



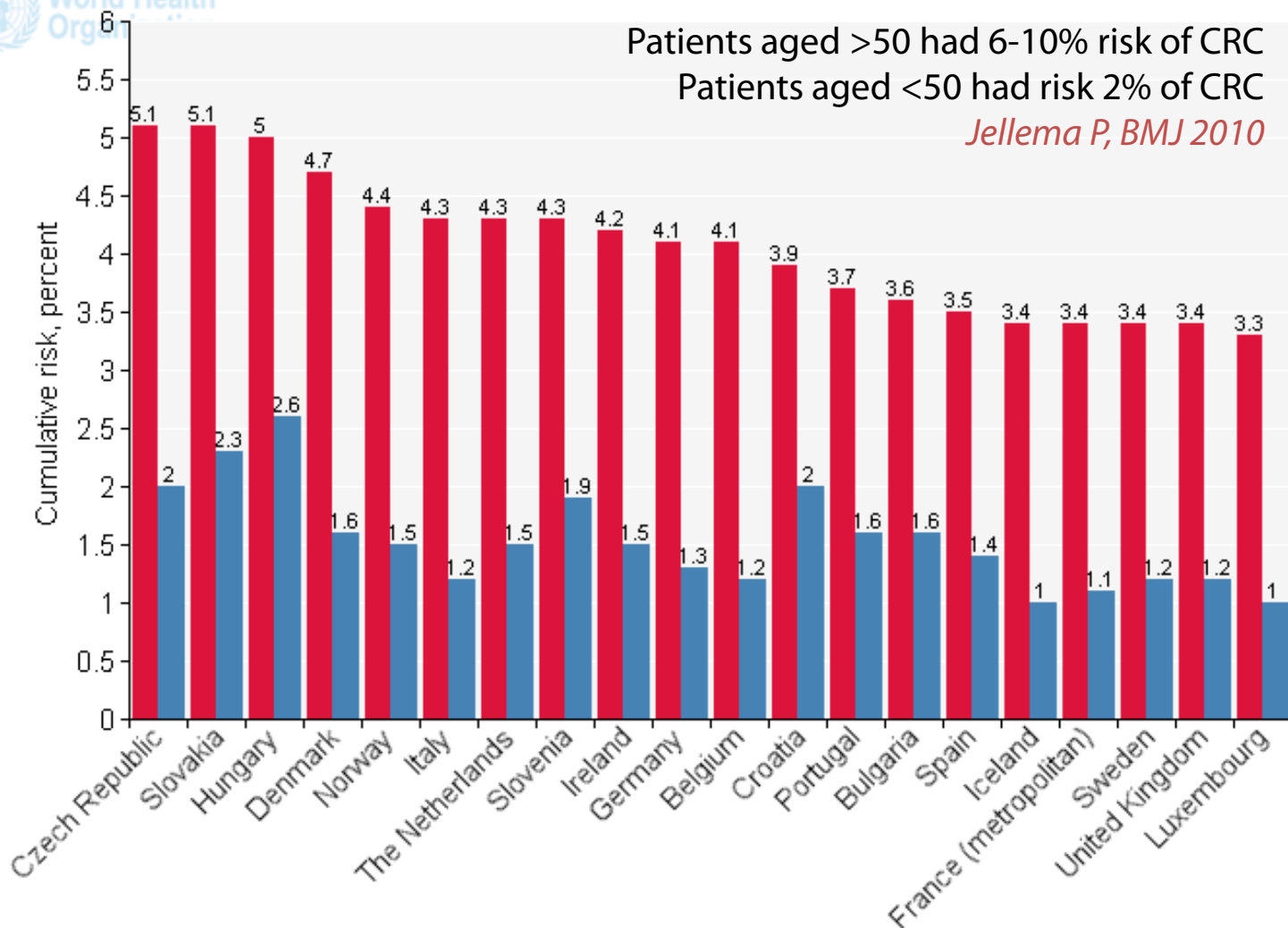
FIRST FACULTY OF MEDICINE
CHARLES UNIVERSITY IN PRAGUE

Effect of measures for improvement of the colorectal cancer screening in the Czech Republic

Bohumil Seifert

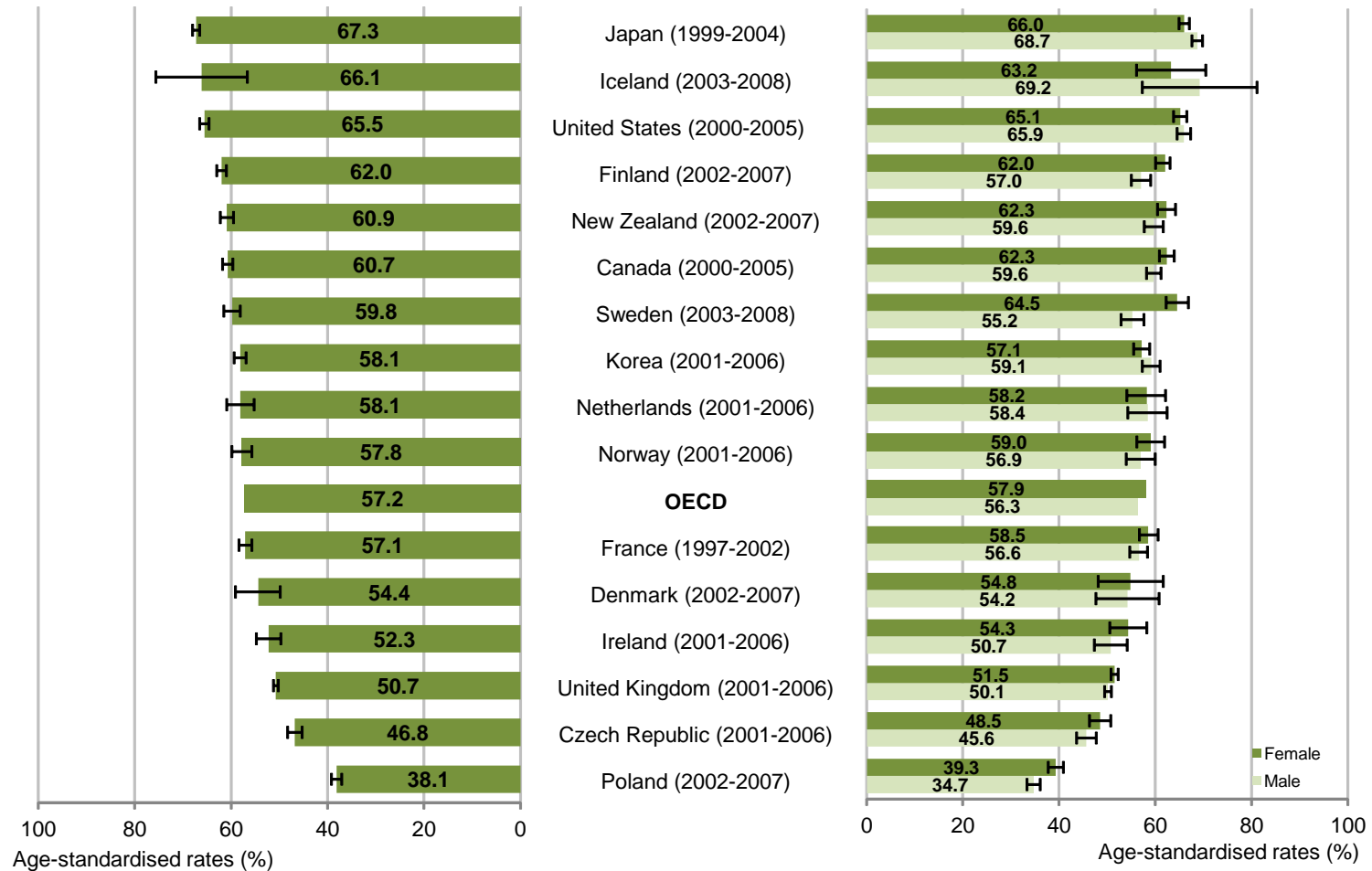
European Colorectal Cancer Days, Brno 2012

