

Taxation as Public Health Policy

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"Sugar, rum, and tobacco, are commodities which are nowhere necessities of life, which are become objects of almost universal consumption, and which are therefore extremely proper subjects of taxation."

Adam Smith, An Inquiry into the Nature and Causes of The Wealth of Nations, 1776

Overview

- Overview of tobacco and alcohol taxation
- Impact of taxes/prices on tobacco and alcohol use, consequences of use
- Earmarking revenues for control programs
- Industry price marketing & policy options
- Counterarguments – Myths & Facts
- Implications for obesity prevention

Overview of Tobacco and Alcohol Taxation

Why Tax?

■ Efficient revenue generation

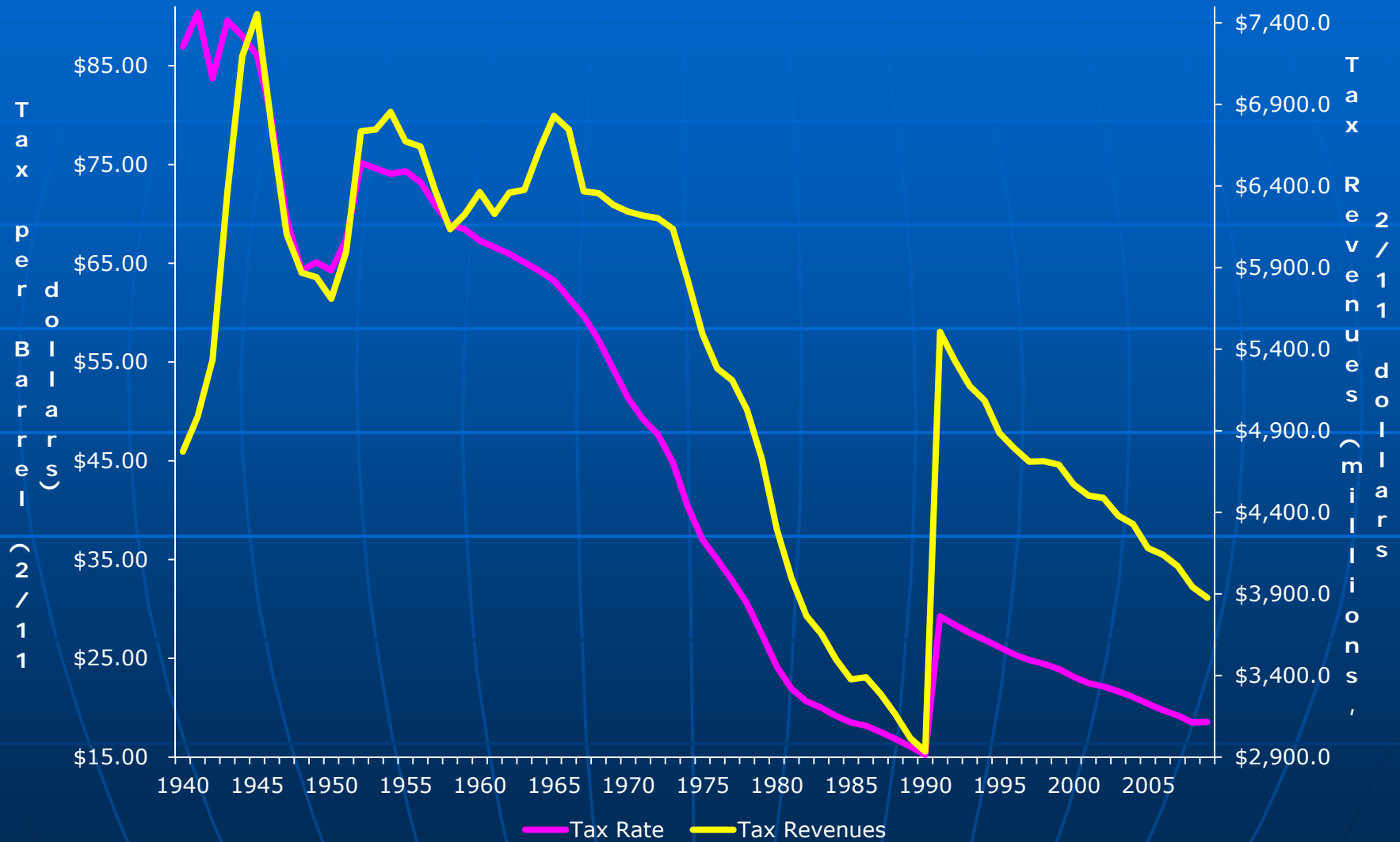
- Primary motive historically and still true in many countries today
- Very efficient sources of revenue given:
 - Historically low share of tax in price in many countries
 - Relatively inelastic demand for tobacco products, alcoholic beverages
 - Few producers and few close substitutes
 - One of many goods/services that satisfies the “Ramsey Rule”
- “This vice brings in one hundred million francs in taxes every year. I will certainly forbid it at once – as soon as you can name a virtue that brings in as much revenue” – Napoleon III on tobacco tax ⁵

Federal Cigarette Tax and Tax Revenues Inflation Adjusted, 1955-2010



Source: *Tax Burden on Tobacco*, 2011, and author's calculations

Federal Beer Tax and Tax Revenues Inflation Adjusted, 1940-2009



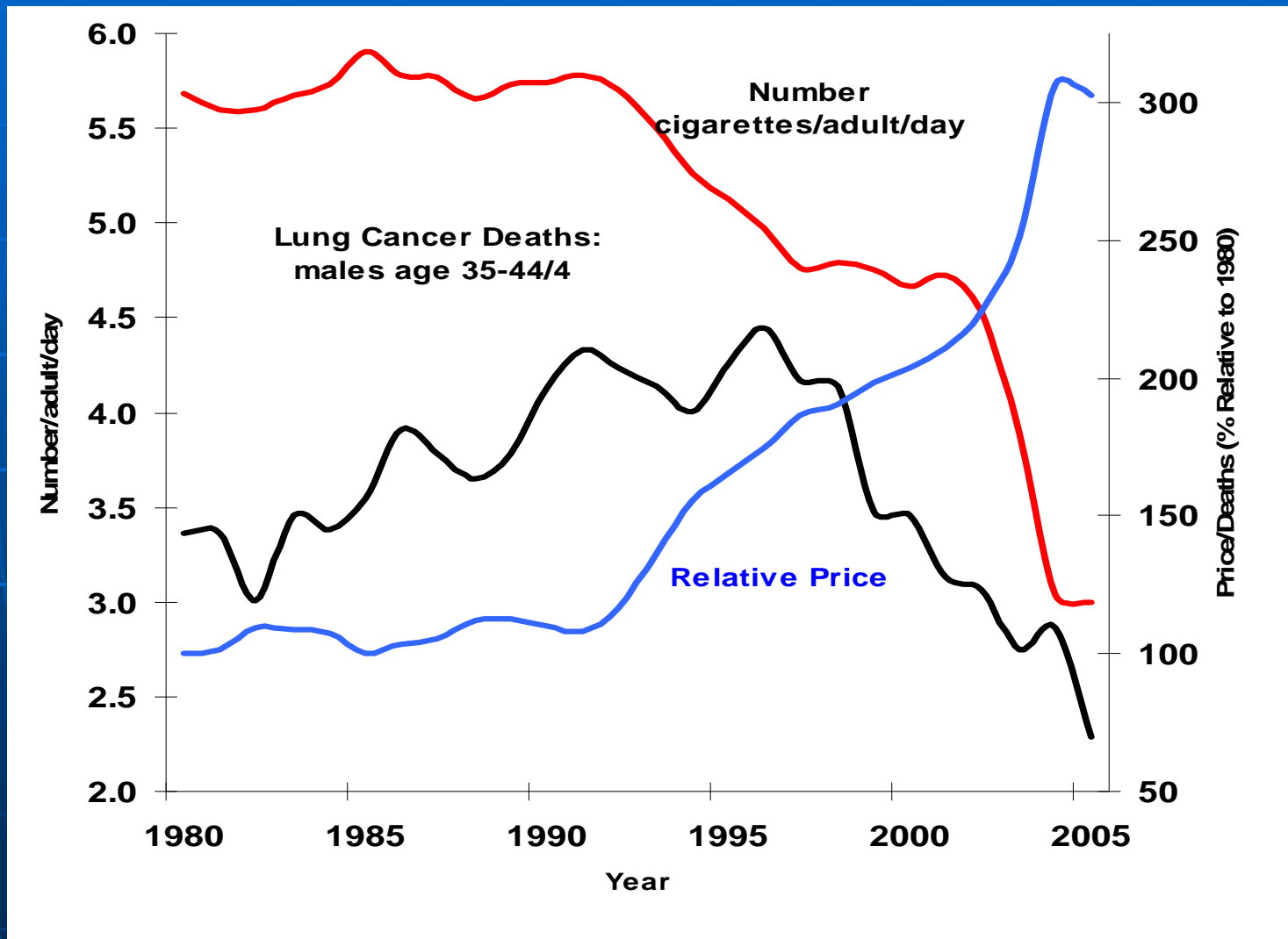
Source: *Brewers Almanac*, 2010, and author's calculations

Why Tax?

