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# 15 yers of Czech National Breast Cancer Screening Programme

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# 1

# Breast cancer screening and national guidelines in the Czech Republic

- **The Czech National Breast Cancer Screening Programme has been under way since 2002**
- **Since the very beginning, the programme is fully organised, with clearly defined rules and a network of monitored accredited centres**
- **Informational support is an integral part of the programme,** enabling a continuous assessment of the entire screening process and its impact on the target population
- **The programme has achieved a significant impact on the target population:**
  - **6 221 732 screening mammography examinations** were performed,
  - the overall **coverage by screening has reached 63,2 %,**
  - **malignant tumours were detected in 32 770 women;** majority of them were detected at early stages, which meant a very good chance of successful treatment.

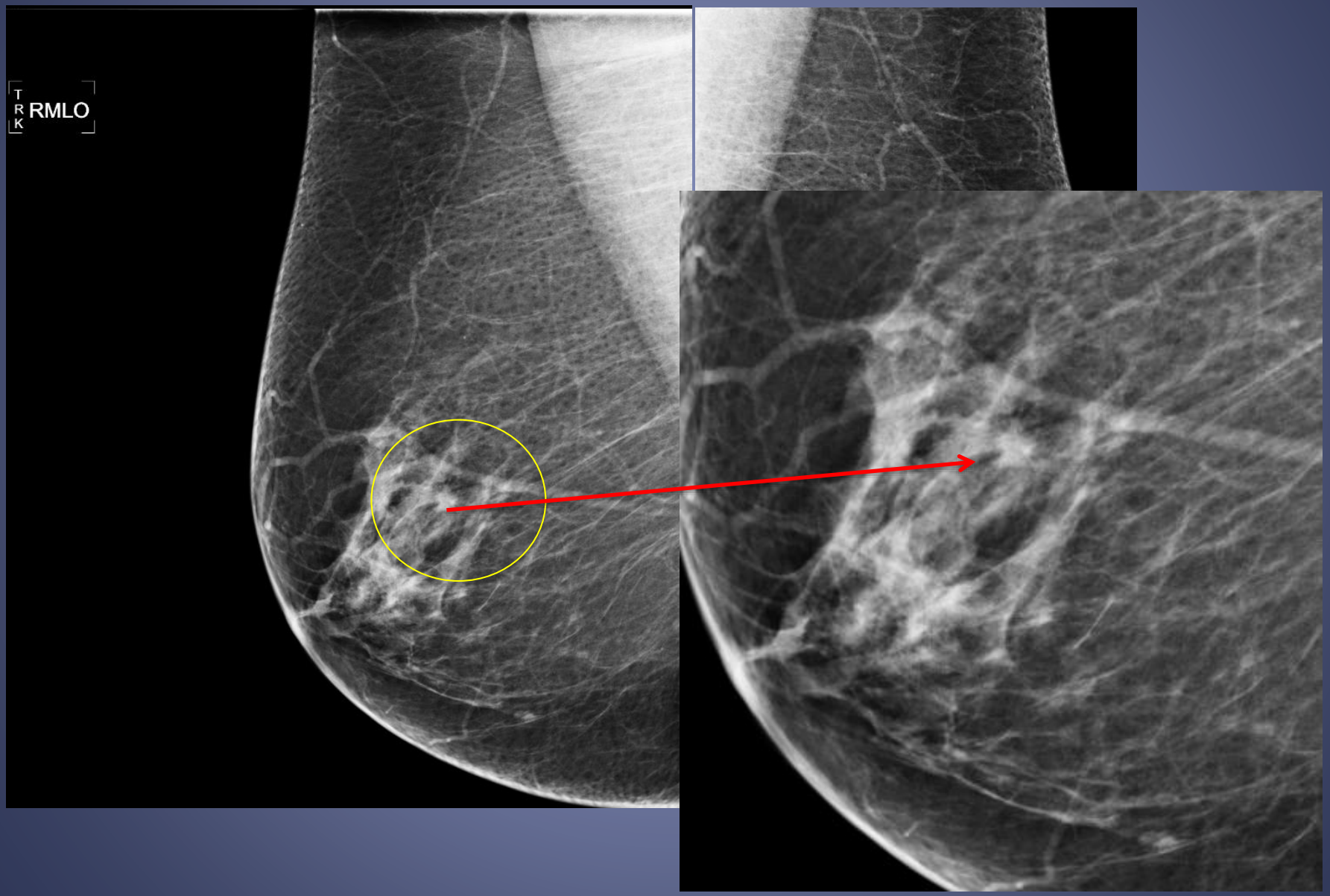
# Design of the screening programme

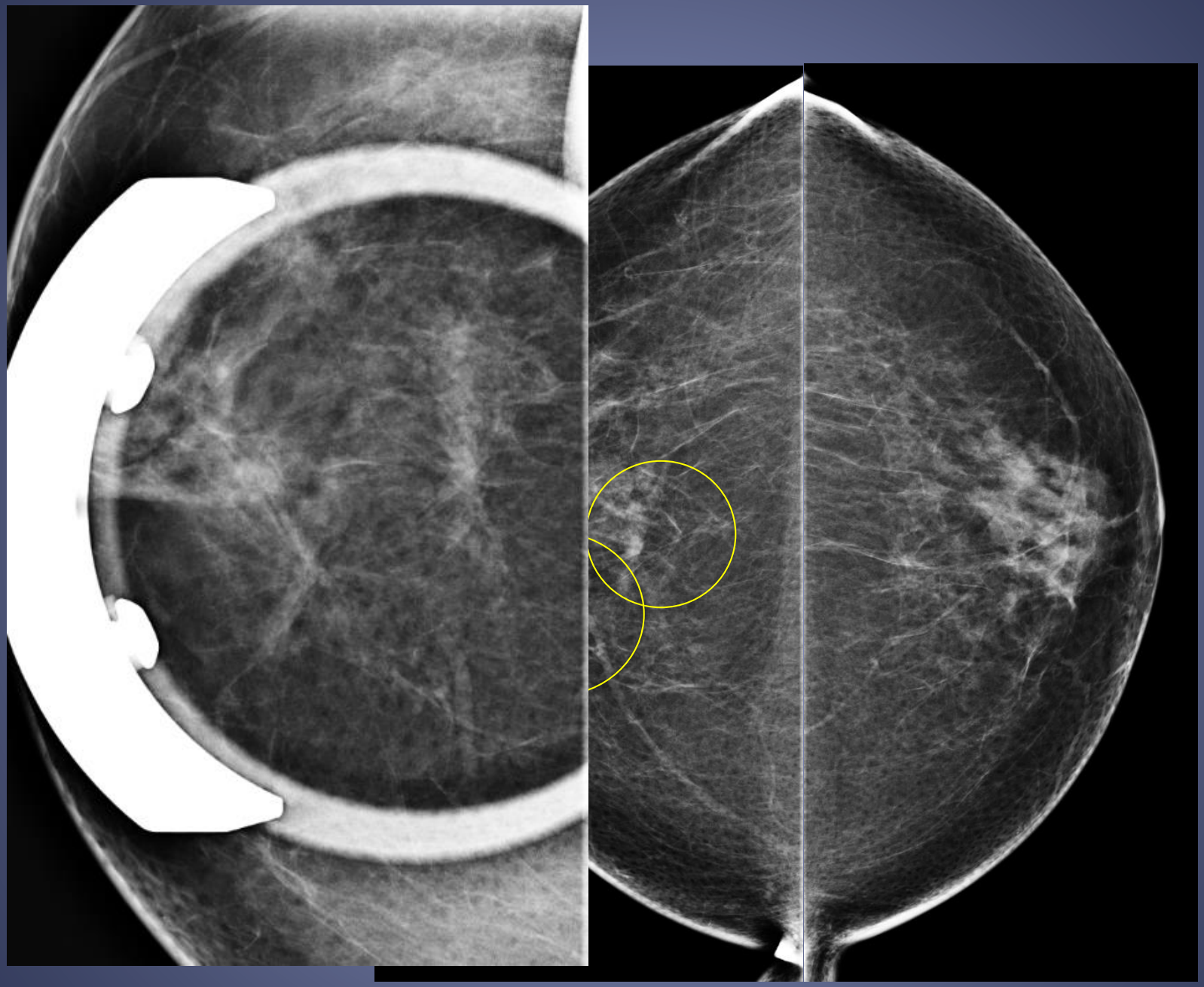
- target **age group**
  - women aged 45 to 69
  - the programme has been extended to **include women aged over 70 since** 2010
  - **women are referred to screening examinations by their GPs or gynaecologists**

- screening **method and interval**
  - two-year screening interval
  - digital mammography (both breasts, two-view mammography; double reading recommended)

- **further assessment**
  - mammograms are evaluated directly in the centres
  - most examinations for further assessment are performed on the same day as the screening mammography examination

# Screening case – second reading





Precision
Precision
MI:(1.5)
2DG
85
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12L5
diffT8.0
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MI:(1.5)
2DG
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12L5
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34 fps
Dist A 2.6 mm
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IP6 A 4
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A 4 IP6
Storing
HDD:82% Free
CINE REVIEW

