

Workshop Screening Mammografico Regione Piemonte
14 Novembre 2012

Antonio Ponti

Bilancio tra benefici e effetti negativi dello screening

Summary of the evidence of breast cancer service screening outcomes in Europe and first estimate of the benefit and harm balance sheet

EUROSCREEN Working Group

J Med Screen 2012;**19** Suppl 1:5–13
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The Benefits and Harms of Breast Cancer Screening:

An Independent Review

Authors:

**The Independent UK Panel on Breast Cancer
Screening**



**A report jointly commissioned by
Cancer Research UK and the Department of Health
(England).**

October 2012

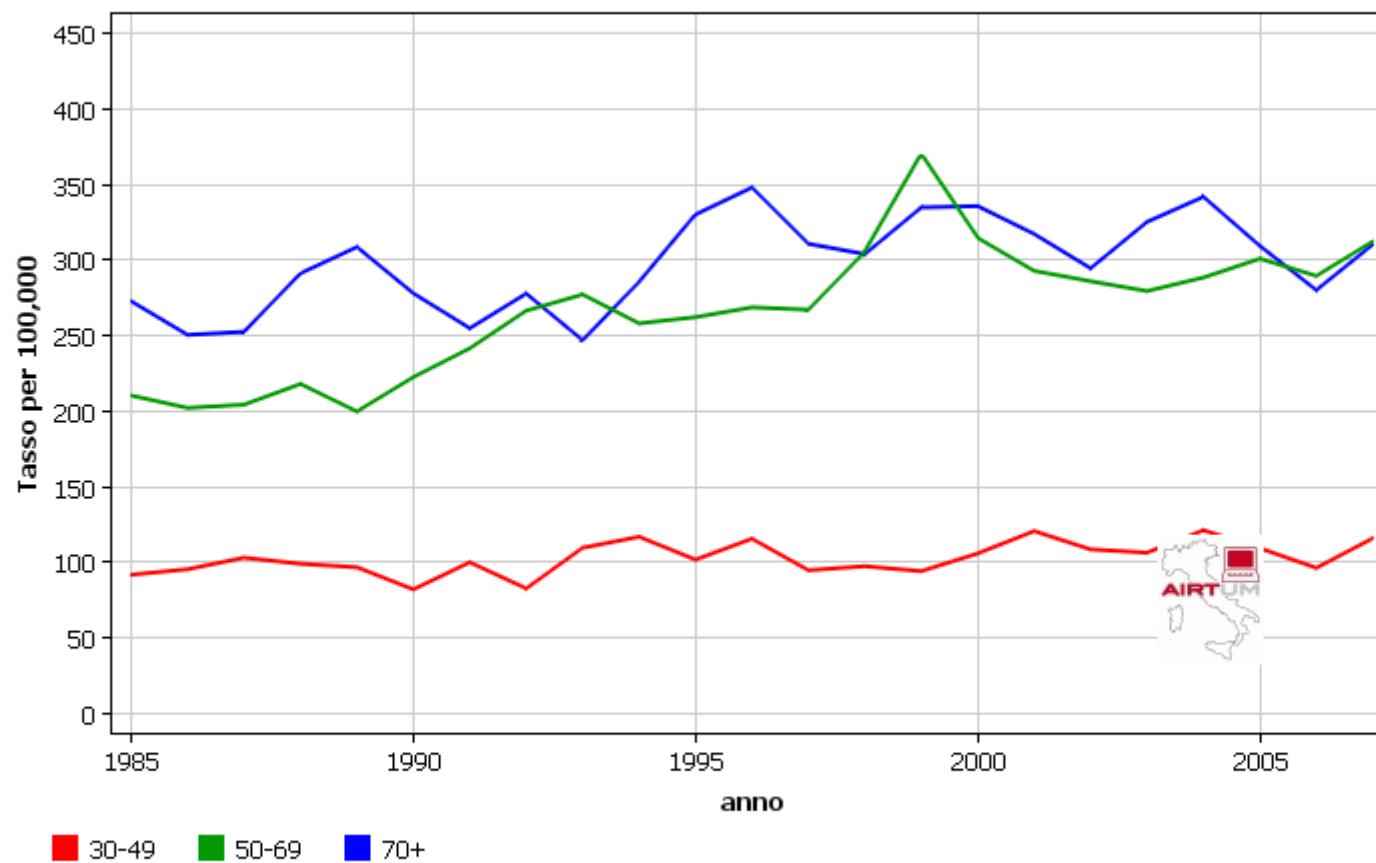
Members of the Independent UK Panel on Breast Cancer screening:

Chair: Professor Sir Michael G Marmot, professor of epidemiology and public health and director of the Institute of Health Equity at University College, London

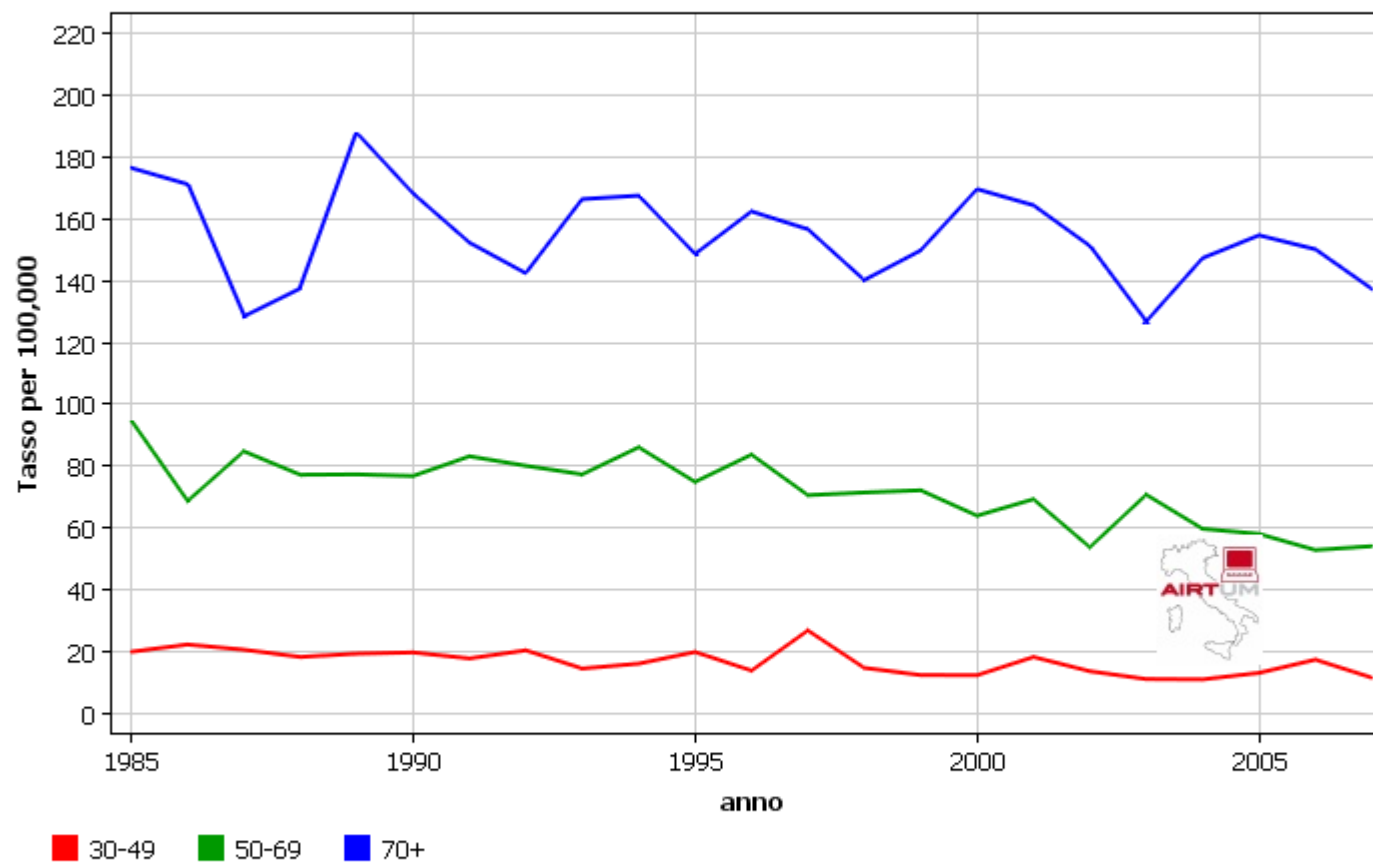
Panel members:

- Professor **Douglas Altman**, director of the centre for statistics in medicine at the University of Oxford
- Professor **David Cameron**, professor of oncology and clinical director of the Edinburgh Cancer Research Centre
- Professor **John Dewar**, consultant and honorary professor of clinical oncology at Dundee University
- Professor **Simon Thompson**, director of research in biostatistics at the University of Cambridge
- **Maggie Wilcox**, patient advocate

Incidenza: Torino Mammella



Mortalità: Torino Mammella



The impact of mammographic screening on breast cancer mortality in Europe: a review of observational studies

Mireille Broeders, Sue Moss, Lennarth Nyström, Sisse Njor, Håkan Jonsson, Ellen Paap, Nathalie Massat, Stephen Duffy, Elsebeth Lynge and Eugenio Paci, for the EUROSCREEN Working Group

J Med Screen 2012;19 Suppl 1:14–25
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The impact of mammographic screening on breast cancer mortality in Europe: a review of trend studies

S M Moss, L Nyström, H Jonsson, E Paci, E Lynge, S Njor and M Broeders, for the Euroscreen Working Group (members listed at the end of the paper)

J Med Screen 2012; **19** Suppl 1:26–32

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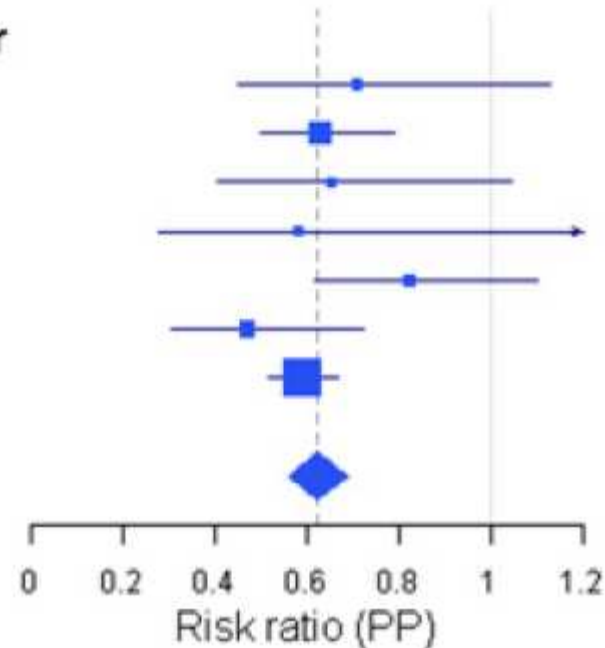
Breast cancer mortality in mammographic screening in Europe: a review of incidence-based mortality studies

Sisse Njor, Lennarth Nyström, Sue Moss, Eugenio Paci, Mireille Broeders, Nereo Segnan, Elsebeth Lynge and The Euroscreen Working Group (members listed at the end of the paper)

J Med Screen 2012;**19** Suppl 1:33–41
DOI: 10.1258/jms.2012.012080

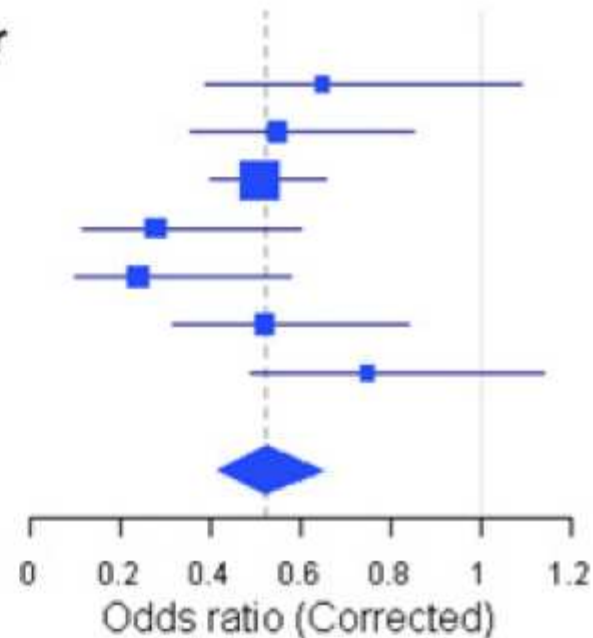
**EUROSCREEN: estimate of mortality reduction
(screened vs non screened)
Incidence based mortality (IBM) studies.**

