

---

If Not Us, Who? If Not Now,  
When?

# Prevention Science and the Larger Context

---

Anthony Biglan

Oregon Research Institute

[tony@ori.org](mailto:tony@ori.org)



---

# Overview

- Prevention science successes
- A little history
- Two examples of the need to expand our scope
- The relevance of prevention science to all the other problems our society faces
- A stab at being inspirational





“Some men see things as they are and say, 'Why?’

I dream things that never were and say, 'Why not?’”



---

# The progress of prevention science

- Evidence of efficacy in preventing
  - Antisocial behavior
  - Tobacco, alcohol, and other drug use
  - Depression
  - Marital discord
  - Academic failure
  - School dropout
- Preventive interventions that affect multiple outcomes



---

# Yet, achieving population-wide effects

- Requires prevention scientists to expand the scope of their research to address aspects of the larger social context that influence the problems we seek to prevent



---

# Two examples

- Marketing practices that harm public health
- Poverty



---

# But First

---

## A Little Public Health History



---

# London, in the 1840s and 1850s

- The largest and wealthiest city in the world
- Few houses were connected to any sewer system
  - Urine and excrement simply collected in cellars and yards



---

# “Night air (miasma)” was believed to be toxic

- To avoid it, many people closed up their houses tightly at night
- This led to many deaths by asphyxiation
  - With cellars full of human excrement, the houses filled with methane



---

# A sewage system initially made matters worse

- As Londoners developed a sewage system, they simply flushed sewage into the Fleet River, which flows into the Thames
- The result was continuing deaths due to cholera
- When the Lambeth Water Company moved its source of supply upstream from the most polluted part of the river, the death rate in its supply area dropped from 130 to 37 per 1,000



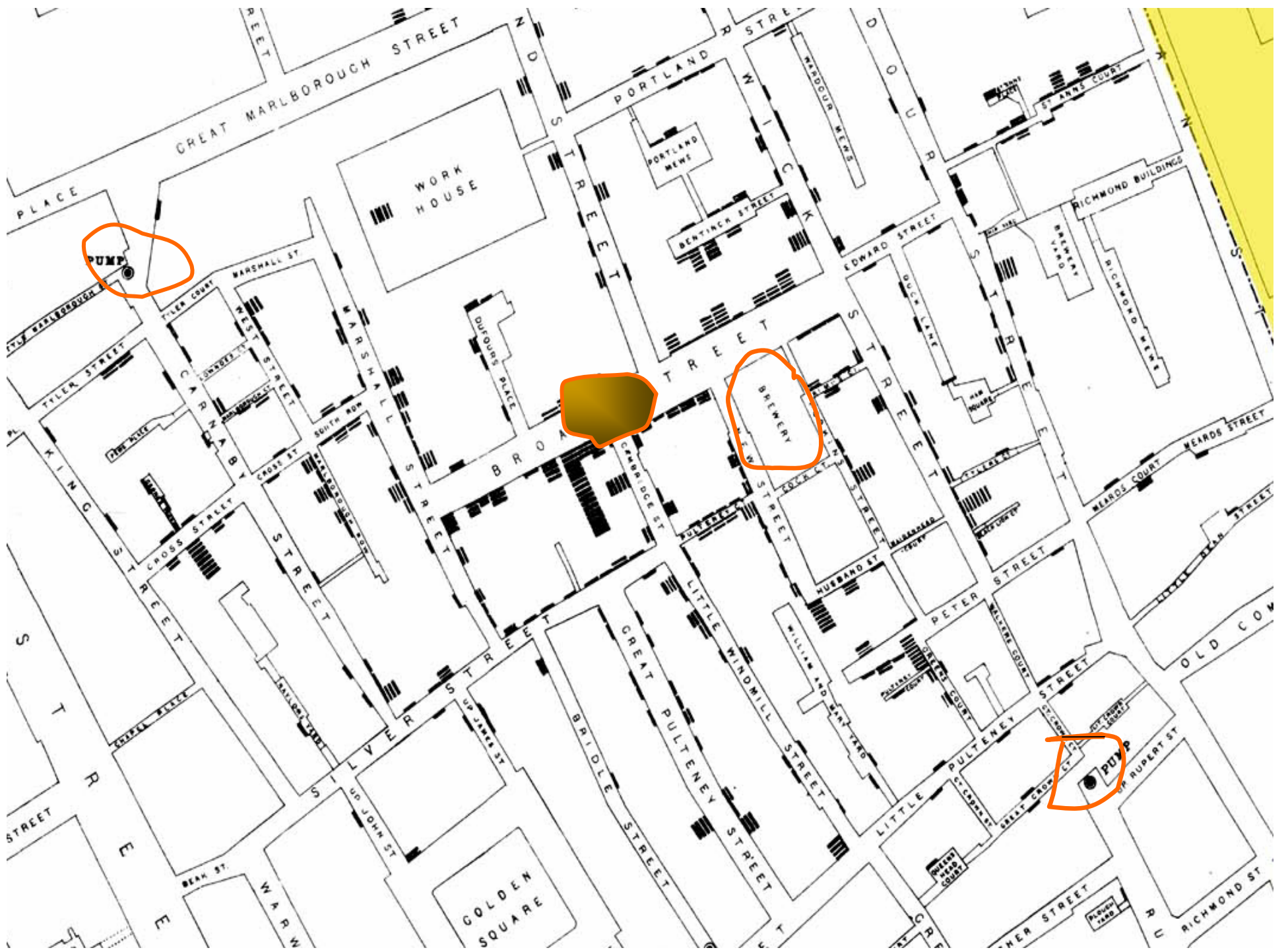


# John Snow and the Broad Street Pump

1813-1858

- Hypothesis: cholera due to contaminated water
- An outbreak began on August 31, 1854 in the Soho area
- By September 10, it had killed 500 people





---

# Lessons

- Focus on incidence and prevalence of problems in populations
- Identify *all* risk factors
- Pragmatic: Employ *every* strategy that works
  - ❑ Remove the pump handle
  - ❑ Not just treatment
  - ❑ Not just interventions targeting individuals
  - ❑ Programs, practices, and ***policies***



---

But there is one other  
important lesson from the  
Broad Street Pump

---



---

Practices we now find  
appalling were once  
commonplace and accepted

---



---

# Perhaps prevention science can

- Bring us to the point where we would be appalled to allow people to be exposed to risk factors that are currently commonplace
  - Harmful marketing practices
  - Poverty
- Make effective childrearing practices as fundamental as sanitation



---

# Some modern-day pump handles

- Tobacco marketing
- Alcohol marketing
- Food marketing



---

# Tobacco marketing—a risk factor for smoking

- In *U.S. vs. Philip Morris et al.*, Judge Kessler ruled that the tobacco companies
  - ❑ “falsely denied, distorted, and minimized the significant health consequences of smoking”
  - ❑ know that their low tar and nicotine cigarettes are not safer but continue to market them



---

## With respect to youth marketing, Judge Kessler ruled

“The evidence is clear and convincing...that Defendants have marketed to young people 21 and under while consistently, publicly, and falsely denying that they do so... .Defendants’ marketing activities are intended to bring new, young, and hopefully long-lived smokers into the market in order to replace those who die ...or quit.”