International Agency for Research on Cancer **Colorectum: both sexes, age [0-74]**



■ Incidence
 ■ Mortality

Colorectal cancer, five-year relative survival rate, total and male/female



Sources: OECD Health Care Quality Indicators Data 2009 (age standardised to the International Cancer Survival Standards population and 95% confidence intervals)

Czech colorectal cancer screening program

Since 2000

- two step program:
 - **gFOBT** performed by GPs
 - **colonoscopy** if FOBT positive

Target population:

- **asymptomatic population age 50 + older**

2009: Critical review of the program = suboptimal outcomes

Czech CRC screening program, 2009....2012

Since 2009: **NEW DESIGN**

- 50-54 yearsgFOBT or **iFOBT annually**
(GP + **GYN**)
- since age 55FOBT biennaly (GP+GYN)

or option: ...**primary screening colonoscopy**
(10 years period)

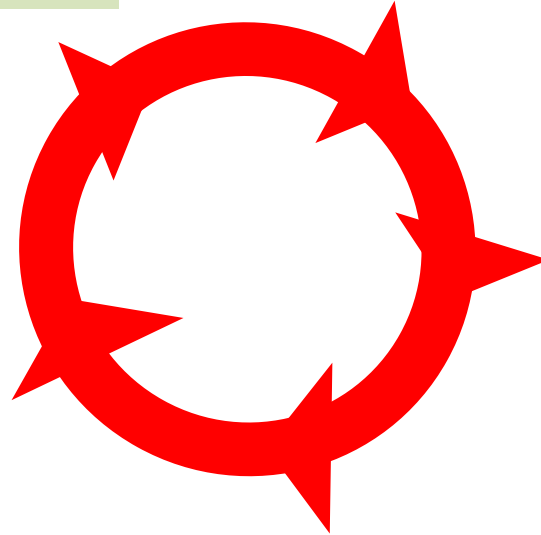
Effects of measures for improvement

Methods: data collection and use

Data registered by
providers

Data collected by
sick funds

Data used,
assessed and
presented by
providers



Data centralized by
**National Reference
Center**

Data processed and analysed
by **Institute for Biostatistics
and Analysis**

Methods: data collection and use

- Number of FOBT performed by GPs and by gynaecologists
- FOBT positivity rate
- Number of primary screening colonoscopies performed
- Regional differences in screening up take
- Regional differences in FOBT positivity rate
- Data collected by gastroenterologists

