

The Norwegian Breast Cancer Screening Program (NBCSP)

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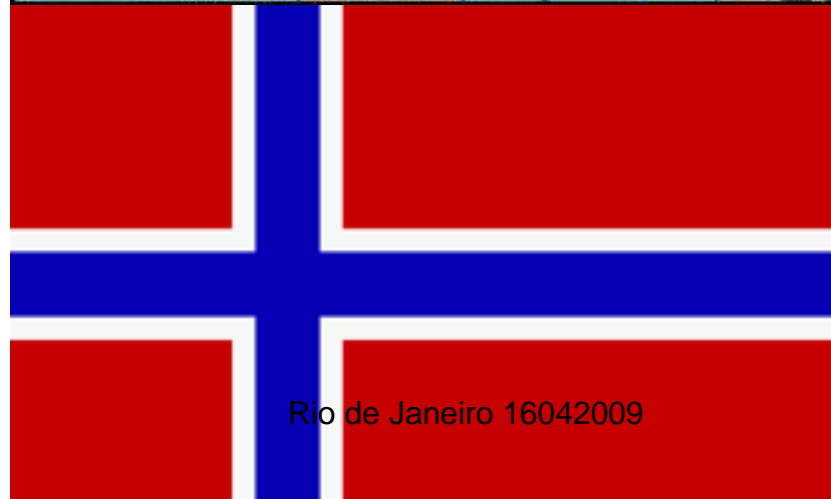
Head of NBCSP

The Cancer Registry of Norway

Institute of Population-Based Cancer Research, Oslo, Norway



- > The Cancer Registry of Norway and some statistics
- > Organization and logistics of the NBCSP
- > Results of Early Outcome and Selected Process Indicators



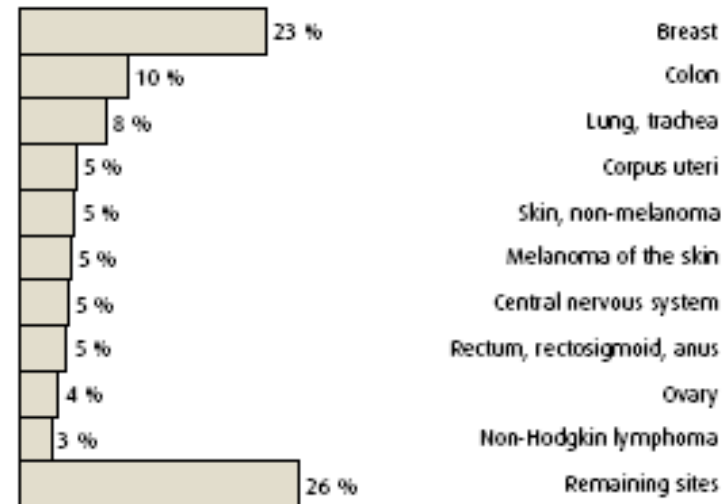
Rio de Janeiro 16042009

The Cancer Registry of Norway

- > Established in 1951
- > Nationwide, population based
- > Mandatory by law to report all new cancer cases, without consent
- > Primary goal is the establishment and dissemination of new knowledge which contributes to the reduction of cancer.
- > 225 000 notifications related to cancer illness every year. Of these, almost 25 000 are newly diagnosed
- > Screening programs:
 - Breast
 - Cervix

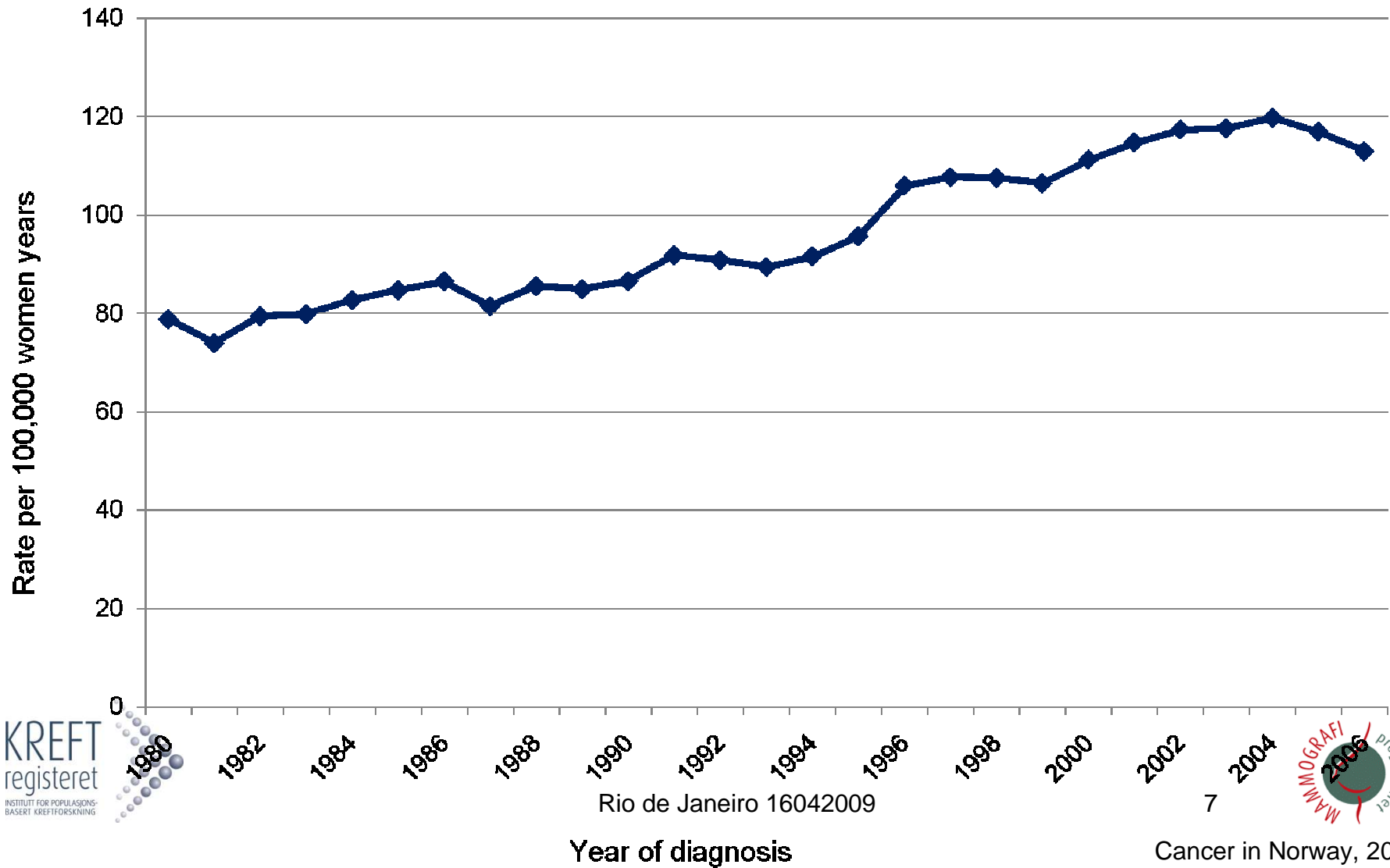
The most frequent incident cancers 2003- 2007

FEMALES all ages (59 258 cases)

