

FICTION AND FACTS IN BREAST CANCER SCREENING

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BREAST CANCER SCREENING

Mammography screening is one of the major medical advances in the last 50 years. It has undergone greater scrutiny and more challenges than virtually any other medical intervention.

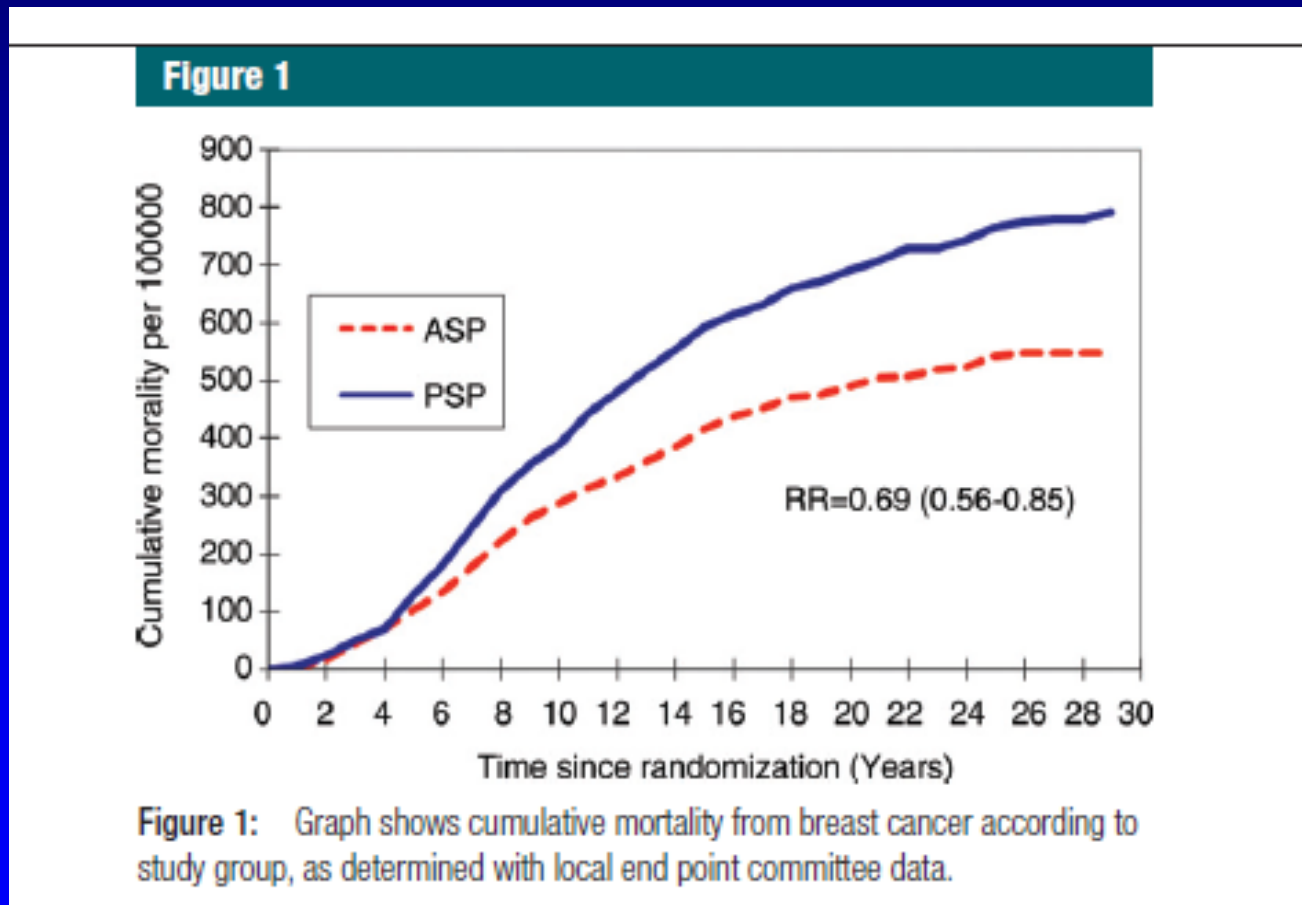
Opposition has persisted for over 40 years despite continually mounting evidence of benefit.

BREAST CANCER SCREENING

Mammography has fulfilled the requirements for an efficacious screening test:

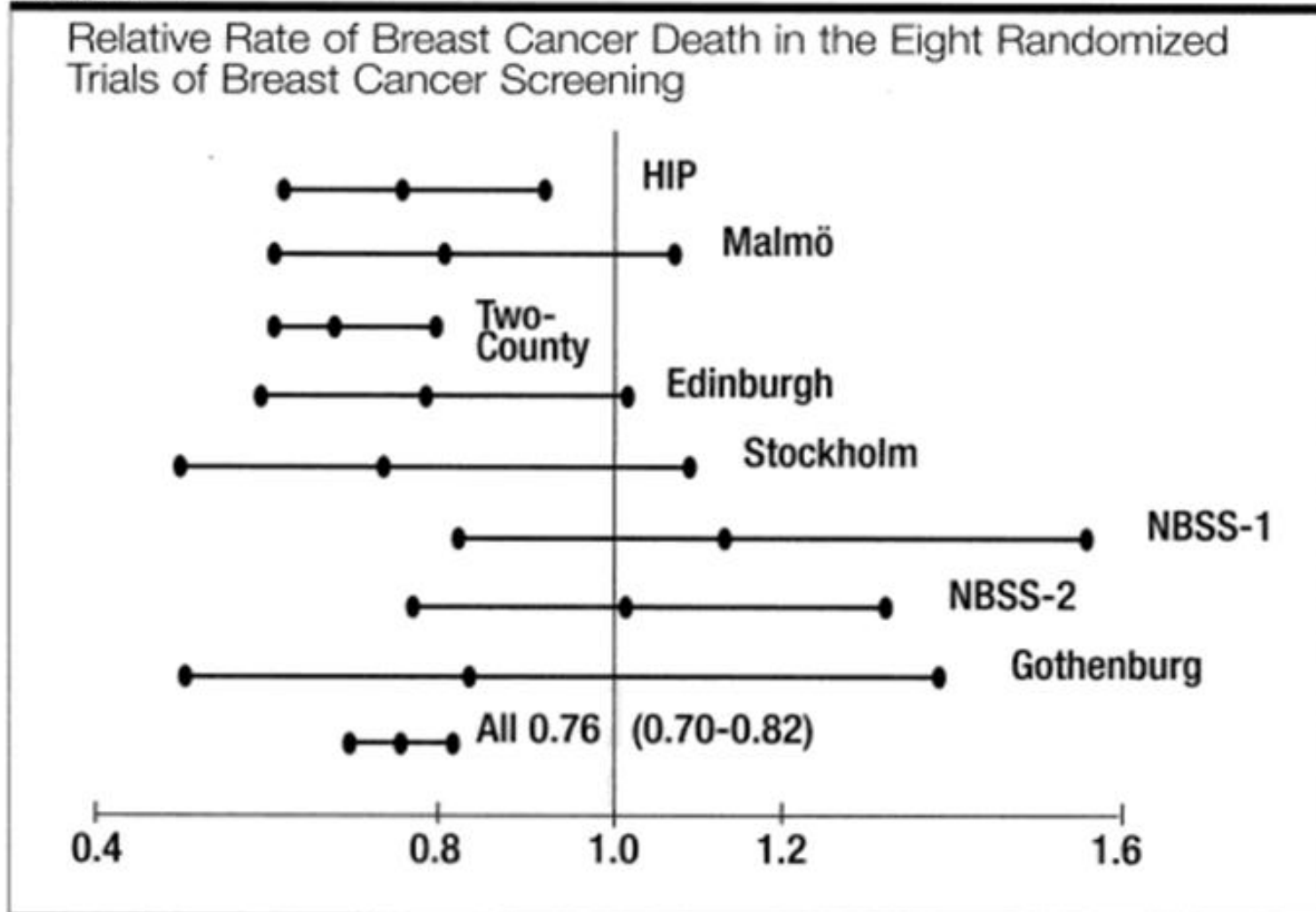
1. It finds cancers before they become clinically evident (The Breast Cancer Detection Demonstration Project 1970's)
2. Randomized, controlled trials have, unequivocally, shown a statistically significant mortality reduction for screening beginning at the age of 40
3. When introduced into general populations the death rate from breast cancer declines

Screening has shown a decrease in breast cancer deaths of approximately 30% for women “invited” to be screened and a greater decline for those who actually participate in screening.



