CONCORD Programme: Worldwide Surveillance of Cancer Survival

The US Perspective

Hannah K Weir, PhD
Division of Cancer Prevention and Control
Centers for Disease Control and Prevention

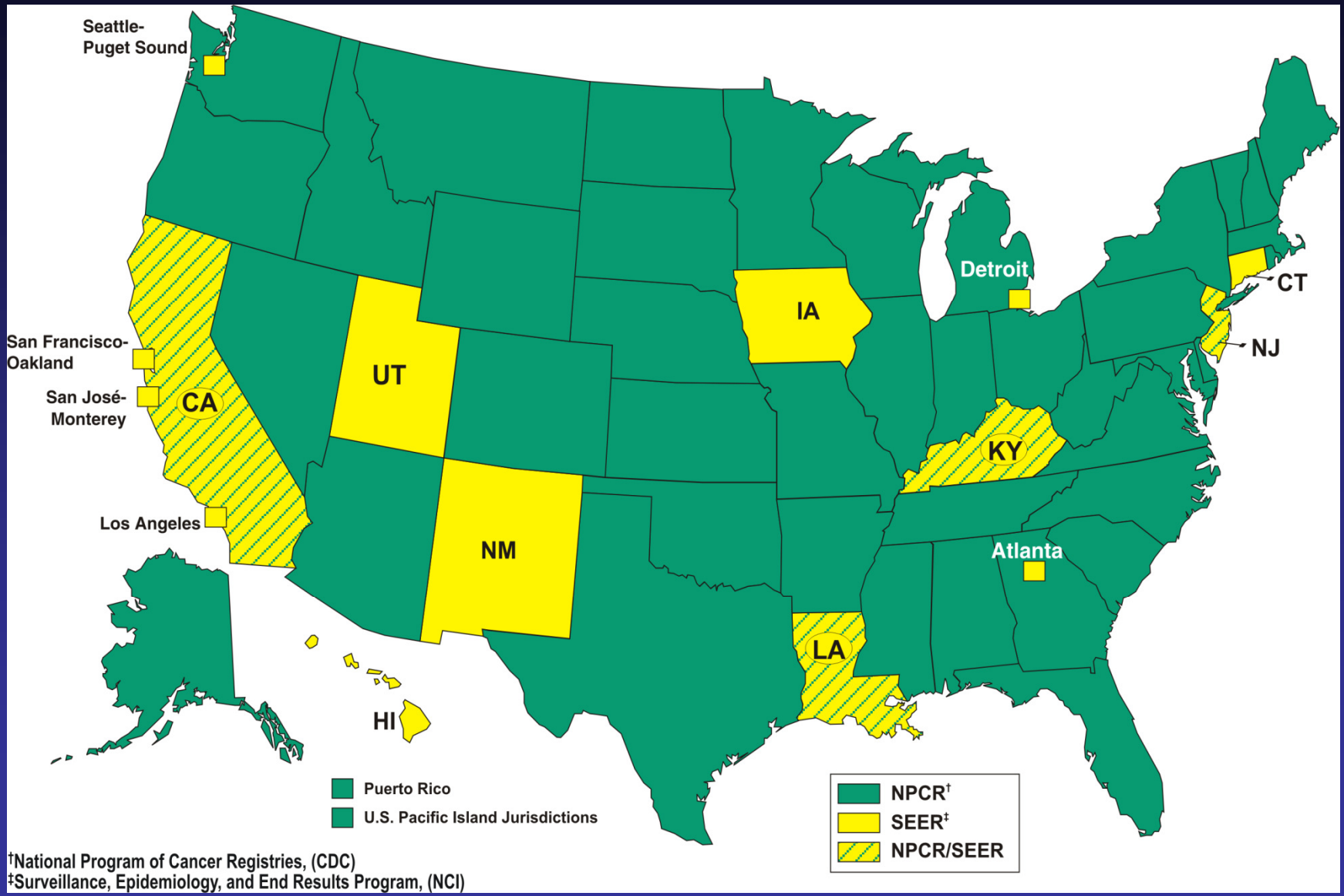
Overview

- Cancer Surveillance in the US
- EUROCARE
- CONCORD Programme
- CONCORD-2 Study

History of Population-based Cancer Registration in the United States

- 1941 - Connecticut Cancer Registry
- 1971 - National Cancer Act
  - 1973 - first diagnosis year for the Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute
- 1987 – North American Association of Central Cancer Registries (NAACCR)
- 1992 - Public Law 102-515
  - 1995 - first diagnosis year for the National Program of Cancer Registries (NPCR), CDC

Cancer Surveillance in the US - 2000



Population-based Cancer Registries

- Hospitals
- Outpatient facilities
- Laboratories
- Radiation therapy
- Medical oncology facilities
- Physicians offices
- Death Certifi**cates**

Electronic

Hard copy

Statewide Cancer Registry

Final data

CDC

SEER

NAACCR

North American Association of Central Cancer Registries

Nationwide Data

- ~ 1.5 M cancers diagnosed each year
  - Annual cancers expected to double between 2000 and 2050
- ~ 0.5 M cancer deaths
  - Cancer is 2nd leading cause of death in US
  - Leading cause of death in half the states
- Prevalence (living with a diagnosis of cancer)
  - 13.7 M 2012
  - 18 M 2020

Annual Report to the Nation

- Collaboration between CDC, NCI, NAACCR, and the American Cancer Society
- Update of cancer death and incidence rates
- Special topics:
  - 2013 – Prevalence of Comorbidity and Impact on Survival Among Persons With Lung, Colorectal, Breast, or Prostate Cancer
  - 2012 - Burden and Trends in HPV-Associated Cancers and HPV Vaccination Coverage Level
  - 2011 - Cancers Associated with Excess Weight and Lack of Sufficient Physical Activity
  - 2010 – benign and malignant brain cancers
  - others

ARTICLE

Annual Report to the Nation on the Status of Cancer, 1975–2009, Featuring the Burden and Trends in Human Papillomavirus (HPV)–Associated Cancers and HPV Vaccination Coverage Levels

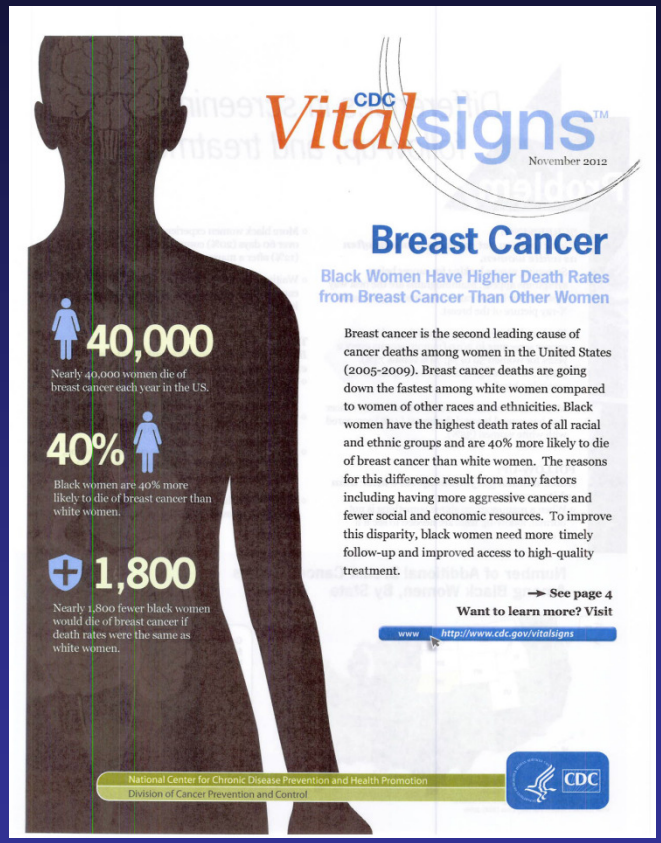
Commentary

Annual Report to the Nation on the Status of Cancer, 1975-2010, Featuring Prevalence of Comorbidity and Impact on Survival Among Persons With Lung, Colorectal, Breast, or Prostate Cancer

Vital Signs

- 2013 – Colorectal Cancer Tests Save Lives
- 2012 – Breast Cancer
- 2011 – Colorectal Cancer

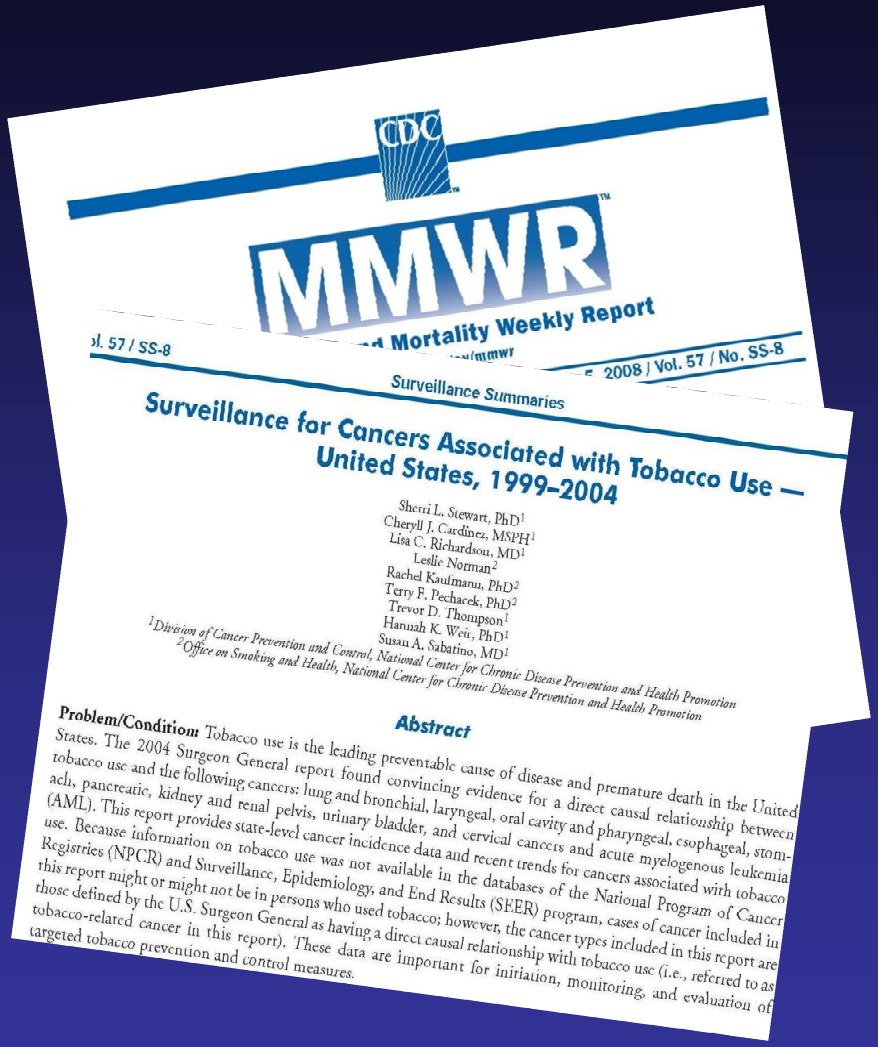
http://www.cdc.gov/vitalsigns/



MMWR Surveillance Summary

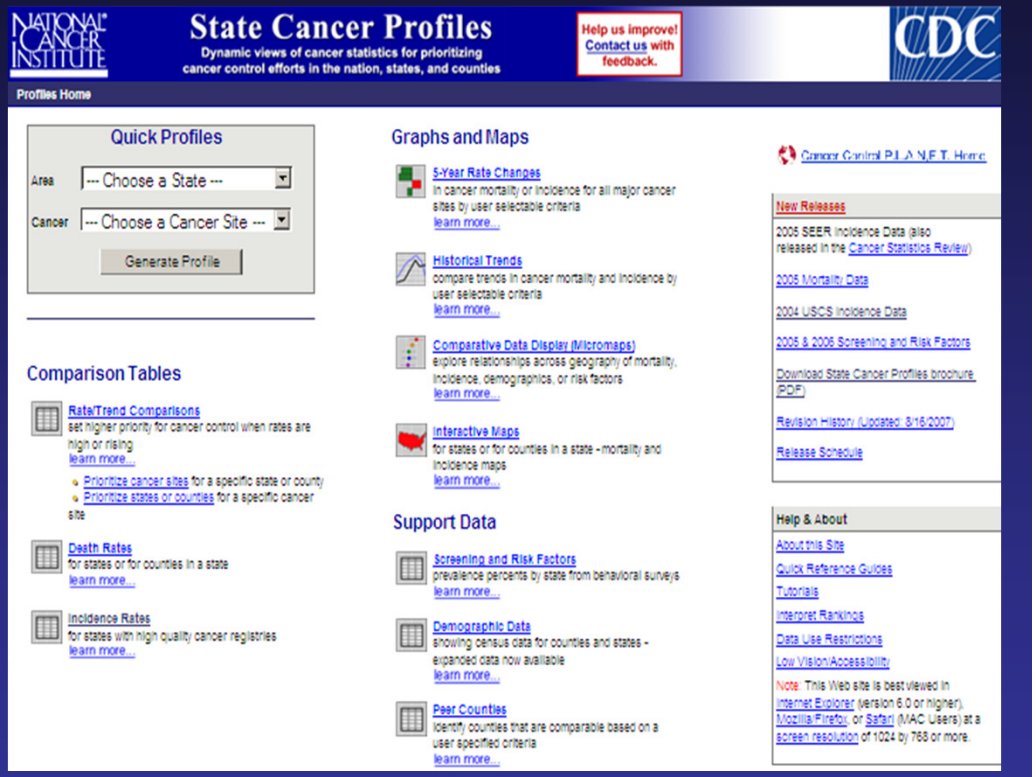
- 2014 - Lung Cancer Incidence Trends Among Men and Women — United States, 2005–2009
- 2013 - Invasive Cancer Incidence — United States, 2009
- 2013 - Colorectal Cancer Incidence and Screening — United States, 2008 and 2010
- 2008 - Surveillance for Cancers Associated with Tobacco Use - United States, 1999-2004

