

***The Burden of Cancer:  
Update 2004***

**John D. Groopman**

**Anna M. Baetjer Professor and Chair**

**Johns Hopkins University**

**Bloomberg School of Public Health**

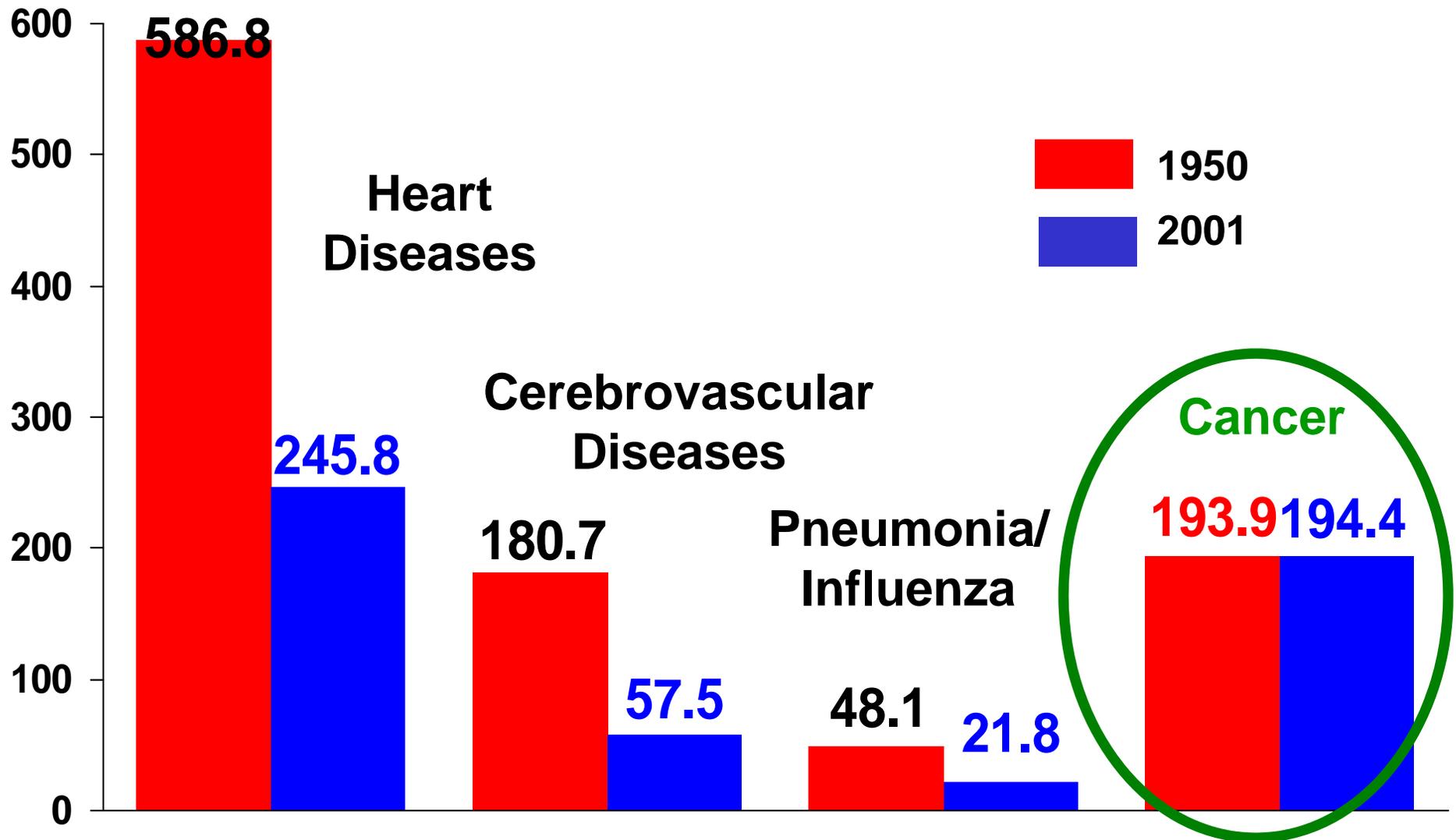
**Sidney Kimmel Comprehensive Cancer Center**

# *US Mortality, 2001*

<b>Rank</b>	<b>Cause of Death</b>	<b>Number</b>	<b>%</b>
1.	Heart Diseases	700,142	29.0
<b>2.</b>	<b>Cancer</b>	<b>553,768</b>	<b>22.9</b>
3.	Cerebrovascular diseases	163,538	6.8
4.	Chronic lower respiratory diseases	123,013	5.1
5.	Accidents (Unintentional injuries)	101,537	4.2
6.	Diabetes mellitus	71,372	3.0
7.	Influenza and Pneumonia	62,034	2.6
8.	Alzheimer's disease	53,852	2.2
9.	Nephritis	39,480	1.6
10.	Septicemia	32,238	1.3

Source: US Mortality Public Use Data Tape 2001, National Center for Health Statistics, Centers for Disease Control and Prevention, 2003., ACS, 2004.

# Change in the US Death Rates\* by Cause, 1950 and 2001 (Rate per 100,000)

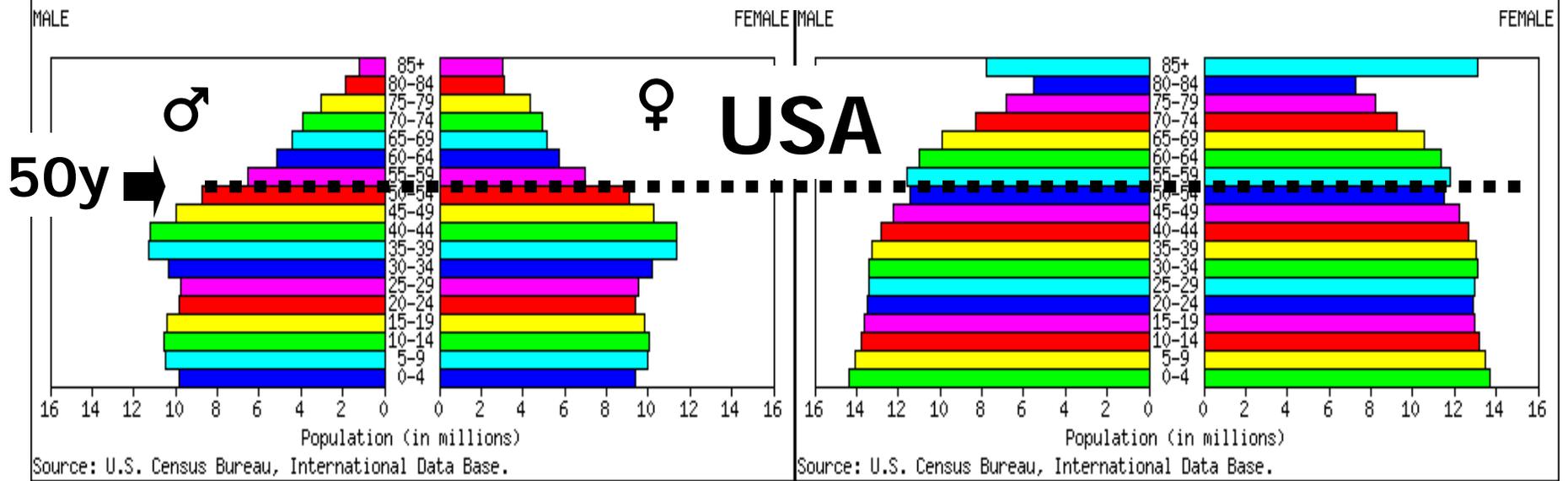


\* Age-adjusted to 2000 US standard population.

Sources: 1950 Mortality Data - CDC/NCHS, NVSS, Mortality Revised.

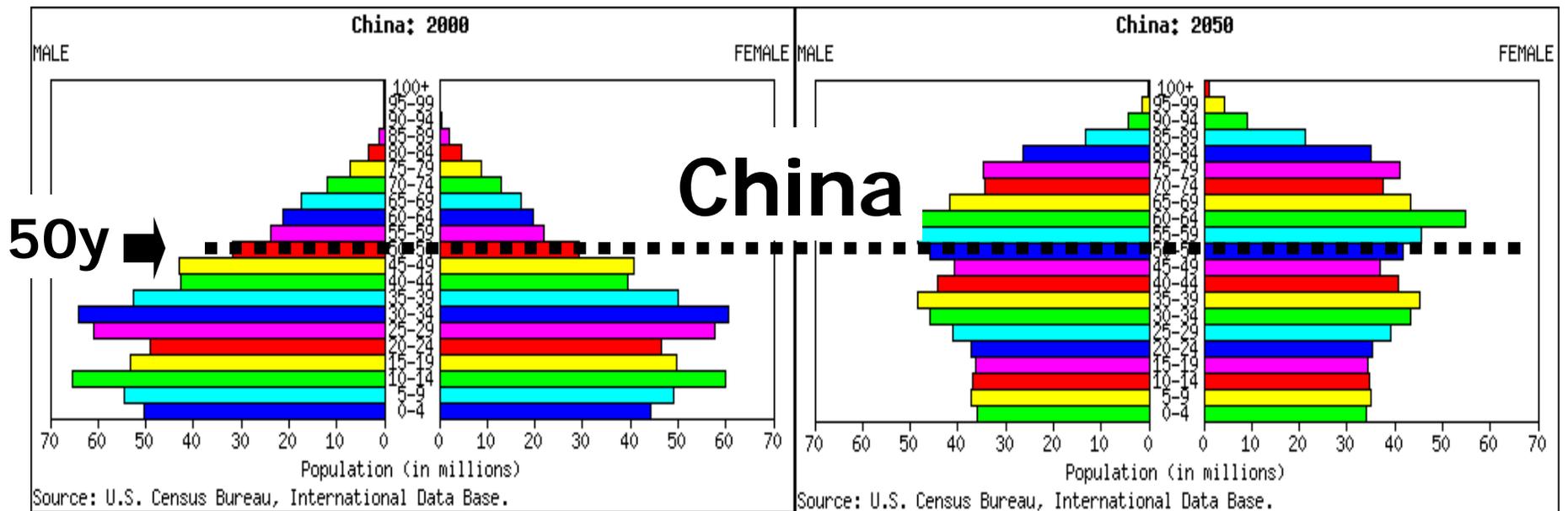
2001 Mortality Data - NVSR-Death Final Data 2001 - Volume 52, No. 3. [http://www.cdc.gov/nchs/data/nvsr/nvsr52/nvsr52\\_03.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr52/nvsr52_03.pdf)