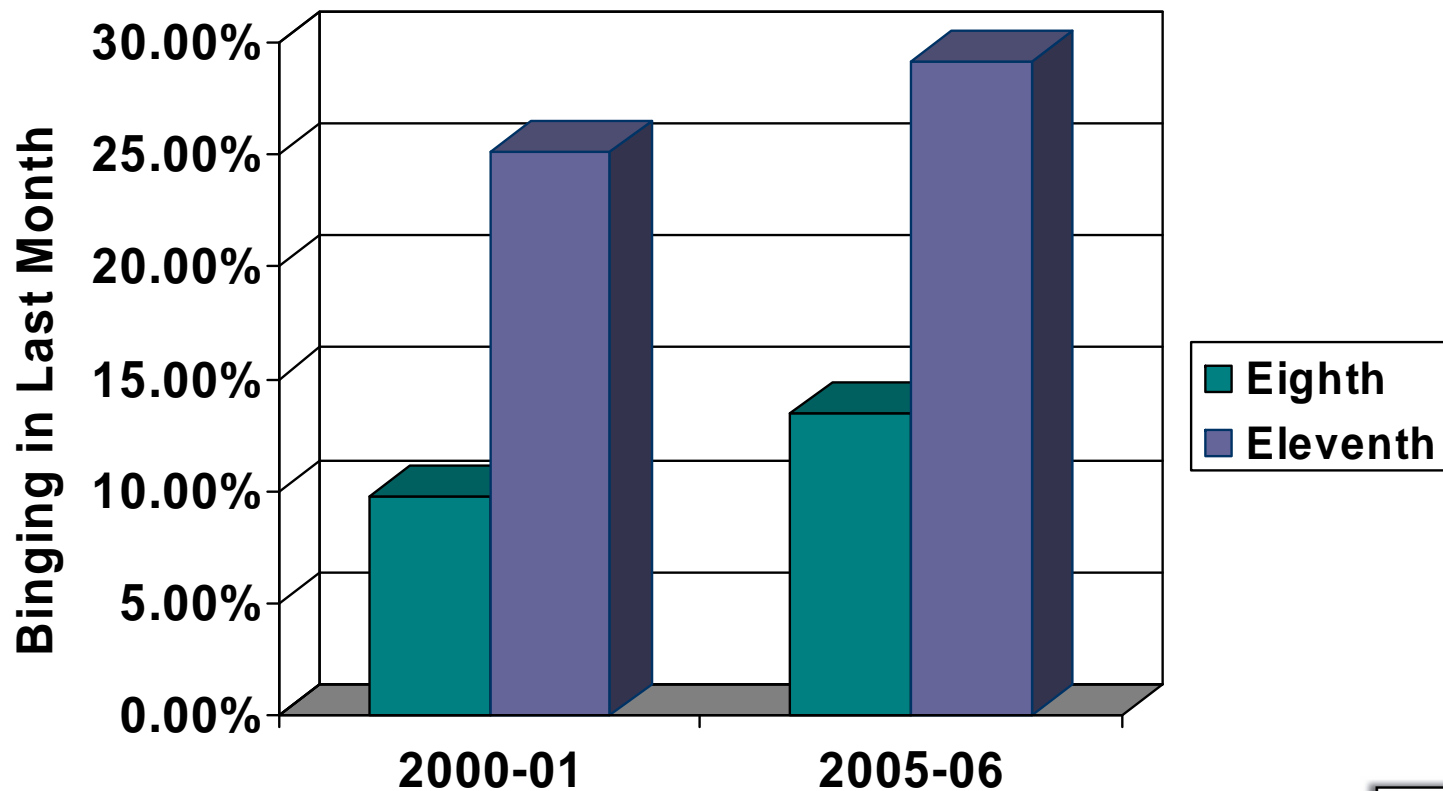
---

# Alcohol marketing (thanks to Joel Grube)

- Evidence less clear
- Much evidence that alcohol marketing reaches teens
- Teens are exposed to more beer ads than adults



# A high prevalence of adolescent binge drinking—e.g., Oregon



---

# And...

- The most heavily advertised brands are the most popular brands
- Greater exposure to alcohol advertising predicts
  - Positive attitudes toward drinking
  - More drinking



---

# Alcohol marketing

- Amount of ads in an area is related to alcohol-related auto crash fatalities
- Restrictions on advertising lower alcohol consumption and rates of alcohol-related auto crashes



Todo Por Una  
**BUD LIGHT**



**BUD  
LIGHT**

**BUD  
LIGHT**  
BEER

*Brewed with the Finest  
Ingredients for a  
Refreshingly Smooth Taste.  
Anheuser-Busch, Inc.  
St. Louis, Mo.  
12/7/03*

Todo Por Una

**BUD LIGHT**



©2003 Anheuser-Busch, Inc. Bud Light® is a registered trademark of Anheuser-Busch, Inc.

[www.budlight.com](http://www.budlight.com)

---

# Food marketing

- Food production has become more economically efficient for the food industry but has increased the consumption of less healthy food (Pollan, 2006)
- Increases in efficiency of corn production and subsidies for corn have led to it being widely used to feed livestock and poultry, sweeten drinks, make many high calorie, non-nutritious foods



---

## Two results:

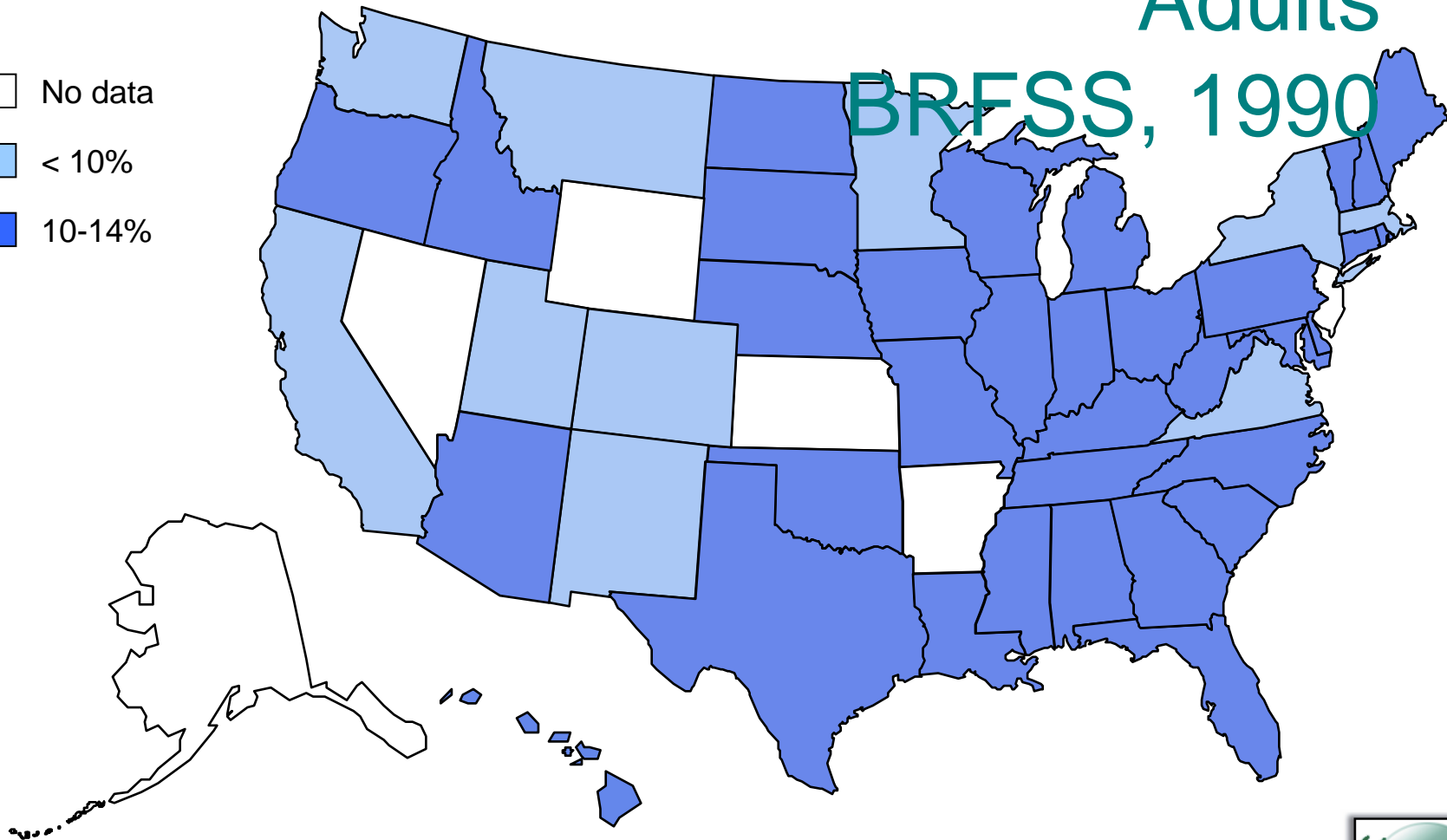
- Low levels of omega-3 fatty acid relative to levels of Omega 6 (as Joe Hibbeln just discussed) contributes to depression, ADHD, and cardiovascular disease
- Cheap soft drinks and other corn-based omega-6 based products are contributing to obesity and diabetes



