Breast and Colorectal Cancer mortality in Scotland – can we do better?

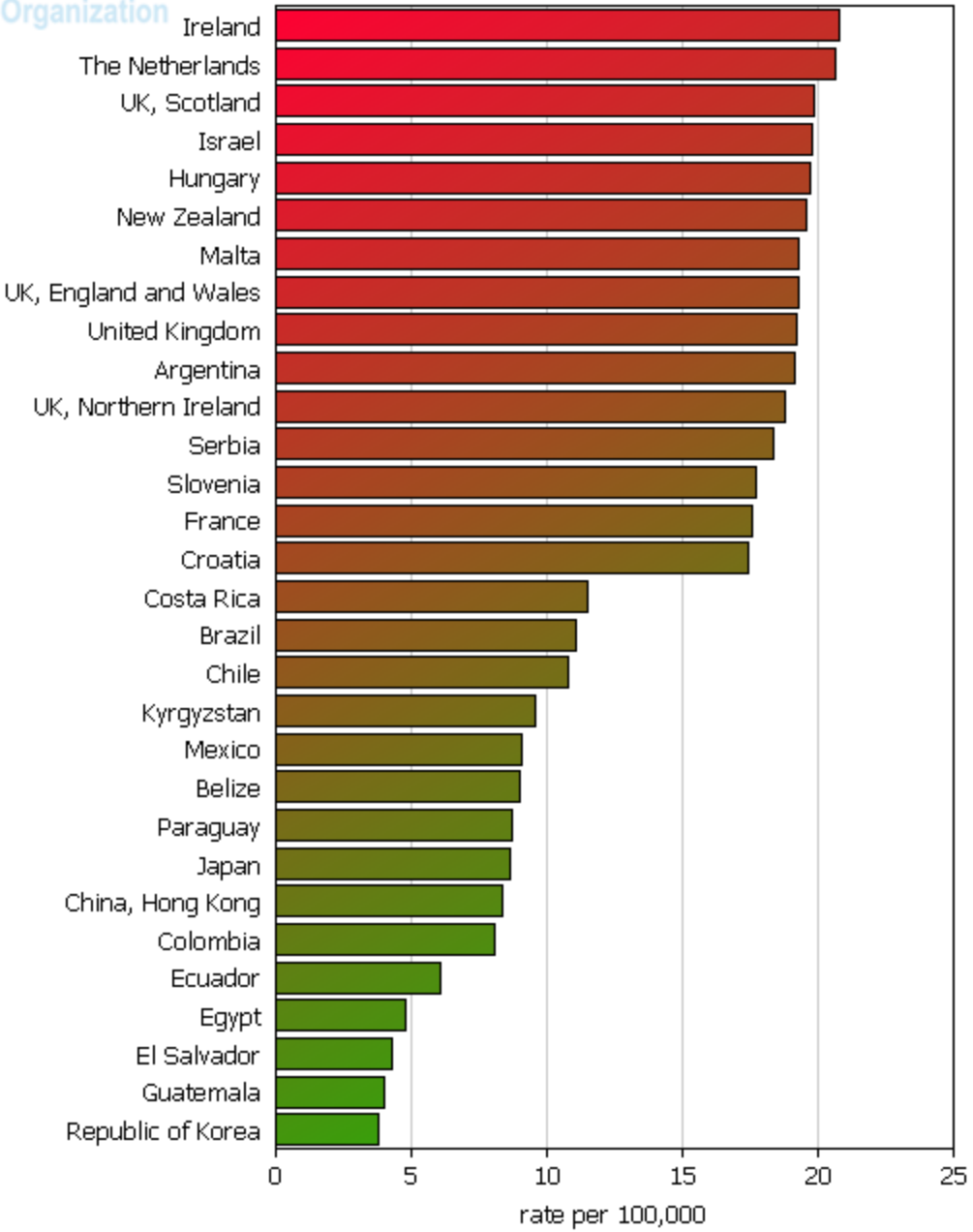
Scottish Cancer Prevention Network Conference

16 November 2011

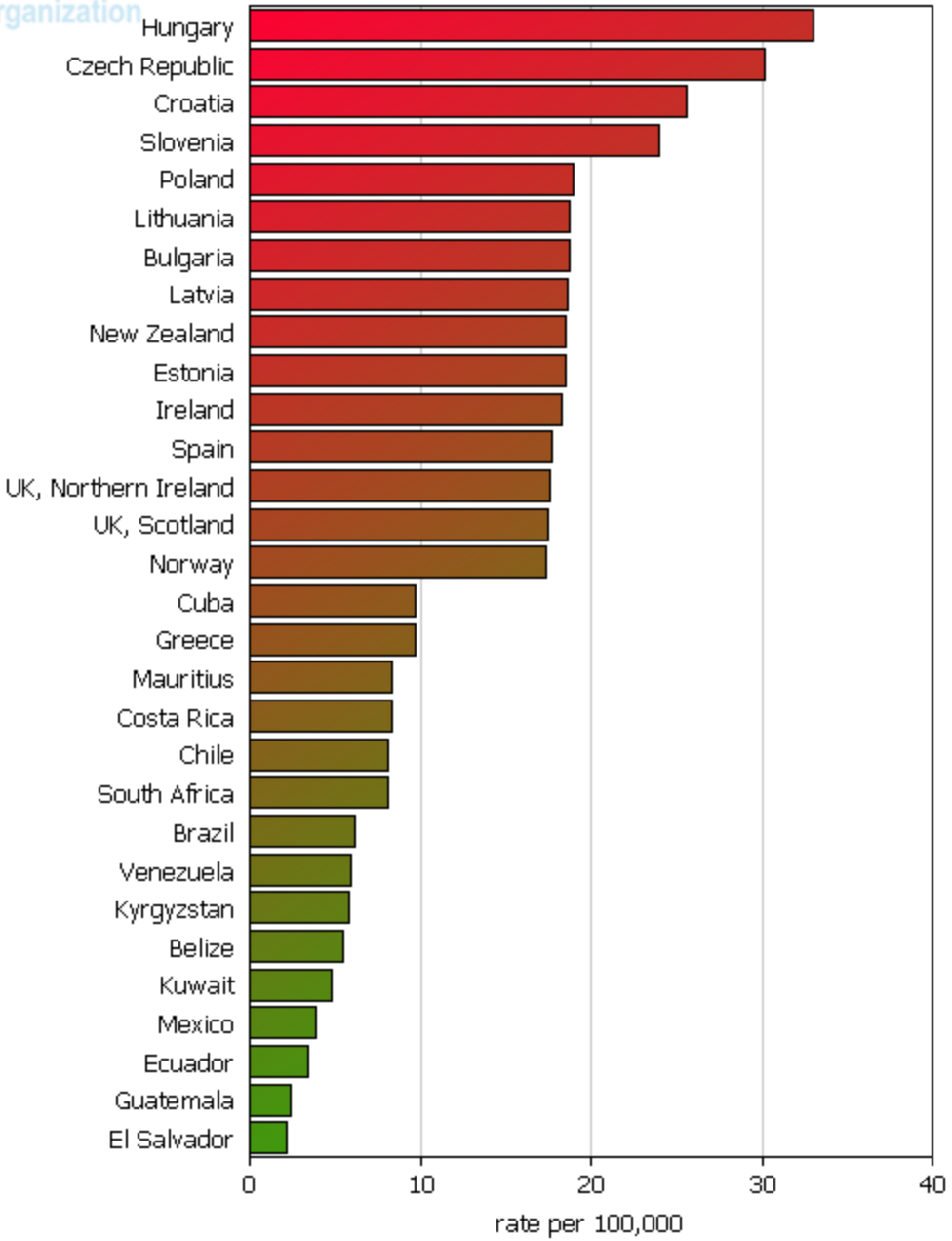
Outline

- Mortality
- Incidence
- Survival
- Risk factors
- Screening
- Treatment

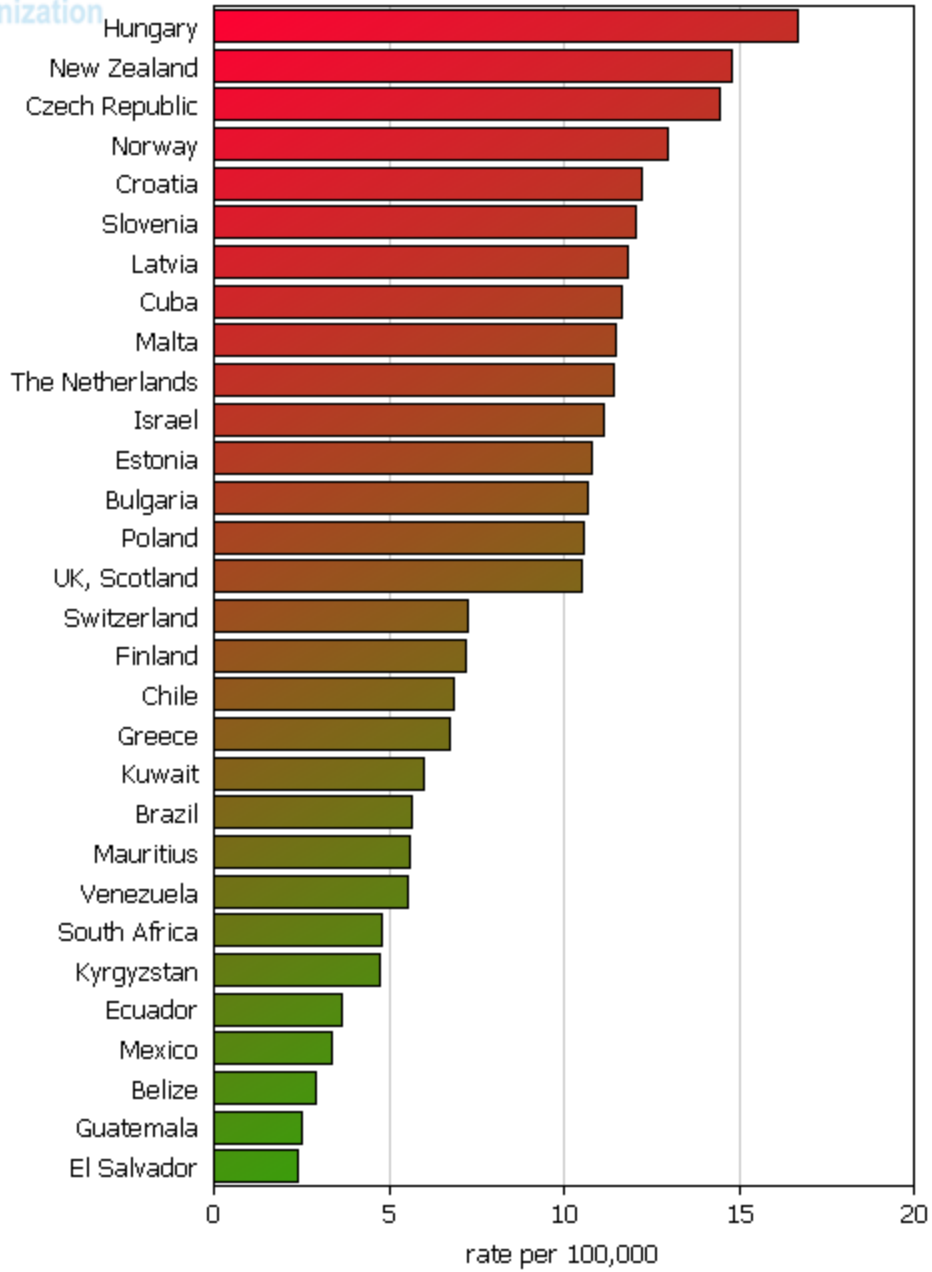
Mortality from Breast Cancer (2003-2007)
Age-standardised rate (World), age (0-85+)



