

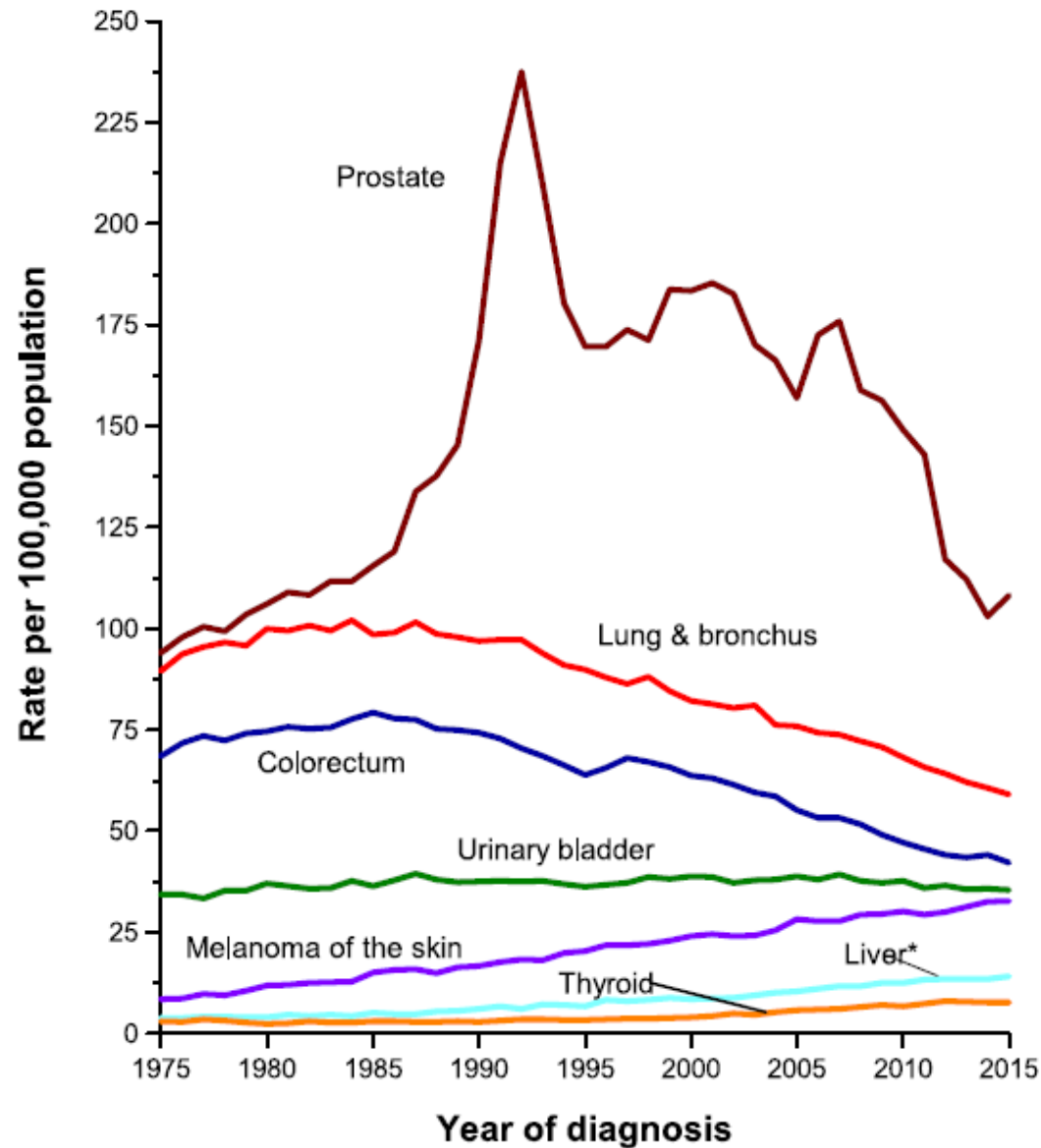


Otis W. Brawley, MD, MACP, FASCO, FACE

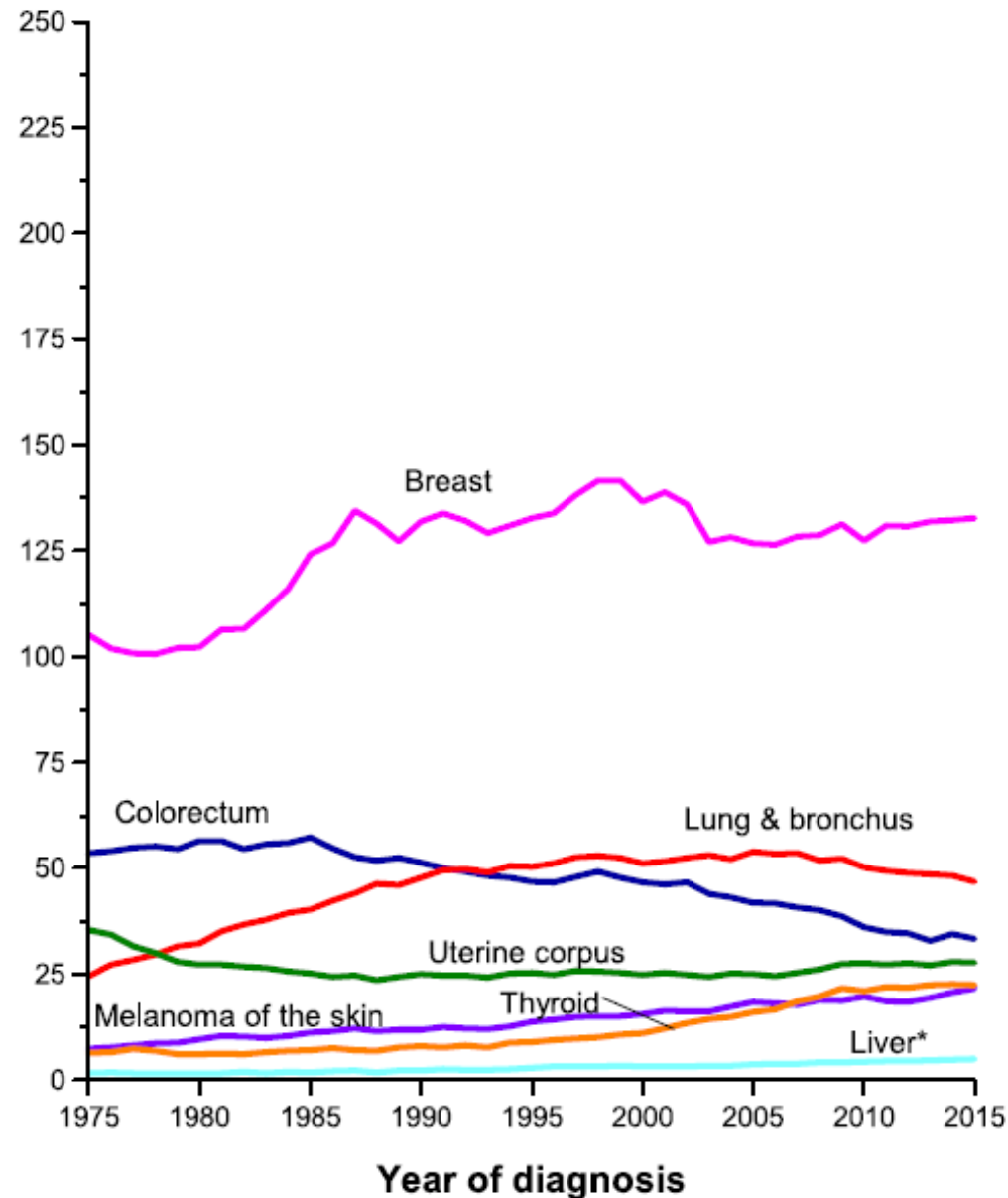
**Bloomberg Distinguished Professor of
Oncology and Epidemiology**

