

# MAMMOGRAPHY SCREENING IN SLOVAKIA

Assessment report for 2020

## National Oncology Institute

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Data contained in this publication can be used only with a quoted source.

If not otherwise stated, the data only concerns women in the Slovak Republic aged 50-69 who underwent mammography screening in certified mammography screening facilities which were recommended for mammography screening by the Expert Working Group for Quality Assurance of Mammography Facilities of the MoH SR Committee for Quality Assurance in Radiodiagnostics, Radiation Oncology and Nuclear Medicine.

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### FOREWORD

Mammography screening of cancerous tumors of the breast is a long-term, systematic, state-supported and guaranteed detection of early stages of oncological diseases of the breast in asymptomatic women aged 50-69 throughout the entire population<sup>1</sup>. Its main objective is to reduce mortality, prolong the women's life thanks to a more effective treatment in the early stages of the disease and improve quality of life. There is a transitory period of increased incidence after implementation of general mammography screening and rising participation of women due to detection of more advanced stages in asymptomatic female population, followed by a long-term decrease in mortality.

These indicators are also influenced by other independent factors, such as various risk factors of the participating population, development of diagnostic methods and their implementation, development of therapies, awareness and education level of the population and, importantly, quality and up-to-dateness of data collected in National Oncology Register and, subsequently, in National Screening Register. A precise assessment of the impact of mammography screening on a population can be ascertained only after these factors are quantified. Another quality indicator is an increasing detection rate of early stages of cancer. That is why long-term regular statistical evaluation of the changes in detected malignancy spectrum and validation of screening results is a necessary process in order to ensure quality of individual facilities as well as the general mammography screening as a whole<sup>2</sup>. Screening mammography can be performed only in certified mammography screening facilities which work efficiently and promptly and provide expert quality, including immediate and effective management of detected malignancies according to requirements set in the valid Standard Procedure for Medical Radiation and Prevention - Screening Mammography<sup>3;4</sup>.

Collection and evaluation of statistical data is also part of mammography screening - in a binding structure, which is not only a condition of self-assessment of individual mammography screening facilities but also a condition of statistical data collection about

Perry N, Broeders M, de Wolf C, Törnberg S, Holland R, von Karsa L. 2006. European guidelines for quality assurance in breast cancer screening and diagnosis. [online]. Fourth edition. Luxembourg: Office for Official Publications of the European Communities, 2006. 416 p. [accessed 1-11-2020]. Available at: <a href="https://www.noisk.sk/files/2019/eu\_guidelines\_c50\_2\_rakovina\_prsnika.pdf">https://www.noisk.sk/files/2019/eu\_guidelines\_c50\_2\_rakovina\_prsnika.pdf</a>>. ISBN 92-79-01258-4.
Rečková M. 2019. Breast cancer screening evaluation. [online]. [accessed 1-8-2021]. Available at: <a href="https://www.noisk.sk/files/2021/2021-05-21-indikatory-hodnotenia-skrining-kp.pdf">https://www.noisk.sk/files/2019/eu\_guidelines\_c50\_2\_rakovina\_prsnika.pdf</a>>. ISBN 92-79-01258-4.
Rečková M. 2019. Breast cancer screening evaluation. [online]. [accessed 1-8-2021]. Available at: <a href="https://www.noisk.sk/files/2021/2021-05-21-indikatory-hodnotenia-skrining-kp.pdf">https://www.noisk.sk/files/2019/eu\_guidelines\_c50\_2</a>. [accessed 1-8-2021]. Available at: <a href="https://www.noisk.sk/files/2021/2021-05-21-indikatory-hodnotenia-skrining-kp.pdf">https://www.noisk.sk/files/2021/2021-05-21-indikatory-hodnotenia-skrining-kp.pdf</a>>.