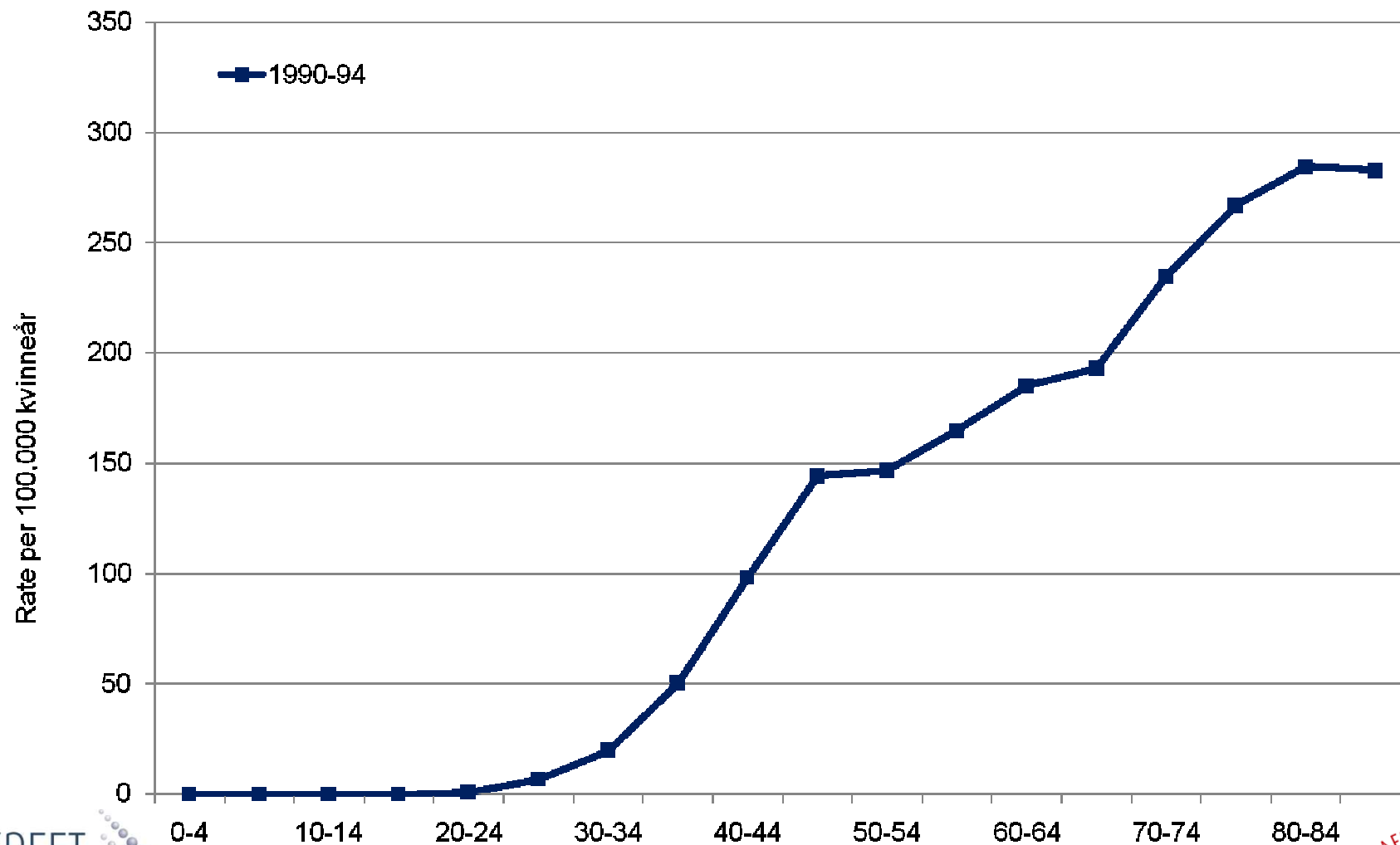


Incidence of invasive breast cancer in Norway

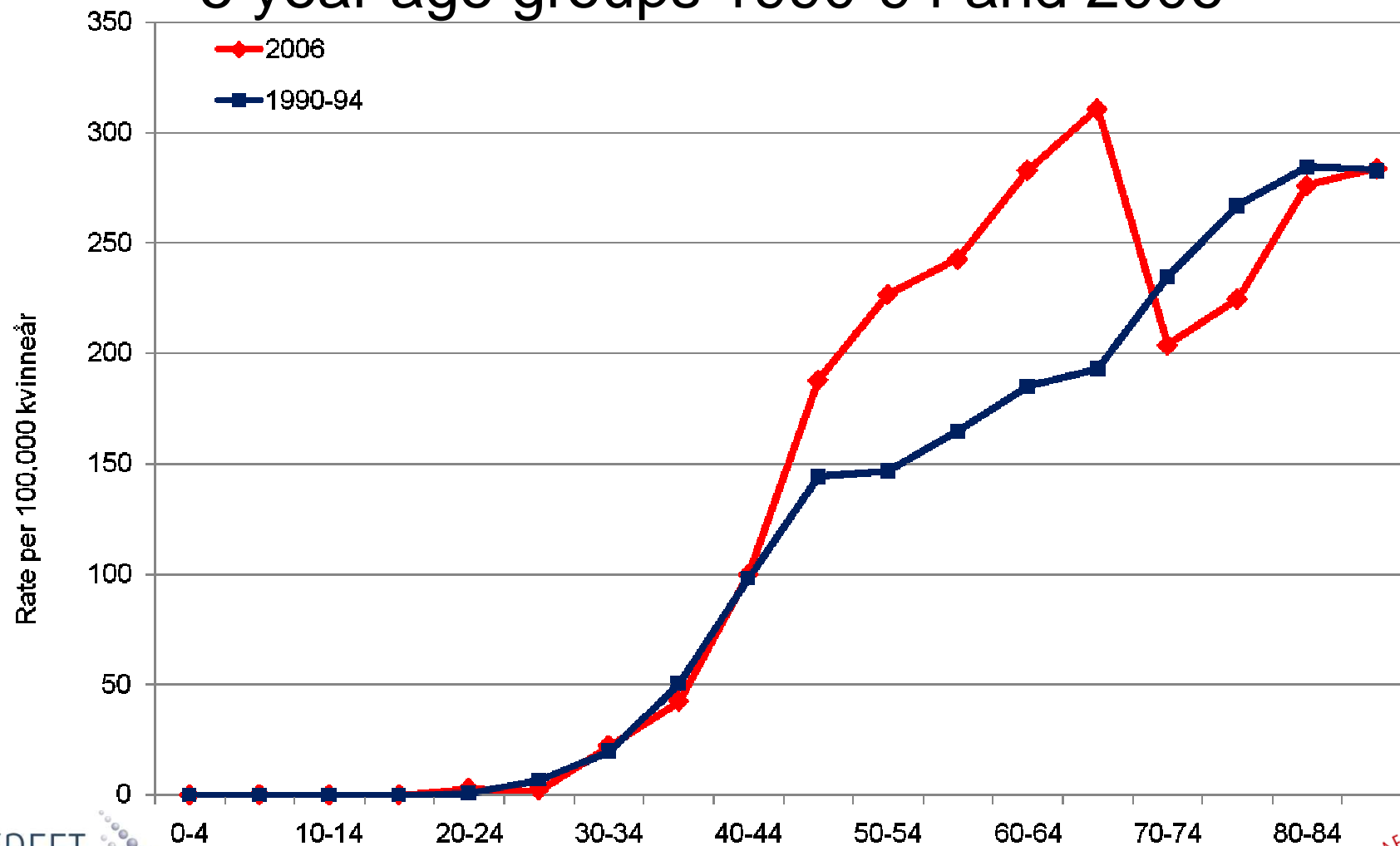
(all ages, not age adjusted)



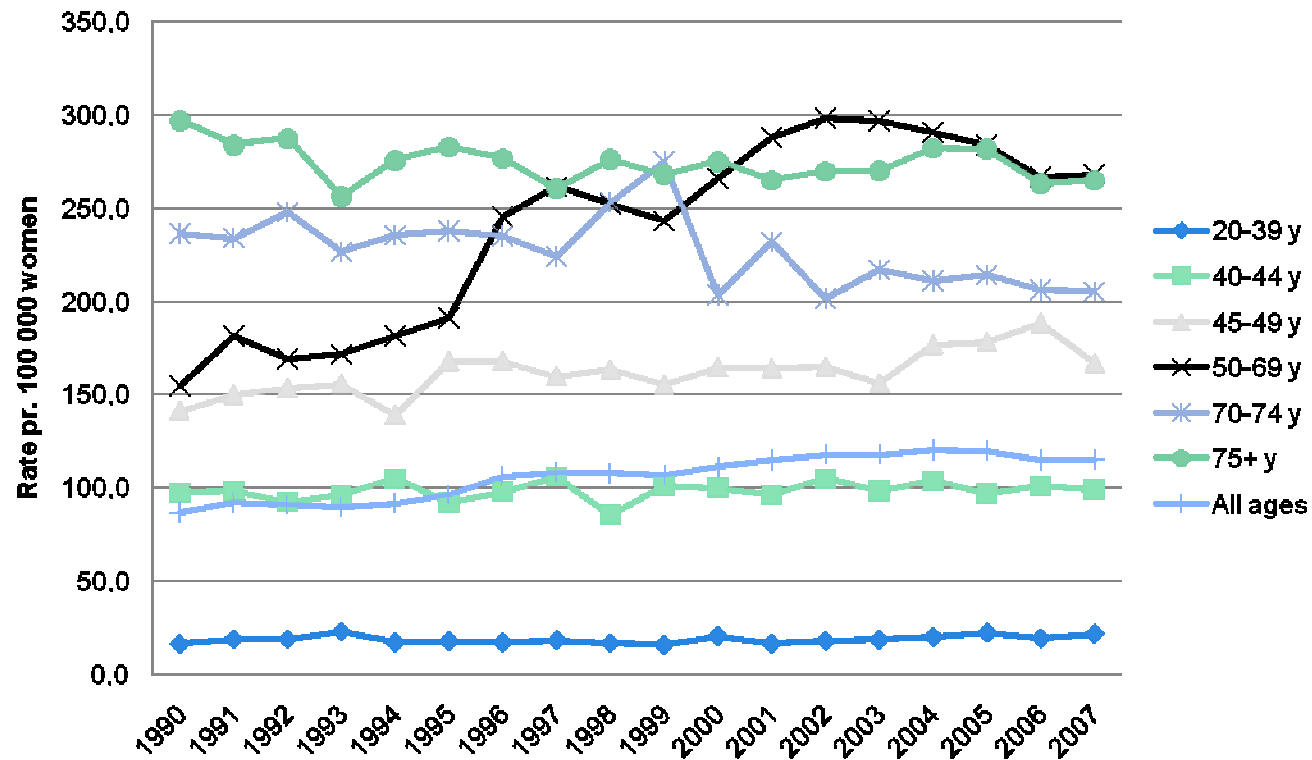
Incidence of breast cancer – 5 year age groups 1990-94