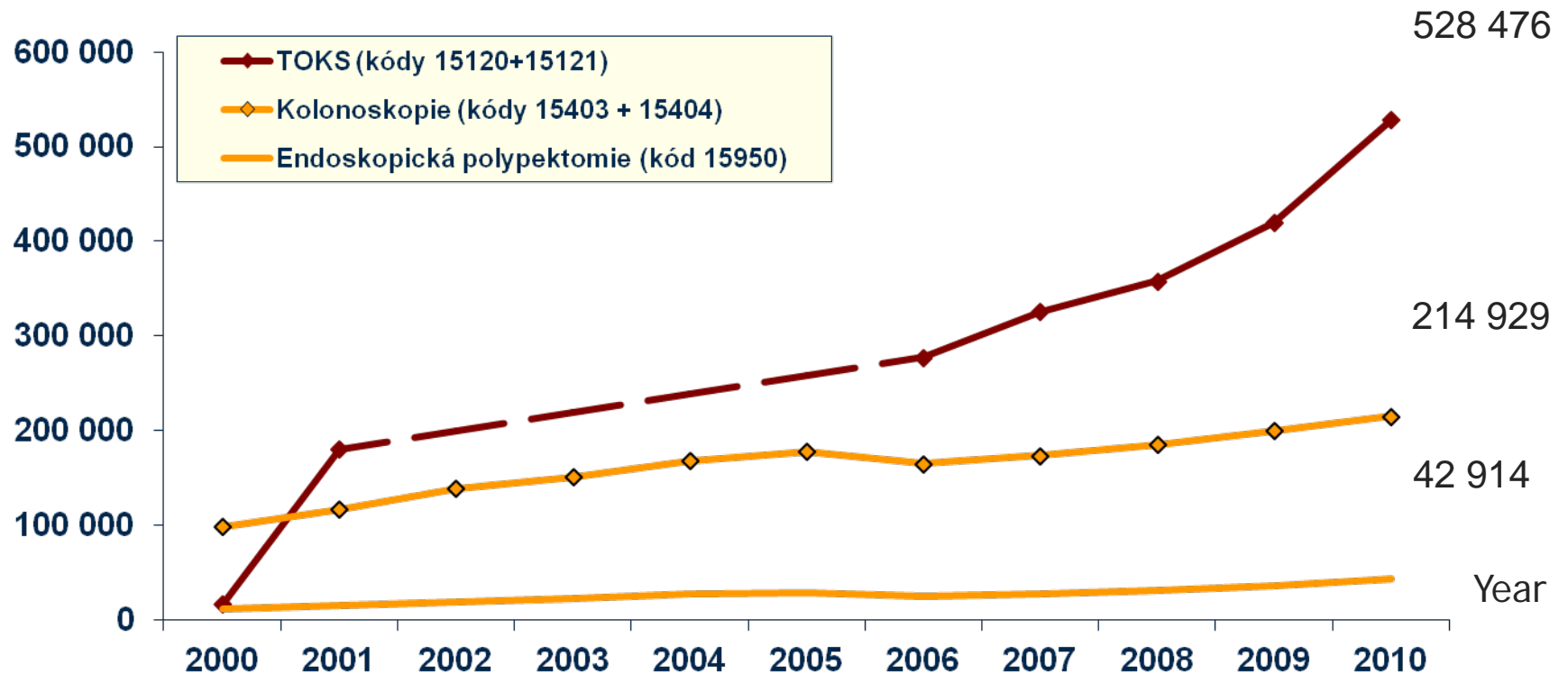
Effects of measures for improvement

Results

CRC screening 2000-2010

Source: NRC

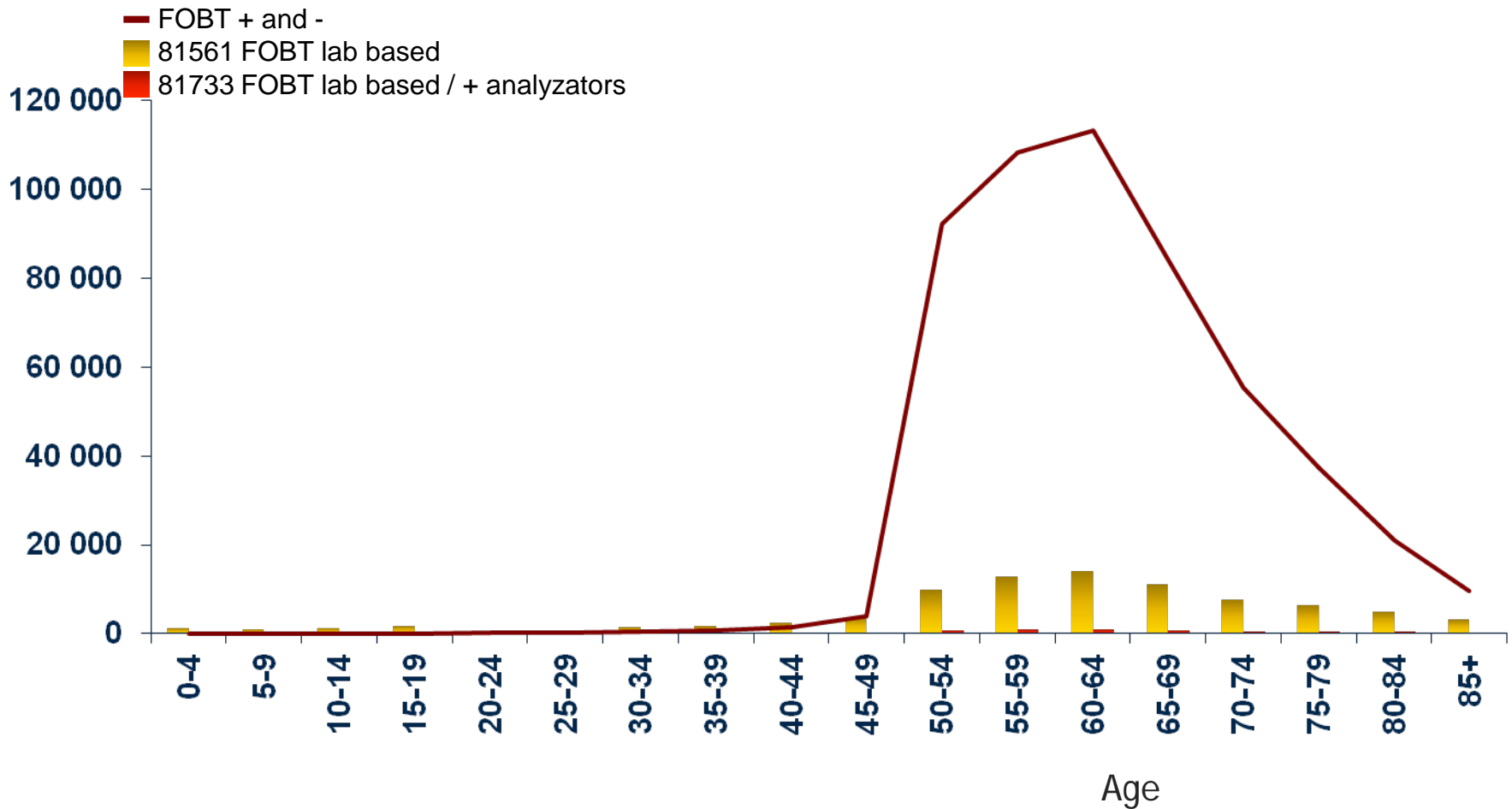
Number of persons examined with FOBT in years