**<sup>3</sup>** Horváthová M, Lehotská V, Nikodemová D, Kallayová A, Slobodníková A. 2019. Standard Procedure for Medical Radiation and Prevention - Screening Mammography, 1<sup>st</sup> revision. [online]. Bratislava: Ministry of Health of the Slovak Republic, 2019. 23 p. [accessed 1-8-2021]. Available at: <a href="https://www.standardnepostupy.sk/standardy-skriningove/">https://www.standardnepostupy.sk/standardy-skriningove/</a>.

**<sup>4</sup>** Horváthová M, Lehotská V, Nikodemová D, Kallayová A, Slobodníková A. 2021. Standard Procedure for Medical Radiation and Prevention - Screening Mammography, 2<sup>nd</sup> revision. [online]. Bratislava: Ministry of Health of the Slovak Republic, 2021. 50 p. [accessed 1-8-2021]. Available at: <a href="https://www.standardnepostupy.sk/standardy-skriningove/">https://www.standardnepostupy.sk/standardy-skriningove/</a>.

screening participants and their evaluation. From January 1, 2020, to December 31, 2020, the statistical data were collected by National Oncology Institute (NOI) according to an approved collection system based on the Standard Procedure for Medical Radiation and Prevention - Screening Mammography in order to adhere to all legislative standards on data protection.

Mammography screening takes place in 15 certified mammography screening facilities which have fulfilled the inclusion requirements for mammography screening according to the valid standard procedure. Their activity must be regularly checked and monitored in accordance with transparency rules laid out in the valid standard procedure. The course of the program, adherence to the rules as well as scientific development of the project are supervised by NOI and Cancer Screening Committee of the Ministry of Health of the SR (MoH SR) with its Working Group of Breast Cancer Screening Committee of the MoH SR which unites radiologists - mammography diagnosticians, representatives of all medical specialties involved in the diagnostics and treatment of breast diseases and representatives of other stakeholders, such as health insurance companies, National Health Information Center (NHIC) and Health Care Surveillance Authority.

The Expert Working Group for Quality Assurance of Mammography Facilities of the MoH SR Committee for Quality Assurance in Radiodiagnostics, Radiation Oncology and Nuclear Medicine is a vital part of the cooperation due to necessary checks and required increase in the number of certified mammography screening facilities, long-term regular need of checks and examination of quality standards in the certified mammography screening facilities as well as precise statistical data collection from performed exams.

Data audit and statistical data processing are performed by NOI in close cooperation with MoH SR, Slovak Radiological Society, NHIC and health insurance companies. NOI is currently preparing a binding parametric information structure for mammography screening participants and their examinations in order to ensure quality of data collection. This data will be a part of repeated quality verification of the involved mammography screening facilities and a precondition for their participation in the mammography screening. The parametric data collection structures will be updated regularly by NOI to take into account new developments in the screening process.

Data collection from the 15 certified mammography screening facilities was carried out in 2020 according to the valid standard procedure. This analysis summarizes data from all facilities. Screening mammography evaluation is done by standard BI-RADS classification (BI-RADS 1: the exam result is negative; BI-RADS 2: result is benign; BI-RADS 3: result is probably benign; BI-RADS 4: result is probably malignant and BI-RADS 5: result is malignant). From the beginning of 2020, i.e., from January 1, 2020, to December 31, 2020, 38,844 participants altogether were examined by screening mammography, which is 10.7% of the entire screened population of women aged 50-69. This document further includes the numbers of examined women and relative participation in individual regions and districts.

**Detected malignancies and their stage:** 310 carcinomas were detected among 38,844 examined women during the reference period (more on this later in the text), the majority in early stages.