# Obesity trends\* among U.S. Adults

BRFSS, 1990

- No data
- < 10%
- 10-14%



Source: Mokdad et al., 2001

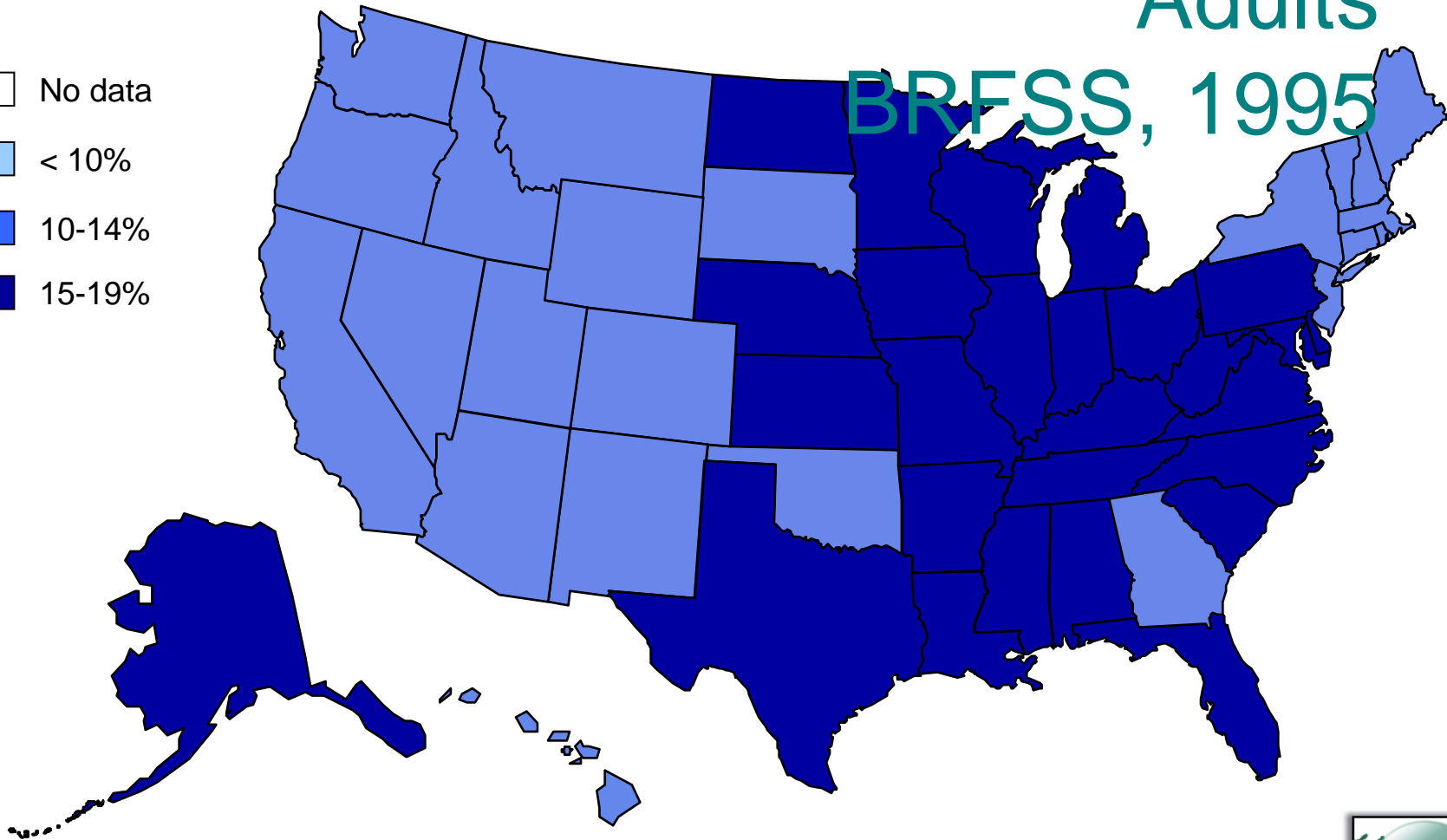
(\*BMI  $\geq 30$ , or  $\sim 30$  lbs overweight for 5'4" woman)



# Obesity trends\* among U.S. Adults

BRFSS, 1995

- No data
- < 10%
- 10-14%
- 15-19%



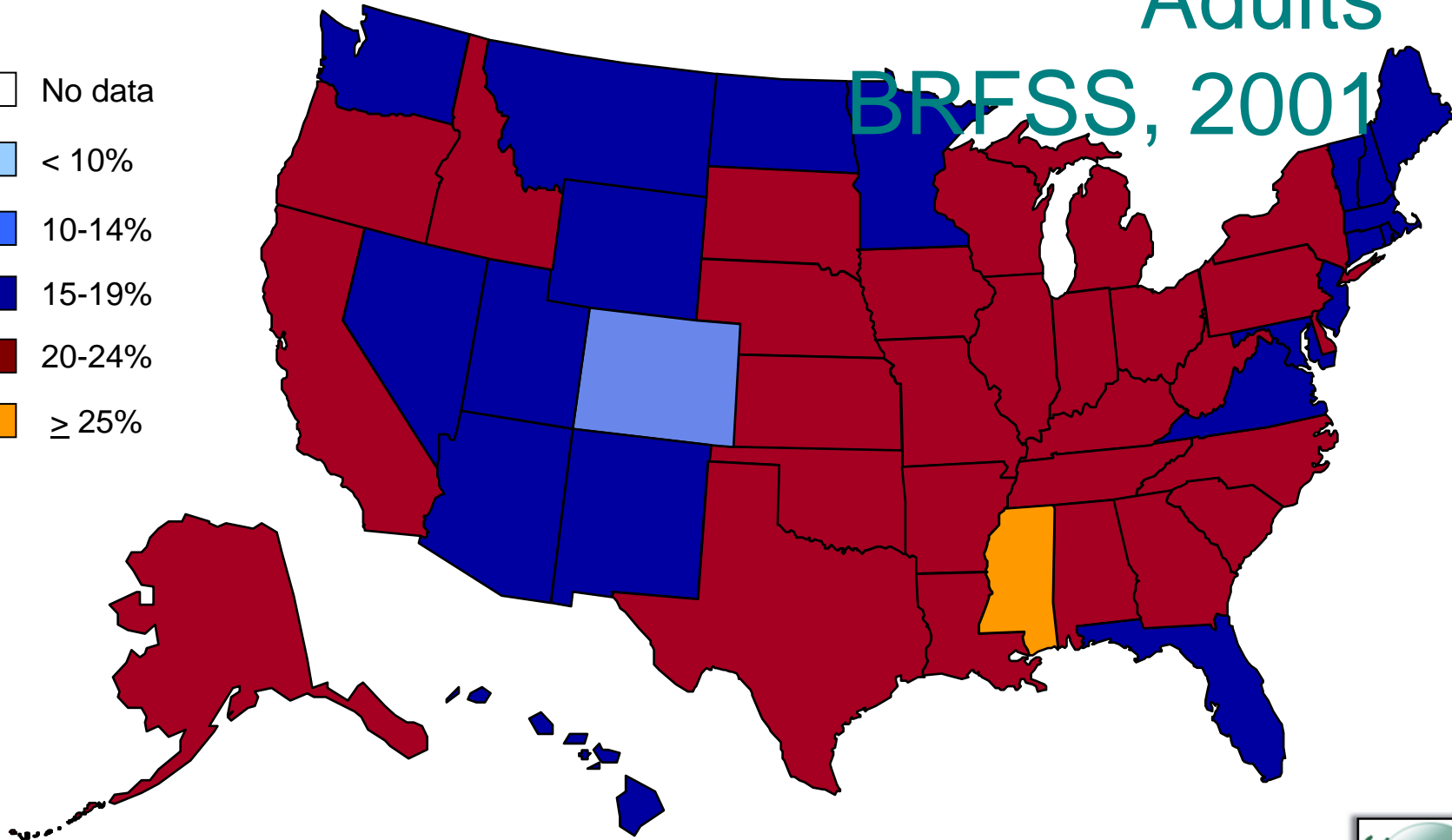
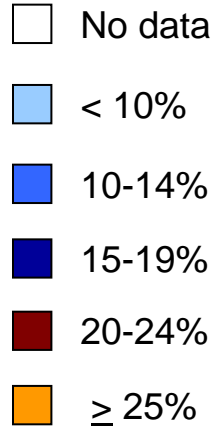
Source: Mokdad et al., 2001