http://www.cdc.gov/mmwr/



State Cancer Profiles

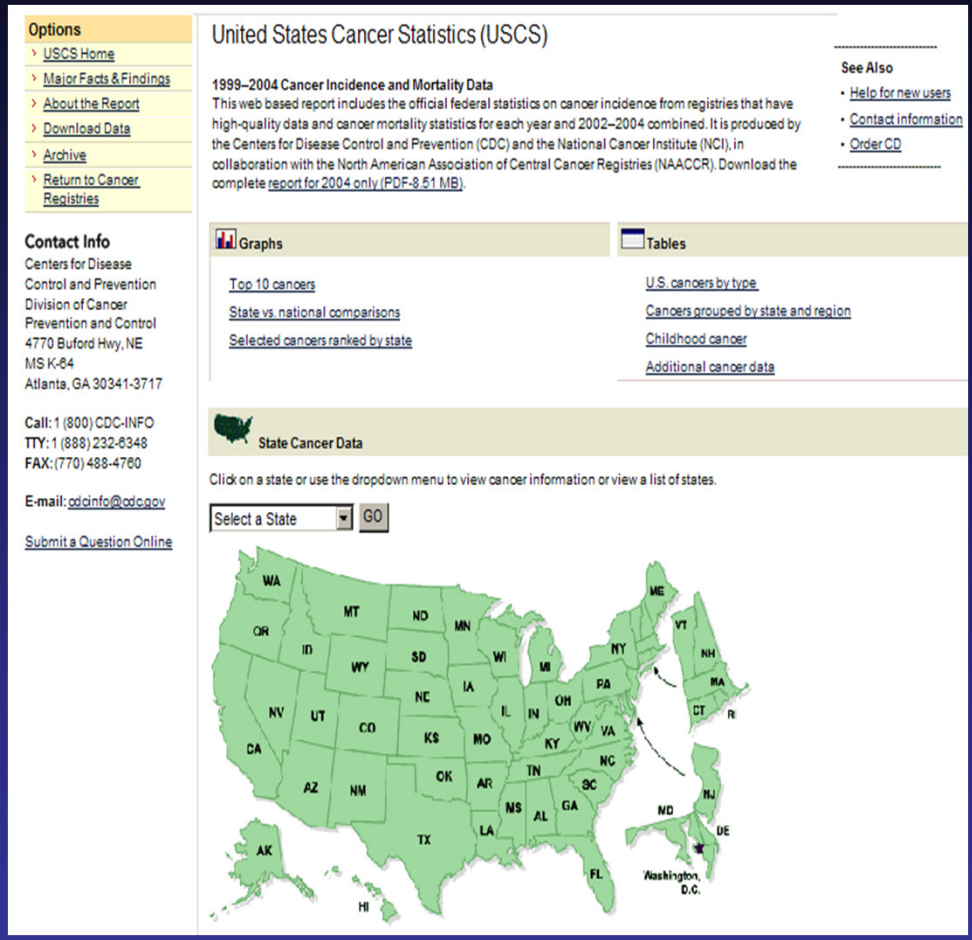
- Comprehensive Cancer Control Plans
- Dynamic views of cancer statistics for prioritizing cancer control efforts
  - Nation
  - State
  - County



http://statecancerprofiles.cancer.gov/

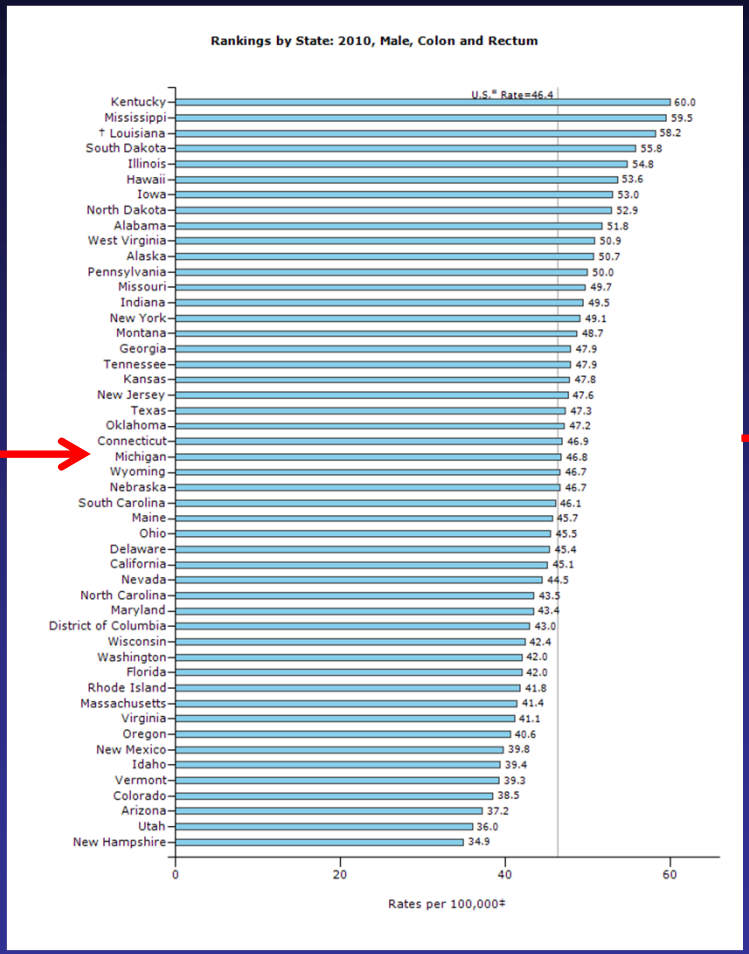
United States Cancer Statistics (USCS)

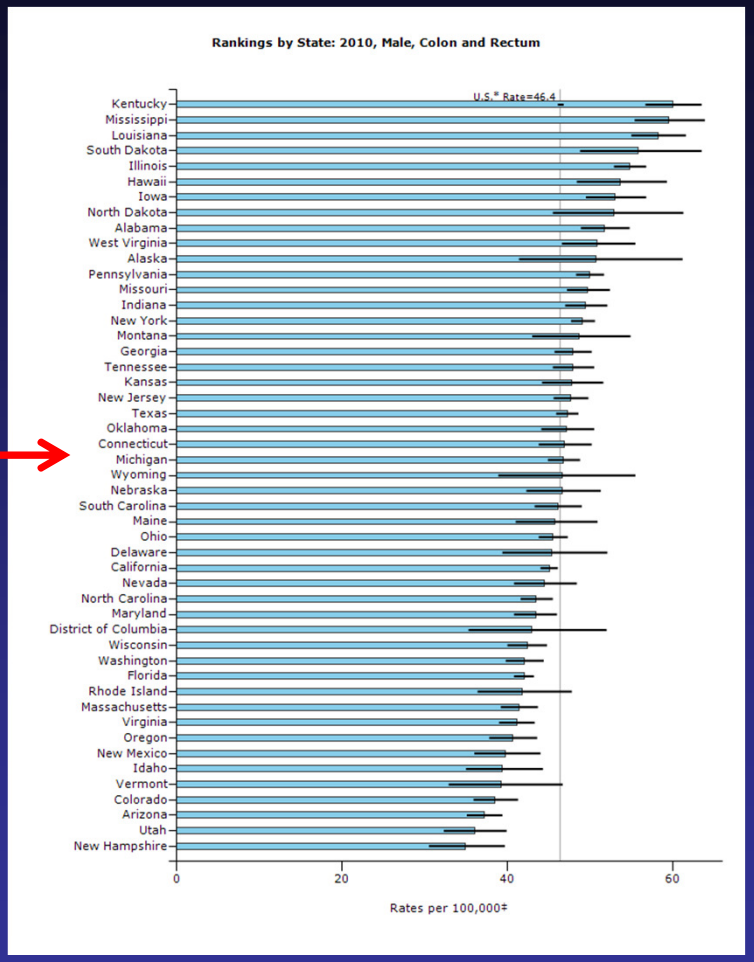
- State, regional, and national data
- Rates for whites, blacks, Asians/Pacific Islanders (A/PI), American Indians/Alaska Natives (AI/AN), Hispanics, and children



http://www.cdc.gov/uscs

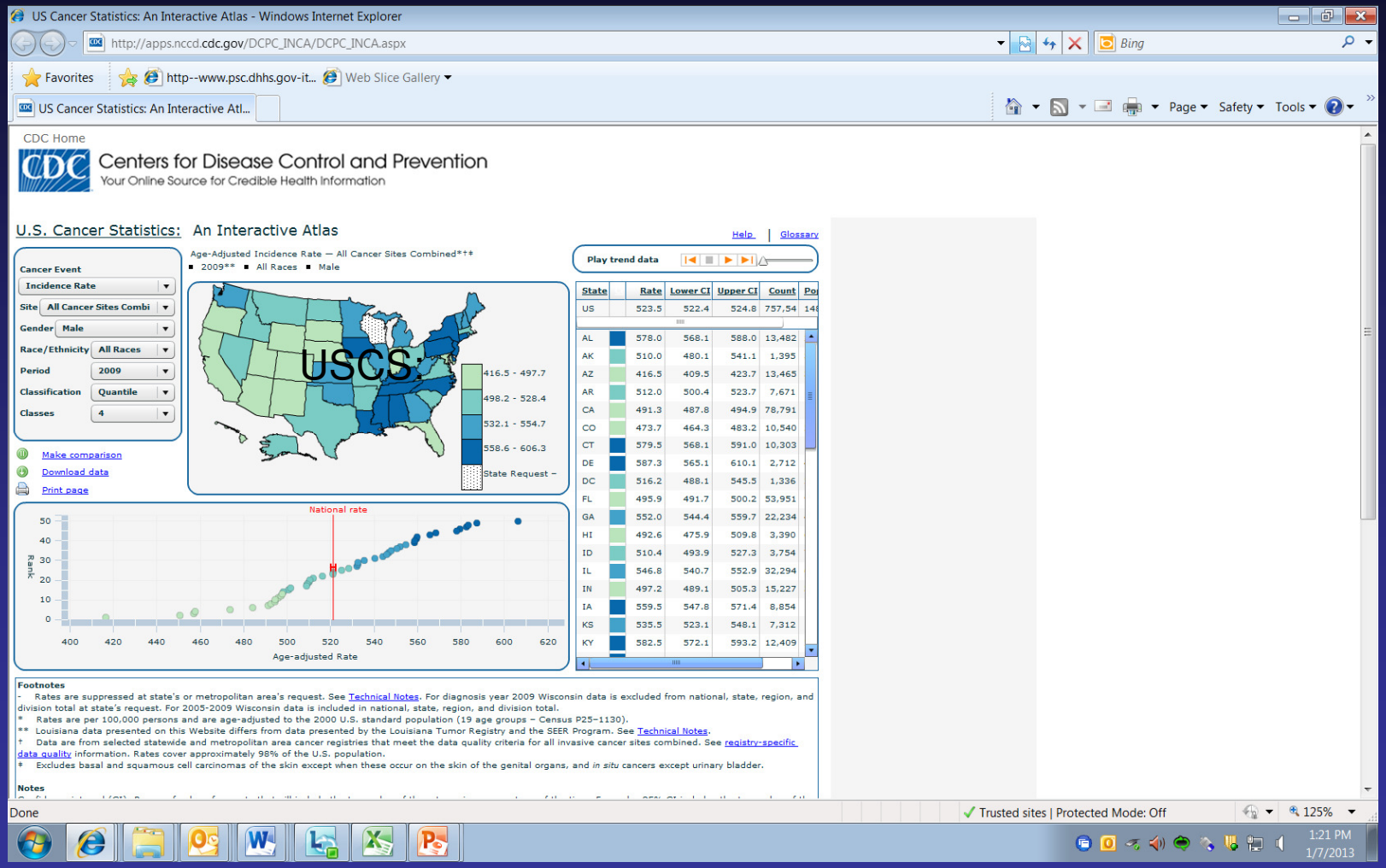
USCS: Cancers Ranked by State
Colorectal caner, males, 2010





USCS: State Maps

– Female Breast Cancer In situ 2010



USCS: Rates by Census Regions/Division
Female Breast Cancer In Situ 2010

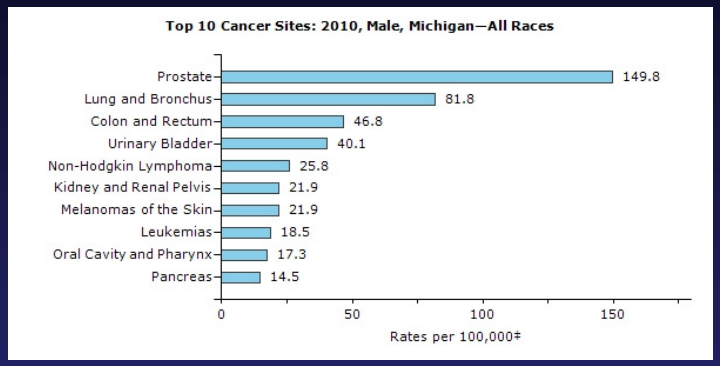
National

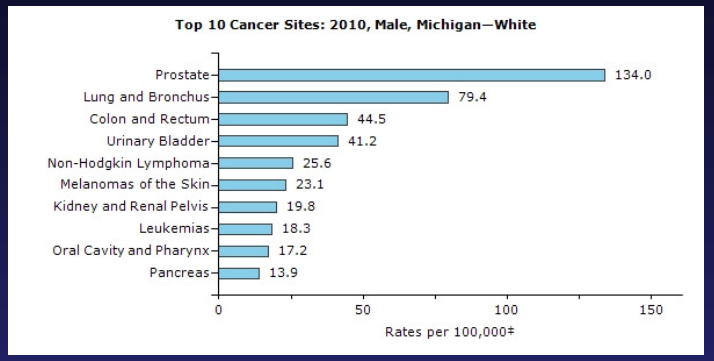
Census Region and Division

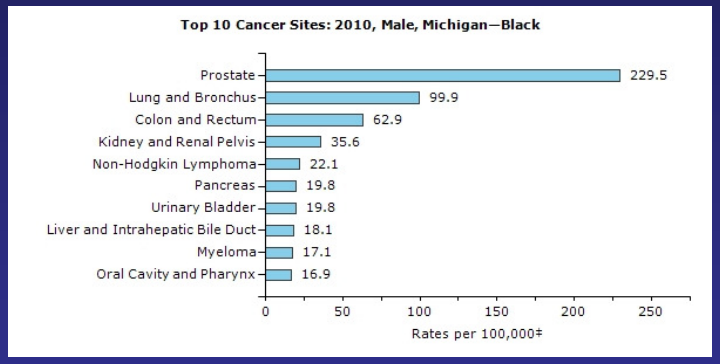
State

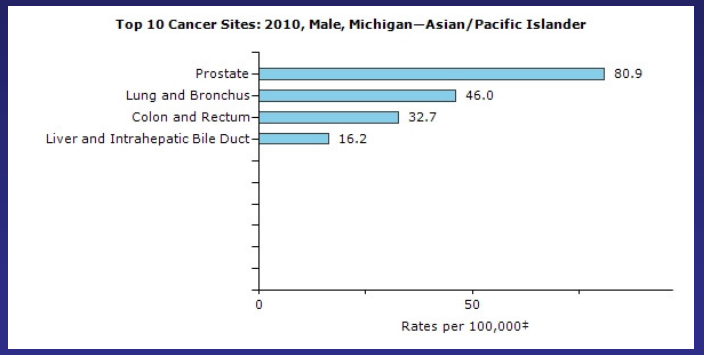
Geographic Area	All Races	White	Black	Hispanic §ll
United States	29.8	29.7	29.3	20.2
Northeast	39.5	40.2	33.6	31.6
New England	40.8	41.2	36.5	35
Middle Atlantic	39	39.7	33.1	30.9
Midwest				
East North Central	29.2	28.8	31.5	18.9
Illinois	32.8	32.8	32.6	20.4
Indiana	25.6	25.2	31.9	21.1
Michigan	**31.6**	**31**	**32**	**13.5**
Detroit	35	35.4	33.7	~
Ohio	24.7	24.1	28.4	18.9
Wisconsin	30.3	30.2	38.5	~
West North Central				
Iowa	28	27.8	~	~
Kansas	21.9	20.6	28.1	~
Minnesota				
Missouri	25.5	24.3	36.6	–
Nebraska	25.5	25.9	~	~
North Dakota	32	33.1	~	~
South Dakota	32.8	33.6	~	~
South	26.6	26.3	27.7	17.3
South Atlantic	28.5	28.3	28.6	20.3
East South Central	25.6	25.5	27	~
West South Central				
West	28	27.8	25.3	18.9
Mountain	25.7	25.8	21.7	19.2
Pacific	29	28.8	26.3	18.8