# 90% OF ALL CANCERS OCCUR AFTER AGE 45

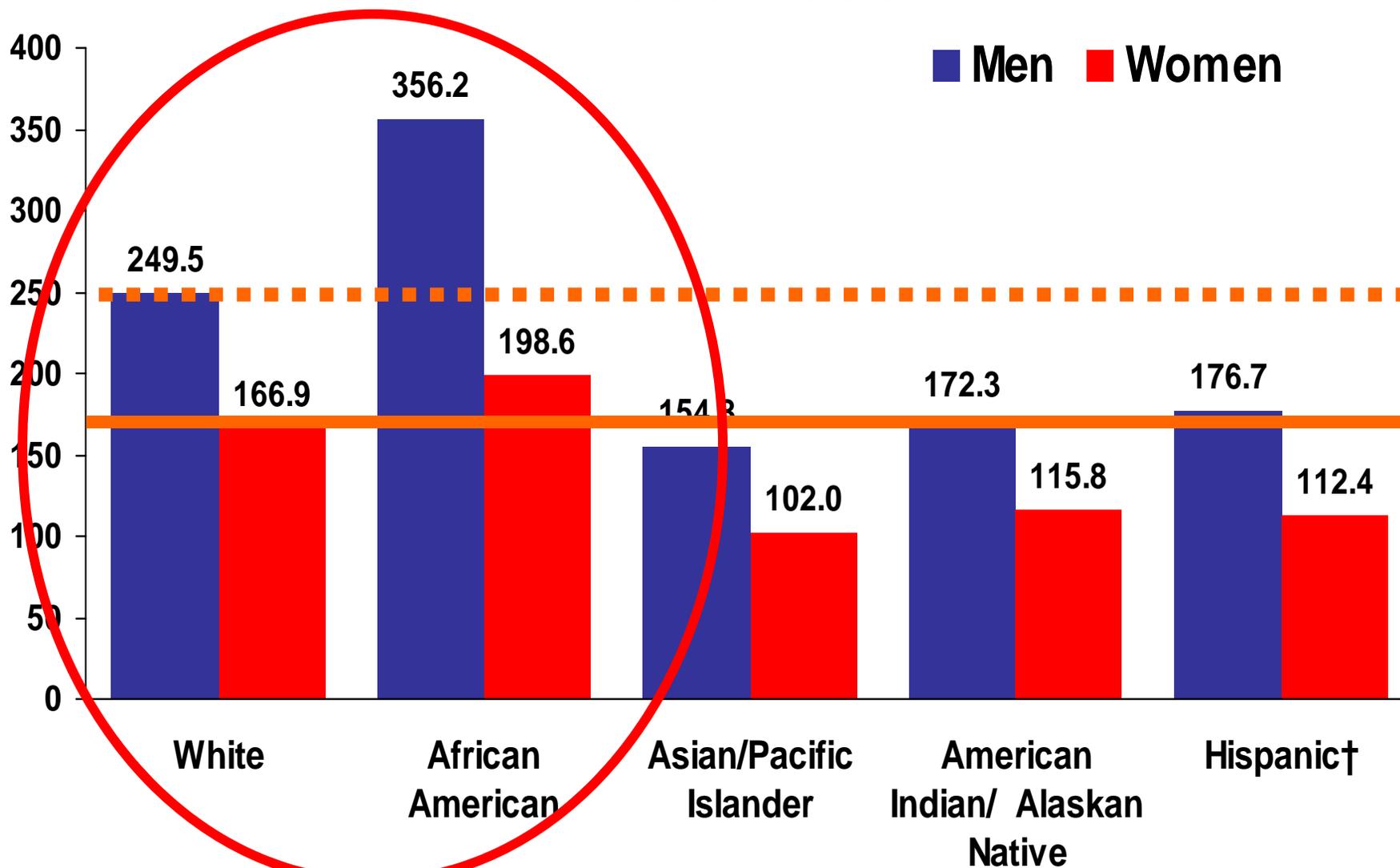


**2000**

**2050**



# Cancer Death Rates\*, by Race and Ethnicity, 1996-2000

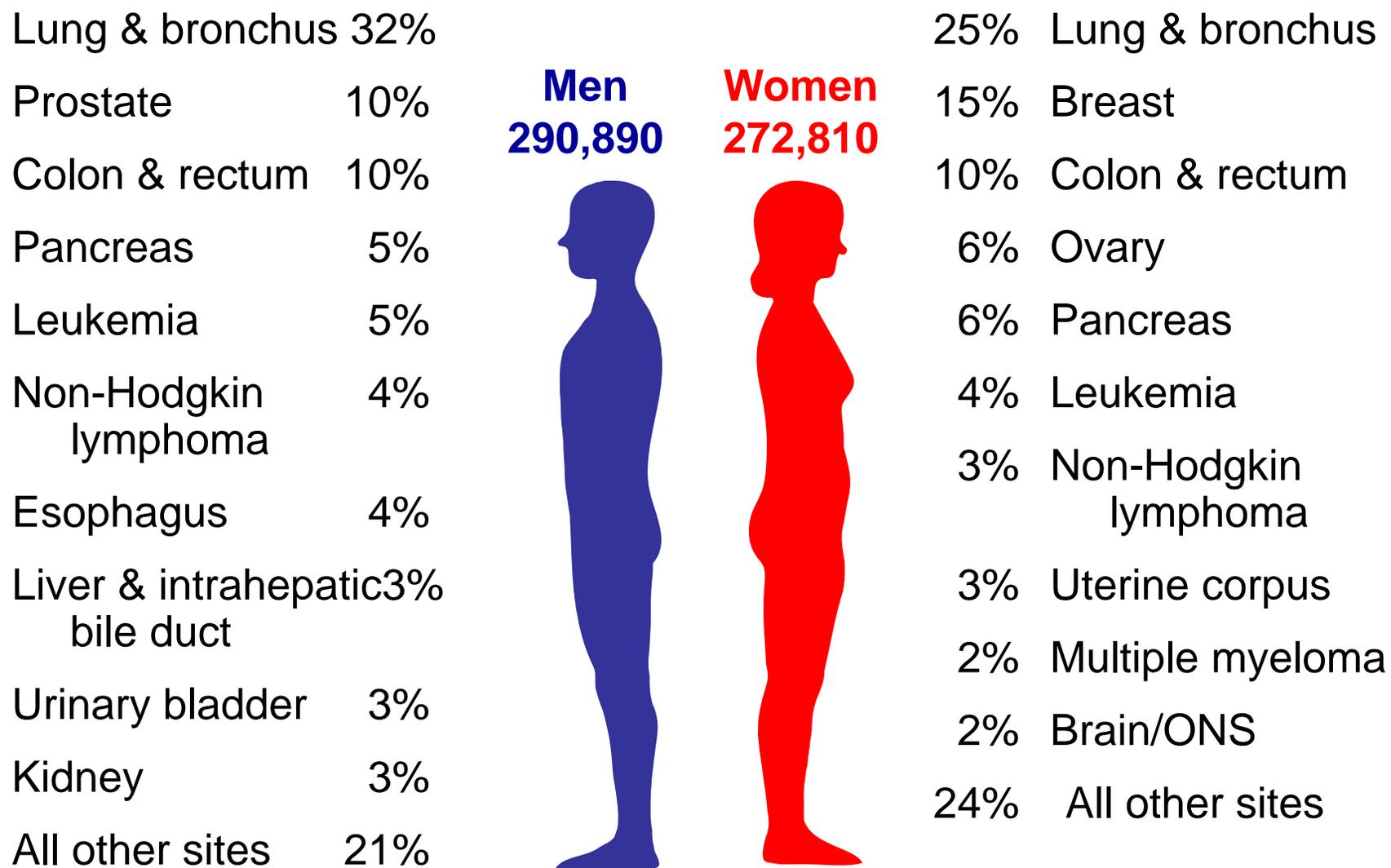


\*Per 100,000, age-adjusted to the 2000 US standard population.

† Hispanic is not mutually exclusive from whites, African Americans, Asian/Pacific Islanders, and American Indians.

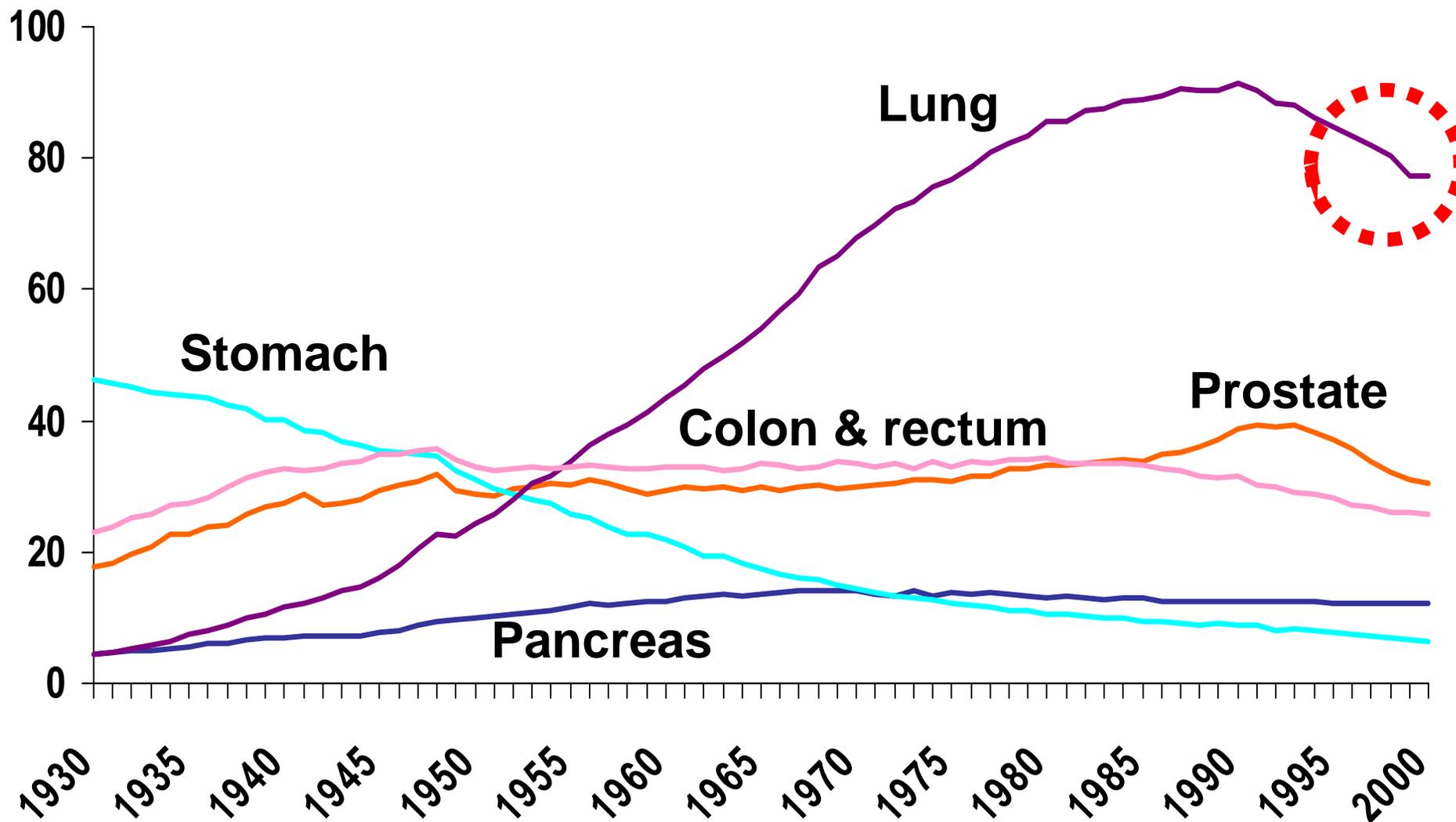
Source: Surveillance, Epidemiology, and End Results Program, 1975-2000, Division of Cancer Control and Population Sciences, National Cancer Institute, 2003.

# 2004 Estimated US Cancer Deaths\*



ONS=Other nervous system.  
Source: American Cancer Society, 2004.

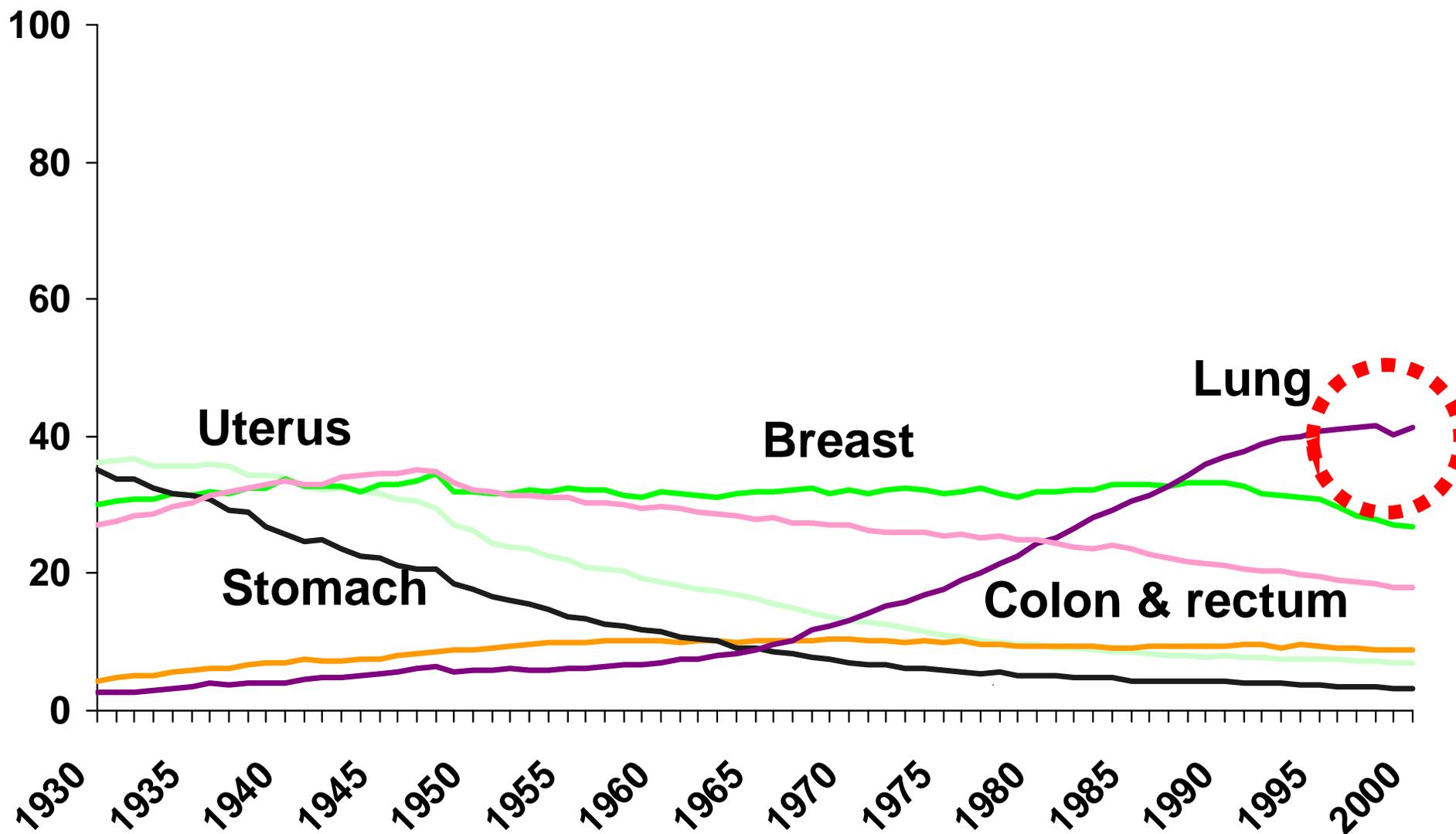
# **Cancer Death Rates\*, for Men, US, 1930-2000** **(Rate per 100,000)**



\*Age-adjusted to the 2000 US standard population.

Source: US Mortality Public Use Data Tapes 1960-2000, US Mortality Volumes 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2003.