FOBT performance 2010

2010, Source of data: NRC

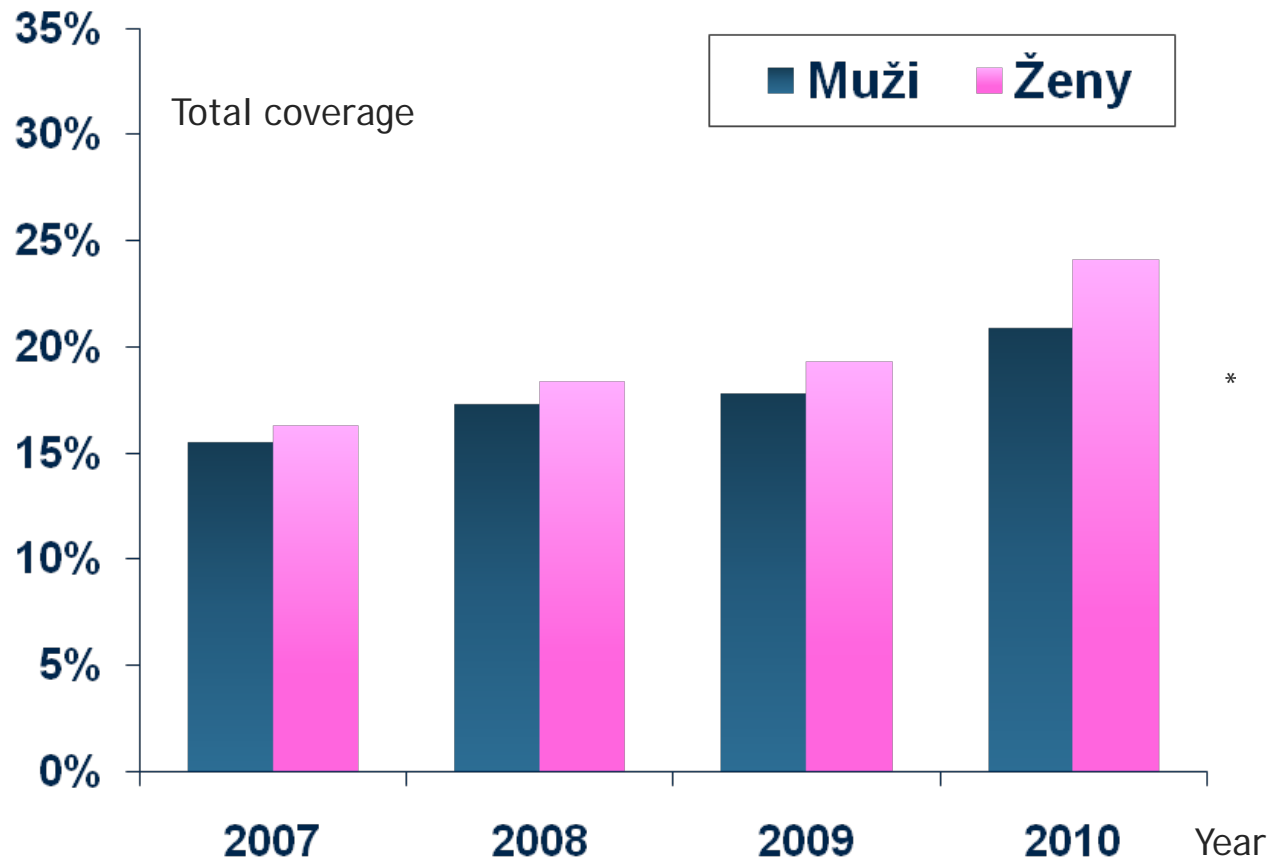
Number of FOBT



Coverage of target population by FOBT

Age group	Number of FOBT performed		Screening interval	Number of persons	Target population 2010	Coverage
	2009	2010				
50-54	73 203	92 331	1 rok	92 331	672 545	13,7%
55-59	86 020	108 334	2 roky	194 354	754 341	25,8%
60-64	87 353	113 353		200 706	743 870	27,0%
65-69	67 746	84 252		151 998	552 120	27,5%
70-74	42 761	55 341		98 102	383 827	25,6%
75-79	31 722	37 384		69 106	313 367	22,1%
80-84	17 573	20 895		38 468	231 966	16,6%
85+	7 922	9 539	17 461	154 546	11,3%	
Total	414 300	521 429		862 526	3 806 582	22,7%

Coverage by sex



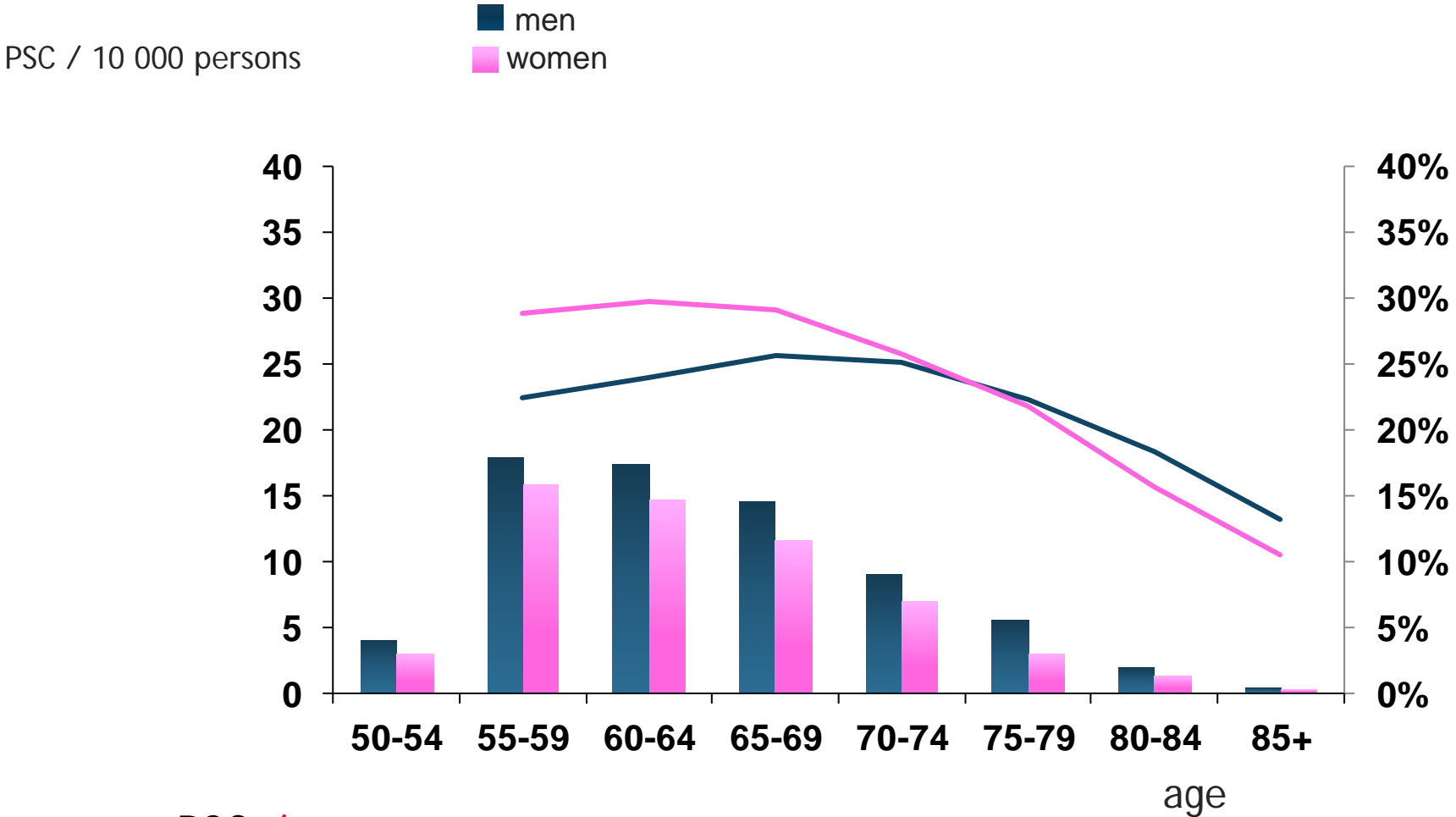
The difference between men and women is increasing