(b) Study	RR	Lower	Upper
Hakama, (1997) ³⁹	0.71	0.45	1.13
Olsen, (2005) ³²	0.63	0.5	0.79
Sarkeala, (2008) ³⁶	0.65	0.41	1.05
Paci, (2002) ⁴²	0.58	0.28	1.22
Kalager, (2010) ⁵¹	0.82	0.62	1.1
Ascunce, (2007) ⁵³	0.47	0.31	0.73
SOSSEG, (2006) ⁵⁹	0.59	0.52	0.67
Summary (random)	0.62	0.56	0.69



**EUROSCREEN: estimate of mortality reduction
(screened vs non screened)
Case control studies.**

(b) Study	OR	Lower	Upper
Gabe, (2007) ⁴⁰	0.65	0.39	1.09
Puliti, (2008) ⁴³	0.55	0.36	0.85
Otto, (2012) ⁴⁷	0.51	0.4	0.66
Van Schoor, (2011) ¹⁵	0.28	0.12	0.6
Paap, (2010) ⁴⁹	0.24	0.1	0.58
Allgood, (2008) ⁶⁵	0.52	0.32	0.84
Fielder, (2004) ⁶⁶	0.75	0.49	1.14
Summary (random)	0.52	0.42	0.65



Independent screening review

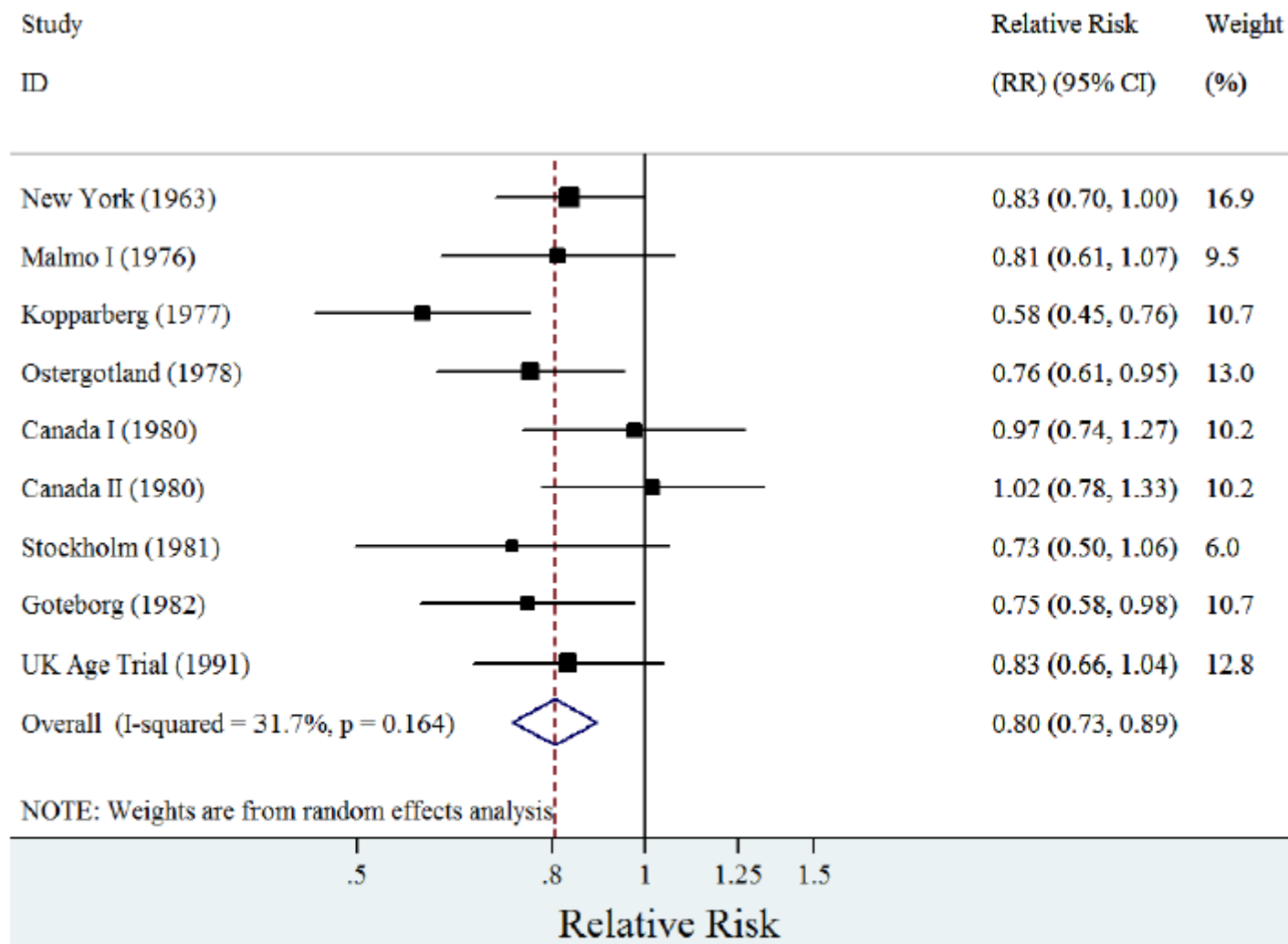


Figure 3.1 Meta-analysis of the breast cancer screening trials: relative risk (RR) of breast cancer mortality after 13 years of follow-up. Adapted from the Cochrane Review (Gøtzsche 2011).

Overdiagnosis in mammographic screening for breast cancer in Europe: a literature review

Donella Puliti, Stephen W Duffy, Guido Miccinesi, Harry de Koning, Elsebeth Lynge, Marco Zappa, Eugenio Paci and the EUROSCREEN Working Group (members listed at the end of the paper)