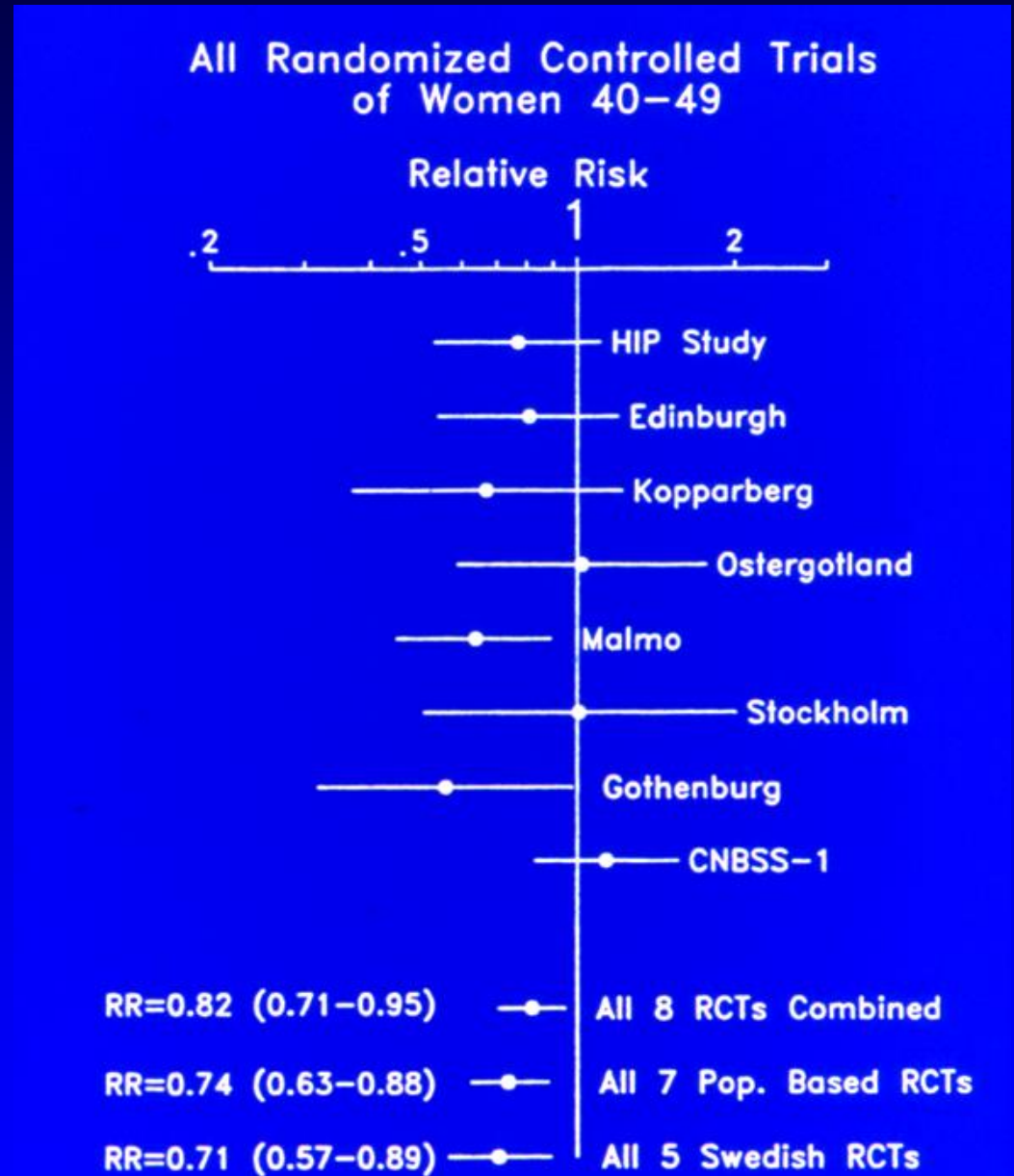
Tabár L, Vitak B, Chen TH, Yen AM, Cohen A, Tot T, Chiu SY, Chen SL, Fann JC, Rosell J, Fohlin H, Smith RA, Duffy SW. Swedish two-county trial: impact of mammographic screening on breast cancer mortality during 3 decades. *Radiology*. 2011 Sep;260(3):658-63.

FIGURE 1



SCREENING FOR WOMEN AGES 40-49

Although the RCT were never intended to be analyzed by age groups, the data show a benefit from screening women ages 40-49. This was provided to, and ignored by the Panel at the 1997 Consensus Development Conference



BREAST CANCER SCREENING WHY THE CONTROVERSIES ?

Since the issues have not changed, and they have all been addressed, scientifically, the continued use of misinformation is either due to a failure to understand the data and legitimate scientific analysis, or a malicious effort to mislead.

THE FICTION CONTINUES

The arguments against screening have gone from ridiculous:

“Mammography squeezes cancer into the blood causing early death”

to outrageous.

“Breast cancer would melt away if left undetected.”

THE FICTION CONTINUES

The “debate” is not about the facts, but has been the result of data manipulation, and pseudoscience that has been permitted and perpetuated by bias and failed peer review at the medical journals, and disseminated by an uncritical media.

THE FICTION CONTINUES

Much of the misinformation has been promulgated by a group that has analyzed data in, scientifically, unsupportable ways to reach specious conclusions that have passed poor peer review and been published and passed on to the public by the media.

THE “NORDIC COCHRANE CENTER” HAS POMULGATED SCIENTIFIC MISINFORMAYION

This group was, severely, criticized in a letter to the editor of the journal *The Lancet* that was signed by 41 experts in breast health care citing “an active anti-screening campaign..... These contrary views are based on erroneous interpretation of data from cancer registries and peer reviewed articles.”

(Karin Bock, Bettina Borisch, Jenny Cawson, Berit Damtjernhaug, Chris de Wolf, Peter Dean, Ard den Heeten, Gregory Doyle, Rosemary Fox, Alfonso Frigerio, Fiona Gilbert, Gerold Hecht, Walter Heindel, Sylvia Helen Heywang-Köbrunner, Roland Holland, Fran Jones, Anders Lernevall, Silvia Madai, Adrian Mairs, Jennifer Muller, Patric Nisbet, Ann O’Doherty, *Julietta Patnick, Nick Perry, Lisa Regitz-Jedermann, Mary Rickard, Vitor Rodrigues, Marco Rosselli Del Turco, Astrid Scharpantgen, Walter Schwartz, Brigitte Seradour, Per Skaane, Laszlo Tabar, Sven Tornberg, Giske Ursin, Erik Van Limbergen, Anne Vandembroucke, Linda J Warren, Lee Warwick, Martin Yaffe, YMarco Zappa julietta.patnick@cancerscreening.nhs.uk. Effect of population based screening on breast cancer mortality. *The Lancet* 2011;378:1775)

PROMULGATION OF MISINFORMATION

OVERDIAGNOSIS

This is the detection of cancers that would never become clinically evident.

The “Nordic Cochrane Center” and its supporters have used completely flawed methodology to suggest that as many as 50% (tens of thousands) of mammographically detected cancers would melt away if they had not been detected by mammography.

(Jørgensen KJ, Gøtzsche PC. Overdiagnosis in publicly organised mammography screening programmes: systematic review of incidence trends. *BMJ*. 2009;339)

Zahl PH, Maehlen J, Welch HG. The natural history of invasive breast cancers detected by screening mammography. *Arch Intern Med*. 2008 Nov 24;168(21):2302-3)

PROMULGATION OF MISINFORMATION

OVERDIAGNOSIS

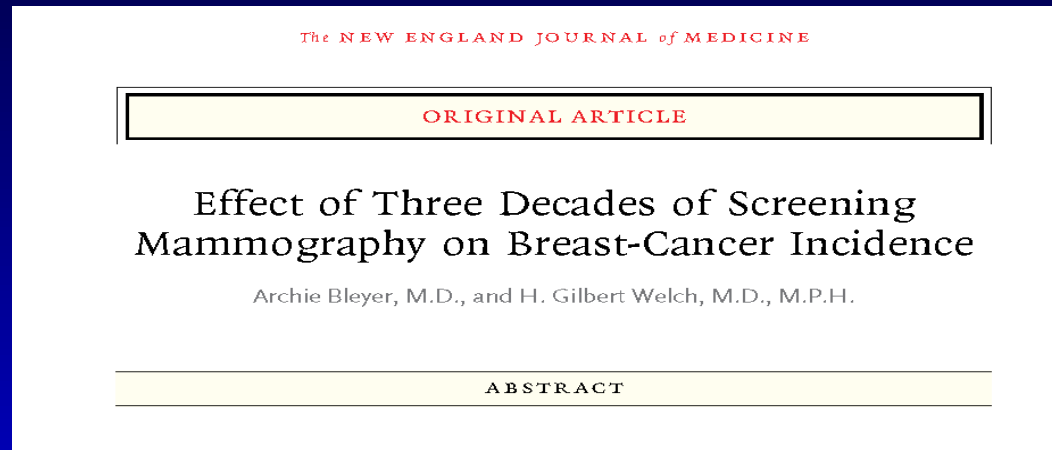
There is not a single credible report in the modern literature of an invasive breast cancer regressing or disappearing on its own. If this occurred as frequently as 50% of the time someone should have at least seen a few cases!

In fact, if there is any ‘overdiagnosis’ from screening it can only be measured from the randomized, controlled trials, and they have suggested that it is, at most, under 10%, and more likely less than 1%.

(Zackrisson S, Andersson I, Janzon L, Manjer J, Garne JP. Rate of over-diagnosis of breast cancer 15 years after end of Malmö mammographic screening trial: follow-up study. *BMJ*. 2006;332:689-92.

Paci E, Warwick J, Falini P, Duffy SW. Overdiagnosis in screening: is the increase in breast cancer incidence rates a cause for concern? *J Med Screen*. 2004;11:23-7)

THE LATEST MISINFORMATION FROM



N Engl J Med 2012;367:1999-2005

Claimed that screening in 2008 alone:

” breast cancer was overdiagnosed in more than 70,000 women; this accounted for 31% of all breast cancers diagnosed”

BIAS IN THE MEDIA

The next day the New York Times, which has a long history of bias against mammography screening, published an Op Ed piece by Dr. Welch with no rebuttal.

The New York Times

The Opinion Pages

OP-ED CONTRIBUTOR

Cancer Survivor or Victim of Overdiagnosis?

By H. GILBERT WELCH

Published: November 21, 2012

Hanover, N.H.

THE LATEST MISINFORMATION

The paper had no scientific merit and should not have been published. They did not have direct patient information, but rather registry summaries. They faulted mammography even though they had no idea which women actually had mammograms and which women had their cancers detected by mammography.

