



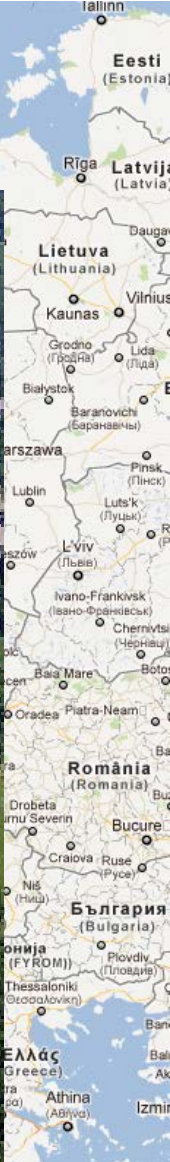
# *Skin cancer screening*

## *Lessons from the German experience*

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## Germany

- 82 million inhabitants

## Schleswig-Holstein

- Northern federal state
- 2.8 million inhabitants

# University of Lübeck

Medicine  
Computer Science  
Life Science / Biotech



maps.google.de

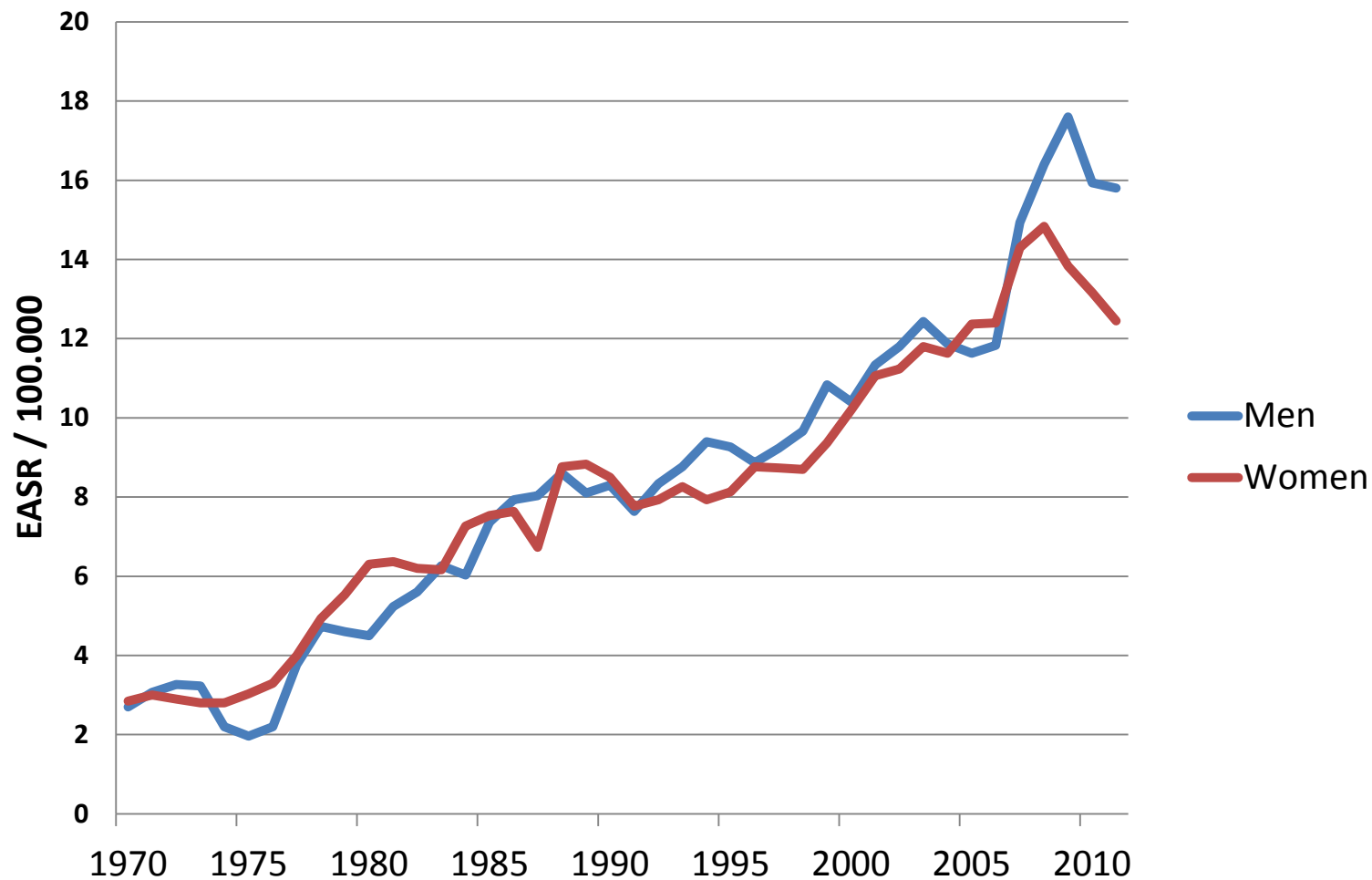


# Outline

- Skin Cancer in Germany
- The SCS pilot project (2003/4)
- Evidence for SCS
- The national SCS (since mid 2008)
- Understanding the differences between pilot project and national screening
- Conclusions/Lessons