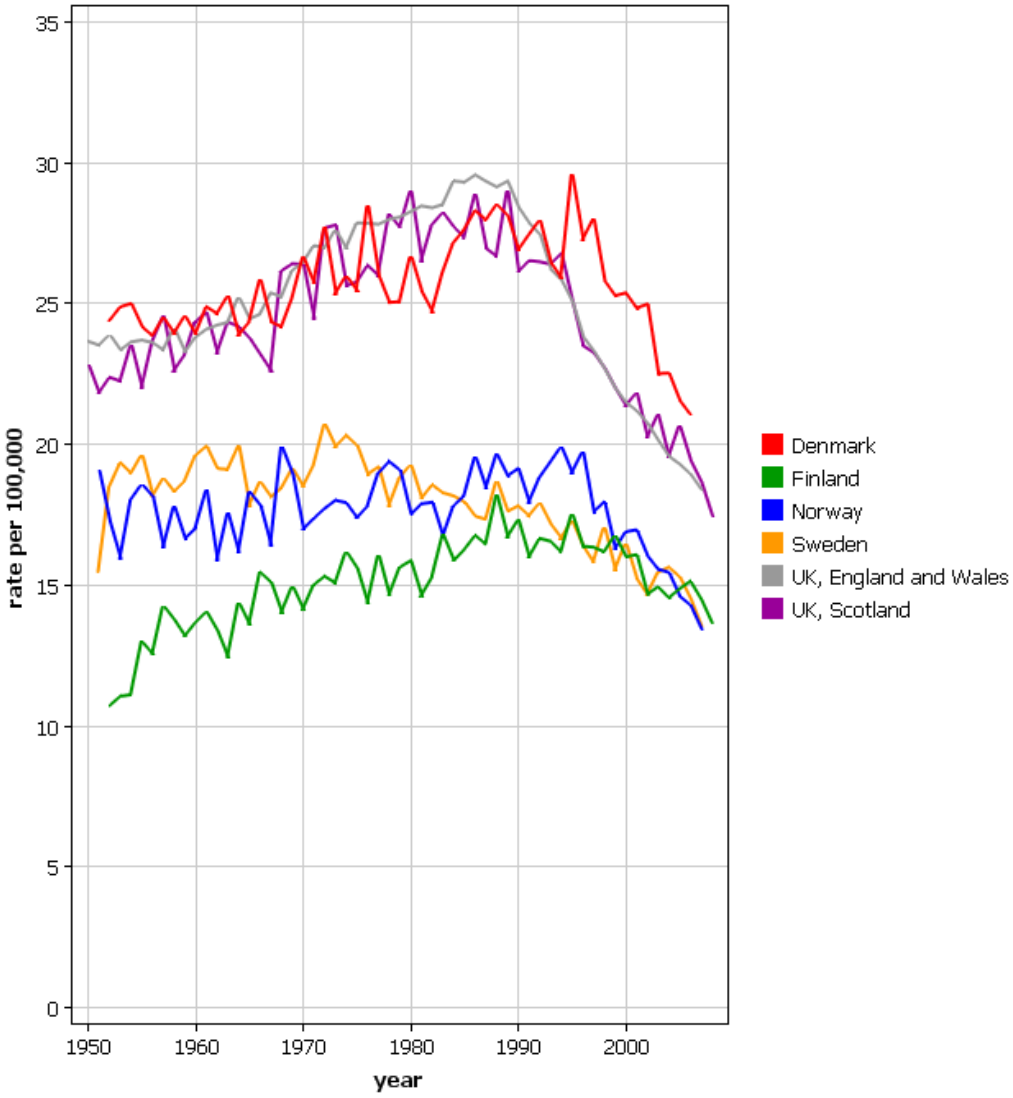
Mortality from Colon, rectum and anus Cancers
Age-standardised rate (World), age (0-85+): Male (2003-2007)



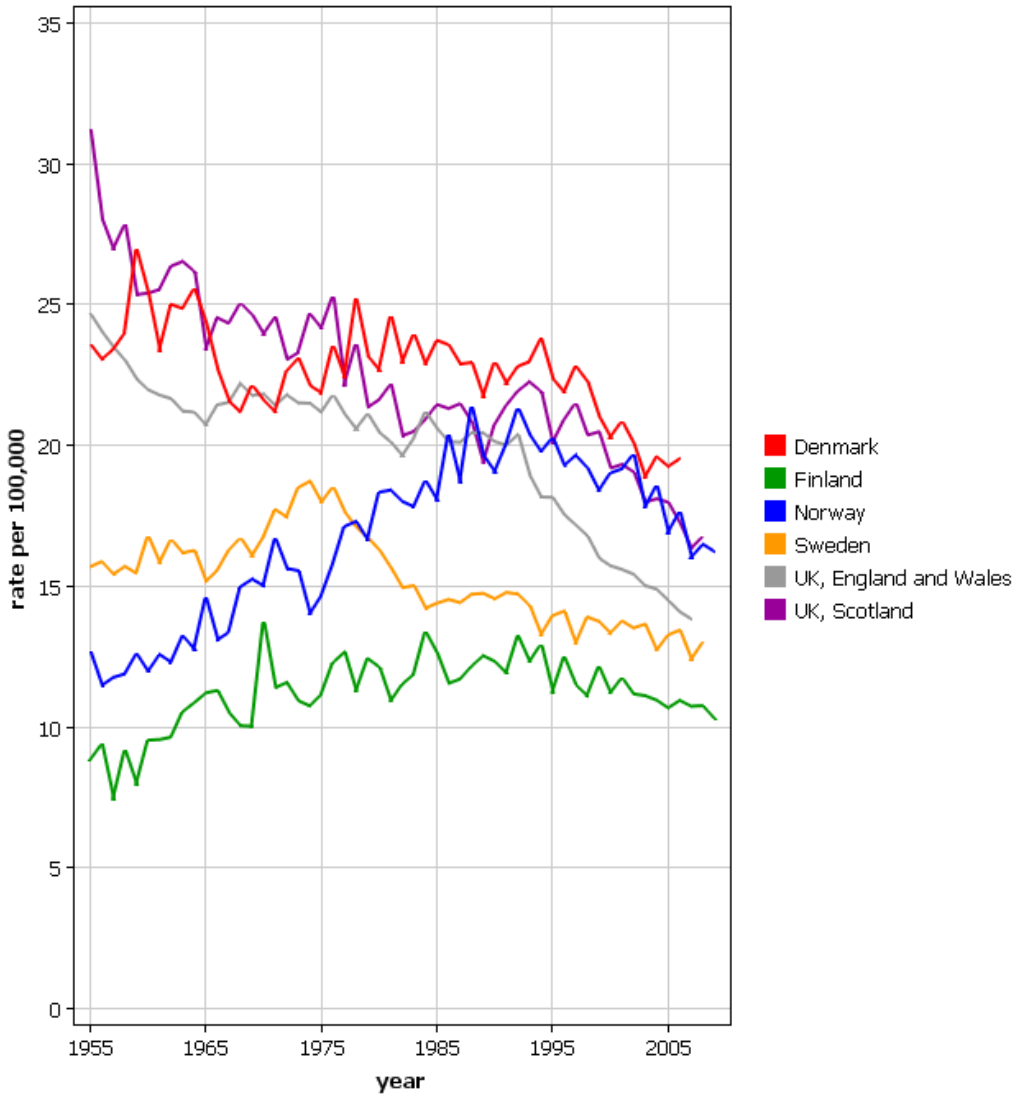
Mortality from Colon, rectum and anus Cancers
Age-standardised rate (World), age (0-85+): Female (2003-2007)



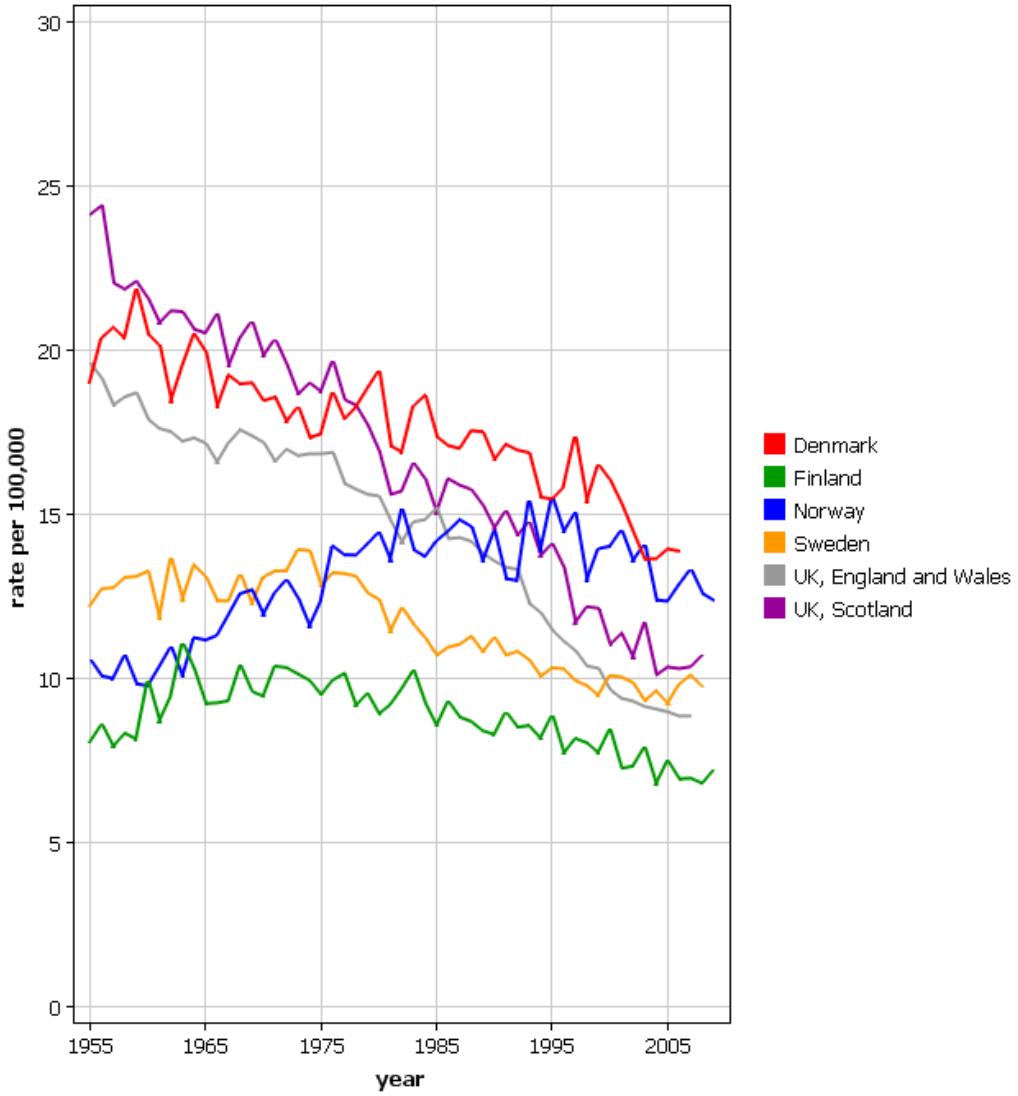
Mortality from Breast Cancer
Age-standardised rate (World) all ages



Mortality from Colon, rectum and anus Cancers
Age-standardised rate (World), Male all ages



Mortality from Colon, rectum and anus Cancers
Age-standardised rate (World), Female all ages



Breast cancer

Population	Age-standardised incidence rate
Switzerland, Geneva (1998-2002)	103.0
USA, SEER (9 Registries): White (1998-2002)	97.1
France, Bas-Rhin (1998-2002)	93.9
Italy, Varese Province (1998-2000)	91.9
The Netherlands (1998-2002)	90.3
Australia, Victoria (1998-2002)	83.9
Denmark (1998-2002)	83.7
Canada (1998-2002)	80.7
Finland (1998-2002)	80.6
UK, Scotland (1998-2002)	**79.2**
Sweden (1998-2002)	78.9
Norway (1998-2002)	71.0
Spain, Navarra (1998-2002)	66.2
Singapore: Chinese (1998-2002)	56.4
Slovakia (1998-2002)	46.9
Japan, Osaka Prefecture (1998-2002)	32.0

Source: *Cancer Incidence in Five Continents, Volume IX*

Colorectal cancer (males)

Population	Age-standardised incidence rate
Slovakia (1998-2002)	52.5
France, Bas-Rhin (1998-2002)	48.7
Australia, Victoria (1998-2002)	48.3
Singapore: Chinese (1998-2002)	46.0
Italy, Varese Province (1998-2000)	43.4
UK, Scotland (1998-2002)	**43.1**
Canada (1998-2002)	42.6
Norway (1998-2002)	40.7
The Netherlands (1998-2002)	39.8
Spain, Navarra (1998-2002)	39.4
Denmark (1998-2002)	39.3
USA, SEER (9 Registries): White (1998-2002)	37.9
Japan, Osaka Prefecture (1998-2002)	37.4
Sweden (1998-2002)	30.0
Finland (1998-2002)	25.6