# Network of accredited screening centres in the CR

# Dedicated software for data collection and analysis

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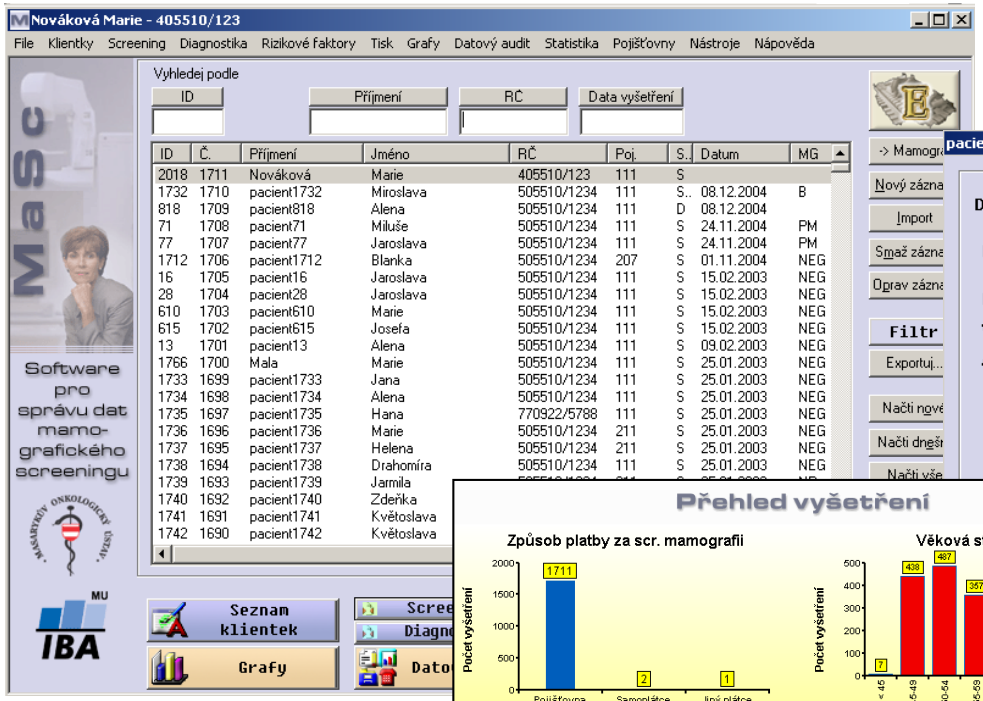
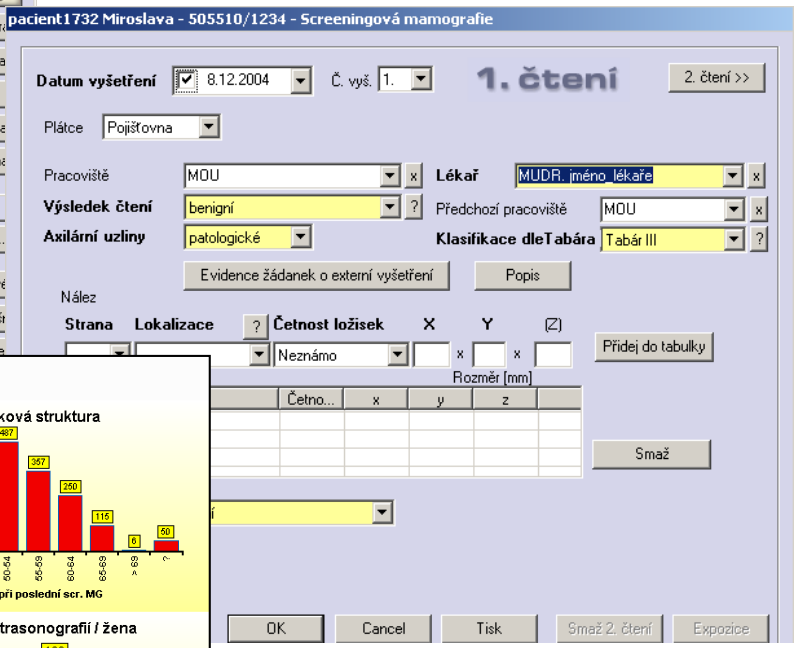
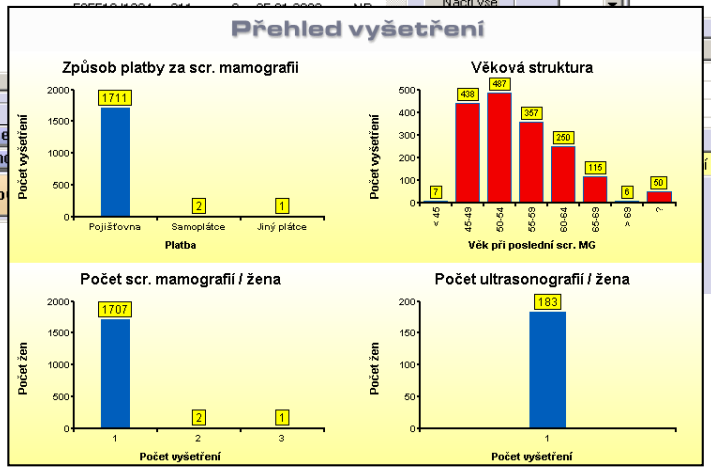
## Data management / invitation process




## Examinations / results

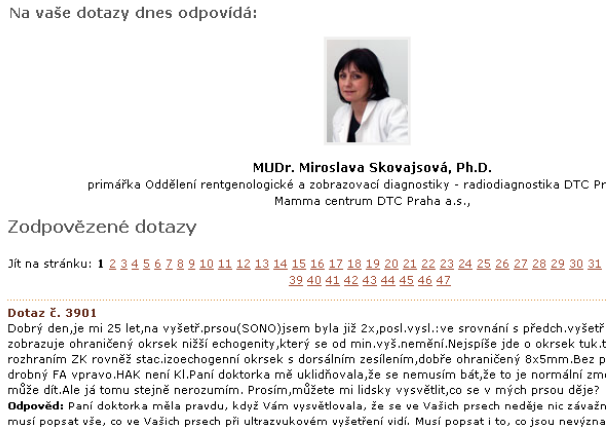



## Data analysis

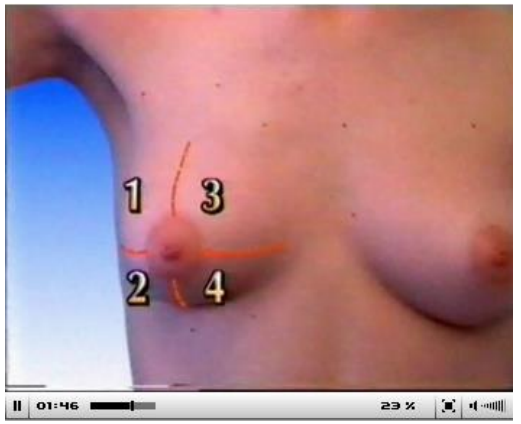
**Data audit (i.e. collection and statistical processing of data) is provided by the Institute of Biostatistics and Analyses of the Masaryk University in Brno.**

# Dedicated website – www.mamo.cz




## COUNSELLING SERVICE

## Advice bureau




## EDUCATIONAL VIDEOS

## INTERACTIVE MAP OF CENTRES

BREAST UNIT
PRAGUE

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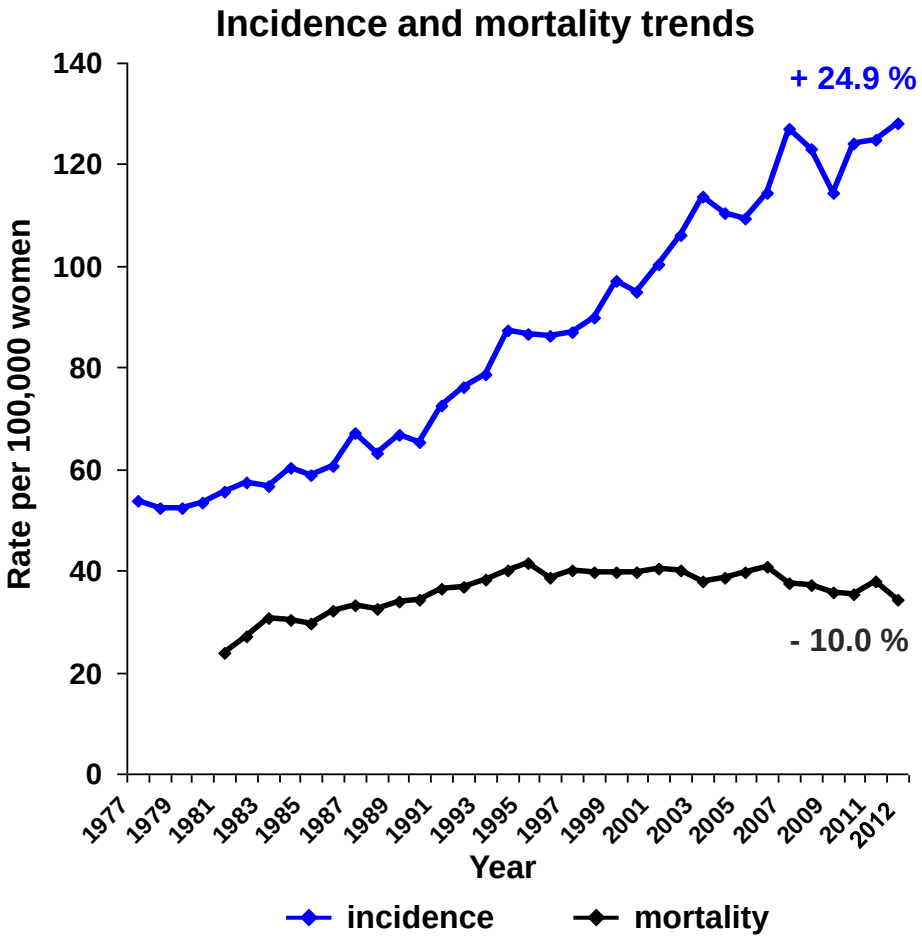
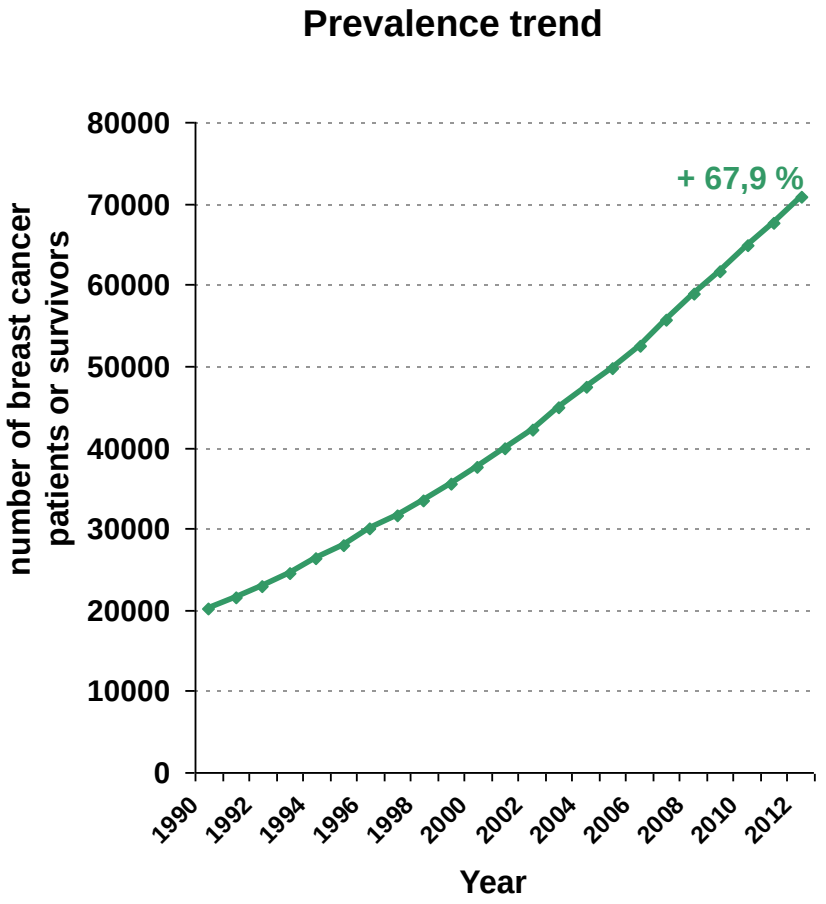
# 2

# Epidemiology of breast cancer in the Czech Republic and in international comparison

# Epidemiological trends in breast cancer (C50) in women




%: growth trend between 2002 and 2012

Source: Czech National Cancer Registry, IHIS

**The programme has a significant impact on C50 epidemiology in the population.**

**Despite the growing incidence, decreasing mortality confirms that the screening programme has a significant impact on stage at the time of diagnosis of breast cancer.**