In 2010 the coverage in men was 20,9% while in women 24,1%

Total coverage (Primary screening colonoscopy + FOBT)

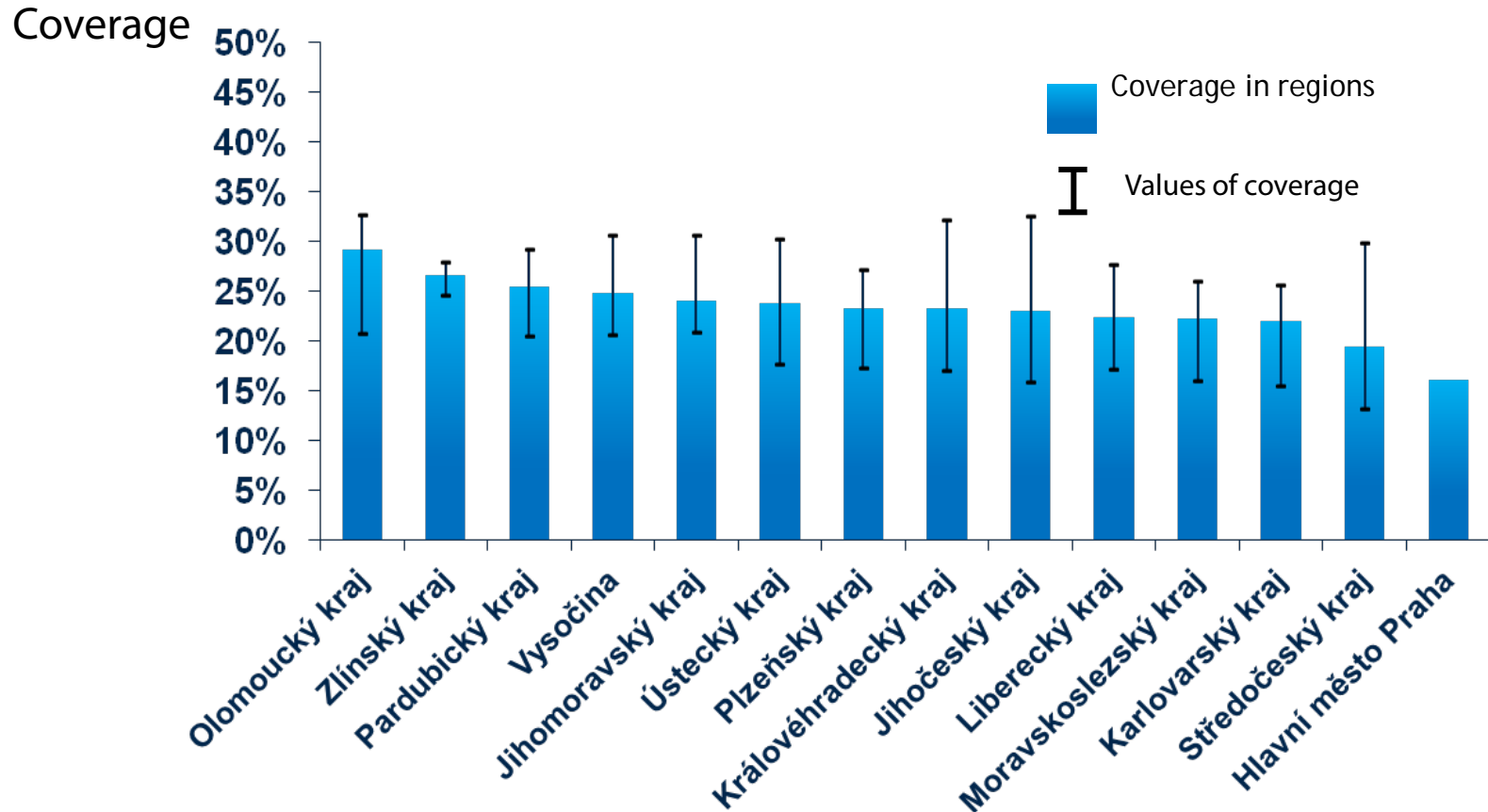
Age group	FOBT	PSC		PSC total	Total PSC + FOBT	Target population 2010	Coverage
		2009	2010				
50-54	92 331	63	238		92 331	672 545	13,7%
55-59	194 354	311	1 274	1 585	195 939	754 341	26,0%
60-64	200 706	294	1 188	1 482	202 188	743 870	27,2%
65-69	151 998	160	717	877	152 875	552 120	27,7%
70-74	98 102	71	303	374	98 476	383 827	25,7%
75-79	69 106	43	126	169	69 275	313 367	22,1%
80-84	38 468	3	36	39	38 507	231 966	16,6%
85+	17 461	1	5	6	17 467	154 546	11,3%
Total	862 526	946	3 887	4 532	867 058	3 806 582	22,8%

Primary screening colonoscopy



10,2 PSC / 10 000 persons in 2010 = 0,7% of all primary tests

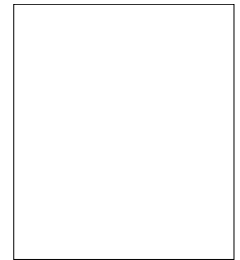
Regional variations in FOBT coverage



Coverage: 22,7 % (Variability in regions 16,1-29,3 %)