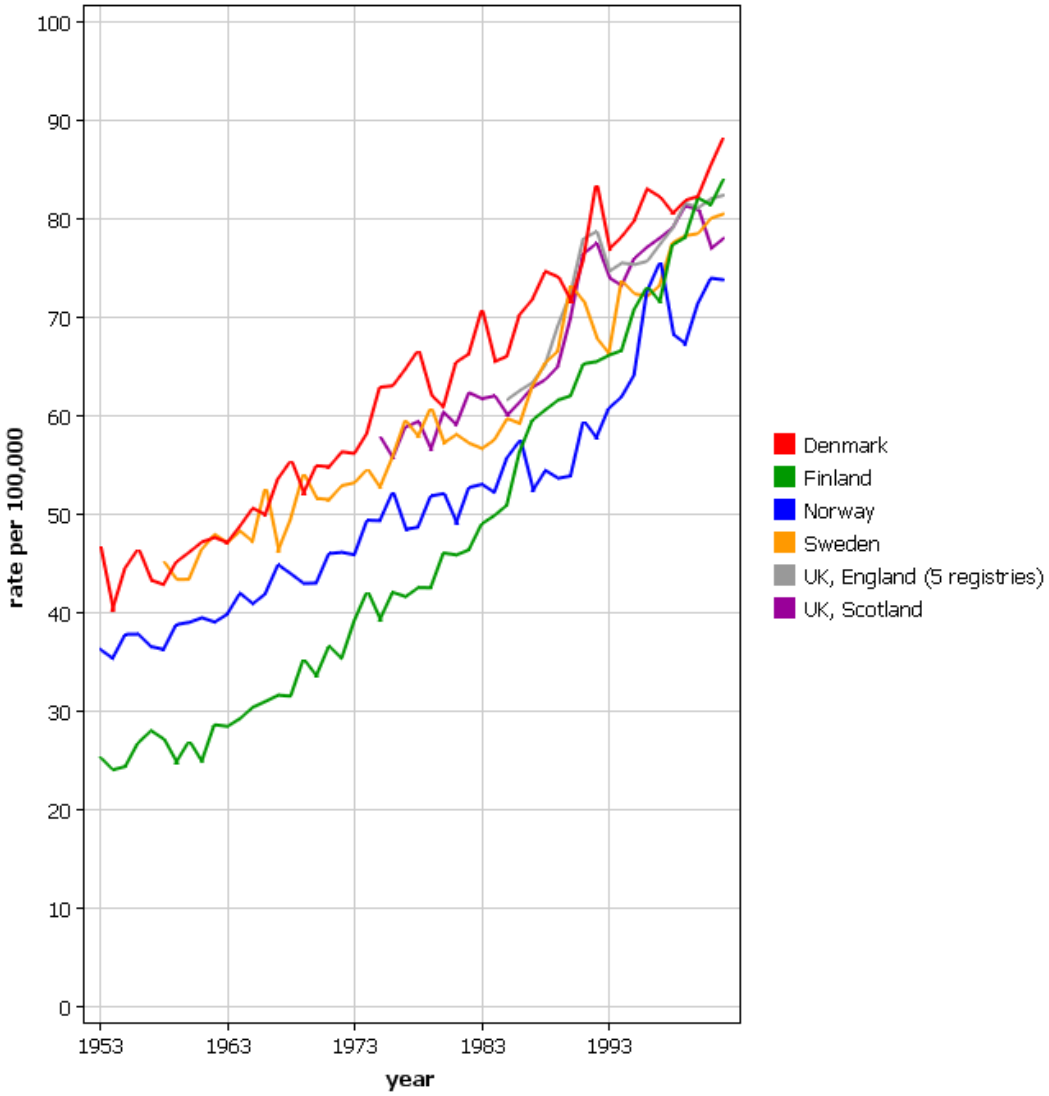
Source: *Cancer Incidence in Five Continents, Volume IX*

Colorectal cancer (females)

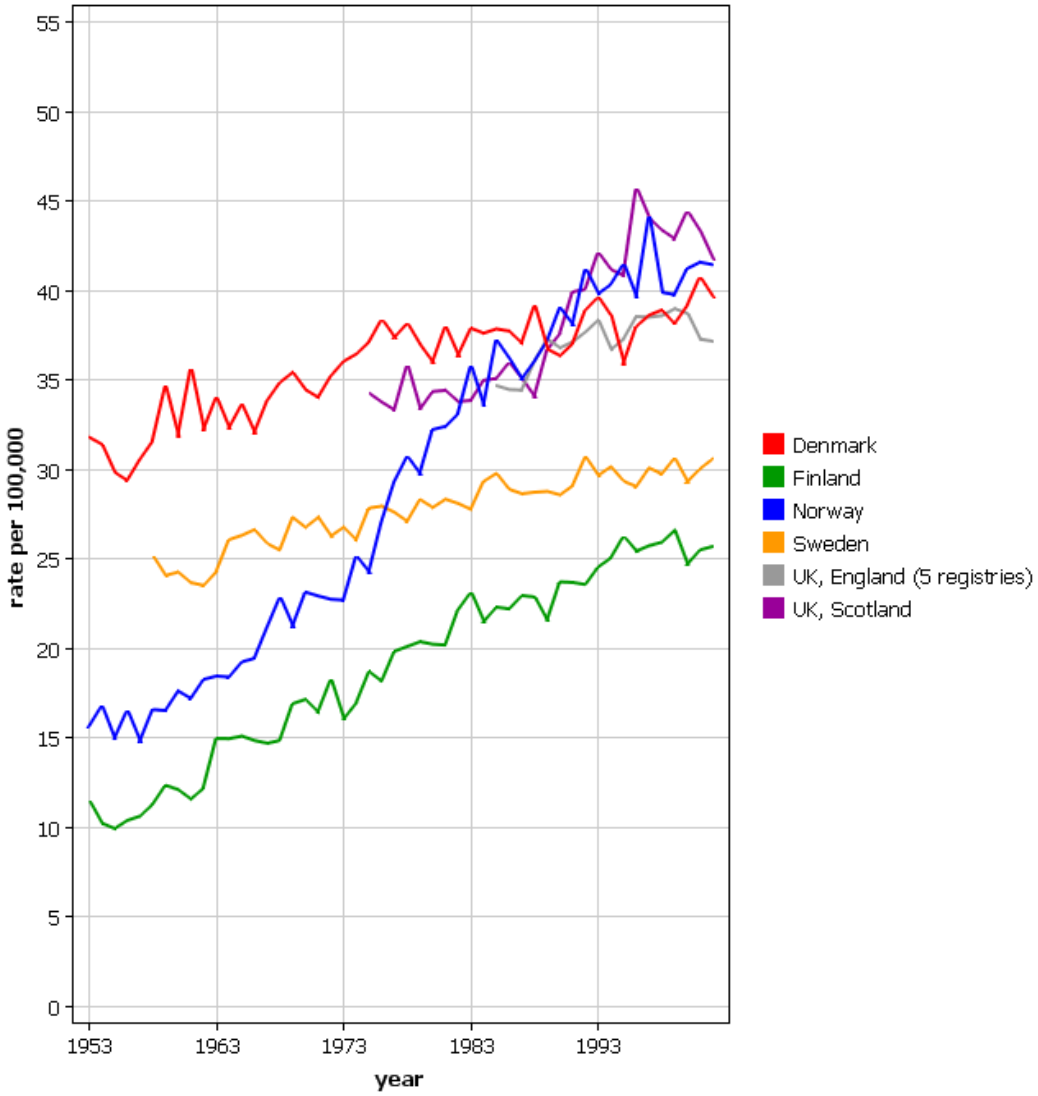
Population	Age-standardised incidence rate
Australia, Victoria (1998-2002)	33.1
Norway (1998-2002)	32.7
Singapore: Chinese (1998-2002)	31.7
Denmark (1998-2002)	29.8
Canada (1998-2002)	29.4
The Netherlands (1998-2002)	28.7
USA, SEER (9 Registries): White (1998-2002)	27.9
Italy, Varese Province (1998-2000)	27.5
UK, Scotland (1998-2002)	**27.5**
Slovakia (1998-2002)	26.7
France, Bas-Rhin (1998-2002)	26.1
Switzerland, Geneva (1998-2002)	24.9
Sweden (1998-2002)	23.4
Spain, Navarra (1998-2002)	22.1
Japan, Osaka Prefecture (1998-2002)	21.7
Finland (1998-2002)	19.5

Source: *Cancer Incidence in Five Continents, Volume IX*

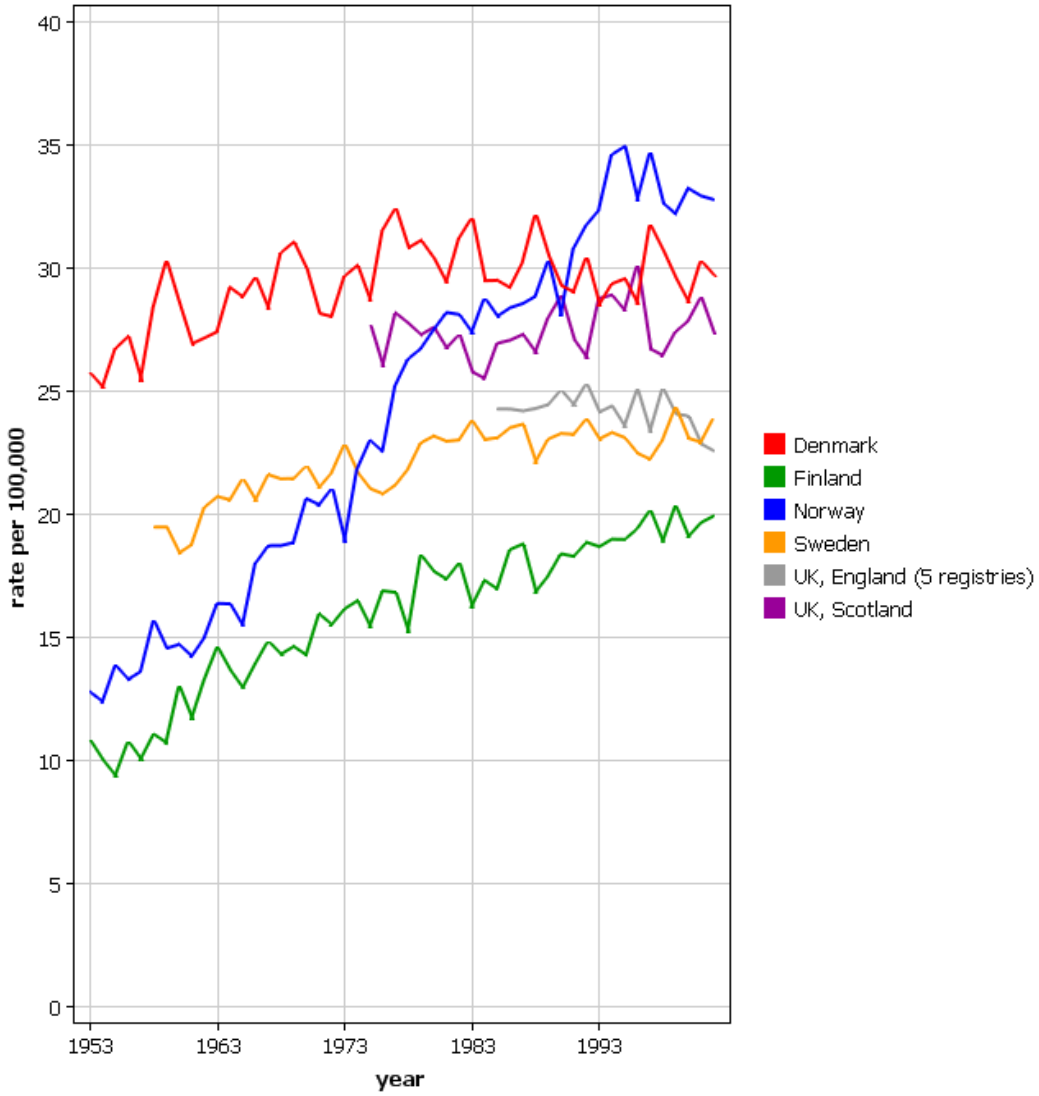
Breast
Age Standardised Incidence Rate (World), age [0-85+]