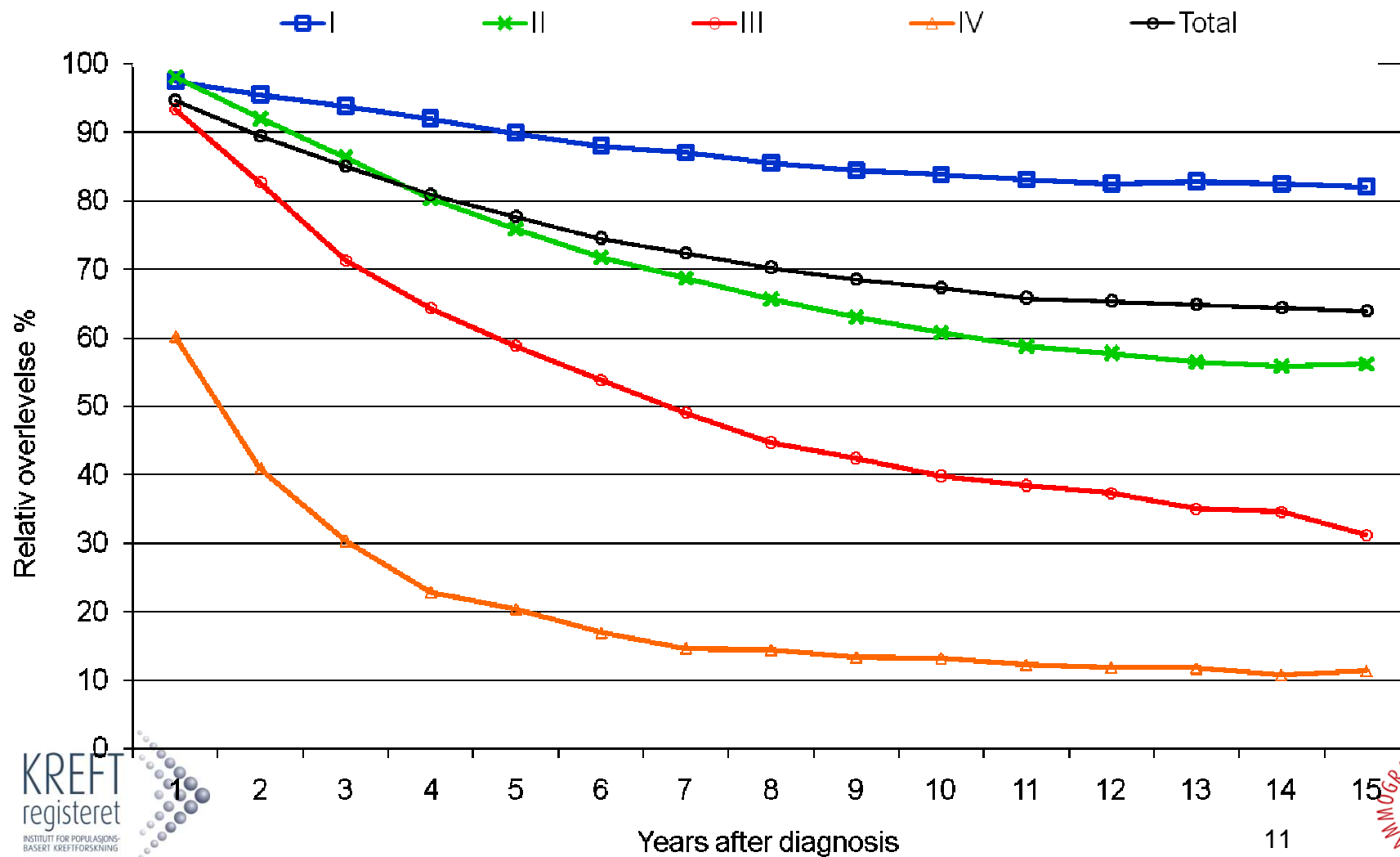
Incidence of breast cancer – 5 year age groups 1990-94 and 2006