- The American Cancer Society estimates that 1.76 million Americans will be diagnosed with cancer in 2019.
- It is estimated that 607,000 will die of cancer in 2019.
- Age adjusted cancer mortality rates have declined 27% from 1991 to 2016.

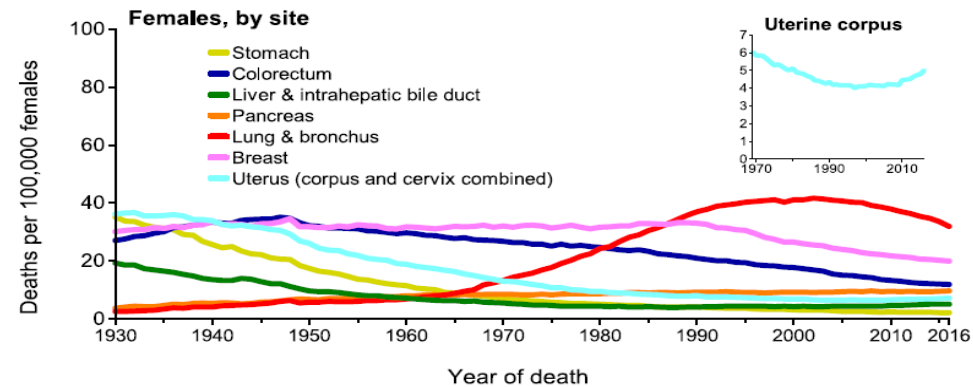
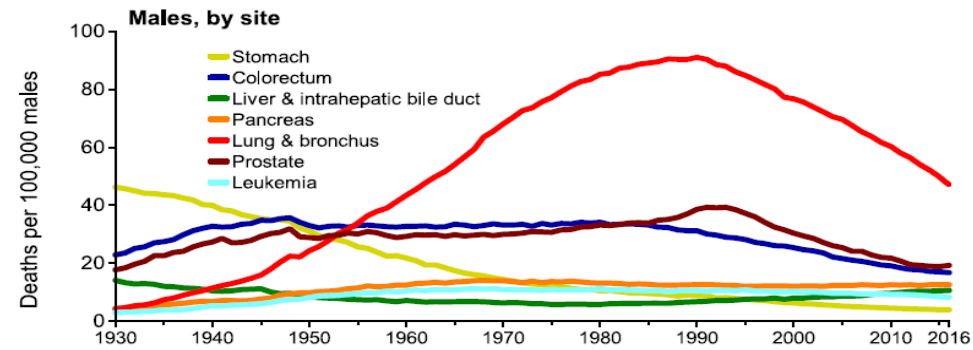
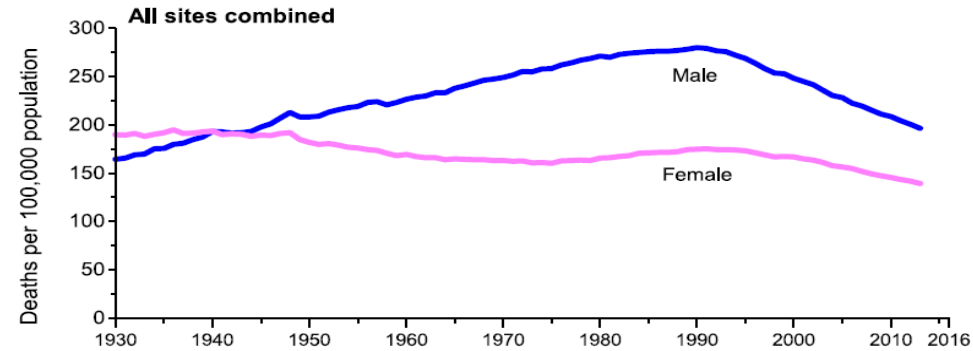
Trends in Age Adjusted Incidence of Selected Cancers (US Males)



Trends in Age Adjusted Incidence of Selected Cancers (US Females)