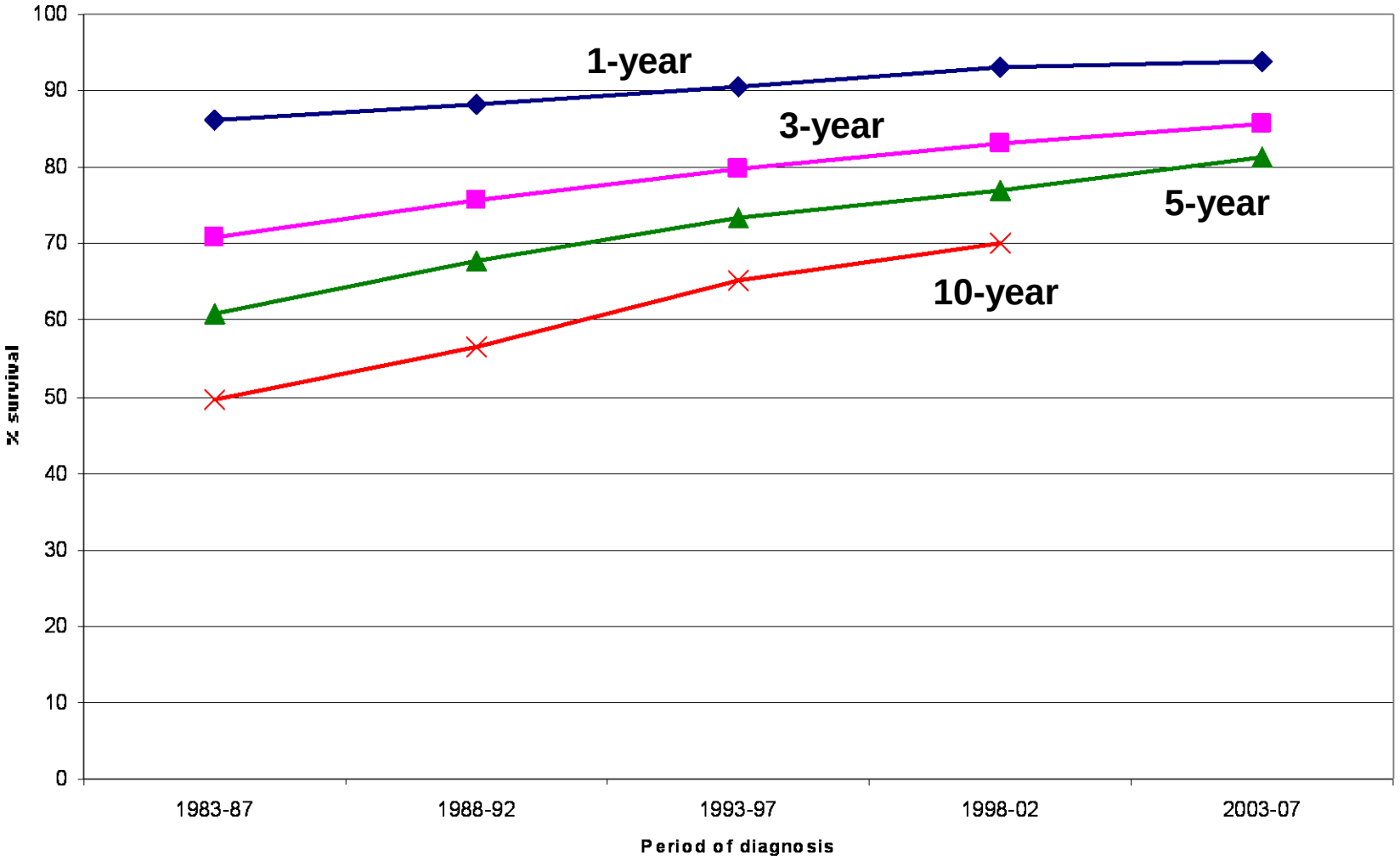
Colon, rectum and anus
Age Standardised Incidence Rate (World), Male age [0-85+]



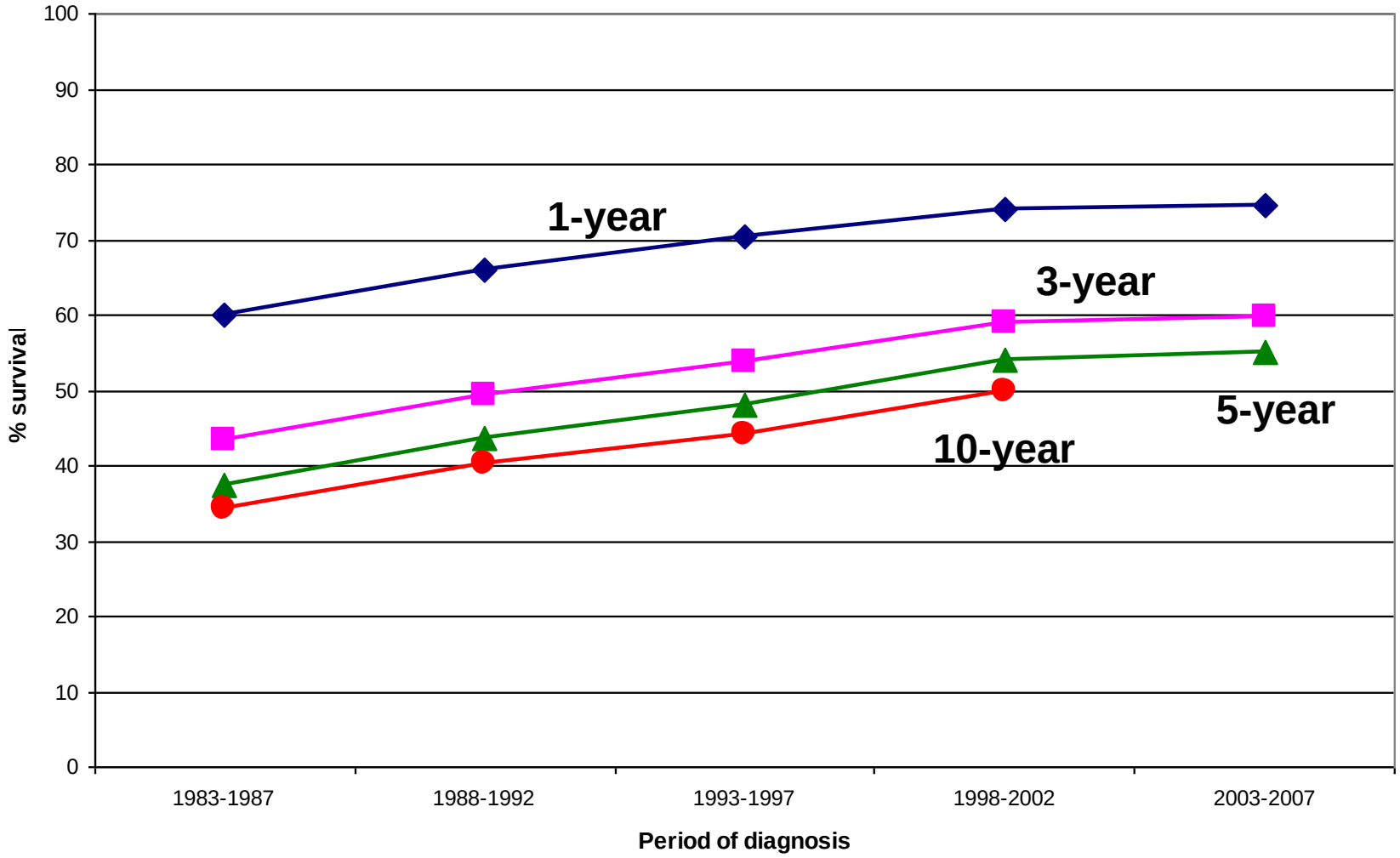
Colon, rectum and anus
Age Standardised Incidence Rate (World), Female age [0-85+]



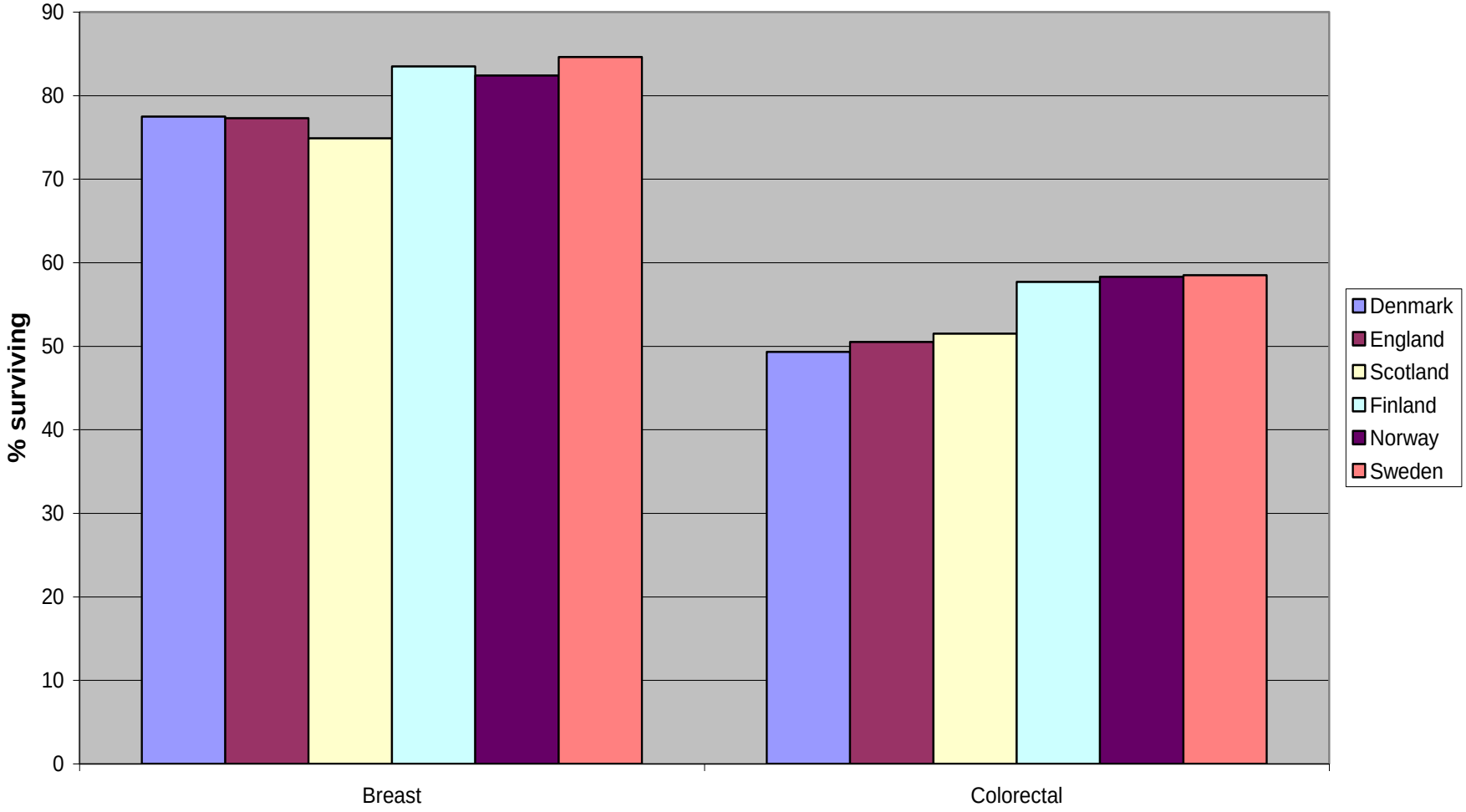
Age-standardised relative survival from breast cancer by survival time and period of diagnosis



Age-standardised relative survival from colorectal cancer by survival time and period of diagnosis



Breast cancer and colorectal cancer diagnosed 1995-99.
Five year relative survival by country



Some factors to consider in population-based survival comparisons

Data quality factors

Population coverage
Completeness of ascertainment
Accuracy of registration
Completeness of follow-up
‘Death certificate only’ registrations