**The population incidence increased temporarily due to a pilot programme in 2007.**

# Incidence according to stages; distribution of stages

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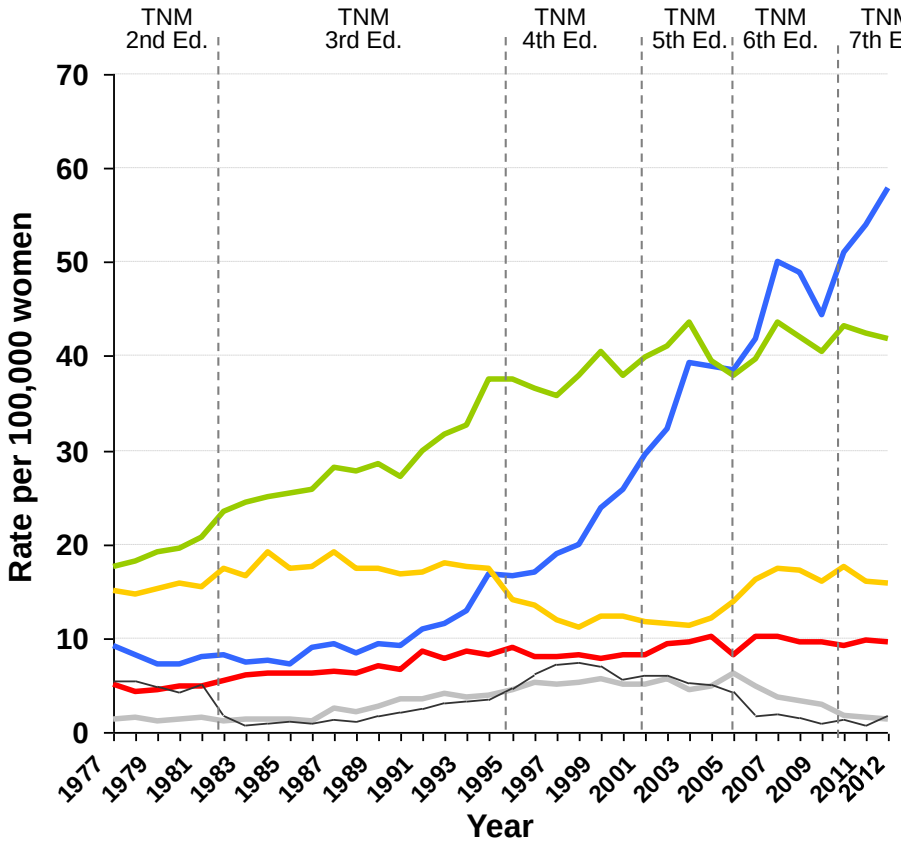
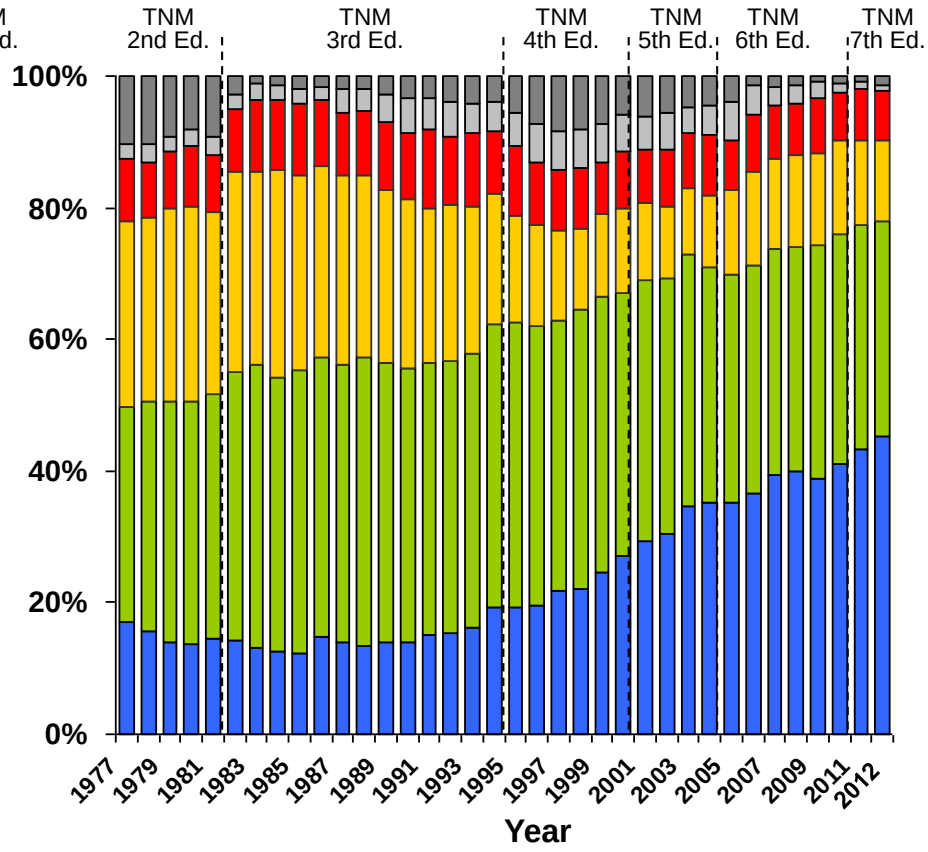
## Incidence trends according to stages




## Trend in distribution of stages at the time of diagnosis



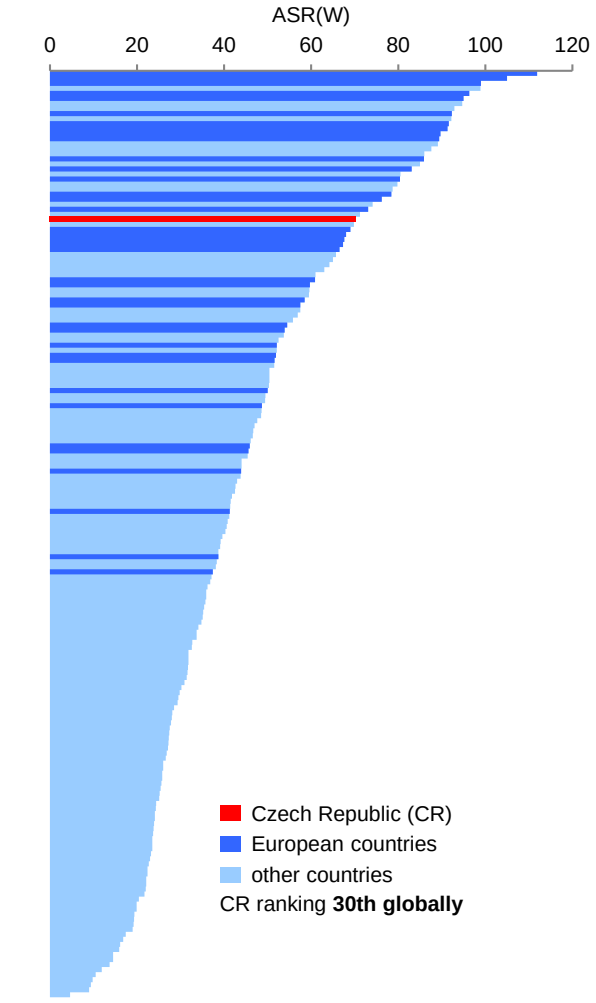

Stage:
1 2 3 4 not available for objective reasons not available – incomplete record

**The proportion of stage Ist has been growing steadily**

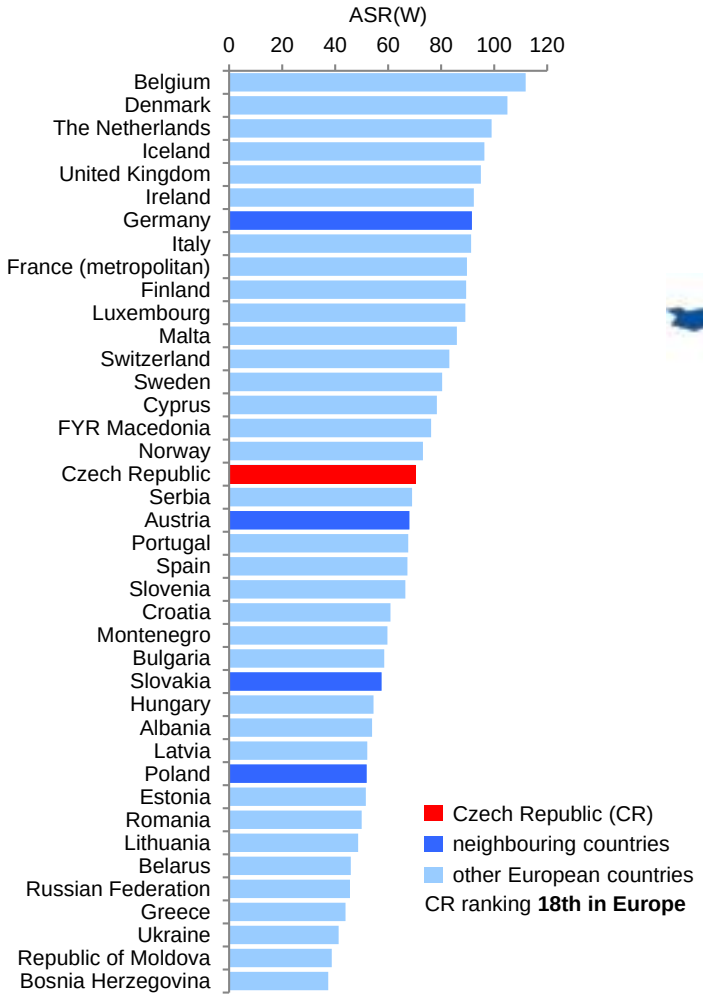
**The relative five-year survival in these patients is almost 100% !!**

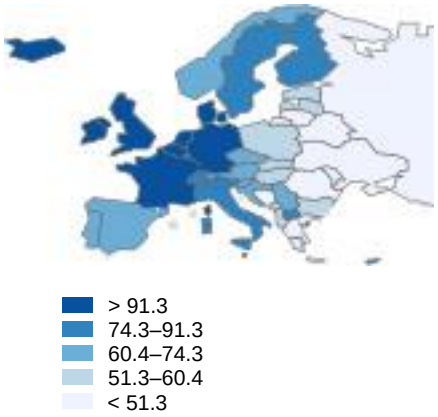
# International comparison of breast cancer incidence rates in women