Age-Adjusted Cancer Mortality 1930 to 2016



Incidence and Mortality Rates

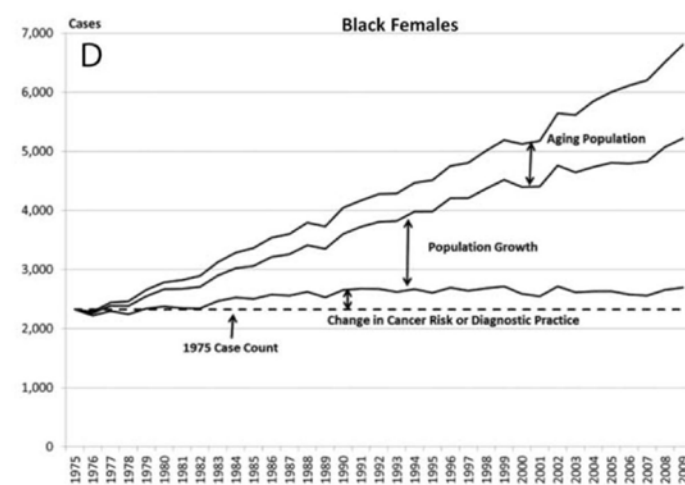
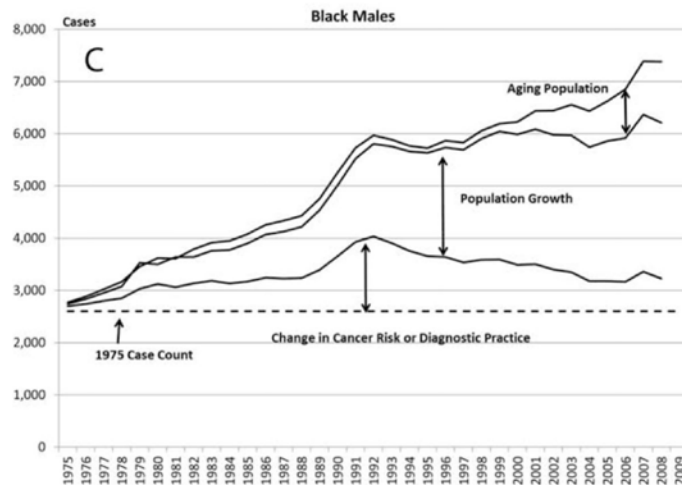
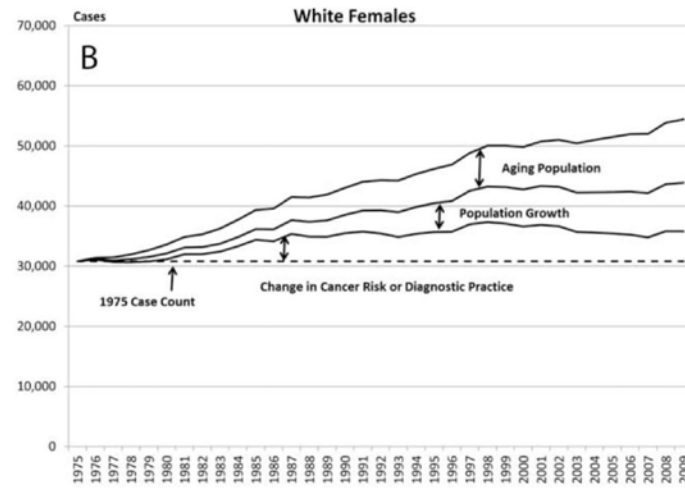
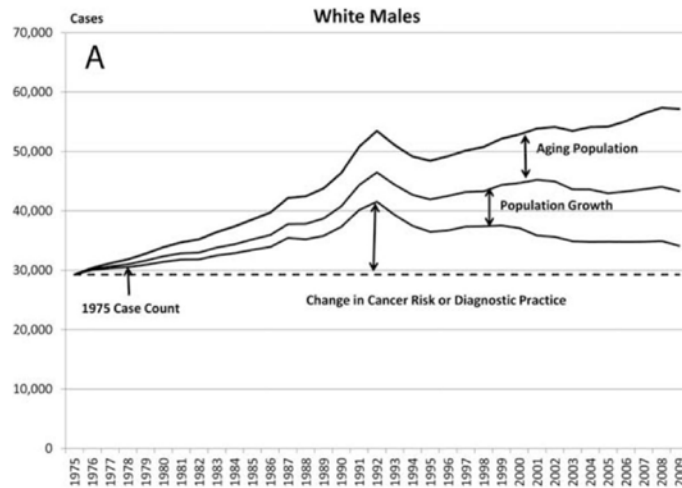
“Age-adjusted” cancer incidence and death rates are projected to continue downward over the next 20 years, but the US population size will increase and the population is aging.

Trends in the Number of Cancers Diagnosed

Are upward and attributed to:

- Changes in population risk,
- Changes in diagnostic practices,
- Population growth, and
- Population aging

Trends in cancer incidence attributed to population risk, diagnostic practices, growth, and aging



- The absolute number of cancers diagnosed and treated will increase.
 - 1.76 million in 2019
 - 2.3 million in 2035*
- Cancers rising in number are:
 - Melanoma, prostate, kidney, liver, and bladder in men
 - Melanoma, lung, breast, uterine, and thyroid in women
- The number of cancer survivors will also increase.

*<https://www.cancerprogressreport.org/Pages/default.aspx>

Cancer Survivors in the United States Estimates

- In 2007, 11.7 million
- In 2016, 15.5 million
- In 2020, 18 million
- In 2026, 20.3 million

https://www.cdc.gov/cancer/dcpc/research/articles/cancer_2020.htm

US Population Projections

Between 2005 and 2050, the nation's population will increase from 296 million to 438 million, a rise of 142 million people that represents growth of **48%**.

The Median Age of Cancer Diagnosis and Death in US

	Diagnosis	Death
Men	66	72
Women	65	73

Siegel, et al. CA 2018;68:329-339
NCI SEER

The Aging of the US Population

- 14.9% of the US population was 65 or over in 2015
- 22.1% of the US population will be 65 or over in 2050