Tumour-related factors

Extent of disease
Site (and sub-site) of tumour
Tumour morphology
Tumour biology

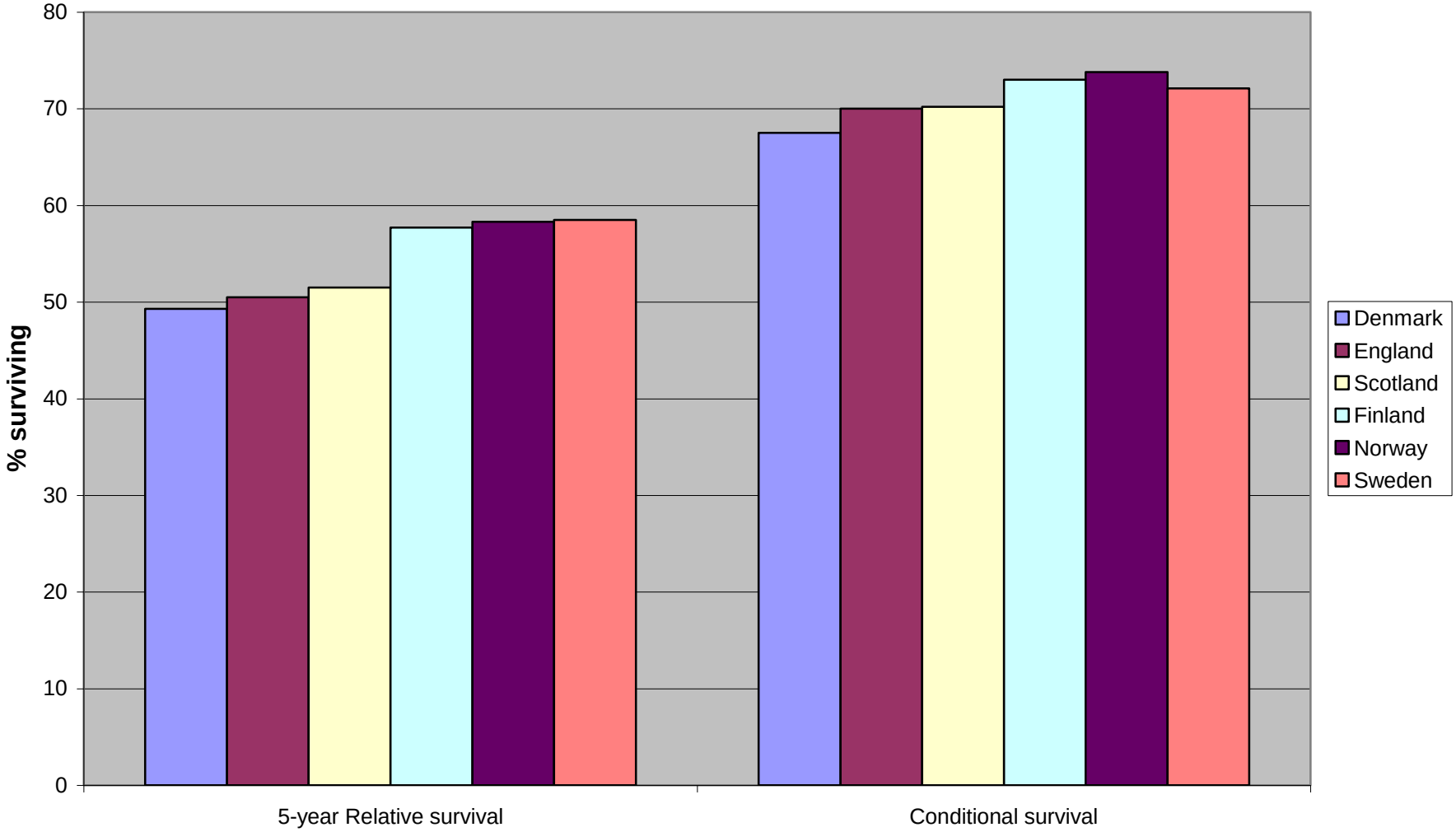
Host factors

Age
Sex
Socio-economic status
Race/Ethnicity
Co-morbidity
Mortality from other causes
Behaviour

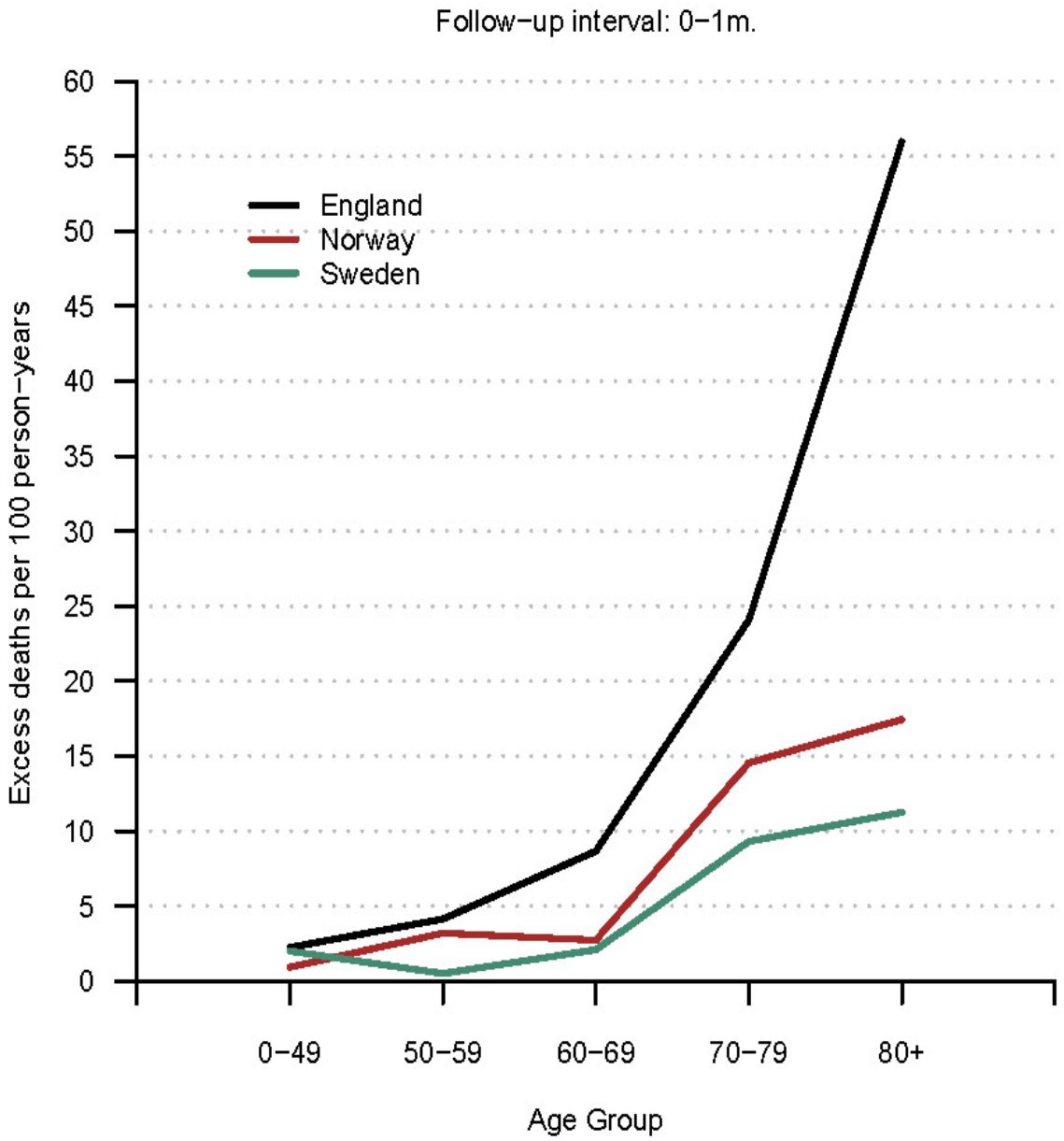
Health care-related factors

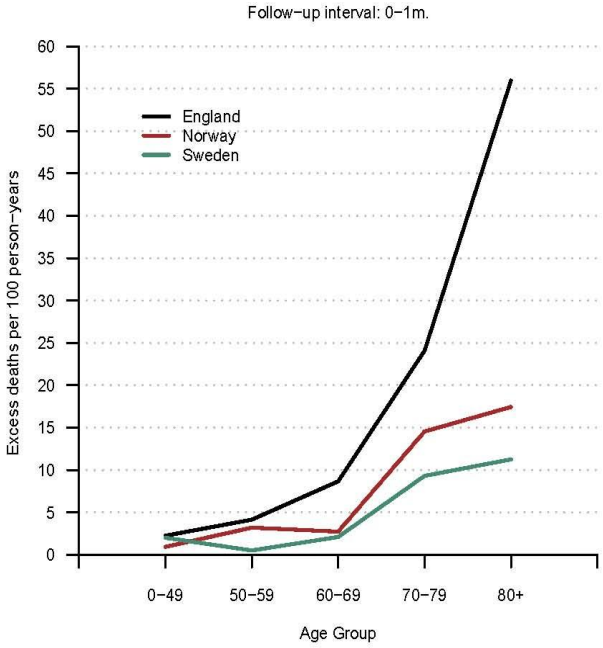
Screening
Diagnostic facilities
Treatment facilities
Quality of treatment
Follow-up care

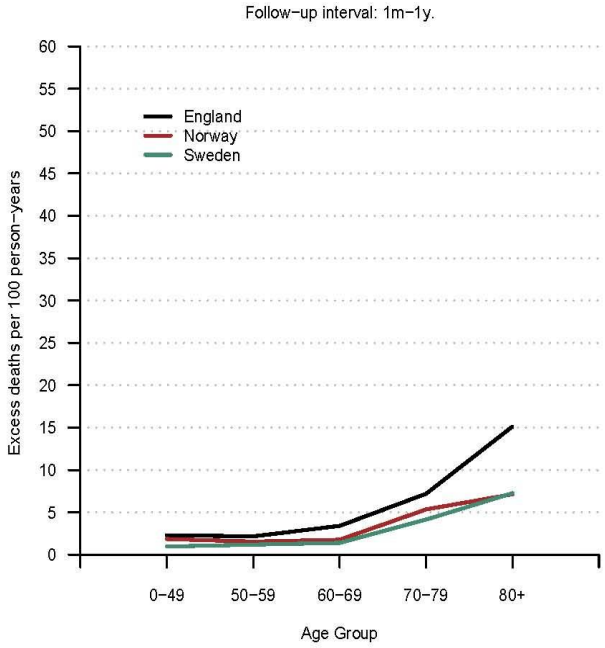
Colorectal cancer diagnosed 1995-99. Five year relative survival vs survival conditional on surviving at least one year

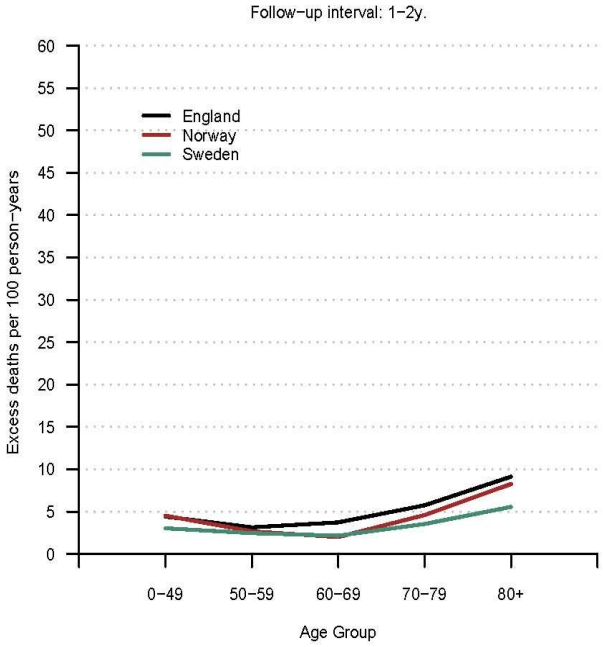


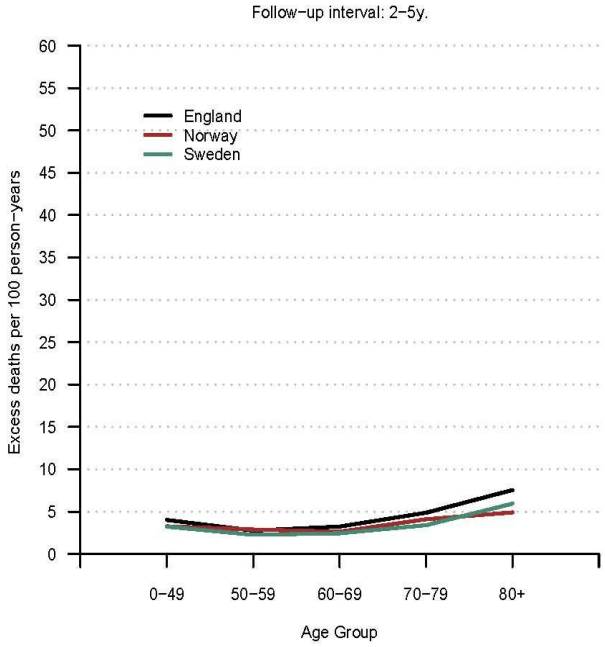
Absolute excess death rates (breast cancer)




Follow−up interval: 0−1m.
Excess deaths per 100 person−years
0
5
10
15
20
25
30
35
40
45
50
55
60
England
Norway
Sweden
0−49
50−59
60−69
70−79
80+
Age Group


Follow−up interval: 1m−1y.
Excess deaths per 100 person−years
0
5
10
15
20
25
30
35
40
45
50
55
60
England
Norway
Sweden
0−49
50−59
60−69
70−79
80+
Age Group