# Cancer Death Rates\*, for Women, US, 1930-2000 (Rate per 100,000)

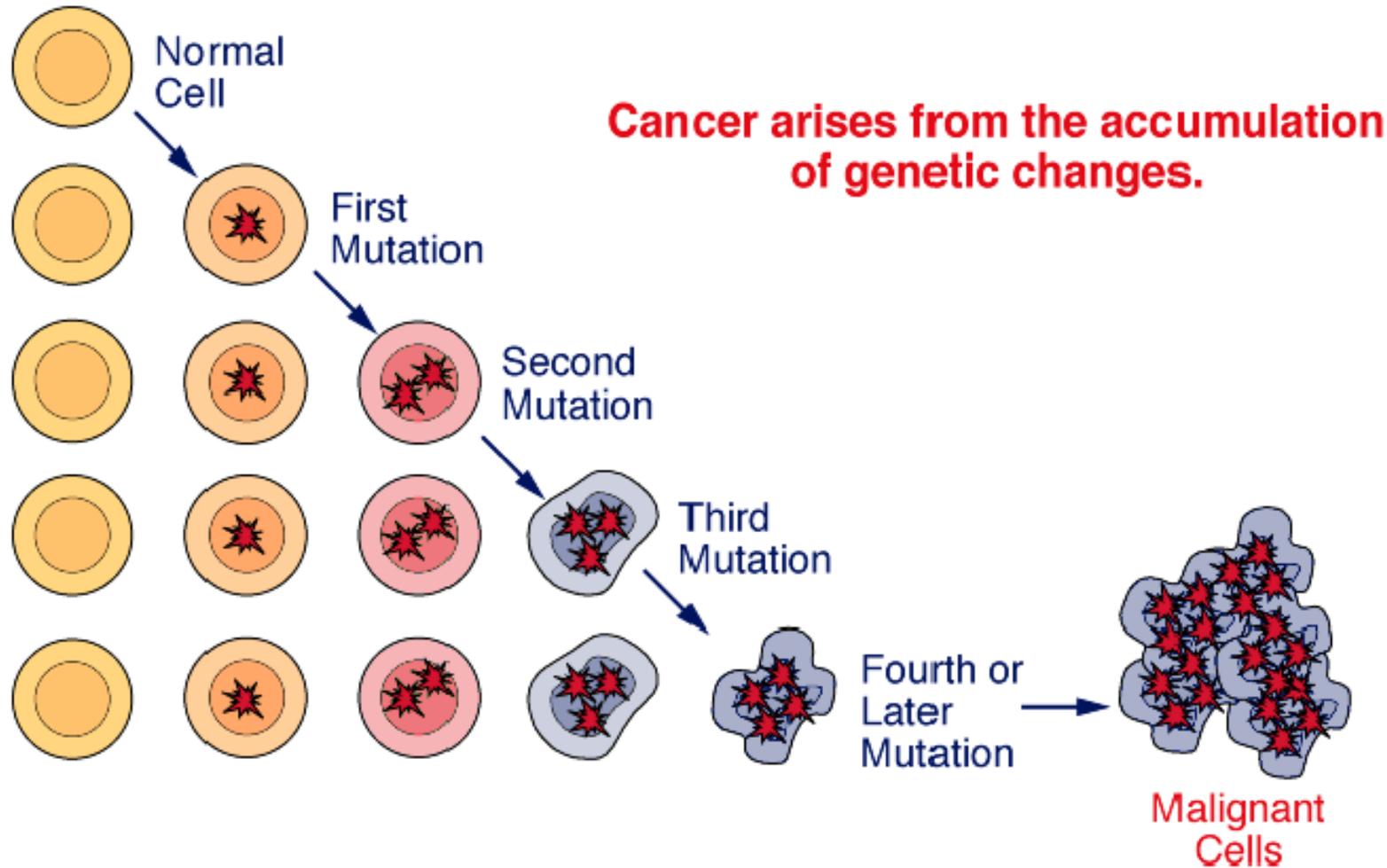


\*Age-adjusted to the 2000 US standard population.

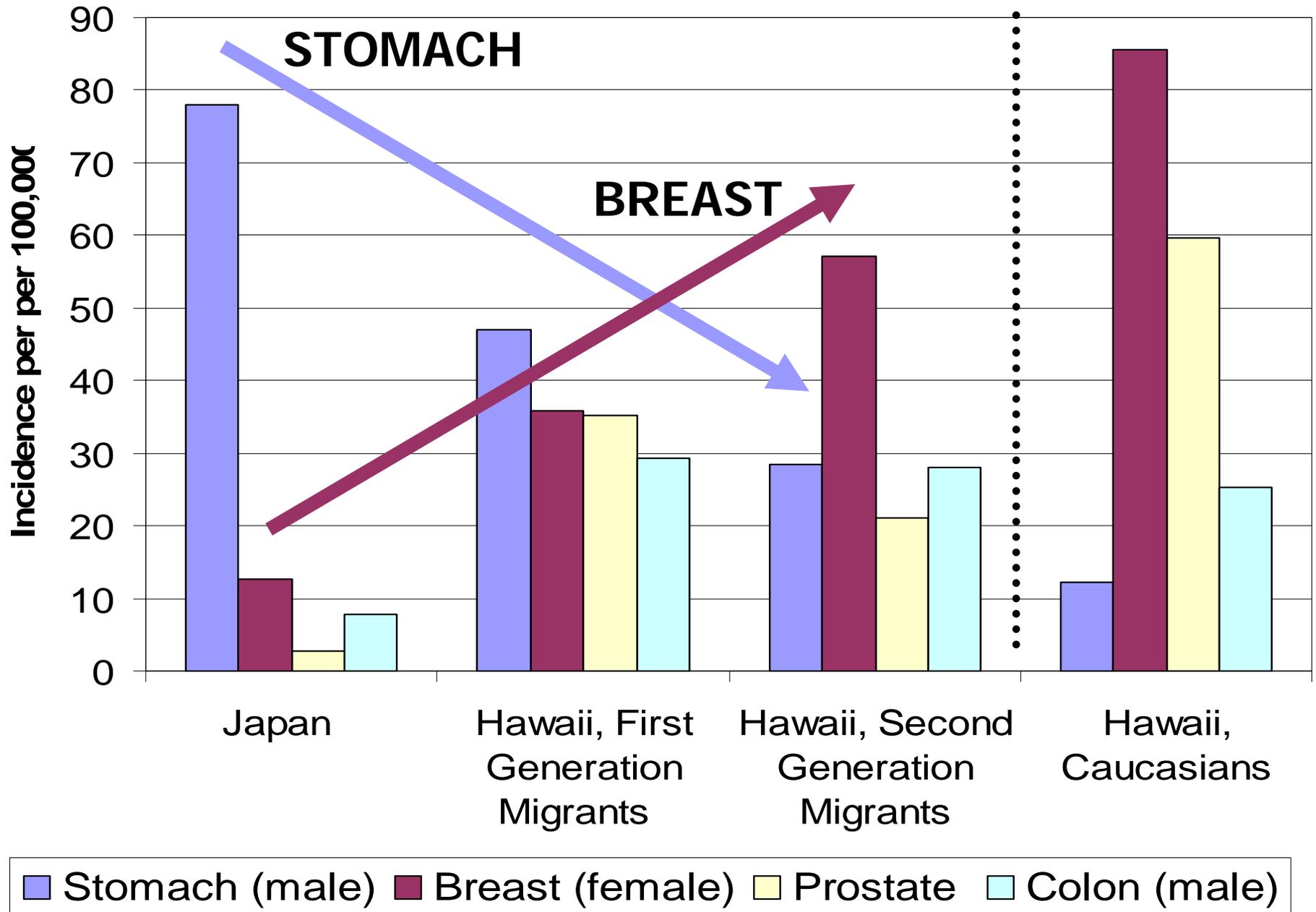
Source: US Mortality Public Use Data Tapes 1960-2000, US Mortality Volumes 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2003.

# Understanding the Molecular Basis of Cancer

---

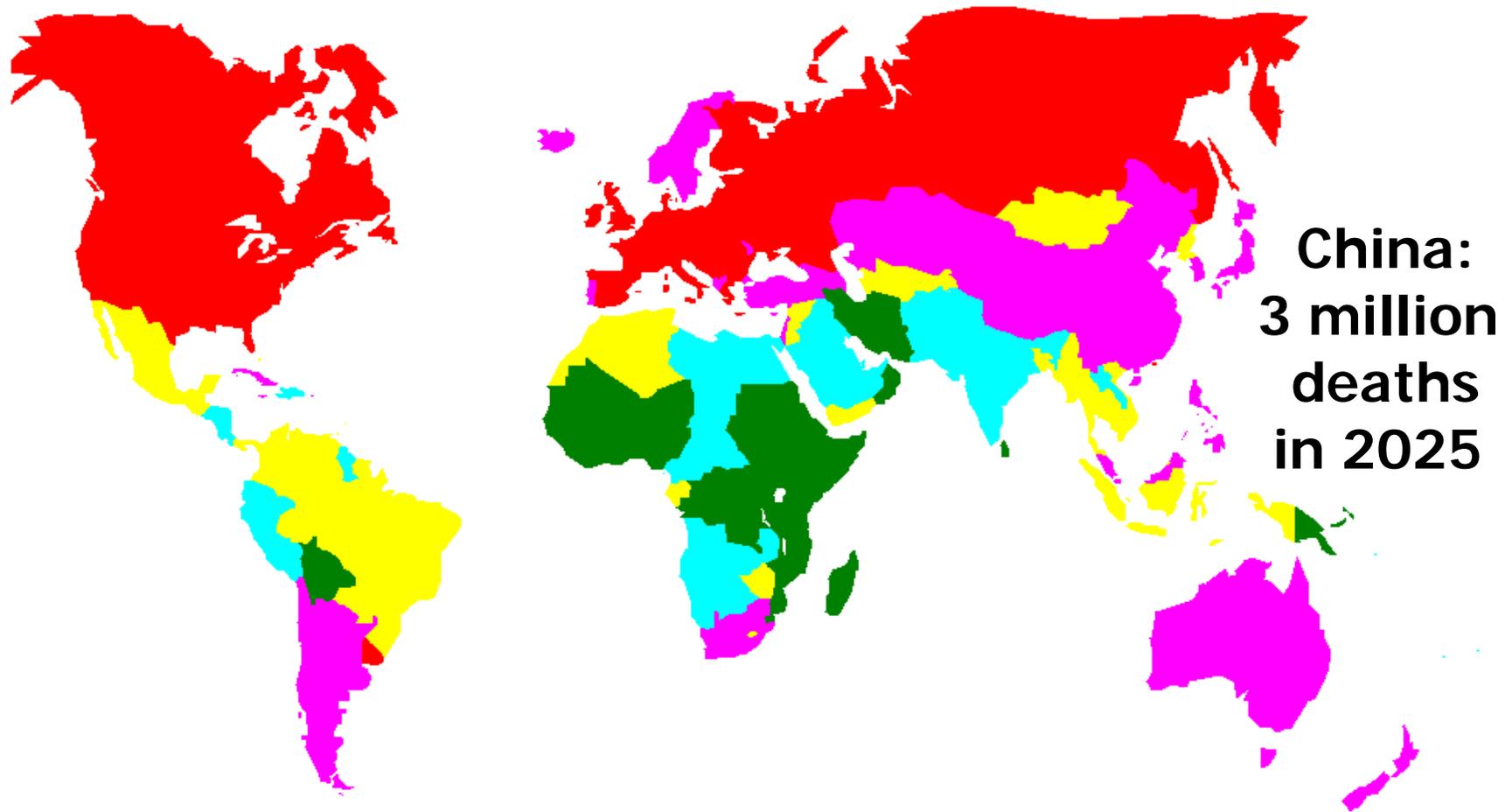


# ENVIRONMENT AND CHANGING CANCER RATES



**Tobacco**

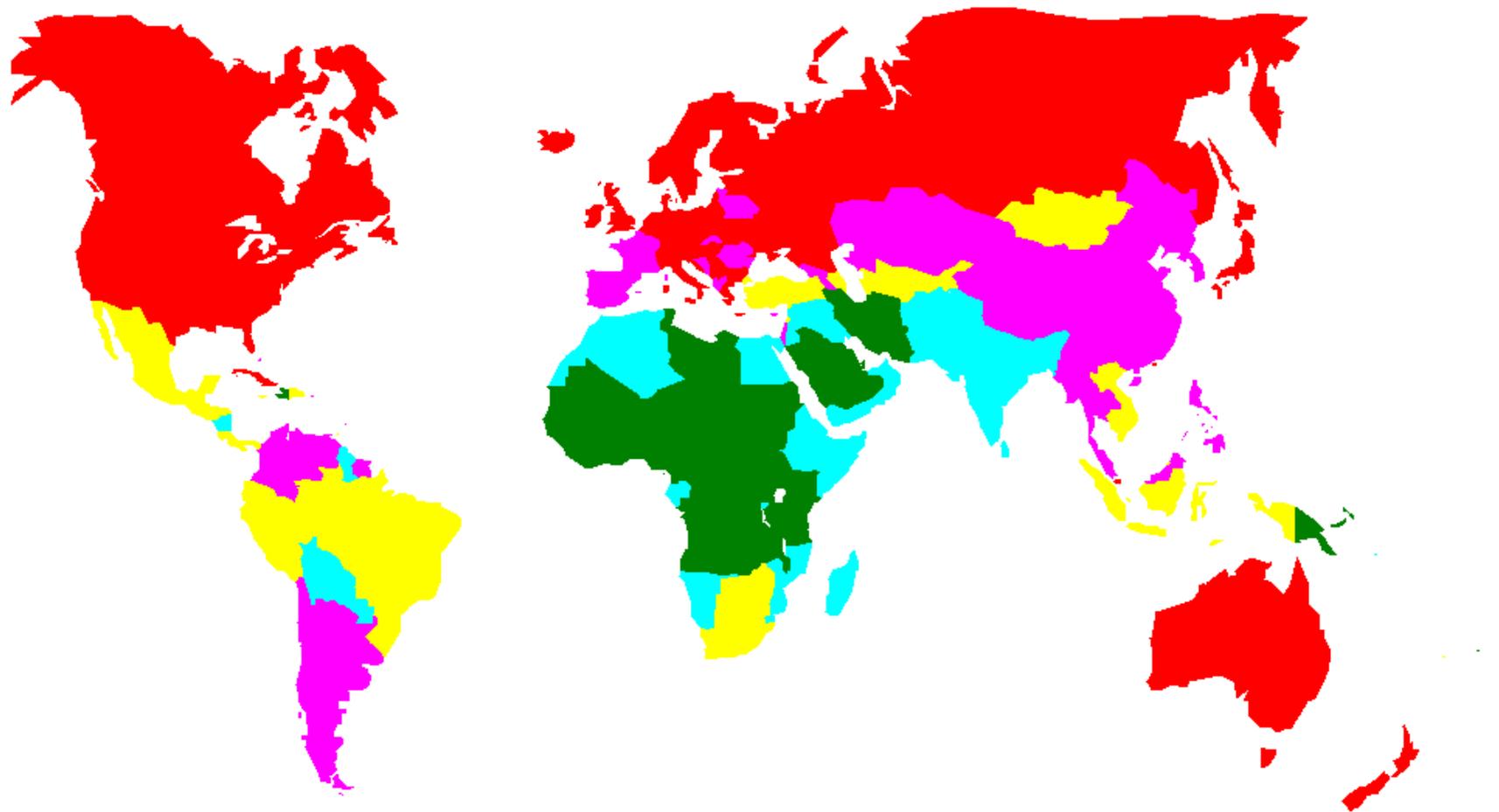
## Incidence of Lung Cancer (Males)