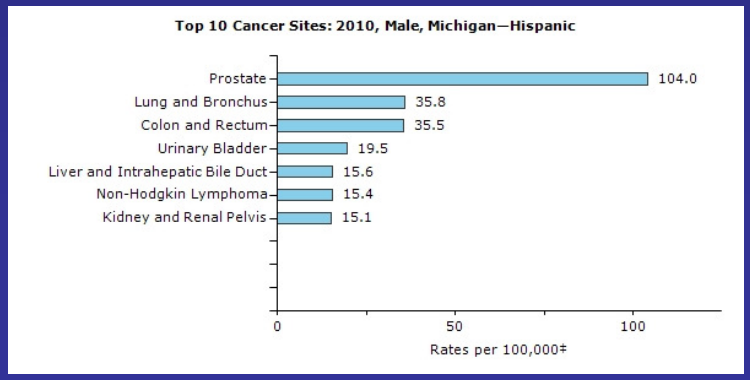
USCS : Leading Cancers by Sex, Race and Ethnicity











Cancer Survival

Clinical trials ***highest*** achievable survival

Population-based ***average*** survival *achieved*

Coleman 1999

Population-based Cancer Registries

- Hospitals
- Outpatient facilities
- Laboratories
- Radiation therapy
- Medical oncology facilities
- Physicians offices
- Death Certificates

Electronic

Hard copy

Statewide Cancer Registry

Final data

CDC

SEER

NAACCR

North American Association of Central Cancer Registries

State Death Certificates

National Death Index

Types of Population-based Survival

Both Cause Specific and Relative are a way of comparing survival of people who have cancer with those who don't— they shows how much cancer shortens life

Crude survival:

… how many individuals diagnosed xx (e.g., five) years?

… endpoint is death from any cause

Cause-specific survival:

… how many individuals diagnosed with cancer have not died specifically of cancer after xx years?

… endpoint is death from cancer

Relative survival:

… compares the survival experience of individuals with cancer to individuals without cancer (of the same age, race, gender, etc.) *

… measure excess mortality among cancer patients

… endpoint is death from any cause

* ***Uses life tables***

Advantages and Disadvantage of Relative vs. Cause-specific Survival

	Advantage	Disadvantages
Relative	Relies on fact of death not cause of death	Life tables may not be available for all populations
Cause-specific	Not limited to populations with life tables	Death Certificates are not reliable (e.g., may be coded to site of mets or recurrence)

Overview

- Cancer Surveillance in the US
- EUROCARE
- CONCORD Programme
- CONCORD-2 Study

www.eurocare.it

EUROCARE

Survival of cancer patients in Europe

Home | About Us | Database | Links | News | Contact | Login |

This website is currently under construction, all information presented is subject to change

EUROCARE

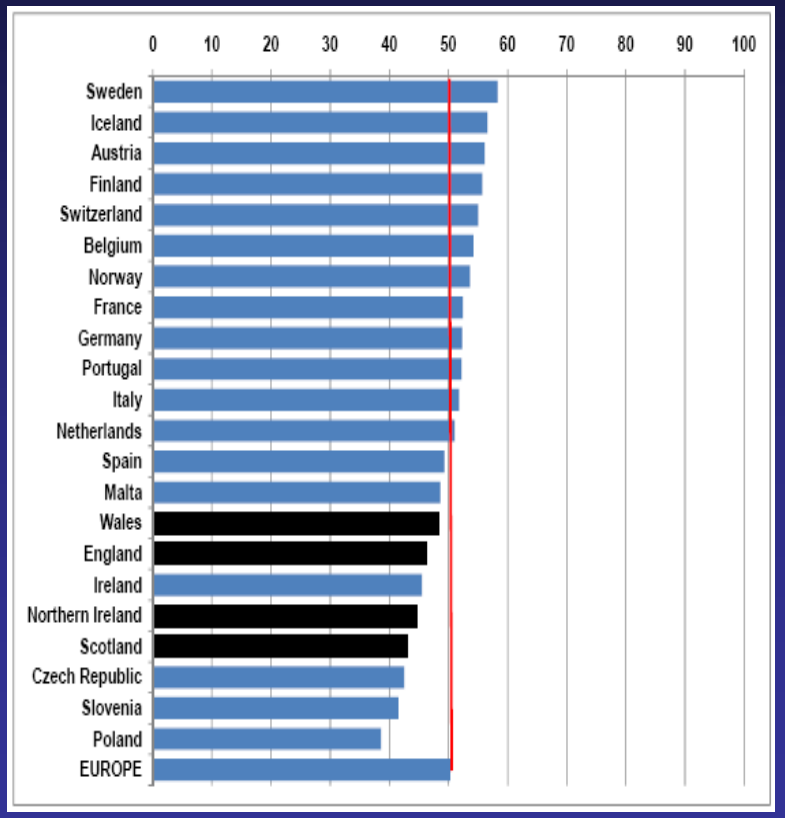
- Nordic countries
- South and West Europe
- UK (England, Scotland, Wales)
- Eastern Europe

History of EUROCARE

	Diagnosis Years	Countries	Registries
EUROCARE 1	1978 - 84	11	30
EUROCARE 2	1985 - 89	17	48
EUROCARE 3	1990 - 94	21	70
EUROCARE 4	1995 - 99	23	93
EUROCARE 5	2000 - 07	29	116

National Cancer Strategies: response to poor UK cancer survival (EUROCARE 4)

Five-year relative survival (%) Europe 1995-99 All Cancers



News Front Page
Africa
Americas
Asia-Pacific
Europe
Middle East
South Asia
UK
Business
Health
Medical notes
Science & Environment
Technology
Entertainment
Also in the news
Video and Audio
Programmes
Have Your Say
In Pictures
Country Profiles
Special Reports
RELATED BBC SITES
SPORT
WEATHER
ON THIS DAY
EDITORS' BLOG

Last Updated: Thursday, 25 September, 2003, 07:46 GMT 08:46 UK

E-mail this to a friend Printable version

Survival gap for UK cancer patients

The UK is worse than most of its European neighbours when it comes to cancer survival rates, a study has found.

Investment is being made in new equipment

Only eastern European countries fare worse in the league tables published on Thursday.

The Eurocare study revealed that France and Austria have the best five-year survival rates - and that Poland has the worst.

Cancer survival is heavily influenced by factors such as the speed the cancer is diagnosed, and the treatments available to patients, say experts.

Click here to see European cancer figures

Early findings from the study, which looked at countries from Scandinavia to eastern Europe, were presented to the European Cancer Conference in Copenhagen.

The researchers analysed data from 22 countries, covering 42 kinds of cancer.

It looked at five-year survival in 1.8m adult cancer sufferers and 24,000 children diagnosed between 1990 and 1994 and followed until 1999.

> **"There are fewer cancer specialists in Britain than in many of the other comparative countries in western Europe"**
>
> Professor Michel Coleman, London School of Hygiene and Tropical Medicine

In overall survival rates for men, England, Scotland and Wales were ranked 11th to 13th.

EUROPEAN CANCER CONFERENCE
KEY STORIES
- Euro survival rates vary
- Child cancer raises mothers' risk
- Stress raises breast cancer risk
- Common cause for child cancers
- Prostate deaths fall by 20%
- Virus causes cervical cancer
- Test to tailor treatment
- Pancreas cancer jab hope

SEE ALSO:
- UK 'has worst cancer record' 02 Jul 02 | Health
- UK cuts cancer deaths 05 Nov 02 | Health
- Europe 'winning cancer battle' 28 Jul 03 | Health

RELATED INTERNET LINKS:
- ECCO conference
- Department of Health

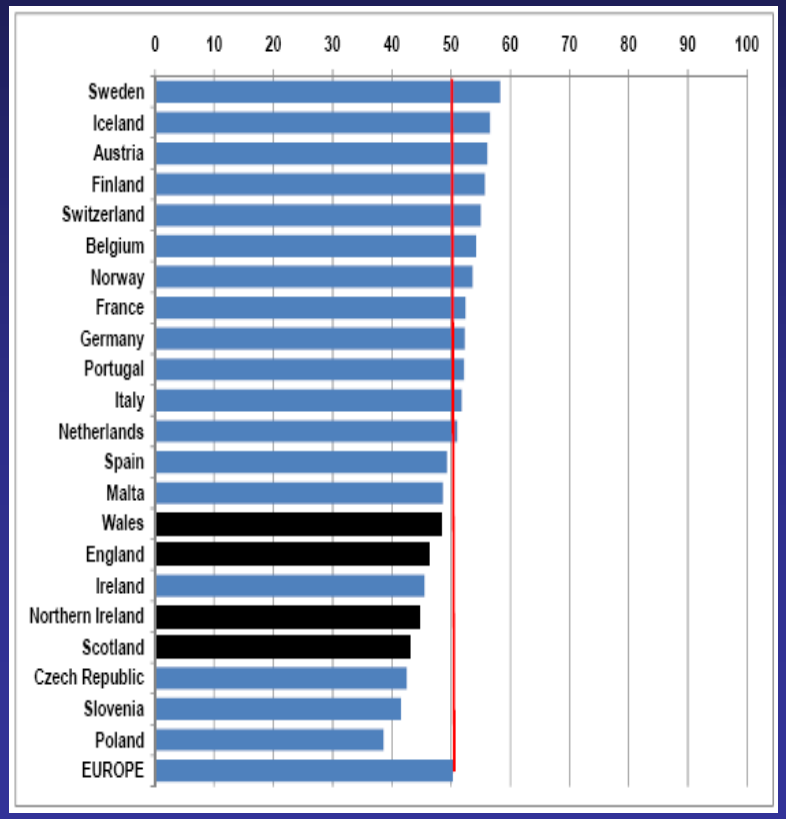
The BBC is not responsible for the content of external internet sites

TOP HEALTH STORIES
- Grandparents 'boost obesity risk'
- Herpes drug 'delays' HIV illness
- Gene clue to early dementia speed

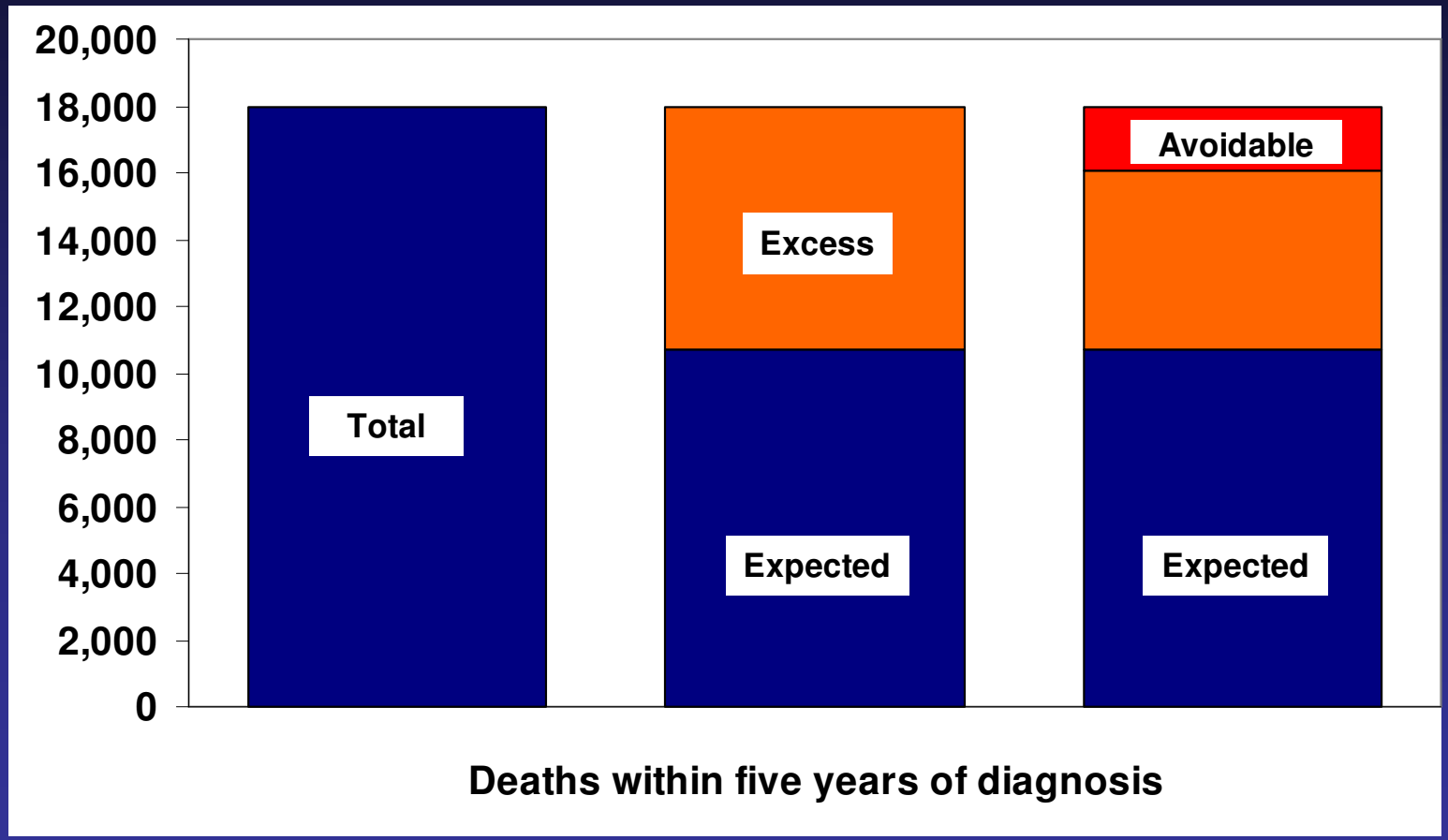
News feeds

National Cancer Strategies: response to poor UK cancer survival (EUROCARE 4)