THE LATEST MISINFORMATION

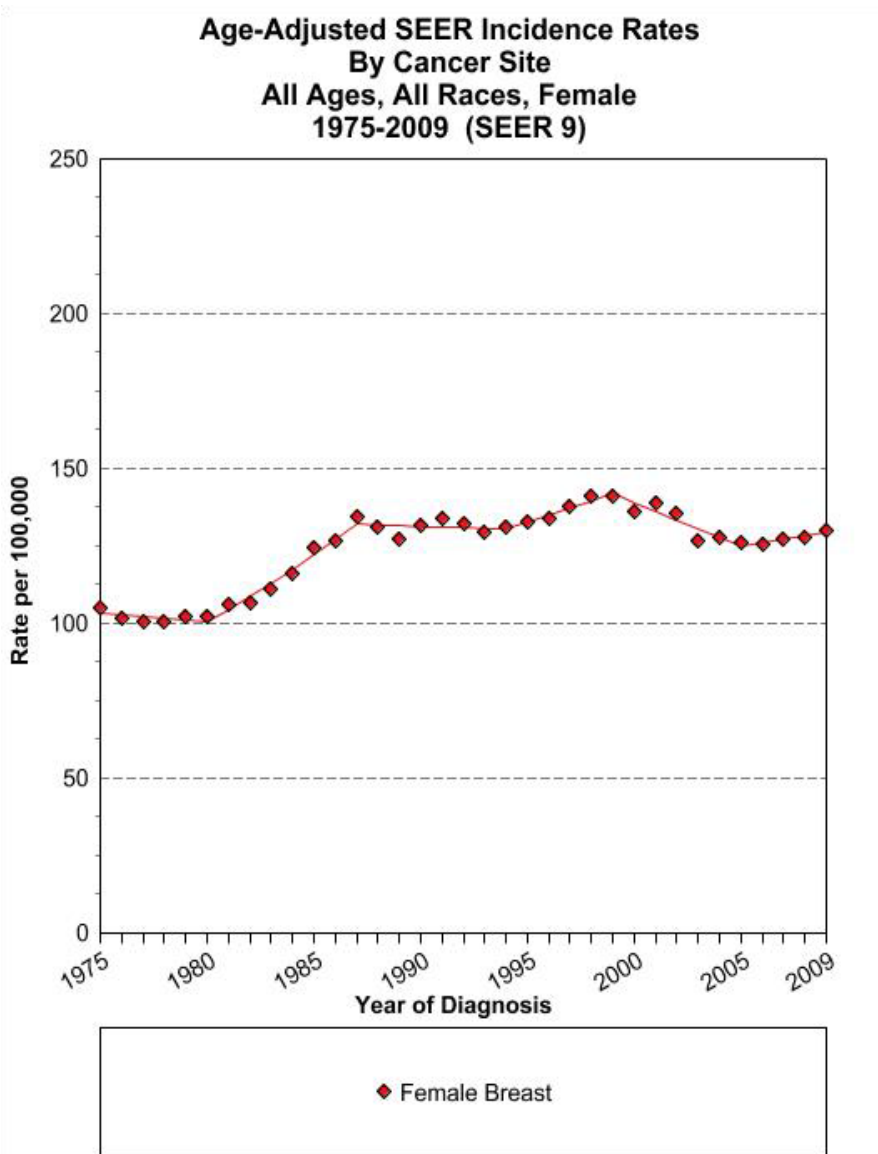
In addition to not having direct patient data, the paper was based on assumptions, estimates, and extrapolations which were simply incorrect.

THE LATEST MISINFORMATION

In order to dilute the benefit of screening in their analysis, Bleyer and Welch combined DCIS and small invasive cancers calling them “early stage cancer”.

No legitimate analyses have done this. There is legitimate debate about DCIS, but there is no justification for combining it with small invasive lesions.

SEER began in 1973. Bleyer and Welch used data from '76-'78 to estimate what the baseline breast cancer incidence would have been had screening not been initiated in the 1980's



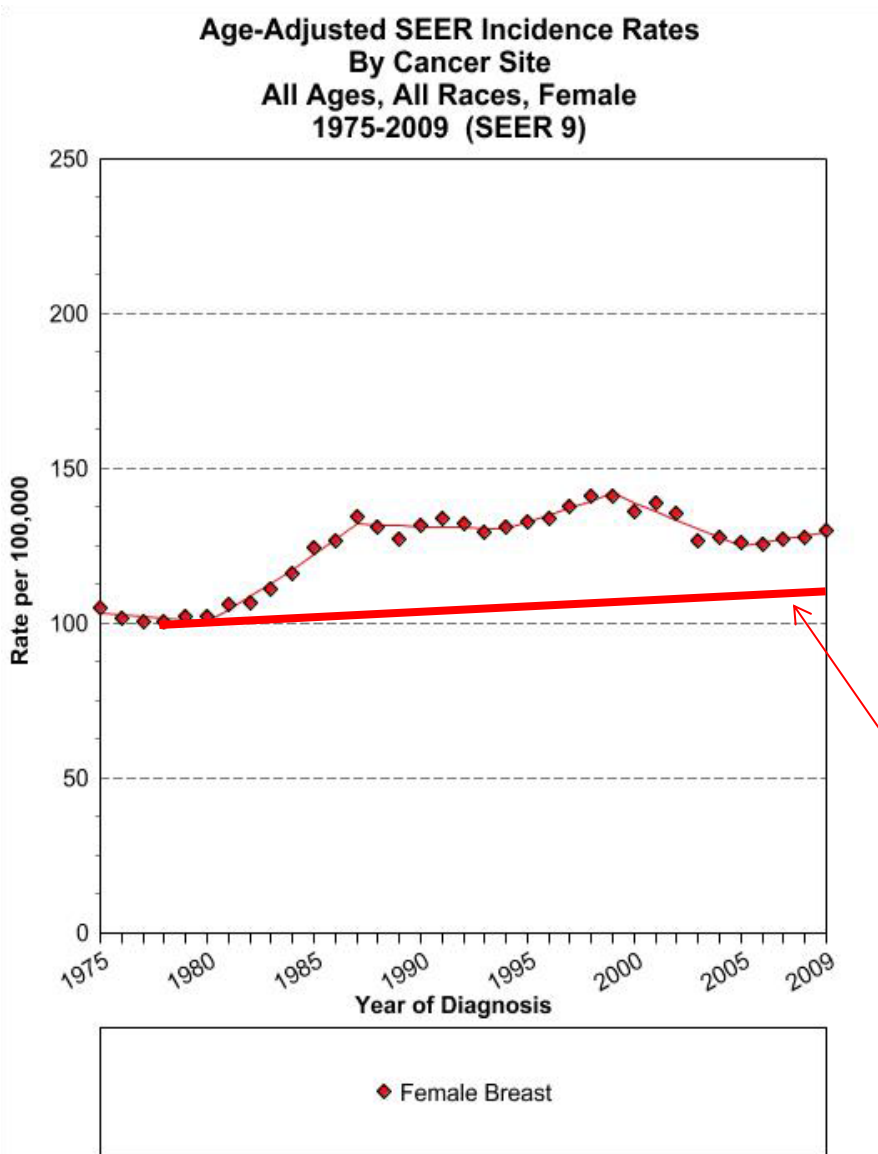
Cancer sites include invasive cases only unless otherwise noted.
Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130). Regression lines are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute.
Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

THE LATEST MISINFORMATION

Bleyer and Welch used data from 1976-1978 to estimate what the incidence of breast cancer would have been in 2008 had screening not been initiated in the 1980's. They ignored the fact that many women were screened over this period after Happy Rockefeller and Betty Ford had breast cancers diagnosed in 1974 confounding their estimate.

They ignored a far more robust 40 years of prescreening data!

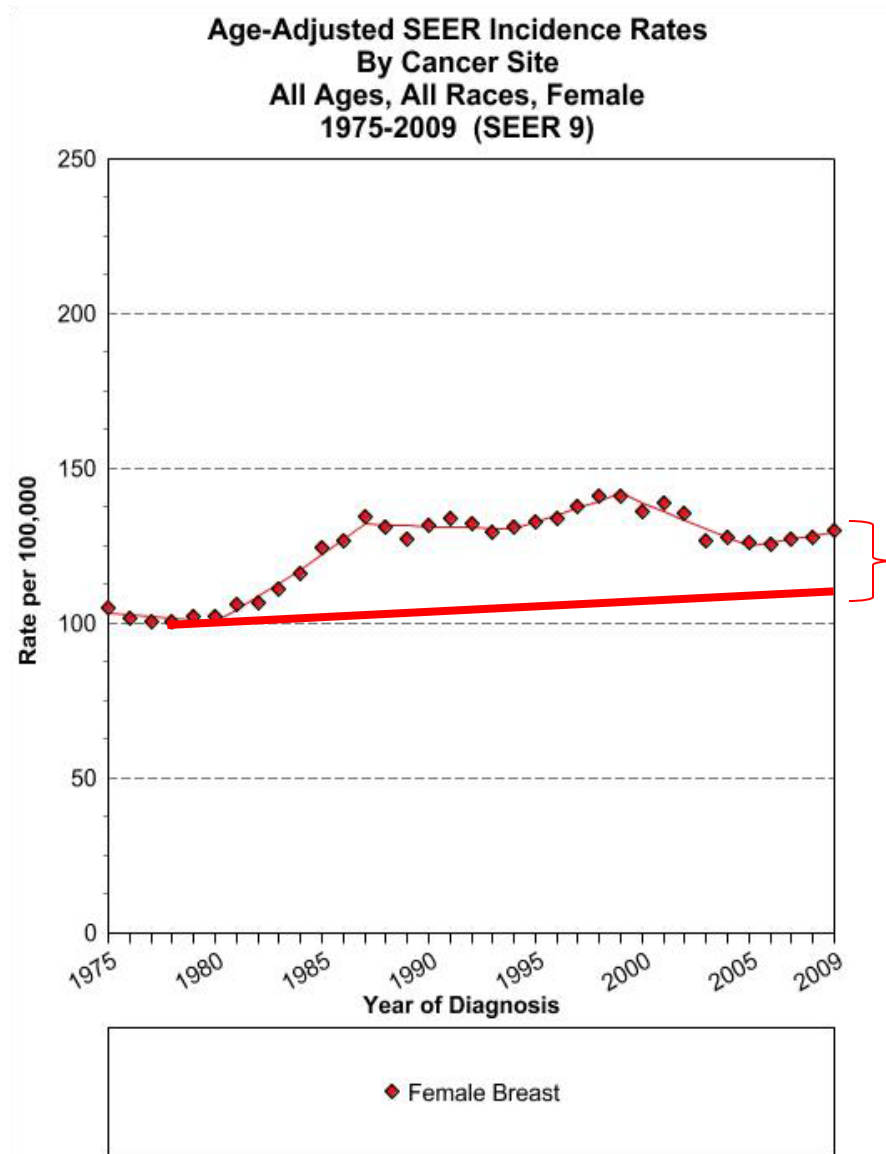
SEER began in 1973. Bleyer and Welch used data from '76-'78 to estimate that the baseline breast cancer incidence would have increased by 0.25% per year if screening had not been initiated