**Conclusion:** Total participation rate of women in mammography screening has been relatively low so far. This is due to several factors:

- The COVID-19 pandemic stopped or reduced screening attendance in facilities for 3 months in 2020.
- No general system of targeted invitations is established in Slovakia. Only women who had not undergone mammography previously or for more than two years before the initiation of mammography screening were invited, except for women treated for breast cancer.<sup>5</sup> The start of the screening is estimated to be gradual and it will take several years before we reach the recommended participation rate of 70-80 percent. Estimated 20 percent of women in Slovakia go to preventive mammography in non-certified diagnostic-preventive mammography facilities within the so-called opportunistic screening. It is necessary to transfer these examinations to certified, high-quality mammography screening facilities. Since May 15, 2021, it is possible to transform preventive mammography referrals to screening mammography by a radiologist if the woman in question is in the required age interval, i.e., between 50-69 years, and fulfills all screening inclusion criteria.
- Another opportunity to increase the participation of women in Slovakia is to consider sending targeted invitations to new participants in a more active manner. Since May 15, 2021, repeated invitations have been sent by certified mammography screening facilities<sup>6</sup> where the woman has already undergone the screening. The network of 15 certified mammography screening facilities in quantitatively insufficient, which is why it is necessary to give a renewed authorization to members of Expert Working Group for Quality Assurance of Mammography Facilities to continue the verification of other

**<sup>5</sup>** NOI. 2019. Methodology of Targeted Invitations to Breast Cancer Screening by Health Insurance Companies. [online]. 2019. [accessed 1-11-2020]. Available at: <a href="https://www.noisk.sk/files/2020/2020-08-20-skrining-c50-pozyvanie-noi-final.pdf">https://www.noisk.sk/files/2020/2020-08-20-skrining-c50-pozyvanie-noi-final.pdf</a>.

**<sup>6</sup>** Horváthová M, Lehotská V, Nikodemová D, Kallayová A, Slobodníková A. 2021. Standard Procedure for Medical Radiation and Prevention - Screening Mammography, 2<sup>nd</sup> revision. [online]. Bratislava: Ministry of Health of the Slovak Republic, 2021. 50 p. [accessed 1-8-2021]. Available at: <a href="https://www.standardnepostupy.sk/standardy-skriningove/">https://www.standardnepostupy.sk/standardy-skriningove/</a>.

registered mammography facilities willing to perform mammography screening. At the moment, there are 6 more candidates to be verified.

- It is also necessary to increase the participation of women via awareness campaigns repeated several times a year.

The time of repeated auditing of certified and functioning mammography screening facilities is growing near. This is backed by the approval of the 2<sup>nd</sup> version of Standard Procedure for Medical Radiation and Prevention - Screening Mammography<sup>6</sup>.

## 1 CERTIFIED MAMMOGRAPHY SCREENING FACILITIES IN SLOVAKIA

In the period from January 1, 2020, to December 31, 2020, the temporary Expert Working Group for Quality Assurance of Mammography Facilities of the MoH SR Committee for Quality Assurance in Radiodiagnostics, Radiation Oncology and Nuclear Medicine added 15 certified mammography screening facilities to the list of mammography facilities *(Figure 1, Table 1)*.

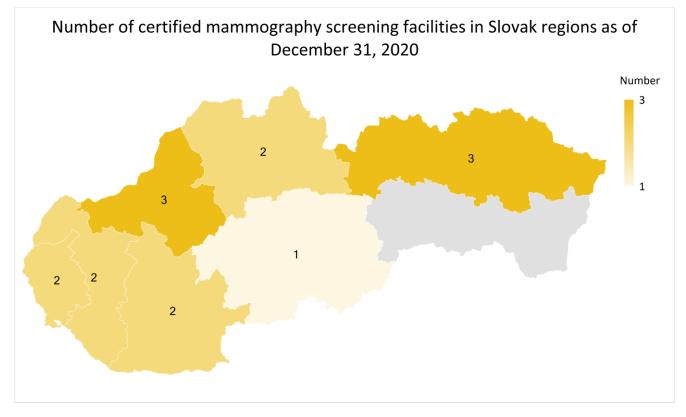


Figure 1. Number of certified mammography screening facilities in Slovak regions as of December 31, 2020.