Incidence of breast cancer in Norway

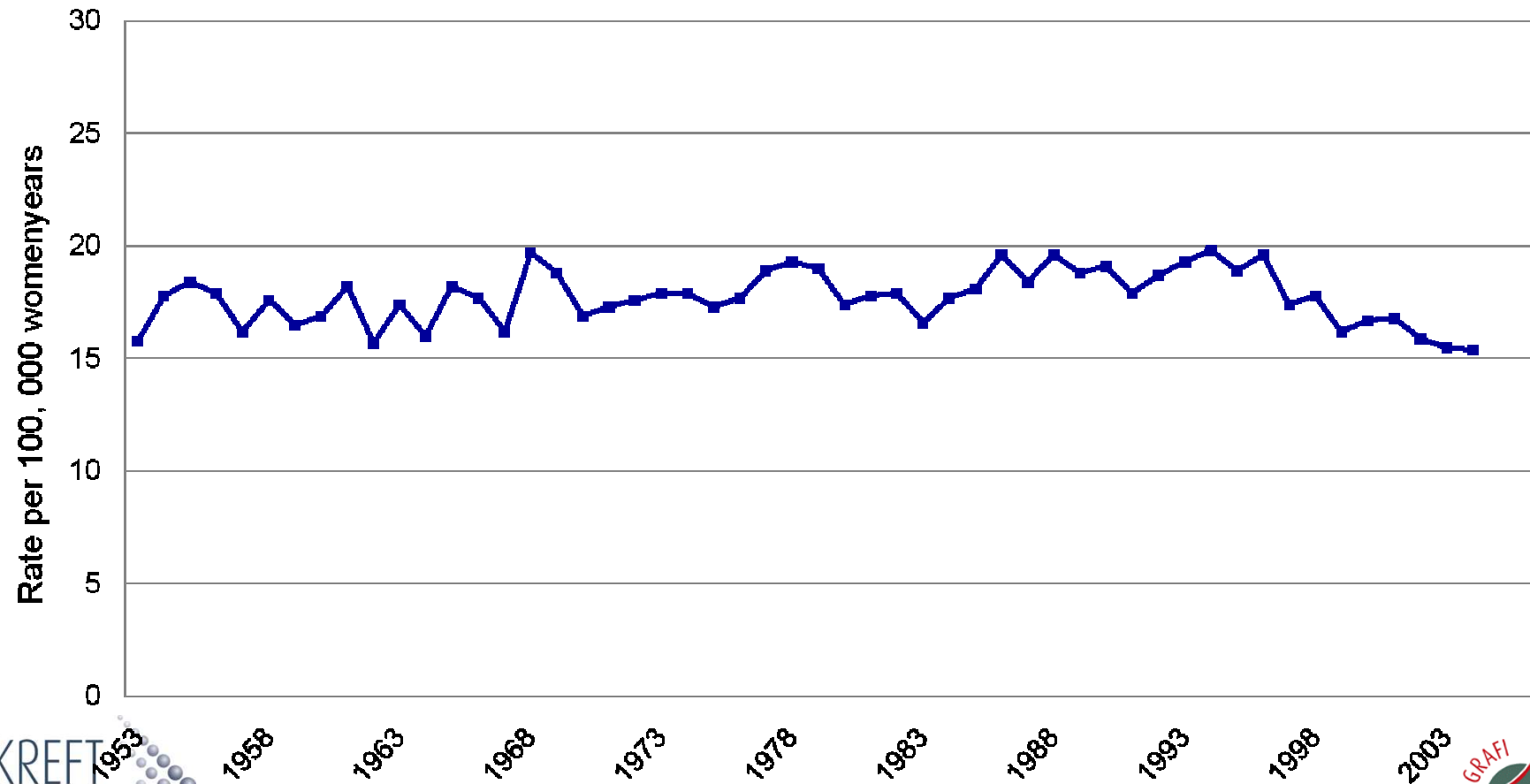


Relative survival from breast cancer diagnosed 1990-94, all ages



Mortality from breast cancer 1953-2003

Age adjusted rates



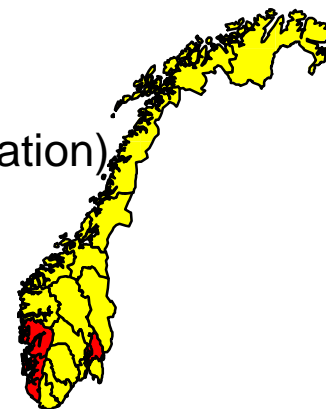


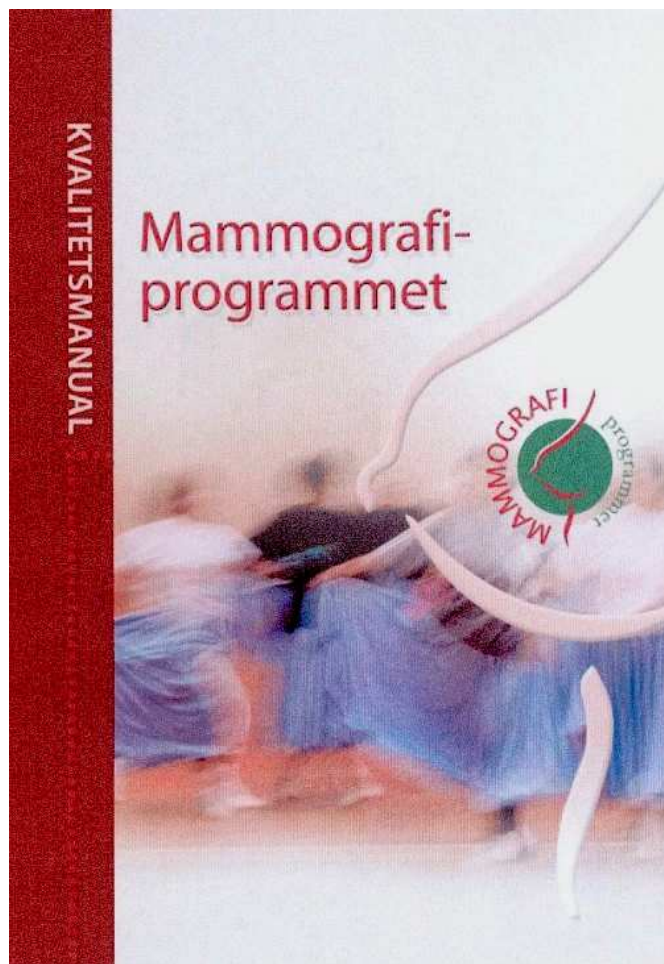


The Norwegian Breast Cancer Screening Program (NBCSP)

NBCSP

- > Start: 1995 in 4 pilot counties (40% of the target population)
- > Expansion: 1998
- > Nationwide: 2004
- > Owned by the Health Authorities
- > Managed by the Ministry of Health and Care Services
- > Administered by the Cancer Registry of Norway
- > Co-operation between:
 - > The Cancer Registry of Norway (administration)
 - > The Norwegian Institute of Public Health
 - > The Norwegian Radiation Protection Authority
 - > The Health Trusts/counties
- > National Advisory group: quality assurance
 - > Different professions
 - > Quality assurance manual





www.kreftregisteret.no

NBCSP

Population registry:	11-digit number
Target population:	50-69 year, 500 000 at the time being
Invitation :	Personal letter,
Own risk :	25 Euro/ 40 US\$
Screening procedures:	32 stationary and mobile units, 12/hour
Work up:	at 17 centralized breast units (breast centers)

Two-years screening interval, two views

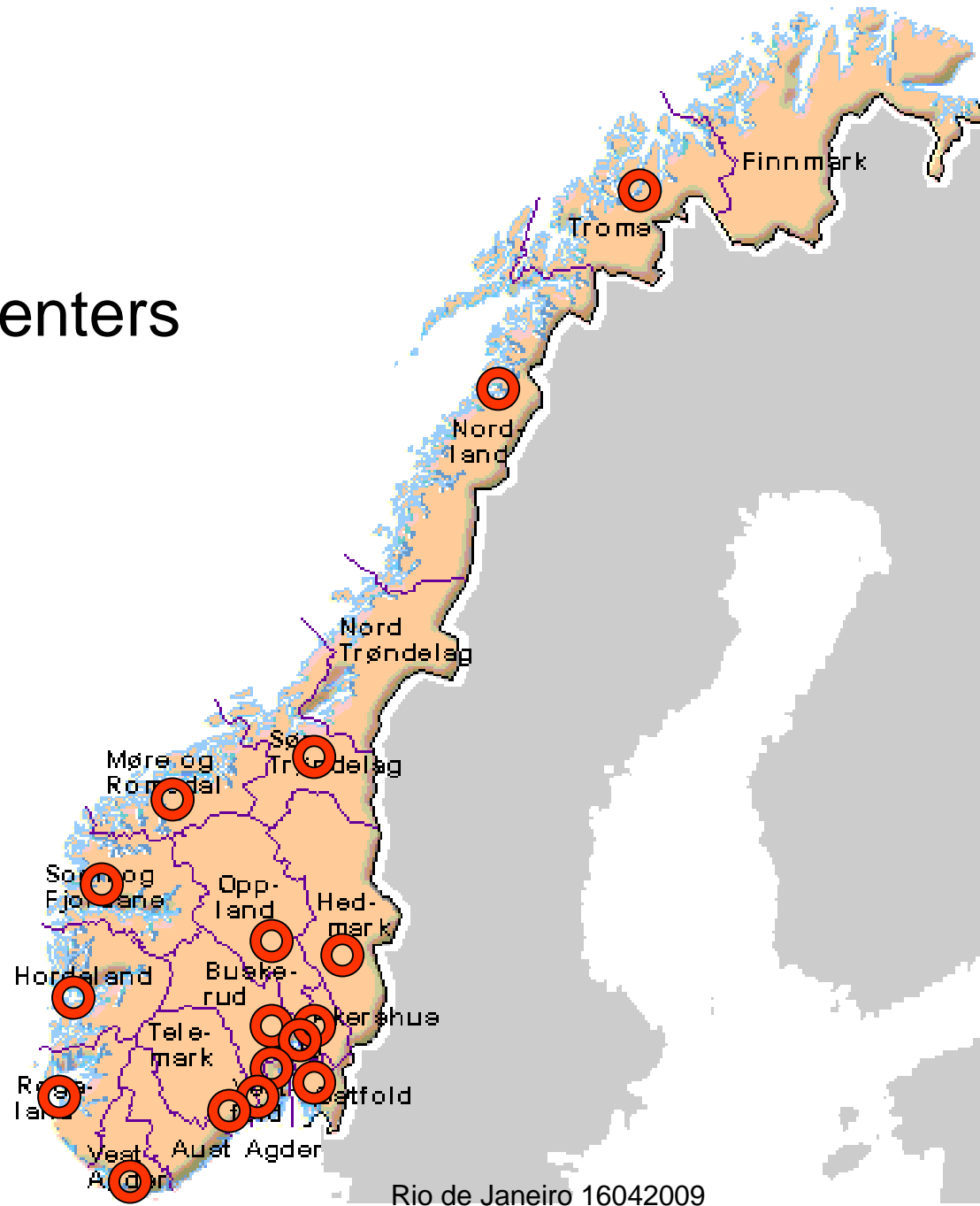
Double independent reading

Coding and reports: All units report all activity to the Mammography database at the Cancer Registry