## World




## Europe



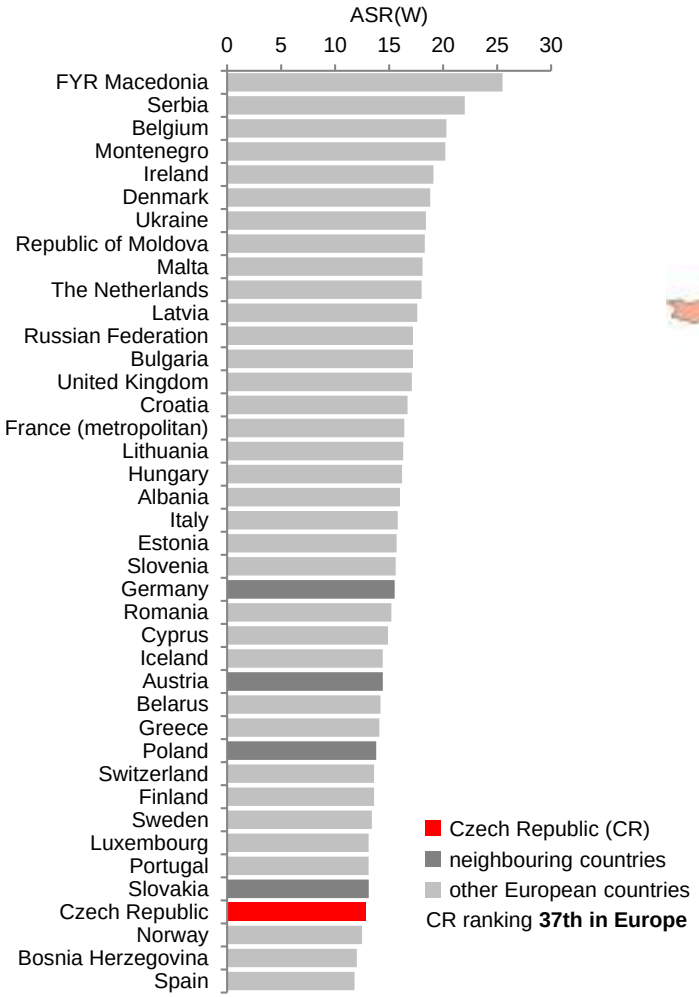



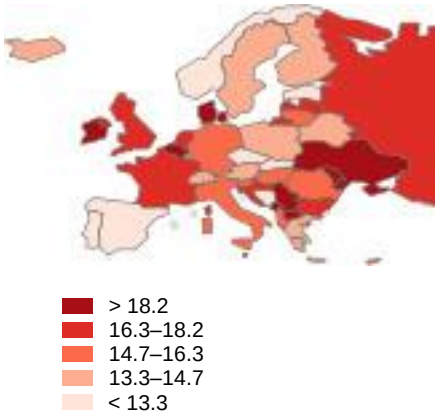

Source: Ferlay, J., Soerjomataram. I., Ervik, M., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., Parkin, D.M., Forman, D., Bray, F.: GLOBOCAN 2012 v1.0. Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [online]. International Agency for Research on Cancer. Lyon (France) 2013. Available from: http://globocan.iarc.fr.

# International comparison of breast cancer mortality rates in women

## World

## Europe



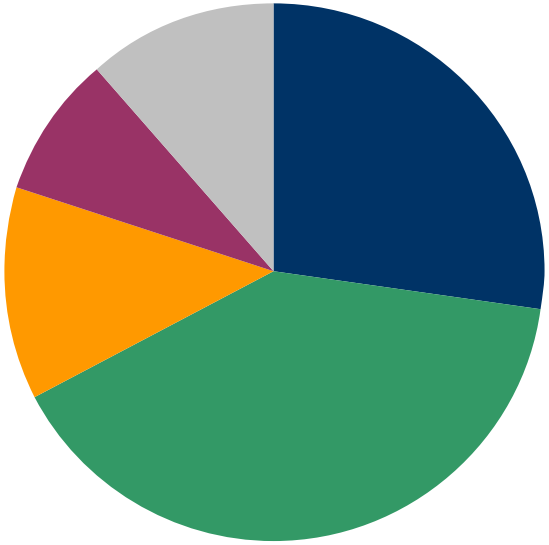




Source: Ferlay, J., Soerjomataram. I., Ervik, M., Dikshit, R., Eser, S., Mathers, C., Rebelo, M., Parkin, D.M., Forman, D., Bray, F.: GLOBOCAN 2012 v1.0. Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [online]. International Agency for Research on Cancer. Lyon (France) 2013. Available from: http://globocan.iarc.fr.

# Comparison of stage distribution – CNCR, screening

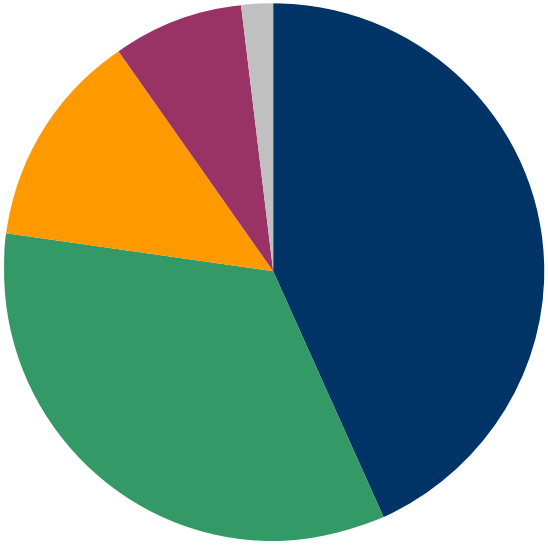
INVASIVE ONLY

**CNCR: Year 2000**
n = 5007



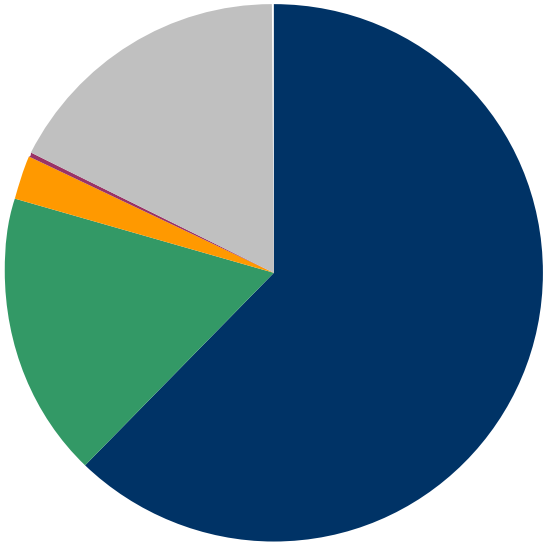
30.6% stage I
(among known)

**CNCR: Year 2011**
n = 6620



44.2% stage I
(among known)

**Screen-detected cases: Year 2015,** n = 3259



74,8% stage I
(among known, previously untreated)

Stage I | Stage II | Stage III | Stage IV | Unknown

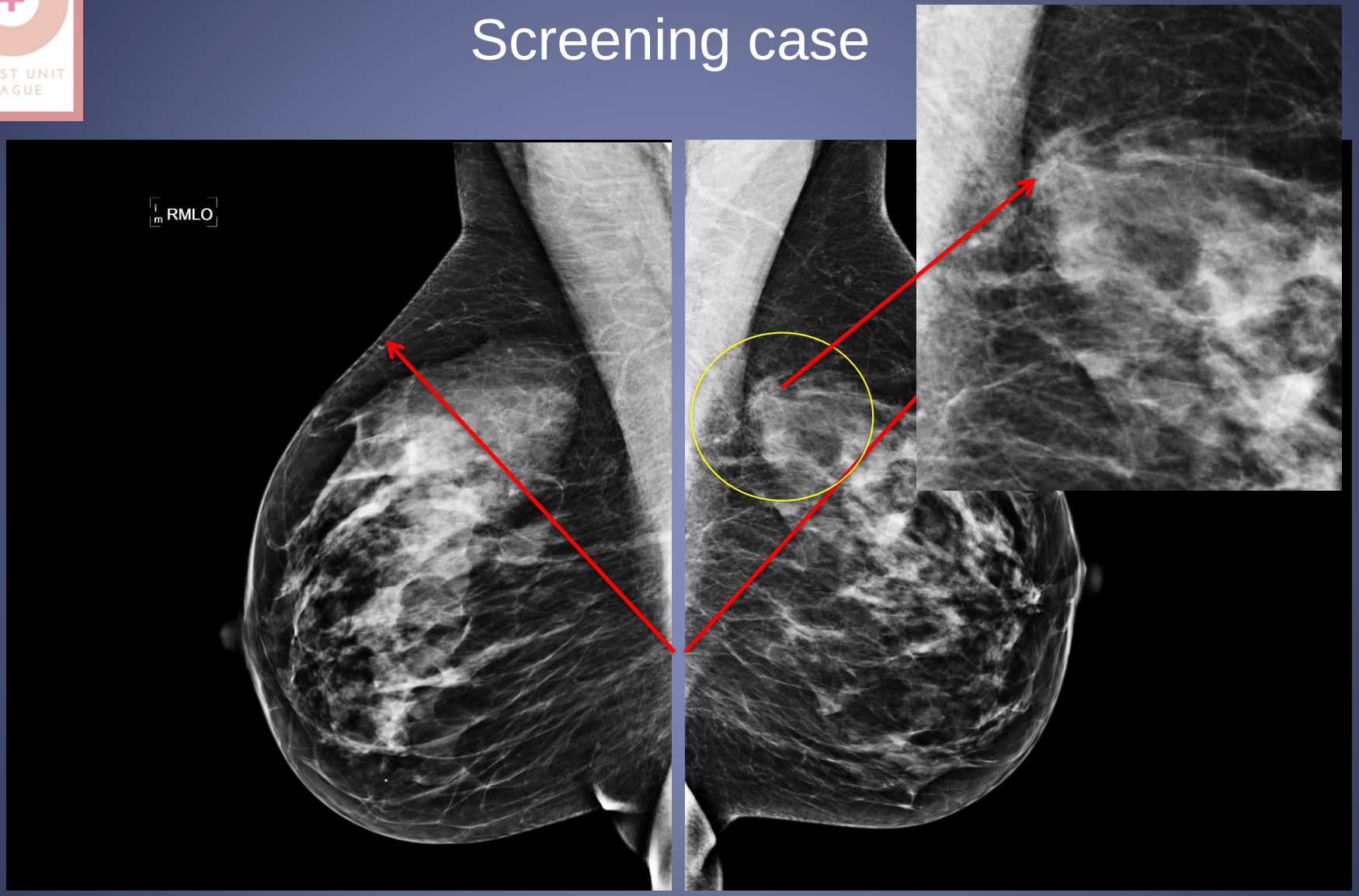
**Data source: Czech National Cancer Registry (CNCR)**