Bleyer and Welch estimate 0.25% per year baseline increase

Cancer sites include invasive cases only unless otherwise noted. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130). Regression lines are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute. Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

Bleyer and Welch claim that since there were more cancers diagnosed than they estimated, the excess must be “fake” cancers that would have never become clinically evident.



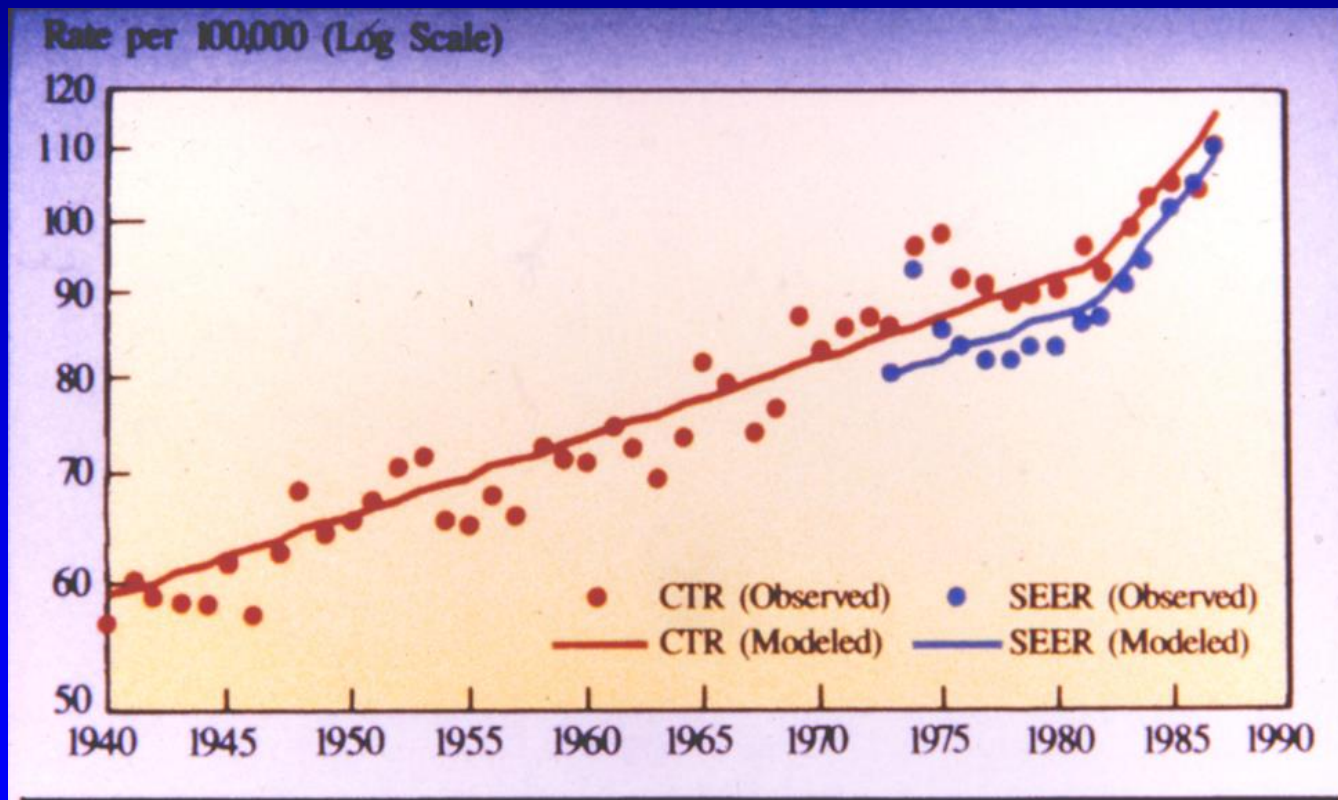
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THE LATEST MISINFORMATION

Bleyer and Welch failed to realize that the incidence of invasive breast cancer had been increasing steadily not by 0.25%, but by 1% per year since at least 1940.

(Garfinkel et al Changing trends. An overview of breast cancer incidence and mortality. Cancer. 1994 Jul 1;74(1 Suppl):222-7.

In fact, the incidence of invasive breast cancer had been increasing by 1% each year from 1940 to 1970 prior to any national screening.



Citation: Cancer Causes and Control,
March 1991 (adopted)
Source: Connecticut Tumor Registry (CTR) and SEER

— By Barry A. Miller,
Eric J. Feuer, Ph.D. and
Benjamin F. Hankey, Sc.D.

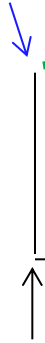
THE LATEST MISINFORMATION

BLEYER AND WELCH GROSSLY OVERESTIMATED OVERDIAGNOSIS

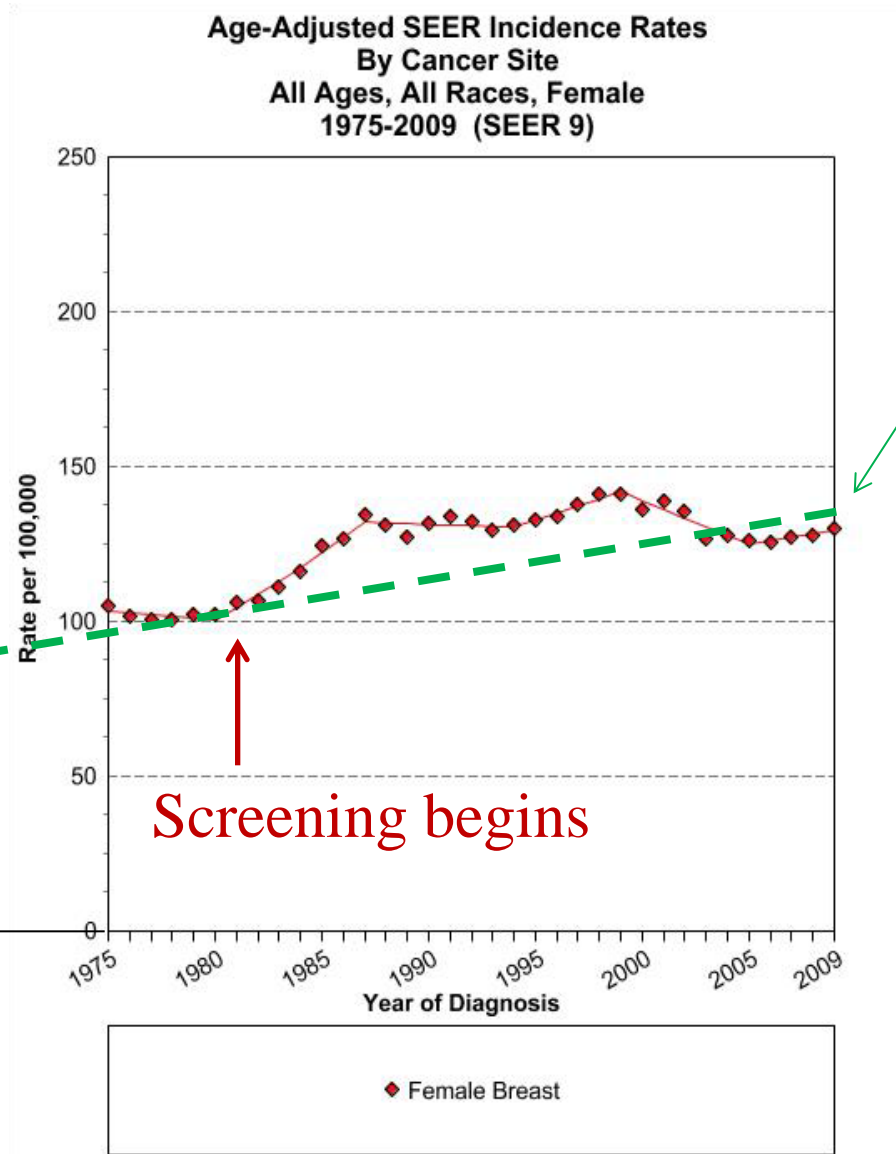
In 1940 there were 60 invasive cancers/100,000 rising to 100/100,000 by 1980. If this 1% per year increase continued there should have been more than 130/100,000 in 2008 yet there were only 128/100,000.

In fact, using Bleyer and Welch's approach, and the correct numbers, there were actually fewer invasive cancers in 2008 than would have been expected.

