancer screening 2018–2019**

Age group	Target population	Invited during the screening round	Population coverage
50–54	176,840	177,118	100.2
55–59	185,560	185,112	99.8
60–64	184,206	182,513	99.1
65–69	187,100	186,038	99.4
Total	733,706	730,781	99.6

TABLE 2: **Breast cancer screening invitations and examinations in 2019**

Age group	Invited	Screened	
	n	n	%
50–54	106,000	85,706	80.9
55–59	75,537	61,298	81.1
60–64	111,398	91,590	82.2
65–69	76,393	62,870	82.3
Total	369,328	301,464	81.6

TABLE 3: **Breast cancer screening results by age group 2019**

Age group	Screened	Recall		Core needle biopsy		Referral for specialized medical care		Malignant finding	
	n	n	%	n	%	n	%	n	%
50–54	85,706	3,455	4.0	905	1.1	584	0.7	377	0.4
55–59	61,298	1,534	2.5	504	0.8	419	0.7	342	0.6
60–64	91,590	2,266	2.5	868	0.9	830	0.9	700	0.8
65–69	62,870	1,573	2.5	676	1.1	658	1.0	576	0.9
Total	301,464	8,828	2.9	2,953	1.0	2,491	0.8	1,995	0.7

TABLE 4: Breast cancer screening invitations and examinations by hospital district in 2015–2019

Hospital district	Invitations	Screened	
	n	n	%*
Åland	9,262	10,605	87.4
Etelä-Karjala	41,413	48,537	85.3
Etelä-Pohjanmaa	58,030	67,921	85.4
Etelä-Savo	33,801	39,818	84.8
Itä-Savo	14,444	17,133	84.3
Kainuu	24,865	29,091	85.6
Kanta-Häme	52,251	62,868	83.2
Keski-Pohjanmaa	21,917	25,689	85.3
Keski-Suomi	71,563	83,223	86.0
Kymenlaakso	54,321	64,030	84.8
Lappi	37,064	44,154	83.9
Länsi-Pohja	19,133	23,180	82.5
Pirkanmaa	142,559	172,131	82.8
Pohjois-Karjala	53,185	62,152	85.6
Pohjois-Pohjanmaa	106,848	125,226	85.3
Pohjois-Savo	77,005	89,754	85.7
Päijät-Häme	66,293	80,255	82.6
Satakunta	69,071	79,995	86.3
Uusimaa	403,009	532,279	75.9
Helsinki	147,985	201,001	73.8
Uusimaa excluding Helsinki	255,024	331,278	77.1
Vaasa	44,717	52,116	85.8
Varsinais-Suomi	139,999	167,348	83.6

* age-standardised, Finland 2014

TABLE 5: Breast cancer screening results by hospital district 2015–2019

Hospital district	Screened	Recall		Referral for specialised medical care		Malignant finding	
	n	n	%*	n	%*	n	%*
Åland	9,262	173	1.9	47	0.5	37	0.4
Etelä-Karjala	41,413	1,250	3.0	431	1.0	294	0.7
Etelä-Pohjanmaa	58,030	1,352	2.3	455	0.8	382	0.7
Etelä-Savo	33,801	776	2.3	309	0.9	206	0.6
Itä-Savo	14,444	327	2.3	117	0.8	94	0.6
Kainuu	24,865	1,049	4.2	152	0.6	108	0.4
Kanta-Häme	52,251	2,066	3.9	420	0.8	355	0.7
Keski-Pohjanmaa	21,917	539	2.4	182	0.8	116	0.5
Keski-Suomi	71,563	1,664	2.3	586	0.8	431	0.6
Kymenlaakso	54,321	1,840	3.4	579	1.1	421	0.8
Lappi	37,064	1,502	4.0	436	1.2	243	0.7
Länsi-Pohja	19,133	465	2.4	127	0.6	106	0.5
Pirkanmaa	142,559	3,998	2.7	1,276	0.9	1,085	0.8
Pohjois-Karjala	53,185	1,479	2.8	362	0.7	327	0.6
Pohjois-Pohjanmaa	106,848	879	2.6	752	0.7	594	0.6
Pohjois-Savo	77,005	3,772	4.8	777	1.0	536	0.7
Päijät-Häme	66,293	1,421	2.1	492	0.7	429	0.6
Satakunta	69,071	1,160	1.7	613	0.9	450	0.6
Uusimaa	403,009	12,550	3.0	3,013	0.8	2,577	0.7
Helsinki	147,985	4,913	3.2	1,097	0.8	955	0.7
Uusimaa excluding Helsinki	255,024	7,637	2.9	1,916	0.8	1,622	0.7
Vaasa	44,717	1,013	2.2	385	0.9	289	0.7
Varsinais-Suomi	139,999	4,510	3.2	1,197	0.8	943	0.7

* age-standardised, Finland 2014

TABLE 6: Breast cancer screening participation and results by mother tongue in 2018–2019

Mother tongue	Invited	Screened		Recall		Referral for specialised medical care		Malignant finding	
	n[1]	n[2]	%[1*]	n	%[2*]	n	%[2*]	n	%[2*]
Domestic	695617	574883	82.6	16806	2.9	4796	0.8	3809	0.7
Other	34486	21593	62.5	614	2.6	119	0.6	89	0.5

[*] age-standardised, Finland 2014

TABLE 7: Breast cancer screening participation and results by socio-economic status in 2018–2019

Socio-economic status	Invited	Screened		Recall		Referral for specialised medical care		Malignant finding	
	n[1]	n[2]	%[1*]	n	%[2*]	n	%[2*]	n	%[2*]
Entrepreneurs	37,861	31,053	81.3	943	2.8	205	0.7	158	0.6
Upper level White-collar	102,979	87,516	84.8	2,939	3.1	672	0.9	526	0.7
Lower level White-collar	220,176	190 465	86.5	5,673	2.8	1,378	0.8	1,069	0.7
Workers	76,439	62,367	82.1	1751	2.6	458	0.8	331	0.6
Students	4,950	3581	74.5	121	3.0	25	0.6	18	0.5
Retired	222,324	175,748	71.8	4,586	3.0	1,803	0.9	1,519	0.7
Unemployed	49,255	36,035	72.6[**]	1,117	3.2[**]	302	0.8[**]	223	0.6[**]
Other / data missing	18,165	10,669	60.9	329	2.9	78	0.8	59	0.6

[*] age-standardised, Finland 2014 [**] age group 65–69 removed from age standardisation due to small numbers

TABLE 8: Breast cancer screening participation and results by level of education in 2018–2019

Educational level	Invited	Screened		Recall		Referral for specialised medical care		Malignant finding	
	n[1]	n[2]	%[1*]	n	%[2*]	n	%[2*]	n	%[2*]
Primary or data missing	11,4741	81,284	68.8	2,186	2.8	720	0.8	581	0.6
Secondary	30,5736	251,945	82.4	7,076	2.8	2,054	0.8	1,638	0.7
Higher	311,672	264,205	84.8	8,197	2.9	2,147	0.8	1,684	0.7

[*] age-standardised, Finland 2014