**Data source: Institute of Biostatistics and Analyses, MU**

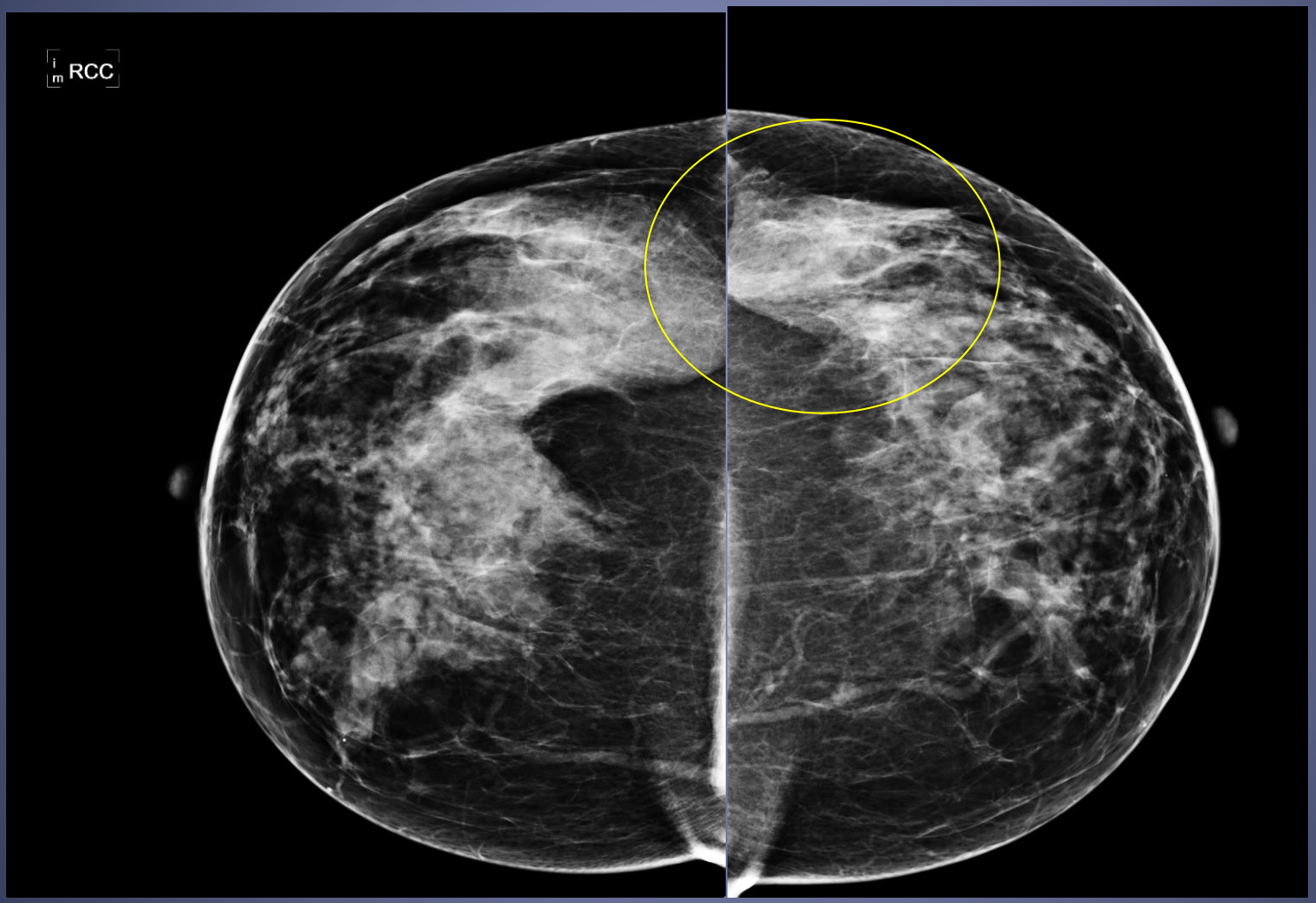
**The proportion of the earliest stage has continuously increased in the entire population.**

**The screening programme itself detects 3 in 4 cases in stage I.**

# Screening case



# Screening case



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# 3

# Main results of the breast cancer screening programme

# Time trends in basic characteristics of the programme

| All ages groups | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|
| ***Number of screened women*** | **435 608** | **538 323** | **555 451** | **602 044** | **649 362** | **683 259** |
| ***Number of detected cancers*** | **2 030** | **2 912** | **3 037** | **3 315** | **3 610** | **3 782** |
| *Detection rate (per 1000 examinations)* | 4,7 | 5,4 | 5,5 | 5,5 | 5,6 | 5,5 |
| ***No. of diagnosed women according to the size of PT*** | | | | | | |
| ***Ca in situ*** | **234 (11,5 %)** | **337 (11,6 %)** | **317 (10,4 %)** | **364 (11,0 %)** | **390 (10,8 %)** | **416 (11,0 %)** |
| ***T1*** | **1 280 (63,1 %)** | **1 820 (62,5 %)** | **1 925 (63,4%)** | **2 105 (63,5 %)** | **2 302 (63,8 %)** | **2 418 (63,9 %)** |
| *T2* | 256 (12,6 %) | 304 (10,4 %) | 325 (10,7 %) | 322 (9,7 %) | 356 (9,9 %) | 382 (10,1 %) |
| *T3* | 11 (0,5 %) | 13 (0,4 %) | 21 (0,7 %) | 12 (0,4 %) | 22 (0,6 %) | 26 (0,7 %) |
| *T4* | 3 (0,1 %) | 7 (0,2 %) | 6 (0,2 %) | 7 (0,2 %) | 8 (0,2 %) | 8 (0,2 %) |
| *Tumour modified by treatment* | 72 (3,5 %) | 119 (4,1 %) | 99 (3,3 %) | 104 (3,1 %) | 105 (2,9 %) | 107 (2,8 %) |
| *Unknown size* | 174 (8,6 %) | 312 (10,7 %) | 344 (11,3 %) | 401 (12,1 %) | 427 (11,8 %) | 425 (11,2 %) |

**Year 2014 has seen the highest number of examinations in the programme's history.**

**There is a large predominance of small tumours.**

# Časový vývoj základních charakteristik programu

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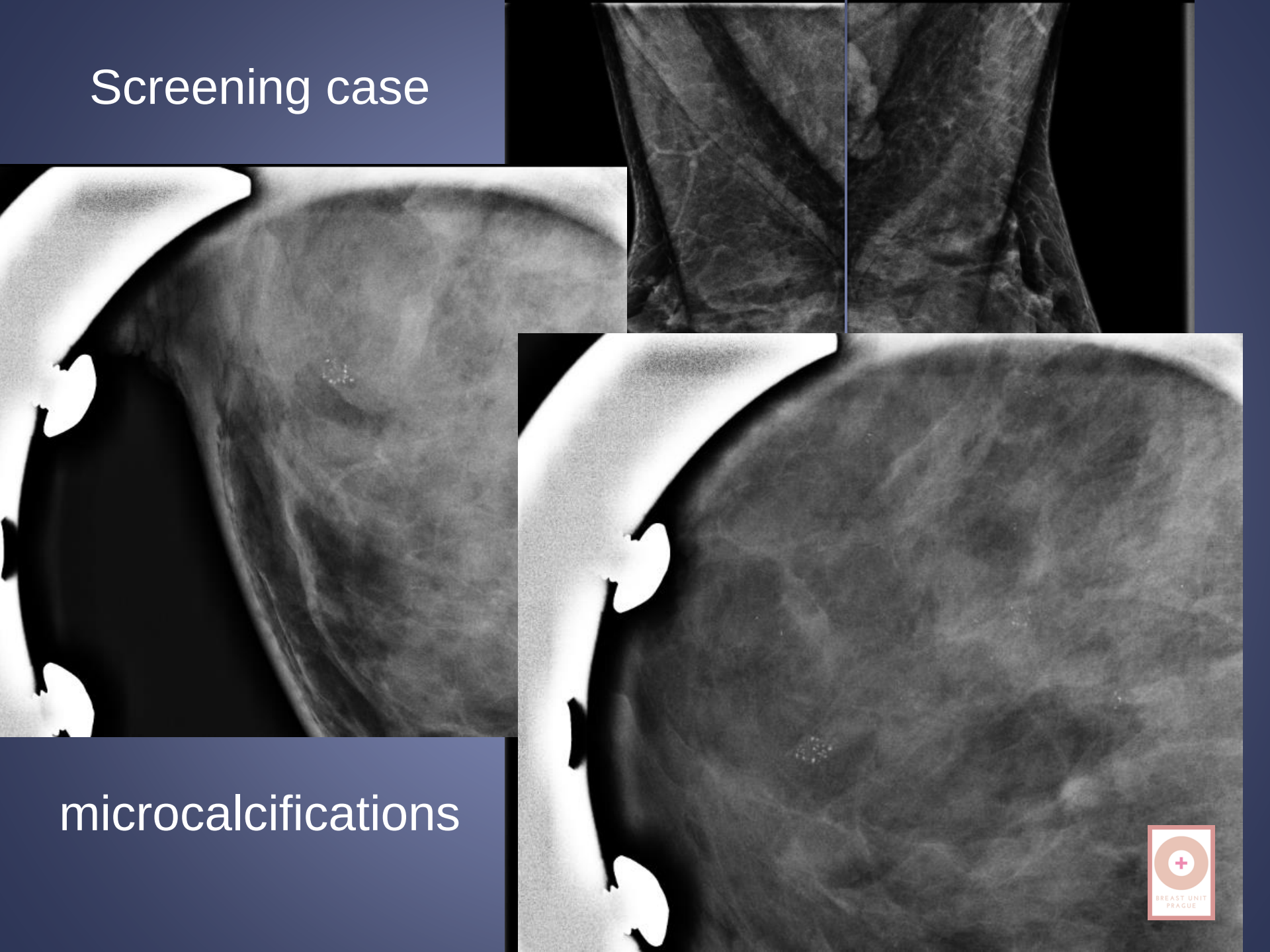
| Všechny věkové skupiny | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|
| ***Počet vyšetřených žen*** | 538 187 | 555 418 | 601 730 | 649 267 | 683 024 | 677 047 |
| ***Počet zachycených karcinomů*** | 2 921 | 3 046 | 3 335 | 3 626 | 3 835 | 3 820 |
| *Detekční míra (na 1000 vyšetření)* | 5,4 | 5,5 | 5,5 | 5,6 | 5,6 | 5,6 |
| ***Počet žen s diagnózou dle velikosti primárního nádoru*** | | | | | | |
| *Ca in situ* | 336 (11,5 %) | 318 (10,4 %) | 366 (11 %) | 395 (10,9 %) | 422 (11 %) | 448 (11,7 %) |
| *T1* | 1 823 (62,4 %) | 1 927 (63,3 %) | 2 109 (63,2 %) | 2 311 (63,7 %) | 2 477 (64,6 %) | 2 461 (64,4 %) |
| *T2* | 305 (10,4 %) | 325 (10,7 %) | 324 (9,7 %) | 357 (9,8 %) | 391 (10,2 %) | 397 (10,4 %) |
| *T3* | 13 (0,4 %) | 21 (0,7 %) | 12 (0,4 %) | 22 (0,6 %) | 27 (0,7 %) | 20 (0,5 %) |
| *T4* | 7 (0,2 %) | 6 (0,2 %) | 8 (0,2 %) | 9 (0,2 %) | 10 (0,3 %) | 12 (0,3 %) |
| *Nádor modifikovaný léčbou* | 121 (4,1 %) | 100 (3,3 %) | 113 (3,4 %) | 108 (3 %) | 128 (3,3 %) | 125 (3,3 %) |
| *Neznámá velikost* | 316 (10,8 %) | 349 (11,5 %) | 403 (12,1 %) | 424 (11,7 %) | 380 (9,9 %) | 357 (9,3 %) |