An Assessment of Cancer Disparities

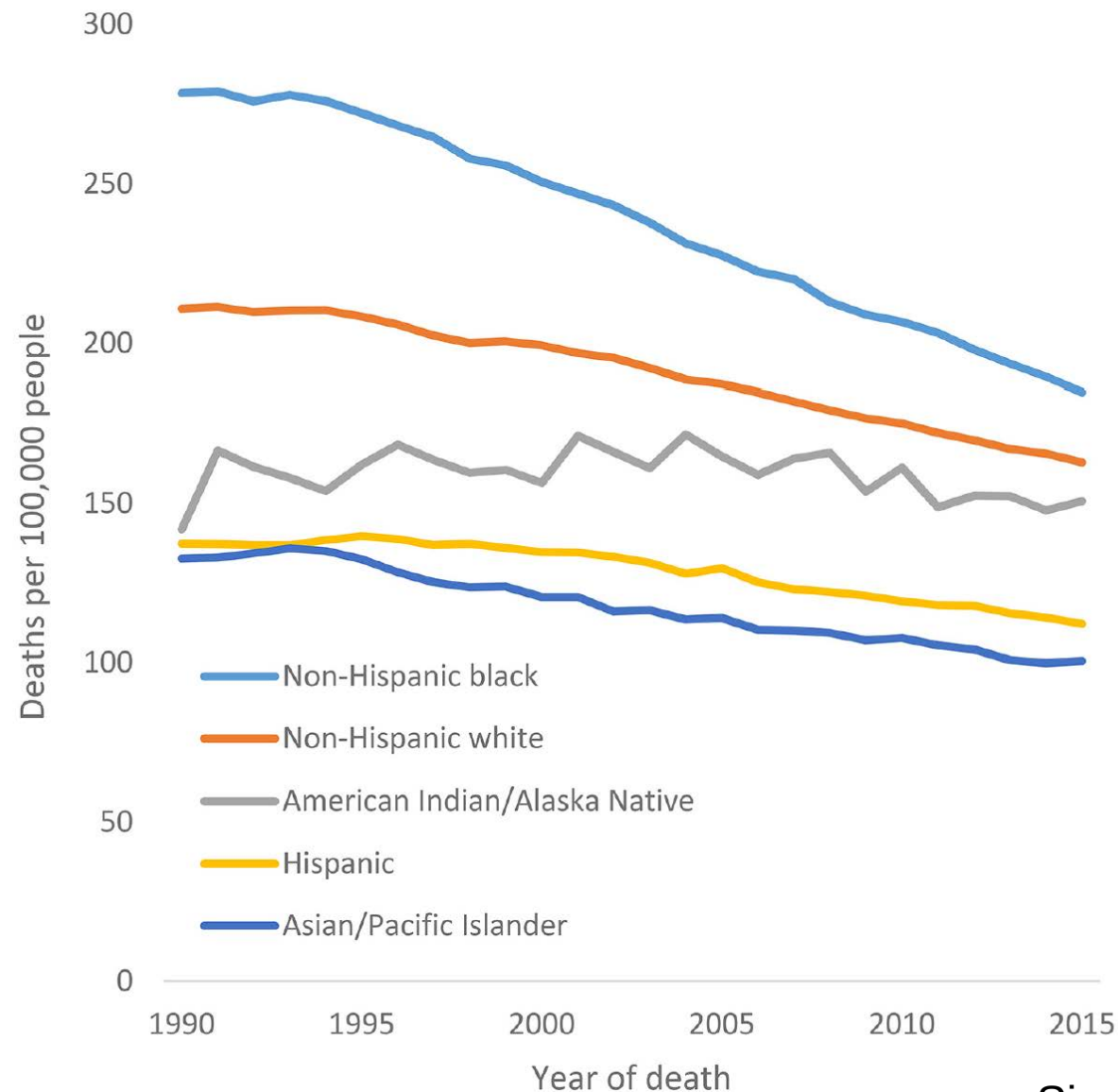
By Race

By Location

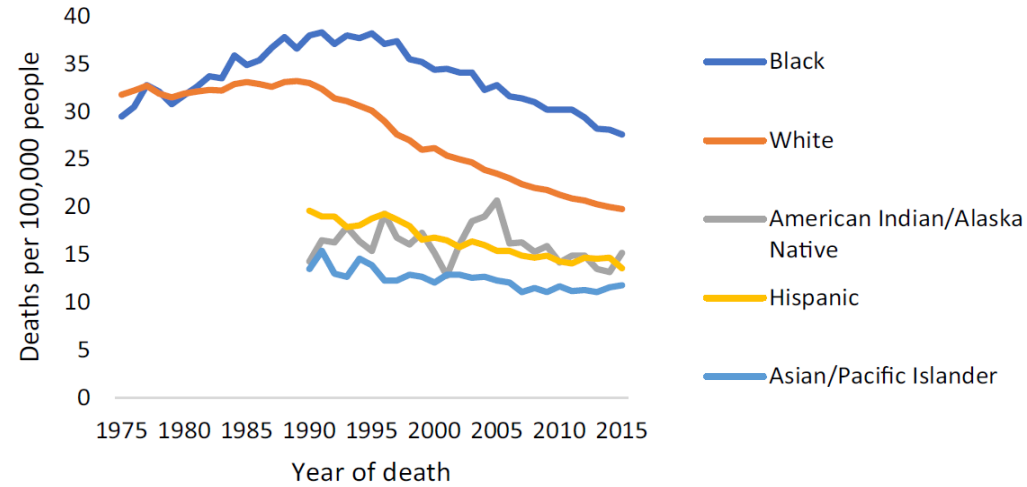
By Socioeconomic Status

The Past Frequently Illustrates Future Patterns

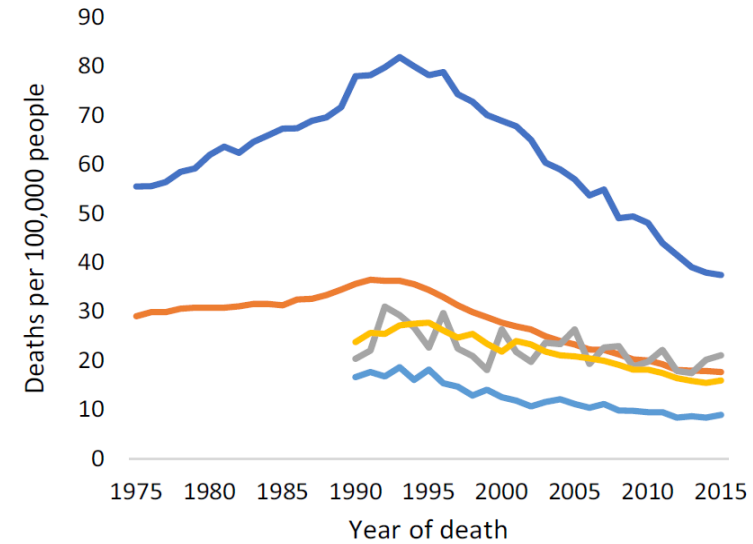
Cancer Mortality by Race/Ethnicity from 1990 to 2015