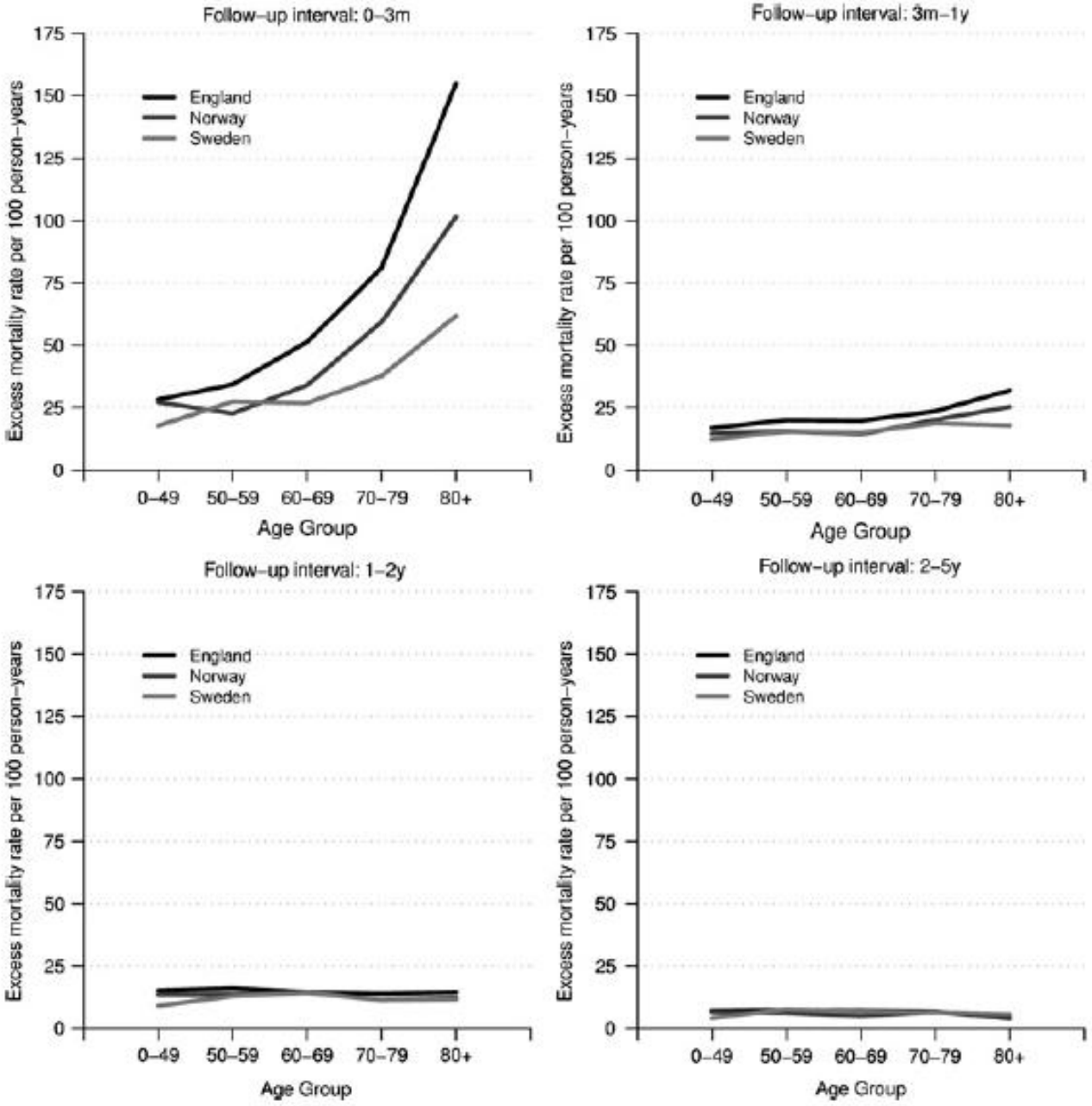

Follow−up interval: 1−2y.
Excess deaths per 100 person−years
0
5
10
15
20
25
30
35
40
45
50
55
60
England
Norway
Sweden
0−49
50−59
60−69
70−79
80+
Age Group


Follow−up interval: 2−5y.
Excess deaths per 100 person−years
0
5
10
15
20
25
30
35
40
45
50
55
60
England
Norway
Sweden
0−49
50−59
60−69
70−79
80+
Age Group

Important observation

- The survival deficit (the excess mortality) in England is mainly in the older patients
- ... and mainly in the short term after diagnosis

Figure 1 Excess death rates among patients with colon cancer in England, Norway and Sweden (2001–2004) by age at diagnosis and period of follow-up.



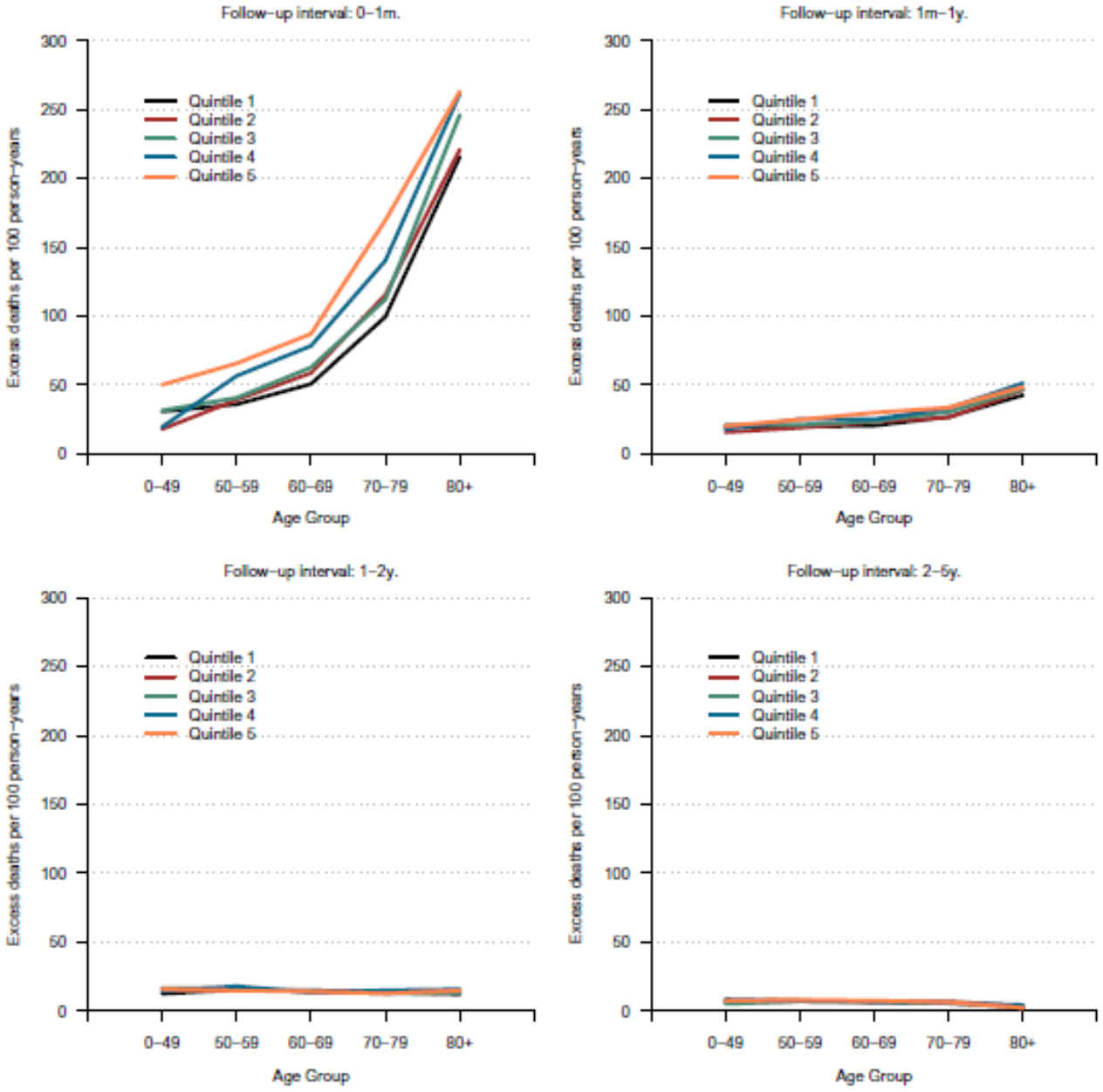
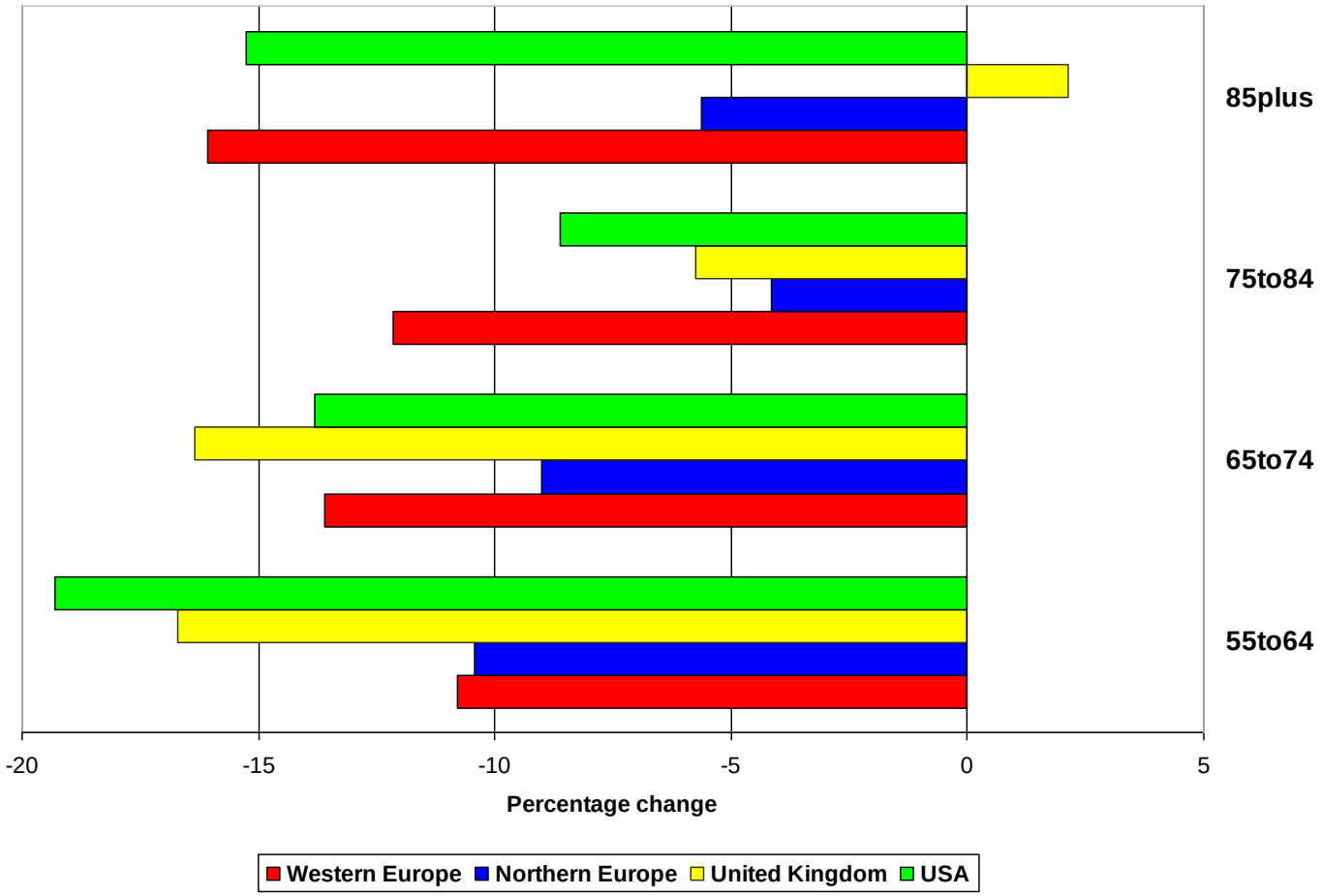


Fig. 1 – Excess death rates among colon cancer patients in socioeconomic quintiles in England 2001–2004, by age at diagnosis and period of follow-up.

Percentage change in age specific cancer mortality rates from 1995-97 to 2003-05



Source: Dr Tony Moran, North West Cancer Intelligence Service

EUROCARE high resolution study of colorectal cancer: Relative risk of death within 3 years of diagnosis

Registry (No of cases)	Model 1 (sex + age + site)	Model 2 (model 1 + stage)	Model 3 (model 2 + surgery – resected cases only)	Model 4 (model 3 + staging procedures† – resected cases only)
Mersey (207)	1.15	1.10	1.01	0.99
Thames (176)	1.41*	1.37*	1.25	1.19

*P<0.05 †Staging procedures = no of LNs examined and liver imaging

Source: Gatta *et al*. *Gut* 2000;47:533-8.