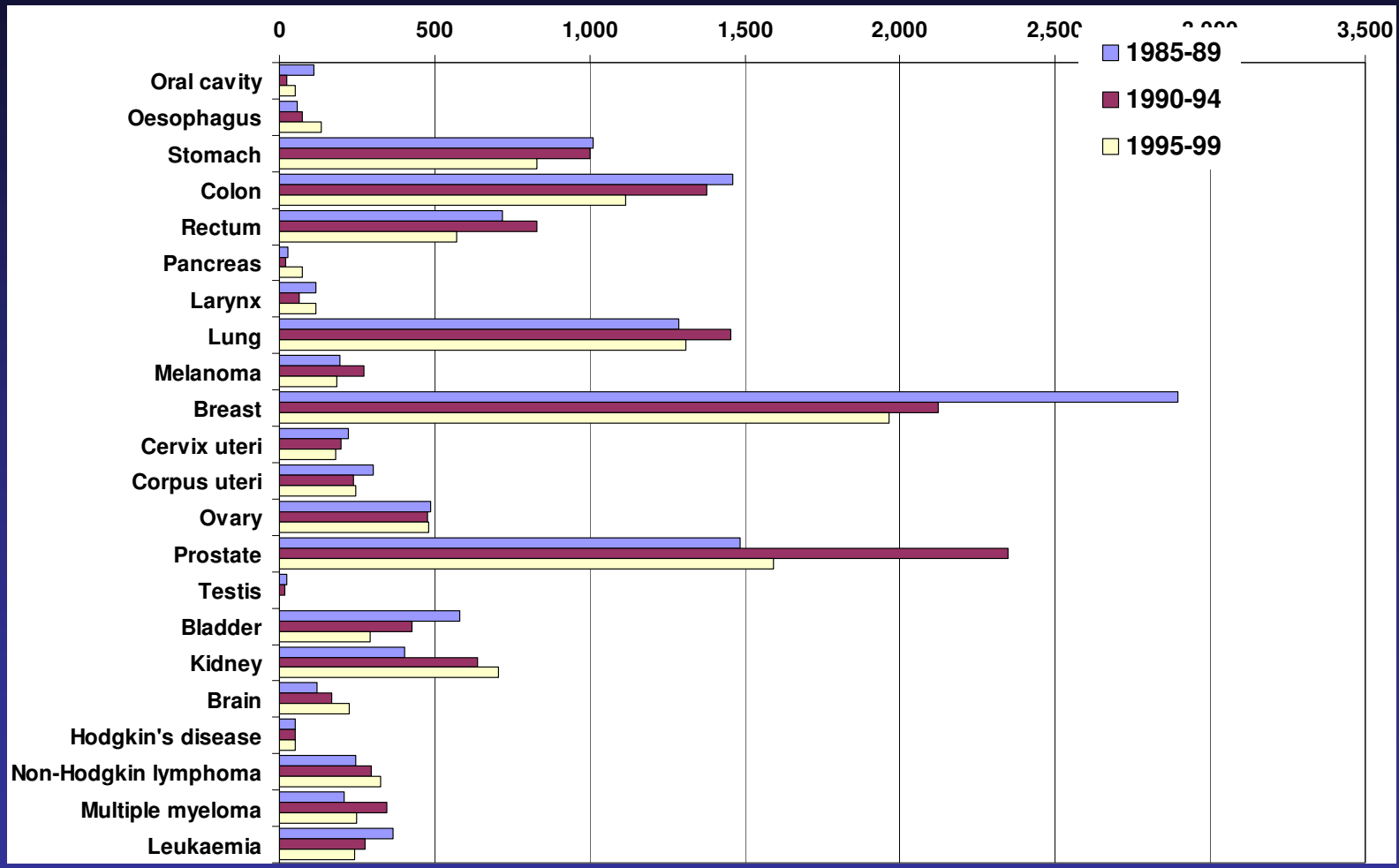
Five-year relative survival (%)
Europe, 1995-99
All Cancers