■ < 3.1   ■ < 9.0   ■ < 19.5   ■ < 62.6   ■ < 116.3

GLOBOCAN (IARC 1998)

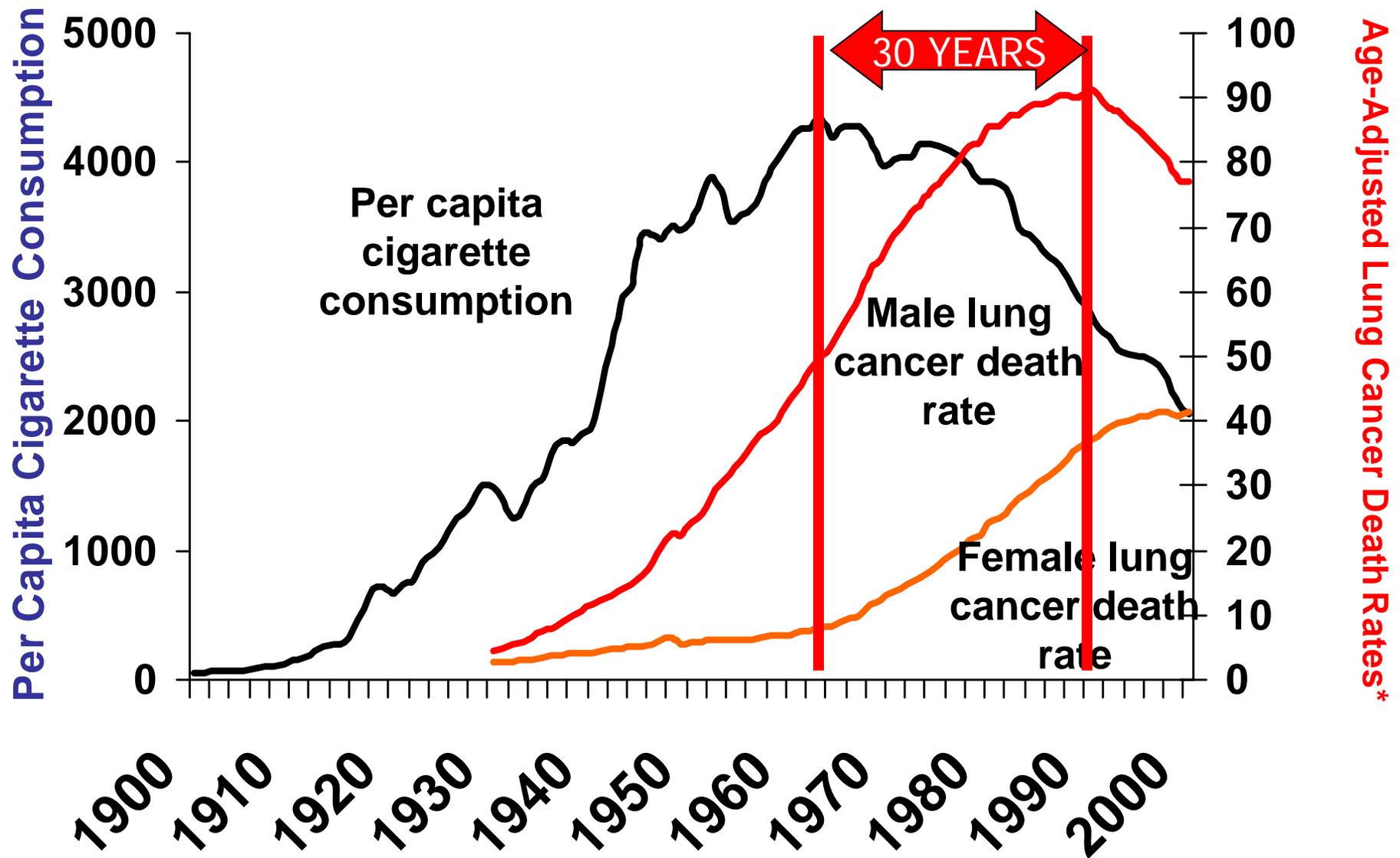
## Incidence of Lung Cancer (Females)



■ < 0.9   ■ < 2.7   ■ < 6.3   ■ < 12.9   ■ < 50.9

GLOBOCAN (IARC 1998)

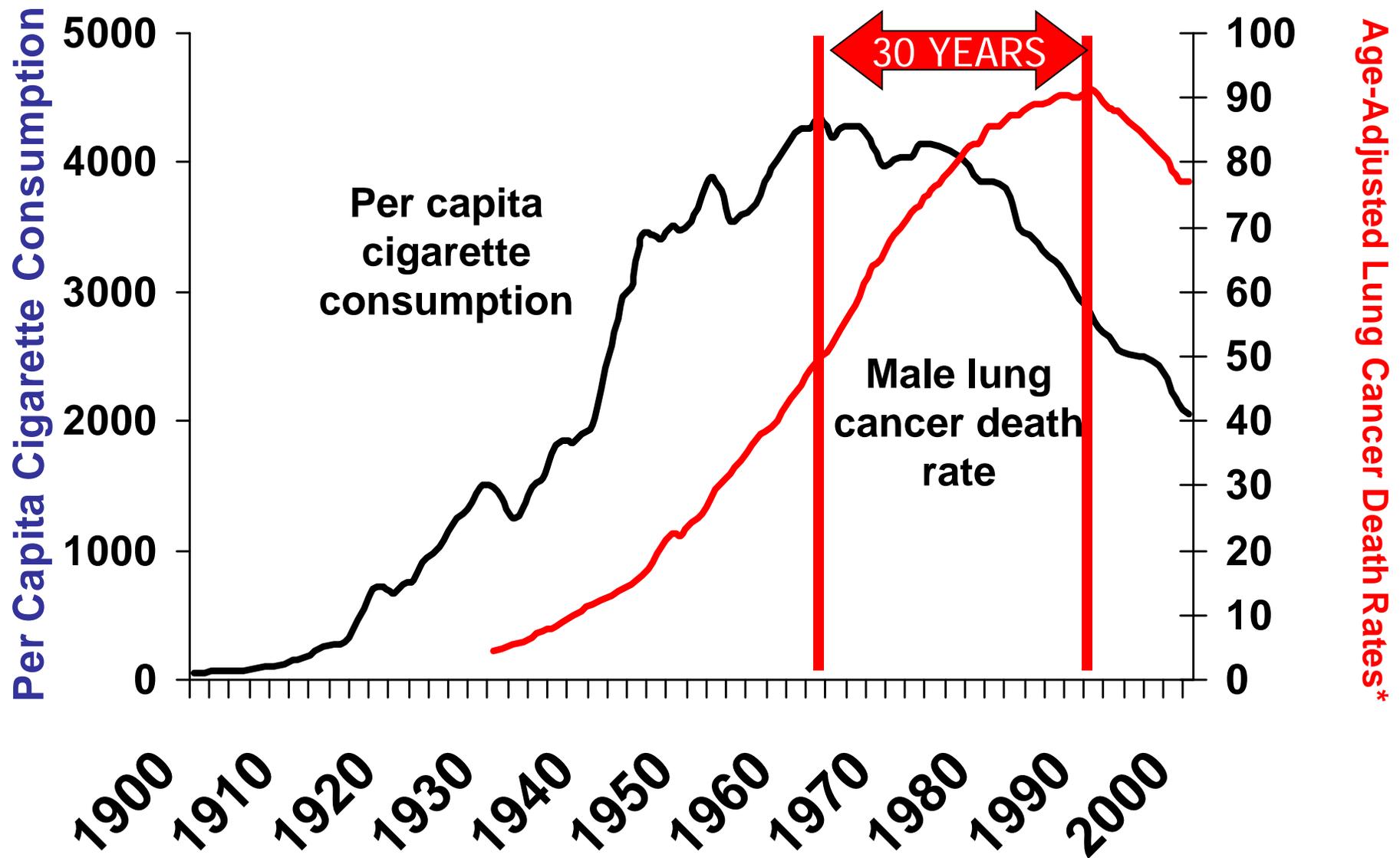
# Tobacco Use in the US, 1900-2000



\*Age-adjusted to 2000 US standard population.

Source: Death rates: US Mortality Public Use Tapes, 1960-2000, US Mortality Volumes, 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2002. Cigarette consumption: US Department of Agriculture, 1900-2000.

# Tobacco Use in the US, 1900-2000



\*Age-adjusted to 2000 US standard population.

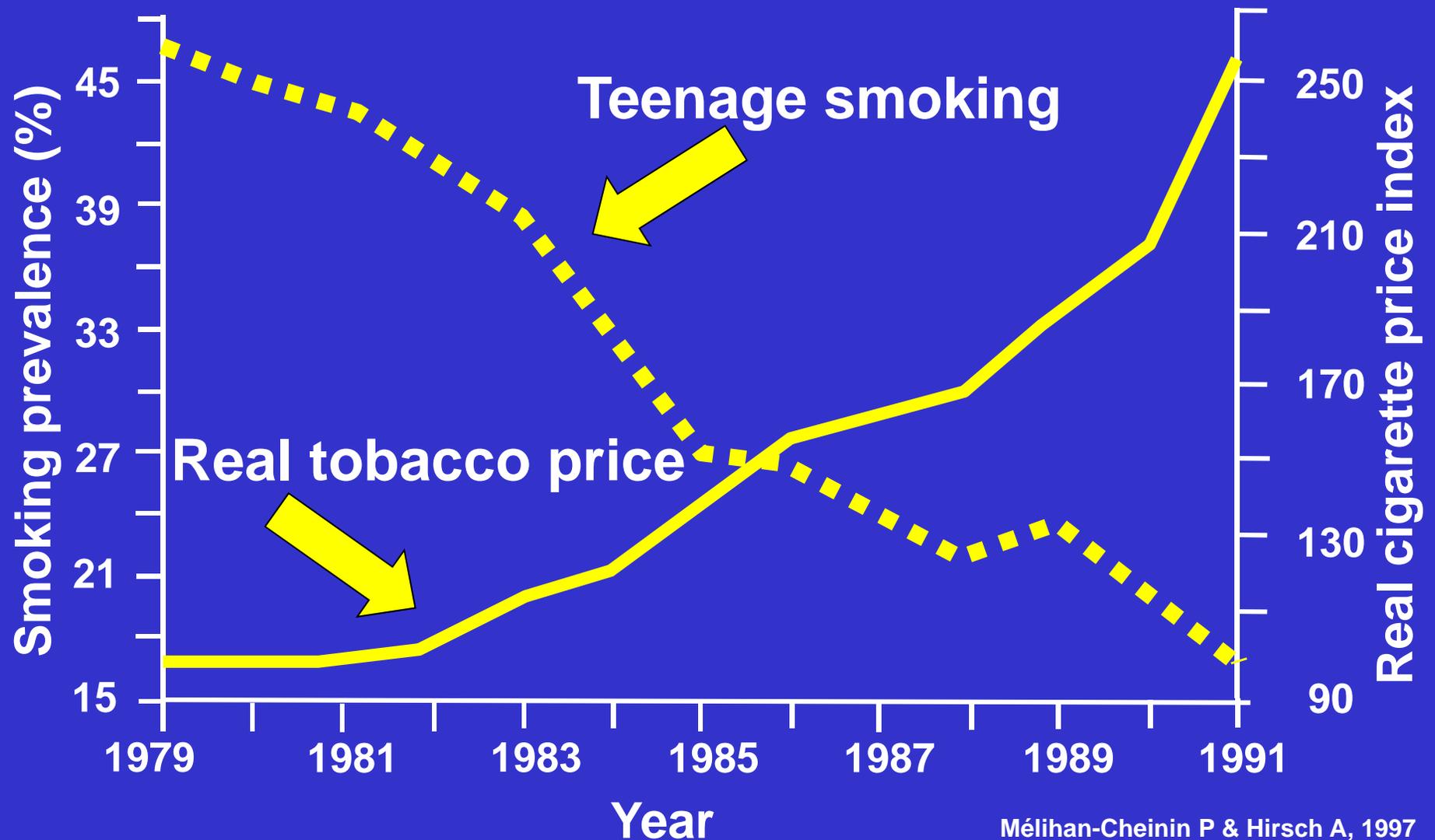
Source: Death rates: US Mortality Public Use Tapes, 1960-2000, US Mortality Volumes, 1930-1959, National Center for Health Statistics, Centers for Disease Control and Prevention, 2002. Cigarette consumption: US Department of Agriculture, 1900-2000.