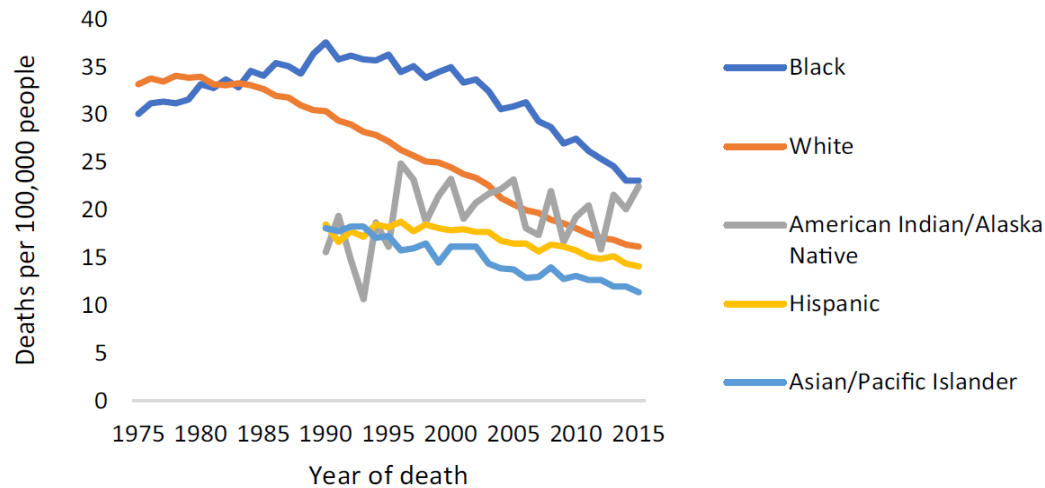
A. Female Breast



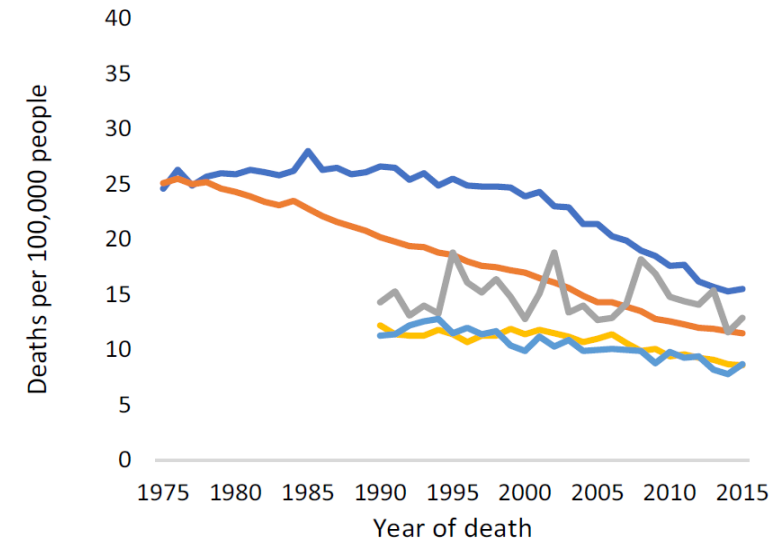
B. Prostate



C. Male Colorectum



D. Female Colorectum



Breast Cancer

In 2019,

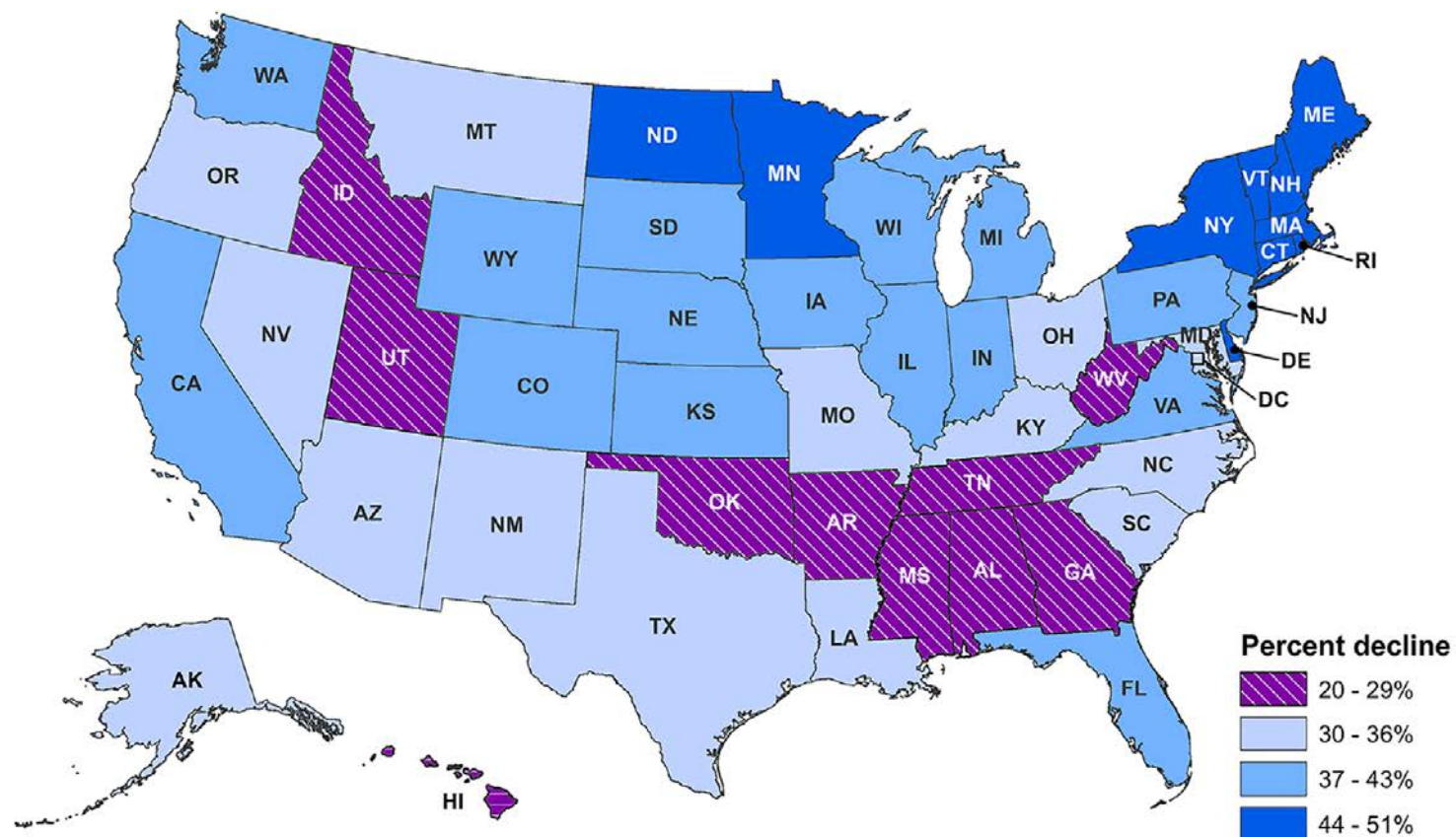
269,000 Diagnosed

42,300 Deaths

There has been a 40% decline in age-adjusted female mortality from 1990 to 2016

ACS Estimate

Breast Cancer Mortality Decline from 1988-90 to 2013-2015 by State



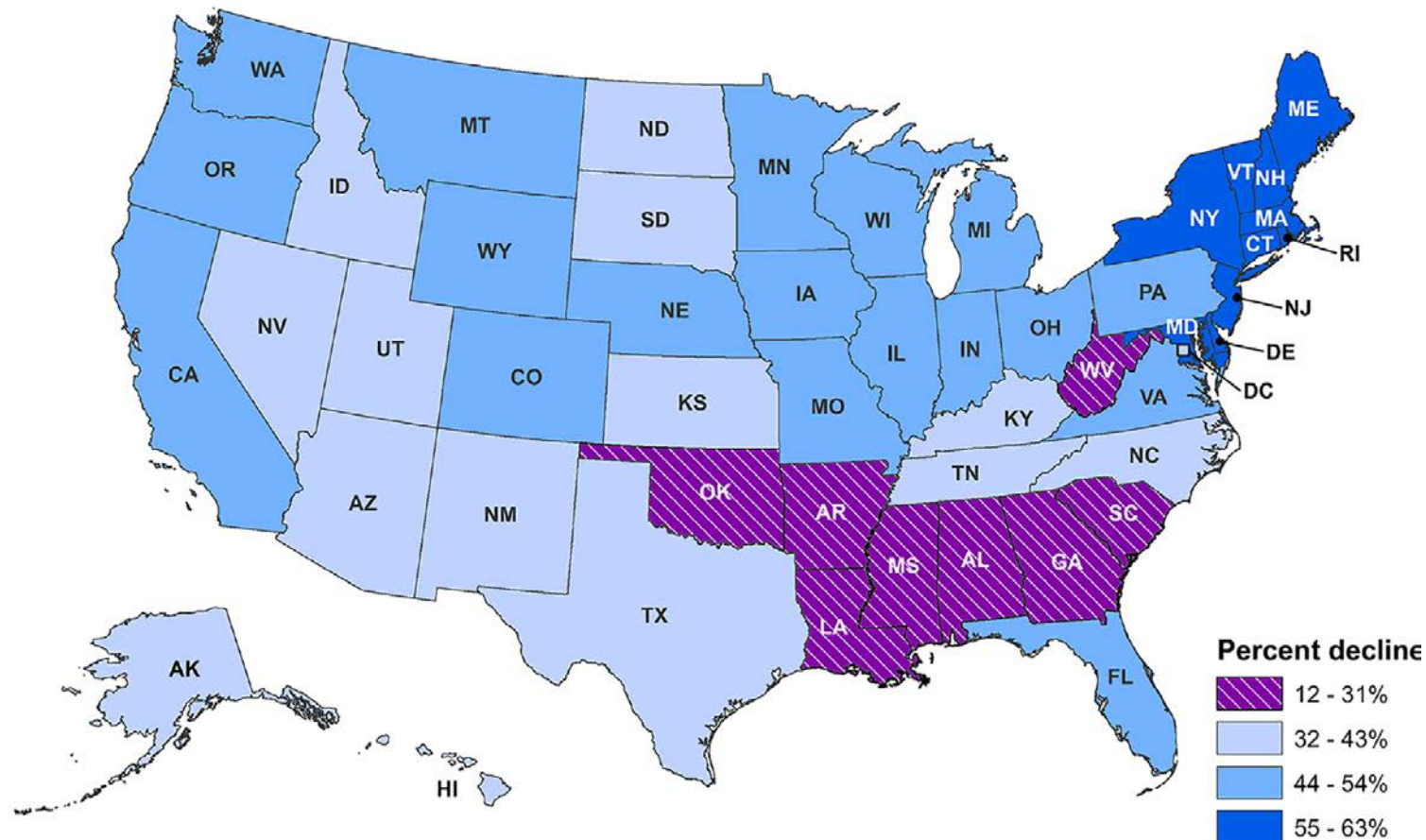
Siegel, et al. CA 2018;68:329-339

Colon and Rectal Cancer

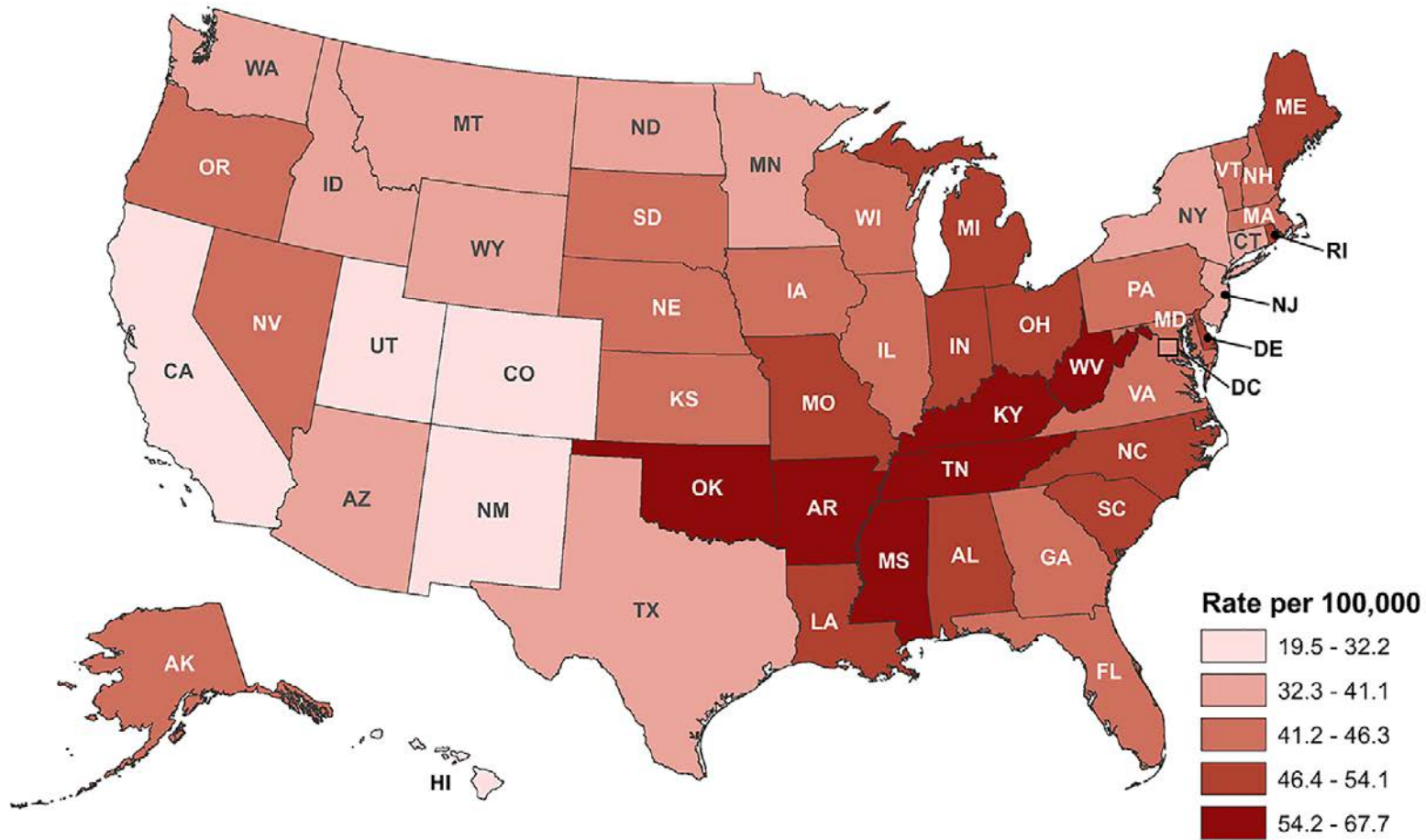
In 2019,

- Diagnosed: 101,400 colon and 44,200 rectal
- 51,000 Americans will die of colon and rectal cancer.
- There has been a 50% decline in age-adjusted death rate since 1980

Colorectal Cancer Mortality Decline from 1980-82 to 2013-2015 by State



Lung Cancer Mortality Rates 2011 to 2015 by State



Data source: Smoking: Behavioral Risk Factor Surveillance System (BRFSS), Centers for Disease Control and Prevention Mortality: National Center for Health Statistics.

Causes of Cancer Mortality Increases

Cancers due to tobacco use are declining more so in men than women.