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



# Obesity trends\* among U.S. Adults

BRFSS, 2001



Source: Ford et al., 2005



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

---

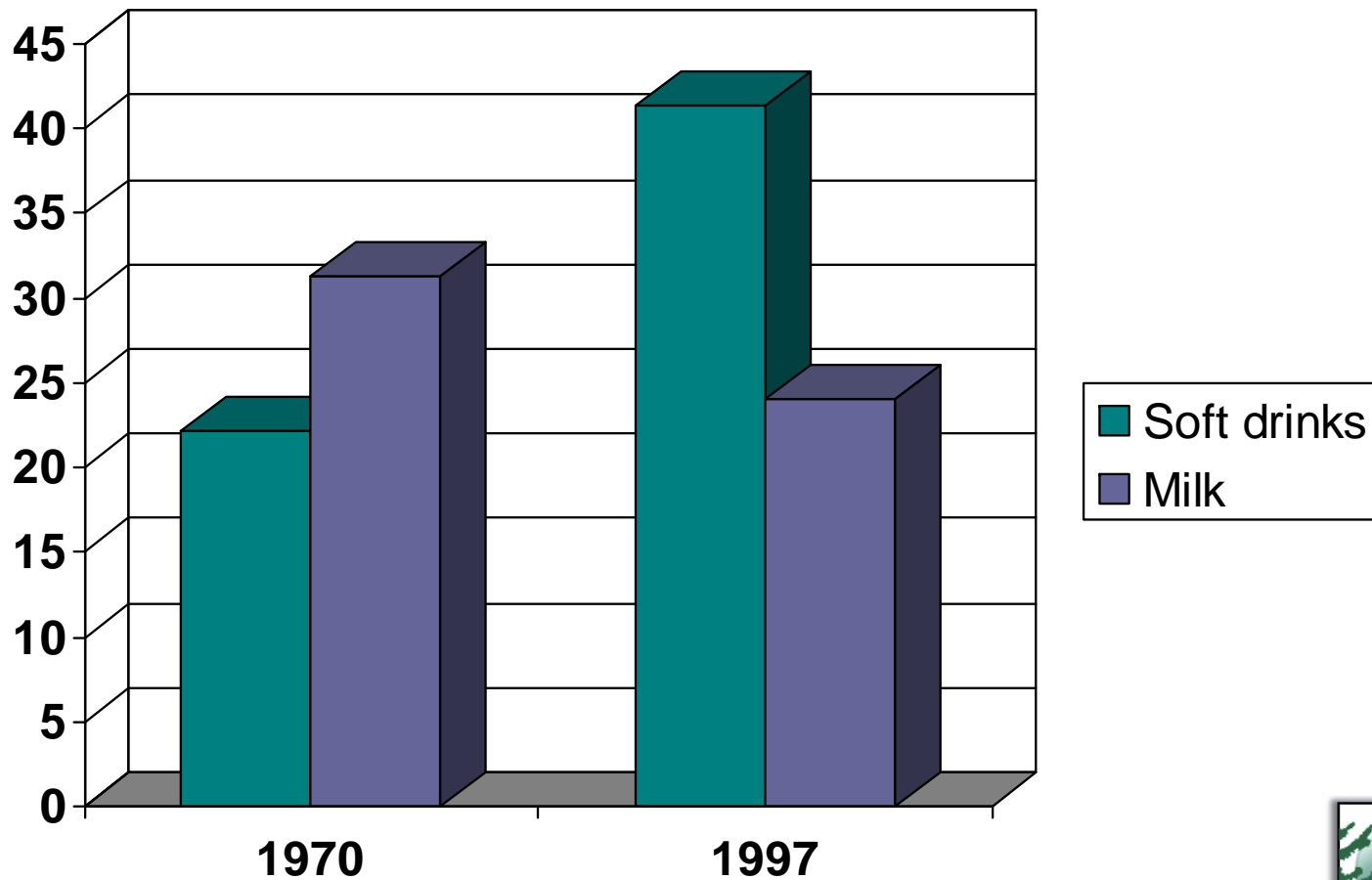
# Food marketing

---

With thanks to Marion Nestle



# Per capita soft drink and milk consumption in the U.S. (Gallons)



---

# Pouring rights

- Exclusive contracts to vend a soft drink in a school
- One Colorado administrator
  - “The Coke Dude”
  - “We must sell 70,000 cases of product... at least once during the first three years... .If 35,439 staff and students buy one Coke product every other day for a school year, we will double the required quota. Here is how we can do it...Allow students to purchase and consume vended products throughout the day...”



---

# For prevention science to contribute further to societal wellbeing

- We need an effective analysis of harmful corporate practices
  - Their contributions to problems
  - Influences on corporate practices
  - Strategies for altering harmful practices



---

# The principle of *selection by consequences*

- Practices of groups and organizations are selected and maintained by their material consequences
  - Biglan, A. (2003). Selection by consequences. *Prevention Science*, 4(4), 213-232
  - Diamond, J. (1999) *Guns, germs, and steel: The fates of human societies*. New York: Norton.
  - Diamond, J. (2004) *Collapse: How societies choose to fail or succeed*. New York: Viking Adult.



# The principle of *selection by consequences*

- Practices of groups and organizations are selected and maintained by their material consequences
  - Glenn S.S. (2004) Individual behavior, culture, and social change. *The Behavior Analyst*, 27, 133-152
  - Harris, M. (1979). *Cultural materialism: The struggle for a science of culture*. New York: Simon & Schuster.
  - Ponting, C. (1991). *A green history of the world: The environment and the collapse of great civilizations*. London: Penguin.
- 35 □ Wilson, D. S. (2003) *Darwin's cathedral*. Chicago:



---

# The metacontingency

- If a practice achieves an outcome, it may continue and may be adopted by other groups
  - Who observe its success
  - Who are progeny of the group that began the practice
- If sustaining outcomes are not achieved, the practice diminishes or ends



---

# Examples of metacontingencies

- Development of agriculture
- Quality control procedures in the auto industry
- Collapse of civilizations, e.g., Easter Island
- Spread of capitalism



---

# The Evolution of Tobacco Marketing Practices

---



---

# John Pierce and Betsy Gilpin's Analysis of Tobacco Marketing

---

Distinct periods over the last century  
and a half in which cigarette marketing  
increased smoking initiation of targeted  
groups