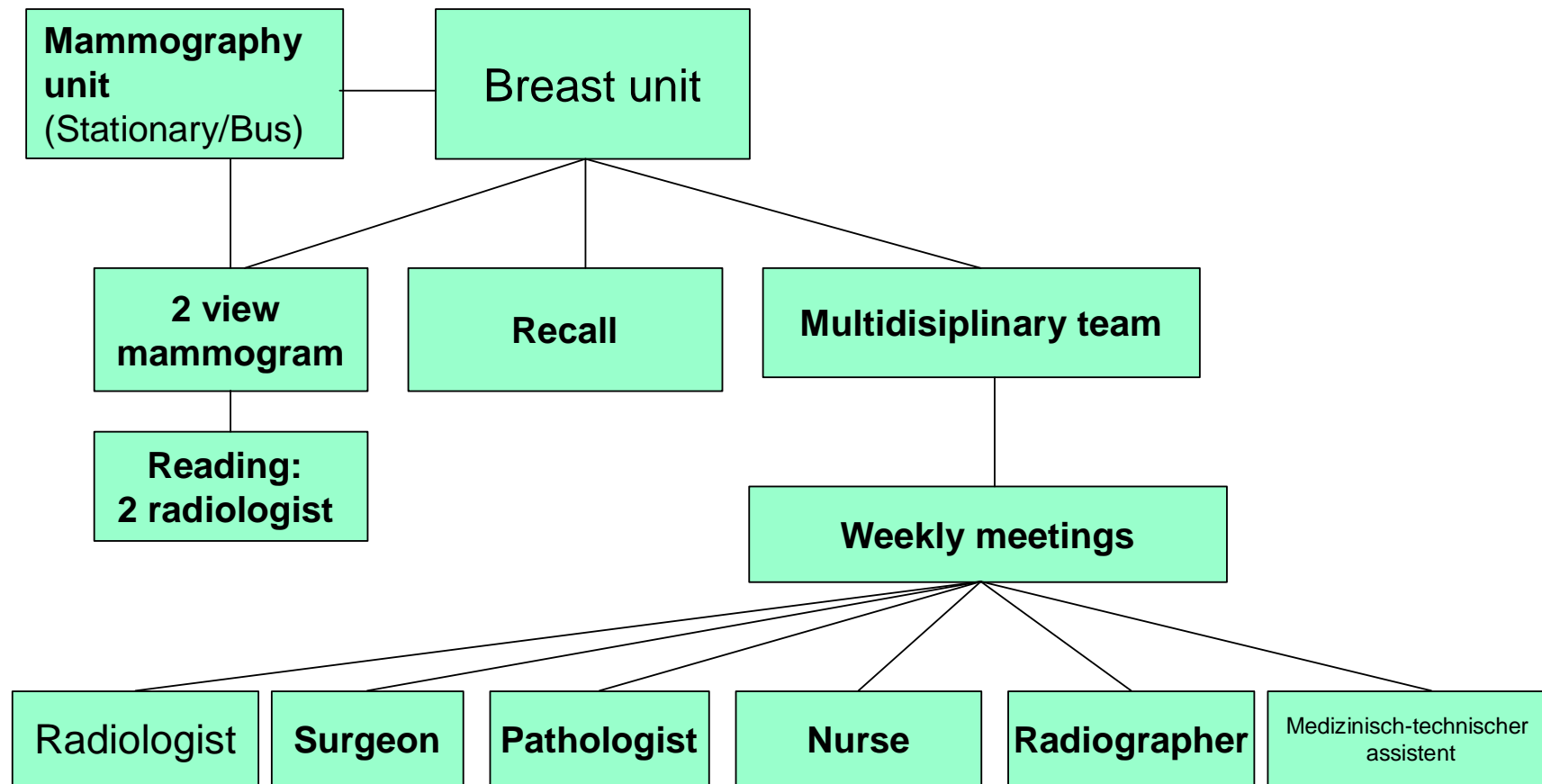
Quality assurance: Quality assurance manual
The Norwegian Radiation Protection Authority