# SKIN CANCER IN GERMANY

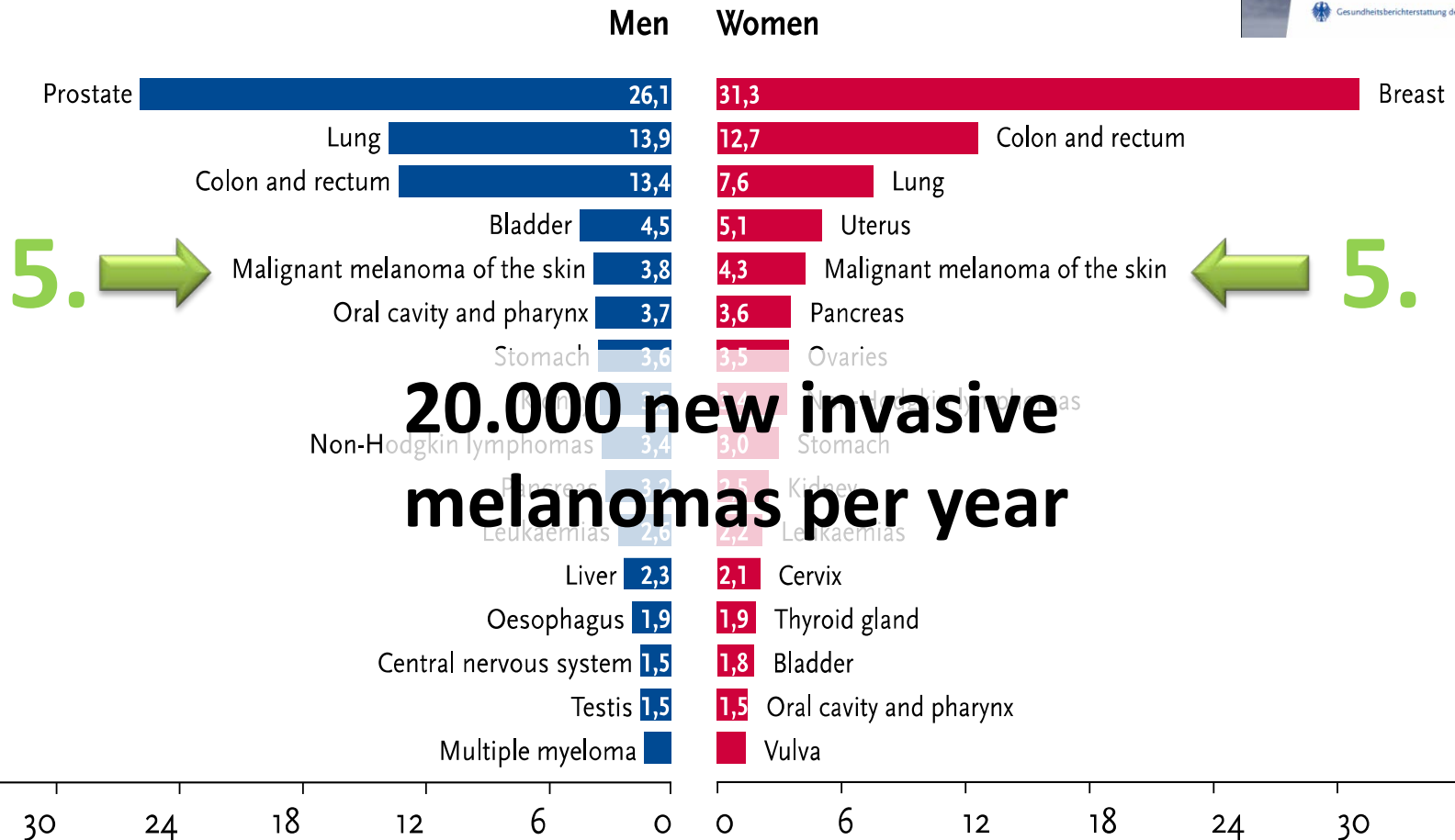
# Trends in melanoma incidence in Germany - an epidemic



# Cancer in Germany



Most frequent tumour sites as a percentage of all new cancer cases in Germany 2010  
(not including non-melanoma skin cancer)



# THE SCS PILOT PROJECT (SCREEN)

# History of skin cancer prevention / early detection in Germany

- 1976 First national early detection guideline (symptomatic skin cancer)
- 1987 ADP – Association of dermatologic prevention
- Since 1989 Campaigns for UV protection and early detection
- 1998-2002 Development of a skin cancer screening (SCS) in Schleswig-Holstein, Germany
- 2003/4 One year SCS pilot project in Schleswig-Holstein (SCREEN project)
- Mid 2008 Nationwide skin cancer screening in Germany



# Professor Dr. Eckhard Breitbart

- Dermatologist (Buxtehude)
- Chairman of the ADP (Association of dermatologic prevention)
- **Inventor and father of the German Skin Cancer Screening**

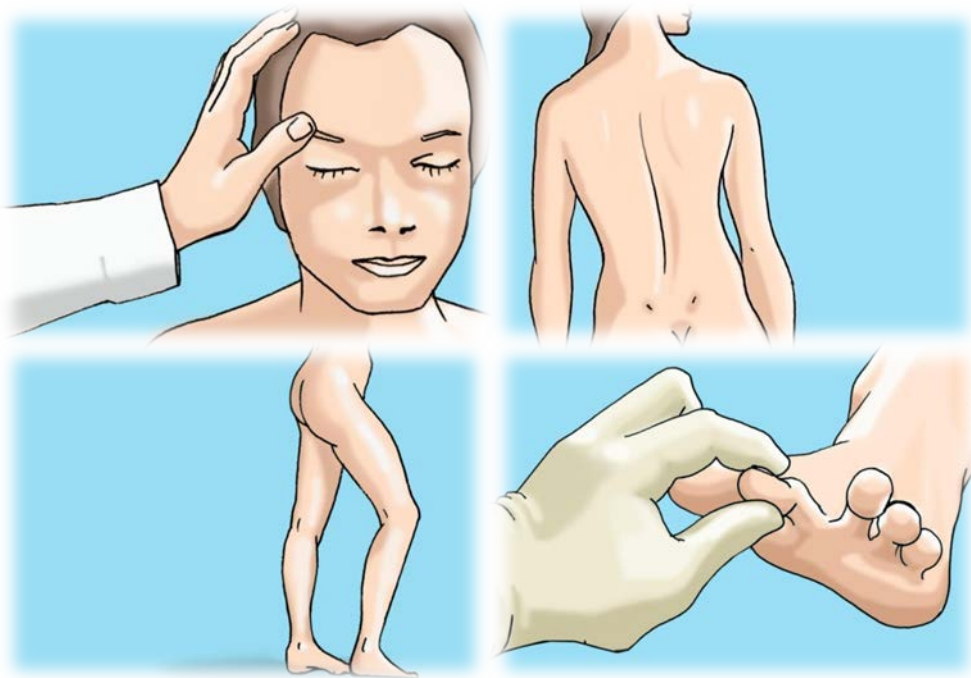


# The SCREEN project

- Development since 1998 with pre-tests of skin exams
- One year skin cancer screening project in Schleswig-Holstein (July 2003 – June 2004)
- Focused on melanoma, basal cell carcinoma, and squamous cell carcinoma
- Eligible population (~1.88 million)
  - Members of statutory health insurance
  - 20 years or older