# **TOBACCO ADVERTISING IN US**

**\$9,700,000,000 IN 2000**

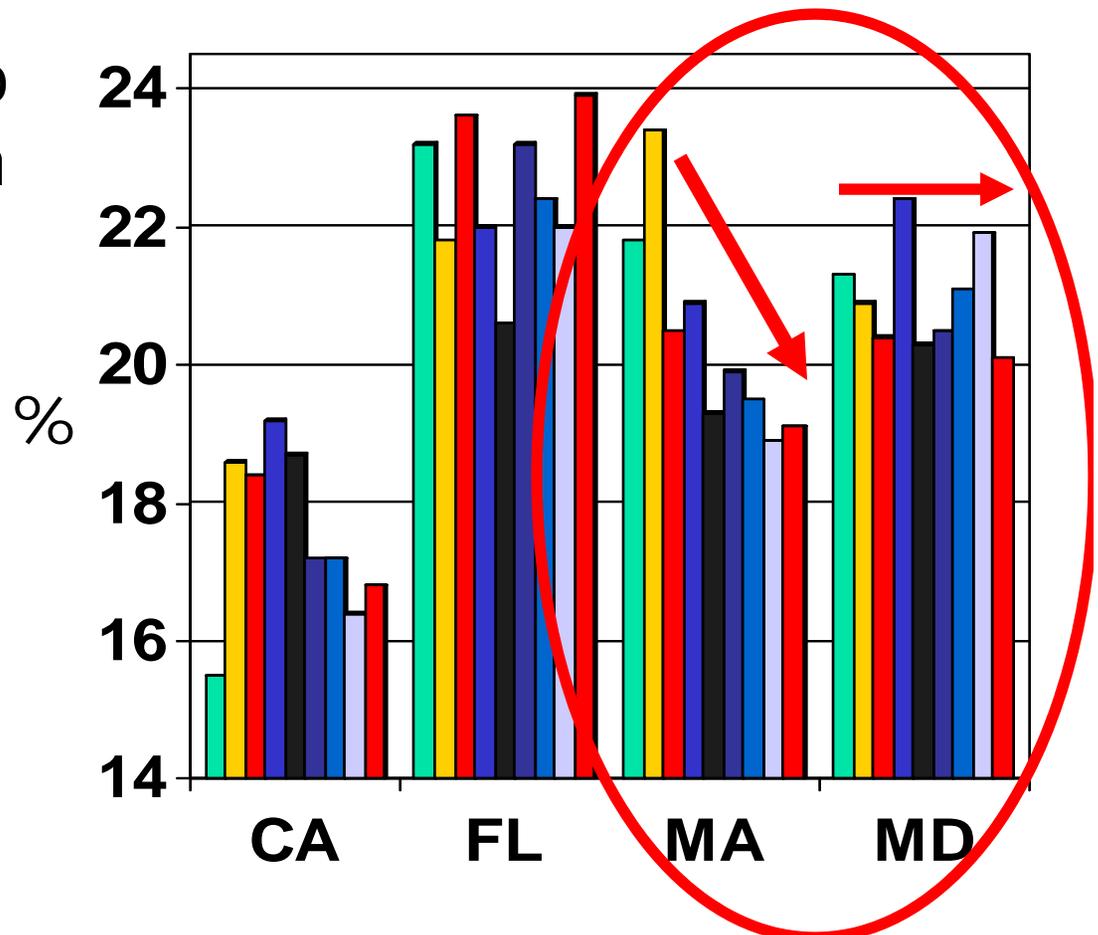
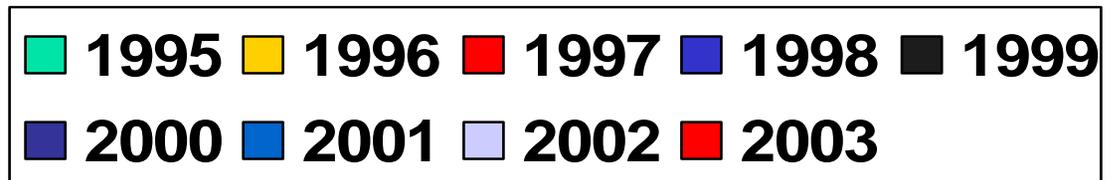
**\$1 MILLION PER HOUR**

# *Impact of Increasing Price on Smoking Among Canadian Teenagers*



# *Smoking Prevalence, 1995-2003, Selected States and Maryland*

- FL levels of smoking higher in 2003 than in 1995
- CA spending on tobacco control reached a low in 95-96.
- MA may be beginning a rebound in tobacco use
- MD making progress but may relapse with cut-back of media campaign



# *Health Consequences of Tobacco Use*

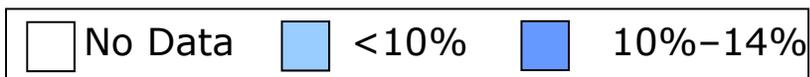
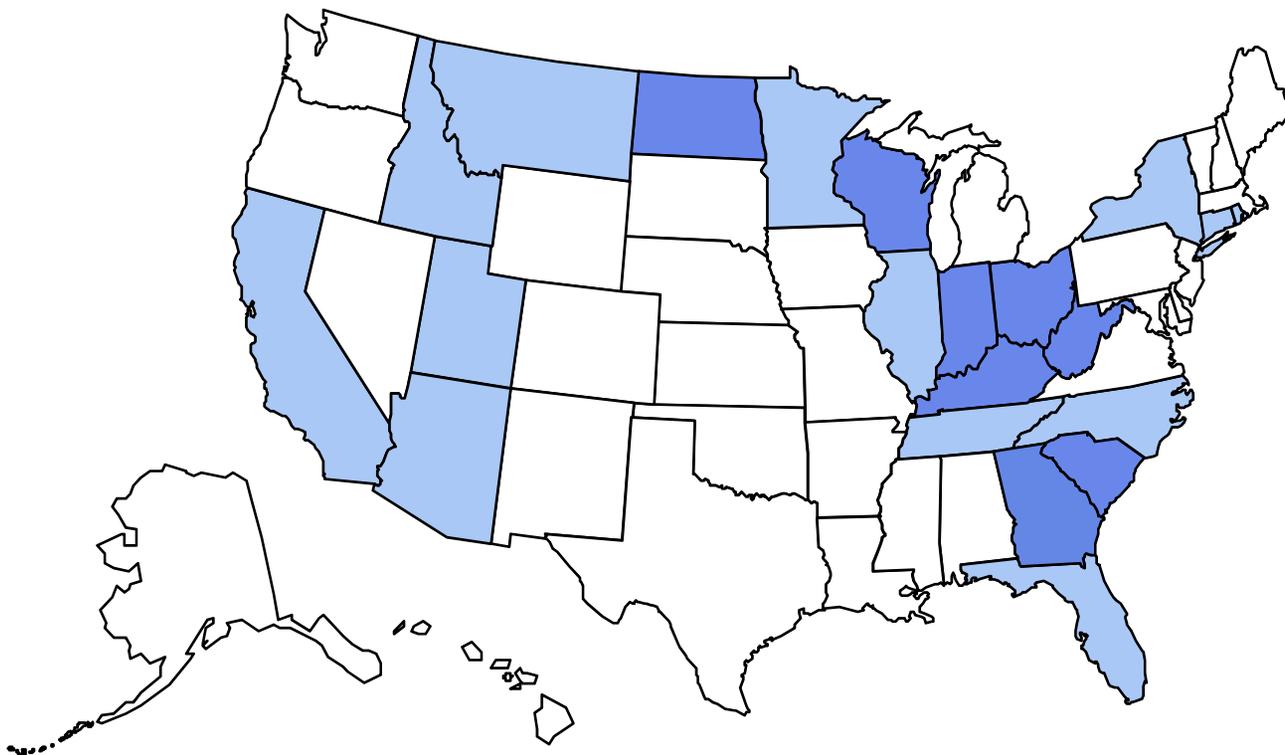
- Each year tobacco kills 3 million people worldwide, by 2020–2030, tobacco will be responsible for 10 million deaths per year
  - 70% will occur in developing countries
- Half of all long-term smokers will be killed by tobacco
  - half of these will die in middle age, losing 20–25 years of life
- Less than 10% of all smokers start after the age of 20.

# Obesity

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1985

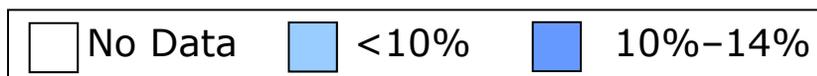
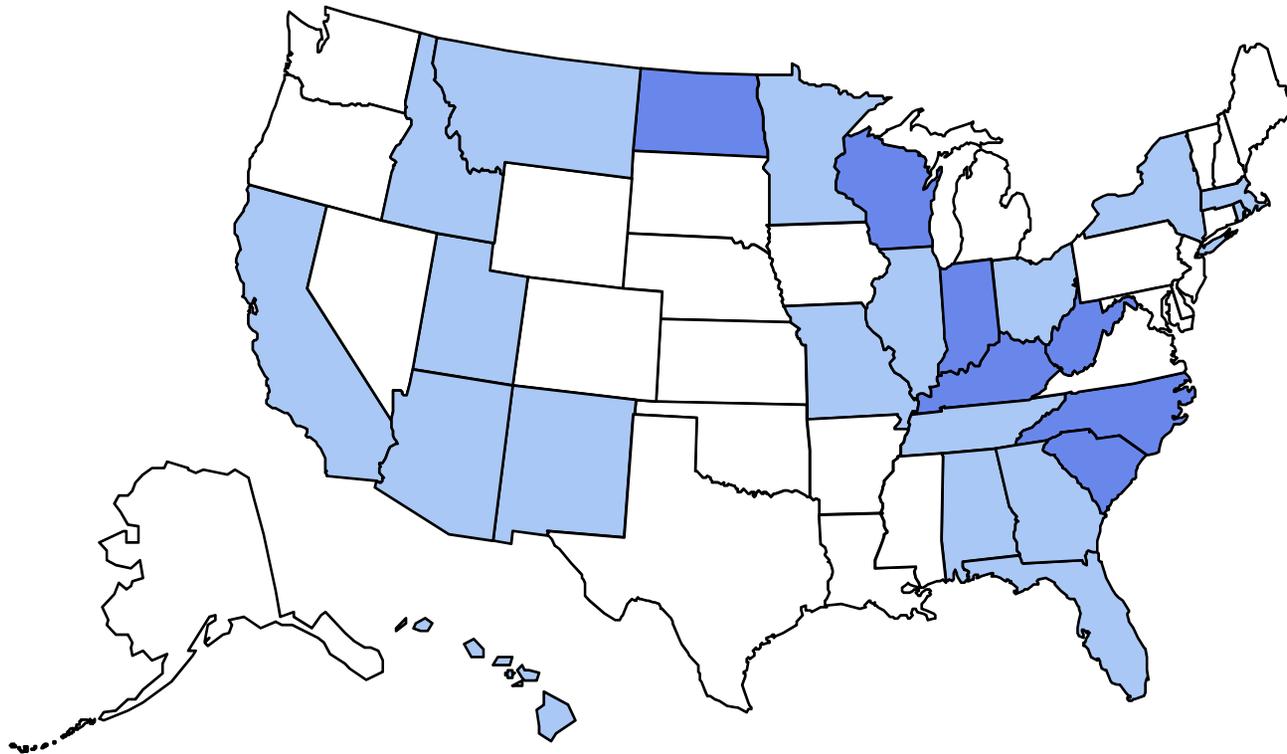
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

## BRFSS, 1986

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)

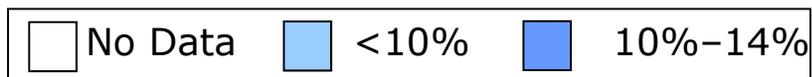
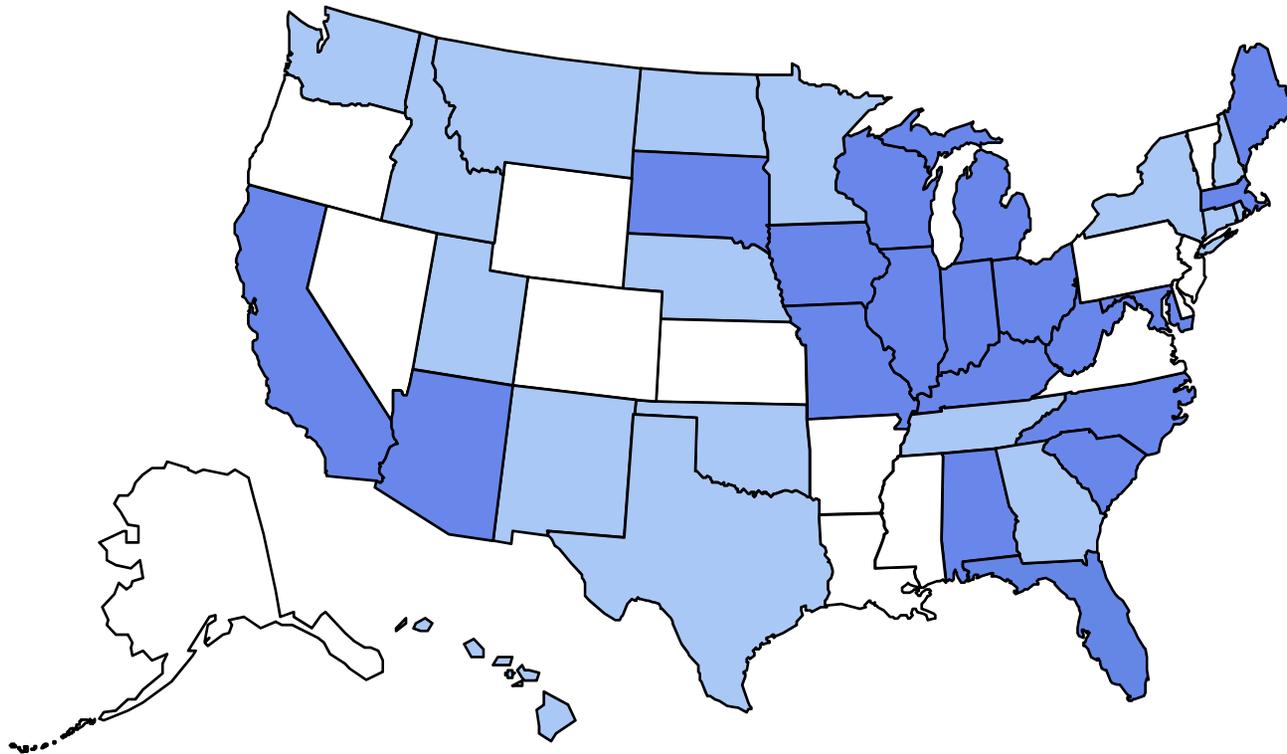