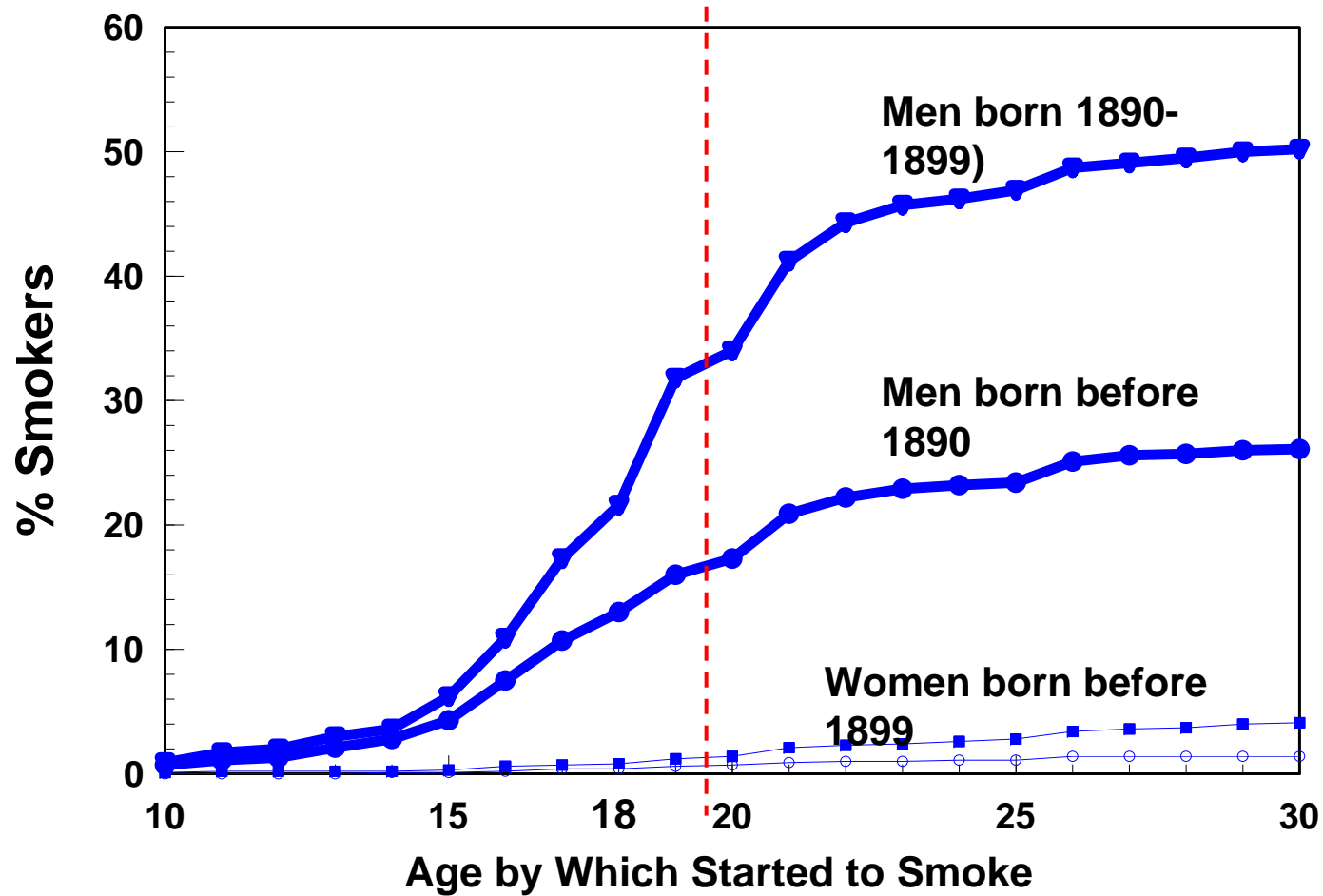
---

# R. J. Reynolds' Camel marketing campaign—1913- 1921

---



# First camel campaign increased the number of male smokers



SOURCE: Pierce & Gilpin, 1995



---

# The result

- Reynolds' market share rose from 0.2% to 50%

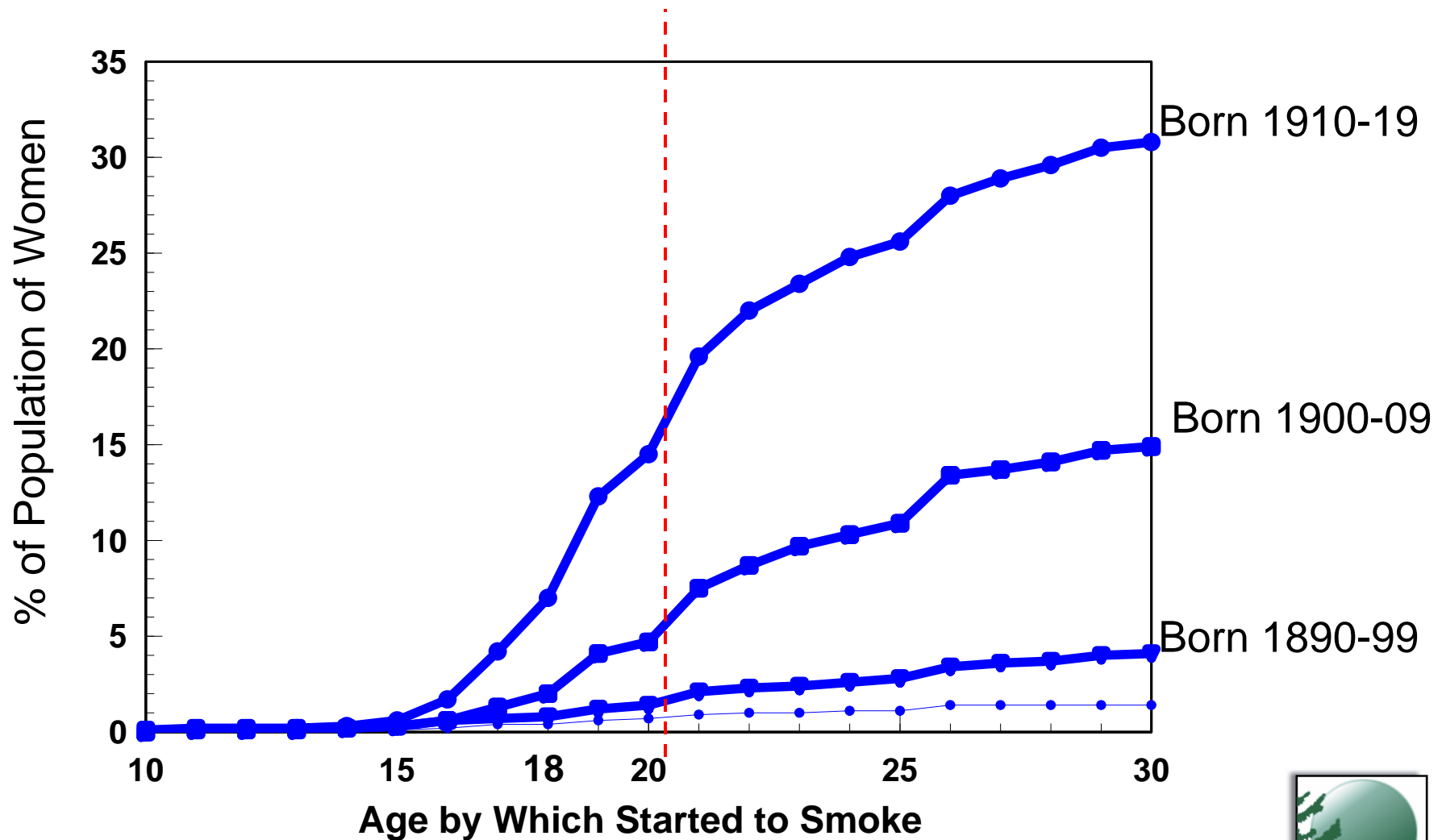


## Mid-1920s—first successful campaign to target

- “Reach for a Lucky Instead of a Sweet”
- “Avoid that future shadow”
- “When tempted, reach for a Lucky”



# Smoking rates by age in women



---

# Change in market share for Camel vs. Lucky Strike 1925-30

- Lucky Strike's "Reach for a Lucky instead of a Sweet"
  - Sales jumped from 12 to 42 billion cigarettes
- Camel did not target women
  - Sales stable at 33 Billion



At the 1906 Claren County Fair, the gentlemen were baffled by the women's insatiable delight in the game of Blindman's Bluff.

You've come a long way, baby.