Appointments Name of facility Physician responsible for Tel. number / scheduling time City Address mammography screening E-mail address + 421 48/4204 901 Mammacenter of St. Agatha Banská + 421 48/4204 911 Bystrica, a.s., + 421 48/4204 912 Banská Bystrica Marcela Beerová, M.D. Health Center - Radiology By phone: T. Andrašovana 46, Mon - Fri: 10:00 AM - 2:00 PM 974 01 Banská Bystrica skriningmmc@svetzdravia.com II Radiology Clinic of Faculty of 02/32249 704 **Medicine Comenius University and** 02/32249 458 St. Elisabeth Cancer Institute (SECI) prof. Viera Lehotská, Mammography facility No. 1 M.D., PhD. Bratislava Mammography facility No. 2 mmg.skrining@ousa.sk Marek Ocilka, M.D. SECI Heydukova 10, 812 50 Bratislava screening mammography and breast ultrasound: 044/5209265 X-ray ward, SVALZY s.r.o. other mammography exams: Liptovský Hrádok Milan Zemančík, M.D. Ul. J.D. Matejovie 542, 044/5209234 033 80 Liptovský Hrádok Mon - Fri: 8:00 AM - 10:00 AM 11:00 AM - 1:00 PM Malacky Hospital 034 2829 800 Nemocničná a.s., Malacky David Bátor, M.D. Mon - Fri: 7:15 AM - 2:30 PM Duklianskych hrdinov 34, rtg.evidencia@nemocnicna.sk 901 22 Malacky /send a scanned copy of referral/ 0903 774 400 Jessenius - Diagnostic Center a.s. 0903 791 139 Zuzana Behúnová, M.D. Špitálska 6, Mon - Fri: 7:00 AM - 3:00 PM 949 01 Nitra Nitra mmg-skrining@jessenius.sk **Nitra Medical Center** 0907 33 66 99 Anna Kóšová, M.D. Mon - Fri: 7:00 AM - 7:00 PM Fatranská 5. 949 01 Nitra recepcia.nitra@procare.sk Poprad Hospital, a.s. 052 7125 405 Department of Diagnostic and Interventional Radiology Mon - Fri: 7:30 AM - 3:30 PM Poprad Gabriela Kusková, M.D. Banícka 803/28, rdglab@nemocnicapp.sk 058 45 Poprad 051/7011 633 051/7011 560 J. A. Reiman's Teaching Hospital with **Health Center Prešov** Zuzana Pažúrová By phone: Prešov Angelovičová, M.D. Mon - Fri: 12:30 PM - 2:30 PM Hollého 14, In person: 081 81 Prešov Mon - Fri: 7:00 AM - 2:45 PM mamocentrumpo@fnsppresov.sk

Table 1. Contacts for certified mammography screening facilities in Slovakia as of December 31, 2020.

Table 1, continued: Contacts for certified mammography screening facilities in Slovakia as of December 31, 2020.

	Name of facility Address	Physician responsible for mammography screening	Appointments	
City			Tel. number / scheduling time	
	Address		E-mail address	
	St. Vincent - Radiology, s.r.o.		046/ 5407557	
Prievidza	Hviezdoslavova 3, 971 01 Prievidza	Beáta Uríčová, M.D.	Mon - Fri: 7:00 AM – 2:30 PM info@sonomamo.sk	
	Central Military Hospital Ružomberok		044 / 438 27 29	
Ružomberok	Teaching hospital Ul. Generála Miloša Vesela 21, 034 01 Ružomberok	Jana Jurášová, M.D.	Mon - Fri: 7:00 AM - 2:30 PM	
	Mammography Facility, Department of Radiology, Hospital Stará Ľubovňa,		052/4317 291	
Stará Ľubovňa	n.o.	Štefan Harčarufka, M.D.	Mon - Fri: 7:15 AM - 2:45 PM	
	Obrancov mieru 3, 064 01 Stará Ľubovňa		rdg@lubovnianskanemocnica.sk	
	Radiology Clinic, s.r.o.	Assoc. Prof. Jana	0917 313 323	
	K dolnej stanici 18, 911 01 Trenčín	Slobodníková, M.D., PhD., MPH.	Mon - Fri: 9:00 AM - 1:00 PM	
Trenčín	Mammography Facility of X-ray Ward, Teaching Hospital TN		032/6566 860 032/6566 383	
	Legionárska 594/28, 911 01 Trenčín	Mário Bôžik, M.D.	Mon - Fri: 1:00 PM - 3:00 PM	
	MRI, s.r.o.		033/29 33 230 033/29 33 231	
	Družba Health Center (pediatric pavilion - basement)	Marek Kopáčik, M.D.	033/381 3091	
	Starohájska 2, 917 01 Trnava		Mon - Fri: 8:00 AM - 2:30 PM	
Trnava			mamoscreening@izd-tt.sk 033/59 38 959	
	Radiology Clinic, Teaching Hospital Trnava	Matej Rusina, M.D.	Mon: 7:45 AM – 2:15 PM Wed: 7:45 AM – 2:15 PM	
	A. Žarnova 11, 917 75 Trnava		Fri: 7:45 AM – 2:15 PM http://fntt.sk/online-objednanie/	