■ Promote public health

- Increasingly important motive for higher tobacco taxes in many high income countries
 - Less so for alcoholic beverage taxes
- Based on substantial and growing evidence on the effects of tobacco taxes and prices on tobacco use
 - Particularly among young, less educated, and low income populations
- *“... We [] have a package of six policy measures, known as MPOWER, that can help countries implement the provisions in the Convention. All six measures have a proven ability to reduce tobacco use in any resource setting. **But tobacco taxes are by far the most effective.**”* Director General Dr. Margaret Chan, WHO, 2008

France: smoking, tax and male lung cancer, 1980-2000



Why Tax?

- **Cover the external costs of tobacco and excessive alcohol use**
 - “Pigouvian” tax
 - Less frequently used motive
 - Account for costs resulting from tobacco, alcohol use imposed on non-users
 - Increased health care costs, lost productivity, property damage, criminal justice costs, etc. caused by exposure to tobacco smoke among non-smokers, harms incurred by non/moderate drinkers
 - Can also include “internalities” that result from addiction, imperfect information, and time inconsistent preferences

Types of Taxes

■ Variety of tobacco, alcohol taxes

- Taxes on value of production
- Customs duties on tobacco leaf, tobacco products, alcoholic beverage imports and/or exports
- Sales taxes/Value added taxes
- Implicit taxes when government monopolizes production and/or distribution
- Excise taxes (or similar taxes)
 - Many of these are applied to variety of agricultural and/or consumer goods and services
 - Excise taxes are of most interest given specificity to tobacco products, alcoholic beverages

Types of Taxes

■ Excise Taxes

- Two types of excises

- Specific Taxes: excises based on quantity or weight (e.g. tax per pack of 20 cigarettes, wine gallons)
- Ad Valorem taxes: excises based on value of products (e.g. a specific percentage of manufacturer's prices for tobacco products, alcoholic beverages)
- Federal, state, and local cigarette taxes and federal alcoholic beverage taxes all specific taxes
- State taxes on other tobacco products, alcoholic beverages are mix of specific and *ad valorem*

Federal Tobacco Taxes

- Federal cigarette tax
 - Specific (per unit) excise tax
 - initially adopted in 1864
 - Raised during war time/lowered during peace time
 - Set at 8 cents per pack in 1951
 - Doubled to 16 cents per pack in 1983
 - Eventually raised to 39 cents per pack in 2002
 - Less than 60% of inflation adjusted value of 1951 tax
 - Significant increase – 61.66 cents – April 1, 2009
 - Earmarked for S-CHIP expansion

Federal Tobacco Taxes

- Specific federal excise taxes on most other tobacco products, including
 - cigars: \$1.0066 per pack on small cigars; 52.75% of price for low priced cigars; cap of 40.26 cents per cigar for high priced cigars
 - chewing tobacco: 3.1 cents per ounce
 - moist snuff: \$1.51 per pound
 - roll-your-own tobacco \$24.78 per pound
 - pipe tobacco: \$2.83 per pound
 - rolling papers: 1.26 cents per pack
- Until latest increases, most were lower than cigarette tax; more equivalent now
- Similarly infrequent increases in taxes

Federal Cigarette Taxes, United States, 1954-2010

(August 2011 dollars)



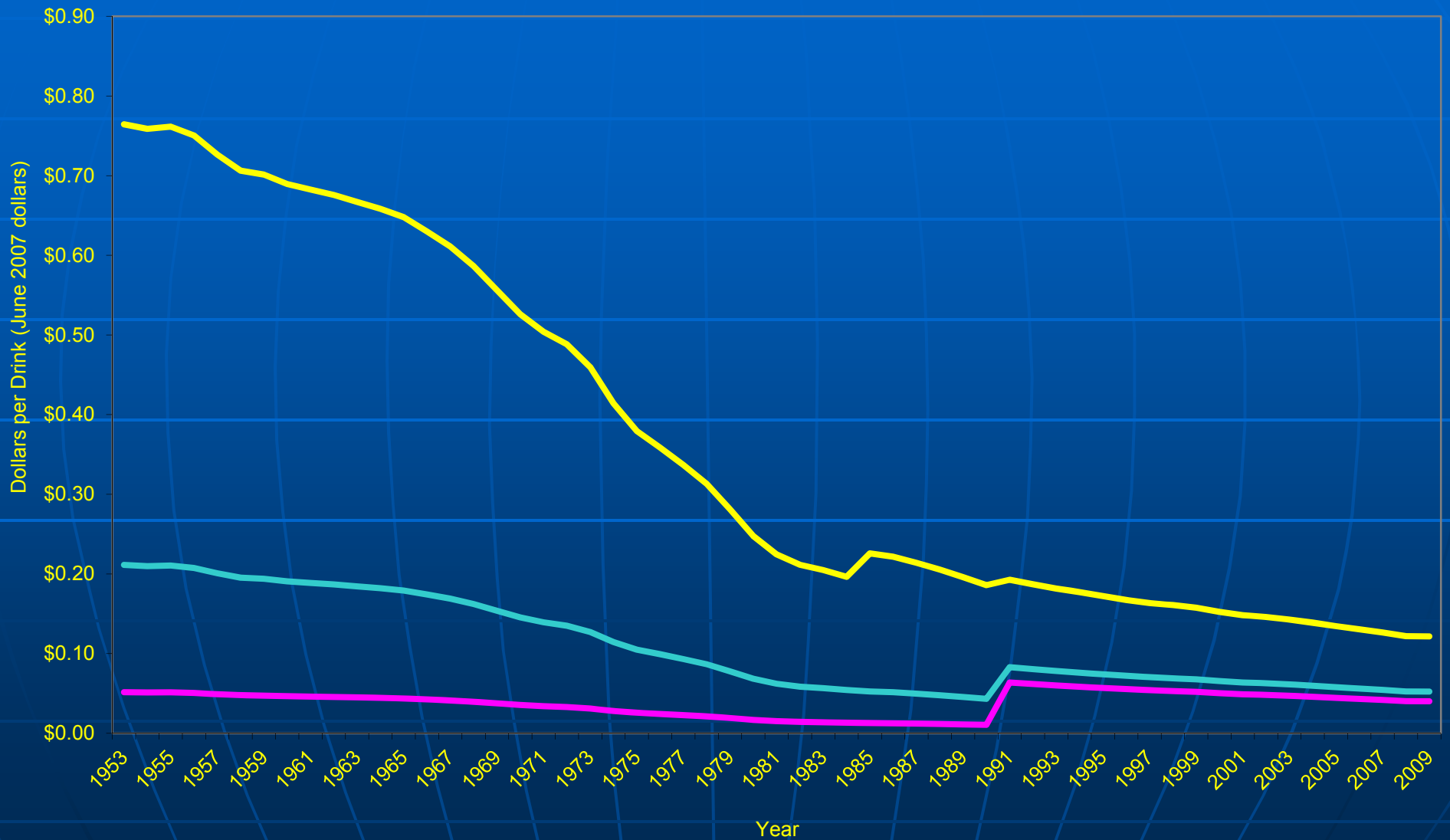
■ Federal Tax

Source: *Burden on Tobacco*, 2011, and author's calculations

Federal Alcohol Taxes

- Specific (per unit) excise taxes
- Beer, spirits taxes adopted in 1862; wine 1916
- Raised during war time/lowered during peace time
- Spirits tax: \$10.50 per proof gallon in 1951
 - \$12.50 in 1985; \$13.50 in 1991
- Table wine tax: \$0.17 per wine gallon in 1951
 - \$1.07 in 1991
- Beer tax: \$9.00 per barrel in 1951
 - \$16.00 in 1991
- Tax per ounce of ethanol varies by type of alcoholic beverage