Table 1 Colorectal cancer cases by registry, period of diagnosis, sex, age, and site. EUROCARE high resolution study on colorectal cancer

Country	Registry	Total cases	Period of study	Males (%)	Age 75+ (%)	Colon (%)
Italy	Varese	445	90	53	37	62
	Modena	306	90–91	52	32	65
France	Calvados	262	90	47	40	52
	Somme	228	90	60	38	64
	Côte d'Or	237	90	54	46	66
The Netherlands	Rotterdam	202	90	54	40	63
	Eindhoven	256	91	52	33	68
Spain	Granada	173	90	51	31	54
UK	Mersey	207	90	48	47	58
	Thames	176	90	47	43	55
Poland	Cracow	228	88–89	42	21	52
Total	All registries	2720	88–91	51	37	60

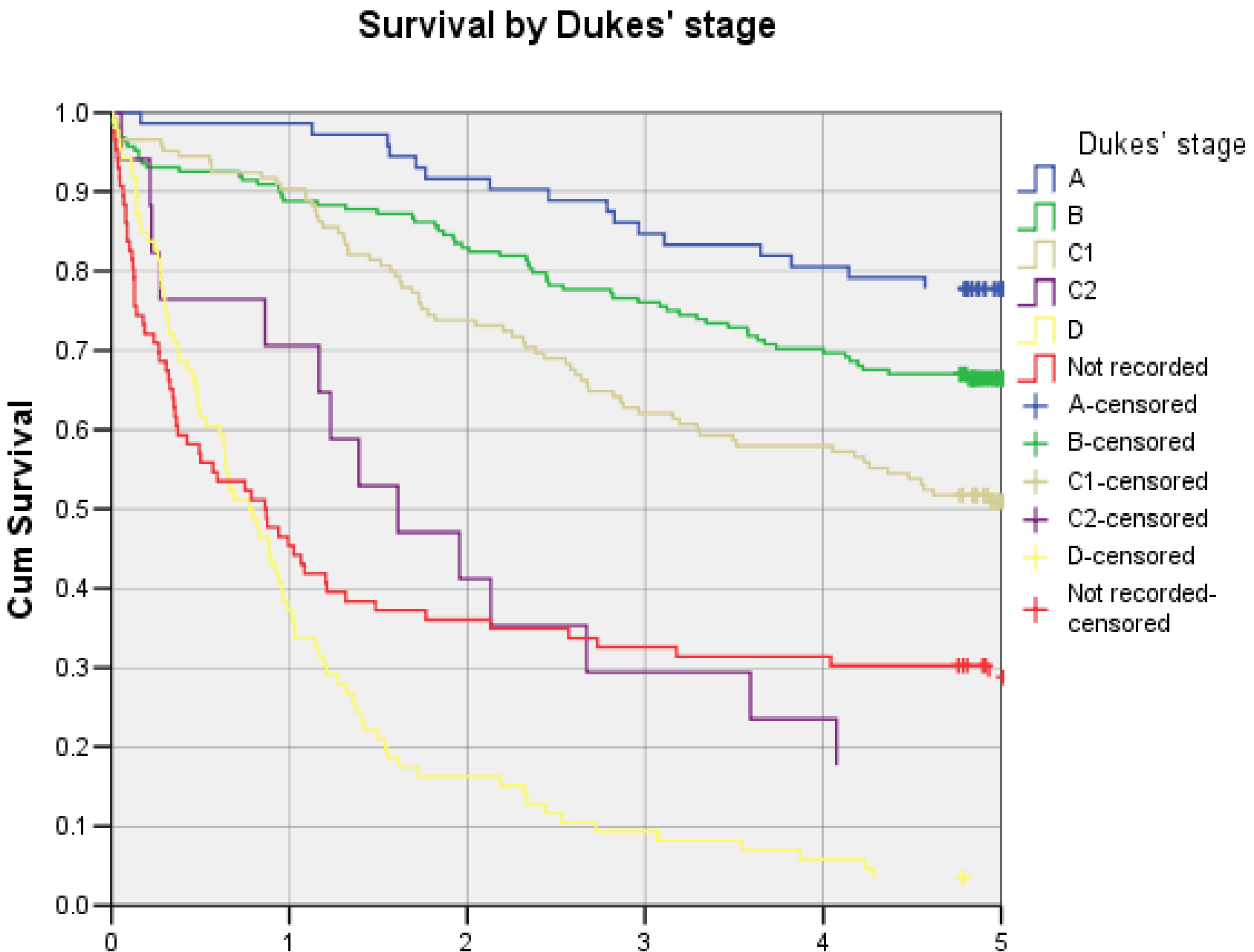
Table 2 Three year observed survival (3 y surv) and distribution of cases by Dukes' stage and stage determinants, according to registry. EUROCARE high resolution study on colorectal cancer

		% Distribution of					
		Dukes' stage*				Stage determinants	
Registry (No of cases)	3 y surv (%)	A+B	C	D	na	12 or more nodes examined‡	Liver imaging performed
Varese (445)	49	50	17	27	6	21	80
Modena (306)	59	48	24	17	11	11	86
Calvados (262)	53	45	20	24	11	23	77
Somme (228)	50	43	19	21	17	4	63
Côte d'Or (237)	50	57	25	14	4	20	82
Rotterdam (202)	48	58	20	15	6	2	59
Eindhoven (256)	55	55	19	21	5	5	59
Granada (173)	46	41	23	19	17	31	49
Mersey (207)	44	40	23	23	14	15	57
Thames (176)	38	42	24	23	11	10	45
Cracow (228)	25	21	18	21	39	10	44
All registries (2720)	48	46	21	21	13	14	67
% 3 y survival	48	73	45	11	26		
Highest†	59	85	55	25	54		
Lowest†	25	56	28	6	8		
RR of death (lowest *v* highest)	2.6	3.6	2.1	2.0	4.1		

*A+B, confined to the bowel wall; C, lymph nodes involved; D, distant metastasis; na, not available.
‡On "resected" patients
†Highest and lowest survival by registry.

TABLE II – CHARACTERISTICS OF THE STUDY POPULATION OF RECTAL CANCER PATIENTS[1] AGE <90 YEARS IN 1997 IN THE NORDIC COUNTRIES AND SCOTLAND[2]

N	Denmark 907 (%)	Finland 142 (%)	Iceland 83 (%)	Norway 717 (%)	Sweden 1293 (%)	Scotland 746 (%)	*p*-value[3]
Age in years							
−59	23.2	23.9	20.5	19.9	18.7	22.9	0.02
60–69	27.1	30.3	32.5	27.6	23.1	26.7	
70–79	32.3	32.4	32.5	35.0	38.4	32.2	
80–89	17.4	13.4	14.5	17.4	19.8	18.2	
Sex							
Male	58.3	55.6	61.5	58.2	58.9	62.1	0.53
Female	41.7	44.4	38.6	41.8	41.1	37.9	
Stage							<0.001
I	12.4	16.2	24.1	24.4	21.0	20.6	
II	28.8	31.0	26.5	26.9	27.5	27.5	
III	28.0	25.4	16.9	26.2	26.9	25.9	
IV	19.2	14.1	25.3	15.1	16.4	13.7	
Missing	11.7	13.4	7.2	7.4	8.3	12.3	


Survival by Dukes' stage
Cum Survival
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
1
2
3
4
5
Dukes' stage
A
B
C1
C2
D
Not recorded
A-censored
B-censored
C1-censored
C2-censored
D-censored
Not recorded-censored

England's response to these observations

The National Awareness and Early Diagnosis Initiative (NAEDI)

- Announced in the English Cancer Reform Strategy (2007)
- Co-led by CR-UK and DoH
- Aim is to coordinate a programme of activity to support local interventions to raise public awareness of symptoms and signs of cancer, and to encourage people to present sooner
- Also encompasses a programme of research
- Much of the evidence underpinning NAEDI was published in a supplement to the *British Journal of Cancer* (3 December 2009).

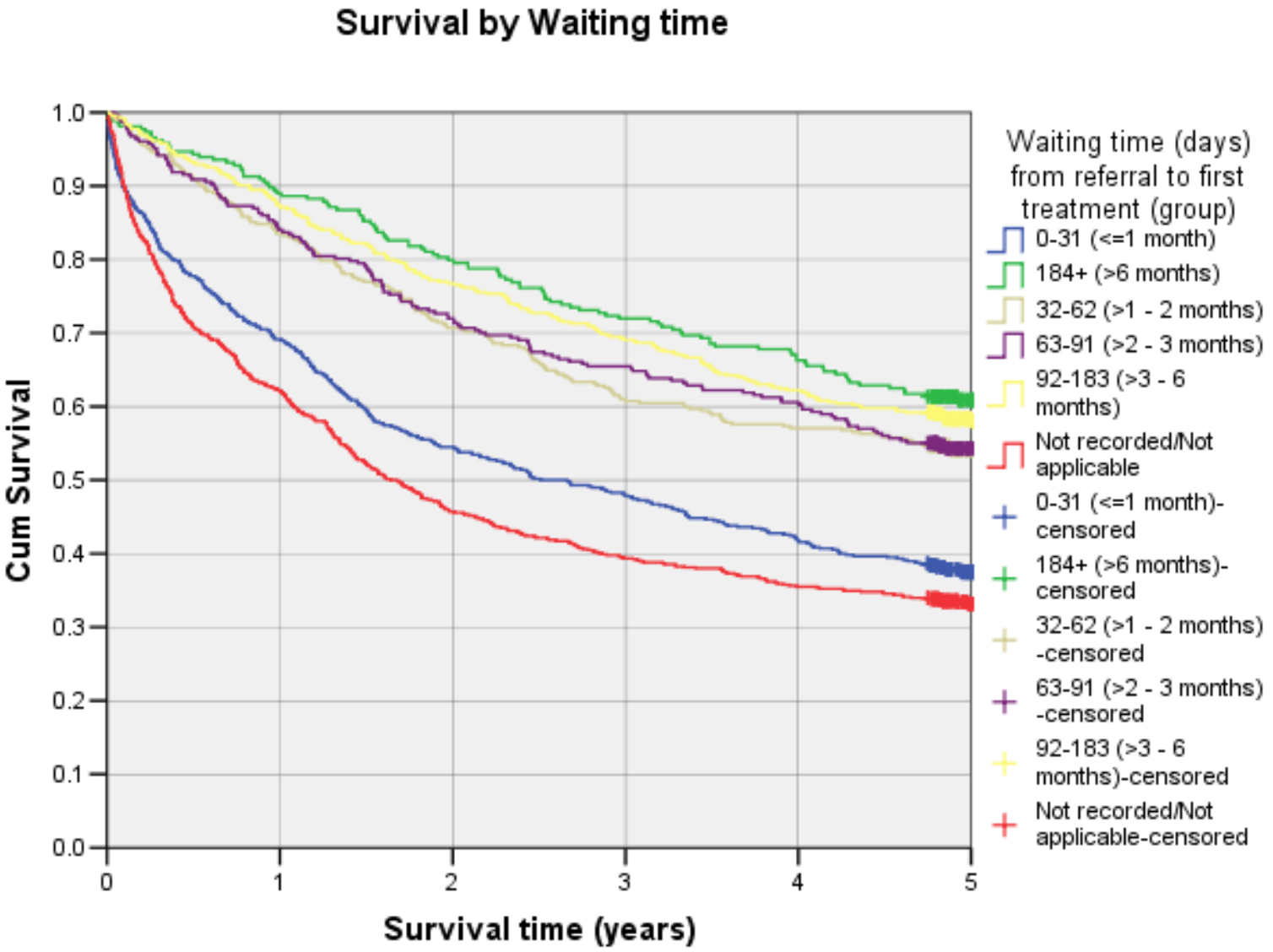
Certainly there is some evidence that..

- Public awareness of warning signs is low (esp. among males, younger people, lower SES, and ethnic minorities).
- Some patients present long after the onset of symptoms.
- GPs are sometimes slow to refer.
- Some reasons for pre-hospital delays have been identified.
- Sometimes, there are some perceived barriers to consulting.
- There are delays in hospital.
- Individual and community interventions may promote awareness and early presentation.