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Objectives Overdiagnosis, the detection through screening of a breast cancer that would never have been identified in the lifetime of the woman, is an adverse outcome of screening. We aimed to determine an estimate range for overdiagnosis of breast cancer in European mammographic service screening programmes.

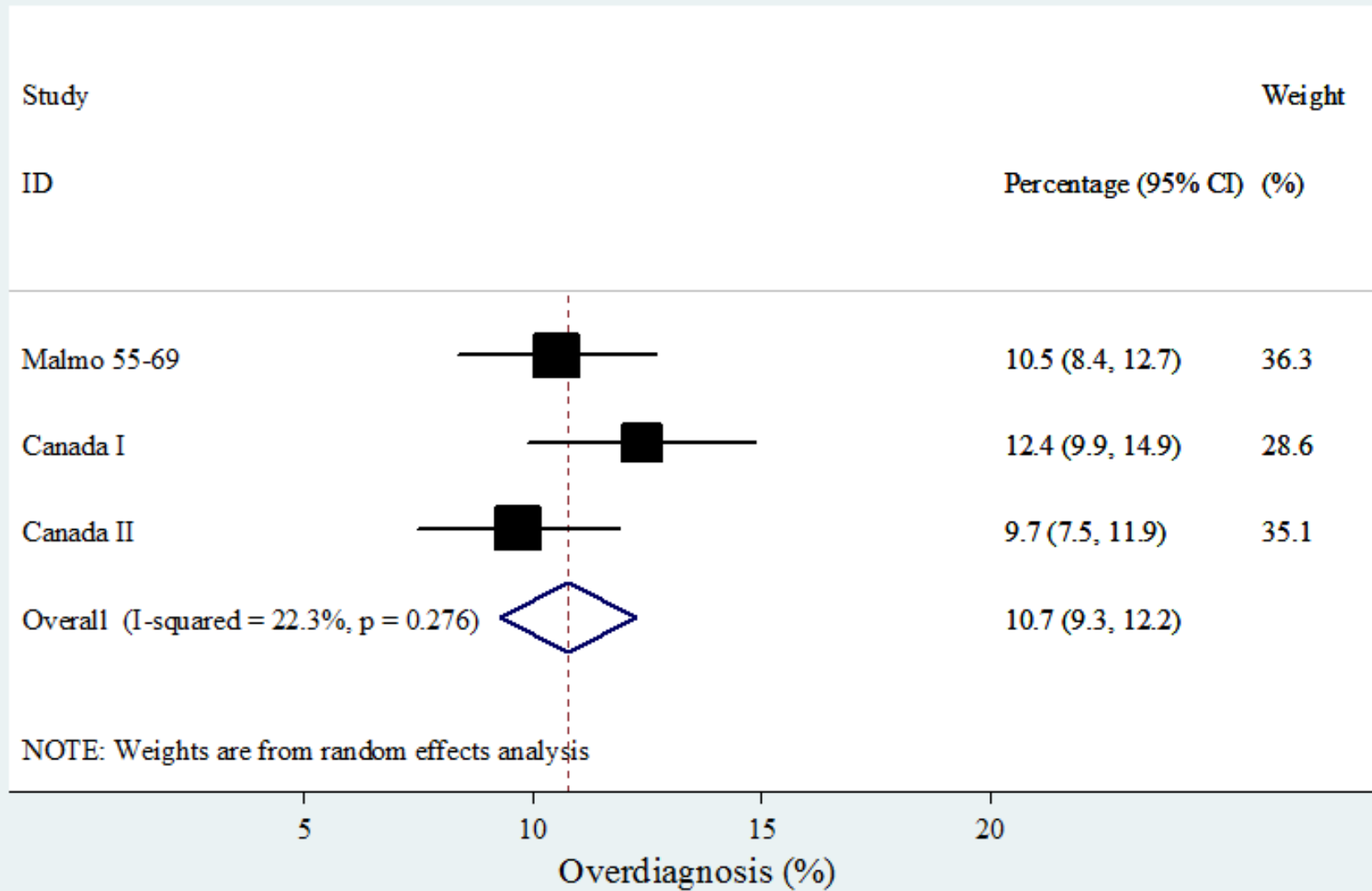
Methods We conducted a literature review of observational studies that provided estimates of breast cancer overdiagnosis in European population-based mammographic screening programmes. Studies were classified according to the presence and the type of adjustment for breast cancer risk (data, model and covariates used), and for lead time (statistical adjustment or compensatory drop). We expressed estimates of overdiagnosis from each study as a percentage of the expected incidence in the absence of screening, even if the variability in the age range of the denominator could not be removed. Estimates including carcinoma *in situ* were considered when available.