Federal Alcoholic Beverage Taxes per Drink Inflation Adjusted, 1953-2009

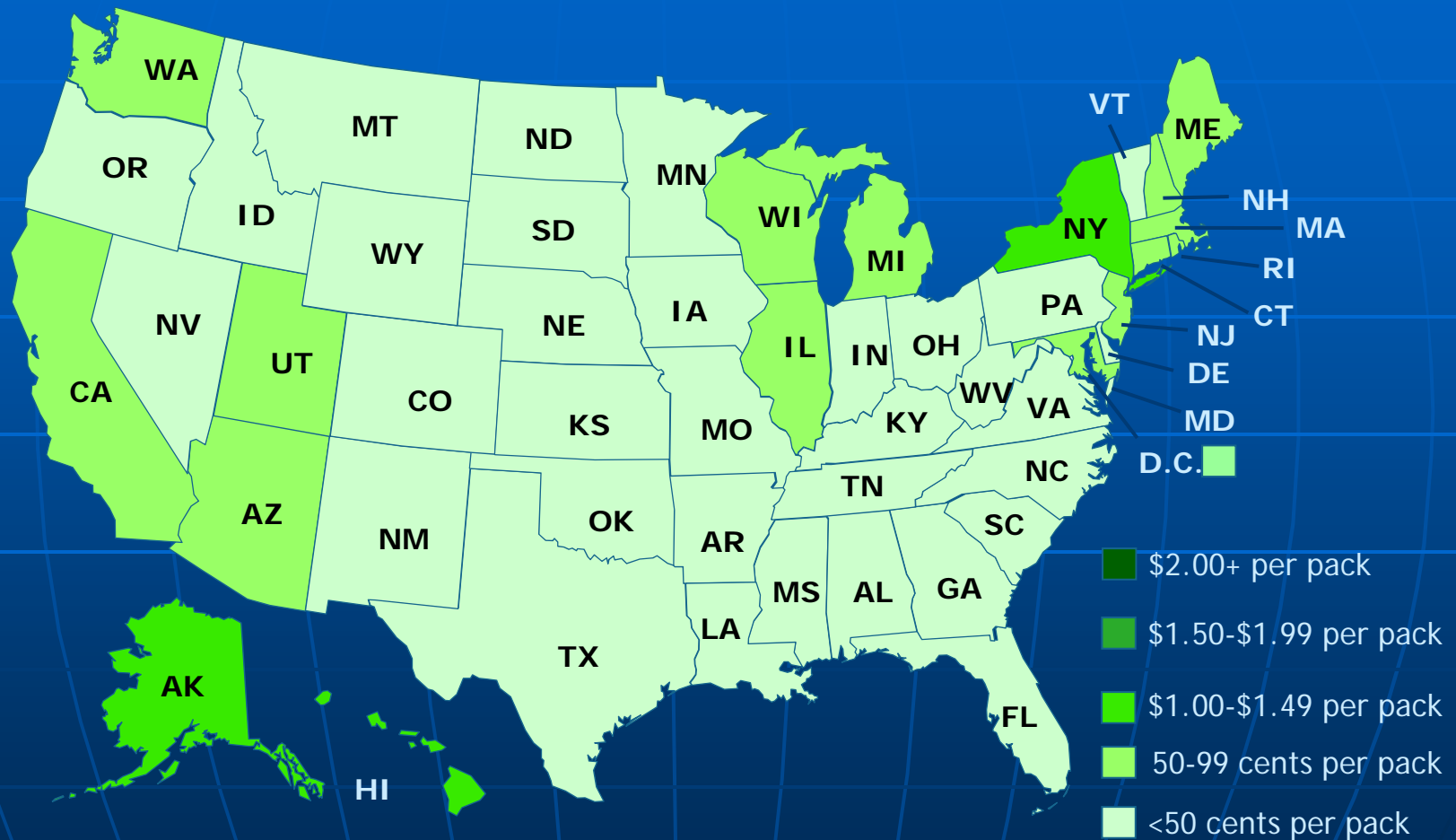


— Beer — Wine — Spirits

State Tobacco Taxation

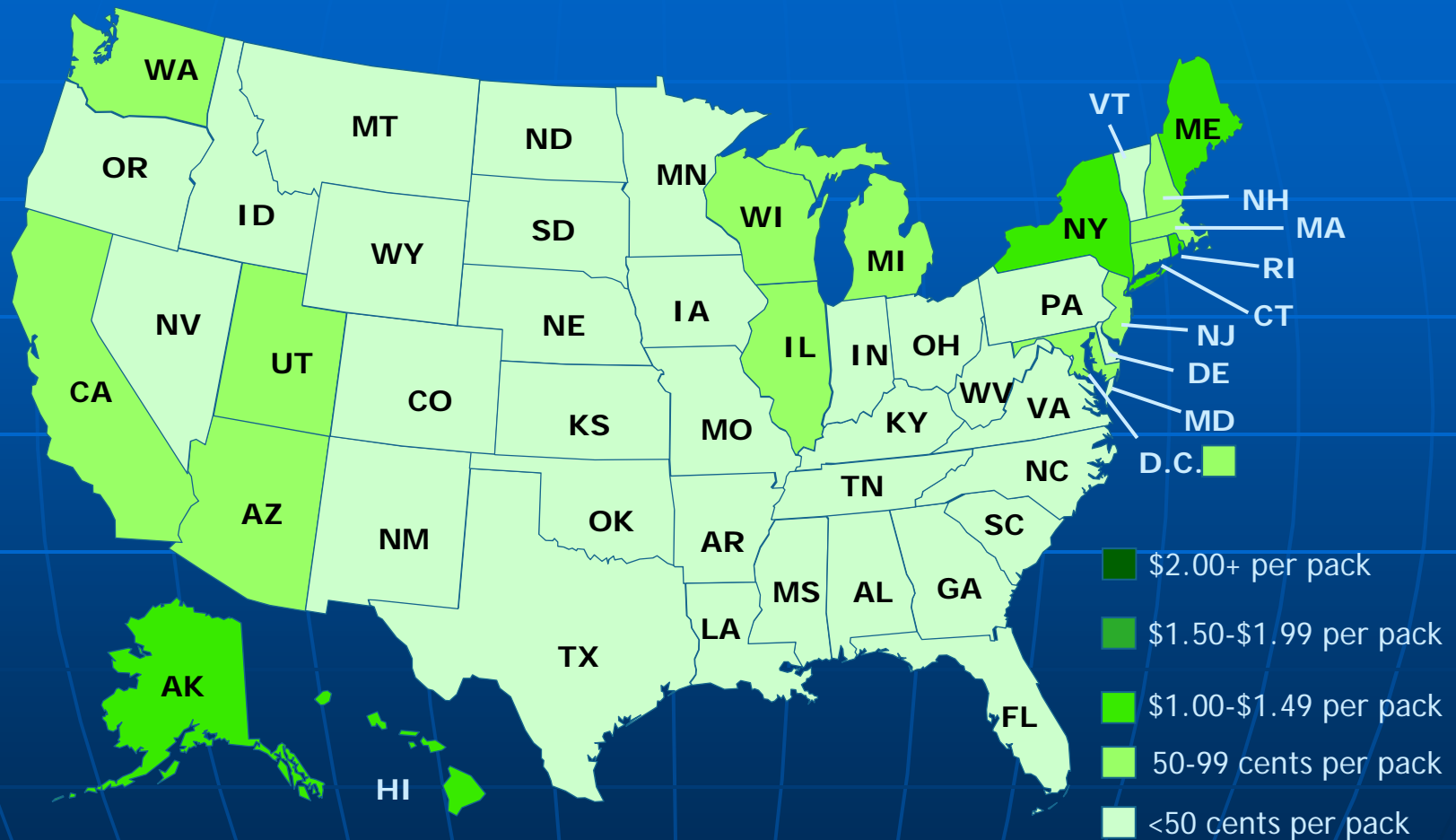
- State cigarette taxes
 - First adopted by IA in 1921; NC last to adopt in 1969
 - Specific excise tax in all states
 - Currently: 17.0 cents/pack (MO) to \$4.35/pack (NY)
 - Average \$1.45 per pack (48.5 cents in tobacco growing states; \$1.57 in other states)
 - Several proposing additional increases