Avoidable Premature Deaths

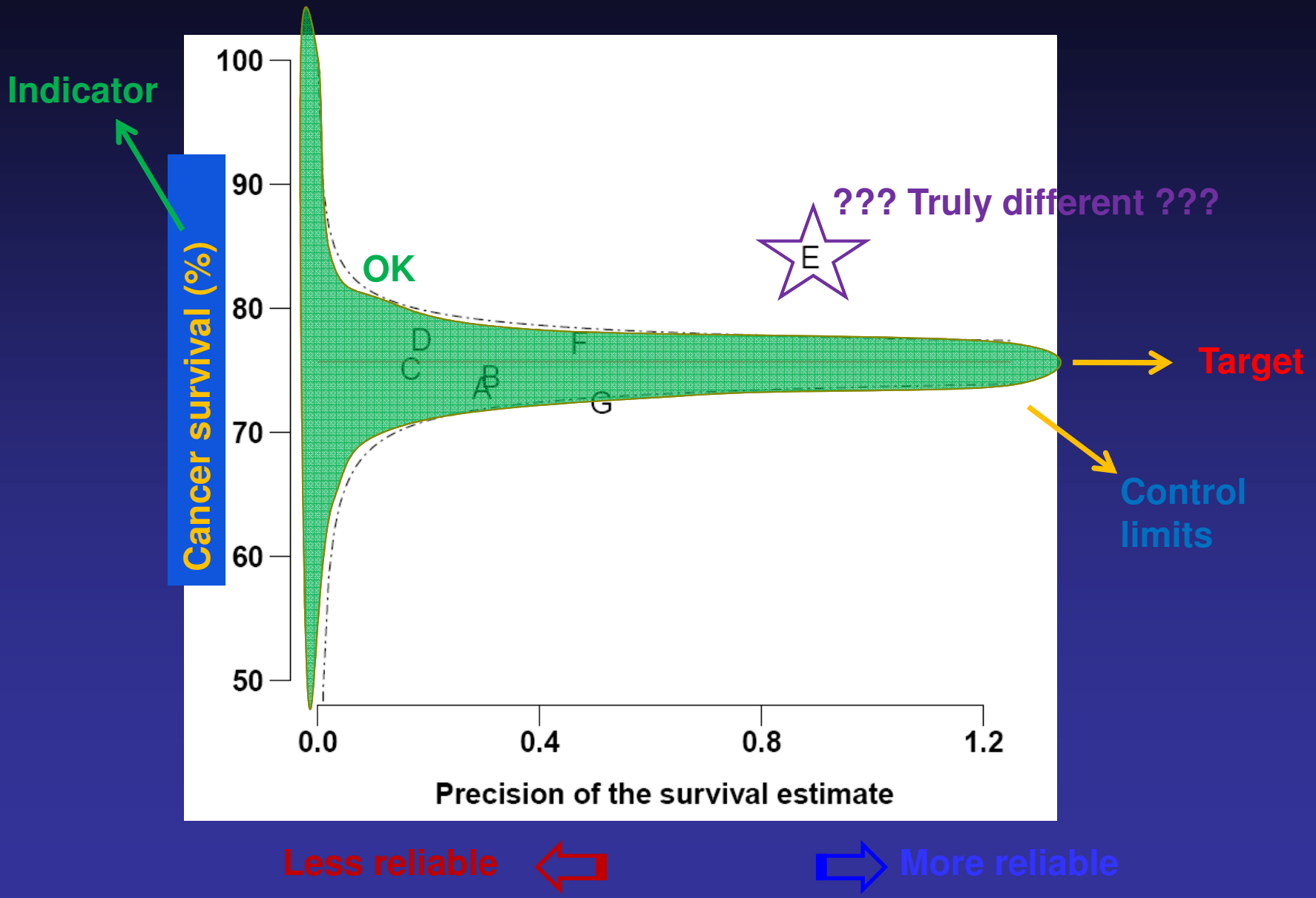


Avoidable Premature Deaths per year in Britain *vs.* Highest European Survival

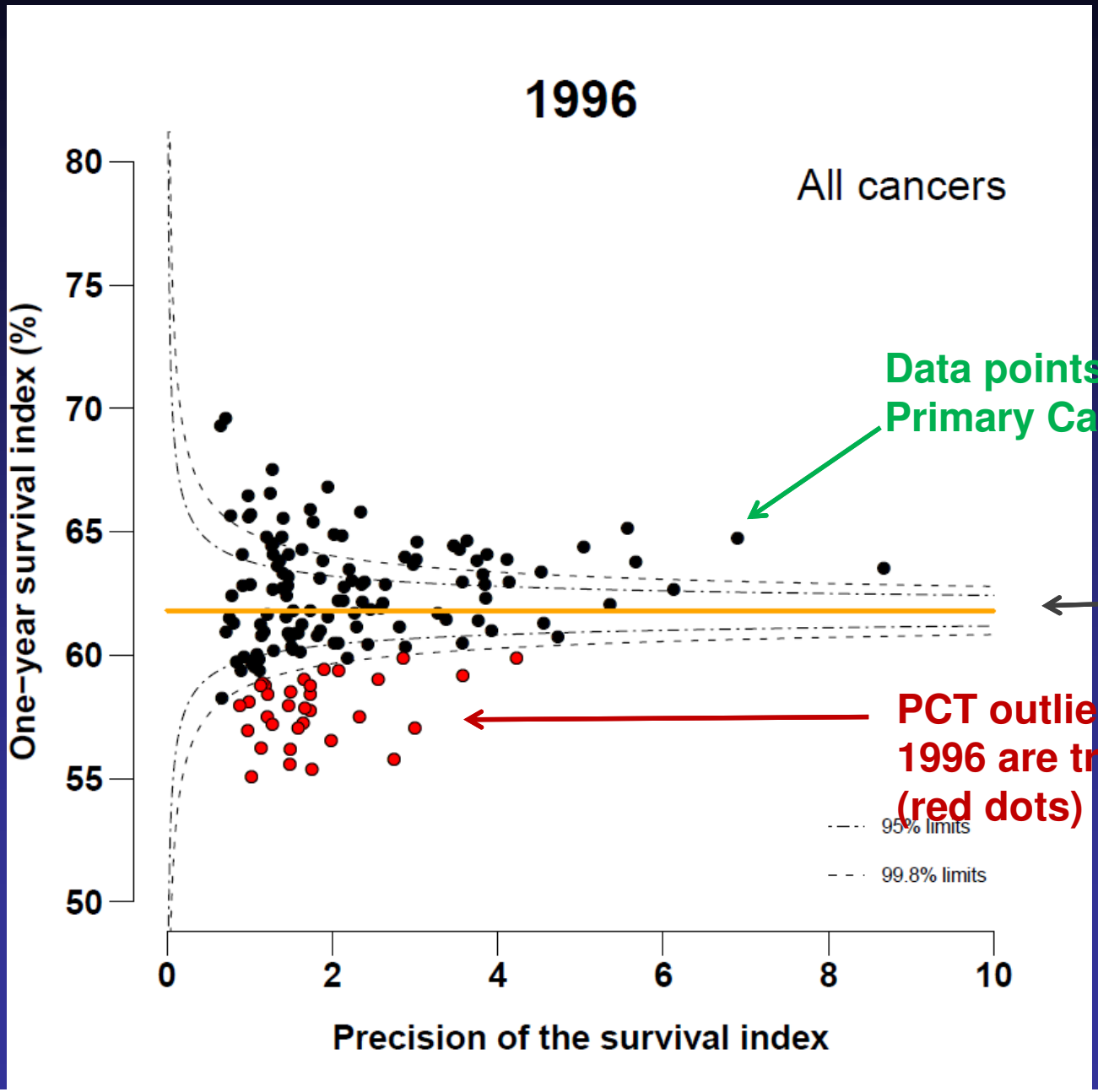


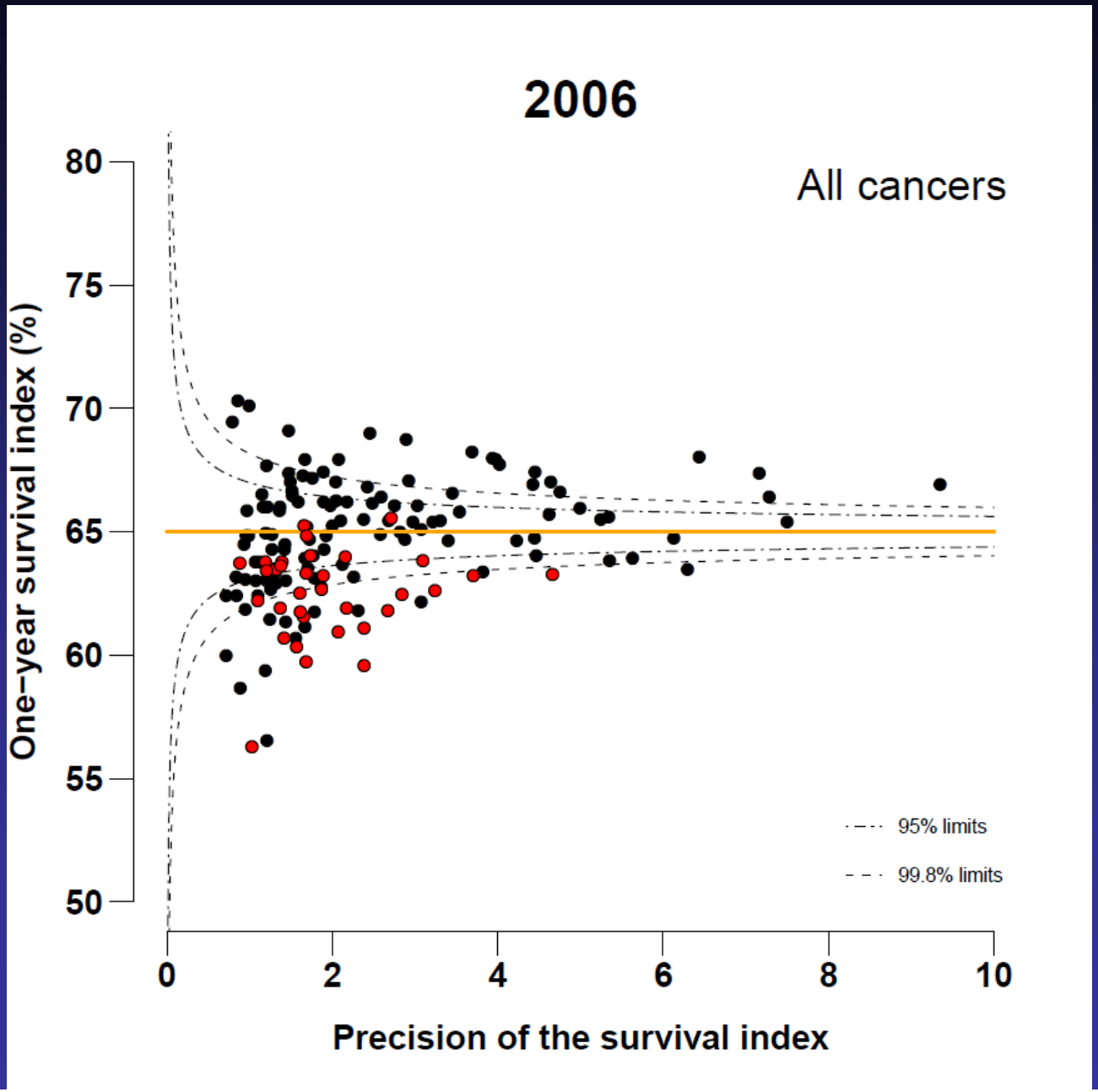
Abdel-Rahman et al. 2009

Funnel plot


Indicator
Cancer survival (%)
100
90
80
70
60
50
OK
??? Truly different ???
E
D
C
A
B
F
G
Target
Control limits
0.0
0.4
0.8
1.2
Precision of the survival estimate
Less reliable
More reliable

All-cancers survival index: 1-year survival, PCT




2006
All cancers
One−year survival index (%)
80
75
70
65
60
55
50
0
2
4
6
8
10
Precision of the survival index
95% limits
99.8% limits

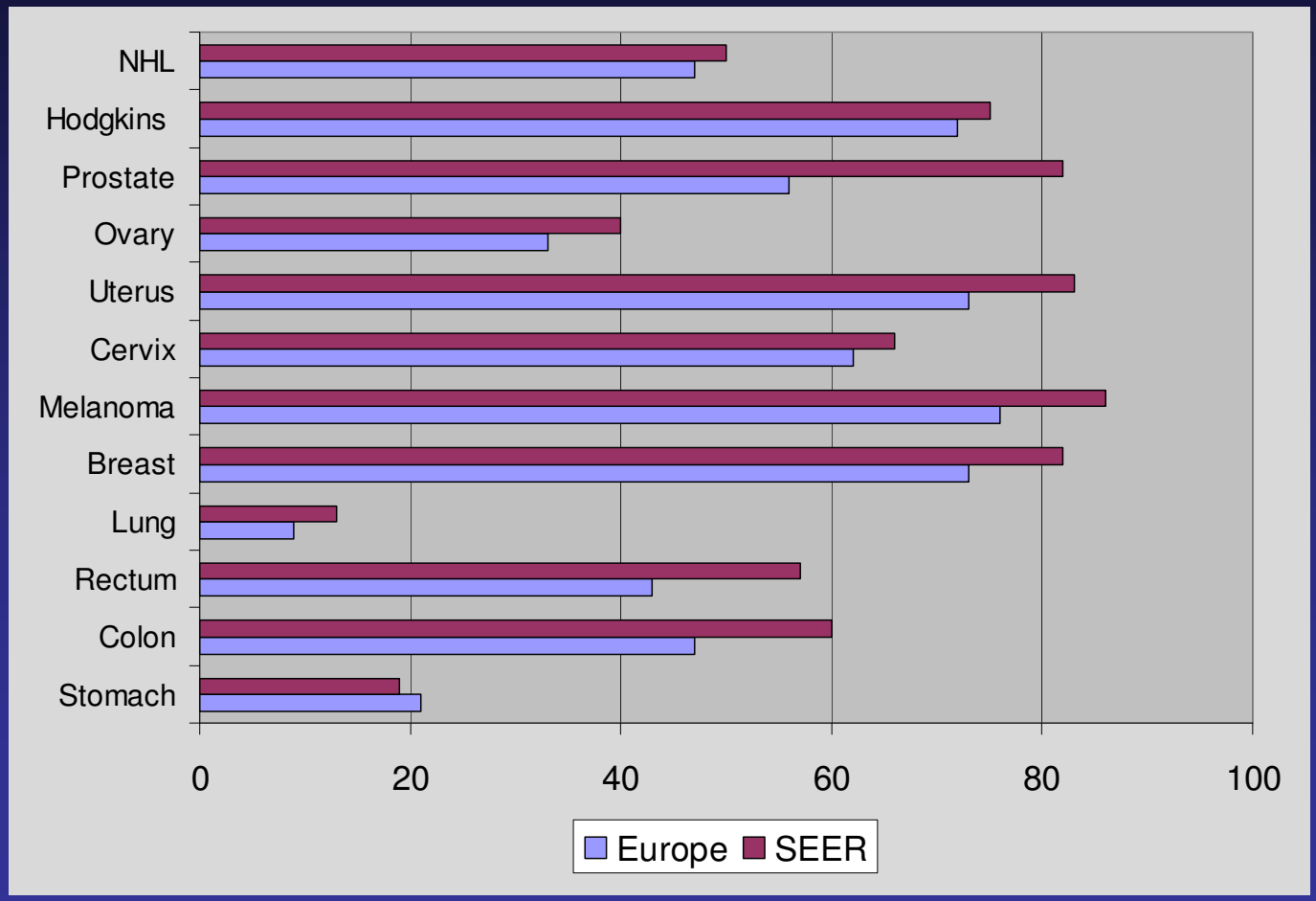
The Main Messages from Funnel Plots

- Increasing national average survival during 1996-2009
- Increasing survival for individual PCT
- Fewer divergent PCTs in more recent years

Meanwhile……

Toward a comparison of survival in American and European cancer patients. Gatta et al. 2000

Cancer survival (5-years) in Europe and USA: patients diagnosed 1985-89



Gatta et al., 2000

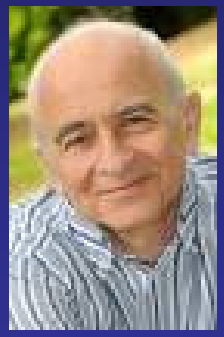
Why are US (SEER) survival rates so high ?

- Artefact of method
  - SEER populations not fully representative
  - Incomplete adjustment for expected mortality in US
  - Higher DCO rates in Europe
  - Differences in loss to follow-up
- Delay in presentation and stage distribution at diagnosis
  - Access to treatment (breast, colon)
- Adherence to protocol
- Older patients treated more aggressively in USA
- Availability of health care resources

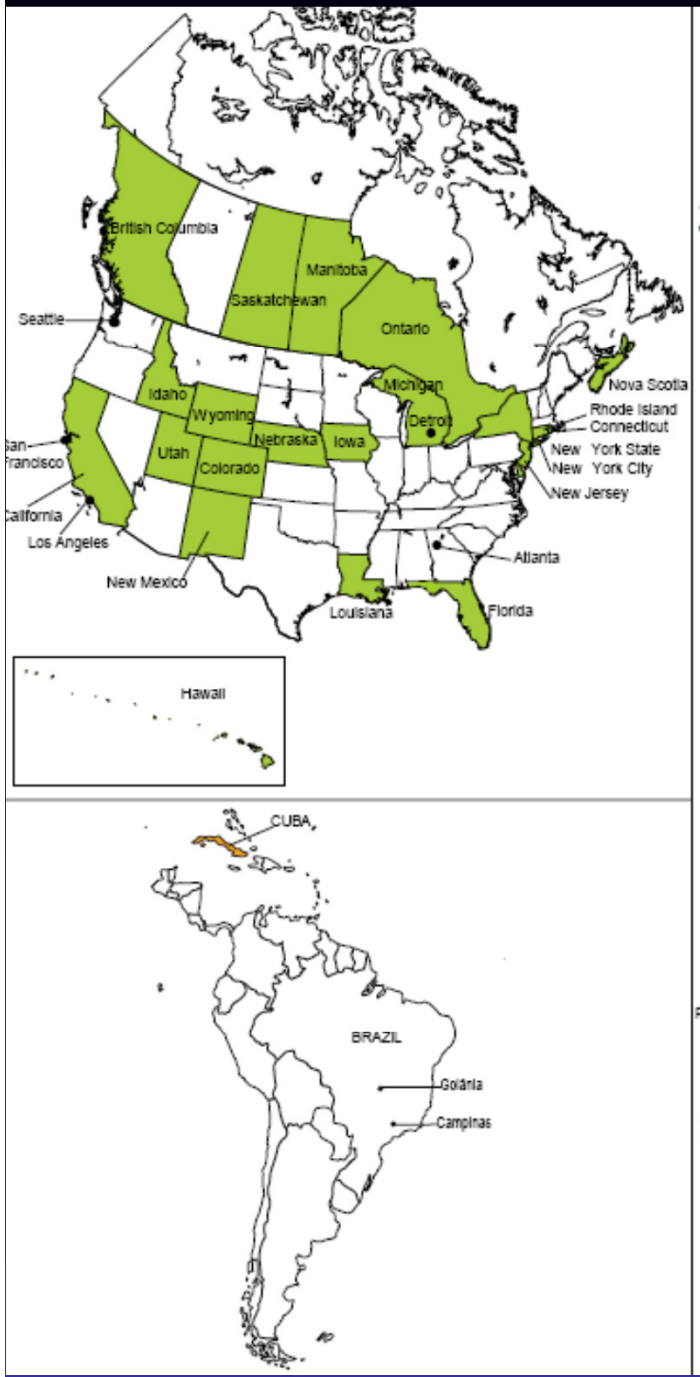
Overview

- Cancer Surveillance in the US
- EUROCARE
- CONCORD Programme
- CONCORD-2 Study

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE



Michel P Coleman, BM BCh MSc FFPH
Professor of Epidemiology and Vital Statistics


British Columbia
Manitoba
Saskatchewan
Ontario
Seattle
Idaho
Wyoming
Nebraska
Iowa
Utah
Colorado
Michigan
Detroit
Nova Scotia
Rhode Island
Connecticut
New York State
New York City
New Jersey
Atlanta
Florida
Louisiana
New Mexico
Los Angeles
Hawaii
CUBA
BRAZIL
Goiânia
Campinas


ICELAND
NORWAY
SWEDEN
FINLAND
ESTONIA
DENMARK
SCOTLAND
N. IRELAND
IRELAND
ENGLAND
Yorkshire
Trent
Mersey
East Anglia
N. Netherlands
Amsterdam
S. Netherlands
WALES
West Midlands
Oxford
South West
South Thames
GERMANY
Saarland
Warsaw
POLAND
Krakow
West Bohemia
CZECH R.
Calvados
Bas-Rhin
SWITZERLAND
St.Gall-App.
SLOVAKIA
Côte D'Or
Basel
Valais
Tirol
G.-Glarus
Geneva
SLOVENIA
Isère
Varese
Veneto
Ferrara
Parma
FRANCE
Turin
Romagna
Basque
Genoa
Modena
Tuscany
Macerata
Navarra
PORTUGAL
Tarragona
Sassari
Latina
ITALY
SPAIN
Murcia
Mallorca
Southern Portugal
Granada
Ragusa
MALTA


JAPAN
Yamagata
Fukui
Osaka


Northern Territory
Queensland
Western Australia
Southern Australia
New South Wales
Victoria
Australian Capital Territory
AUSTRALIA
Tasmania


Sétif
ALGERIA

Population-based Cancer Survival in High Income Countries

EUROCARE	Patients diagnosed	Countries	Cancer registries	Year
1	1978 – 1984	11	30	1995
2	1985 – 1989	17	48	1999
3	1990 – 1994	20	66	2003
CONCORD	1990 – 1994	31	101	2008

CONCORD Study

Objectives: to obtain directly comparable, quantitative estimates of differences in population survival for approximately 1.7 million patients diagnosed (1990-94) and followed through 1999 with female breast, colon and rectum, or prostate

Common protocol, data evaluation, standardized data analysis, including construction of life tables