# Obesity Trends\* Among U.S. Adults

## BRFSS, 1988

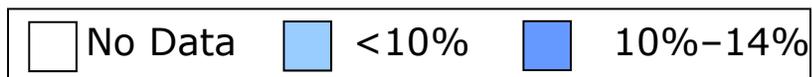
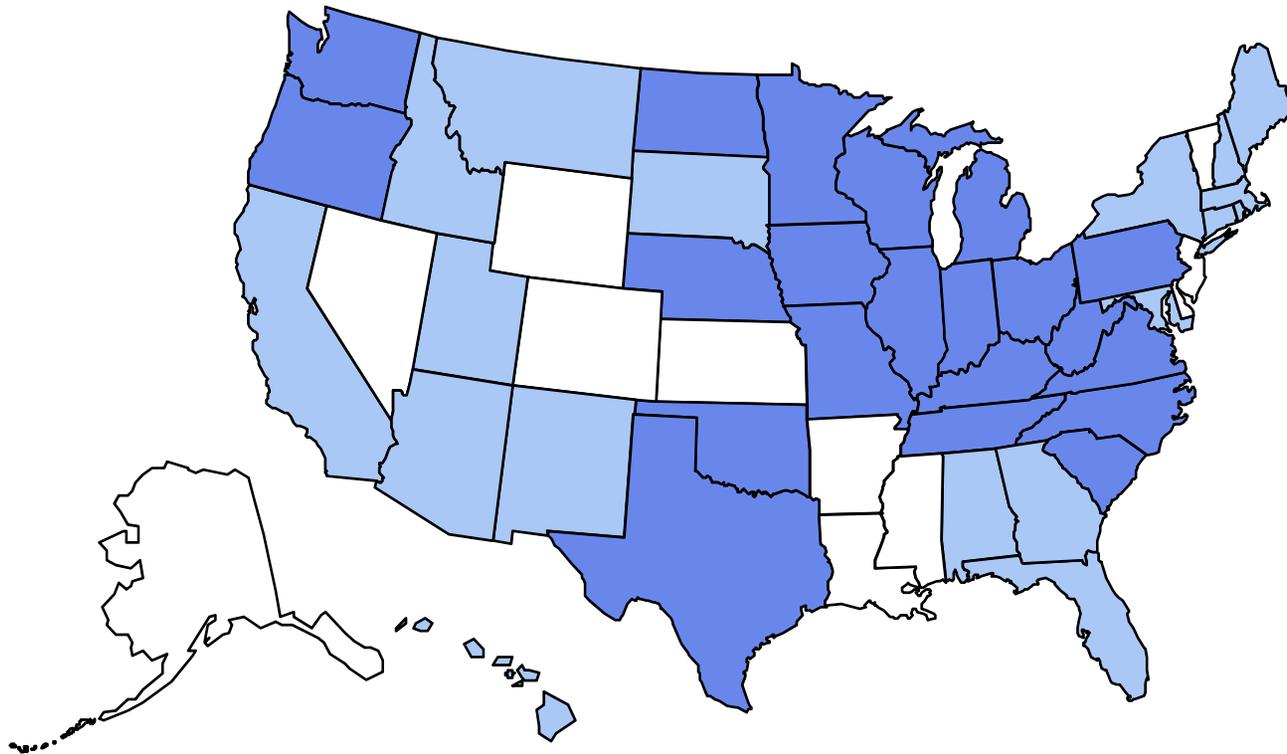
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

## BRFSS, 1989

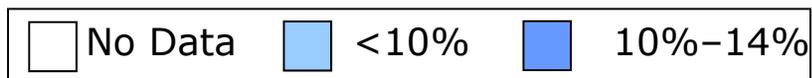
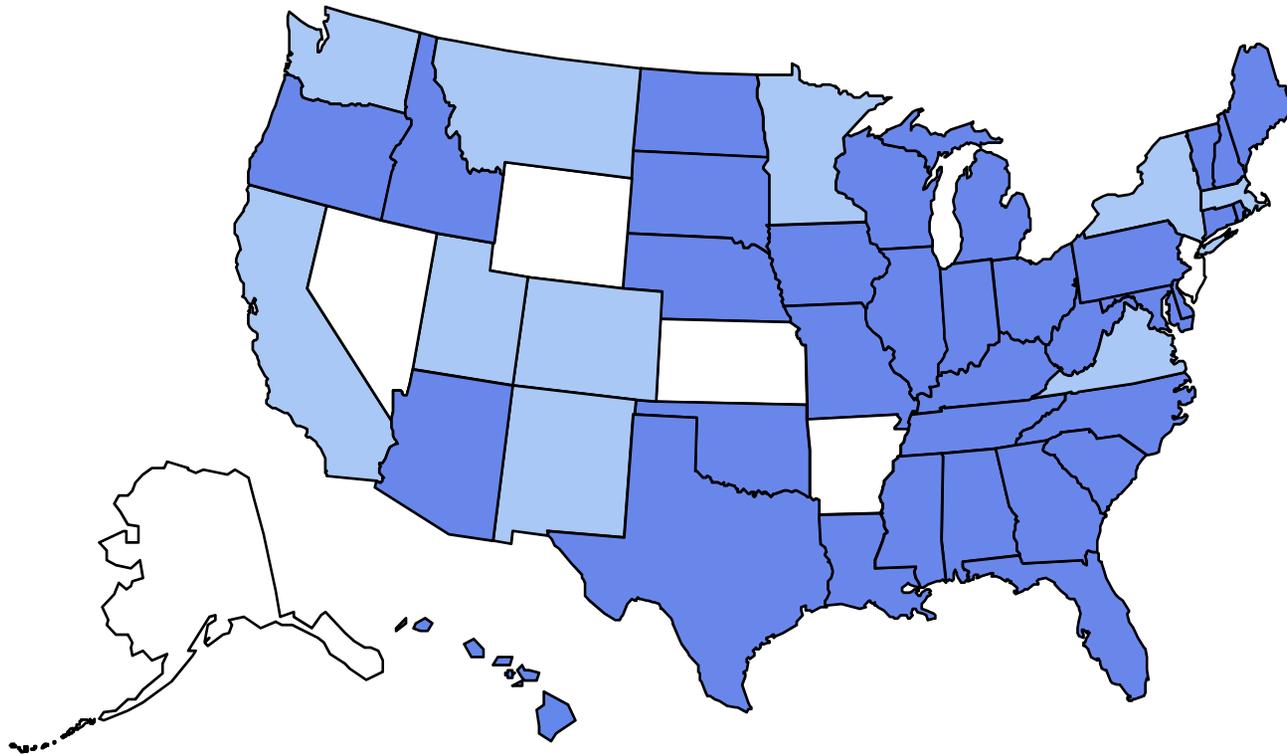
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

## BRFSS, 1990

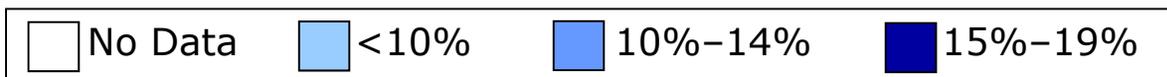
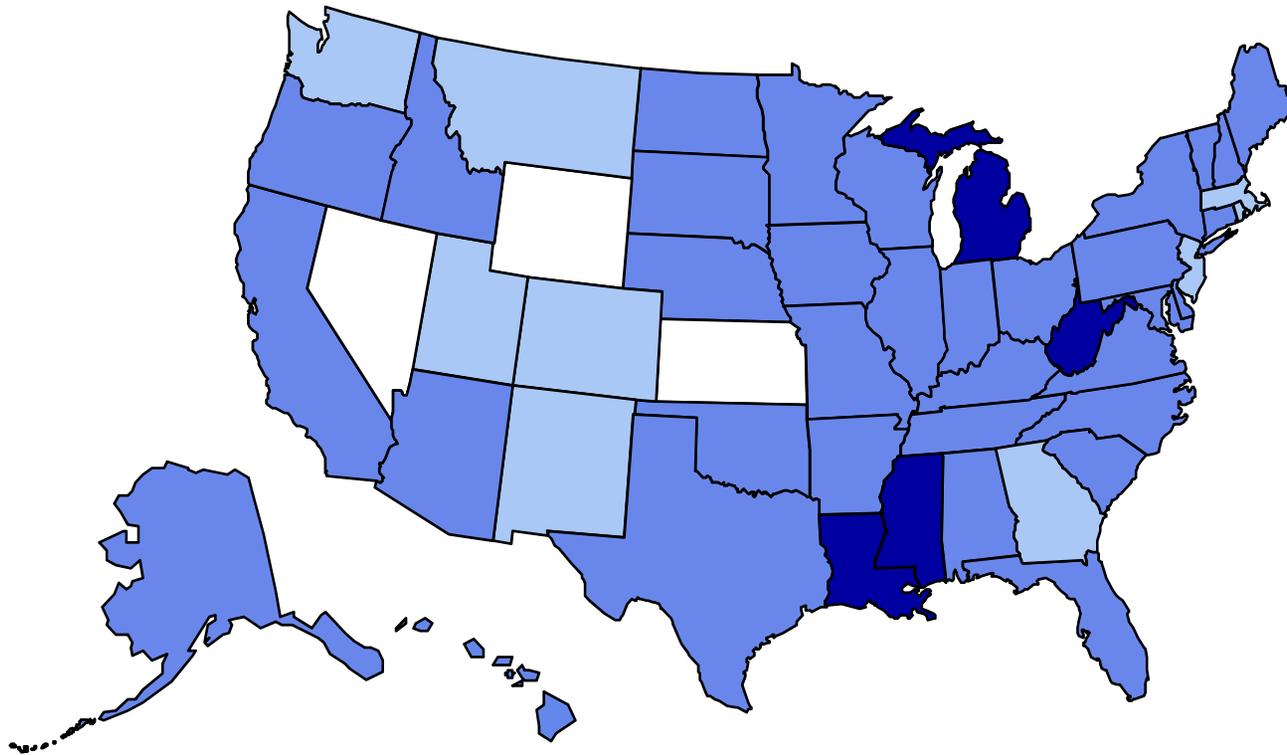
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

**BRFSS, 1991**

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)

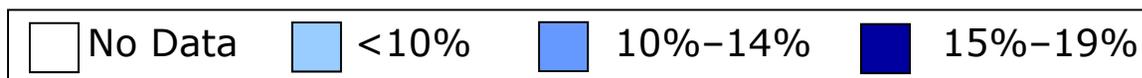
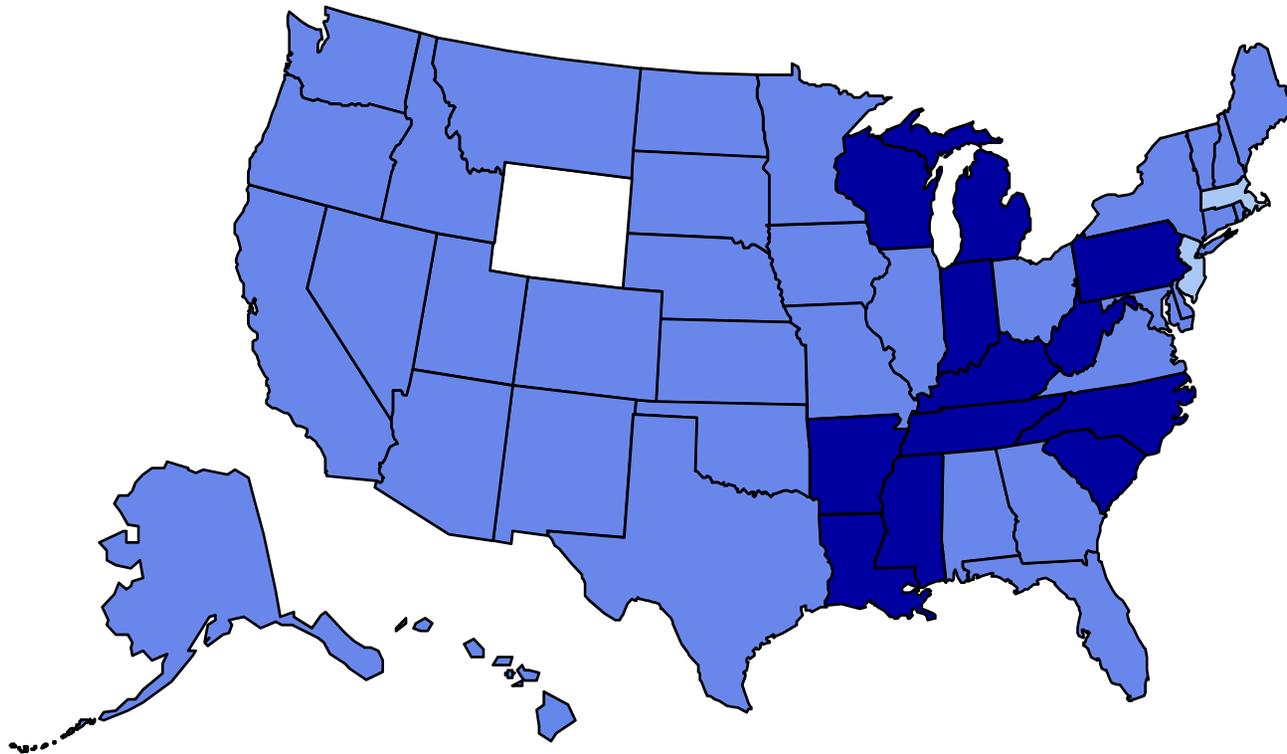




# Obesity Trends\* Among U.S. Adults

## BRFSS, 1993

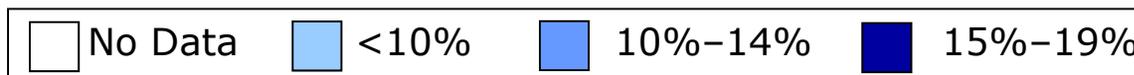
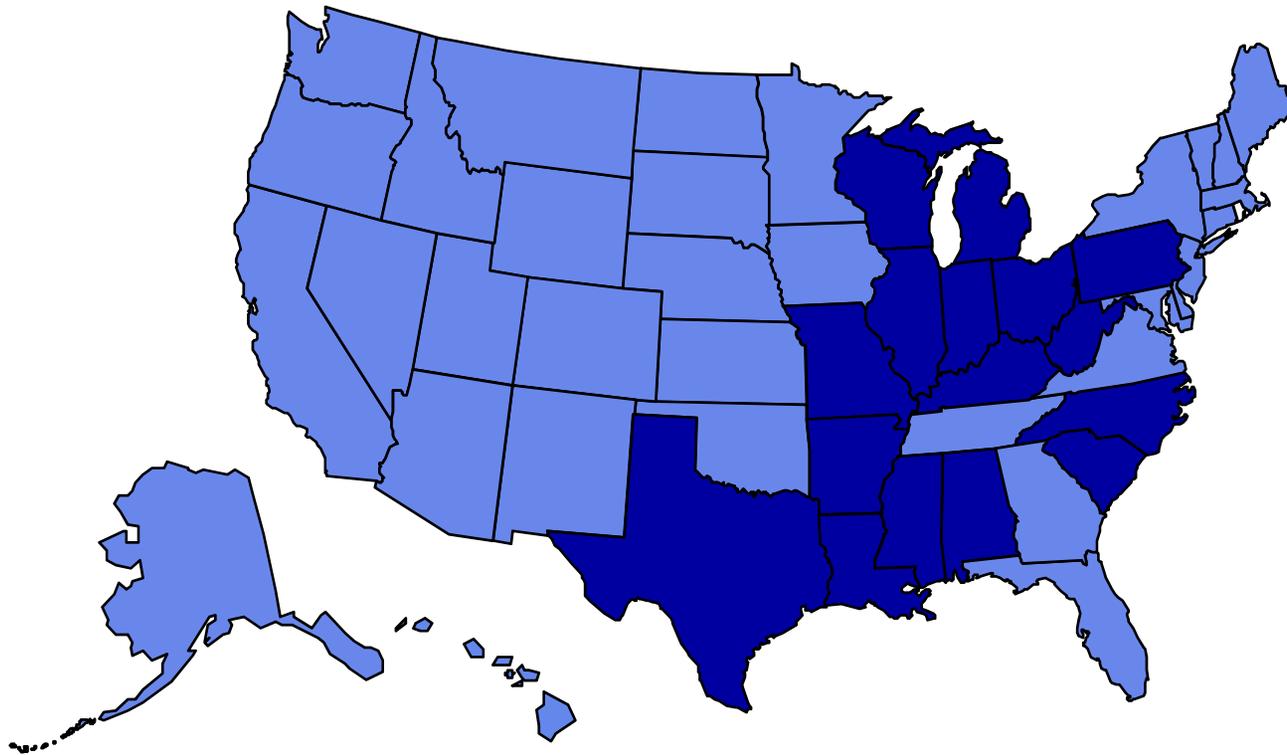
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