60/100,000



1940



40 year
trend 1% per
year
increase in
baseline for
invasive
cancers

Screening begins

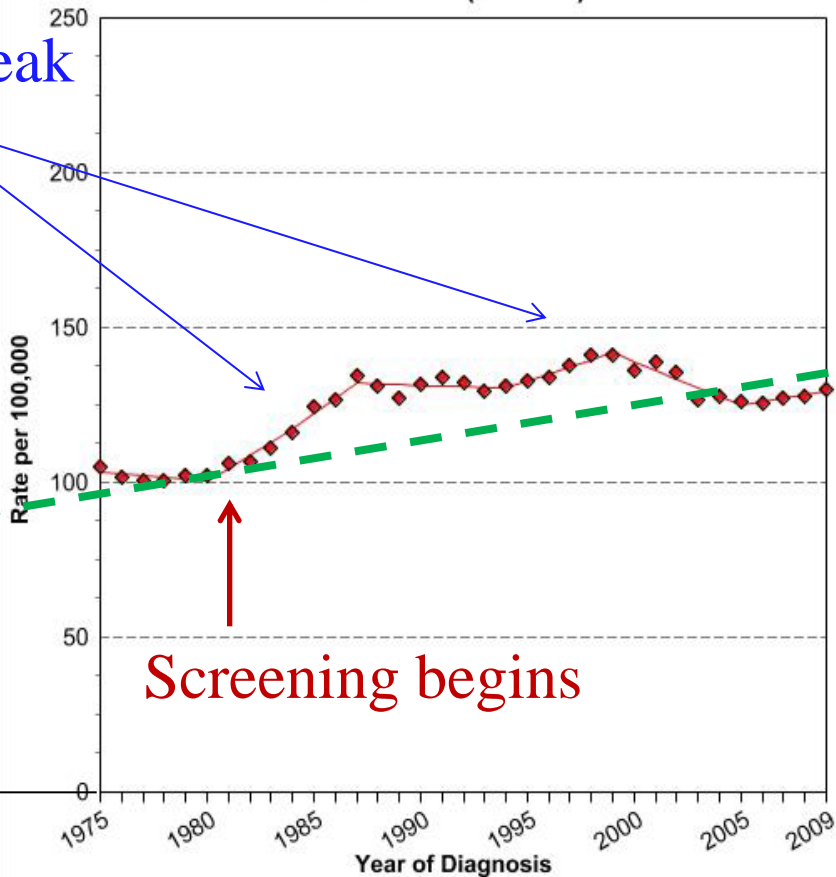
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Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico,
Seattle, Utah, and Atlanta).

Long prevalence peak

60/100,000

1940

Age-Adjusted SEER Incidence Rates
By Cancer Site
All Ages, All Races, Female
1975-2009 (SEER 9)



Screening begins

40 year trend 1% per year increase in baseline for invasive cancers

◆ Female Breast

Cancer sites include invasive cases only unless otherwise noted. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130). Regression lines are calculated using the Joinpoint Regression Program Version 3.5, April 2011, National Cancer Institute. Incidence source: SEER 9 areas (San Francisco, Connecticut, Detroit, Hawaii, Iowa, New Mexico, Seattle, Utah, and Atlanta).

THE LATEST MISINFORMATION FROM THE DARTMOUTH INSTITUTE ON HEALTH POLICY

Bleyer and Welch are incorrect.

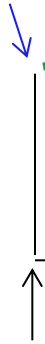
Not only was there no overdiagnosis, but there were fewer invasive cancers than expected following the start of national screening in the mid 1980's. It is likely that the removal of DCIS lesions over the years has resulted in fewer invasive cancers.

THE LATEST MISINFORMATION FROM THE DARTMOUTH INSTITUTE ON HEALTH POLICY

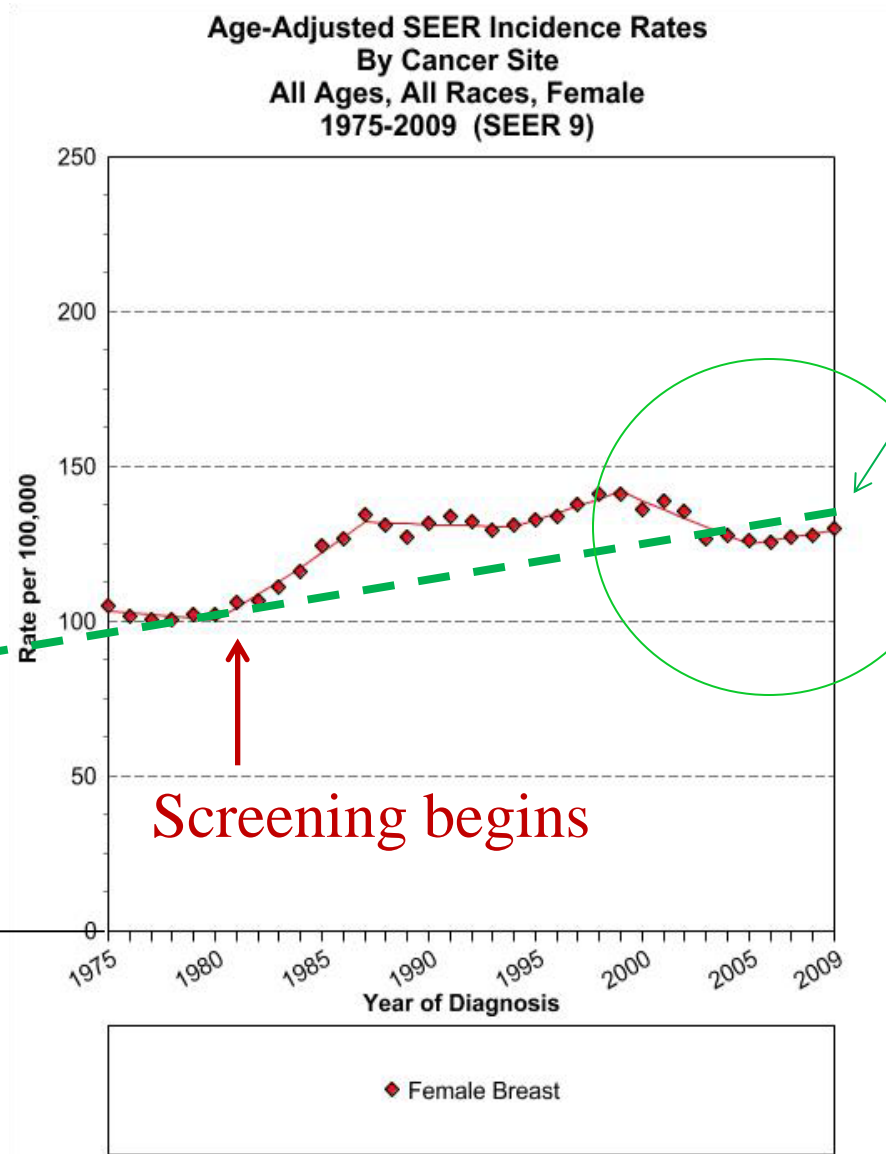
Bleyer and Welch are incorrect.

It is clear that the 1% per year rate increase is correct. Now that the prevalence peak has returned toward the baseline, the baseline has resumed a 1% per year increase.

60/100,000



1940



NOTE !!!:
The latest SEER data show that the rate of invasive breast cancers has returned to 1% per year as expected

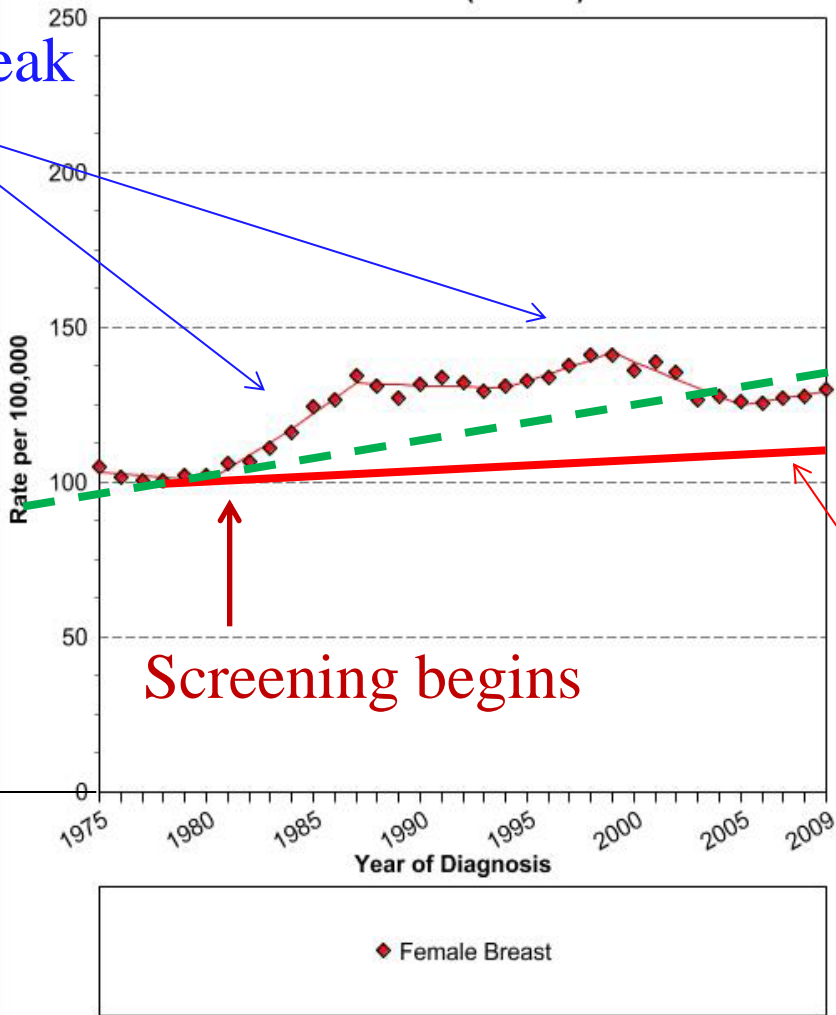
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Long prevalence peak

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40 year trend 1% per year increase in baseline for invasive cancers

Bleyer and Welch estimate 0.25% per year baseline increase

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THE LATEST MISINFORMATION

GROSSLY OVERESTIMATED OVERDIAGNOSIS

Not only was there NO OVERDIAGNOSIS, but the numbers suggest that the removal of DCIS lesions over the same period of time has reduced the number of invasive cancers to less than would have been expected.