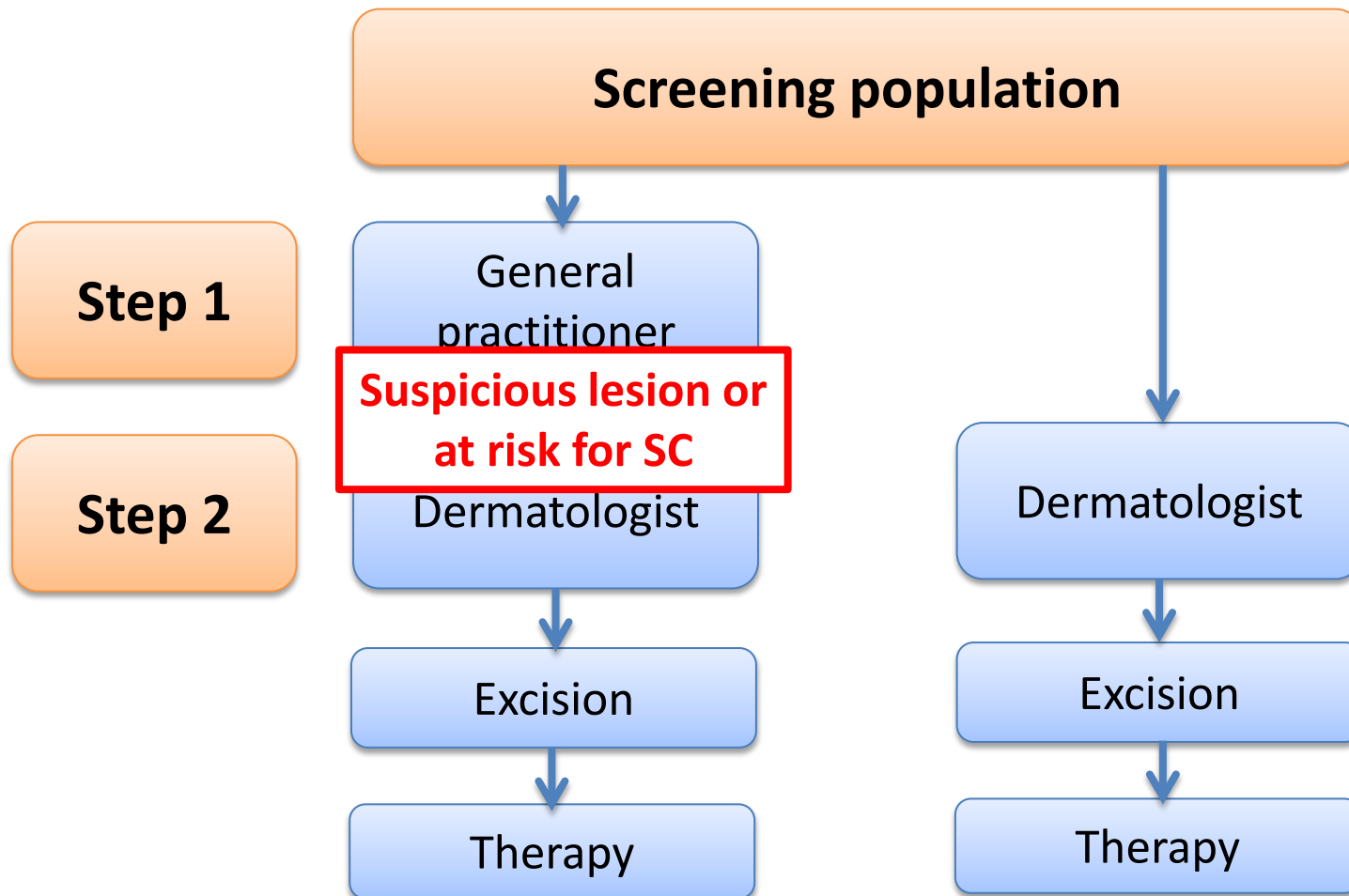
\*including gynecologists, urologists, surgeons, internists

# The skin cancer screening test



- Whole-body examination
- Physician
- Undressed person
- From scalp to toes
- 10 minutes
- Documentation
- Actually 25€  
(paid by health insurance)

# The screening model (two-steps)



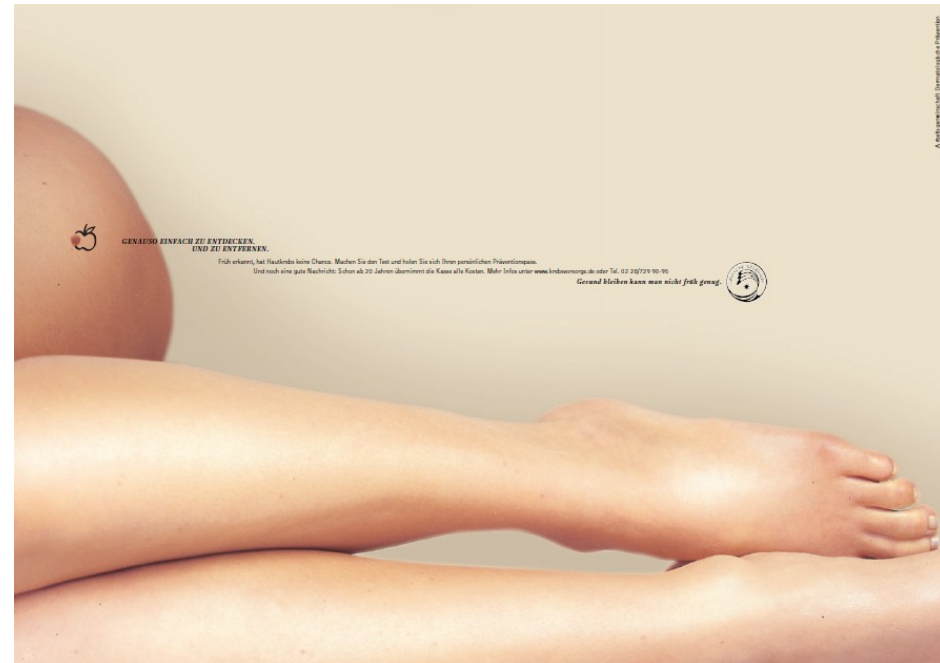
# The Screener in SCREEN

- Dermatologists (116 out of 118)
- “General practitioners” (1673 out of 2614)  
(including gynecologists, urologists, surgeons, internists)
- Precondition: 8 hours training course