### **2 DEMOGRAPHIC STATISTICS**

Based on data from the Statistical Office of the Slovak Republic - *demographic statistics* /*age stratification of the population*/<sup>7</sup> - there were 727,868 women aged 50 to 69 in Slovakia as of December 31, 2019. When taking into account a 2-year screening interval and inclusion and exclusion criteria, 363,934 women should attend a mammography screening each year (it would be necessary to subtract all women currently undergoing treatment for breast cancer but this information is not available at the moment). Approximately 30% of the women, i.e., roughly 100,000 women, attend annual preventive mammography, so-called opportunistic screening, based on a referral from their gynecologist, general practitioner for adults or another specialist.

Data provided by health insurance companies show that 111,844 women, i.e., 30.7%, underwent a mammography exam in 2020. However, it must be underlined that this number includes screening, preventive and diagnostic mammography because they cannot be distinguished based on the data provided. 38,844 women, i.e., 10.7% of the target female population, underwent screening mammography in certified mammography screening facilities.

Within mammography screening implementation in Slovakia, health insurance companies (VšZP, Union, Dôvera) send invitations to women aged 50-69 who have not attended a mammography examination in more than 2 years based on a precise set of criteria. The invitations were not sent temporarily for 3 months in 2020 due to the COVID-19 pandemic. Total number of invited women from January 2020 to December 2020 was 81,200 *(Table 2),* while invited women underwent the mammography exam in a certified mammography screening facility or other mammography screening facility *(Table 3).* Of all invited women, 4,490, i.e., 5.5%, were examined based on mammography screening referral in other than certified mammography screening facility, which represents 1.2% of the target female population. 7,759 women, i.e., 9.6% of the invited women and 2.1% of the target female

<sup>7</sup> Statistical Office of the SR. 2021. Demographics and Social Statistics. [online]. Accessed 2021-05-01. Available at: <a href="http://statdat.statistics.sk/cognosext/cgi-">http://statdat.statistics.sk/cognosext/cgi-</a>

bin/cognos.cgi?b\_action=cognosViewer&ui.action=run&ui.object=storeID%28%22i40A03AF2150C41DE8BE98D0C0C41A764%22%29&u i.name=Vekov%c3%a9%20zlo%c5%beenie%20-

<sup>%20</sup>SR%2c%20oblasti%2c%20kraje%2c%20okresy%2c%20mesto%2c%20vidiek%20%5bom7009rr%5d&run.outputFormat=&run.prompt =true&cv.header=false&ui.backURL=%2fcognosext%2fcps4%2fportlets%2fcommon%2fclose.html&run.outputLocale=sk >

population, underwent screening mammography in certified mammography screening facilities. Apart from that, further 31,085 women, i.e., 8.5% of the target female population, underwent screening mammography in certified mammography screening facilities.