Results There were 13 primary studies reporting 16 estimates of overdiagnosis in seven European countries (the Netherlands, Italy, Norway, Sweden, Denmark, UK and Spain). Unadjusted estimates ranged from 0% to 54%. Reported estimates adjusted for breast cancer risk and lead time were 2.8% in the Netherlands, 4.6% and 1.0% in Italy, 7.0% in Denmark and 10% and 3.3% in England and Wales.

Conclusions The most plausible estimates of overdiagnosis range from 1% to 10%. Substantially higher estimates of overdiagnosis reported in the literature are due to the lack of adjustment for breast cancer risk and/or lead time.

Independent review: estimate of overdiagnosis

% of ca diagnosed over long term follow up in women invited



Mammographic screening programmes in Europe: organization, coverage and participation

Livia Giordano, Lawrence von Karsa, Mariano Tomatis, Ondrej Majek, Chris de Wolf,
Lesz Lancucki, Solveig Hofvind, Lennarth Nyström, Nereo Segnan, Antonio Ponti and The
Eunice Working Group (Eunice Working Group members are listed at the end of the paper)

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DOI: 10.1258/jms.2012.012085

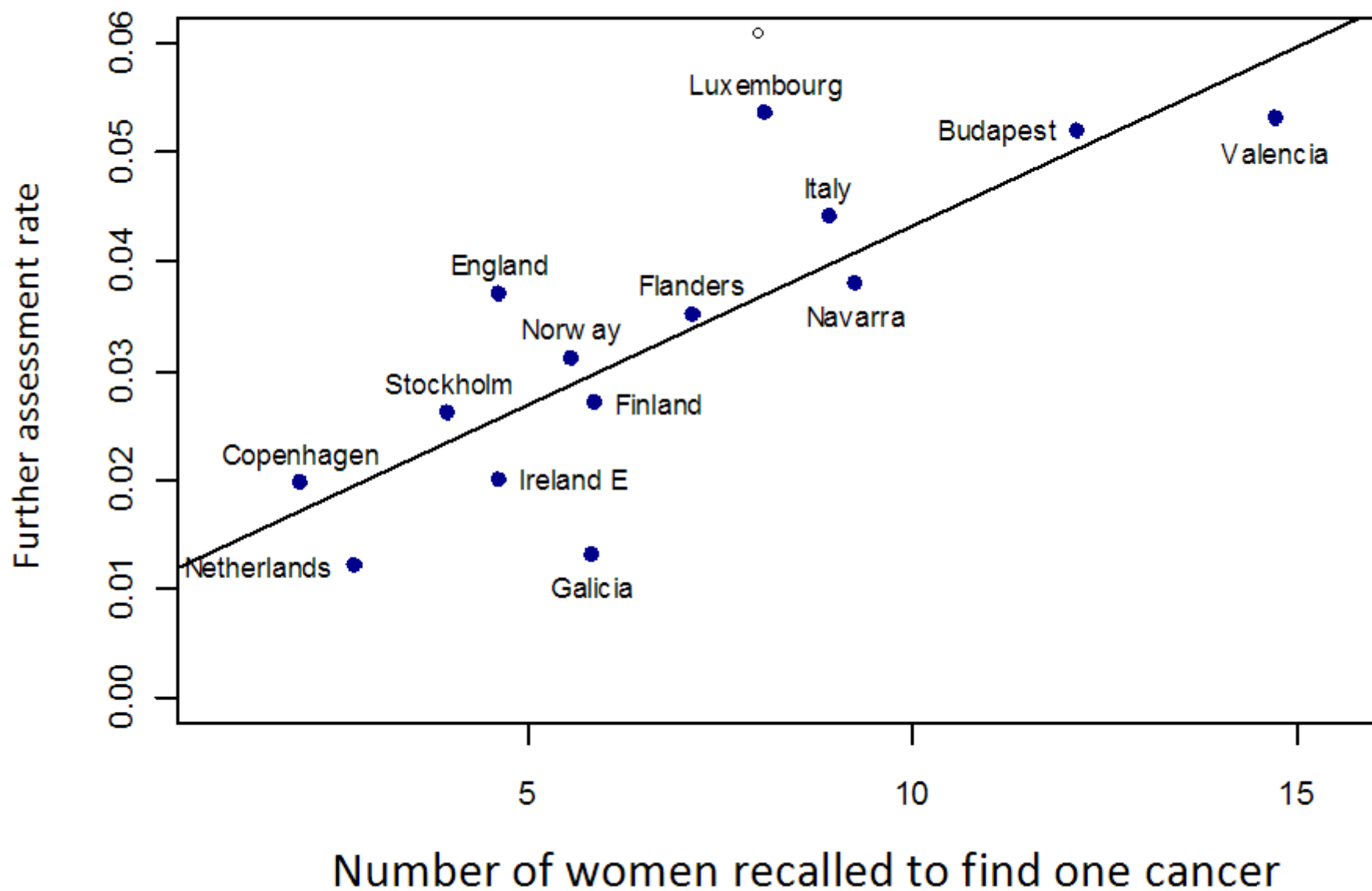
False-positive results in mammographic screening for breast cancer in Europe: a literature review and survey of service screening programmes

Solveig Hofvind, Antonio Ponti, Julietta Patnick, Nieves Ascunce, Sisse Njor, Mireille Broeders, Livia Giordano, Alfonso Frigerio and Sven Törnberg The EUNICE Project and Euroscreen Working Groups (Members of the EUNICE Project and Euroscreen Working Groups listed at end of paper)