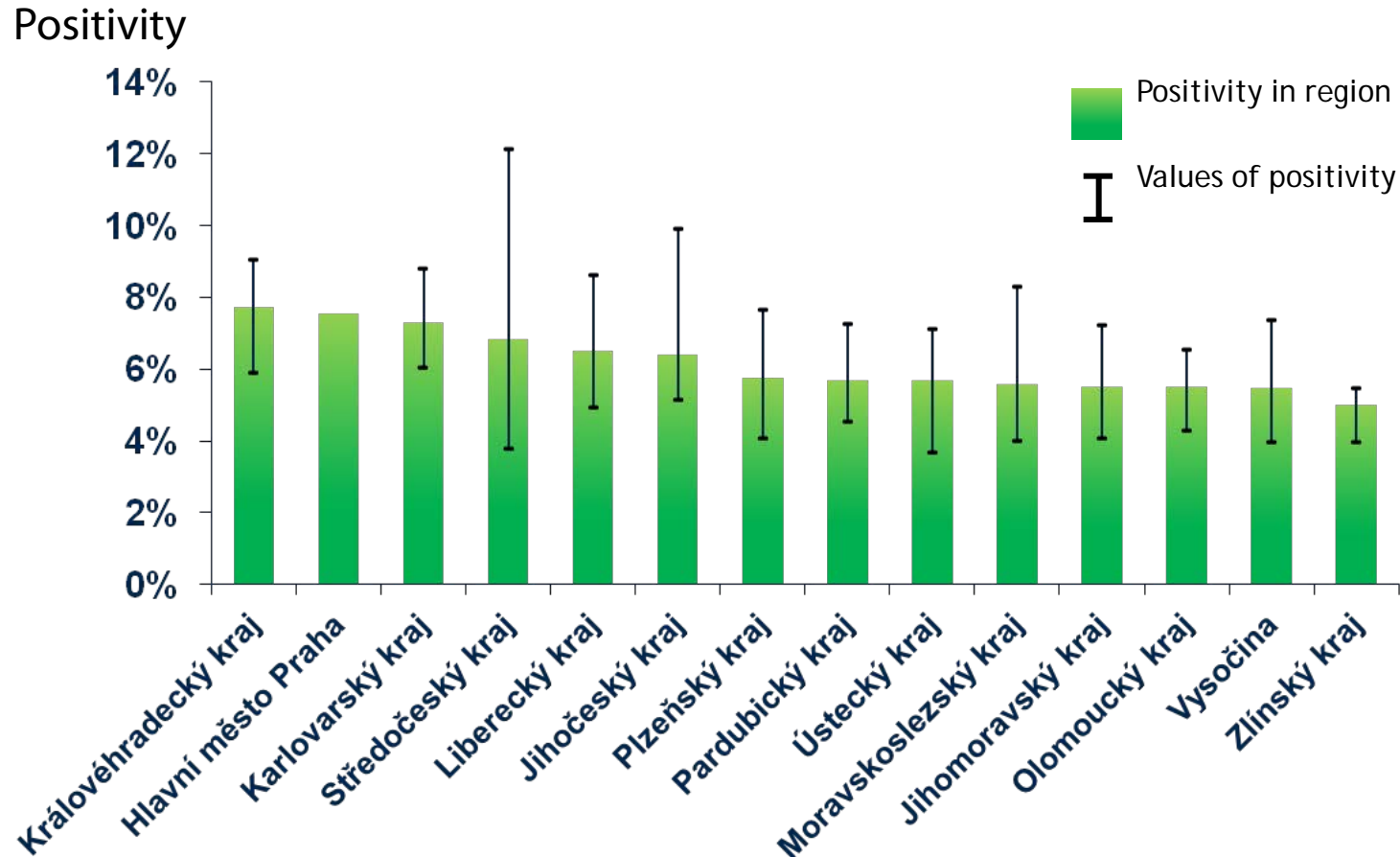
District variability in FOBT coverage

erage in %



Coverage: 22,7 % (Variability in districts 13,1-32,6 %)

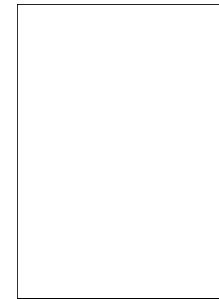
FOBT positivity in regions



Total positivity (2010): 6,1 % (variability in regions: 5,0-7,7%)

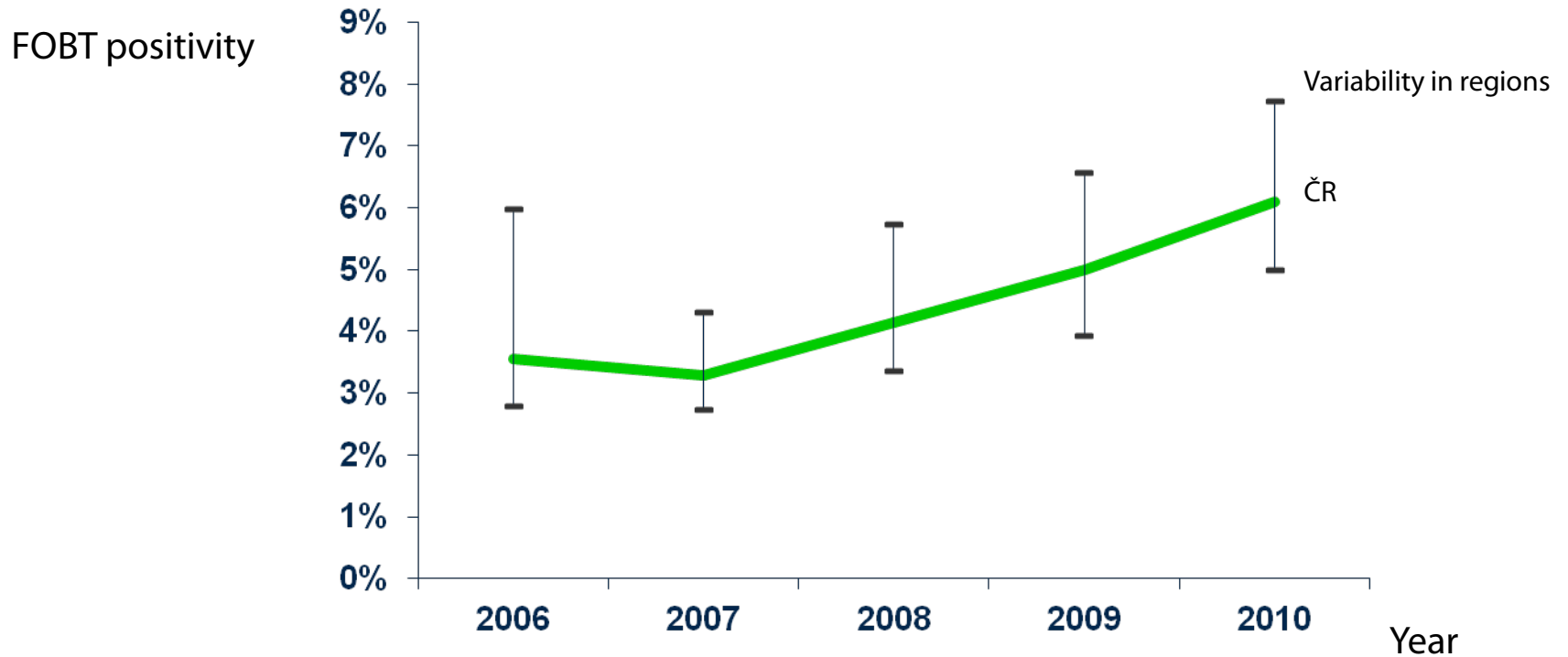
FOBT positivity in districts

positivity %



Total positivity **6,1 %** (in districts 3,7-12,1 %)