Health insurance company	Frequency of invitations	Number of invited women
VšZP	4,800 / 1 month	43,200
Dôvera	3,500 / 1 month	31,500
Union	6,500 / 3 months (only Q1 2020)	6,500
TOTAL INVITED WOMEN		81,200

Table 2. Number of women invited to screening mammography by health insurance companies.

Table 3. Participation of invited women in screening mammography.

	Participation rate [number (%)]		
Health insurance company (number of invited women)	Certified mammography screening facility	Other than certified mammography screening facility	Total
VšZP (43,200)	4,476 (10.36%)	2,292 (5.31%)	6,768 (15.67%)
Dôvera (31,500)	2,860 (9.08%)	1,650 (5.24%)	4,510 (14.32%)
Union (6,500)	423 (6.51%)	548 (8.43%)	971 (14.94%)
Total invited women (81,200)	7,759 (9.56%)	4,490 (5.53%)	12,249 (15.08%)

### 3 STATISTICAL EVALUATION OF MAMMOGRAPHY SCREENING IN 2020

Mammography screening started in Slovakia in September 2019. In the time period from September 1, 2019, to December 31, 2020, 16,453 women participated in screening mammography in 16 certified mammography screening facilities. These women were diagnosed with 87 carcinomas, i.e., 5 cases per 1,000 women.

In the following year, i.e., from January 1, 2020, to December 31, 2020, 38,844 women were examined in 15 certified mammography screening facilities<sup>8</sup>, i.e., 10.7% of the target female population (including a 3-month break due to the COVID-19 pandemic situation). These women were diagnosed with 310 carcinomas, i.e., 8 cases per 1,000 women.

The participation rate of women in individual regions with certified mammography screening facilities in 2019 and 2020 is shown in *Figure 2, 3.* 

Relative participation rate of women in mammography screening per region with certified mammography screening facilities is shown in *Table 4*. Relative participation rate of women in mammography screening per district with certified mammography screening facilities is shown in *Table 5*.

Number of malignancies diagnosed during mammography screening in certified mammography screening facilities is found in *Table 6.* 

<sup>8</sup> Two separate certified mammography screening facilities under one institution were merged into one in 2020. That is why the number of certified mammography screening facilities was reduced by 1 in 2019 - 2020.

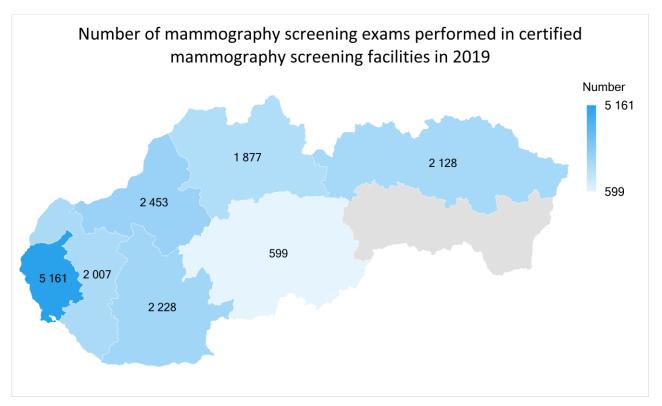


Figure 2. Number of mammography screening exams performed in certified mammography screening facilities in 2019 (September 2019 - December 2019).

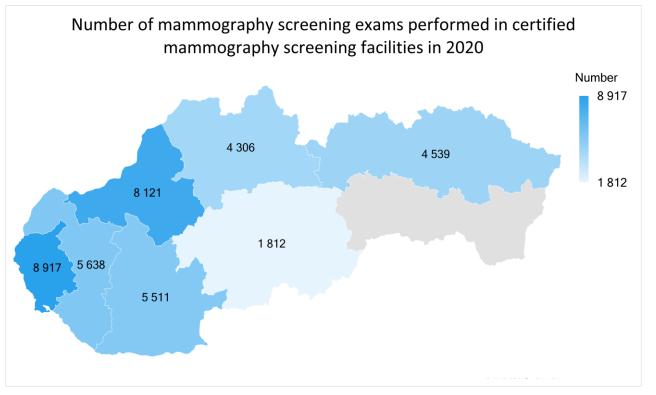


Figure 3. Number of mammography screening exams performed in certified mammography screening facilities in 2020 (January 2020 - December 2020)