**VIRGINIA SLIMS**

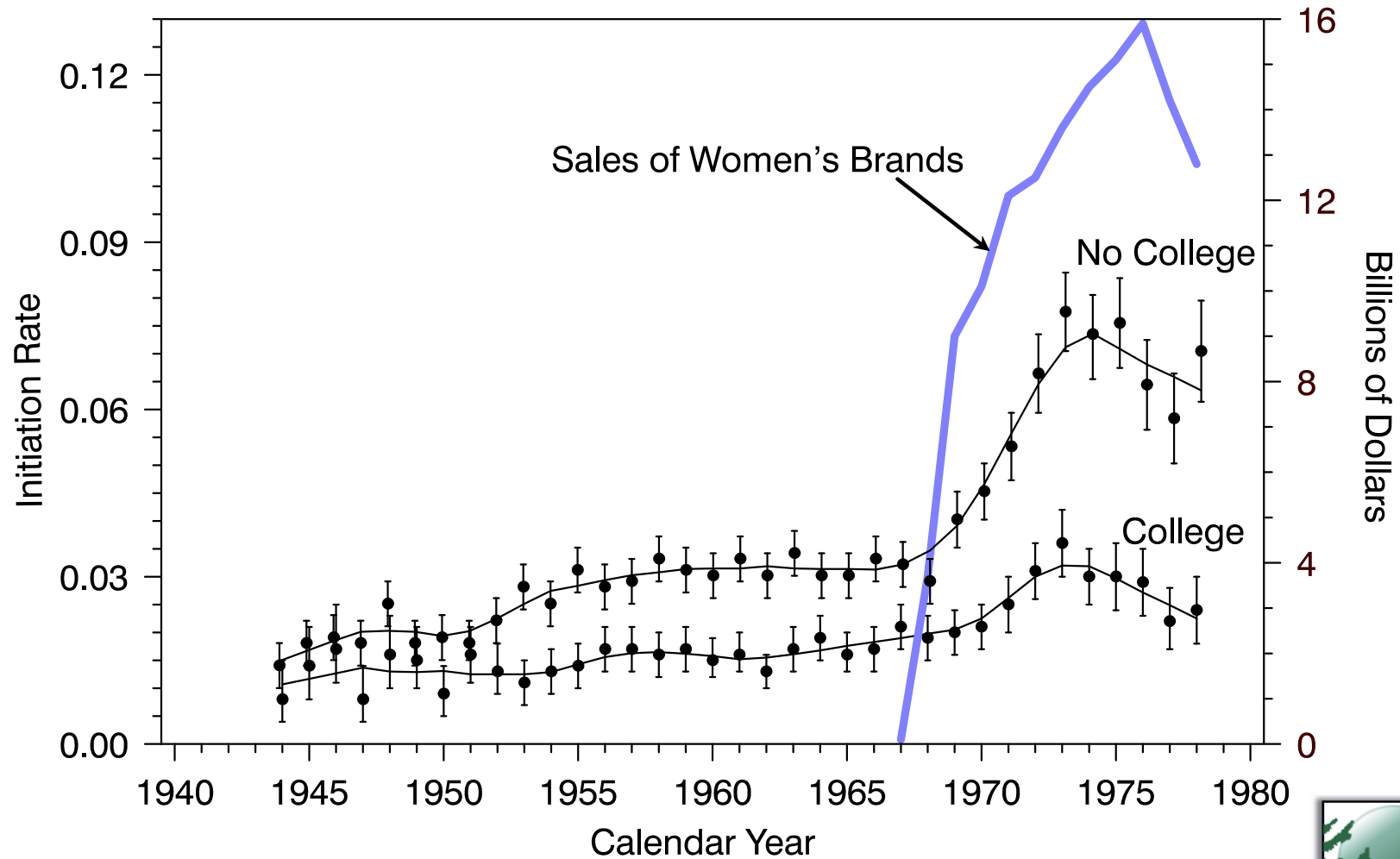
Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

16 mg. "tar," 1.0 mg. nicotine av. per cigarette, FTC Report, Apr. '76

- You've come a long way, baby



# Effect of Virginia Slims on Young People (10-17 years of age)



Pierce et al., 1994



---

# Tobacco company public relations and lobbying practices essential to profits

- Denied health effects
- Denied marketing to youth
- Prevented restrictions on marketing
  - Youth “prevention” activities were used to prevent marketing



---

# Summary

- Tobacco marketing is a modern day pump handle
- The marketing, public relations, and lobbying practices of the tobacco companies were selected by their consequences—profits and market share



---

# Similarly

- Evidence suggests that the practices of the alcohol and food industry are selected by these same consequences



---

# Prevention science must expand its scope to

- Analyze corporate practices that contribute to problems we seek to prevent
- Analyze the contingencies that select corporate practices
- Develop and test strategies for altering those practices
  - Policies
  - Direct interventions with corporate leaders



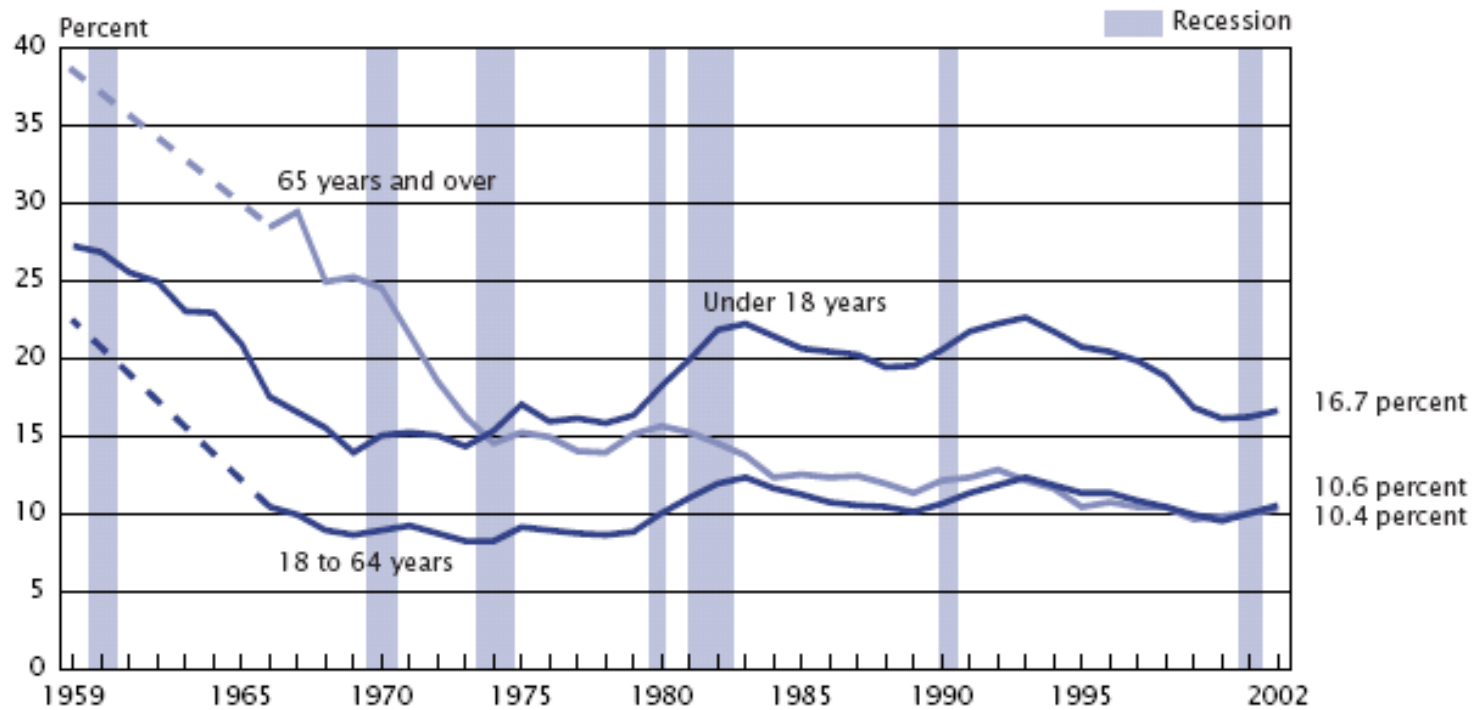
---

# Poverty: A Risk Factor for Diverse Problems

---



Figure 2.  
**Poverty Rates by Age: 1959 to 2002**



Note: The data points represent the midpoints of the respective years.  
 Data for people 18 to 64 and 65 and older are not available from 1960 to 1965.  
 Source: U.S. Census Bureau, Current Population Survey, 1960-2003 Annual Social and Economic Supplements.