BUT

- Delay is not synonymous with advanced stage – don’t forget tumour biology

Colorectal cancer diagnosed 2002: the delay-survival paradox



The waiting time paradox: the colorectal cancer example…

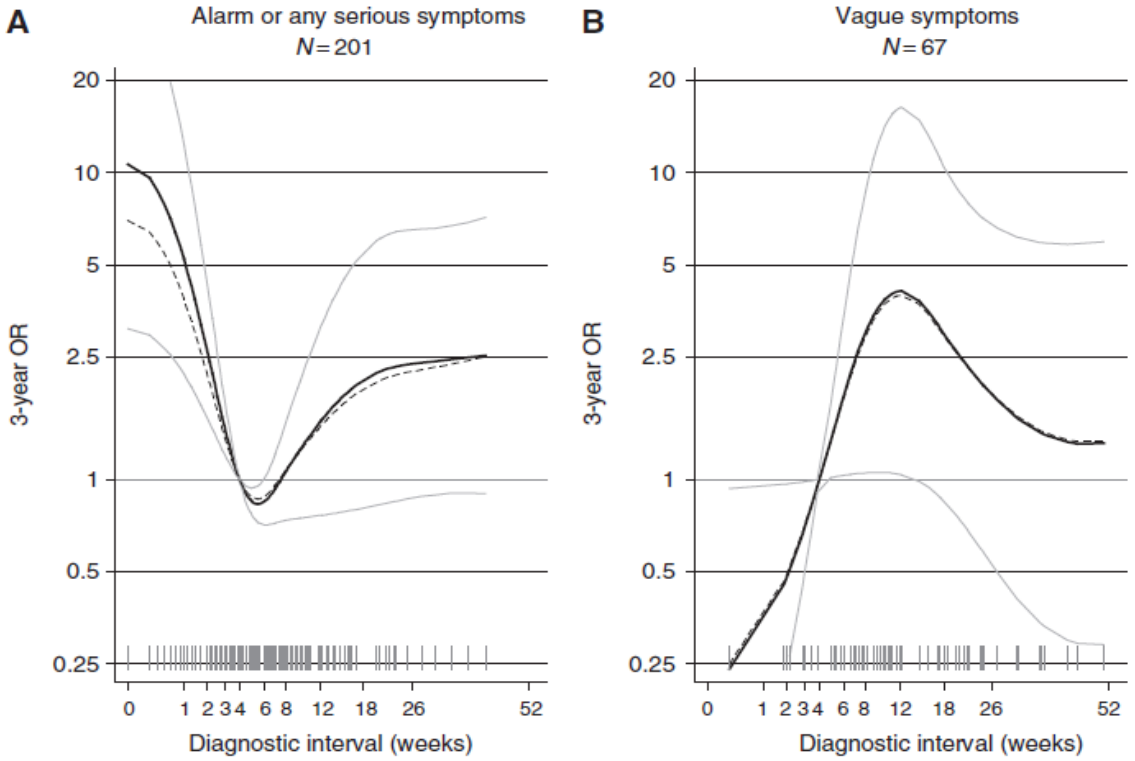


Figure 3 Estimated 3-year mortality odds ratios (ORs) as a function of the diagnostic interval (time from first presentation of symptoms in primary care until diagnosis) analysed for colorectal cancer patients presenting with (**A**) alarm symptoms of cancer or symptoms related to any serious illness and (**B**) vague or ill-defined symptoms not directly related to cancer or any other serious illness. We adjusted for tumour site (colon/rectal), Charlson Comorbidity Index (0/1–2/⩾3), age (18–59/60–74/⩾75), and sex. The solid curves indicate adjusted estimates with point-wise 95% confidence limits in grey. The dashed curves indicate crude estimates. The grey spikes show the distribution of the diagnostic intervals on a squared scale. The grey horizontal lines indicate the chosen reference point of 4 weeks (28 days).

Source: Torring ML et.al. Time to diagnosis and mortality in colorectal cancer: a cohort study in primary care.Br J Cancer 2011;104:934–40.

Lawder et al. BMC Public Health 2010, 10:330
http://www.biomedcentral.com/1471-2458/10/330

BMC Public Health

RESEARCH ARTICLE Open Access

Is the Scottish population living dangerously? Prevalence of multiple risk factors: the Scottish Health Survey 2003

Richard Lawder[1], Oliver Harding[2], Diane Stockton[1], Colin Fischbacher[1,3], David H Brewster[1,3], Jim Chalmers[1,3], Alan Finlayson[1] and David I Conway*[1,4]

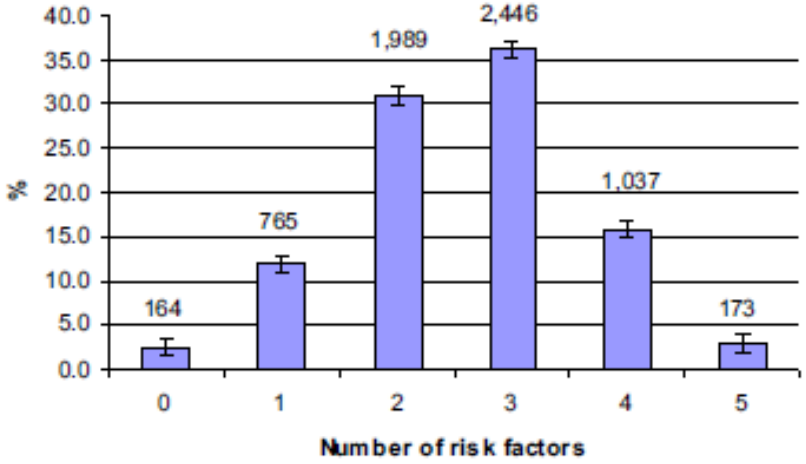


Figure 1 Risk factor prevalence and 95% Confidence Intervals among the adult population. numbers indicated above bars represent respondents

Mortality - males

Fig. 3(a) Scotland males

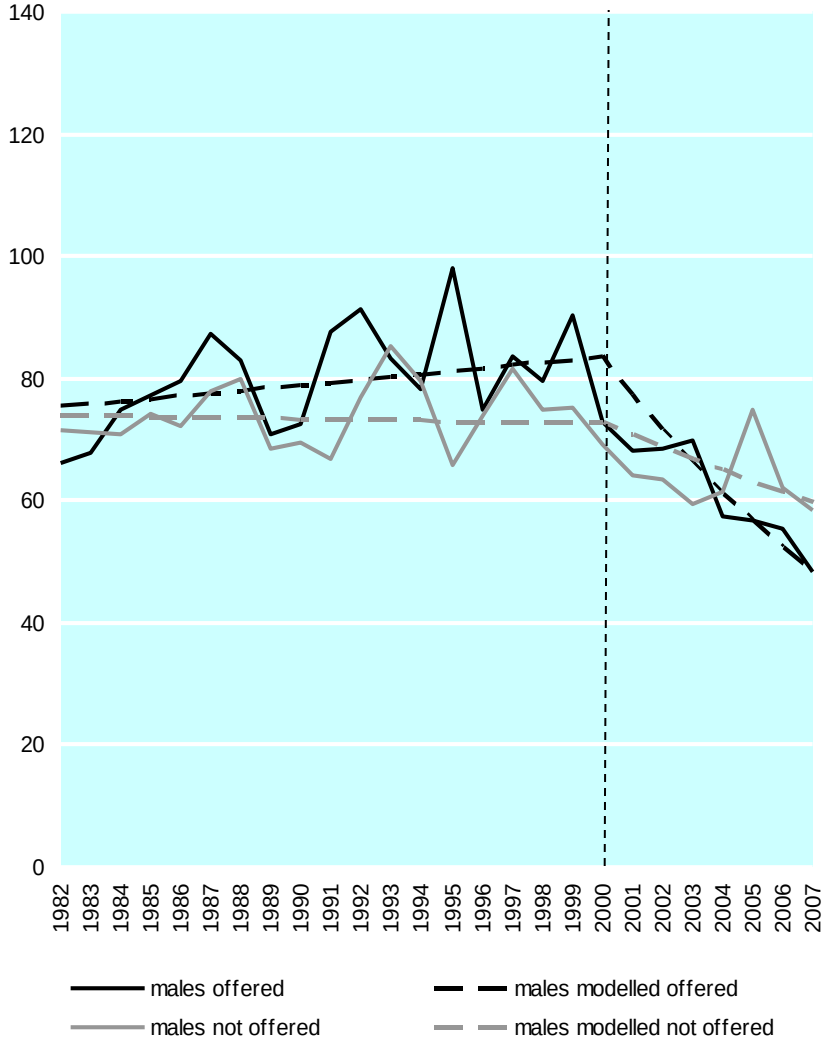
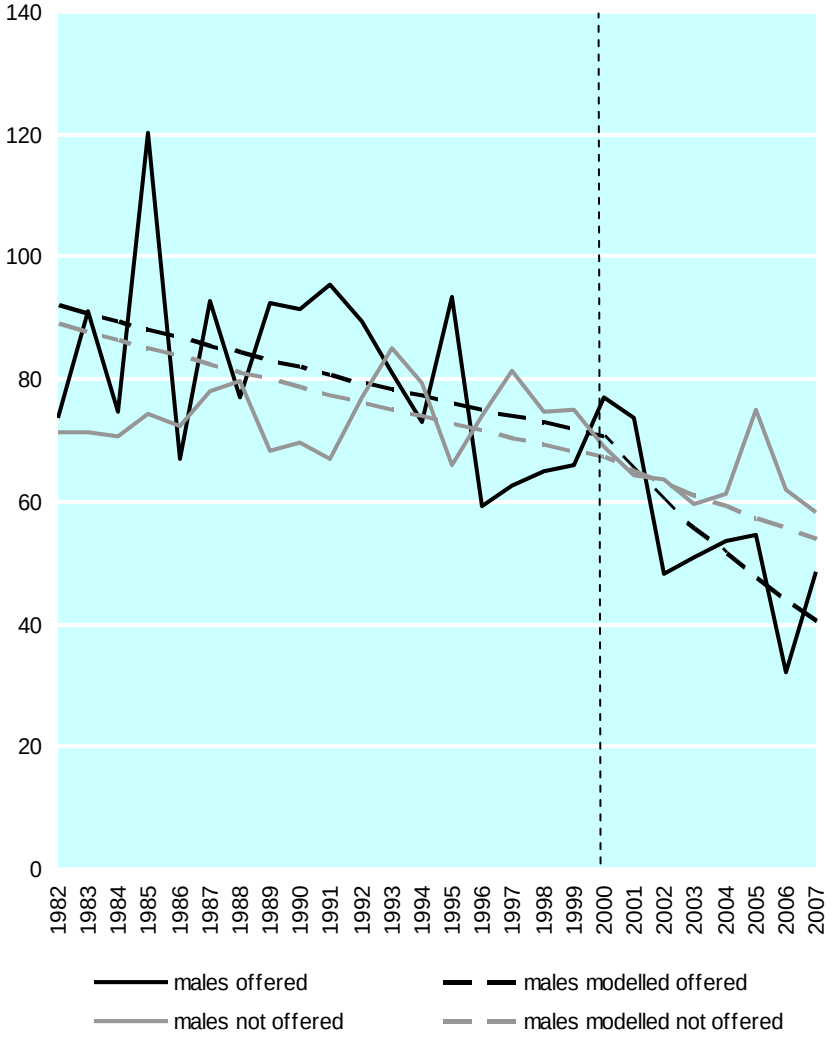


Fig. 3(b) West Midlands males



Characteristics of patients dying within 30 days of diagnosis of breast or colorectal cancer in Scotland, 2003–2007

DH Brewster*[,1], DI Clark[1], DL Stockton[1], AJ Munro[2] and RJC Steele[2]

[1]Information Services Division, NHS National Services Scotland, Gyle Square, 1 South Gyle Crescent, Edinburgh EH12 9EB, UK; [2]Department of Surgery and Molecular Oncology, Ninewells Hospital and Medical School, Dundee DD1 9SY, UK

BACKGROUND: Recent research has shown that most of the excess risk of death following breast and colorectal cancer in England compared with Norway and Sweden occurs in older age groups during the first year, and especially in the first month of follow-up. The aim of this study was to explore the characteristics of patients dying within 30 days of being diagnosed with one of these cancers in Scotland during 2003–2007.

METHODS: Anonymised cancer registry records linked to hospital discharge and death records were extracted. The study population was divided into patients who died within 30 days of diagnosis (cases) and those who survived beyond this threshold (controls). Differences in patient-, tumour-, and health service-related characteristics were assessed using the χ^2-test and logistic regression.

RESULTS: Patients dying within 30 days were more likely to be elderly and to have experienced emergency admission to non-surgical specialities. Their tumours were less likely to have been verified microscopically, but they appeared more likely to be of high grade and advanced in stage. A substantial number of patients died from causes other than their cancer.

CONCLUSION: These results suggest that early mortality after a diagnosis of breast or colorectal cancer may be partly due to comorbidity and lifestyle factors, as well as due to more advanced disease. Further research is required to determine the precise explanation for these findings and, in particular, if any potentially avoidable factors such as delays in presentation, referral, or diagnosis exist.

British Journal of Cancer (2011) **104,** 60–67. doi:10.1038/sj.bjc.6606036 www.bjcancer.com

Keywords: breast neoplasms; colorectal neoplasms; co-morbidity; mortality; Scotland; survival

British Journal of Anaesthesia **102 (3):** 297–306 (2009)
doi:10.1093/bja/aen401

BJA

REVIEW ARTICLES

Smoking and alcohol intervention before surgery: evidence for best practice

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Smoking and hazardous drinking are common and important risk factors for an increased rate of complications after surgery. The underlying pathophysiological mechanisms include organic dysfunctions that can recover with abstinence. Abstinence starting 3–8 weeks before surgery will significantly reduce the incidence of several serious postoperative complications, such as wound and cardiopulmonary complications and infections. However, this intervention must be intensive to obtain sufficient effect on surgical complications. All patients presenting for surgery should be questioned regarding smoking and hazardous drinking, and interventions appropriate for the surgical setting applied.

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