# Attending mass media campaigns – SCREEN



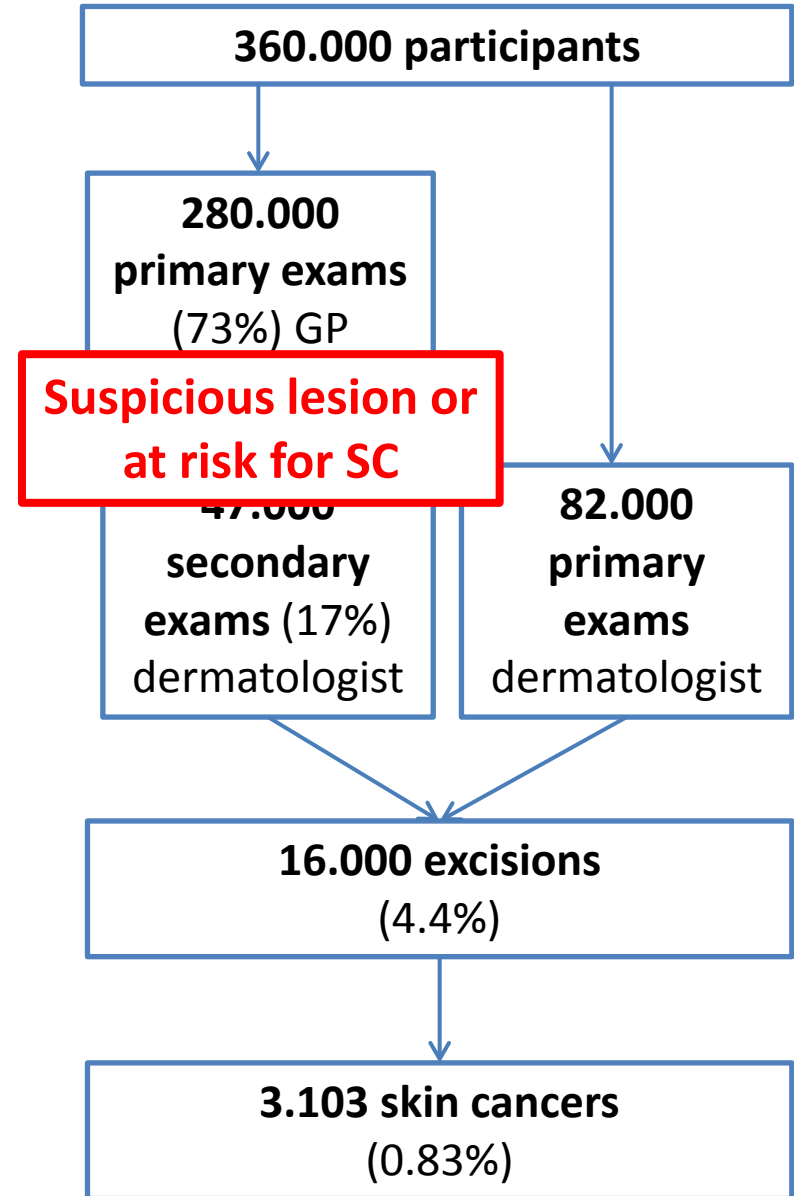
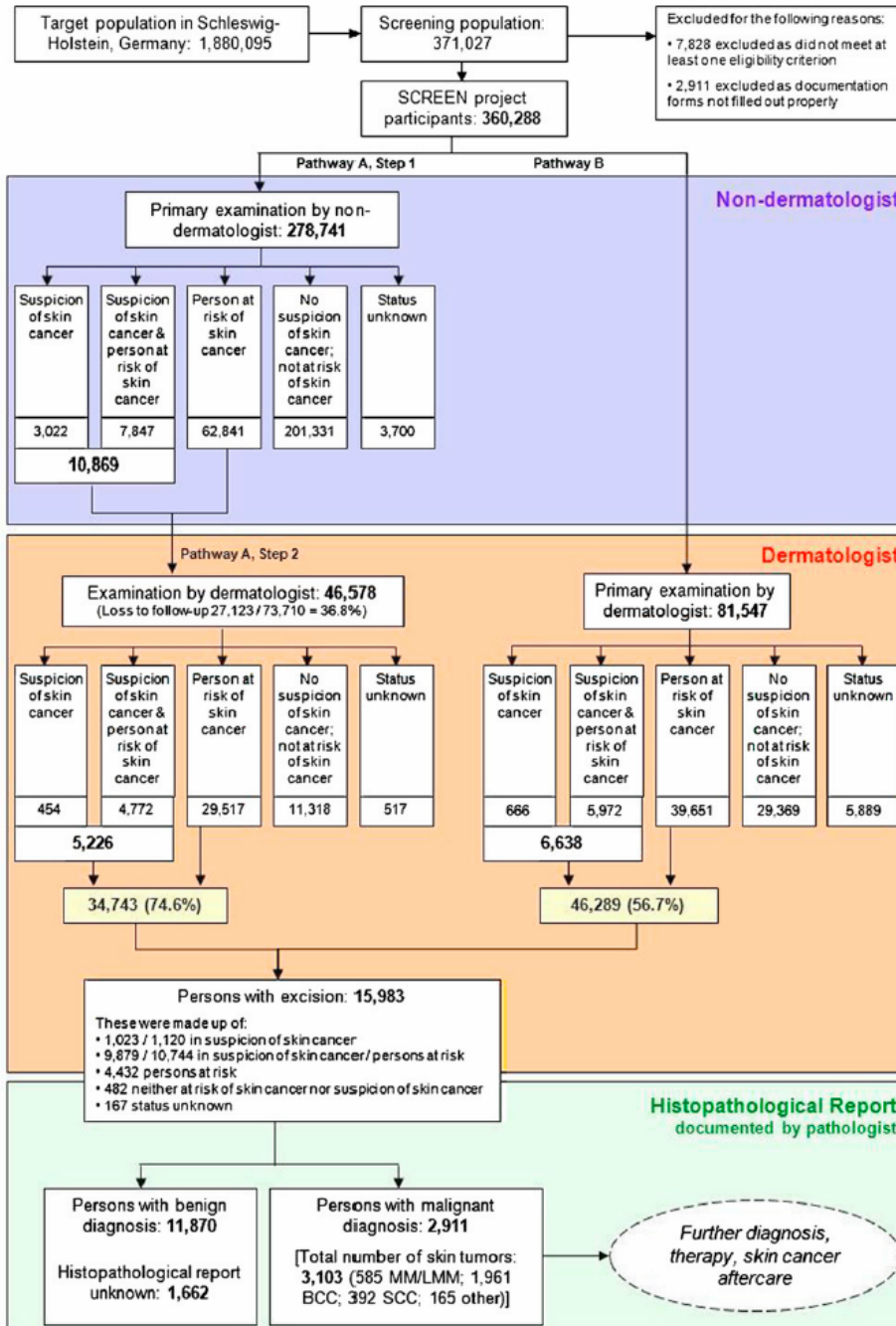
This can be cured  
if you don't close your eyes.