Weir HK, Thompson TD, Soman A, Møller B, Leadbetter S, White MC. [Meeting the Healthy People 2020 objectives to reduce cancer mortality](#). *Preventing Chronic Disease* 2015;12:140482.

Weir HK, Thompson TD, Soman A, Møller B, Leadbetter S. [The past, present, and future of cancer incidence in the United States: 1975 through 2020](#). *External Cancer* 2015;121(11):1827–1837.

Causes of Cancer Mortality Increases

- Energy balance (overweight, obesity, too many calories, lack of exercise)
 - 2/3 of adults and 1/3 of children are overweight or obese
 - Weight related cancers are expected to increase 30 to 40% by 2030
- Cancers caused by infection
 - Liver cancer expected to go up 50% due to HCV and HBV
 - Oral cancers increasing by 30% due to HPV

Prevention of cancer is clearly a need in the future!

Weir HK, Thompson TD, Soman A, Møller B, Leadbetter S, White MC. [Meeting the Healthy People 2020 objectives to reduce cancer mortality](#). *Preventing Chronic Disease* 2015;12:140482.

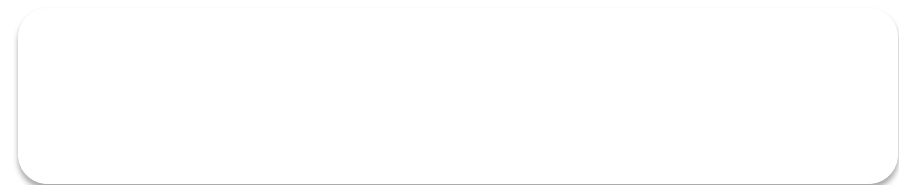
Weir HK, Thompson TD, Soman A, Møller B, Leadbetter S. [The past, present, and future of cancer incidence in the United States: 1975 through 2020](#). *External Cancer* 2015;121(11):1827–1837.