State Cigarette Excise Tax Rates – 2000



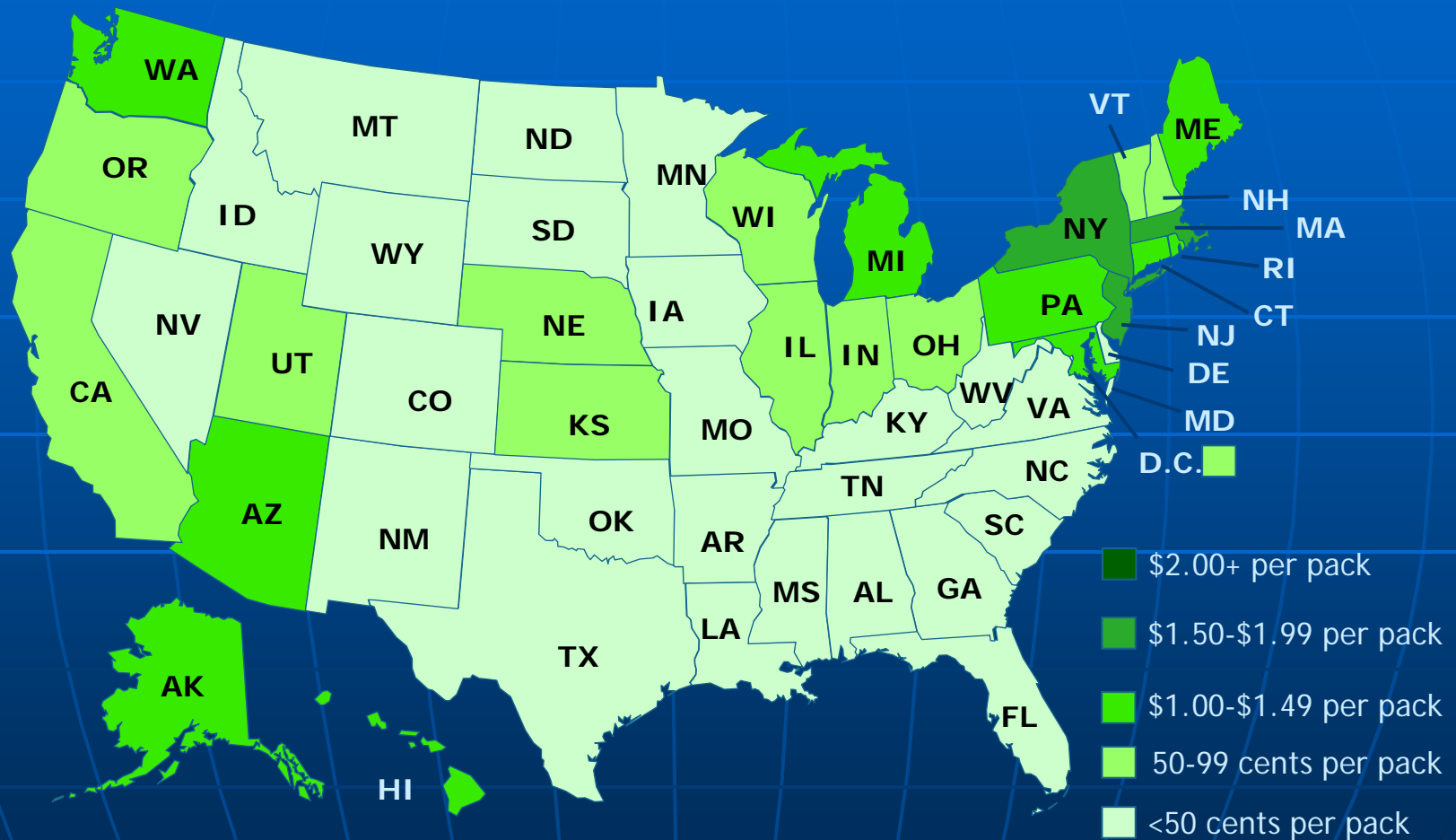
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2001



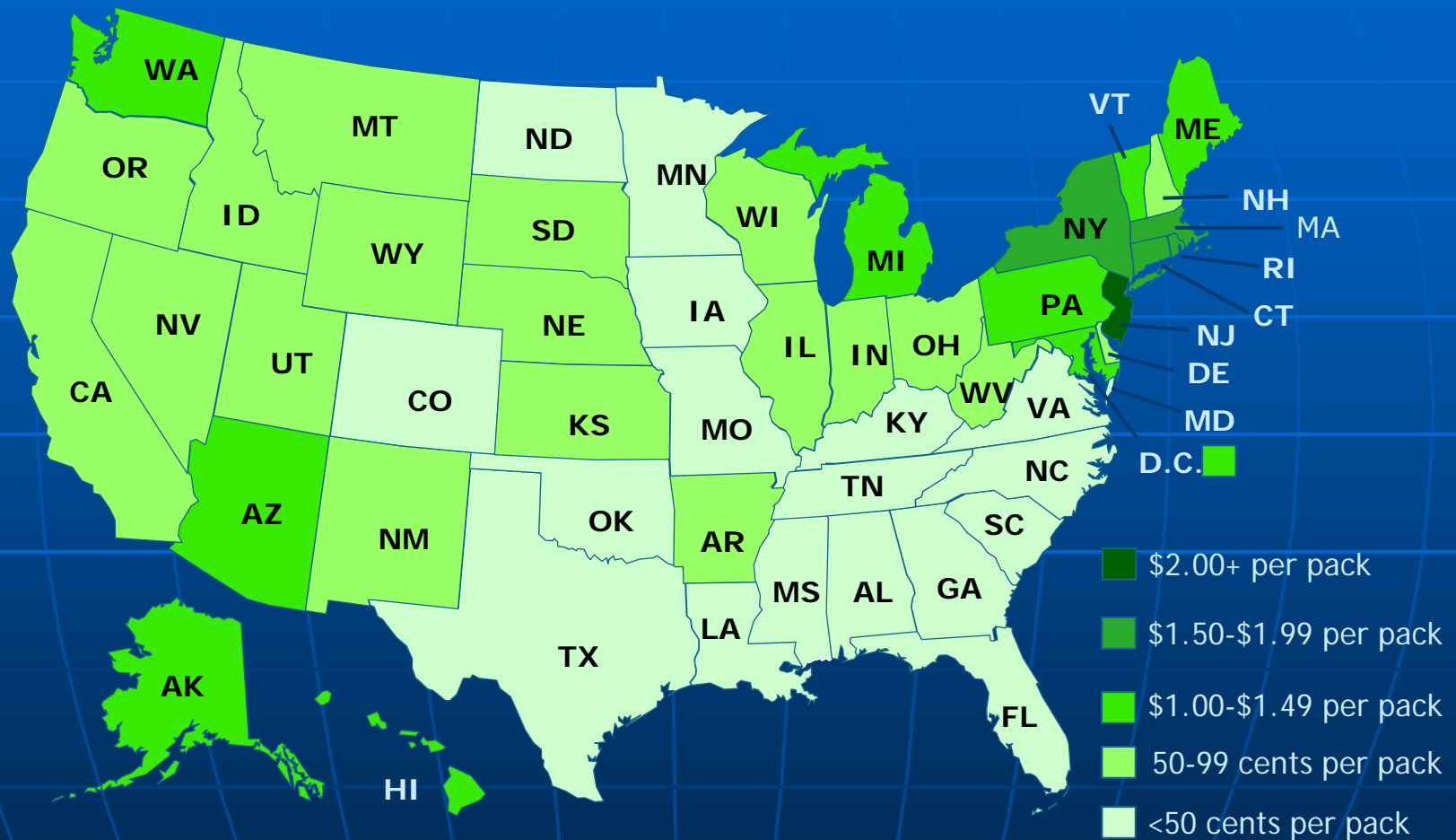
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2002