Additionally:

- radio spots
- newspaper
- leaflets

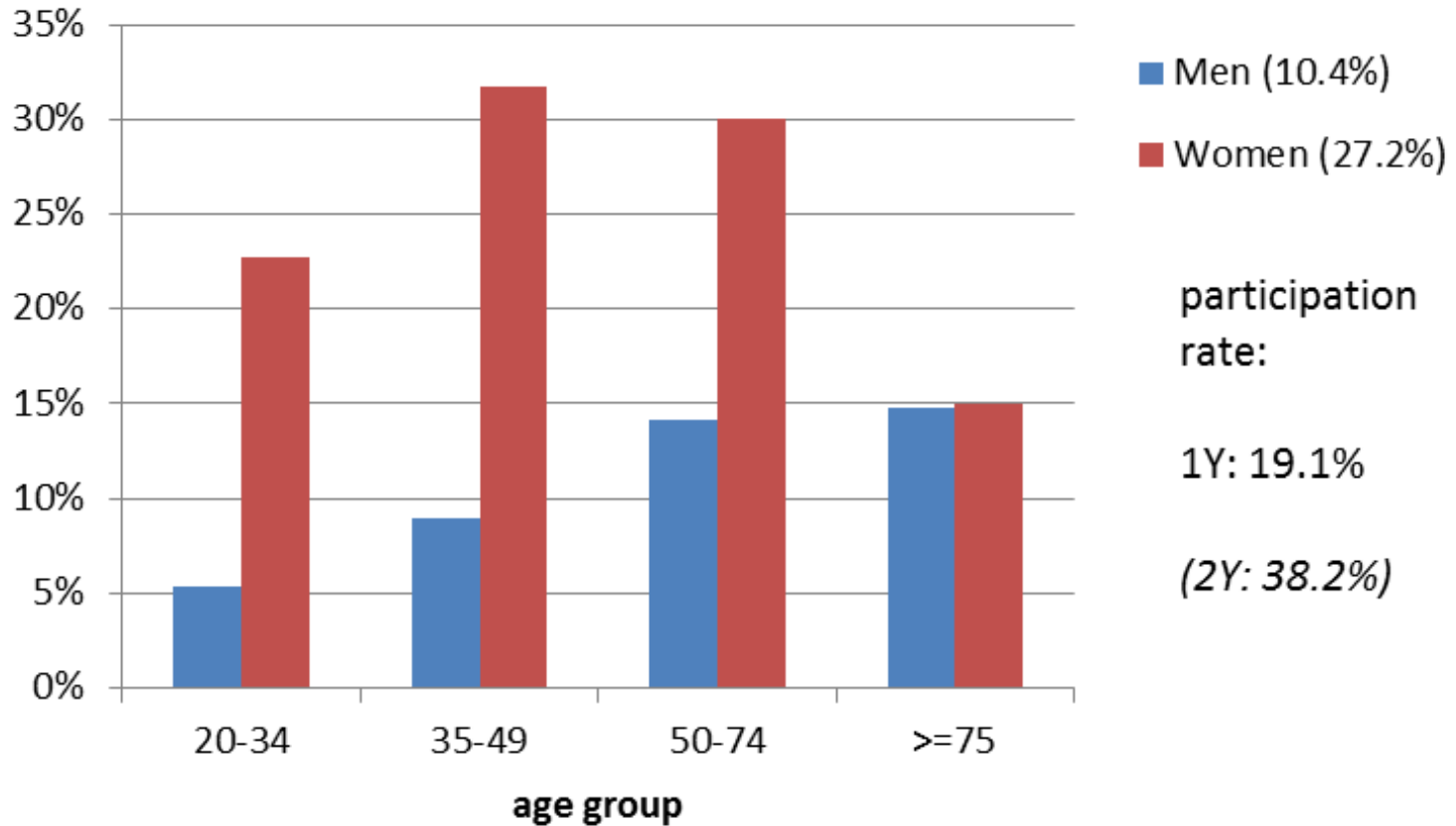
# SCREEN results



Breitbart EW, Waldmann A, Nolte S, Capellaro M, Geinert R, Volkmer B, Katalinic A. Systematic skin cancer screening in Northern Germany. J Am Acad Dermatol. 2011. Epub 2011/11/15



# Population-based one-year SCREEN participation





# SCREEN – tumor findings

Tumor findings (in 2911 persons)	N	%
Melanoma*	585	20.1
BCC	1,961	67.4
SCC	392	13.5
Other	165	3.5
<b>Total</b>	<b>3,103</b>	<b>100.0</b>

\* including in situ (30%)

# SCREEN - Yields

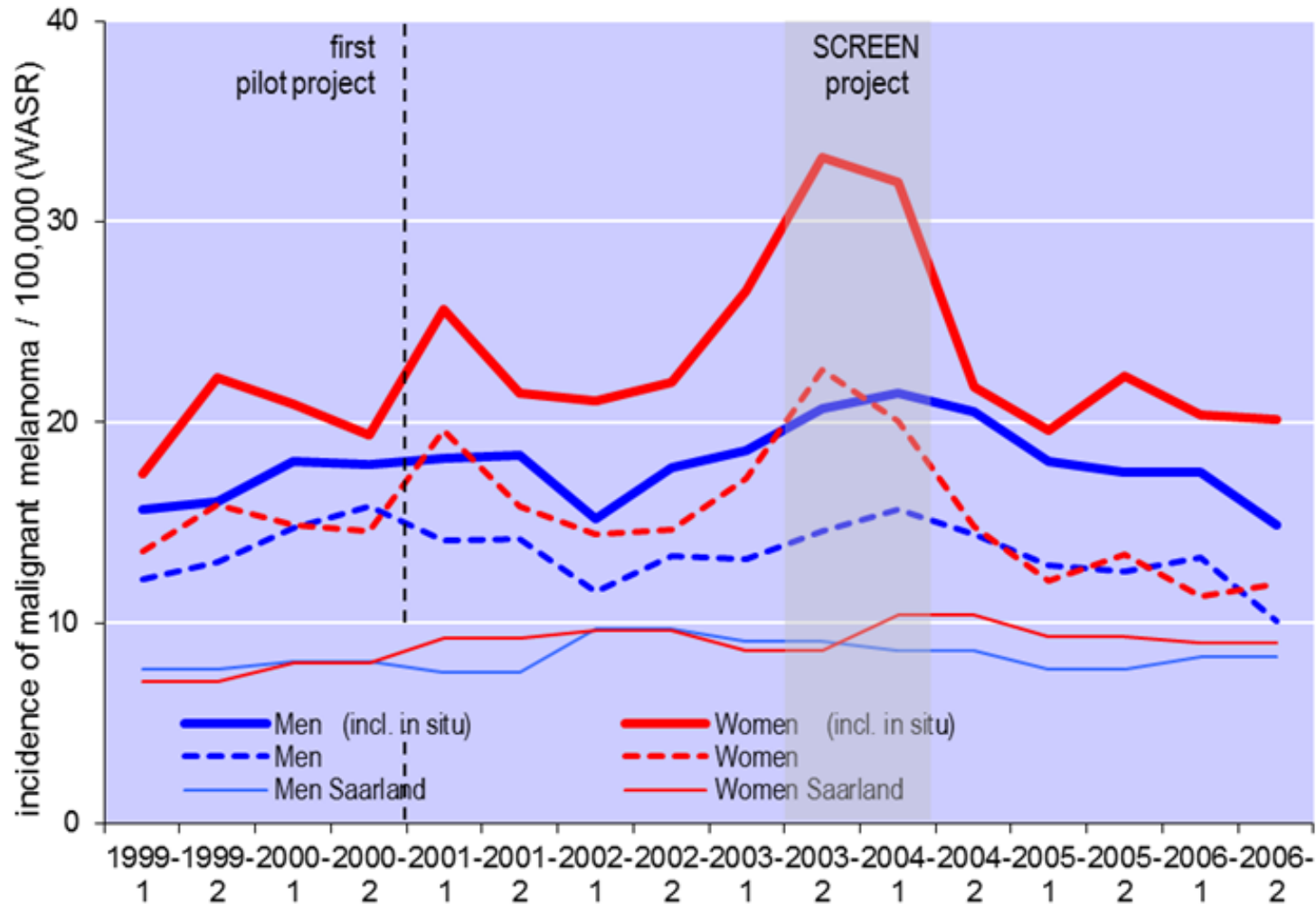
**360,000 screenees, 15,983 excisions (1/23 screenees)**