**BRFSS, 1994**

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



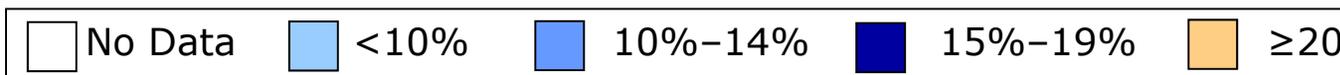
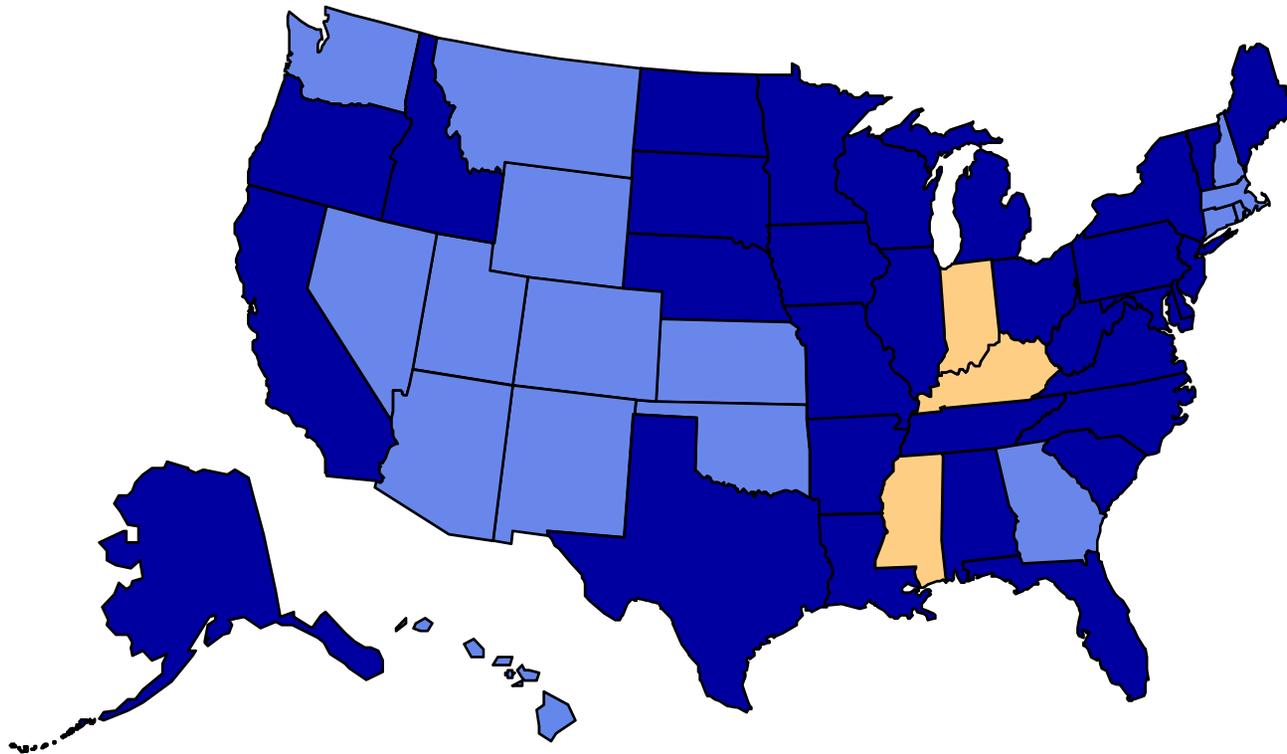




# Obesity Trends\* Among U.S. Adults

**BRFSS, 1997**

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)

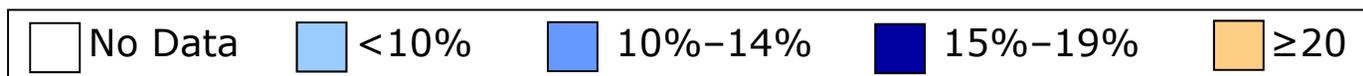
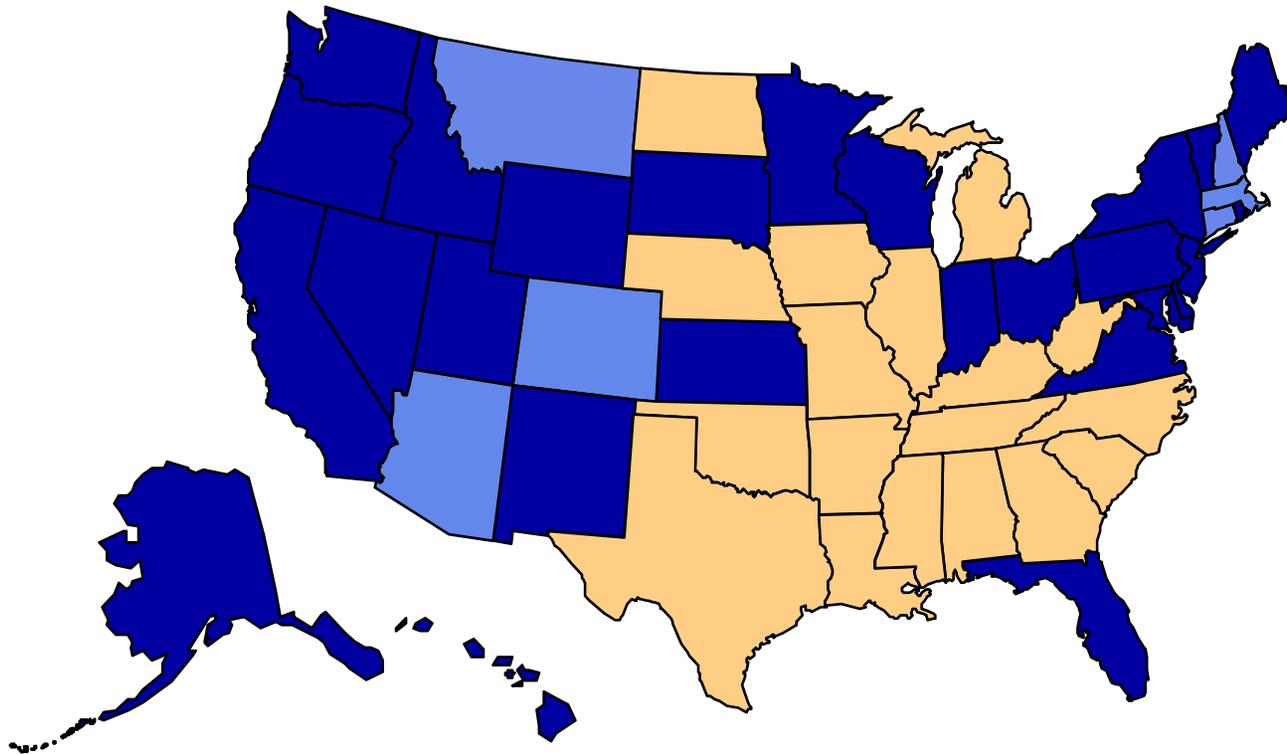




# Obesity Trends\* Among U.S. Adults

## BRFSS, 1999

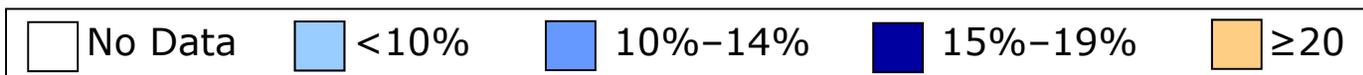
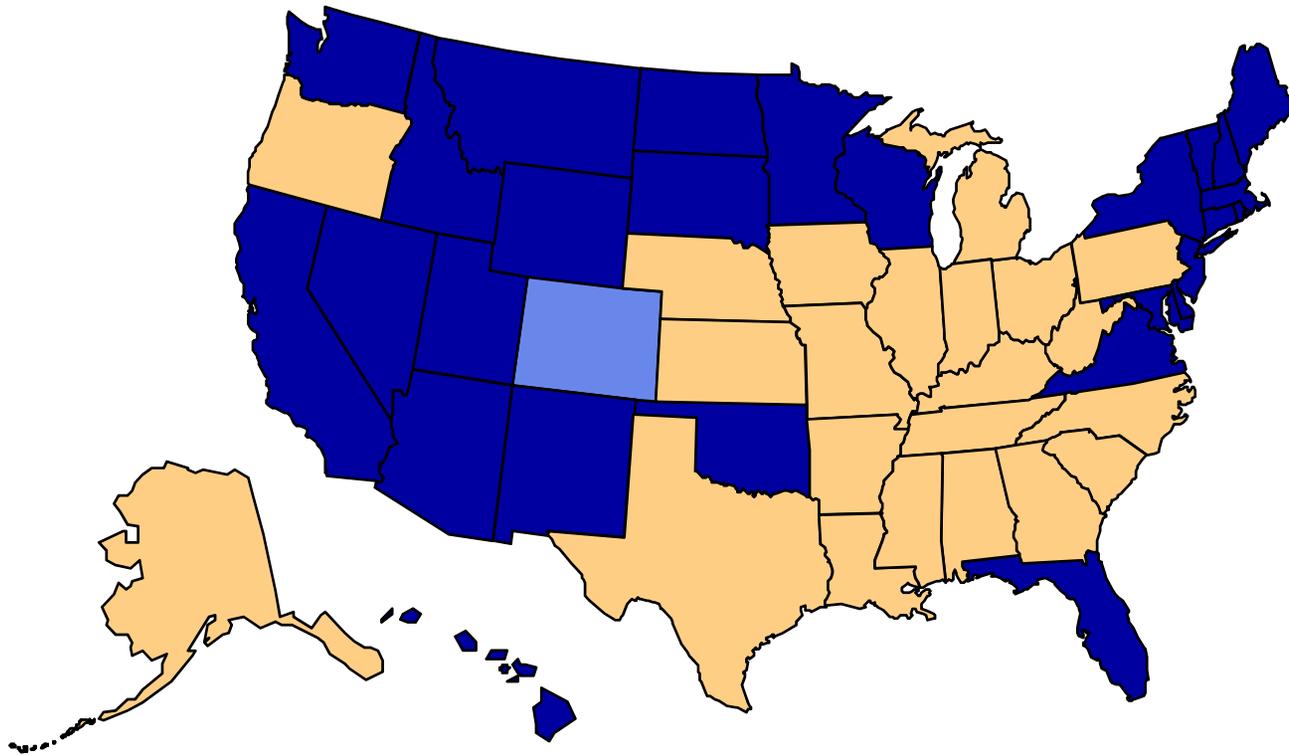
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

## BRFSS, 2000

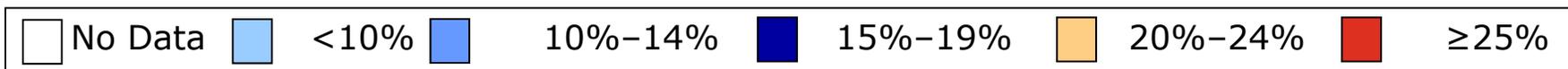
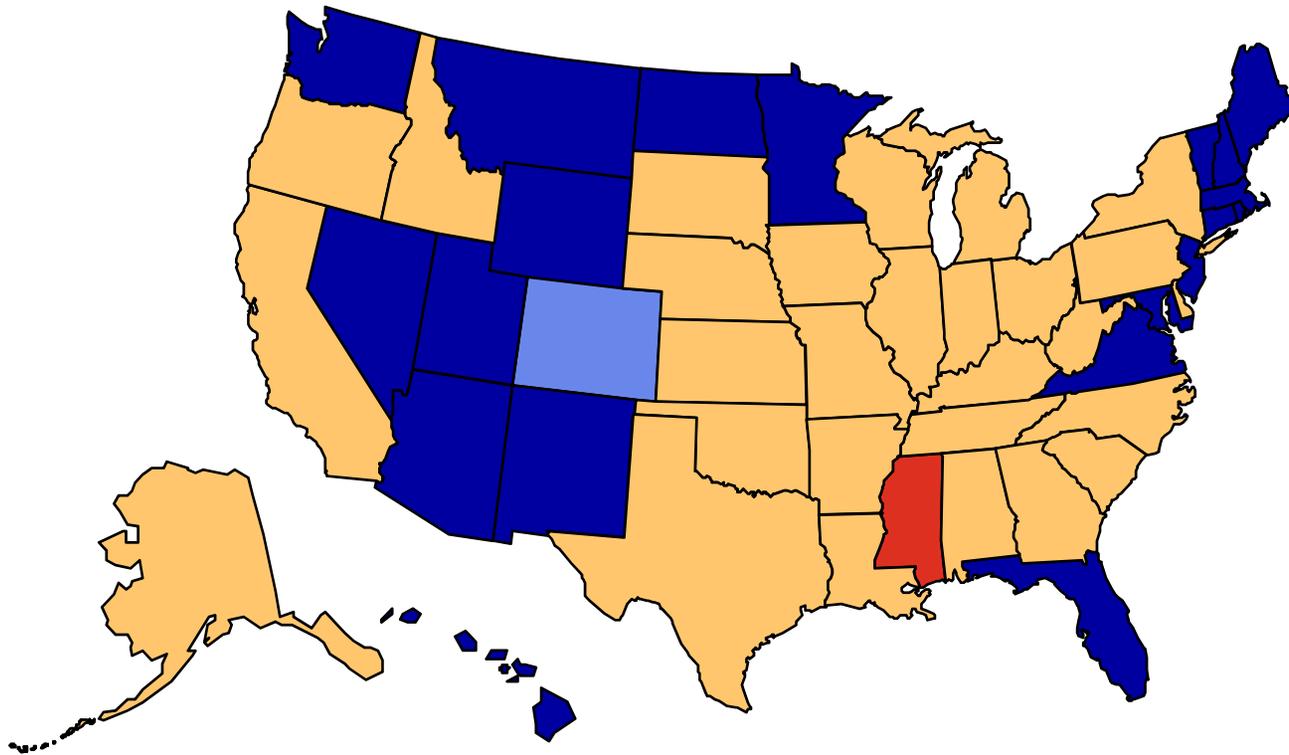
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