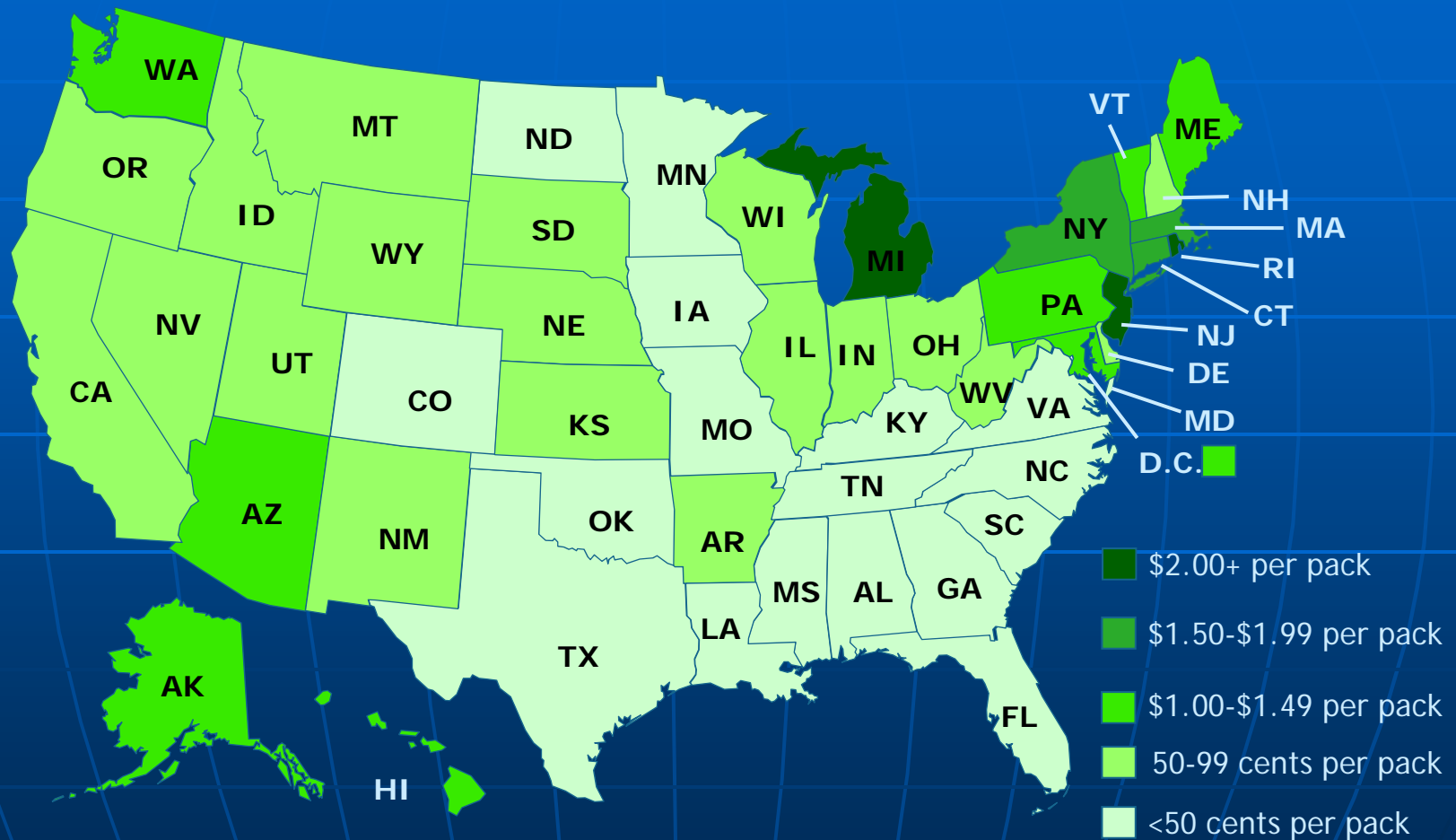
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2003



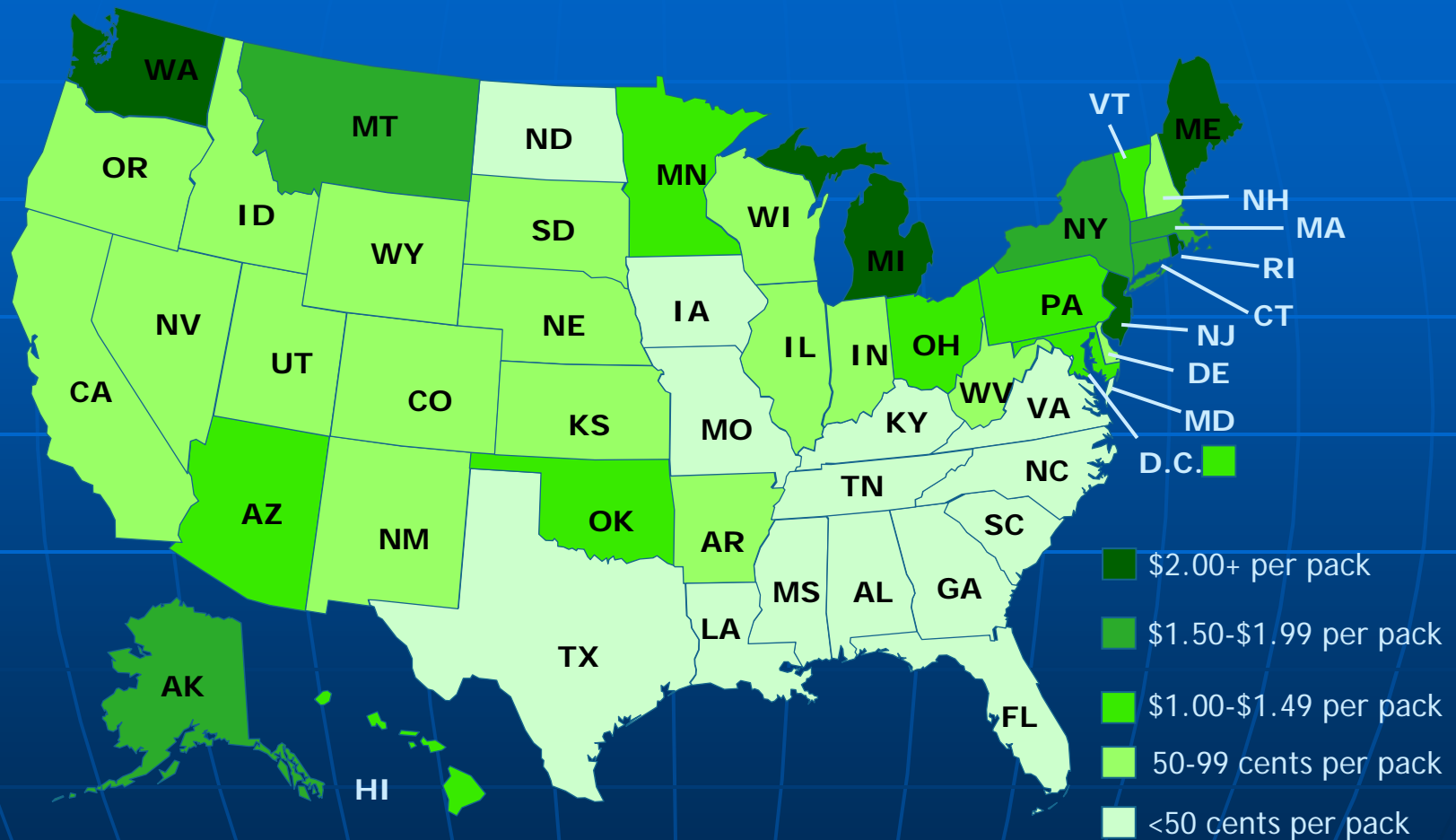
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2004