	Confirmed skin cancers	Yield-S [1 SC per x screenees]	Yield-E [1 SC per x excisions]
Melanoma	585	1/620	1/28
BCC	1,961	1/184	1/9
SCC	392	1/920	1/41
<b>Total</b>	<b>2,911*</b>	<b>1/116</b>	<b>1/5</b>

\* 3,103 tumors

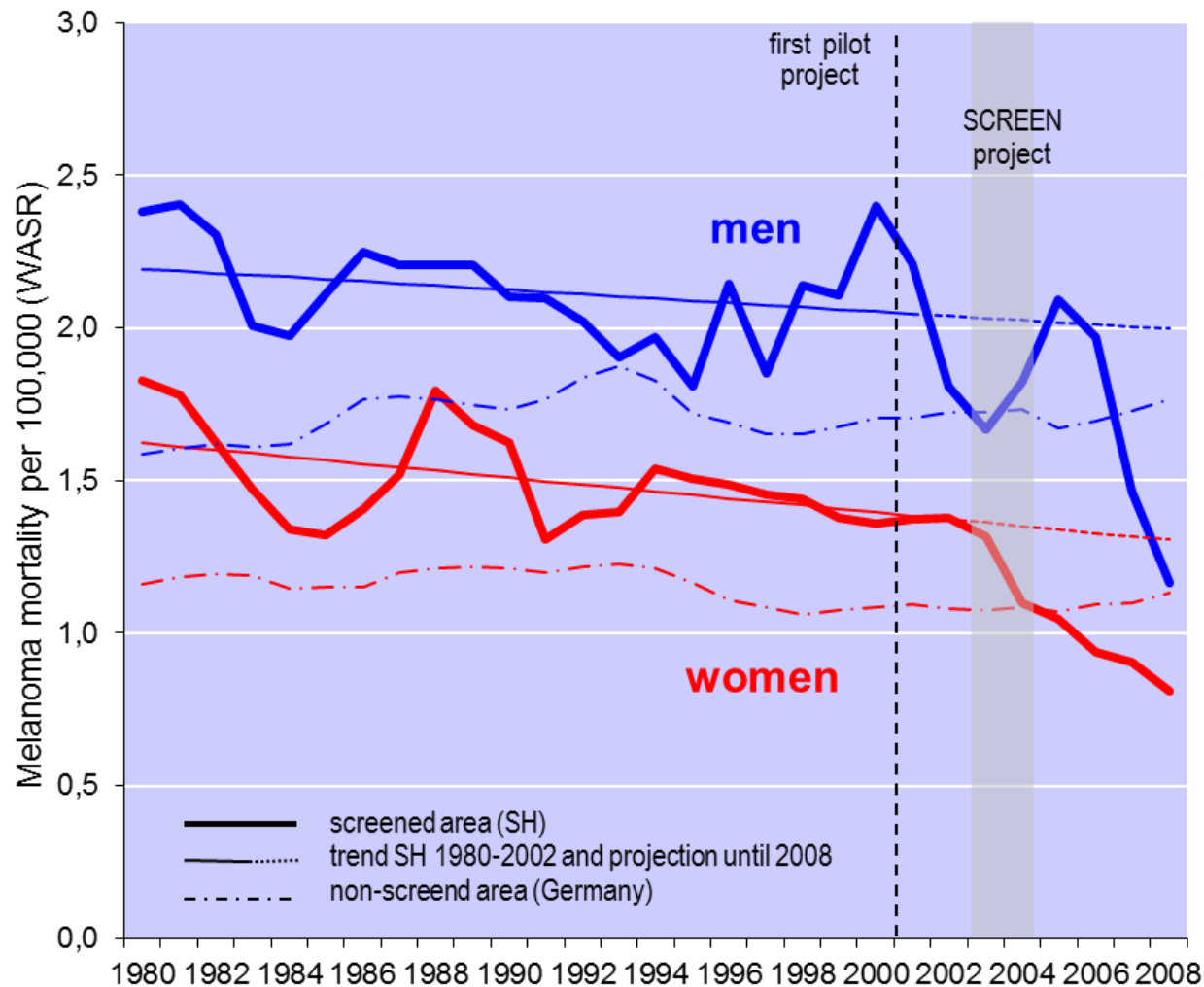
Waldmann A, Nolte S, Geller AC, Katalinic A, Weinstock MA, Volkmer B, Greinert R, Breitbart EW. Frequency of excisions and yields of malignant skin tumors in a population-based screening intervention of 360,288 whole-body examinations. *Archives of Dermatology*. 2012;148(8):8.