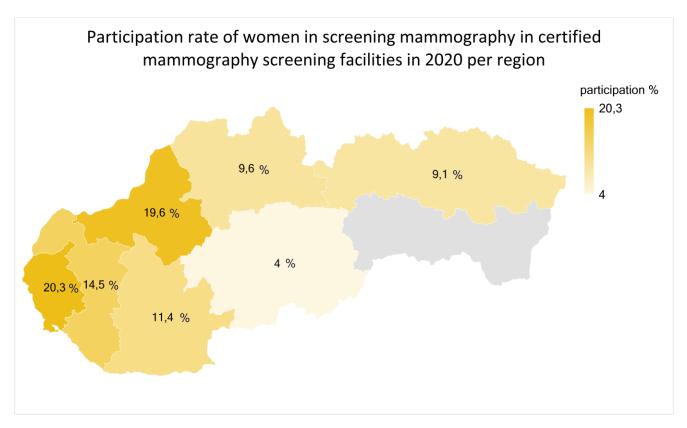


Figure 4. Participation rate of women in screening mammography in certified mammography screening facilities in 2020 per region.

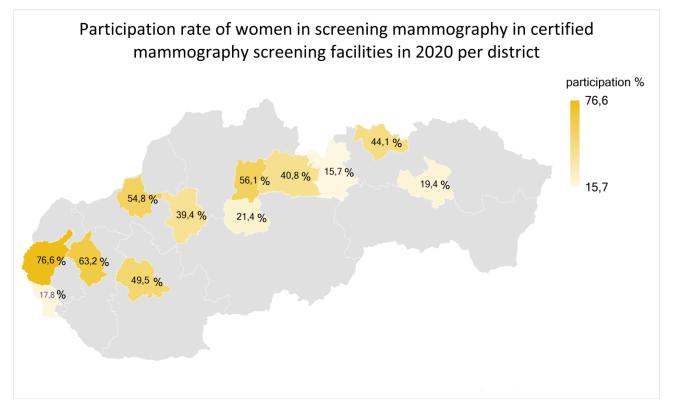


Figure 5. Participation rate of women in screening mammography in certified mammography screening facilities in 2020 per district.

Table 4. Relative participation rate of women in mammography screening per region with certified mammography screening facilities in 2020

Region of the SR /number of facilities in the region/	Number of women aged 50-69 / number of women when preserving the screening interval <sup>9</sup>	Number of performed screening mammography exams	Relative participation rate when preserving the screening interval (%)
Banská Bystrica / 1 /	90,500 / 45,250	1,812	4.0%
Bratislava / 2 /	87,661 / 43,831	8,917	20.3%
Nitra / 2 /	96,849 / 48,425	5,511	11.4%
Prešov / 3 /	100,192 / 50,096	4,539	9.1%
Trenčín / 3 /	82,673 / 41,337	8,121	19.6%
Trnava / 2 /	77,809 / 38,905	5,638	14.5%
Žilina / 2 /	89,999 / 45,000	4,306	9.6%

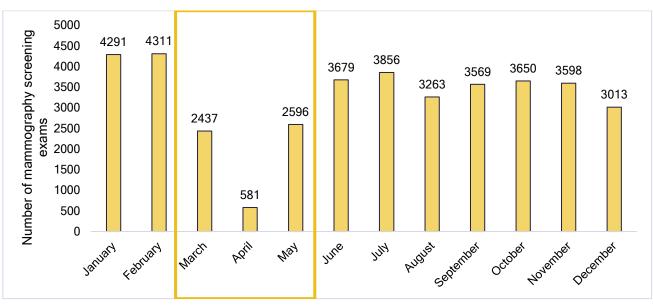
Table 5. Relative participation rate of women in mammography screening per district with certified mammography screening facilities in 2020