NBCSP

breast centers

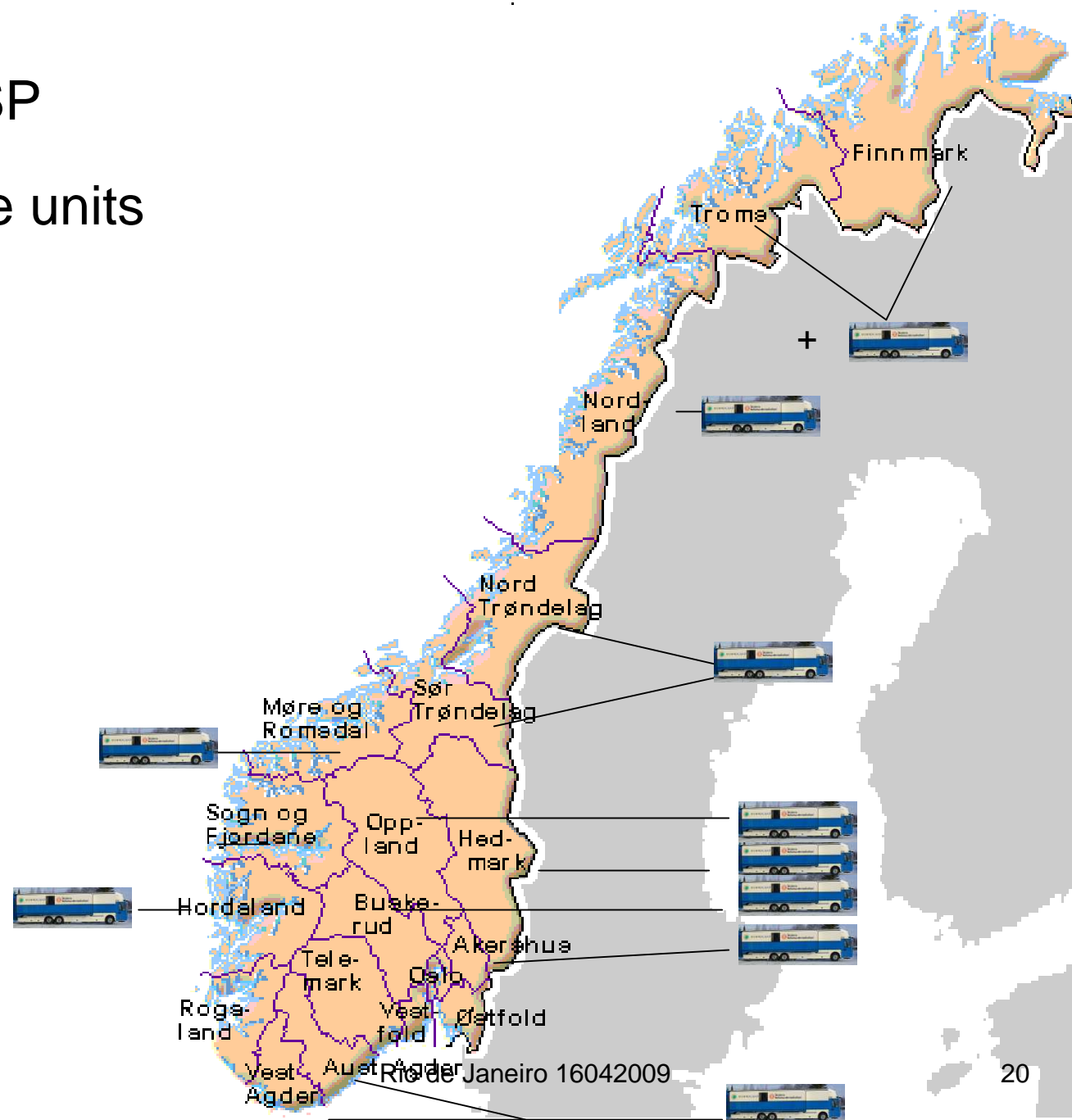


NBCSP - Organization



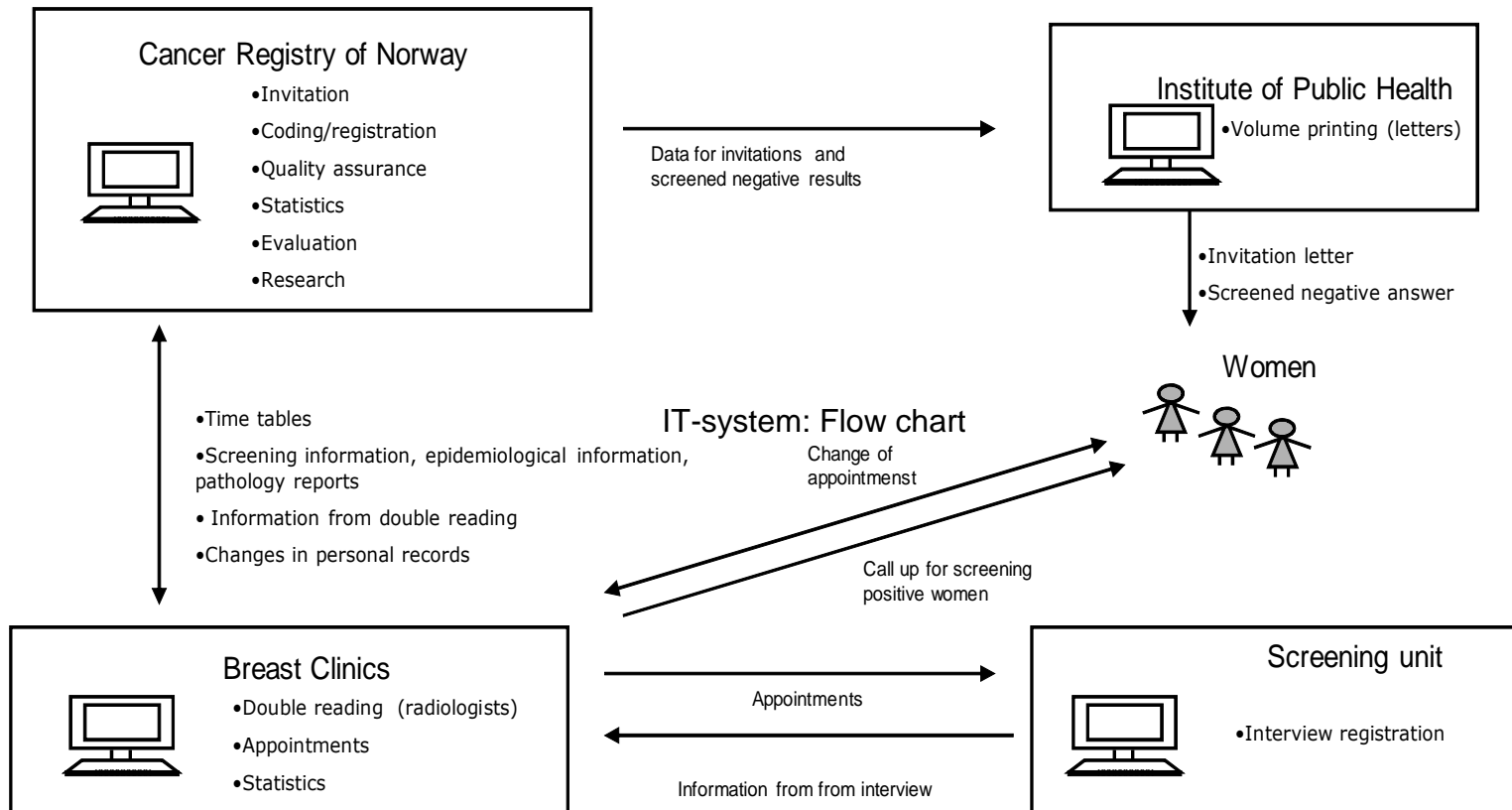
NBCSP

mobile units

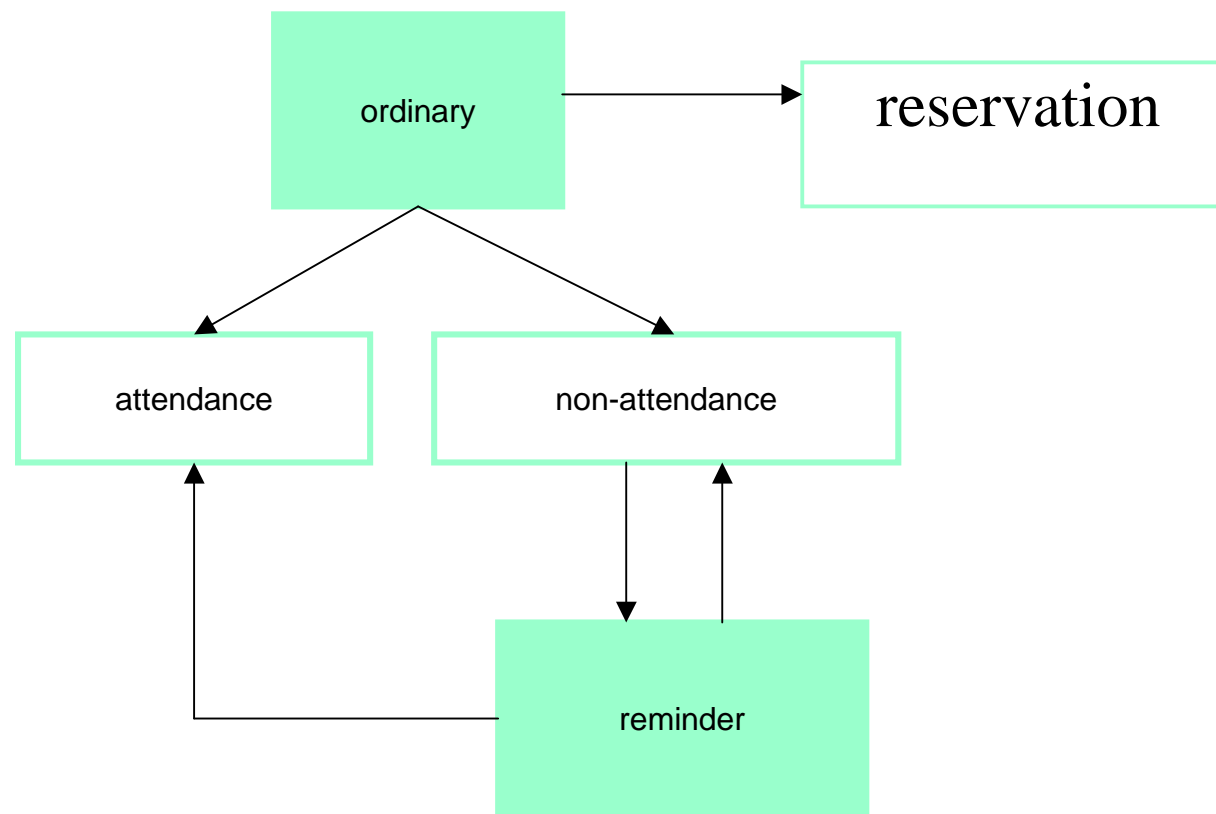




IT-system: Flow chart



NBCSP - Invitation



NBCSP

The aim is to reduce breast cancer mortality by 30% among the invited women

NBCSP

Intermediate indicators are developed to measure effect of performance on service screening programs:

- Attendance rate
- Recall rate
- Detection rate
- Stage and morphological characteristics
- Interval cancer

Attendance

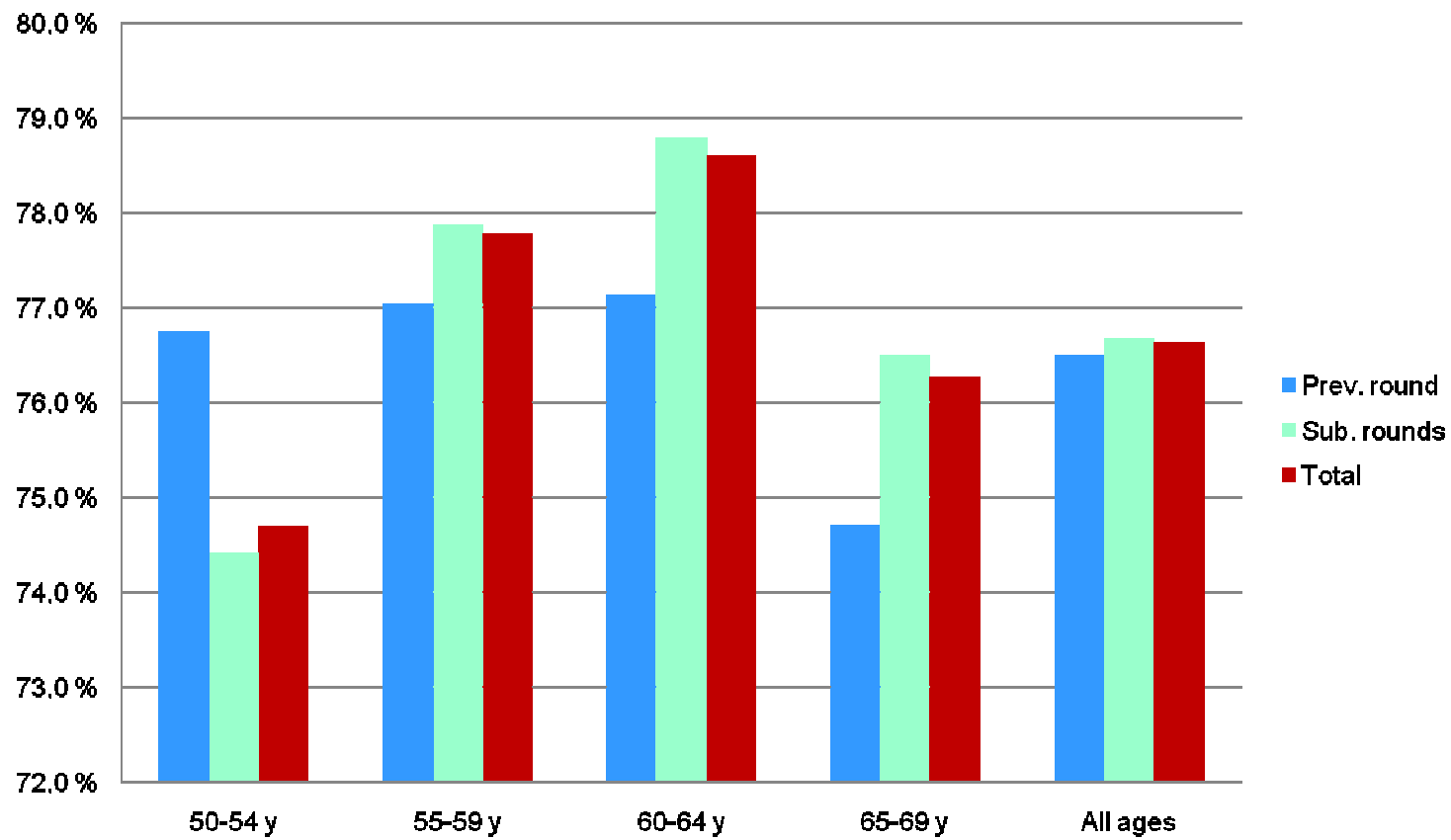
	Prevalent round	Subsequent round	Total
Total attendance	76,5 %	76,7 %	76,6 %
- Stationary units			75,8 %
- Mobile units			79,6 %