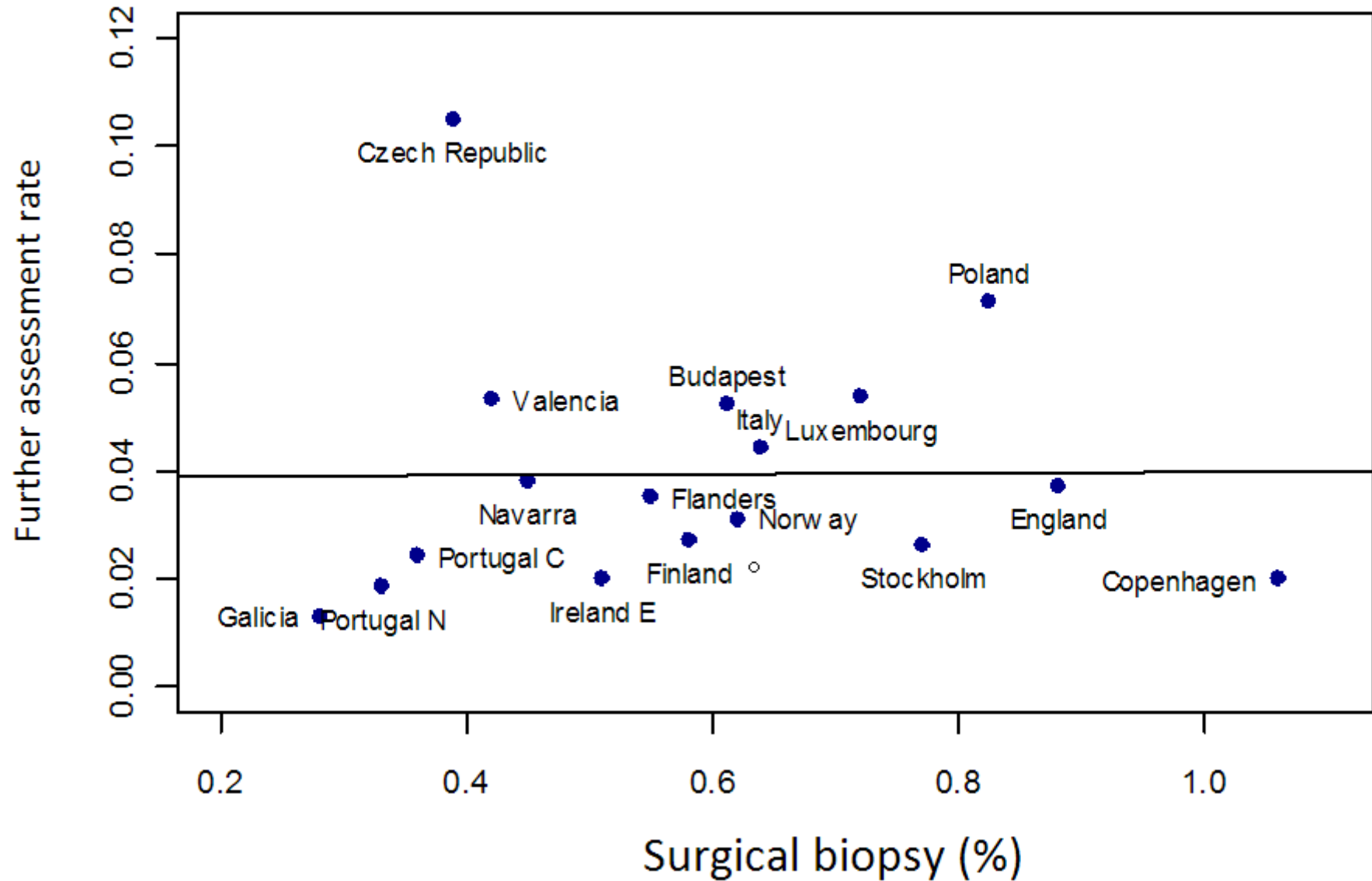
J Med Screen 2012;**19** Suppl 1:57–66

DOI: 10.1258/jms.2012.012083

A) 1/Positive Predictive Value for mammography (p-value<0.001)



C) Surgical intervention (p-value=0.33)



Women invited / screened for 20 years starting at age 50

	EUROSCREEN review (screening interval 2 years)	UK Independent review (screening interval 3 years)
Mortality reduction	28% (invited) 42% (screened)	20% (invited) 25% (screened)
Absolute mort. benefit (lives saved)	1 / 127 (screened)	1 / 235 (invited) 1 / 180 (screened)
Over-diagnosis	6.5% of incident ca. in absence of screening	11% of incident ca. since start of screening
FP (non invasive inv.)	17%	
FP (invasive inv.)	3%	

For every 10000 women screened since age 50 for 20 years:

	EUROSCREEN review (screening interval 2 years, follow up till age 79)	UK Independent review (screening interval 3 years)
Cases diagnosed	710	
BC deaths expected	300 (190 IBM)	
Lives saved	80	56
Over-diagnosed cases	40	168
LS : OD	1 : 0.5	1 : 3

The Panel concludes that the UK breast screening programmes confer significant benefit and should continue. The greater the proportion of women who accept the invitation to be screened, the greater is the benefit to the public health in terms of reduction in mortality from breast cancer. But for each woman the choice is clear: on the plus side screening confers a likely reduction in mortality from breast cancer because of early detection and treatment. On the negative side, is the knowledge that she has perhaps a 1% chance of having a cancer diagnosed, and treated with surgery and other modalities, that would never have caused problems had she not been screened.

Evidence from a **focus group** conducted by Cancer Research UK and attended by two panel members, and in line with previous similar studies, was that this was an offer many women will feel is worth accepting: the treatment of overdiagnosed cancer may cause suffering and anxiety but that suffering is worth the gain from the potential reduction in breast cancer mortality. **Clear communication** of these harms and benefits to women is of utmost importance and goes to the heart of how a modern health system should function. There is a body of knowledge on how women want information presented, and this should inform the design of information to the public.

Communicating the balance sheet in breast cancer screening

Livia Giordano, Carla Cogo, Julietta Patnick, Eugenio Paci and the Euroscreen Working Group
(members listed at the end of the paper)

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