**Výrazně převládají nádory malé velikosti.**

**Počet vyšetření roste v čase vyjma roku 2015, což lze vysvětlit zavedením adresného zvaní v roce 2014 a dvouletým screeningovým intervalem. Tedy ženy, které úspěšně reagovaly na pozvání již v roce 2014 se mohou opakovaně zúčastnit až v roce 2016. Relevantním údajem hodnocení trendu účasti je pokrytí mamografickým screeningem.**

# Screening case

# Screening case

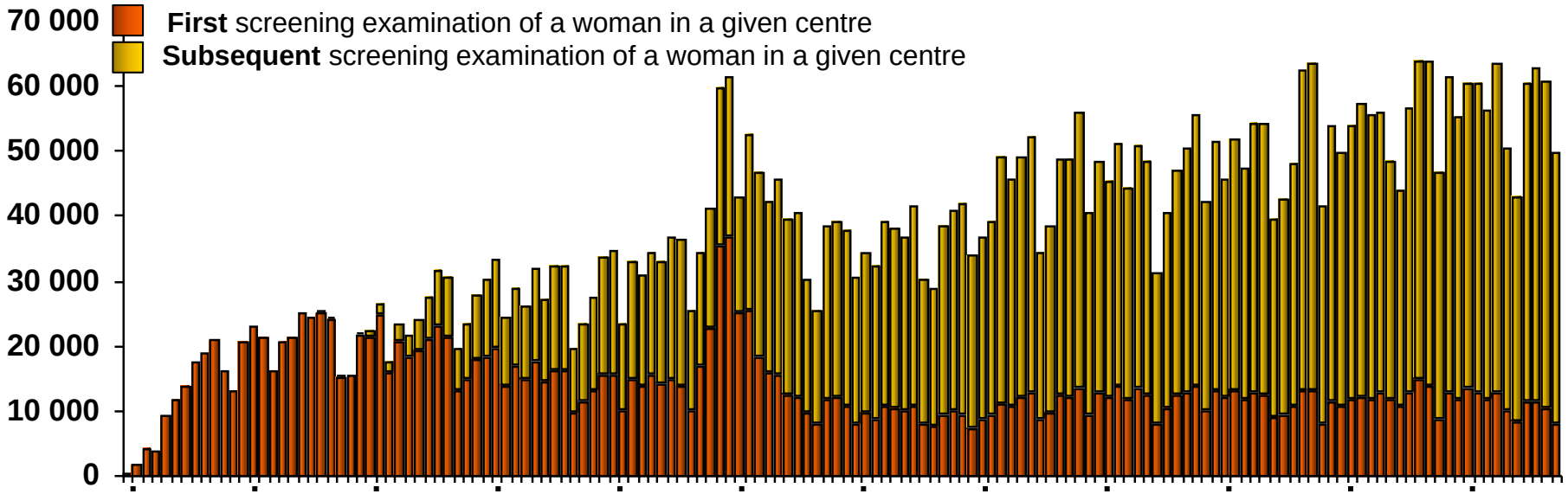


microcalcifications

# Monthly volumes of screening examinations (2014)

*n* = 5,546,037 examinations

**Number of screening examinations**

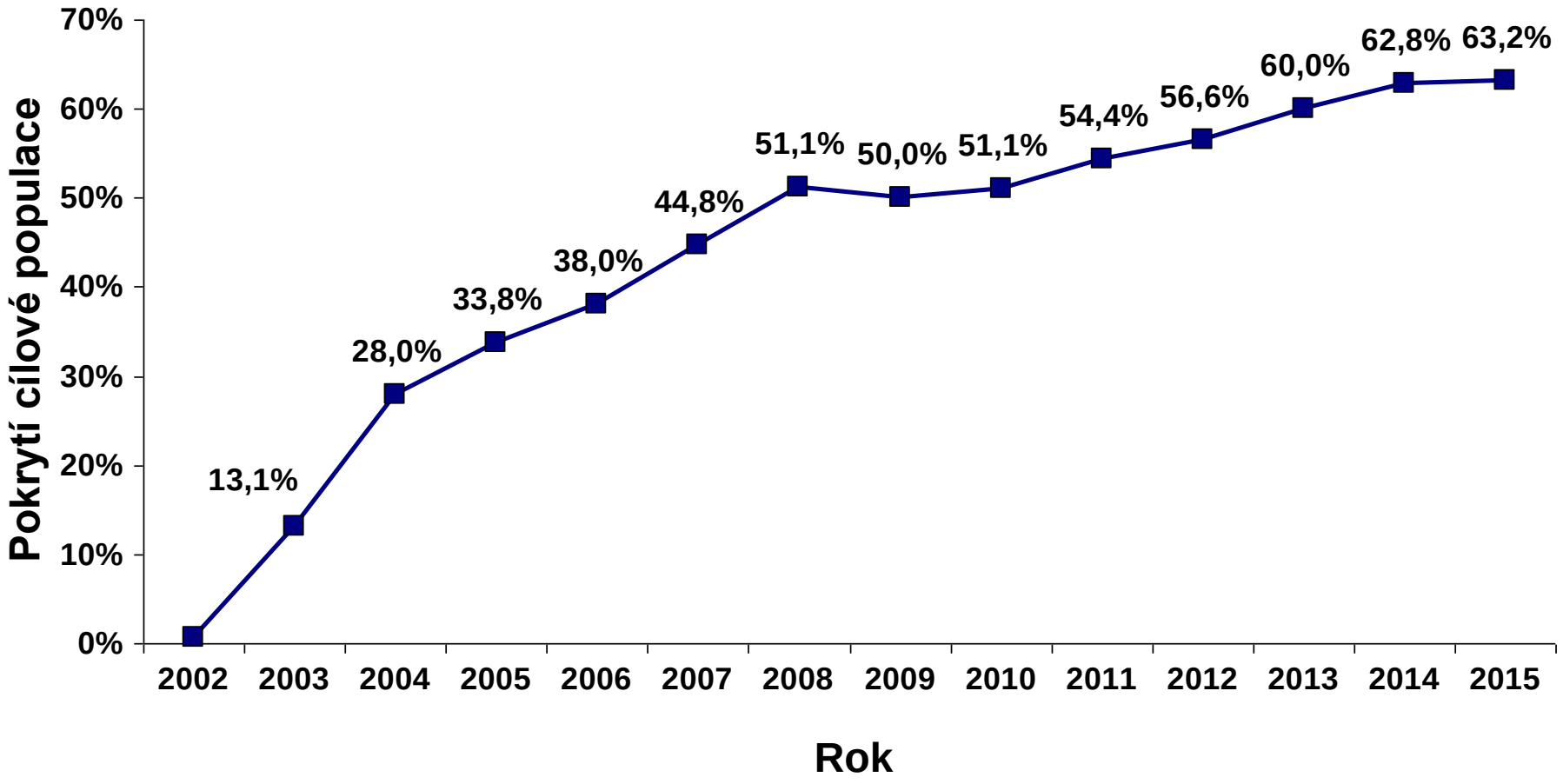



| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| First | 10 045 | 212 394 | 258 508 | 220 595 | 170 651 | 232 408 | 159 188 | 110 780 | 130 118 | 142 548 | 137 119 | 141 853 | 134 002 |
| Subs. | 0 | 22 | 6 467 | 96 206 | 169 714 | 236 624 | 309 168 | 324 828 | 408 205 | 412 903 | 464 925 | 507 509 | 549 257 |
| Total | 10 045 | 212 416 | 264 975 | 316 801 | 340 365 | 469 032 | 468 356 | 435 608 | 538 323 | 555 451 | 602 044 | 649 362 | 683 259 |

**In the long term, there is a clearly growing trend in the volume of examinations. Subsequent screening examinations predominate – i.e. women return to be screened.**

# Time trend in coverage with breast cancer screening

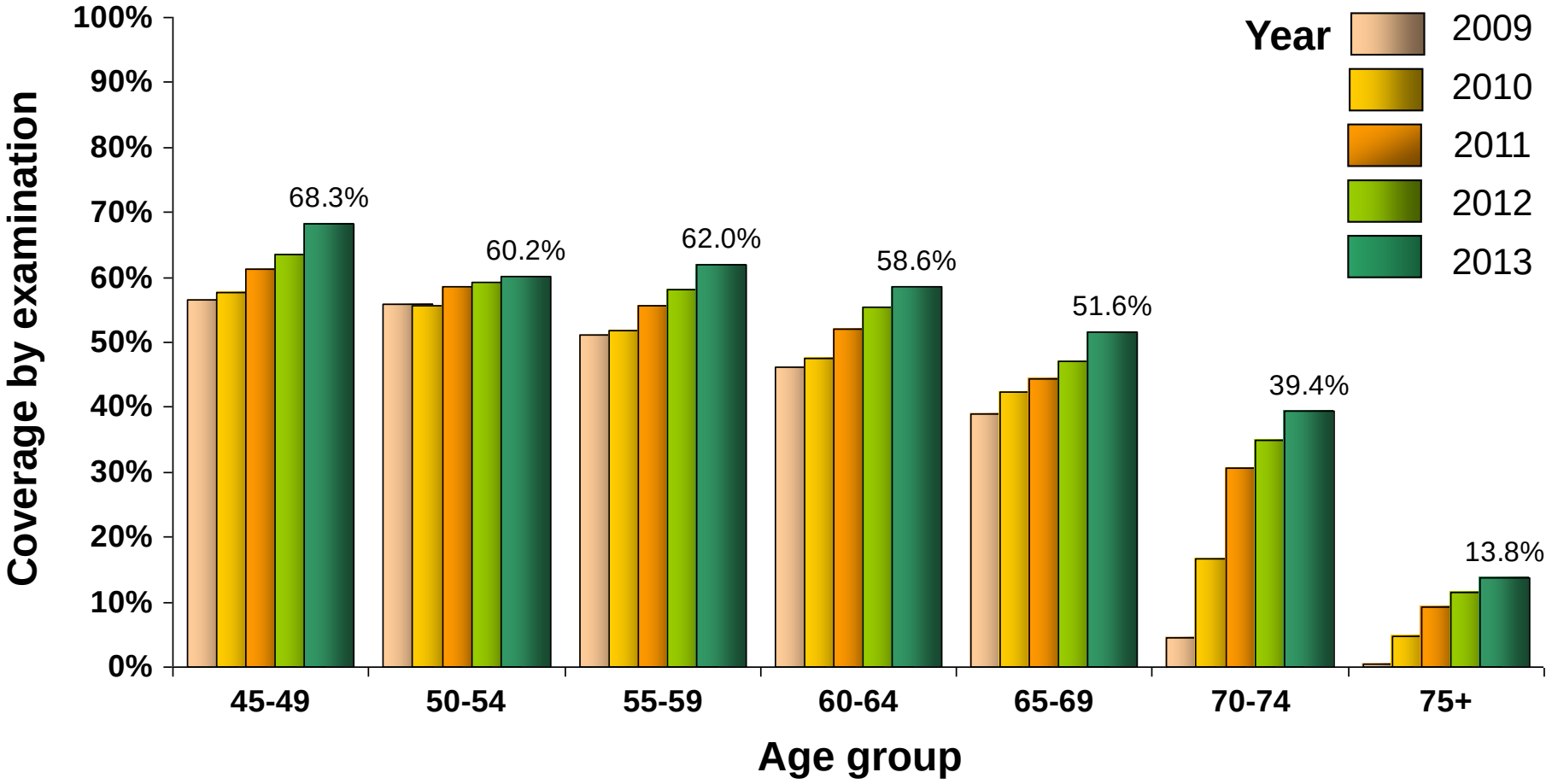
(věková skupina **45-69 let,** rok 2015: 1 756 629)




- About a half of the population of women aged 45 to 69 has been covered
- with breast cancer screening since 2008.
- The coverage has increased slightly in the last year, currently achieving 63%.