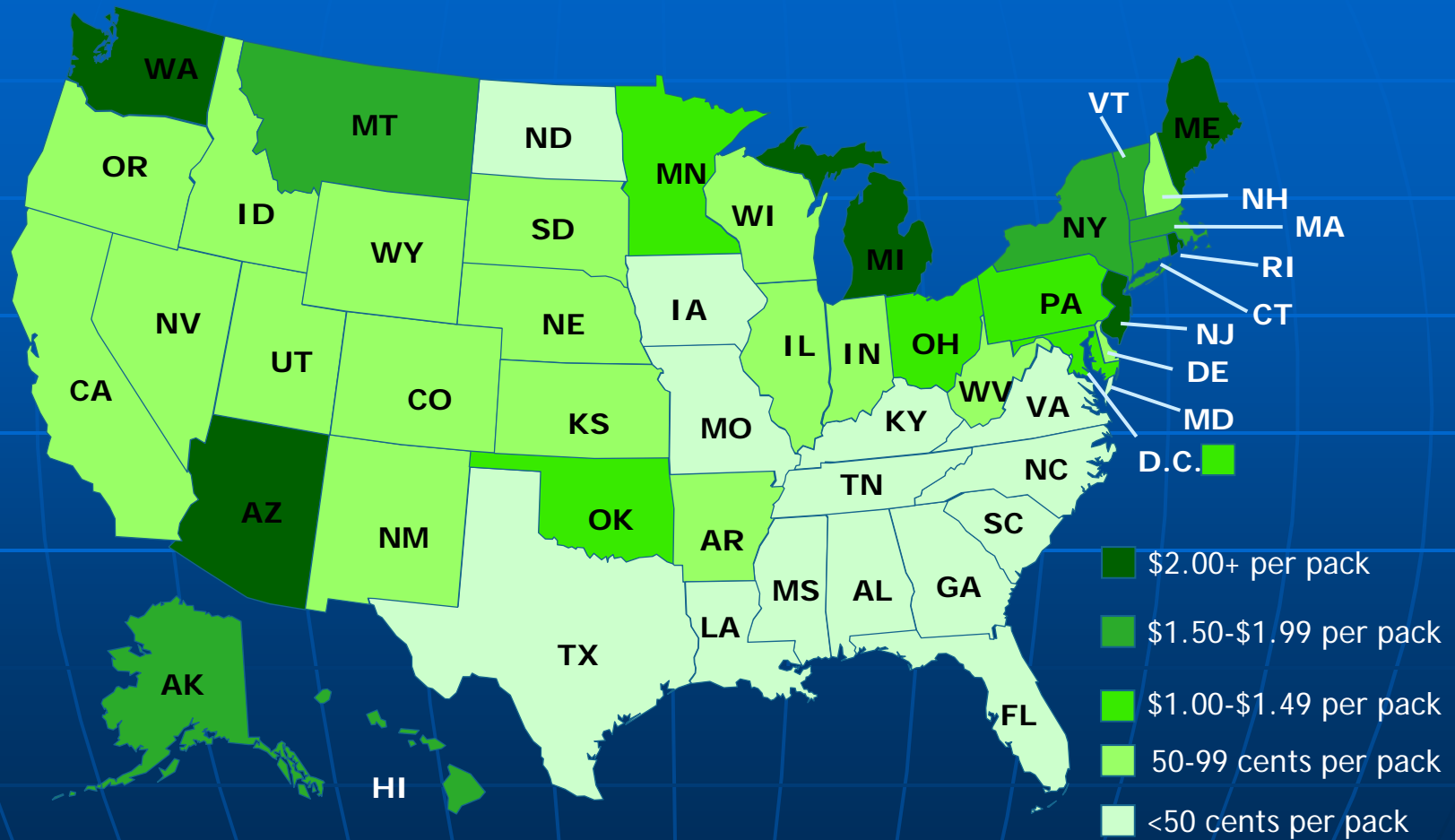
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2005



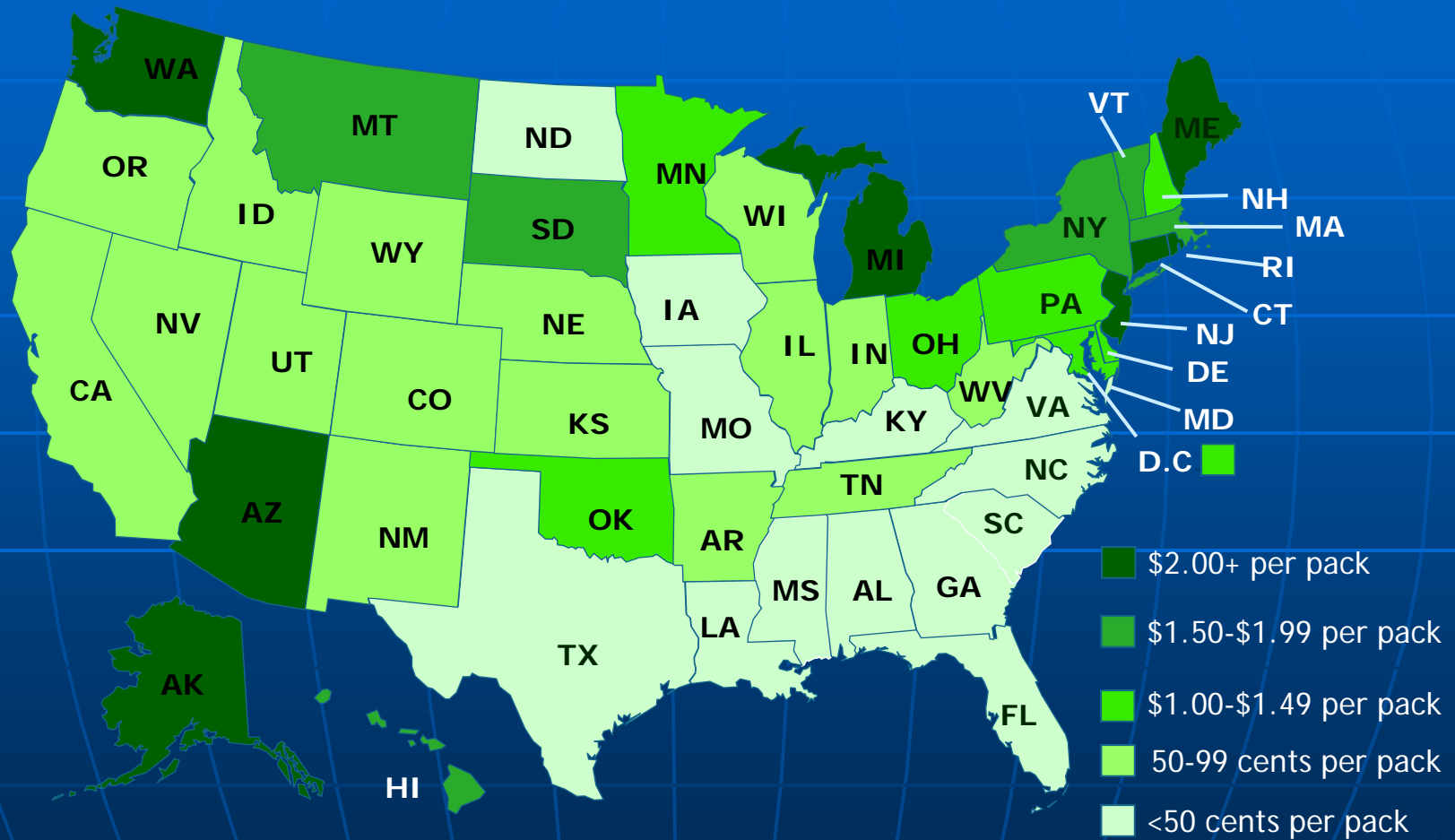
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2006