NPCR Eligibility Criteria

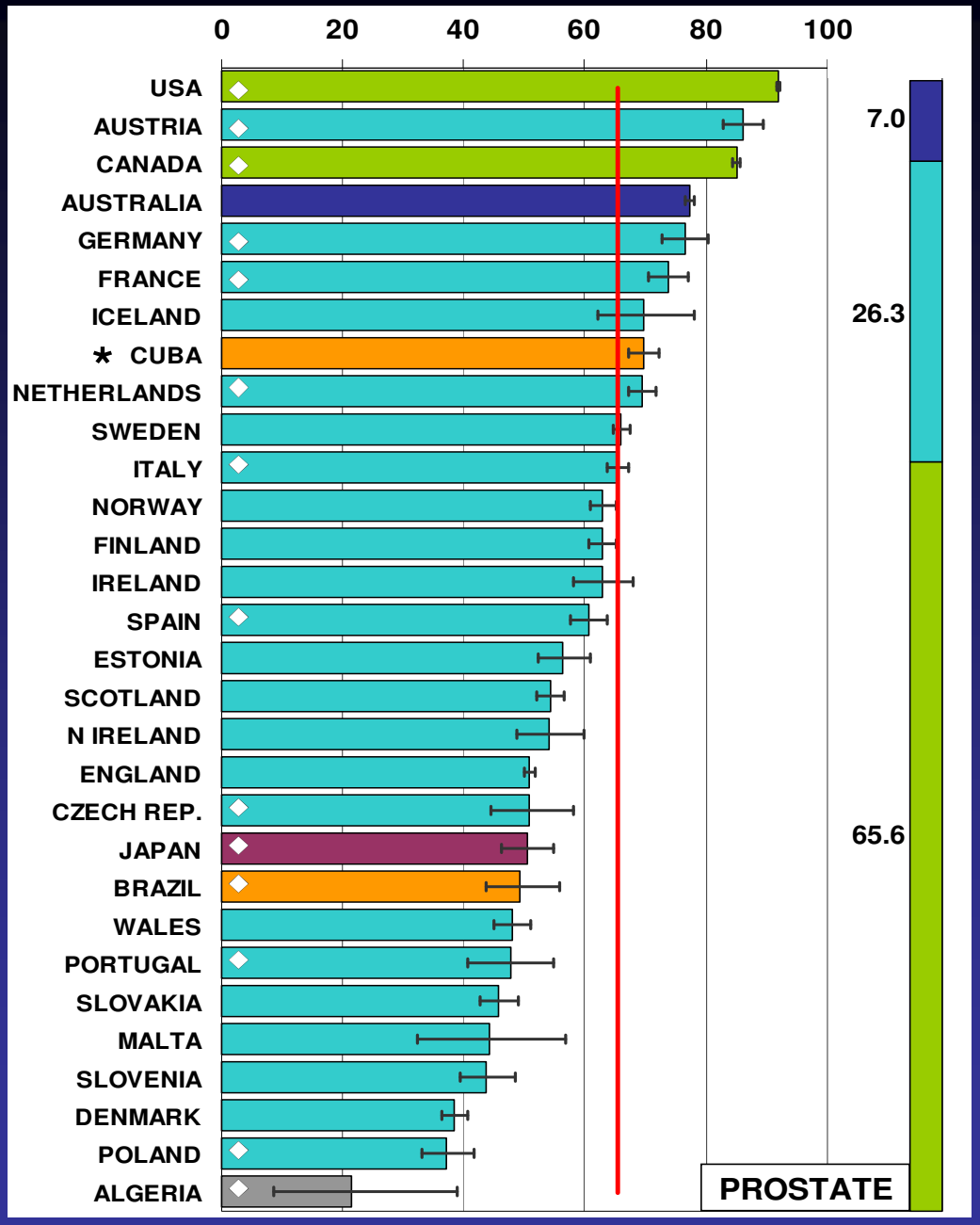
- High quality population-based incidence data 1990-1994
  - Met NAACCR data standards for inclusion in CINA
- Performed death linkage with state death certificates (1990-1999)
- Linked with the National Death Index (1990-99)

North American Coverage

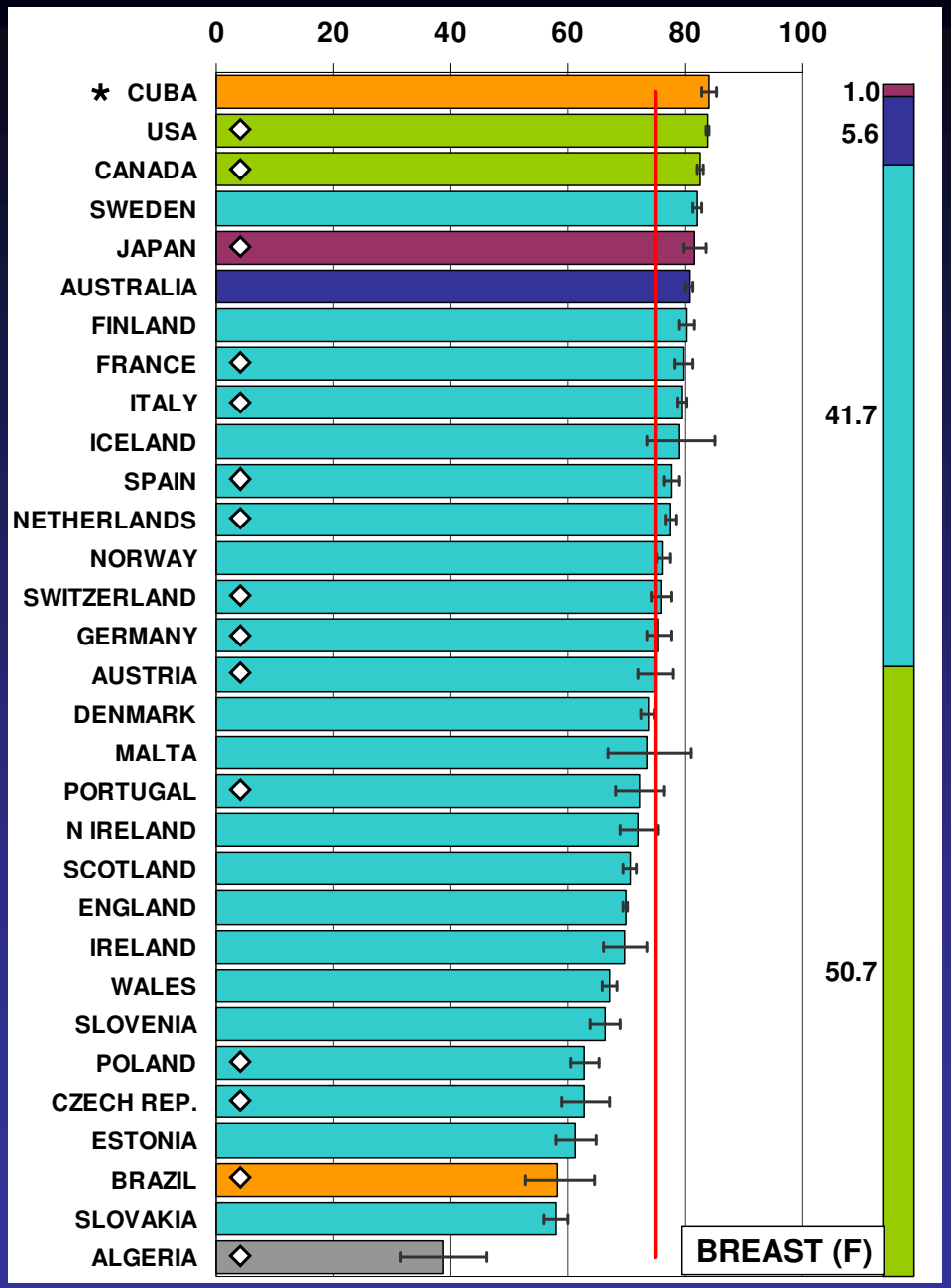
What we learned from the first CONCORD study…..

Coleman et al., 2008

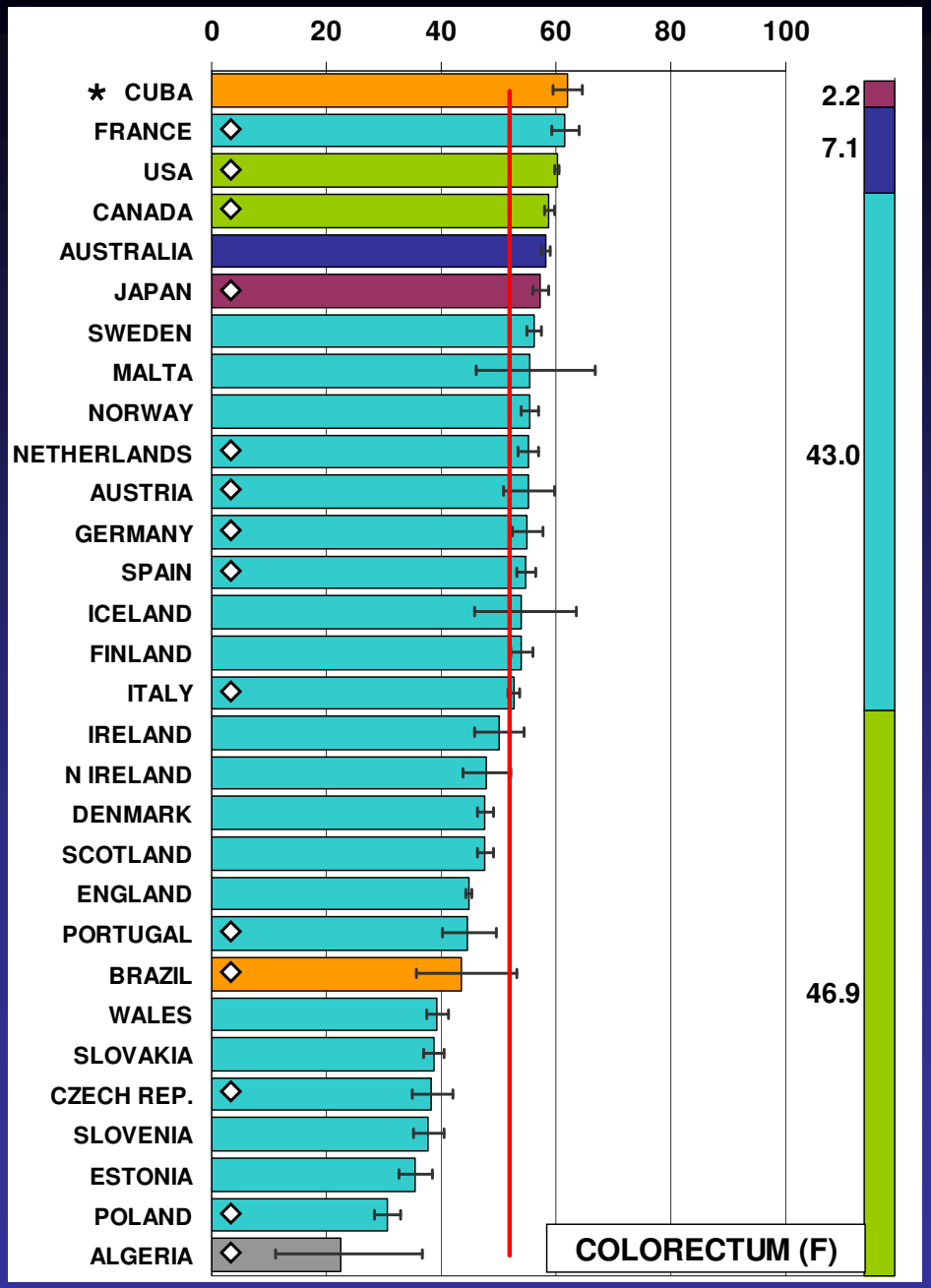
Five-year relative survival (%) - prostate cancer (15-99 years)



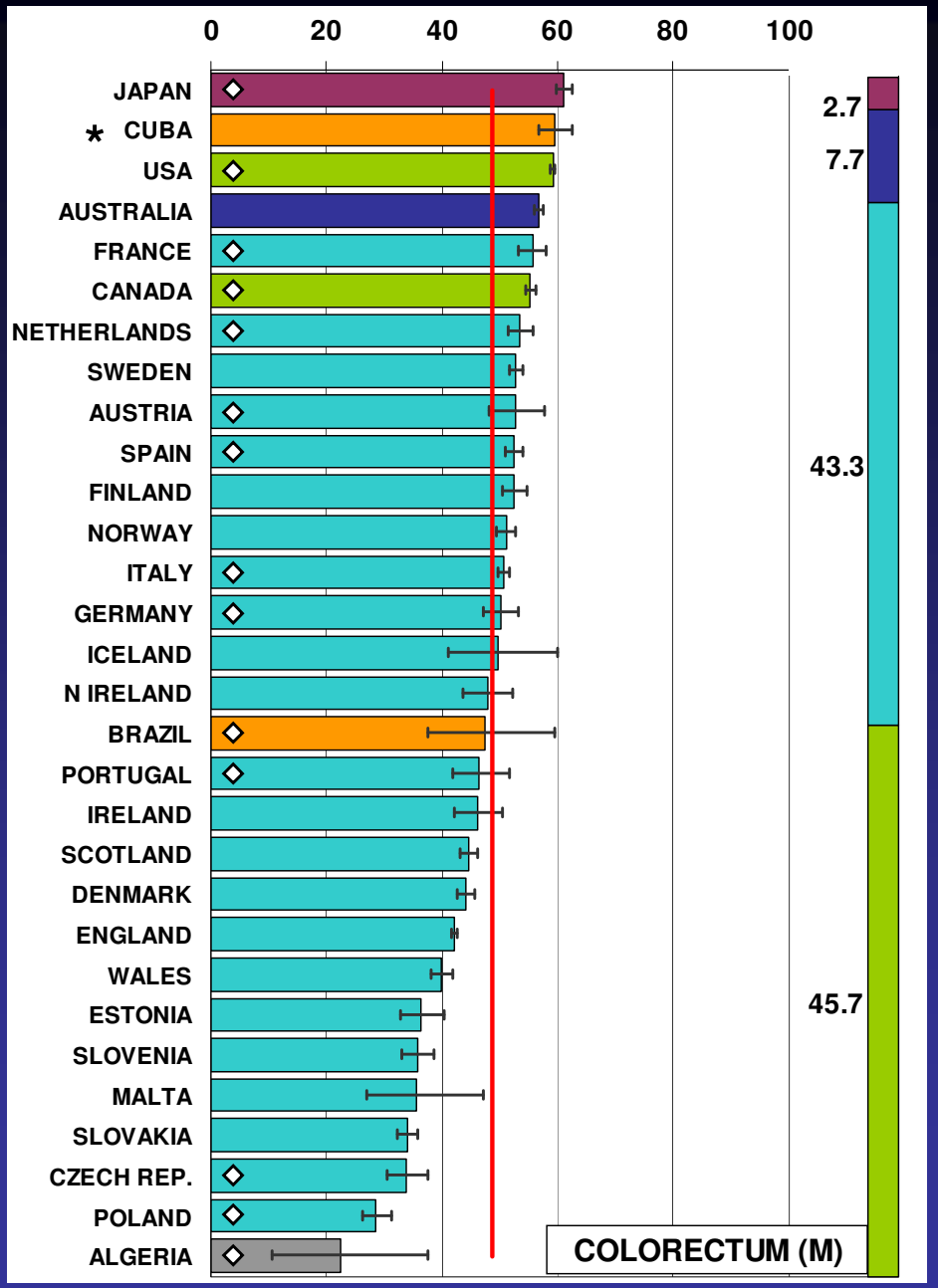
Five-year relative survival (%) - breast cancer, women (15-99 years)