## BRFSS, 2001

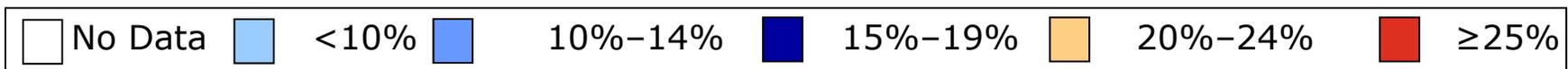
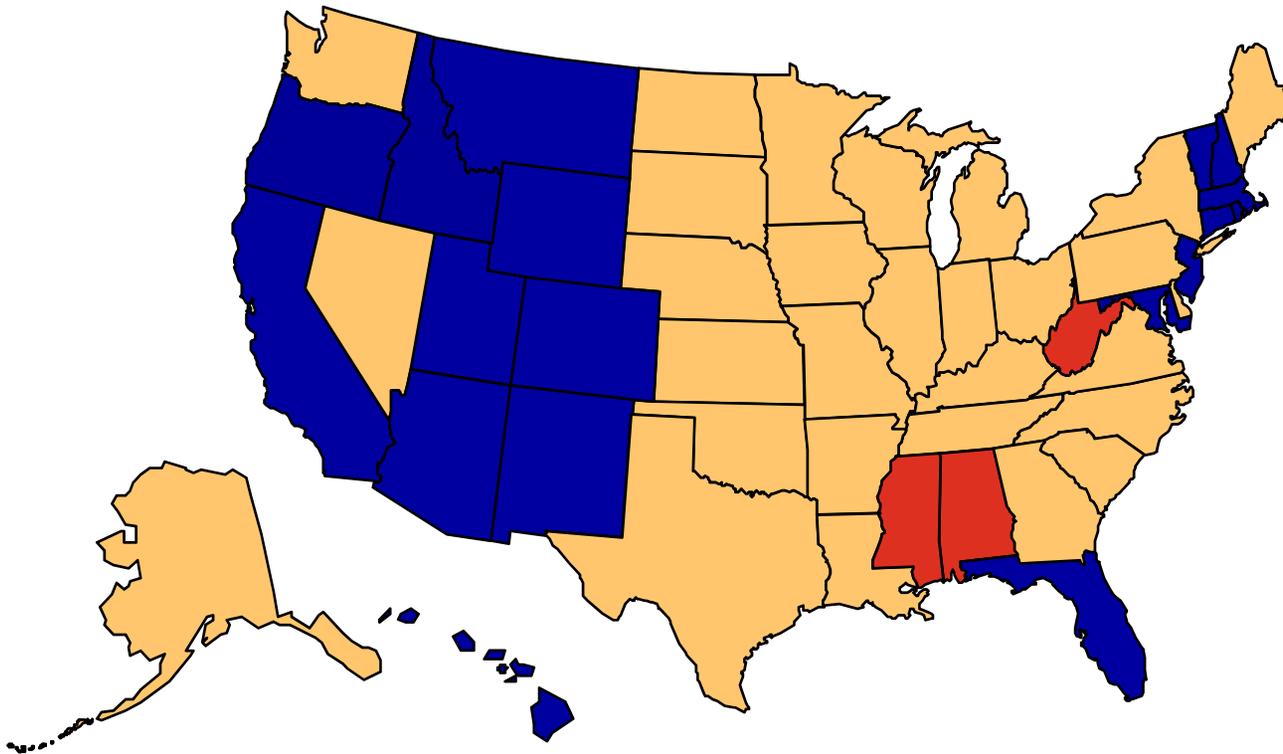
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



# Obesity Trends\* Among U.S. Adults

## BRFSS, 2002

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)



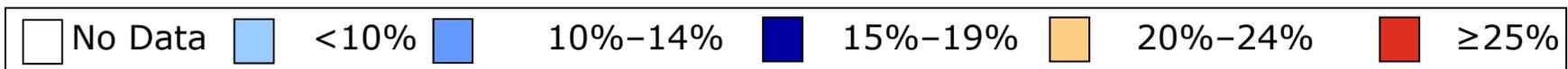
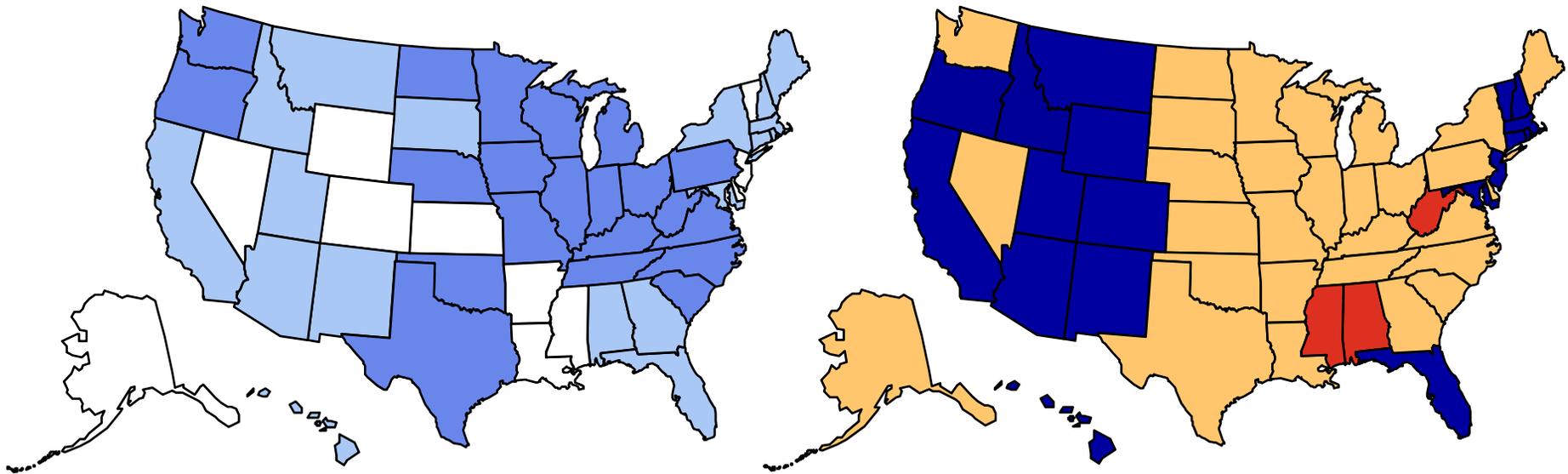
Source: Behavioral Risk Factor Surveillance System, CDC

# Obesity Trends\* Among U.S. Adults

(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5' 4" woman)

1989

2002



Source: Behavioral Risk Factor Surveillance System, CDC

# *Obesity as a Modifier of Environmental Exposures*

- Trends extend even further back; during WWII 35-40% of draft age white males were judged to be malnourished.
- Major issue is that we have very little science based data on obesity as a modifier of environmental exposures.

# *Maryland Health Rank (Rate), 1998 and 2003*

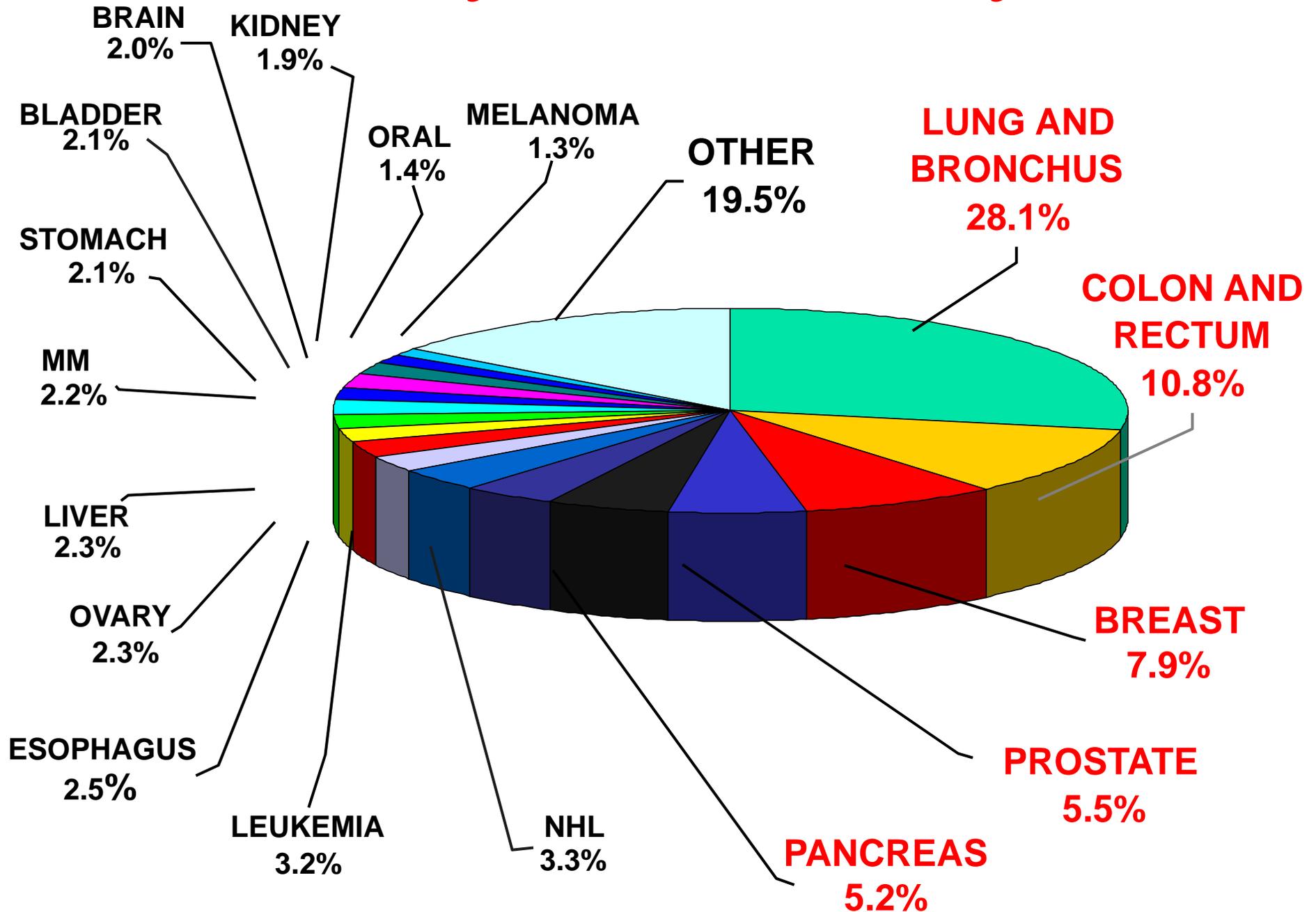
	<b>Current Tobacco Use</b>	<b>No Exercise</b>	<b>&lt;5 Fruits and Veggies</b>	<b>Overweight</b>
<b>1998</b>	<b>31/32<sup>nd</sup> (22.4%)</b>	<b>36/37<sup>th</sup> (66.2%)</b>	<b>49<sup>th</sup> (69.9%)</b>	<b>14<sup>th</sup> (34.4%)</b>
<b>2002</b>		<b>23/24<sup>th</sup> (77.0%)</b>		<b>28<sup>th</sup> (57.9%)</b>
<b>2003</b>	<b>40<sup>th</sup> (20.1%)</b>		<b>46<sup>th</sup> (71.1%)</b>	

Source: CDC.Wonder.gov  
Prevalence is the proportion of adults reporting

**GREEN=GOOD**  
**RED=BAD**

**Maryland Cancer Mortality and  
Incidence Statistics:  
UPDATE AND SOME  
GOOD NEWS**

# Maryland Cancer Mortality: 1999-2001



# *Cancer Mortality Change in Maryland 1989-93 to 1999-2001*

	Rank Among States and DC	Average Annual % Change	Lives NOT Lost to Cancer
<i>All Cancers</i>	5 <sup>th</sup> to 16 <sup>th</sup>	-1.4%	6,730
Lung/bronchus	13 <sup>th</sup> to 18 <sup>th</sup>	-1.1%	1,510
Colon/rectum	4 <sup>th</sup> to 8 <sup>th</sup>	-2.2%	1,190
Prostate (male)	6 <sup>th</sup> to 11 <sup>th</sup>	-3.7%	1,520
Breast (female)	11 <sup>th</sup>	-2.2%	770

All Cancers in MD is now 138% of Utah's rate (compared to 210% in 1989-93)Source:

<http://wonder.cdc.gov>

Kanarek, 2004