Potentials for Cancer Prevention

Cause	% cancer caused	Deaths in United States [†]	Magnitude of possible reduction (%)	Period of time (years)	Evidence example
Smoking	33%	188,744	75%	10–20	Utah vs Kentucky
Overweight/obesity	20%	114,390	50%	2–20	Bariatric surgery
Hereditary factors (*)	16%	91,520	50%	2–10	Oophorectomy; MRI: Tamoxifen; Colonoscopy
Diet	5%	28,600	50%	5–20	Folate , colorectal cancer
Lack of exercise	5%	28,600	85%	5–20	Adolescent activity
Occupation	5%	28,600	50%	20–40	Asbestos
Viruses	5%	28,600	100%	20–40	Liver cancer, HPV vaccine
Alcohol	3%	17,200	50%	5–20	Regulation
UV and ionizing radiation	2%	11,400	50%	5–40	Medical exposures
Prescription drugs	1%	5,720	50%	2–10	Hormone therapy
Reproductive factors	3%	17,200	0	N/A	N/A
Pollution	2%	11,400	0	N/A	N/A

We could reduce cancer deaths 60% by paying attention to known risk factors

**WHAT IF WE APPLIED WHAT WE
ALREADY KNOW ABOUT CANCER?**



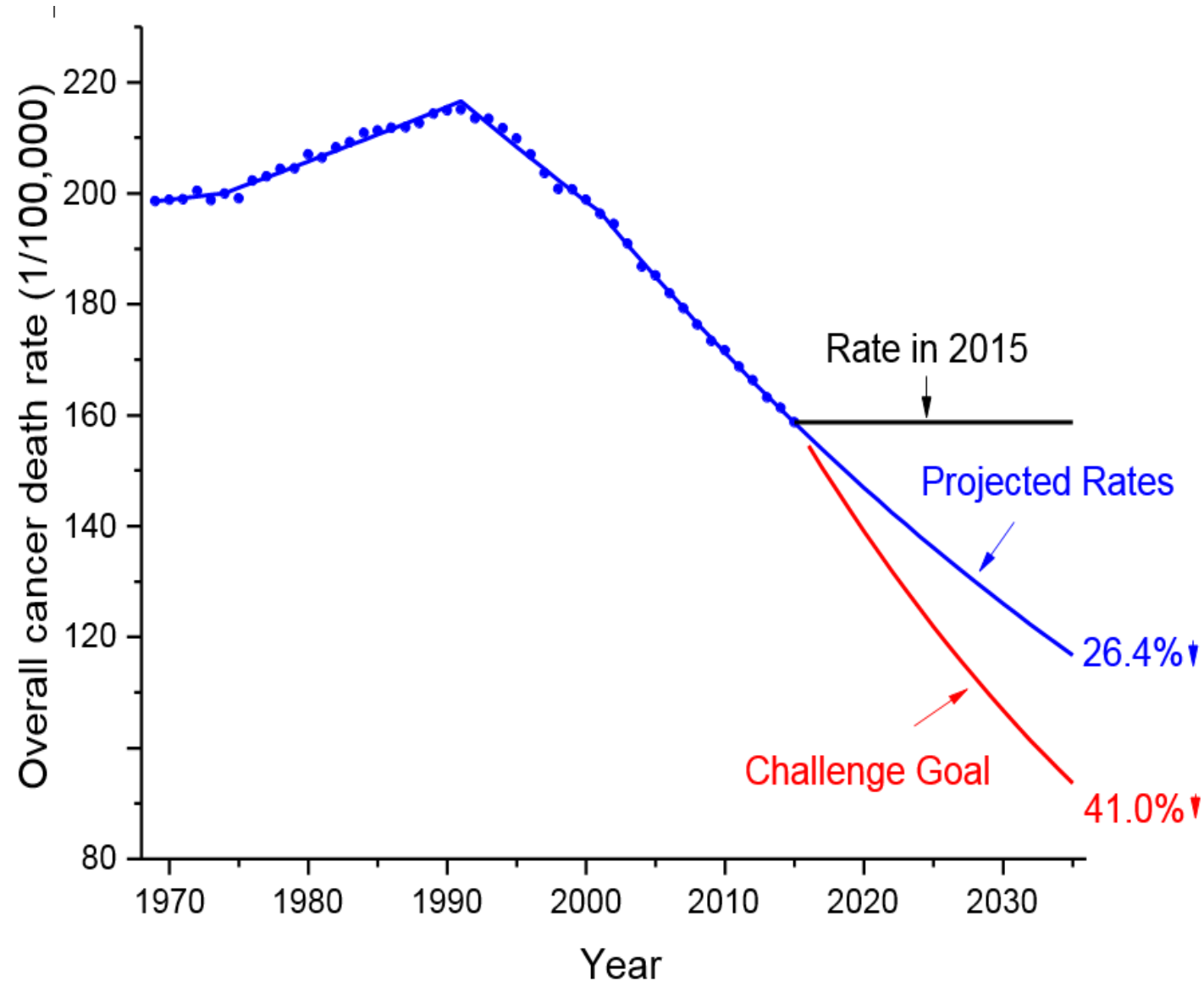
The Most Important Question in Cancer Control

How Can We Provide Adequate High Quality Care (to Include Preventive Services) to Populations That So Often Do Not Receive It?

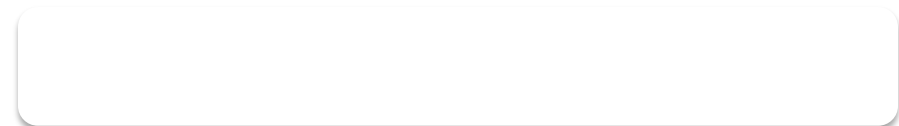
Applying Known Science (Prevention and Treatment)

- 607,000 Americans will die of cancer this year.
- If all Americans had the cancer death rate of college educated Americans then 152,000 would not die this year!