# Melanoma Incidence



Breitbart et al. 2011 JAAD 66:201-11

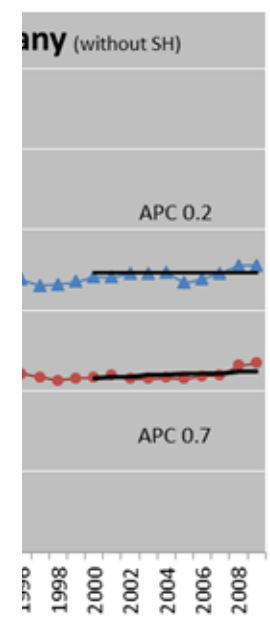
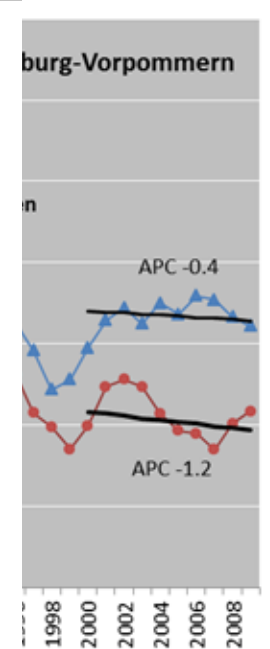
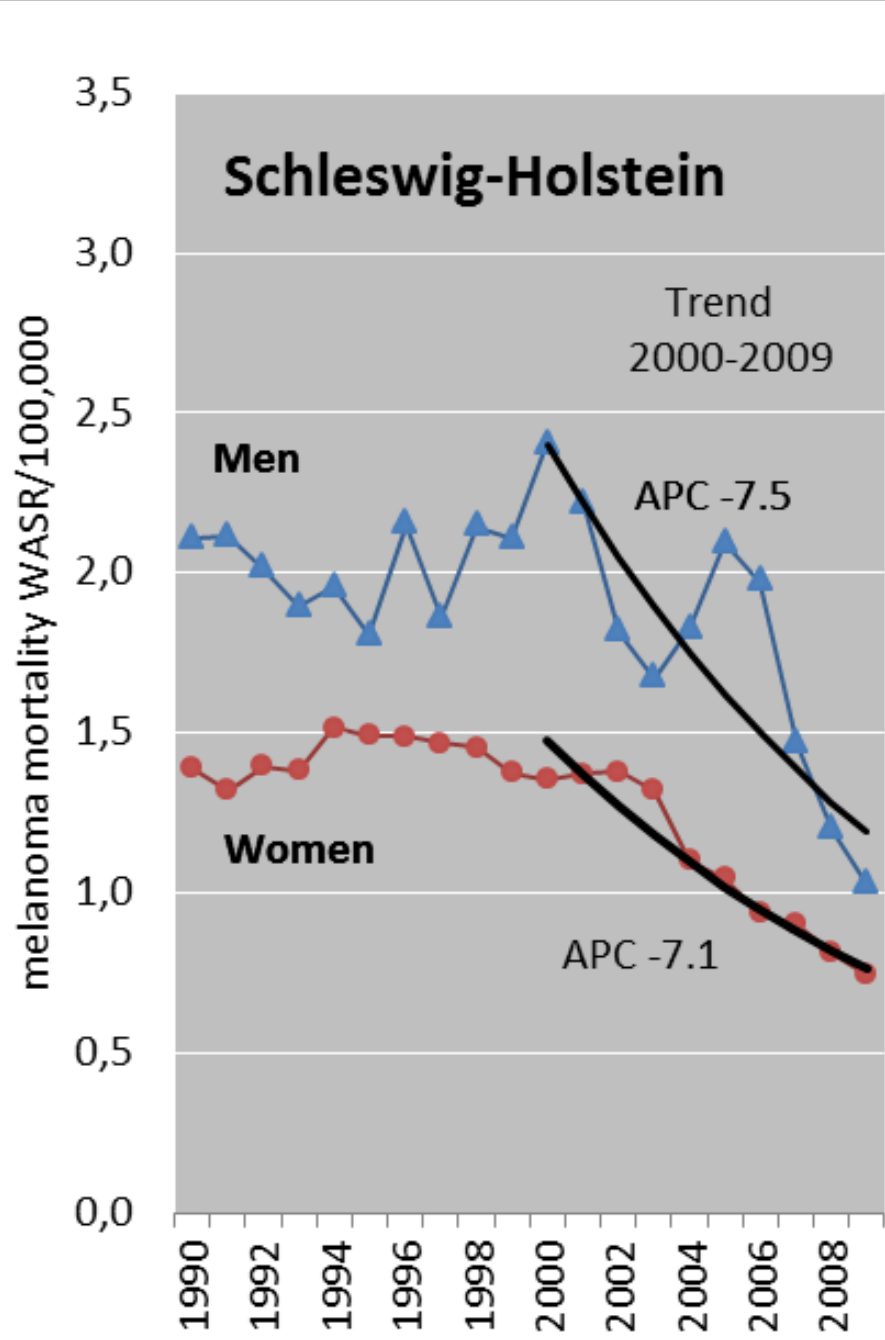
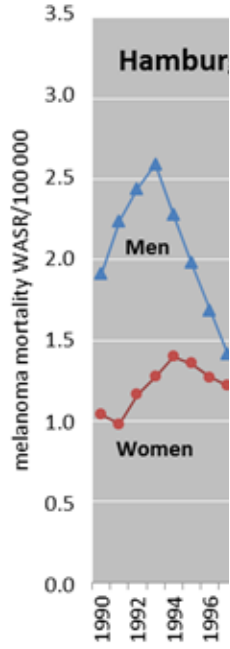
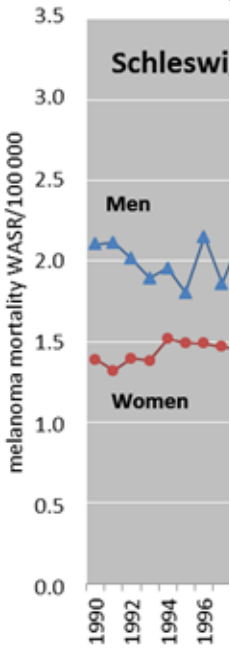
# Melanoma mortality – first analysis



Breitbart et al. 2011 JAAD 66:201-11



# Multiple time series and trends



Katalinic A, Waldmann A, Weinstock MA, Geller AC, Eisenmann N, Greinert R, Volkmmer B, Breitbart E. Does skin cancer screening save lives?: an observational study comparing trends in melanoma mortality in regions with and without screening. *Cancer*. 2012 Nov 1;118(21):5395-402.

# Publications in progress

- 5-year follow up of the SCREEN cohort  
Observed vs. expected melanoma mortality OR 0.6
- Interval cancers after negative screen (24 months)  
invasive cancers OR 0.7
- Risk factors and melanoma detection OR 18
- Systematic review

# Review in progress: Impact of SCS/Skin on Melanoma Incidence and Mortality

Outcomes	No. of publications	Direction of effect	Range	
			Absolute change per 100,000/year	Percentage change
Incidence	8 registry studies, 1 cohort study	In situ: ↑	+1.6 to +24.1	+36% to +133%
		Invasive: ↑↓	-3.1 to +8.9	-17% to +53%
Stage-specific incidence	2 registry studies, 1 cohort study, 1 case-control study	Thin: ↑	+0.3 to +9.0	+3% to +73%
		Thick: ↓	-9.8 to +0.2	-100% to +18%
Mortality	3 registry studies, 1 cohort study	↓	-0.9 to -0.7	-50% to -47%

# Interim conclusion

- There is evidence that SCS is effective (weak)
- SCS in SCREEN has to be classified as a complex intervention  
  
(examination, awareness, education,...)