THE LATEST MISINFORMATION

DECREASE IN ADVANCED CANCERS

Bleyer and Welch are simply incorrect. They claim that there was little reduction in advanced cancers so there was little benefit from screening. In fact, using the correct baseline, there has been a dramatic decline in advanced breast cancers.

Screening also reduces the size of cancers within stages which saves lives.

BREAST CANCER SCREENING

Can screening be “tailored” based on breast cancer risk?

NO !

1. The randomized, controlled trials were not stratified by risk so there is no proof that screening only high risk women will save any lives.
2. If we only screen high risk women we will miss 75-90% of women who develop breast cancer each year.

BREAST CANCER SCREENING

The Bottom Line

Most women who develop breast cancer are not at increased risk.

All women are at risk and annual screening, beginning at the age of 40, should be encouraged for all women.

BREAST CANCER SCREENING

FICTION

1. There is no benefit from screening – (1960-2009)
2. We can't possibly screen all women – (1970)
3. The radiation from the mammogram will cause more cancers than will be cured – (1976)
4. There is no benefit from screening women ages 40-49 – (1993)
5. The parameters of screening change abruptly at the age of 40 – (1994-1997)
6. Breast cancer is not a big issue for women ages 40-49 – (1994-1997)

BREAST CANCER SCREENING

FICTION

7. Mammography screening leads to false positive studies that lead to biopsies that permanently scar the breast so that when a lesion is palpable the mammogram is useless – (1994)
8. The benefit must appear within 5 years – (1993-1997).
9. The breast tissues are dense prior to the age of 50 hiding most cancers. At age 50 the breasts turn to fat and screening begins to save lives. (1993-1997)
10. There is so little breast cancer among women in their forties that we should concentrate on screening women ages 50 and over – (1994)

BREAST CANCER SCREENING

FICTION

11. Age Creep – Women reached the age of 50 and screening began to work.
12. 1997 Consensus Development Conference - There is no reason to encourage women in their forties to be screened – (1997)
13. Removing breast cancer early in women younger than age 50 leads to premature death – (1994-2000)
14. 2001 Gotzsche and Olsen Lancet – There is no benefit from screening for women at any age.
15. 2002 Gotzsche and Olsen, Lancet, and the New York Times - There is no benefit from screening for women at any age.

BREAST CANCER SCREENING

FICTION

16. The incidence of breast cancer has decreased because of reduced use of hormones - 2007
17. Screening women in their forties should be based on their risk of developing breast cancer (2008).
18. Cancers detected by mammography would “melt away if not detected by screening (2009).
19. Since mammography does not find the fastest most aggressive cancers it is not very useful (Esserman JAMA 2009)
20. Screening leads to massive overdiagnosis and overtreatment

UNETHICAL BEHAVIOR BY MAJOR MEDICAL JOURNALS

Journals such as:

The New England Journal of Medicine

The Annals of Internal Medicine

The Journal of the American Medical Association

“The Journal of the National Cancer Institute”

(which is not the NCI’s journal. It was sold to

Oxford University Press in 1996)

Have refused to publish work supporting screening

while publishing papers opposing screening

(particularly for women ages 40-49)

THE 2009 MAMMOGRAPHY SCREENING GUIDELINES OF THE US PREVENTIVE SERVICES TASK FORCE

In November of 2009, the USPSTF issued new guidelines for breast cancer screening. The guidelines are scientifically unsupportable, but the medical journals prevented this from being discussed.

THE 2009 MAMMOGRAPHY SCREENING GUIDELINES OF THE US PREVENTIVE SERVICES TASK FORCE

The New England Journal of
Medicine refused to publish any of
the scientific criticism of the
USPSTF guidelines that were later
published in Radiology.

Kopans DB. The 2009 U.S.P.S.T.F. Guidelines Ignore important
Scientific Evidence and Should be Revised or Withdrawn.
Radiology 2010;256:15-20.

THE 2009 MAMMOGRAPHY SCREENING GUIDELINES OF THE US PREVENTIVE SERVICES TASK FORCE

The New England Journal of
Medicine went on to publish a
“Sounding Board” article that stated
that radiologists had a conflict of
interest and were only concerned
with making money.

Quanstrum KH, Hayward RA, Sounding Board
Lessons from the Mammography Wars NEJM | September 8, 2010 .

THE 2009 MAMMOGRAPHY SCREENING GUIDELINES OF THE US PREVENTIVE SERVICES TASK FORCE

The Annals of Internal Medicine
refused to publish any of the
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THE 2009 MAMMOGRAPHY SCREENING GUIDELINES OF THE US PREVENTIVE SERVICES TASK FORCE

The Annals of Internal Medicine then published an editorial stating that the only opposition to the USPSTF was due to “anecdote, emotion, or politics”.

The Editors. Editorial. When Evidence Collides With Anecdote, Politics, and Emotion: Breast Cancer Screening. Ann Intern Med published ahead of print February 15, 2010 .

THE 2009 MAMMOGRAPHY SCREENING GUIDELINES OF THE US PREVENTIVE SERVICES TASK FORCE

The Journal of the American Medical Association would not permit Wendie Berg, M.D. to publish anything that would be “contentious”, so that her article contained none of the important issues.

WE HAVE A MAJOR PROBLEM !

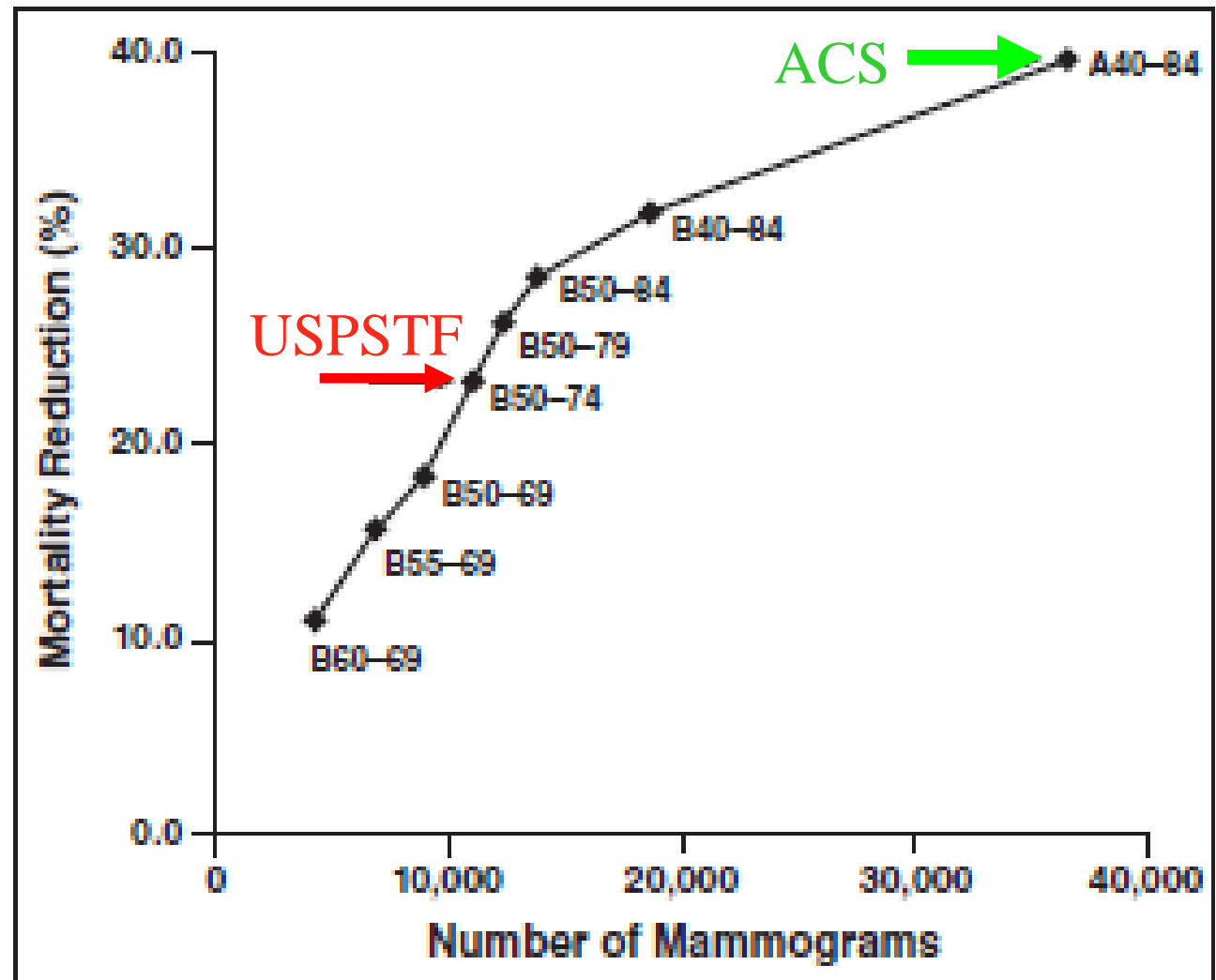
The major medical journals
are preventing an open
discussion of important
medical issues.

THE 2009 MAMMOGRAPHY SCREENING GUIDELINES OF THE US PREVENTIVE SERVICES TASK FORCE

The USPSTF refused to debate the issues in an open forum with anyone who understands the data.