	Prevalent round	Subsequent round	Total
City*	73,8 %	69,4 %	70,1 %
Rural**	86,8 %	84,3 %	84,7 %

*The two counties with the most densely built-up areas (Oslo + Akershus)

** Two counties more sparsely populated (Hordaland + Rogaland)

Attendance in age cohorts



Recall and screen detection rates

	Prevalent screens N=488,696	European guidelines	Subsequent screens N=570,613	European guidelines
Recalls (n, %)	22,275 / 4.6	< 5.0	14,723 / 2.6	< 3.0
Screen cancers (n, %)	3,168 / 0.6		2,810 / 0.5	
Screen detection rate of invasive cancers / background incidence	534 / 180 3.0	> 3.0	408 / 180 2.3	> 1.5

Prognostic tumor characteristics in invasive screen detected breast cancer

	Prevalent screens N=2,609	European Guidelines	Subsequent screens N=2,326	European Guidelines
Tumor size				
Mean (mm)	15.2		14.1	
Median (mm)	13		12	
≤ 10mm (%)	34.3	≥ 25	30.7	≥ 30
< 15mm (%)	53.9	> 50	61.3	> 50
> 20mm (%)	18.4	< 25	15.6	< 20
<i>Unknown (n)</i>	88		102	
Grade				
1 (%)	38.0		34.3	
2 (%)	47.8		48.5	
3 (%)	14.2		17.2	
<i>Unknown (n)</i>	139		110	
Axillary lymph node metastasis				
No metastases (%)	74.1	> 70	75.2	> 75
<i>Unknown (n)</i>	131		199	
Hormone receptor status				
Estrogen positive (%)	88.8		86.3	
<i>Unknown (n)</i>	331		316	
Progesterone positive (%)	69.5		65.5	
<i>Unknown (n)</i>	362		360	

Incidence and tumor characteristics of breast cancer diagnosed before and after implementation of a population-based screening-program

Hofvind S, Sorum R, Thoresen S. Acta Oncol. 2007 Sep 12;:1-7

Tumor size	Before screening	Invited	Not invited	Exposed	Not exposed
≤ 20mm	778 (55.7)	2,561 (74.3) [§]	268 (63.8) [§]	2,244 (76.8) [§]	585 (61.8) [§]
> 20 ≤ 50mm	463 (33.2)	745 (21.6) [§]	122 (29.0) [§]	584 (20.0) [§]	283 (29.9) [§]
> 50mm	53 (3.8)	56 (1.6) [§]	12 (2.9)	41 (1.4) [§]	27 (2.9)
Grown into chest-wall, cutis	102 (7.3)	85 (2.5) [§]	18 (4.3) [§]	51 (1.7) [§]	52 (5.5)
No information	1, 138	610	165	471	304

Interval cancer detection rates

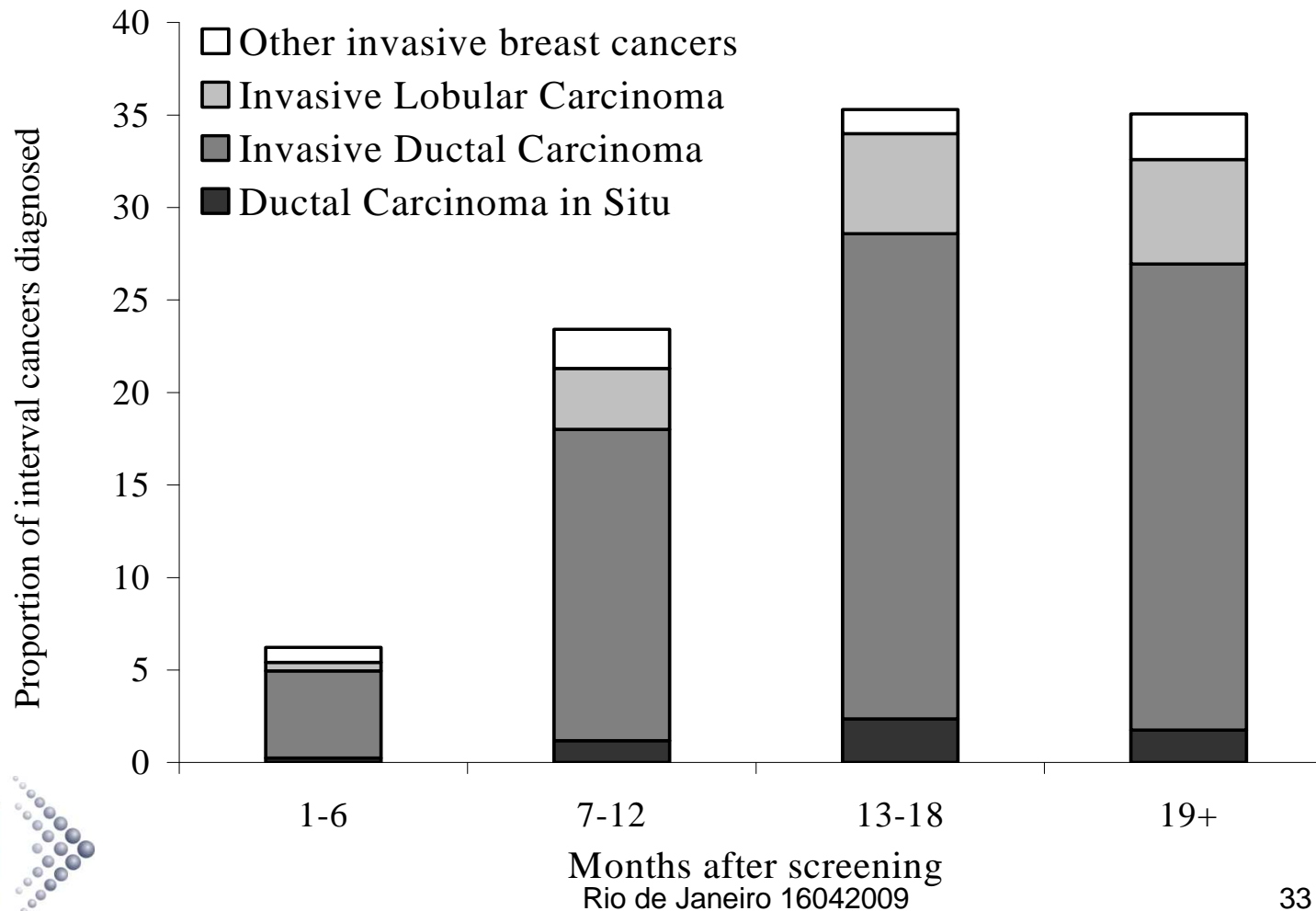
(Hofvind et al, Eur J Epi, 2007)

	Prevalent screens (n=448,696)	Subsequent screens (n=570,613)
DCIS	0.17	0.12
Invasive	1.65	1.69
DCIS + invasive (per 1000 screens)	1.72	1.81

Histological prognostic factors in invasive screen detected and interval cancers diagnosed in the NBCSP 1996-2005