---

The U.S. ranks 25th out of 25 developed countries in the proportion of children in households with income less than 50% of the median income for that country

---



---

## Poor children are

- Twice as likely to be in poor health
- Three times as likely to suffer lead poisoning
- At greater risk for anemia and iron deficiency
- More likely to have stunted growth
- More likely to have injuries and accidents
- More likely to be hospitalized



---

# Poverty is associated with higher rates of

- Mild mental retardation
- School failure and drop out
- Antisocial behavior
- Depression
- Poor self-regulation



---

# Poorer neighborhoods have higher rates of

- Mortality
- Cardiovascular disease
- Obesity
- Partner violence
- Smoking
- Adolescent alcohol consumption



---

# Poor children

- Less likely to have health coverage
- Uninsured children have more unmet health problems and more delayed care



---

# Parenting: A key pathway from poverty to problem development

- Undermines parenting (Conger et al., 1994; Dodge et al., 1995; NICHD, 2001)
- Parents under financial strain
  - Less involved with their children
  - More likely to criticize and argue with them (Gutman et al., 2005)



---

# Parenting: A key pathway from poverty to problem development

- Such perturbed parenting leads to
  - ❑ Children and adolescents being more anxious and depressed (Elder et al., 1985; Gutman et al., 1999)
  - ❑ Failure in school (Gutman et al., 1999)
  - ❑ Aggressive behavior (NICHD, 2001)
  - ❑ Delinquency (Weatherburn & Lind, 2006)



---

# Poverty hampers the effects of preventive interventions

- Low family income was the strongest predictor of poor response to treatment in a recent meta-analysis of parent training studies



---

# Population attributable risk of poverty

- We are accustomed to looking at the population attributable risk of a risk factor for a single problem
- Need to shift our focus to the population attributable risk of major risk factors for multiple problems
- Poverty contributes to virtually the entire range of problems we seek to prevent
- Poverty should a major target for prevention



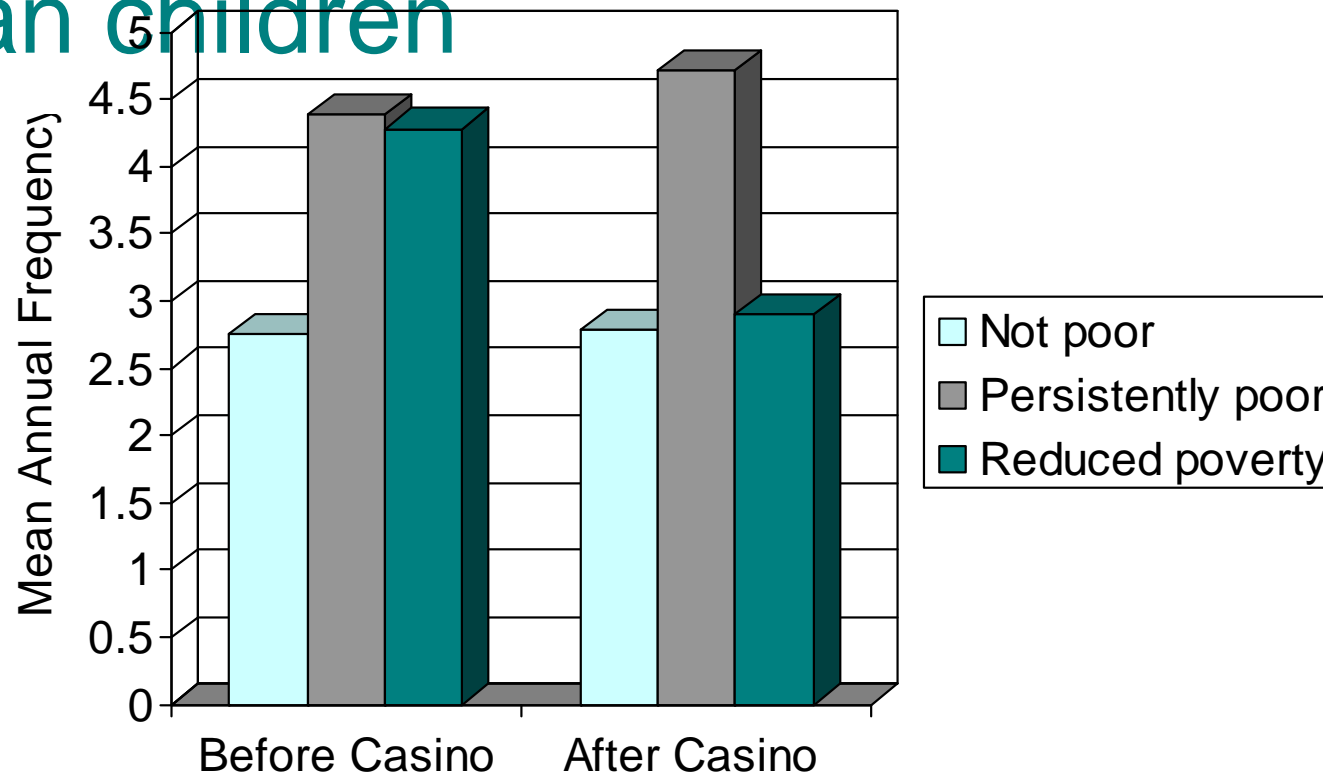
---

# Benefits of Ameliorating Poverty

---



# Impact of casino revenue on total psycho-pathology among American Indian children



---

# Numerous policies can reduce poverty

- The Earned Income Tax Credit
  - Supplemented the income of 19.5 million people in 1999
  - Lifted four million families above the poverty level
- Temporary Assistance to Needy Families (TANF)
- The Food Stamp Program
- Federal housing subsidies



---

# Many current policies increase poverty

- Lack of healthcare
  - The number one reason for bankruptcies in the U.S.
- Abandonment of health and safety regulations that could prevent worker injuries



---

# Consider the minimum wage

- Current minimum wage of \$5.15 per hour
  - 37% below the value of the minimum wage at its peak value in 1968
- 52 weeks of work at \$5.15 minimum wage earns \$10,712
  - 12.2% below the poverty line for a family of two
- During that same period, labor productivity rose about 80% in the U. S.
  - If minimum wage had risen in keeping with these changes, it would have been \$14.65 in 2001



---

## In sum,

- We have a set of economic policies that directly contribute to most of the problems we seek to prevent
- We need to understand how these policies have evolved and how they can be altered



---

# Dominant view in public discussion

- Government does not work
- Economic wellbeing will best be assured by limiting government and taxation and encouraging everyone to maximize their own wealth



---

If we continue to work for the wellbeing of families within the confines of these assumptions, our progress will inevitably be limited

---



---

If we continue to work for the wellbeing of families within the confines of these assumptions, our progress will inevitably be limited

---

It is like the boy running away from home...



---

# Current economic policies have been advocated by organizations that have directly benefit from those policies

## ■ Sources:

- ❑ Alterman E. (2003) *What liberal media*, New York: Basic Books.
- ❑ Lapham L. (2004) *Tentacles of rage*, *Harpers Magazine*.