# Time trends in coverage by age groups

(age group **45 and over**, entire target population in 2013: 2,474,691)




**Coverage is higher in younger women.**

**Coverage has slightly increased in most age groups, including the newly involved group of women aged over 70.**

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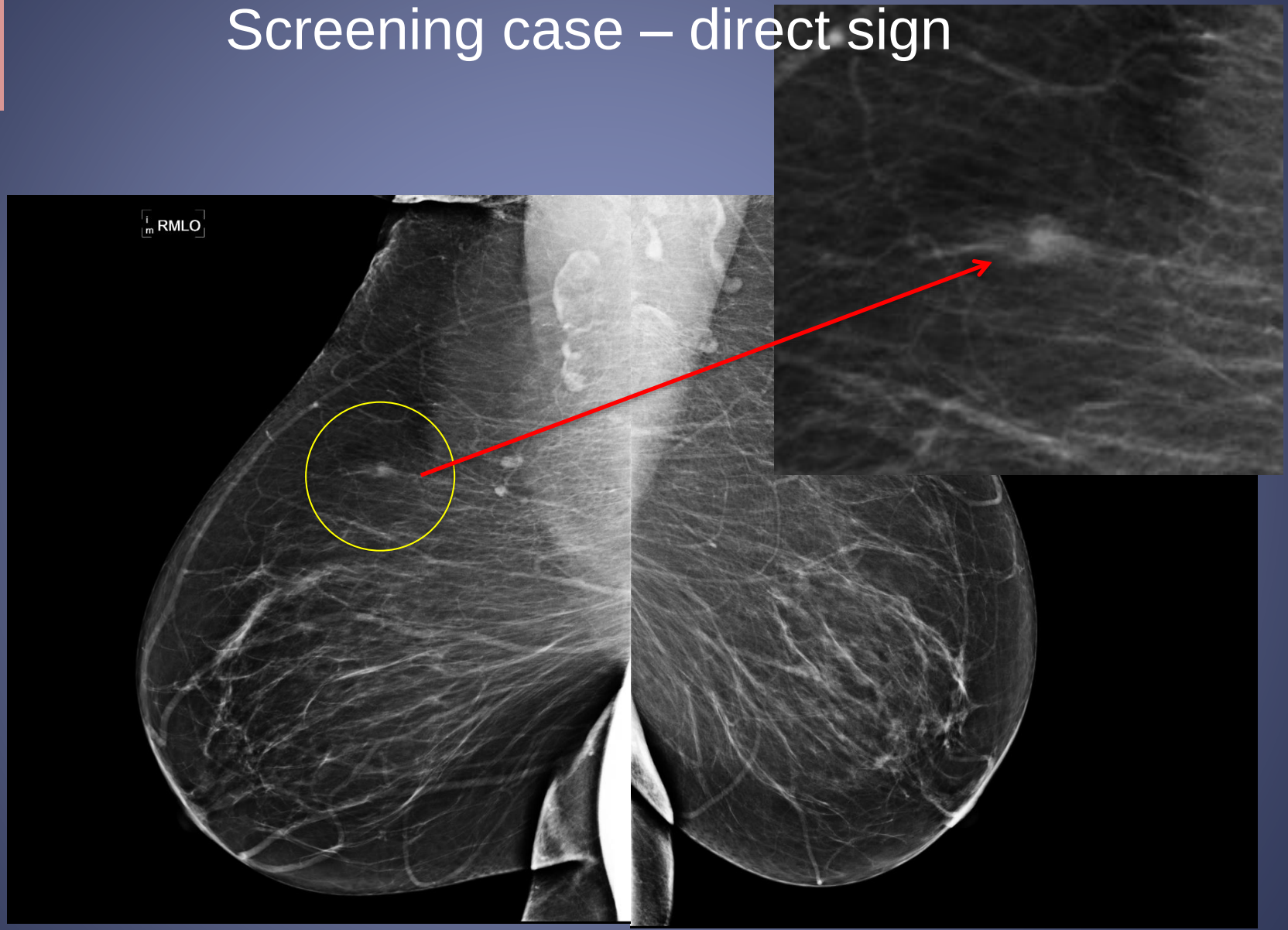
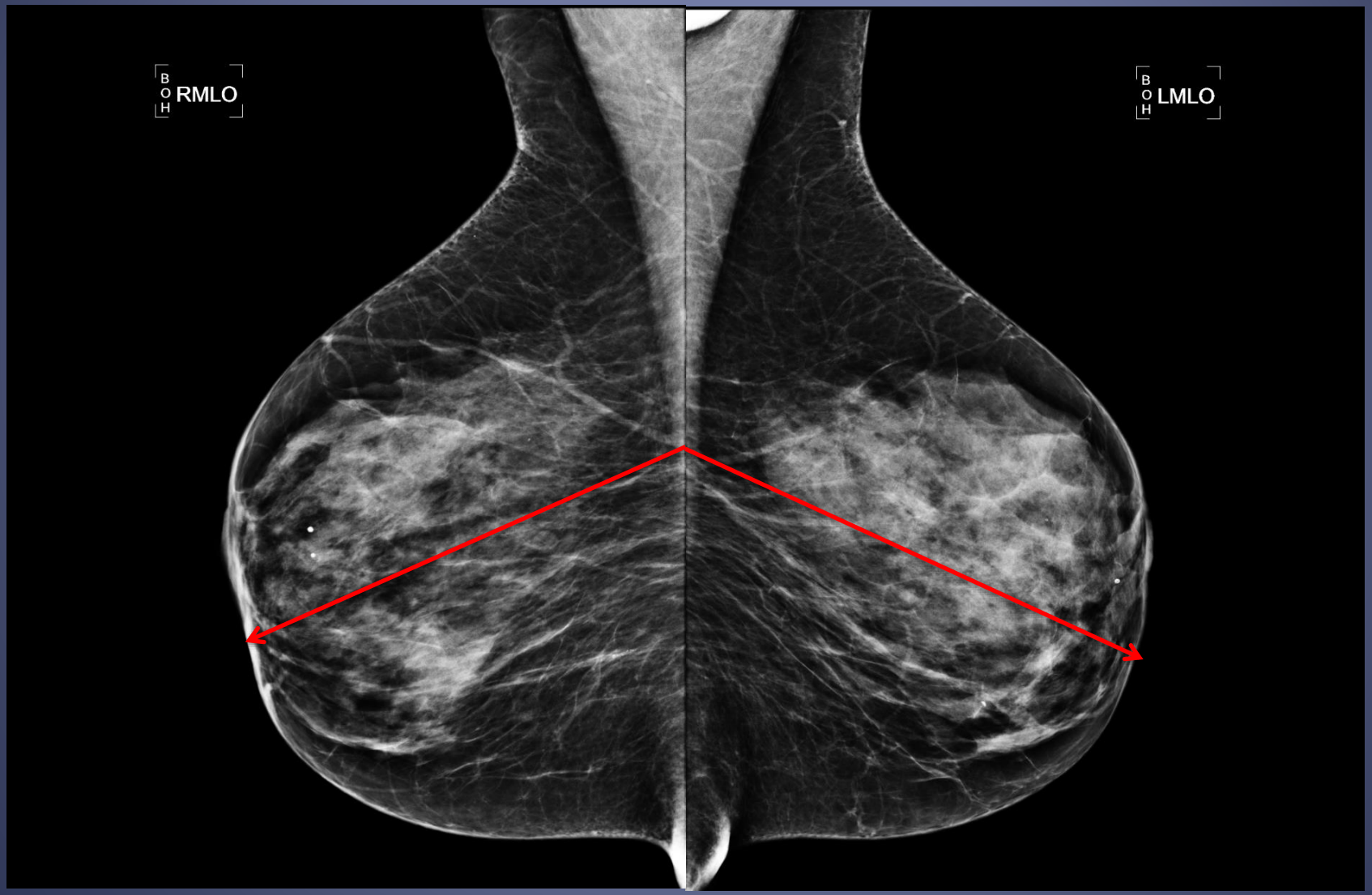
# 7