District of the SR /number of certified facilities in the district/	Number of women aged 50-69 / number of women when preserving the screening interval <sup>9</sup>	Number of performed screening mammography exams	Relative participation rate when preserving the screening interval (%)
Banská Bystrica / 1 /	16,972 / 8,486	1,812	21.4%
City of Bratislava / 1 /	60,254 / 30,127	5,365	17.8%
Liptovský Mikuláš / 1 /	10,339 / 5,170	2,108	40.8%
Malacky / 1 /	9,274 / 4,637	3,552	76.6%
Nitra / 2 /	22,254 / 11,127	5,511	49.5%
Poprad / 1 /	14,043 / 7,022	1,103	15.7%
Prešov / 1 /	22,064 / 11,032	2,144	19.4%
Prievidza / 1 /	19,431 / 9,716	3,831	39.4%
Ružomberok / 1 /	7,840 / 3,920	2,198	56.1%
Stará Ľubovňa / 1 /	5,859 / 2,930	1,292	44.1%
Trenčín / 2 /	15,650 / 7,825	4,290	54.8%
Trnava / 2 /	17,845 / 8,923	5,638	63.2%

%20SR%2c%20oblasti%2c%20kraje%2c%20kresy%2c%20mesto%2c%20vidiek%20%5bom7009rr%5d&run.outputFormat=&run.prompt =true&cv.header=false&ui.backURL=%2fcognosext%2fcps4%2fportlets%2fcommon%2fclose.html&run.outputLocale=sk>

<sup>9</sup> Statistical Office of the SR. 2021. Demographics and Social Statistics. [online]. Accessed 2021-05-01. Available at: <a href="http://statdat.statistics.sk/cognosext/cgi-">http://statdat.statistics.sk/cognosext/cgi-</a>

bin/cognos.cgi?b\_action=cognosViewer&ui.action=run&ui.object=storeID%28%22i40A03AF2150C41DE8BE98D0C0C41A764%22%29&u i.name=Vekov%c3%a9%20zIo%c5%beenie%20-



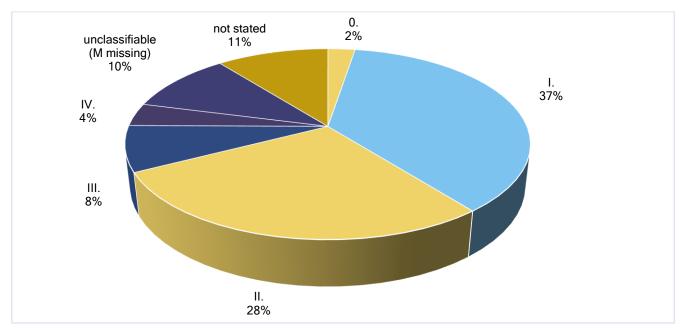
Graph 1. Number of performed mammography screening exams in certified mammography screening facilities per month in 2020.

\*Note: Highlighted area: State of emergency due to COVID-19 pandemic situation

Table 6. Number of malignancies diagnosed during mammography screening in certified mammography screening facilities in 2019 and 2020 according to TNM staging

	Number of diagnosed malignancies during mammography screening			
TNM stage	Year 2019 (September - December)		Year 2020 (January - December)	
	number	percentage	number	percentage
0	2	2.3%	8	2.6%
I	33	37.9%	114	36.8%
II	37	42.5%	87	28.1%
III	4	4.6%	24	7.7%
IV	4	4.6%	12	3.9%
Incomplete*	1	1.2%	32	10.3%
Not stated	6	6.9%	33	10.6%
Total	87	100%	310	100%

\*Note: TNM stage was classified as incomplete due to absent M-stage data.



Graph 2. TNM stages of malignancies discovered during mammography screening in certified mammography screening facilities in 2020.