Cancer Mortality from 1970 to 2015 with projections to 2035

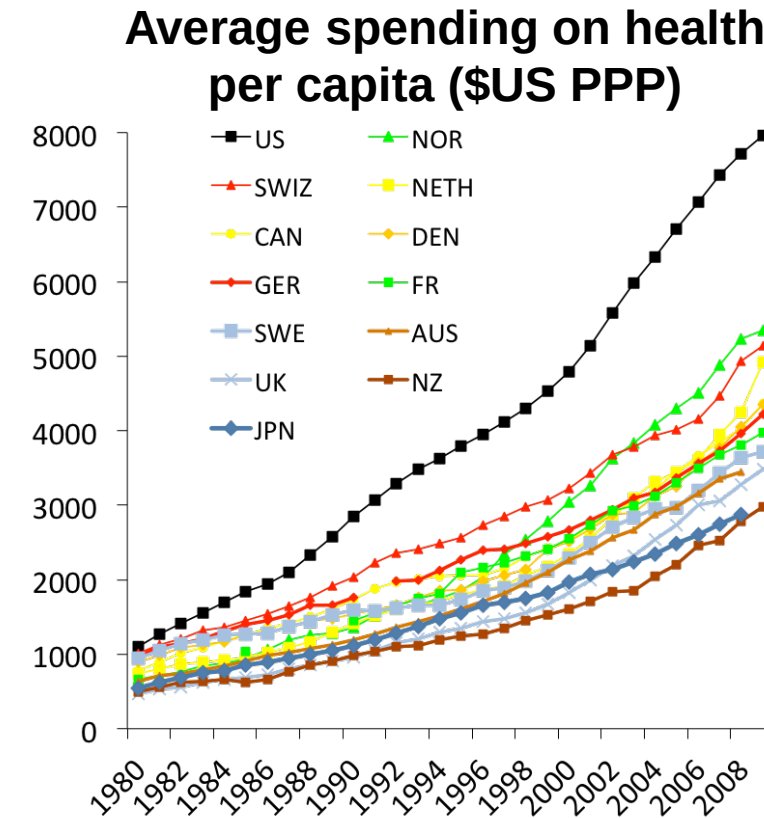


THE COST OF HEALTHCARE



Trends in Healthcare Spending

- U.S. spends more on health care than other industrialized nations
- We're not getting our money's worth: many health outcomes are worse



Source: OECD Health Data 2011 (Nov. 2011).

U.S. Health Care Spending

In 2016, the U.S. spent
\$3.3 TRILLION
on Health Care

Gross Domestic Product by Country, 2016

Trillion Dollars, at Official Exchange Rate

• United States	18.62
• China	11.20
• Japan	4.94
• Germany	3.48
• United Kingdom	2.65
• France	2.47

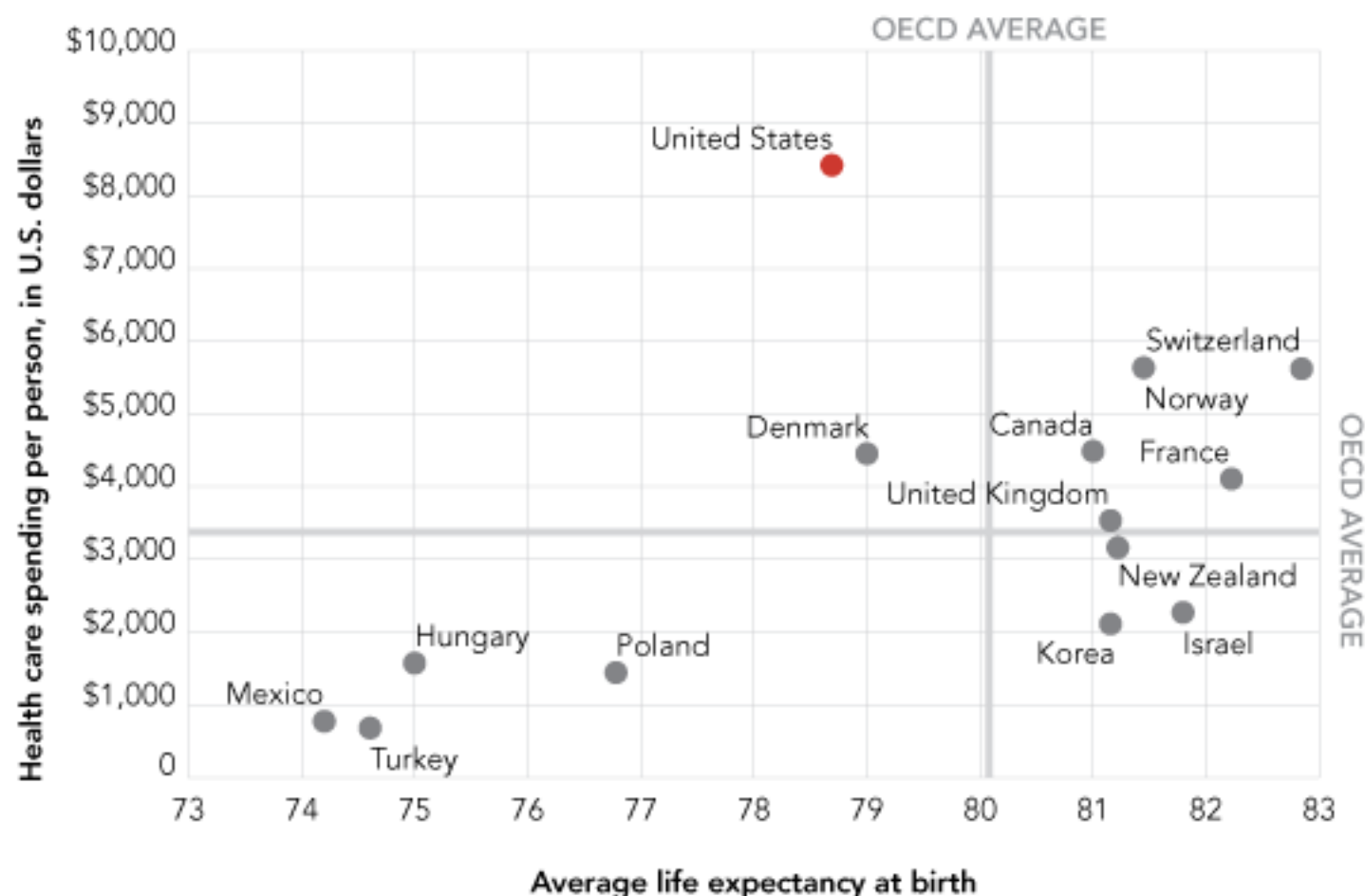
CIA World Fact Book, 2018

National Health Expenditure 2016

- \$3.3 Trillion
- \$9,990 per person
- 17.8% of Gross Domestic Product
 - Switzerland 12.2%% of GDP

[CMS.gov/research-statistics](https://cms.gov/research-statistics)

Americans don't live longer than people in countries that spend much less on health care.



Notes: Data is from 2011 or nearest year. New Zealand numbers exclude investments. Not all OECD countries are included.
Source: OECD Health Data 2013

The Cost of Healthcare

- Average family healthcare policy in U.S. was \$18,500 in 2016
- If we were Switzerland:
 - it would be \$11,600
 - we would have higher productivity and
 - employers would hire more employees.
- Costs are going up!!!!

National Healthcare Expenditures

Year	Per Capita US Cost	NHE as a Share of Gross Domestic Product
1960	\$147	5.0%
1970	\$356	7.0%
1980	\$1,112	8.9%
1990	\$2,851	12.1%
2000	\$4,884	13.4%
2010	\$5,411	17.4%
2015	\$9,900	17.6%
2020	\$12,808	18.4%
2023	\$14,944	19.3%

NHE data from Centers for Medicare and Medicaid Services National Health Statistics Group 2020 and 2023 costs are estimates

I found a home and it has a dome!!!