## Main aim – unpalpable lesion

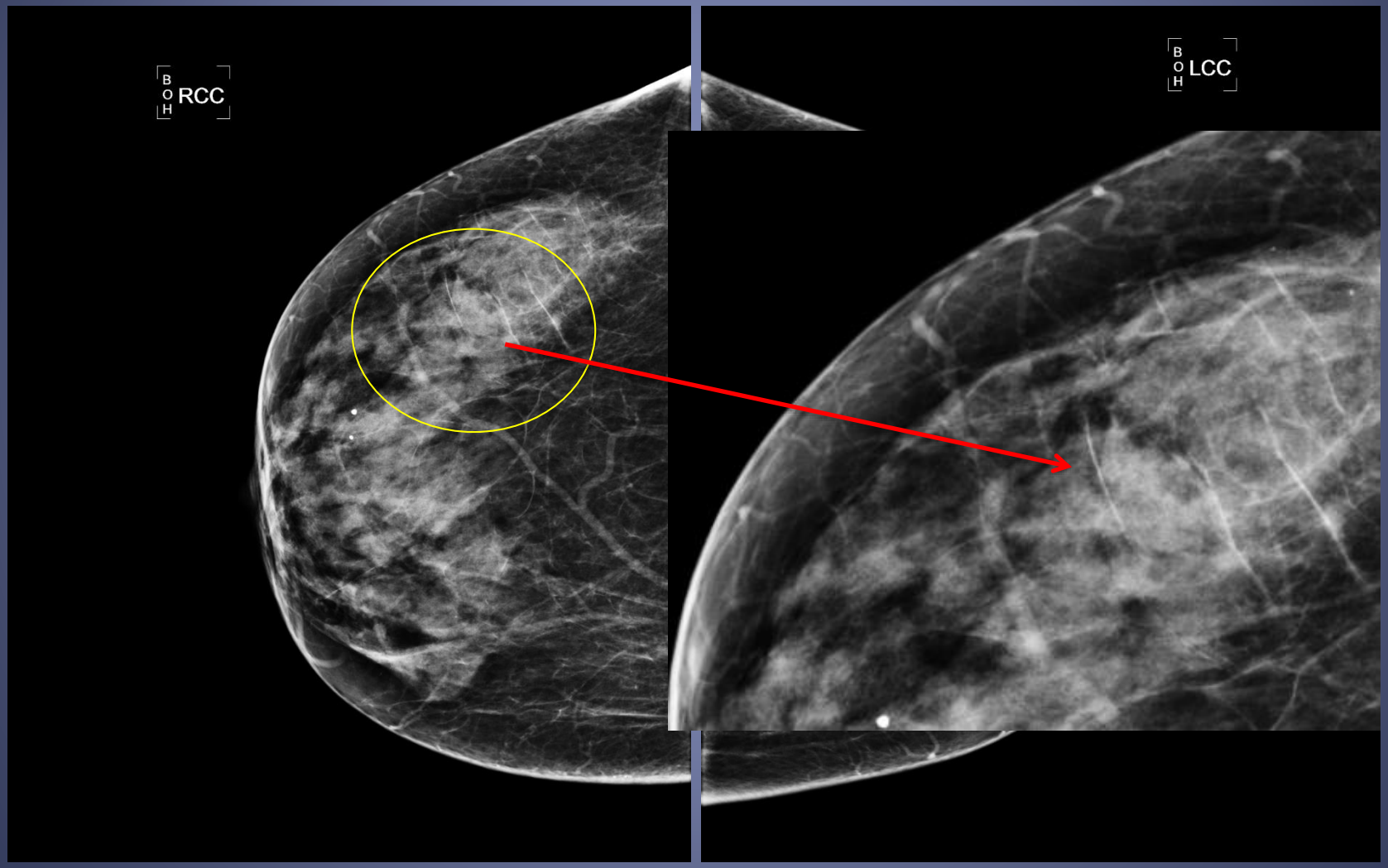
# Screening case – direct sign



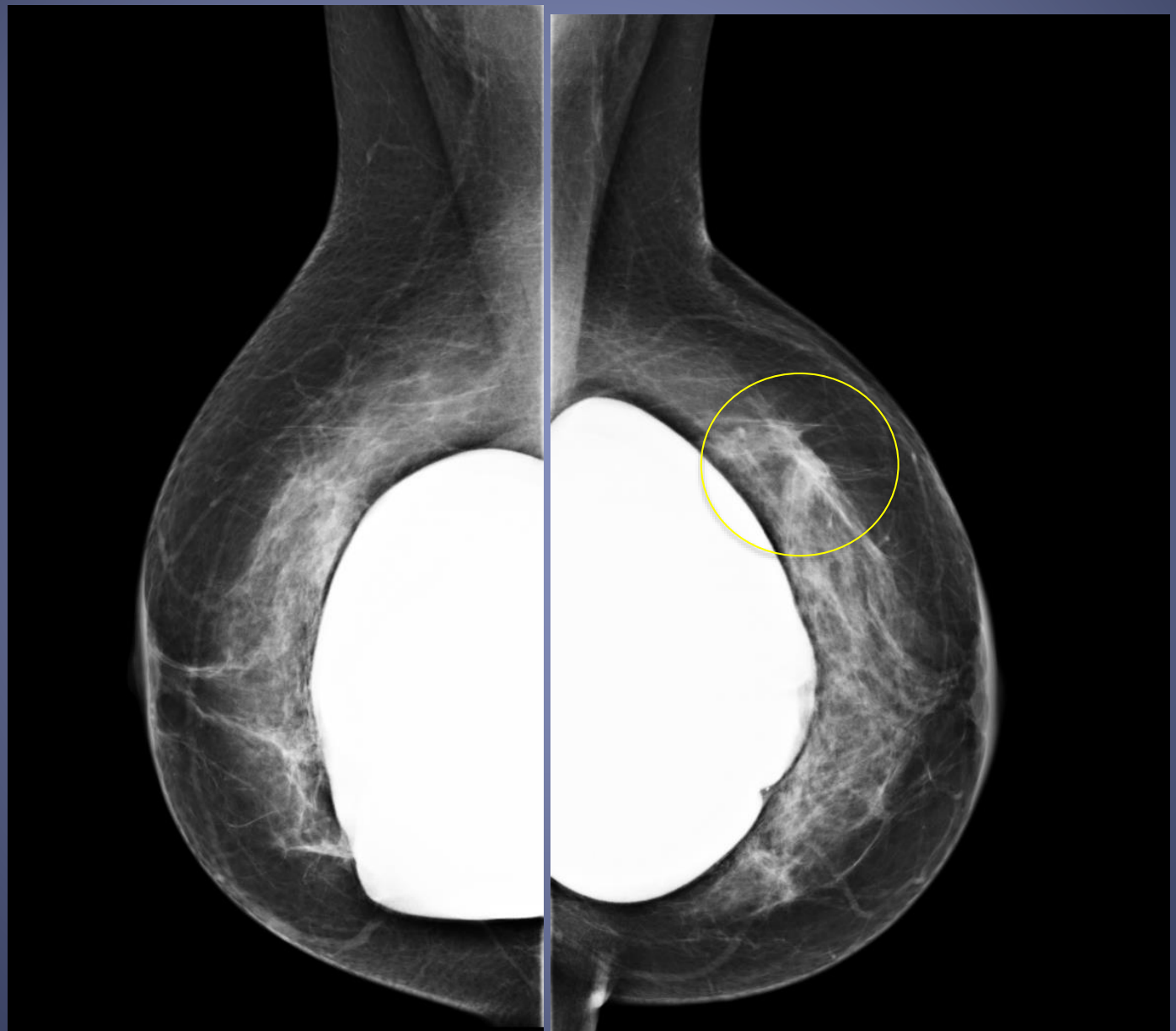
# Screening case - undirect sign

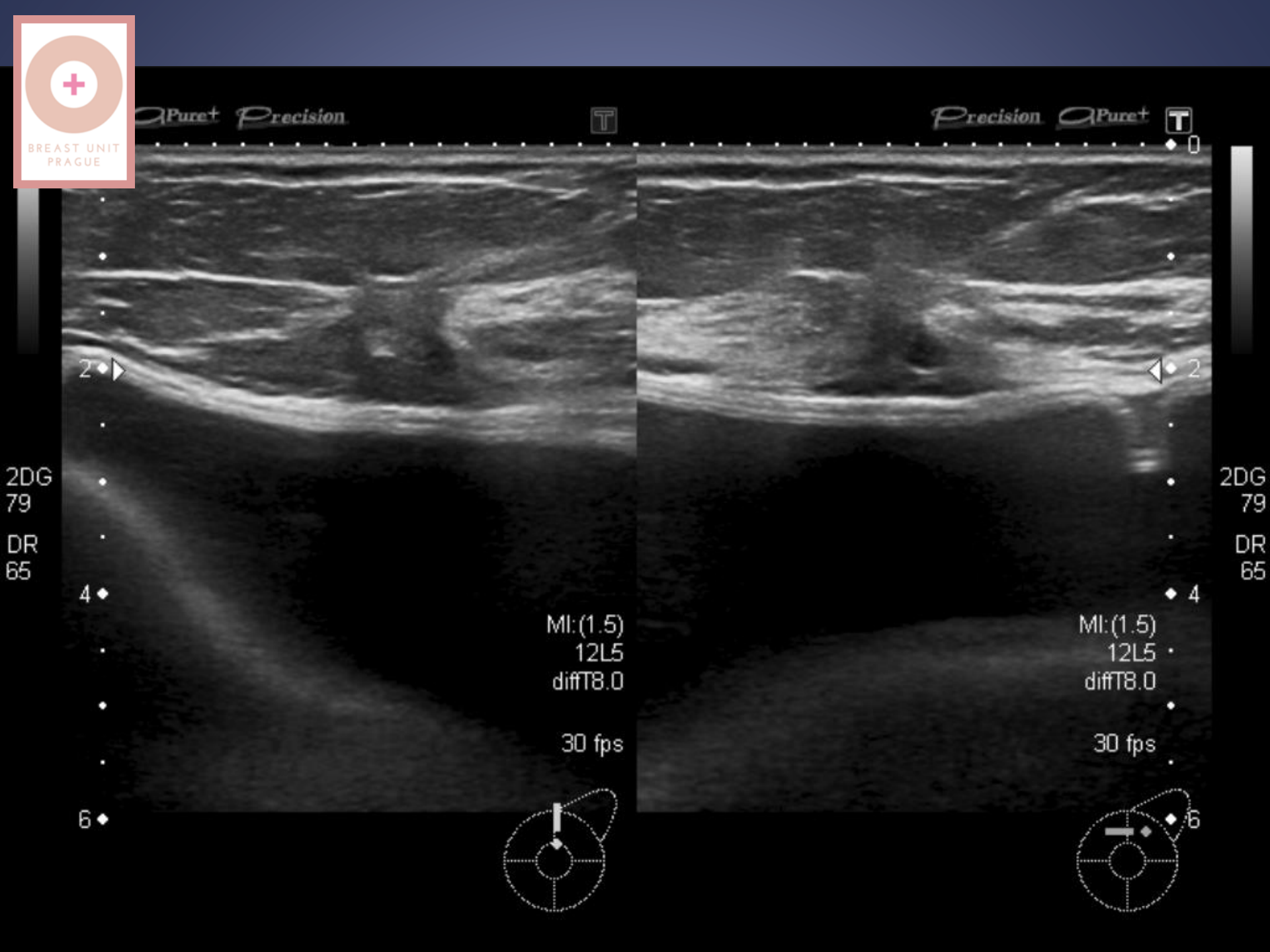


# Screening case – undirect sign



# Screening case




BREAST UNIT
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diffT8.0
30 fps
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# 7

# Conclusion

# Conclusion. Take home message

- **Breast cancer is one of the most common cancers in women.**
- **In the recent period, mortality rates for breast cancer in the Czech Republic have decreased significantly.**
- **Early detection due to the organised breast cancer screening programme contributes to positive trends.**
- **High quality of the screening programme is a key prerequisite; long-term monitoring based on data audit contributes to high quality of the programme.**
- **The participation rate of Czech women has been growing continuously (also thanks to the introduction of personalised invitations), and gets closer to the most successful population-based programmes in Europe.**