FOBT positivity increase



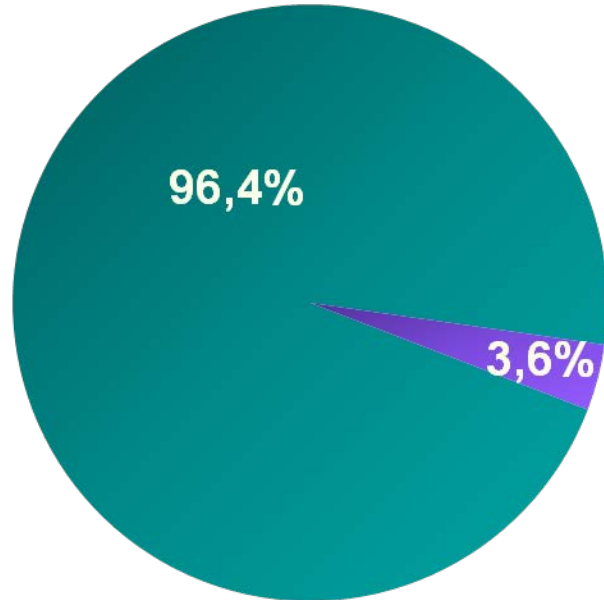
g-FOBT: 3,9 %

Gynaecologists in screening since 2009

FOBT positives and negatives

2009

n = 411 266 FOBTs

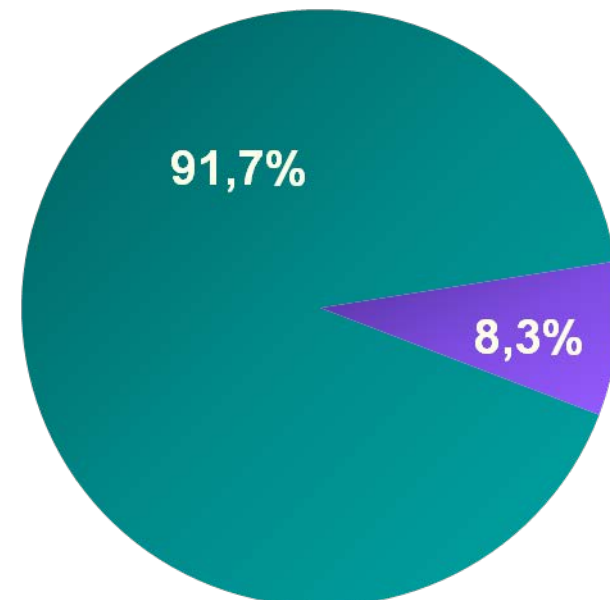


Women 57,5 % of all persons examined

■ General practitioner

2010

N = 519 715 FOBTs



Women 59,1 % of all persons examined

■ Gynaecologist (incl. 2009)