USPSTF SHOWS THAT MOST LIVES ARE SAVED BY ANNUAL SCREENING BEGINNING AT 40 (ACS Guidelines)

Fig. 1—Percentage mortality reduction from various screening strategies. Note that annual (A) screening from ages 40–84 years (A40–84, *solid arrow*) is estimated to have 71% greater mortality benefit than biennial (B) screening from ages 50–74 years (B50–74, *dashed arrow*). Number of mammograms shown on horizontal axis is per 1,000 women screened. Data shown are mean values of six models from [6].



THE USPSTF GUIDELINES ARE SCIENTIFICALLY UNSUPPORTABLE

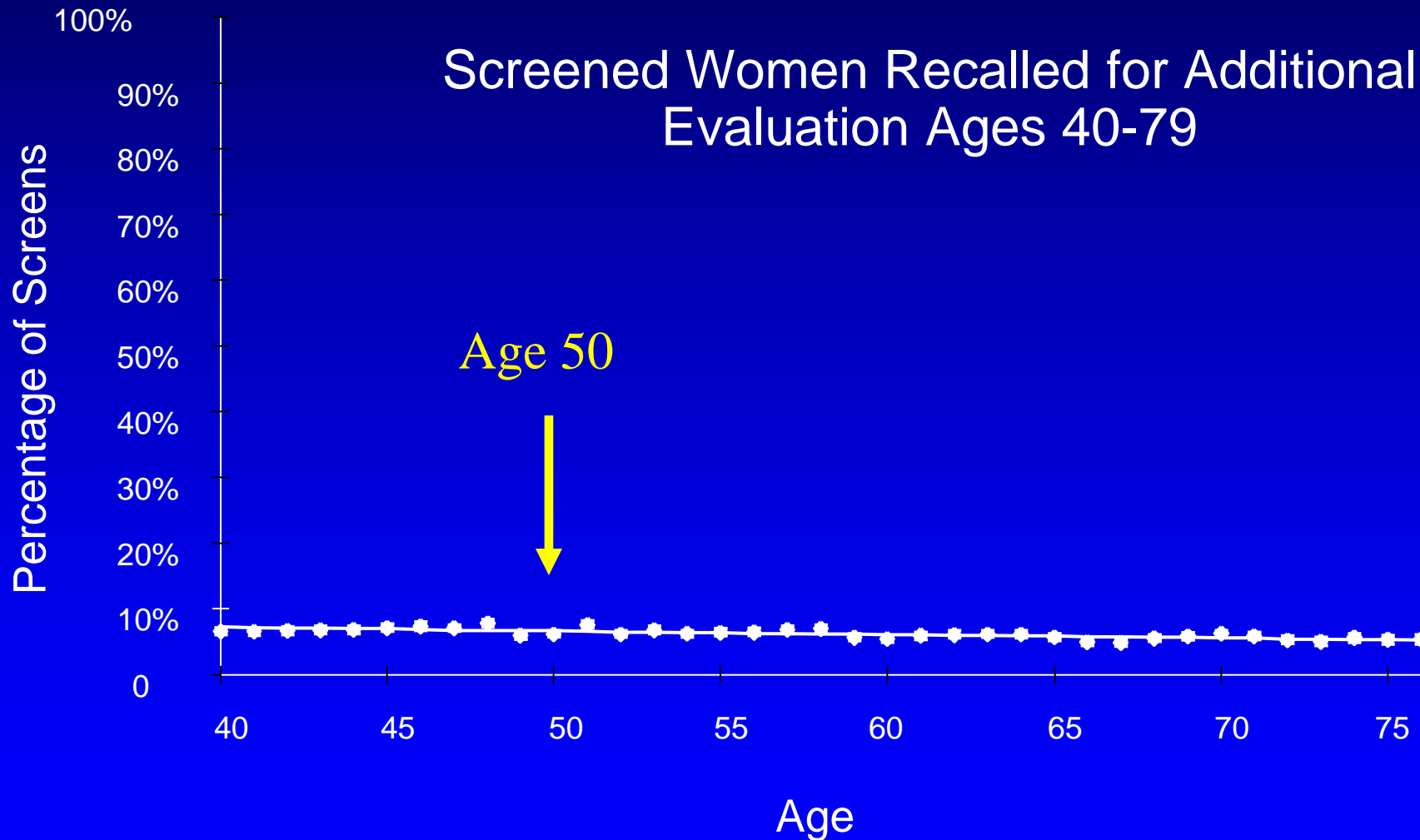
Direct studies from the Netherlands and Sweden show that most of the decrease in deaths is due to screening and not therapy. In Sweden, where women are more likely to attend screening, the death rate is down by 30%.

THE USPSTF GUIDELINES ARE SCIENTIFICALLY UNSUPPORTABLE

Fact:

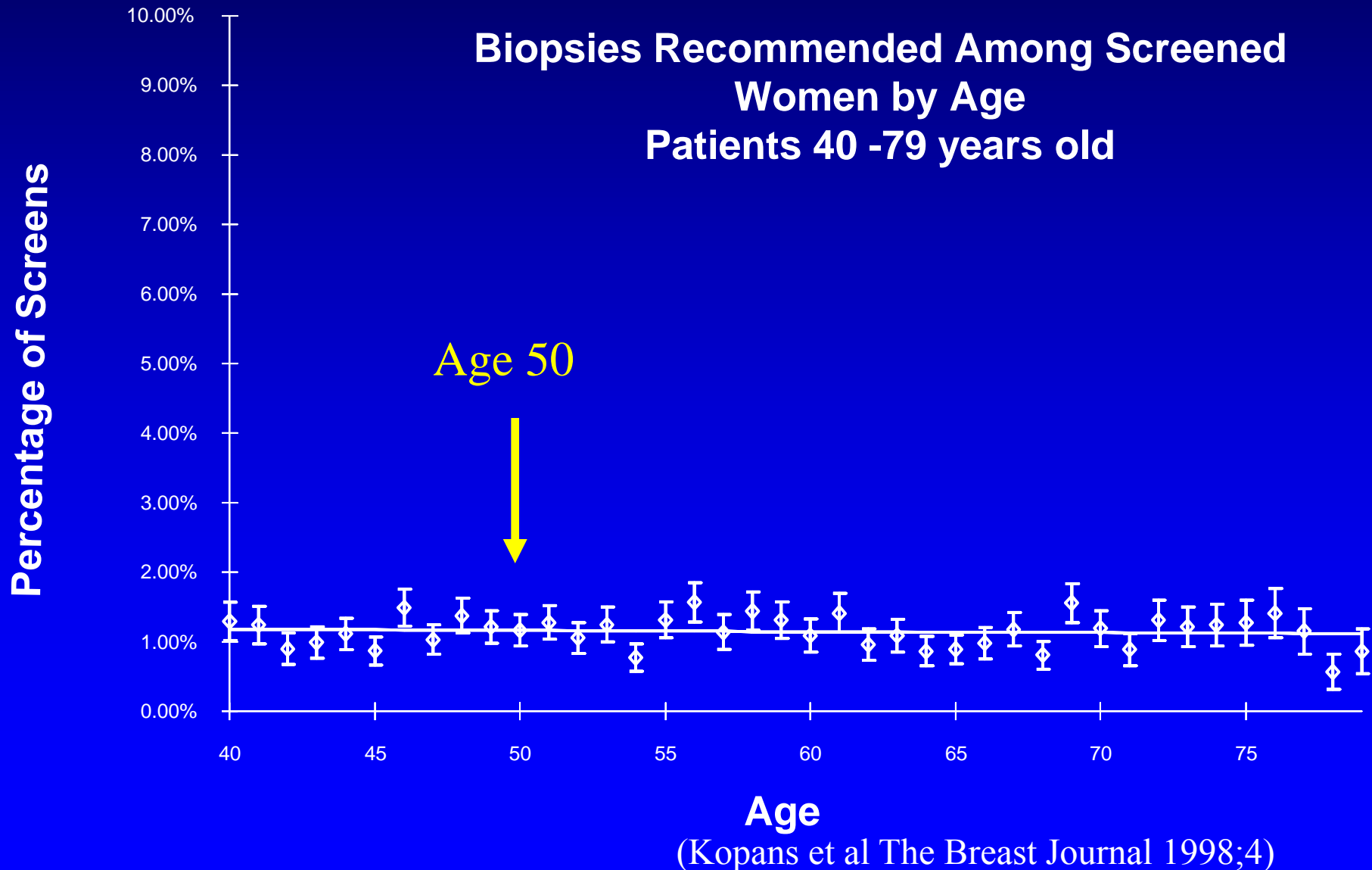
There are no data (NONE !!!!) that support the use of the age of 50 as a threshold for screening. None of the parameters of screening change abruptly at the age of 50 or any other age. Even menopause has no demonstrated effect.