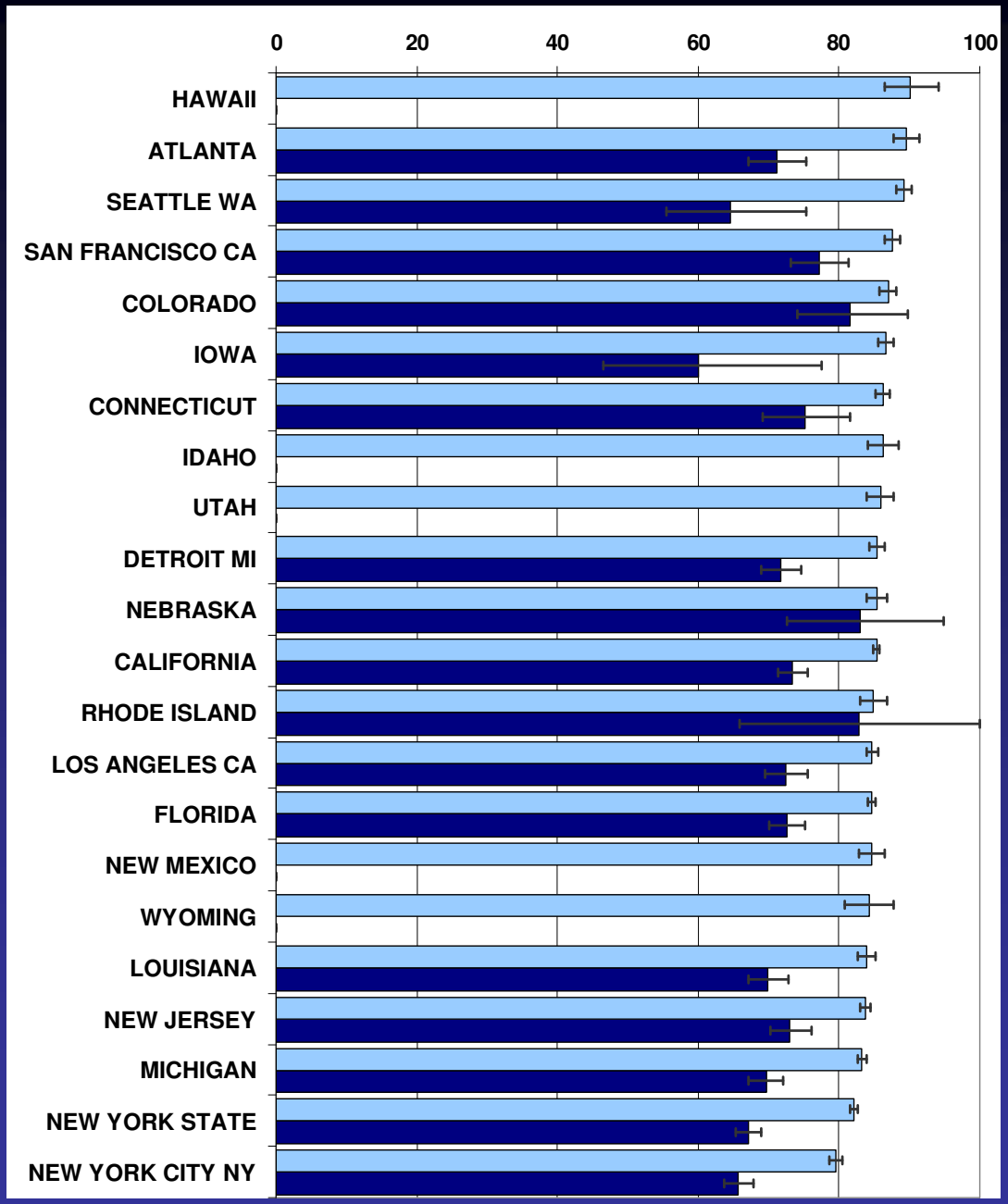
Five-year relative survival (%) - colorectum cancer, women (15-99 years)



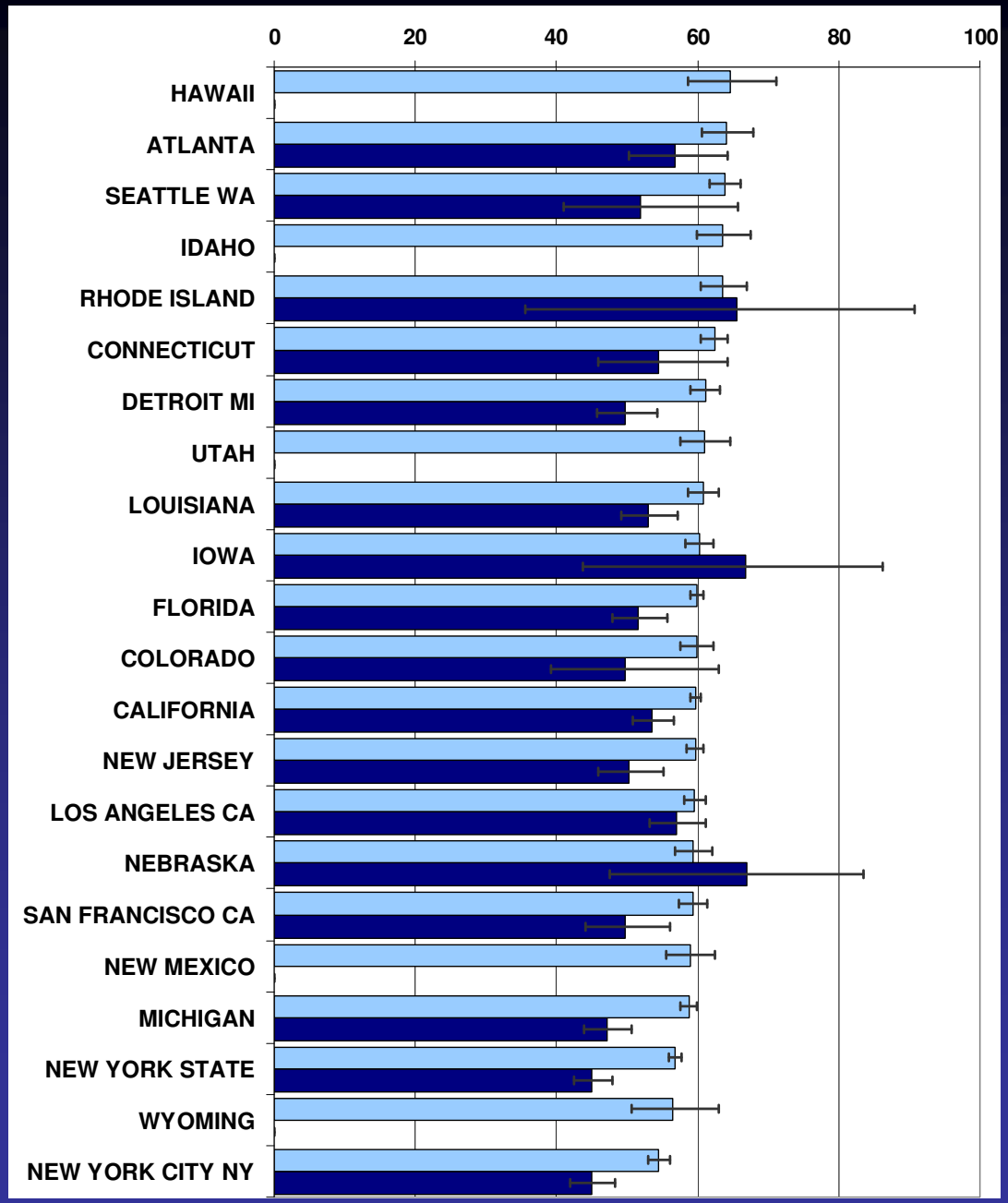
Five-year relative survival (%) - colorectum cancer, men (15-99 years)



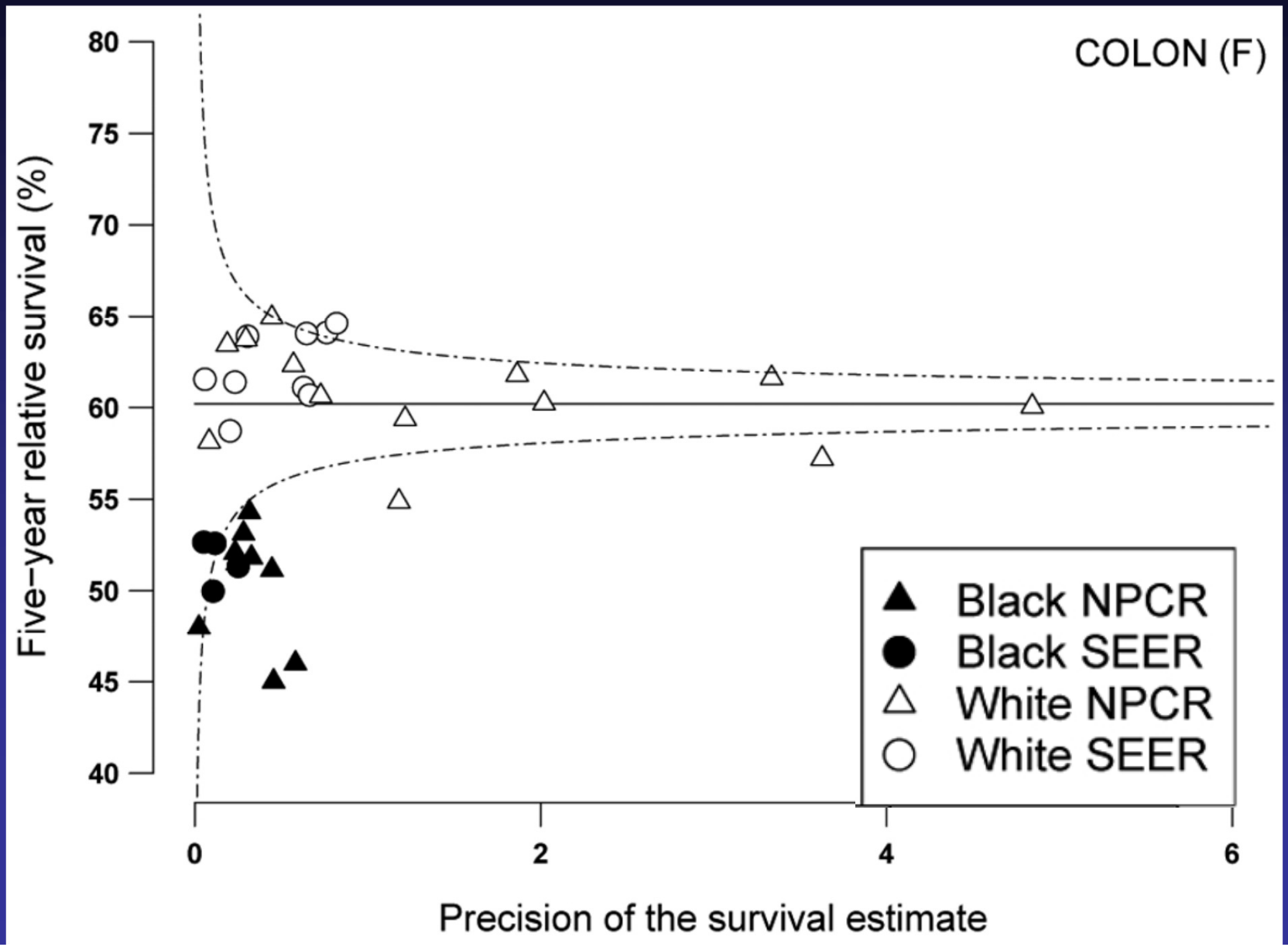
Five-year relative survival (%) - breast cancer
women
(15-99 years):
USA, by race



Five-year relative survival (%) - colorectum cancer, men (15-99 years): USA, by race

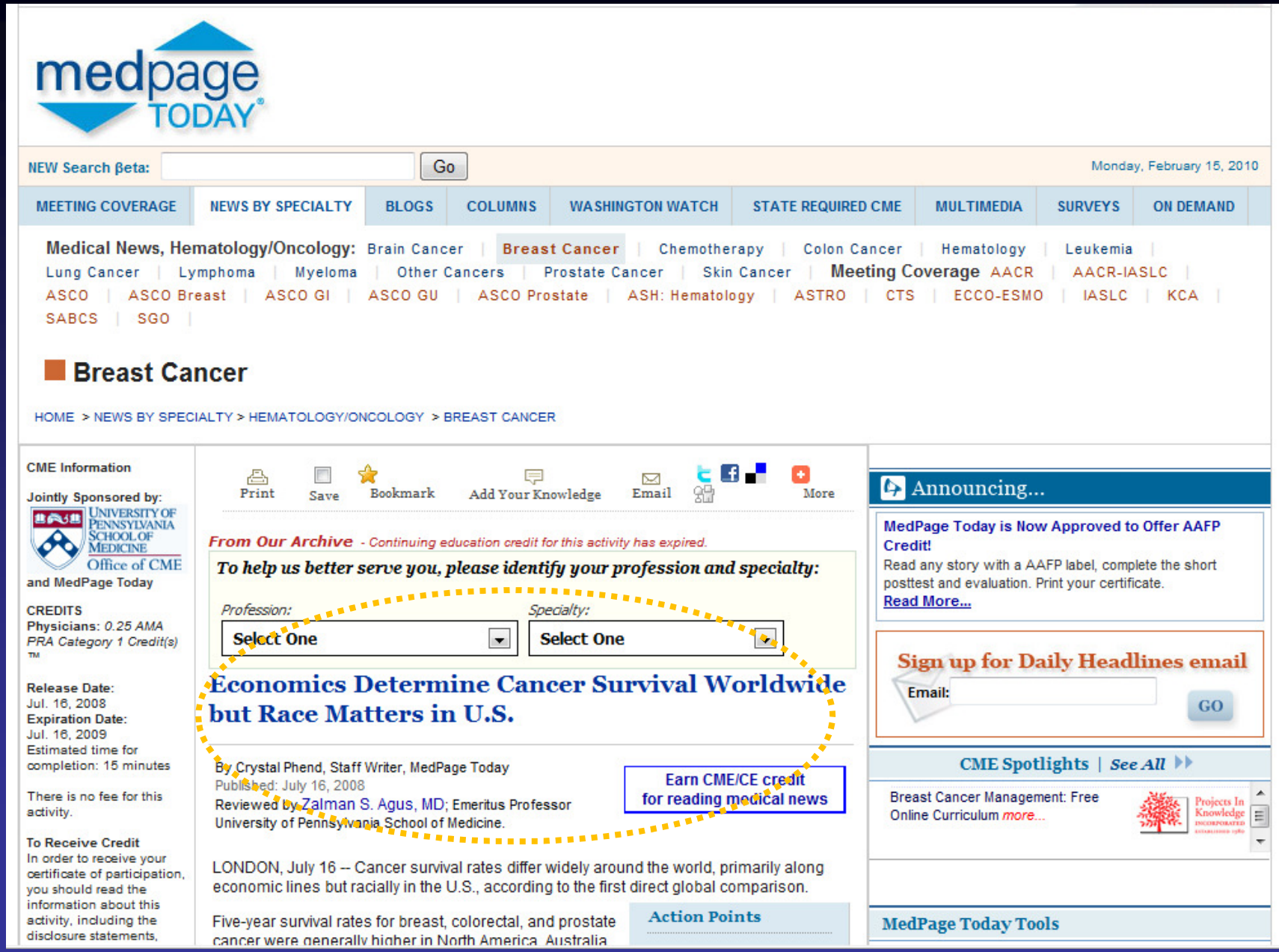


Five-year relative survival (%), colon (F) USA, 1990-99, by race and program area