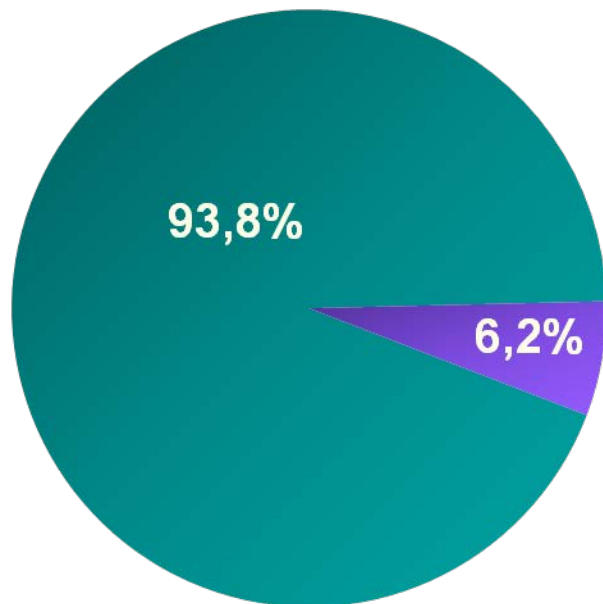
Gynaecologists in screening since 2009

FOBT positives and negatives

WOMEN IN SCREENING

2009

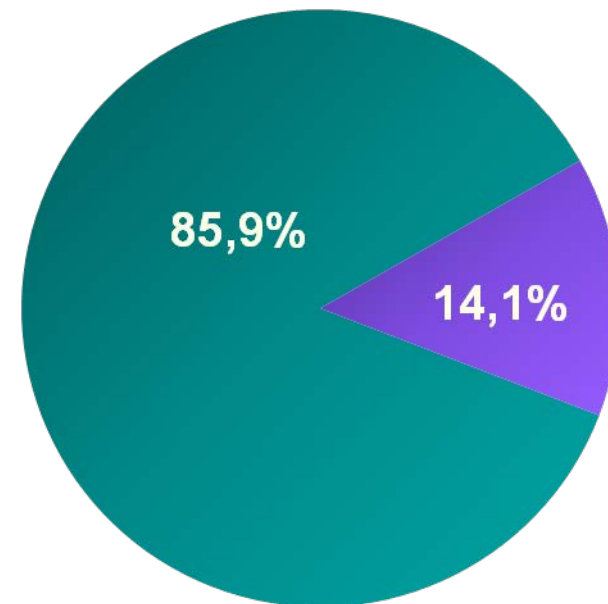
N = 236 663 FOBTs



■ GP

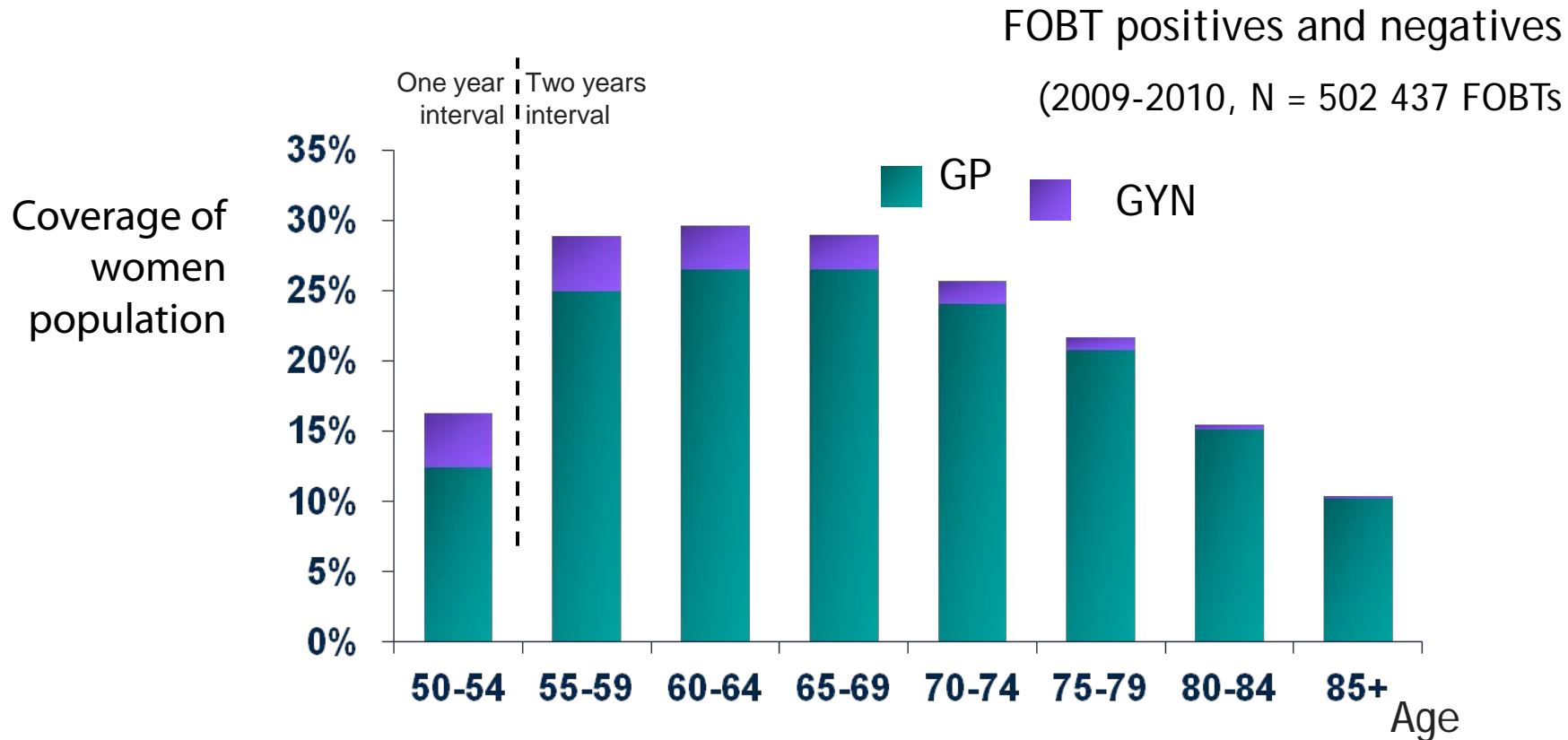
2010

N = 306 928 FOBTs



■ Gynaecologist

Gynaecologists in screening since 2009



Total coverage of women(2009-2010): 24,0 %

Coverage by GP 21,5%, by gynaecologist 2,5%

FOBT positivity rate: gynaecologists 8,6% v. 5,1% GPs

Key results

- In general measures adopted in 2009 in Czech CRC screening program increased in **48%** the uptake of target population compare to situation in 2008.
- Adoption of **annual FOBT testing** in age period 50-55 had positive impact on CRC screening.
- Introduction of **iFOBT** significantly improved the adherence of population and PC physicians.
- **Gynaecologists** contributed significantly to higher uptake for CRC screening in women age 50-65 (14%).
- Introduction of **primary screening colonoscopy** had a marginal effect on CRC screening uptake (0,7%).

Discussion:

Critical issues in Czech CRC screening

- Variability in FOBTs used /cut off
- Adherence of targeted population
- Quality/capacity of colonoscopy
- Marketing of program
- Personalised Invitation System

2012: FOBTs in use in the CR

FOBT	EBM	Adherence	POCT	Sensitivity Specificity	Auto reading	Cut off	Expenses
g- FOBT	3 RT	+/-	YES	19-50% > 90%	NO	NO	1 EUR +GP fee
Immuno FOBT Qualitative		+++	YES	> gFOBT	NO	NO	1 EUR + GP fee
Immuno FOBT Quantitative		+++	YES	> gFOBT	YES	YES	3 EUR + GP fee
Immuno FOBT Quantitative Lab based	1 RT	?	NO	> gFOBT	YES	YES	1-3 EUR +logistics + GP fee



Sensitivity = the proportion of actual positives which are correctly identified as such by test (depends on number of samples, frequency of tests, cut off).

Specificity = the proportion of negatives which are correctly identified by test as negative

Cut Off = a threshold value for a quantity (from which the result is positive)

Imunochemical FOBT

Evidence in favour of the substitution of gFOBT by iFOBT is increasing, the gain being more important for high adenomas than for cancers.

- Easier sampling and analysis
- No life style restrictions
- iFOBT: higher sensitivity
- The

Czech Society of GP recommends to terminate the use of gFOBT before the end of 2012.

allows with an ideal specificity.

significantly improved the
in CRC screening in the Czech
public.

Optimal FOBT

- Without diet restriction
- Simple (user friendly) quantitative sampling
- Easy logistics (POCT?)
- Automatic reading

Cut off options with regards to

- national standardization
- optimal sensitivity and specificity
- safety, capacity and cost/benefit
- risk groups (men, seniors, diabetics)

➤ Quantitative iFOB tests

FOBT: Cut off optimization

CUT OFF	Number of colonoscopies	Sensitivity	Specificity	PPV
high	↓	↓	↑	↑
low	↑	↑	↓	↓

- Chen, 2007: 100 – 150ng/ml faecal hemoglobin
- Rossum, 2009: 75 ng/ml for the Netherland
200ng/ml where CS capacity is insuff.
- Suggested cut off 75ng/ml would mean FOBT positivity rate 12-16% compare to 4% with gFOBT resp. current 6% with iFOBT.
- The **waiting time for colonoscopy** is increasing....
(safety, capacity, costs)

Population based v. organized screening

- Programs using invitation system show higher adherence of target population
- Central invitation is the only way how to get participation over 50%.
- Invitation via GP offices increases the adherence rate in 8% (UK)

FOBT: test distribution

- in practices (GPs, gyneacologists)
- central invitation with direct mailing the sample devices

CZECH PROGRAM: letters administered by sick funds (different for all three programs) will invite people to GPs (gynaecologists, mamma centrum) since 2013.



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