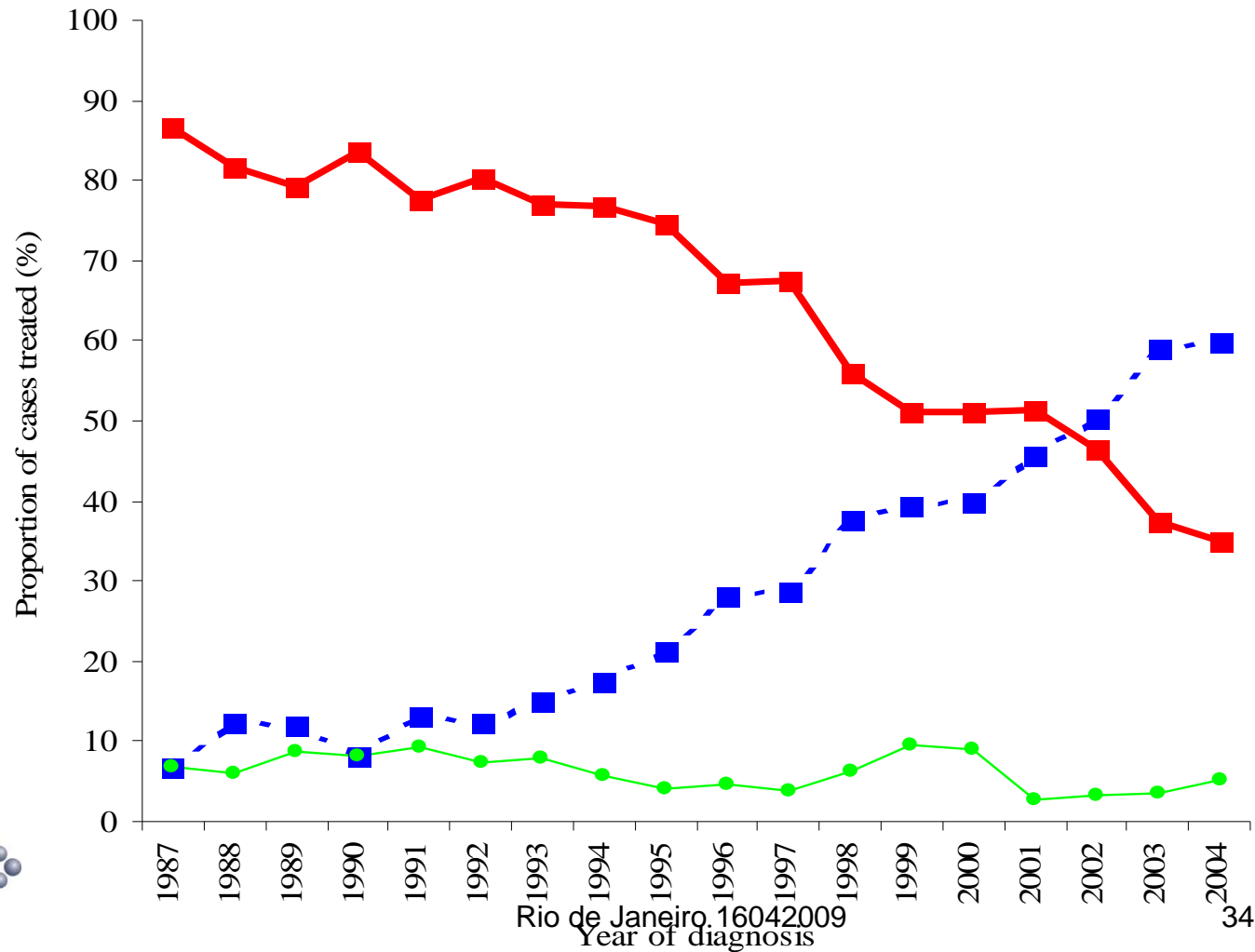
	Screen detected	Interval cancer	Chi- square
	N=4,945	N=1,173	
Tumor size			
Mean (mm)	14.7	21.2	<0.001
Median (mm)	13	18	
Unknown (n)	190	117	
Grade			
1 (%)	36.2	20.7	<0.001
2 (%)	48.2	48.6	
3 (%)	15.6	30.6	
Unknown (n)	249	63	
Axillary lymph nodes			
Negative (%)	74.6	56.2	<0.001
Unknown (n)	330	180	
Hormonal status			
Estrogen positive (%)	87.6	73.6	<0.001
Unknown (n)	647	155	
Progesterone positive (%)	60.6	53.0	<0.001
Unknown (n)	722	178	

Interval cancer – When do they appear?



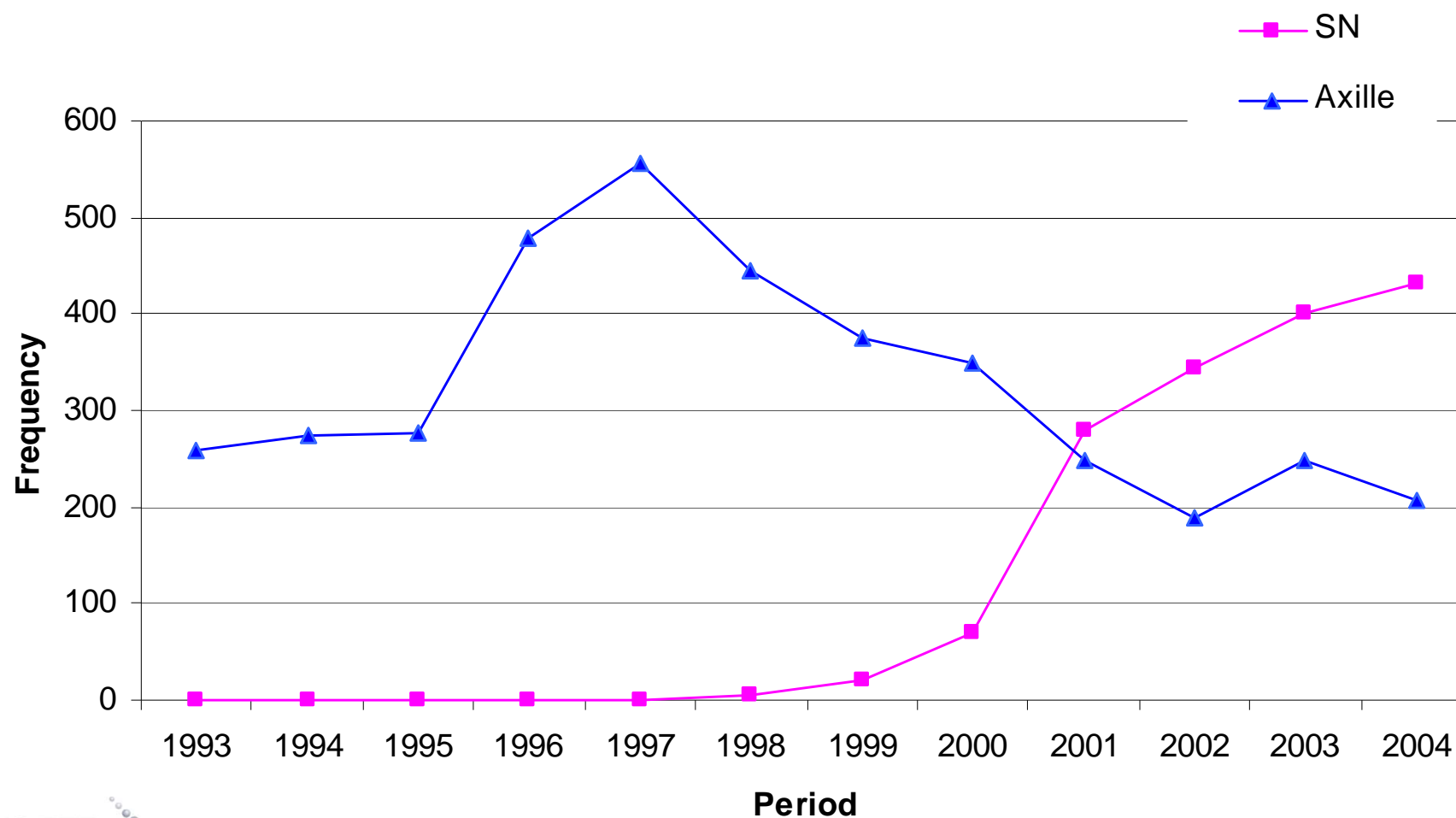
Surgery treatment of breast cancer in the pre-screening and screening period

- ■ - Breast conserving treatment - ■ - Ablatio - ● - Other/missing information



Use of Sentinel Node Technique

(AHOR, 50-69 years old, 1993-2004)



Evaluation of the NBCSP

The Ministry of Health and Care Services has charged the Research Council of Norway with responsibility for conducting a research-based evaluation of the Norwegian Breast Cancer Screening Program.

The objective is to investigate whether the program has fulfilled its intentions and purpose, with special weight on mortality-reduction.



Encontro Internacional sobre
**Rastreamento do
Câncer de Mama**

International Meeting on Breast Cancer Screening

**16 e 17 de abril
Rio de Janeiro**