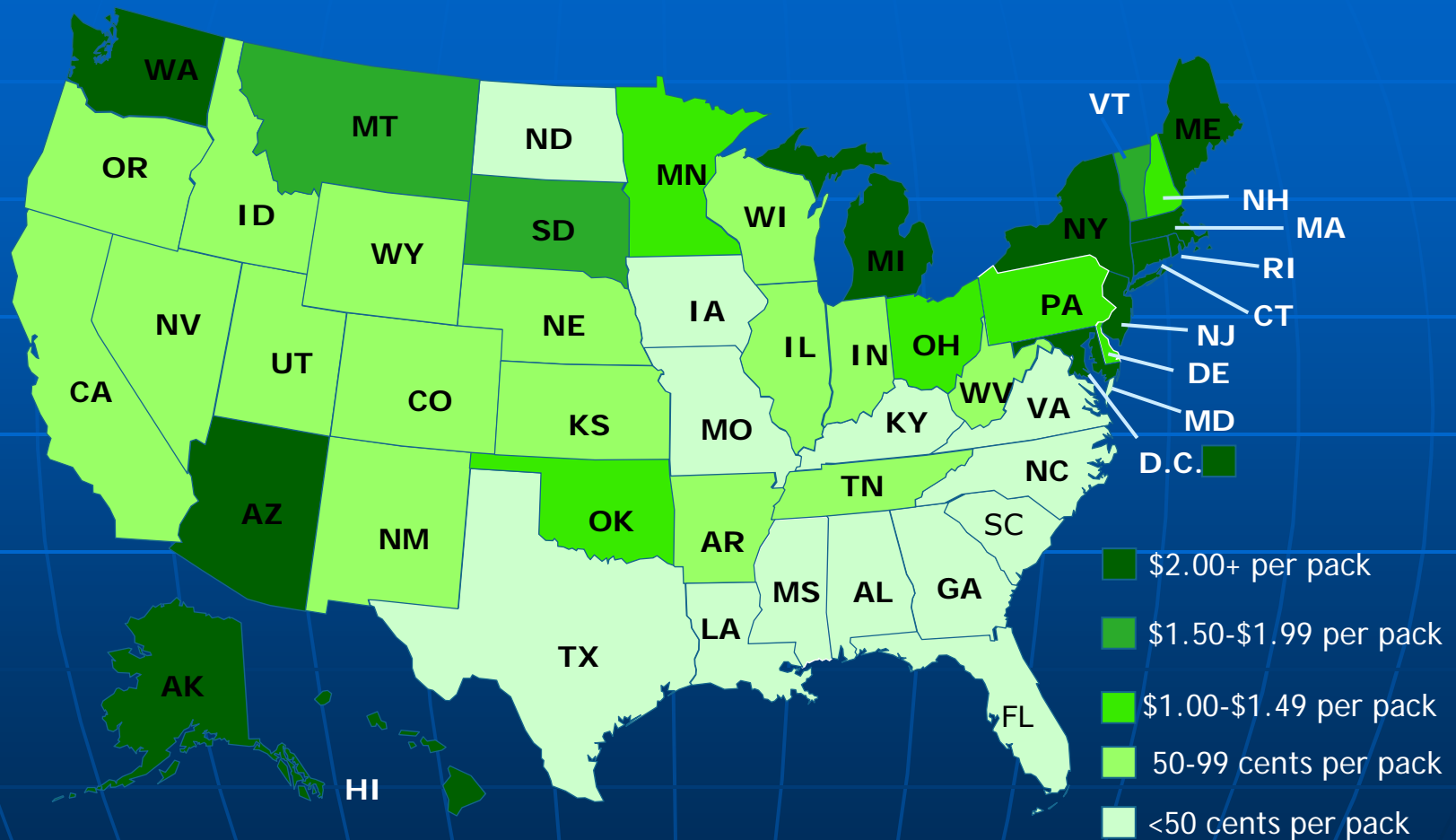
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2007



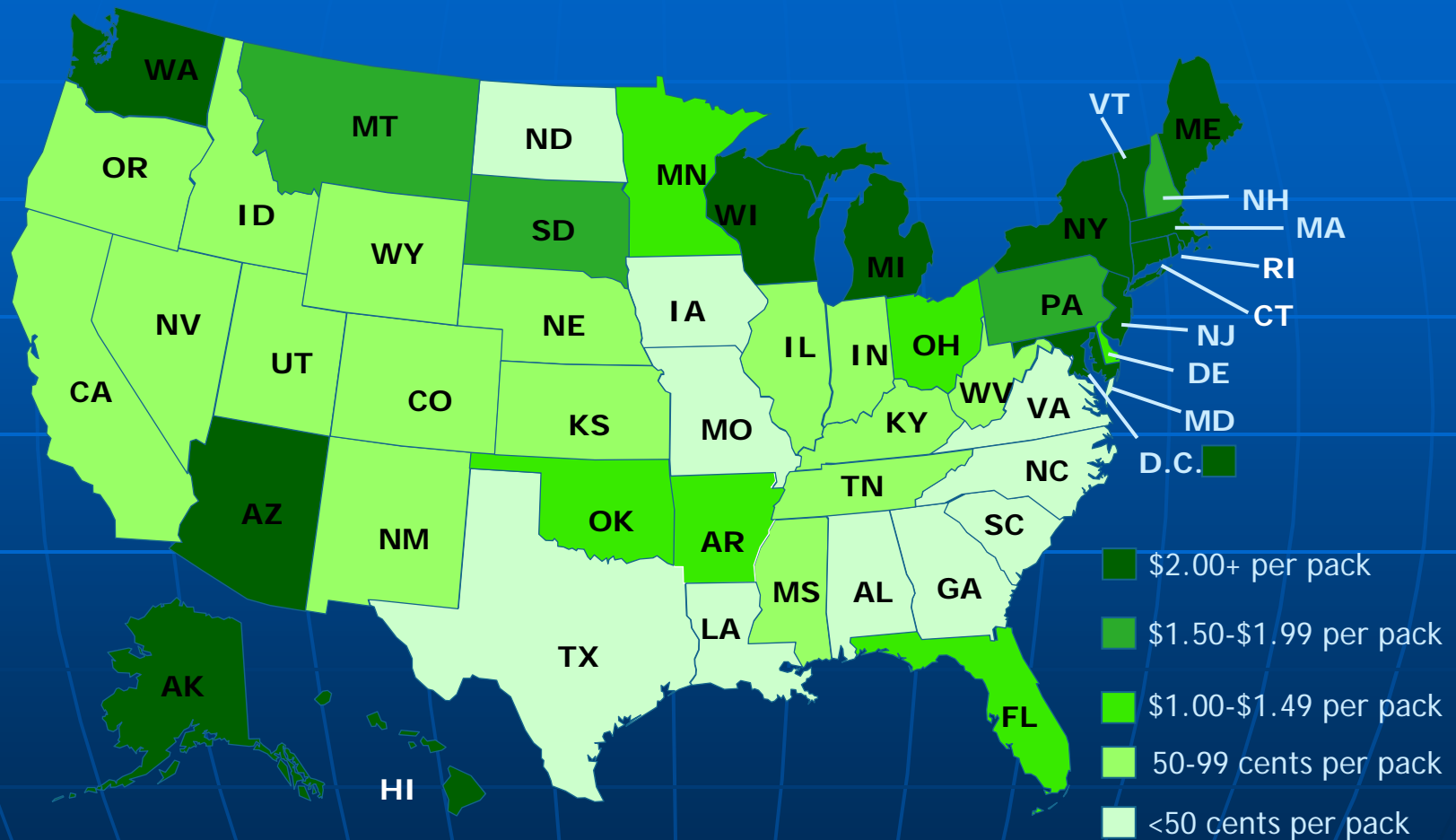
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2008