# NATIONAL SCS

# National Skin Cancer Screening

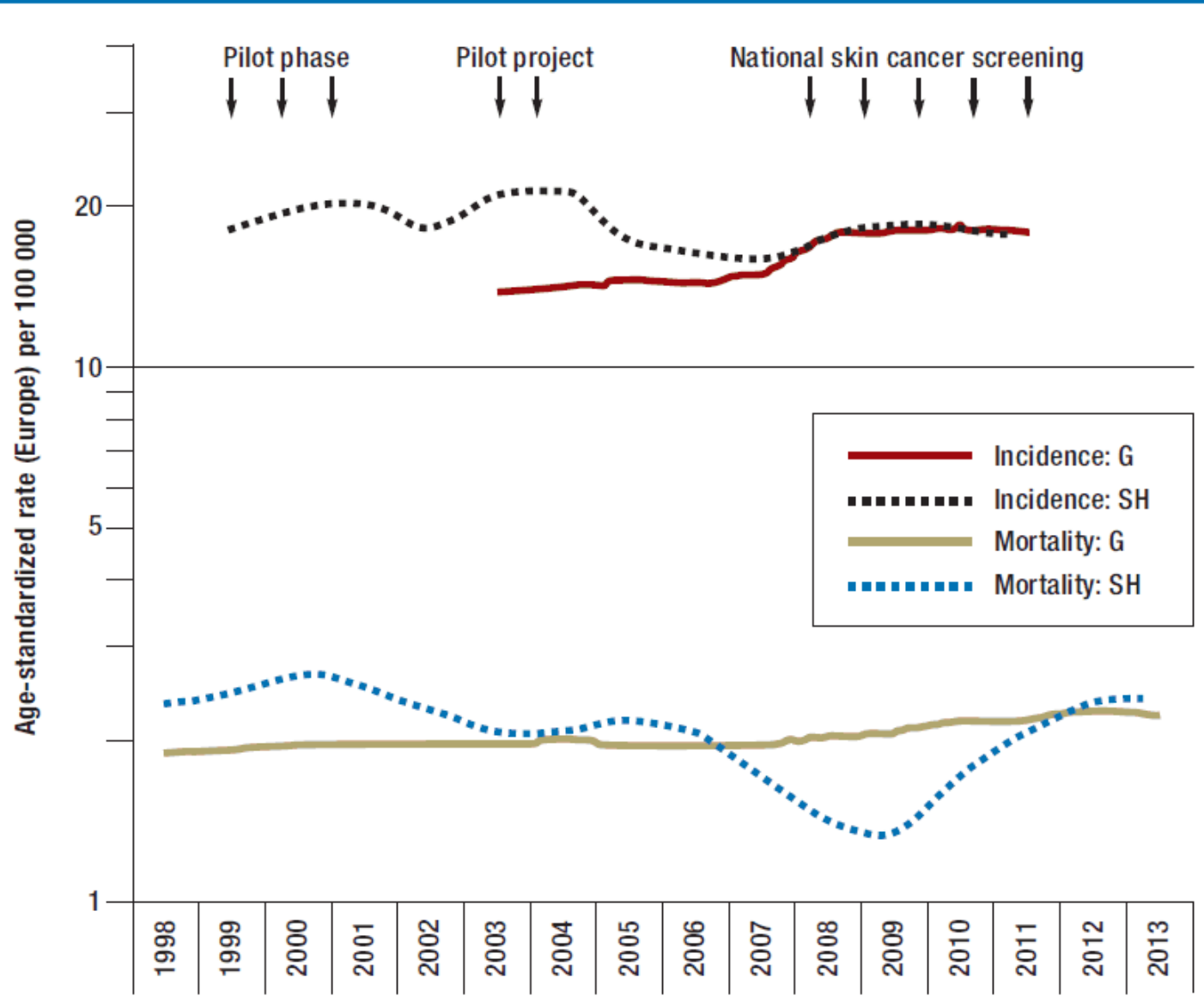
- Mid 2008
- Two-step screening (GP/dermatologist with whole-body examination)
- Referral in case of suspicious finding
- Screening interval: two years
- Eligible population: 35 years and older (about 45 million)
- Financed by health care system
- No invitation system
  
- Estimated participation since 2008: 30% of the population

# Malignant melanoma incidence and mortality in Germany and Schleswig-Holstein, male and female combined, rate standardized for age according to the European standard per 100 000, logarithmic representation, mortality shown as moving average.

Germany and Schleswig-Holstein, male and female combined, rate standardized for age according to the European standard per 100 000, logarithmic representation, mortality shown as moving average.

Data sources:  
 mortality:  
[www.gbe-bund.de](http://www.gbe-bund.de);  
 incidence for Germany (G):  
[www.gekid.de](http://www.gekid.de);  
 incidence for Schleswig-Holstein (SH):  
[www.krebsregister-sh.de](http://www.krebsregister-sh.de)

**FIGURE**



# National skin cancer screening

- Disappointing results at first sight
- Closer look reveals crucial differences between the national SCS and SCREEN

# Understanding differences between national skin cancer screening and pilot project

## National skin cancer screening

- **Referral (GP/D)** when suspicious lesion present
- **Screeners:** GPs and dermatologists, representing about 30% of all physicians
- **Awareness:** No campaigns or awareness programs
- **Participation rate:** About 30% in five years

## SCREEN pilot project

- **Referral (GP/D)** → suspicious lesion or risk factors
- **Screeners:** Broad inclusion of out-patient physicians about 65% of all physicians
- **Awareness:** Multiple campaigns and awareness
- **Participation rate:** 19% in one year

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# Interim conclusion on the national SCS

- Substantial differences between national SCS and pilot project
- National SCS is much less “intensive”
- It is likely that fewer risk persons attended
- The mere introduction of a screening examination seems to be insufficient
- Insofar the rising melanoma mortality in the pilot region and the stable mortality in the rest of Germany are almost not surprising

# Conclusions and lessons learnt from the German SCS

- SCS can be effective, there is limited but sufficient evidence.
- It is unclear which part of the complex intervention in the pilot region is the most relevant. Most likely the interaction of awareness, training and screening examination is the key.
- The mere introduction of a screening examination seems to be insufficient.
- There are promising results that a risk-adaptation of SCS could improve performance.
- Whatever we do, an evaluation strategy is needed in advance to show that we are causing more benefit than harm!

# Views of the Hanse City Lübeck