The recall rate from screening decreases gradually with increasing age from 8% to 6% with no abrupt change at age 50 or any other age



(Kopans et al The Breast Journal 1998;4)

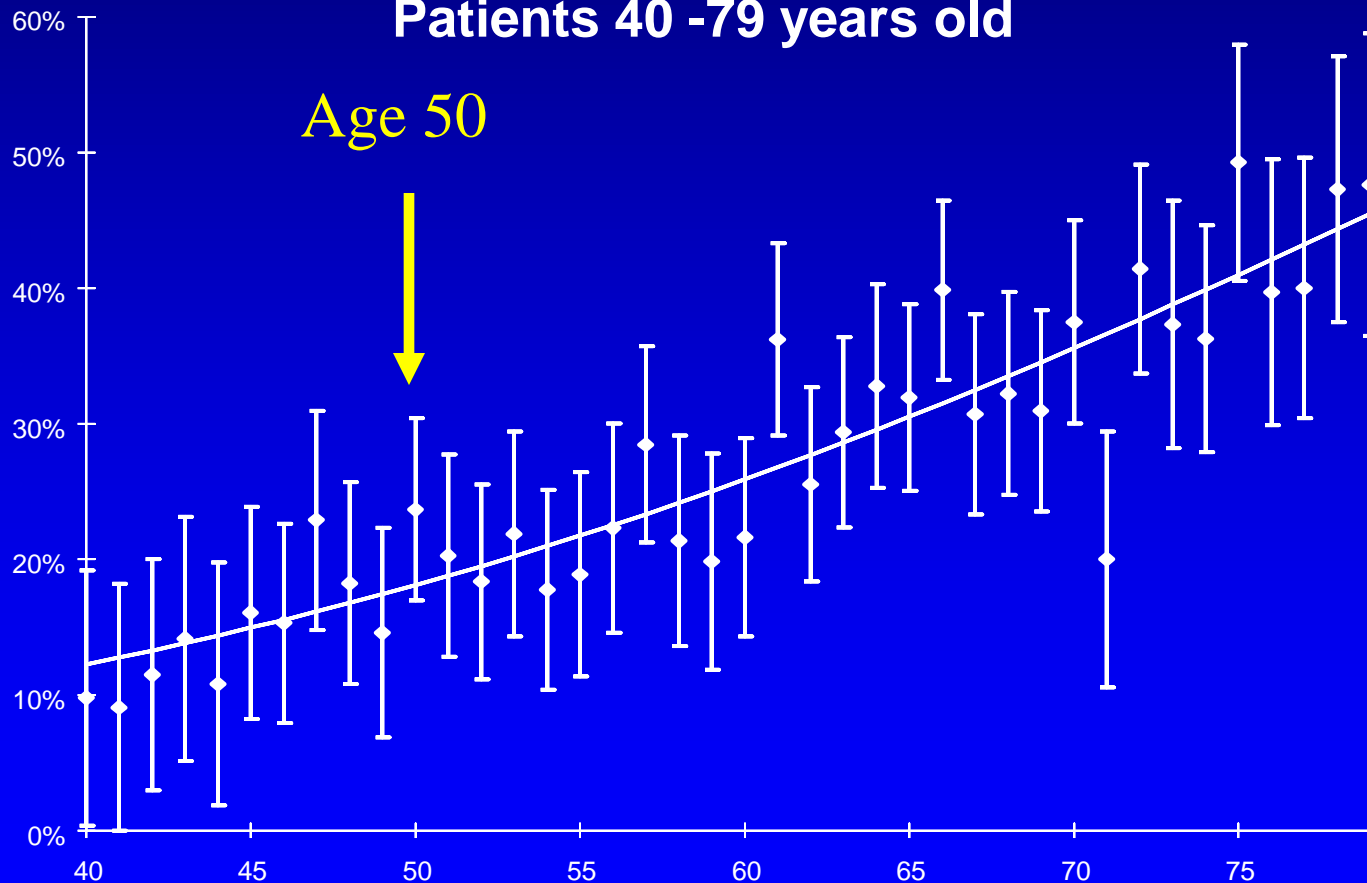
The percentage of women who are recommended for biopsy is fairly constant with no abrupt change at age 50 or any other age.



The positive predictive value of a biopsy instigated by mammography goes up with the prior probability of cancer in the population with no abrupt change at any age.

The yield of cancer for all
Mammographically Initiated Biopsies
Patients 40 -79 years old

Percentage of Biopsies Yielding Cancer



Age

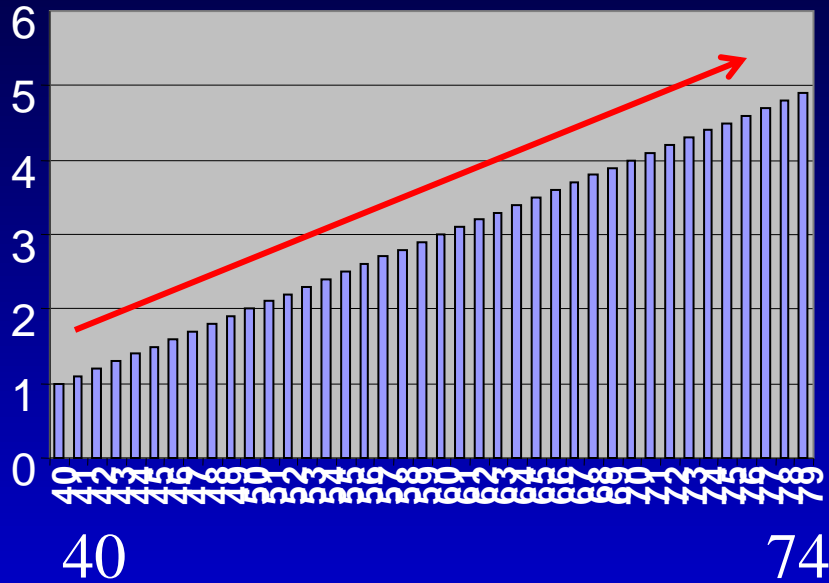
(Kopans et al Rad 1996:200)

AGE 50 AND MAMMOGRAPHY SCREENING

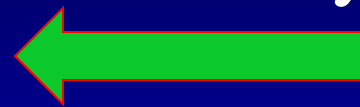
Fact:

The cancer detection rate increases steadily with increasing age along with the steady increase in breast cancer incidence, reflecting the prior probability of breast cancer that increases with age. There is no abrupt change at age 50 or any other age.

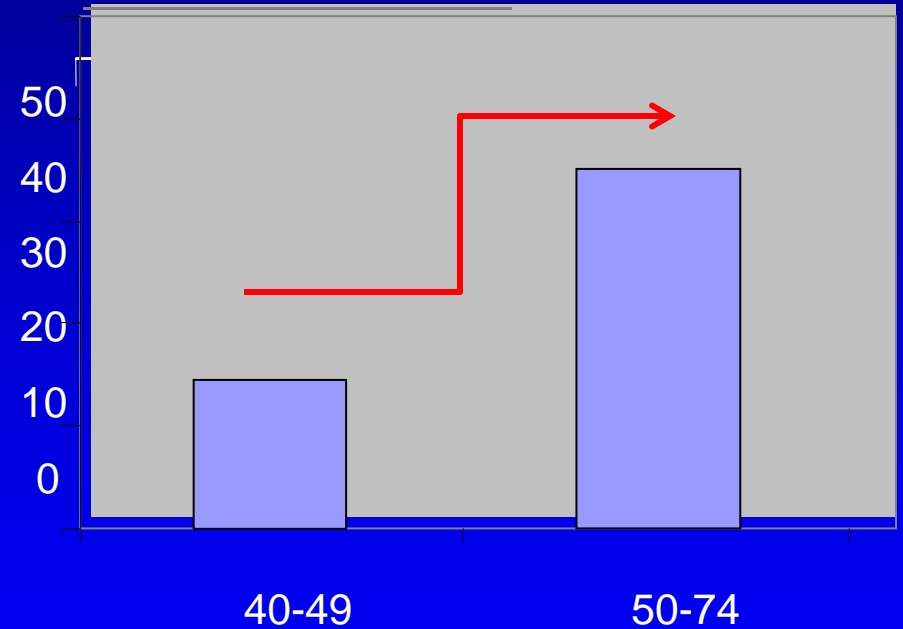
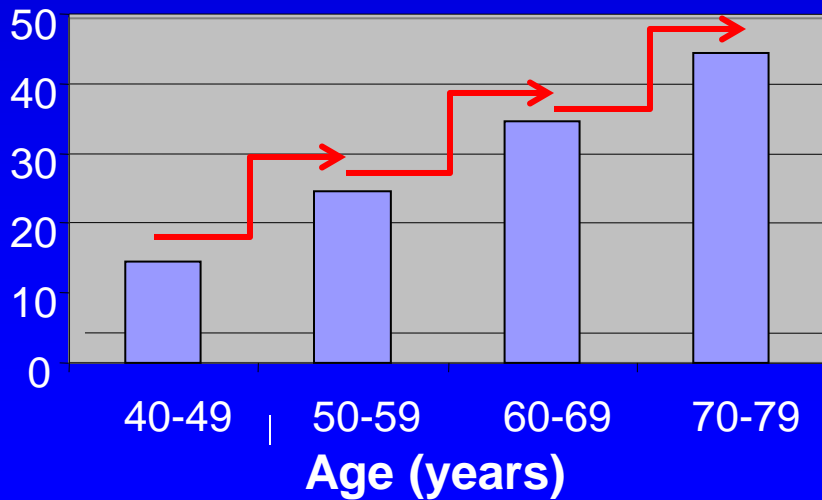
Age grouping has been used to make data that actually change gradually with increasing age appear to change suddenly at the age of 50.



Reality = continuous gradual change



Dichotomous grouping



USPTSF = group by decade

THE USPSTF GUIDELINES ARE SCIENTIFICALLY UNSUPPORTABLE

By grouping the data by decades, the USPSTF misled the public –

A woman age 48 is much more like a woman age 52 than she is like a woman age 42.

WHY IS THE MYTH PERPETUATED ??

The age of 50 has been imbued with importance by scientifically unjustified subgroup analyses, and dichotomous data grouping that makes steady changes appear to change at the age of 50. Investigators should know better.

AGE 50 AND MAMMOGRAPHY SCREENING

The suggestion that any of the parameters of screening change abruptly at the age of 50 *is a myth* that is unsupported by any science. Women should be informed, and investigators should cease grouping data to make age 50 appear as if it has any true importance.

Mammography Screening

Mammography screening is not perfect. It does not detect all cancers and does not detect all cancers early enough for a cure, but thousands of lives are being saved each year by screening. The spread of misinformation should stop.