What we learned from the first CONCORD study

- Canada and US survival was among highest worldwide
- In the US, 5-year survival in black men and women was systematically and substantially lower than in white men and women.
  - Breast Cancer - survival was 85% for white women and 71% for black women (difference of 15%)
  - Colorectal Cancers - survival was 60% for white men and women and 50% for black men and women (difference of 10%)
  - Prostate Cancer - survival was 92% for white men and 86% for black men (difference of 7%)
- Differences represent a large number of avoidable deaths


medpage TODAY
NEW Search βeta:
Go
Monday, February 15, 2010
MEETING COVERAGE
NEWS BY SPECIALTY
BLOGS
COLUMNS
WASHINGTON WATCH
STATE REQUIRED CME
MULTIMEDIA
SURVEYS
ON DEMAND
Medical News, Hematology/Oncology: Brain Cancer | Breast Cancer | Chemotherapy | Colon Cancer | Hematology | Leukemia | Lung Cancer | Lymphoma | Myeloma | Other Cancers | Prostate Cancer | Skin Cancer
Meeting Coverage AACR | AACR-IASLC | ASCO | ASCO Breast | ASCO GI | ASCO GU | ASCO Prostate | ASH: Hematology | ASTRO | CTS | ECCO-ESMO | IASLC | KCA | SABCS | SGO
Breast Cancer
HOME > NEWS BY SPECIALTY > HEMATOLOGY/ONCOLOGY > BREAST CANCER
CME Information
Jointly Sponsored by:
University of Pennsylvania School of Medicine Office of CME
and MedPage Today
CREDITS
Physicians: 0.25 AMA PRA Category 1 Credit(s) ™
Release Date:
Jul. 16, 2008
Expiration Date:
Jul. 16, 2009
Estimated time for completion: 15 minutes
There is no fee for this activity.
To Receive Credit
In order to receive your certificate of participation, you should read the information about this activity, including the disclosure statements,
Print
Save
Bookmark
Add Your Knowledge
Email
More
From Our Archive - Continuing education credit for this activity has expired.
To help us better serve you, please identify your profession and specialty:
Profession:
Select One
Specialty:
Select One
Economics Determine Cancer Survival Worldwide but Race Matters in U.S.
By Crystal Phend, Staff Writer, MedPage Today
Published: July 16, 2008
Reviewed by Zalman S. Agus, MD; Emeritus Professor University of Pennsylvania School of Medicine.
Earn CME/CE credit for reading medical news
LONDON, July 16 -- Cancer survival rates differ widely around the world, primarily along economic lines but racially in the U.S., according to the first direct global comparison.
Five-year survival rates for breast, colorectal, and prostate cancer were generally higher in North America, Australia
Action Points
Announcing...
MedPage Today is Now Approved to Offer AAFP Credit!
Read any story with a AAFP label, complete the short posttest and evaluation. Print your certificate.
Read More...
Sign up for Daily Headlines email
Email:
GO
CME Spotlights | See All
Breast Cancer Management: Free Online Curriculum more...
Projects In Knowledge
MedPage Today Tools

Overview

- Cancer Surveillance in the US
- EUROCARE
- CONCORD Programme
- CONCORD-2 Study

Background to the CONCORD-2 Study

- Cancer registration in the US has expanded to nationwide coverage

- Changes in clinical practice (including screening, diagnosis and treatment) have continued to improve in the 15 + years since the first CONCORD study, at least in wealthier countries

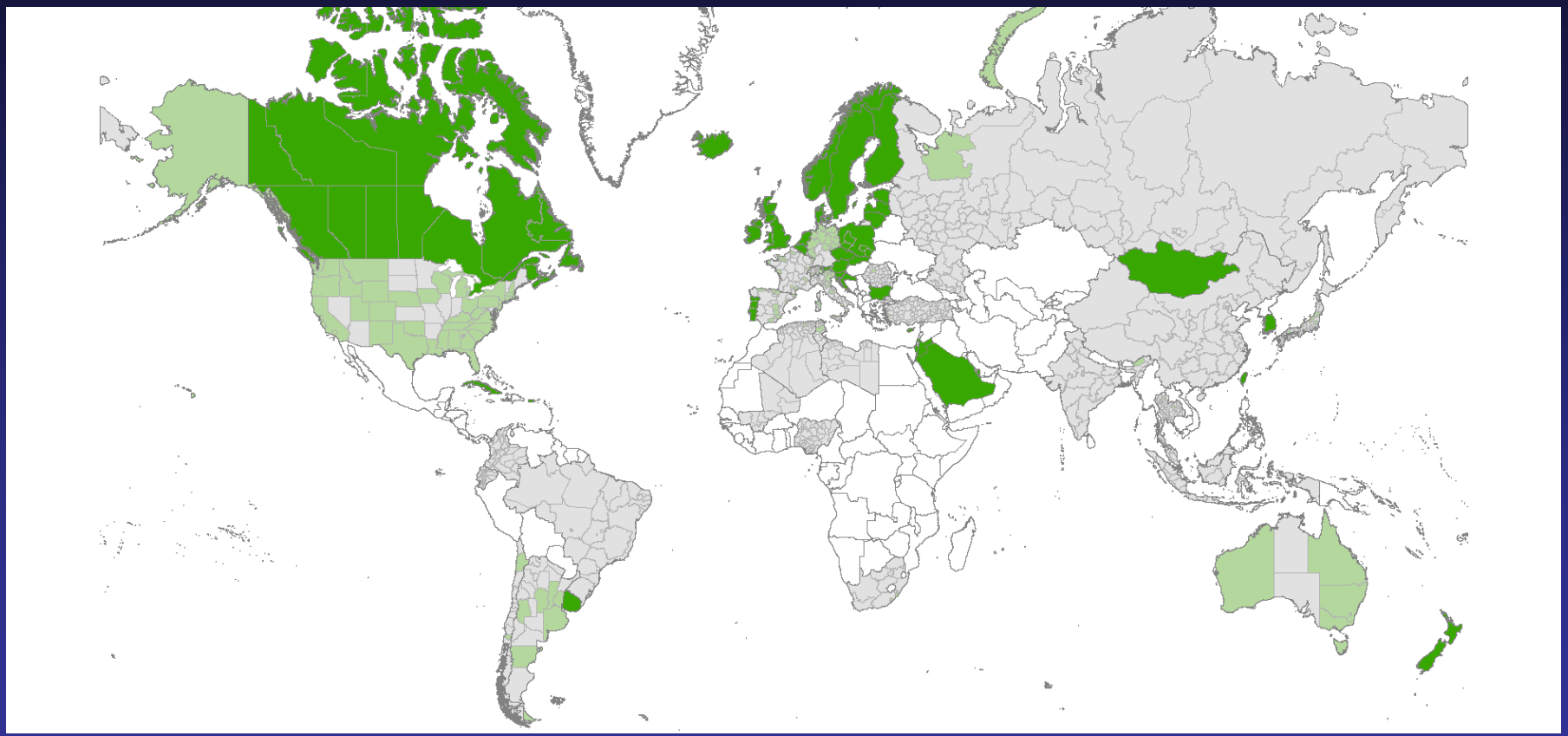
CONCORD-2 Study

Objectives: to obtain directly comparable, quantitative estimates of differences in population survival for approximately 30 million patients diagnosed (1995-2009) and followed through 2009 with stomach, colon, rectum, liver, lung, breast (women), cervix, ovary, prostate, leukaemia (adults and children)

Common protocol, data evaluation, standardized data analysis, including construction of life tables

Population-based Cancer Survival in High Income Countries

EUROCARE	Patients diagnosed	Countries	Cancer registries	Year
1	1978 – 1984	11	30	1995
2	1985 – 1989	17	48	1999
3	1990 – 1994	20	66	2003
4	1995 – 2002	23	83	2007
5	2003 – 2007	-	-	2013
CONCORD-2	1995 – 2009	69	292	2013



Cancer registries, data sets, quality control

	Signed up	Submitted	Data sets	Checked
Africa	12	12	79	79
America C+S	27	26	171	171
America N	58	56	560	560
Asia	52	50	470	470
Europe	127	127	1,136	1,056
Oceania	7	7	70	70
	283	278	2,486	2,406

CONCORD
Global surveillance
of cancer survival

Number of cancer patients

Africa	24,213
America C+S	459,964
America N	13,579,666
Asia	3,804,259
Europe	11,132,170
Oceania	1,050,246
	30,050,518

Note: provisional figures, February 2014

What we expect to learn from the CONCORD-2 study

- Period Analysis and “prediction” of survival
- Trends over 15+ years
  - Do racial disparities within the US persist?
- Avoidable deaths: How many cancer-related deaths within five years of diagnosis would be expected *not* to occur, if racial inequalities were eliminated?
- Prevalence

Relative survival: cohort and period approaches

- The basic cohort method
  - Uses everyone diagnosed with cancer in the past, who has had sufficient follow up time
  - Traditional approach to survival statistics; reflect the survival expectations of patients diagnosed many years ago (i.e., everyone in the cohort must have had five years of follow up)

Relative survival: cohort and period approaches

- The Period approach[1]
  - Provides more 'up-to-date' estimates of long-term survival rates, incorporates the survival experience of recently diagnosed cases into the analysis.
  - e.g., 5-year survival for people diagnosed 2003-2007, with follow-up to the end of 2008
    - 1-year estimate will include the 1-year survival experience of people diagnosed in 2003-2007
    - 2-year estimate will include the survival experience for people diagnosed in 2003-2006
    - 3-year estimate will include 2003-2005 follow-up,
    - …. And so on

Brenner and Gefeller 1996

UICC World Cancer Declaration

WCD 2008 – 11 goals for 2020

- Achieve major improvements in cancer survival in all countries (#11)
- Improve measurement of global cancer burden and impact of cancer control interventions (#2)

WCD 2013 – “one overarching goal”

- There will be major reductions in premature deaths from cancer, and improvements in quality of life and cancer survival.

www.uicc.org/wcd/wcd2008.pdf, 31 August 2008
www.uicc.org/world-cancer-declaration, 25 November 2013

Global surveillance of cancer

"I believe that the fight against cancer, rather than focussing on specific, spectacular news, should aim at viewing the overall global comprehensive picture.

"We should monitor trends if we want to improve that reality."

Dr Tabaré Vázquez, oncologist
President of Uruguay (2005-10)

World Cancer Leaders' Summit, Shenzhen, China, 19 August 2010

A rationale for disease surveillance ...

I believe it is also our job to constantly assess the impact of our activities. One thing I learned from my previous life is this: what gets measured gets done.

Dr Margaret Chan, WHO Director-General, 2007

References

- Abdel-Rahman M, Stockton D, Rachet B, Hakulinen T, Coleman MP. What if cancer survival in Britain were the same as in Europe: how many deaths are avoidable? Br J Cancer. 2009 Dec 3;101 Suppl 2:S115-24.
- Baili P, Micheli A, De Angelis R, Weir HK, Francisci S, Santaquilani M, Hakulinen T, Quaresmas M, Coleman MP; CONCORD Working Group. Life tables for world-wide comparison of relative survival for cancer (CONCORD study). Tumori. 2008 Sep-Oct;94(5):658-68.
- Brenner H, Gefeller O. An alternative approach to monitoring cancer patient survival. Cancer 1996;78: 2004–2010.
- Coleman MP. Opinion: why the variation in breast cancer survival in Europe? Breast Cancer Res. 1999;1(1):22-6. Epub 1999 Oct 7.
- Coleman MP, Quaresma M, Berrino F, Lutz JM, De Angelis R, Capocaccia R, Baili P, Rachet B, Gatta G, Hakulinen T, Micheli A, Sant M, Weir HK, Elwood JM, Tsukuma H, Koifman S, E Silva GA, Francisci S, Santaquilani M, Verdecchia A, Storm HH, Young JL; CONCORD Working Group. Cancer survival in five continents: a worldwide population-based study (CONCORD). Lancet Oncol. 2008 Aug;9(8):730-56.
- Gatta G, Capocaccia R, Coleman MP, Gloeckler Ries LA, Hakulinen T, Micheli A, Sant M, Verdecchia A, Berrino F. Toward a comparison of survival in American and European cancer patients. Cancer. 2000 Aug 15;89(4):893-900.
- Quaresma M, Coleman MP, Rachet B. Funnel plots for population-based cancer survival: principles, methods and applications. Stat Med. 2014 Mar 15;33(6):1070-80.

Interesting Cancer Survival Websites

- EUROCARE www.eurocare.it
- Paul Dickman www.pauldickman.com
- International Agency for Research on Cancer (IARC) http://www.iarc.fr/
- UK Cancer Survival Group: www.lshtm.ac.uk/ncdeu/cancersurvival/
- SEER: www.seer.gov/cancer
- Statistics Canada: www.statcan.gc.ca/
- Canadian Partnership Against Cancer: www.partnershipagainstcancer.ca

Thank You

Hannah K. Weir, PhD
Division of Cancer Prevention and Control
Centers for Disease Control and Prevention
hbw4@cdc.go
770 488-3006

The findings and conclusions in this presentation are those of the presenter and do not necessarily represent the official position of the Centers for Disease Control and Prevention.