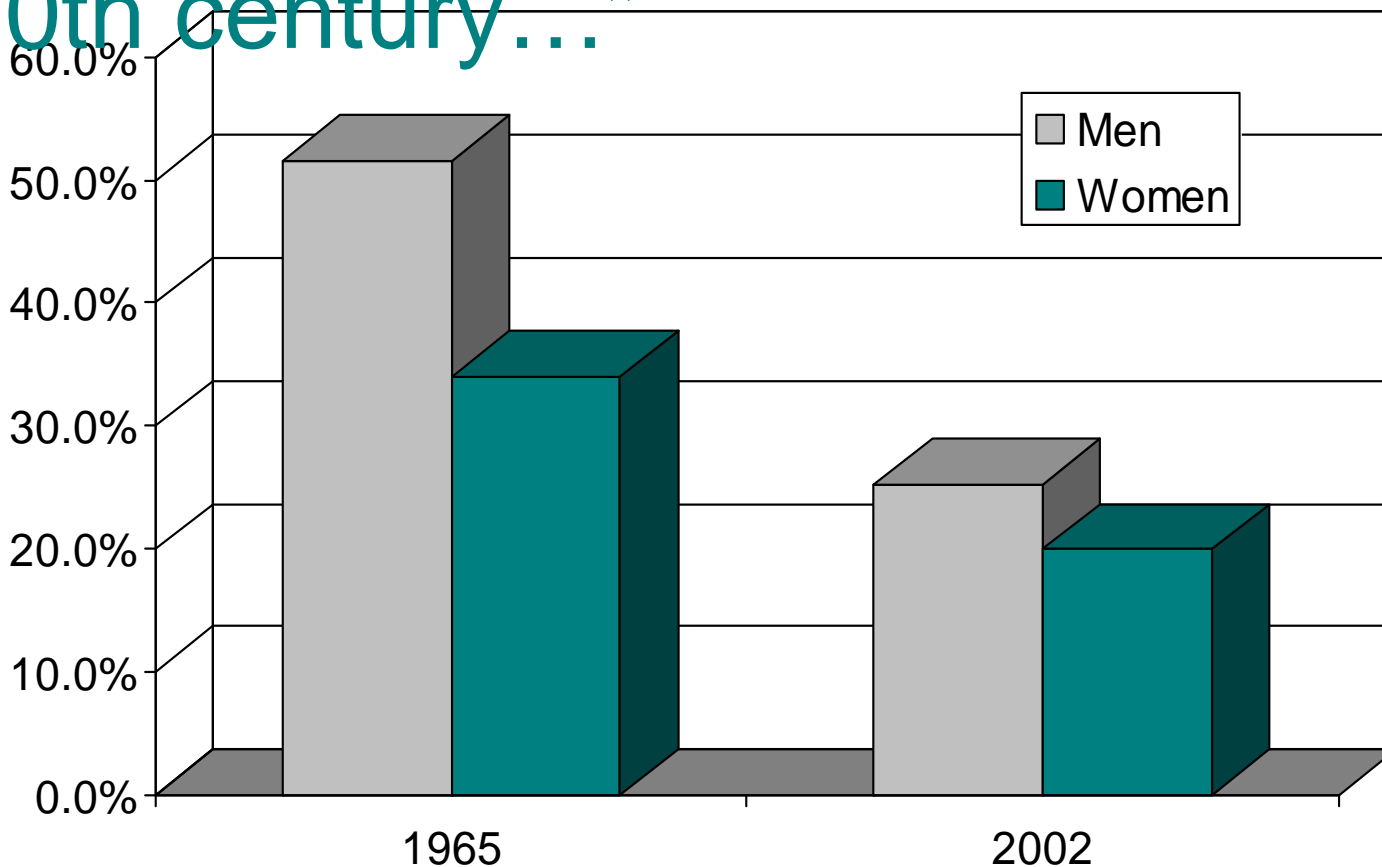
---

# Lessons from the Tobacco Control Movement

---



“...one of the 10 greatest achievements in public health in the 20th century...”



---

# Key features of the tobacco control movement

- An expanding network of epidemiological evidence—effectively delivered to opinion leaders
- A growing body of evidence-based programs and policies that affect smoking
- A network of advocacy and public health organizations
- Surveillance system



---

# Creative epidemiology

- Smoking is the number-one preventable cause of disease and death
- Smoking kills 450,000 people a year in the U.S., including about 50,000 nonsmokers who were exposed to second hand smoke
- It is as if two Boeing 747s crashed killing everyone on board, every day of the year



---

# Tobacco control methods

- Taxation
- Clean indoor air legislation
- Media campaigns
- Cessation programs
- School-based prevention
- Restrictions on marketing
- Judiciously chosen epidemiological reports
- Litigation



---

# Development of antitobacco infrastructure

- American Cancer Society, American Lung Association, American Heart Association
- Campaign for Tobacco Free Kids, Americans for Nonsmokers' Rights
- Increased funding for research
  - And increasingly strategic research
- Increased funding for intervention
- A virtuous cycle



---

# All of this happened, despite

- Very sophisticated marketing and public relations over the last 100 years (and continuing today)
- One of the most sophisticated misinformation campaign in history



---

# Implications for other harmful marketing practices?

- Obvious (to the industries at least)



---

# Implications for poverty

- Target poverty as a major risk factor for virtually all the things we seek to prevent
- Epidemiology
- Advocacy
- Intervention research
- Surveillance



---

# Epidemiology

- Devote more research to
  - Impact of poverty on wellbeing
  - The policies and practices that contribute to poverty
  - The costs to society of poverty
  - The benefits of reducing poverty
    - Prevention of crime and mental illness
    - Improvement of American competitiveness



---

# Intervention research

- Develop and evaluate
  - Programs
  - Practices
  - *Policies*
  - That ameliorate poverty and its sequelae



---

# Build

- A network of research, practice, and advocacy organizations that are
  - ❑ Coordinated by the epidemiological and intervention evidence
  - ❑ Increasing the understanding of policymakers and opinion leaders
  - ❑ Advocating for research and evidence-based practices
  - ❑ Obtaining more funds for advocacy and action



---

# And...

- Advocate egalitarian values



---

The generic features of our enterprise are relevant to **ALL** the problems human societies face

---



---

# Some examples

- Religious intolerance that inspires violence
- Unsustainable business practices
- The suppression of human rights
- Terrorism
- The war making of nation states



---

# We have scientific tools

- That have never been applied to these problems
- We know that incremental accumulation of knowledge is like the cork coming out of a champagne bottle



---

# Can we justify such an expansion?

- A priori? I doubt it.



---

It is a matter of calculated  
insanity

---



---

# Let us choose to make our lives about taking on the most important problems society faces

- Not because we know we will succeed, but because we can make our lives richer by trying



---

And,

- If Not Us, Who?
- If Not Now, When?



# Literature cited

- Alterman E. (2003). *What liberal media?* New York: Basic Books.
- Biglan A. (2003). Selection by consequences: One unifying principle for a transdisciplinary science of prevention. *Prevention Science*, 4, 213-232.
- Conger RD, Ge X, Elder GH, Lorenz FO et al. (1994). Economic stress, coercive family process, and developmental problems of adolescents. *Child Development*, 65, 541-561.
- Costello EJ, Compton SN, Keeler G & Angold A. (2003). Relationships between poverty and psychopathology: A natural experiment. *JAMA*, 290, 2023-2029.
- Diamond J. (1999). *Guns, germs, and steel: The fates of human societies*. New York: Norton.
- Diamond J. (2004). *Collapse: How societies choose to fail or succeed*. New York: Viking Adult.
- Dodge KA, Pettit GS, Bates JE & Valente E. (1995). Social information-processing patterns partially mediate the effect of early physical abuse on later conduct problems. *Journal of Abnormal Psychology*, 104, 632-643.
- Elder GH, Nguyen TV & Caspi A. (1985). Linking family hardship to children's lives. *Child Development*, 56, 361-375.



## Literature cited

- Ford, E.S., Mokdad, A.H., Giles, W.H., Galuska, D.A., & Serdula, M.K. (2005). Geographic variation in the prevalence of obesity, diabetes, and obesity-related behaviors. *Obesity Research*, 13, 118-122.
- Glenn SS. (2004) Individual behavior, culture, and social change. *The Behavior Analyst*, 27, 133-152
- Gutman LM & Eccles JS. (1999). Financial strain, parenting behaviors, and adolescents' achievement: Testing model equivalence between African American and European American single- and two-parent families. *Child Development*, 70, 1464-1476.
- Gutman LM, McLoyd VC & Tokoyawa T. (2005). Financial strain, neighborhood stress, parenting behaviors, and adolescent adjustment in urban African American families. *Journal of Research on Adolescence*, 15, 425-449.
- Harris M. (1979). *Cultural materialism: The struggle for a science of culture*. New York: Simon & Schuster.
- Lapham L. (2004). Tentacles of rage. *Harper's Magazine*.
- Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS & Koplan J.P. (2001). The continuing epidemics of obesity and diabetes in the United States. *JAMA*, 286, 1195-1200.



# Literature cited

- NICHD Early Child Care Research Network (2001). Childcare and family predictors of preschool attachment and stability from infancy. *Developmental Psychology*, 37, 847-62.
- Pierce JP, Evans N & Farkas AJ. (1994). *Tobacco use in California. An evaluation of the California Tobacco Control Program, 1989–93*. San Diego: La Jolla, Univ. of California.
- Pierce JP & Gilpin EA. (1995). A historical analysis of tobacco marketing and the uptake of smoking by youth in the United States: 1890-1977. *Health Psychology*, 4, 500-508.
- Pollan, M. (2006). *The omnivore's dilemma*. New York: Penguin USA.
- Ponting C. (1991). *A green history of the world: The environment and the collapse of great civilizations*. New York: Penguin Books.
- UNICEF. (2007). *Child Poverty in perspective: An overview of child well-being in rich countries*. Innocenti Report Card 7. Florence, Italy: UNICEF Innocenti Research Centre.
- US Census Bureau (2004). *Current population survey, 1960-2003*. Annual social and economic supplements.
- Weatherburn D & Lind B. (2006). What mediates the macro-level effects of economic and social stress on crime? *The Australian and New Zealand Journal of Criminology*, 39, 384-397.
- Wilson DS. (2003) *Darwin's cathedral*. Chicago: University of Chicago Press