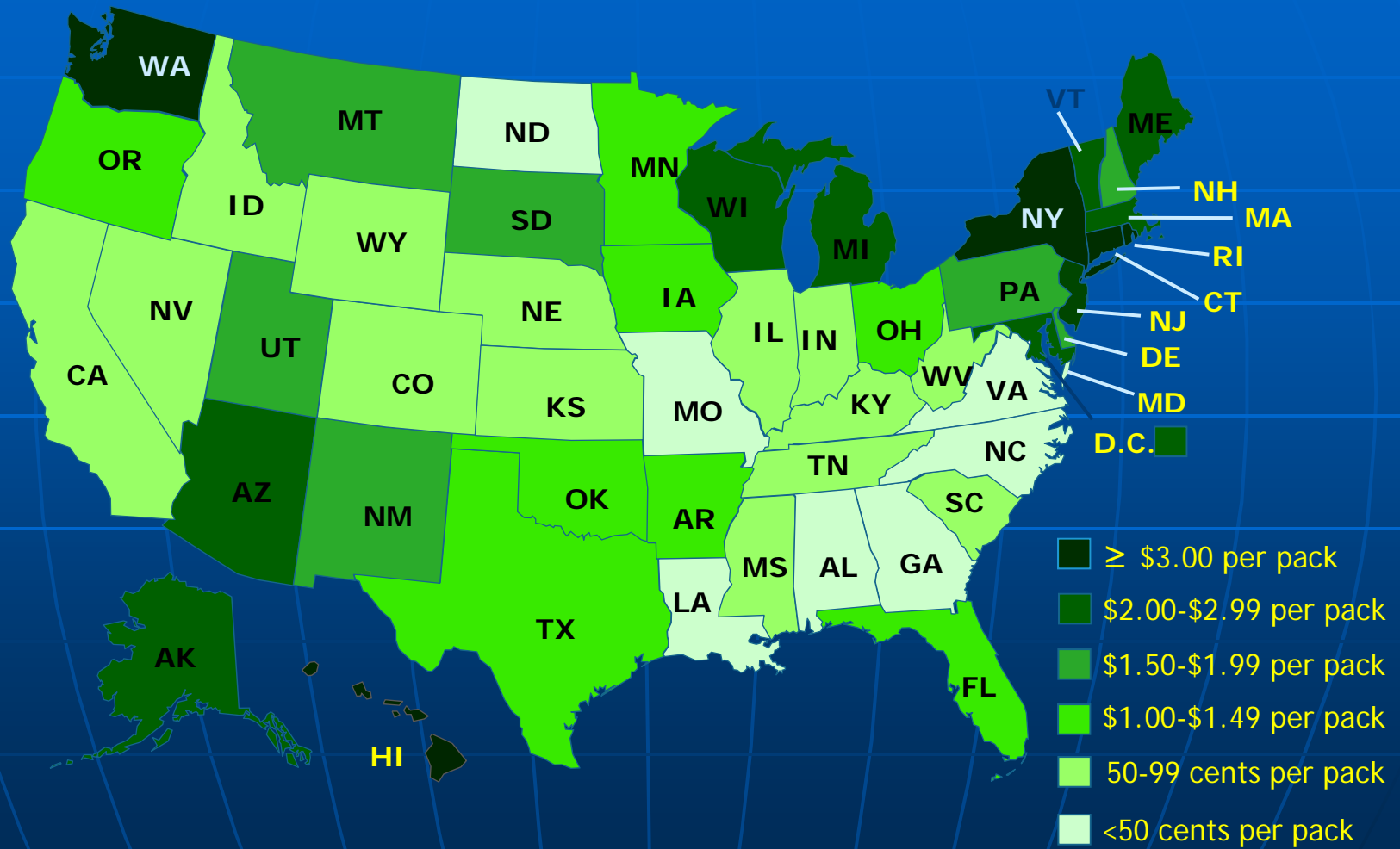
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2009



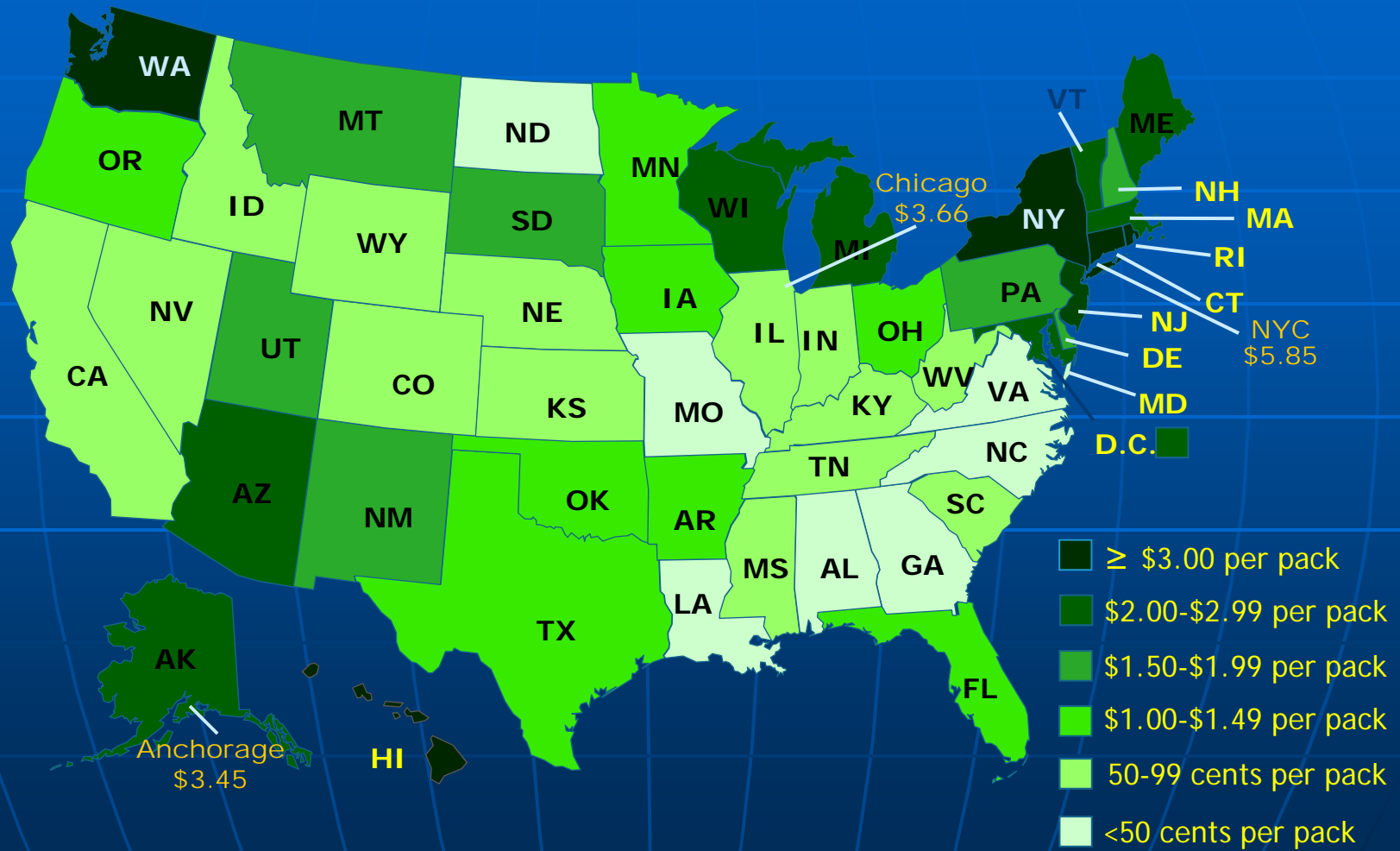
CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2010



CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

State Cigarette Excise Tax Rates – 2011



CDC, Office on Smoking and Health. State Tobacco Activities Tracking and Evaluation (STATE) System.

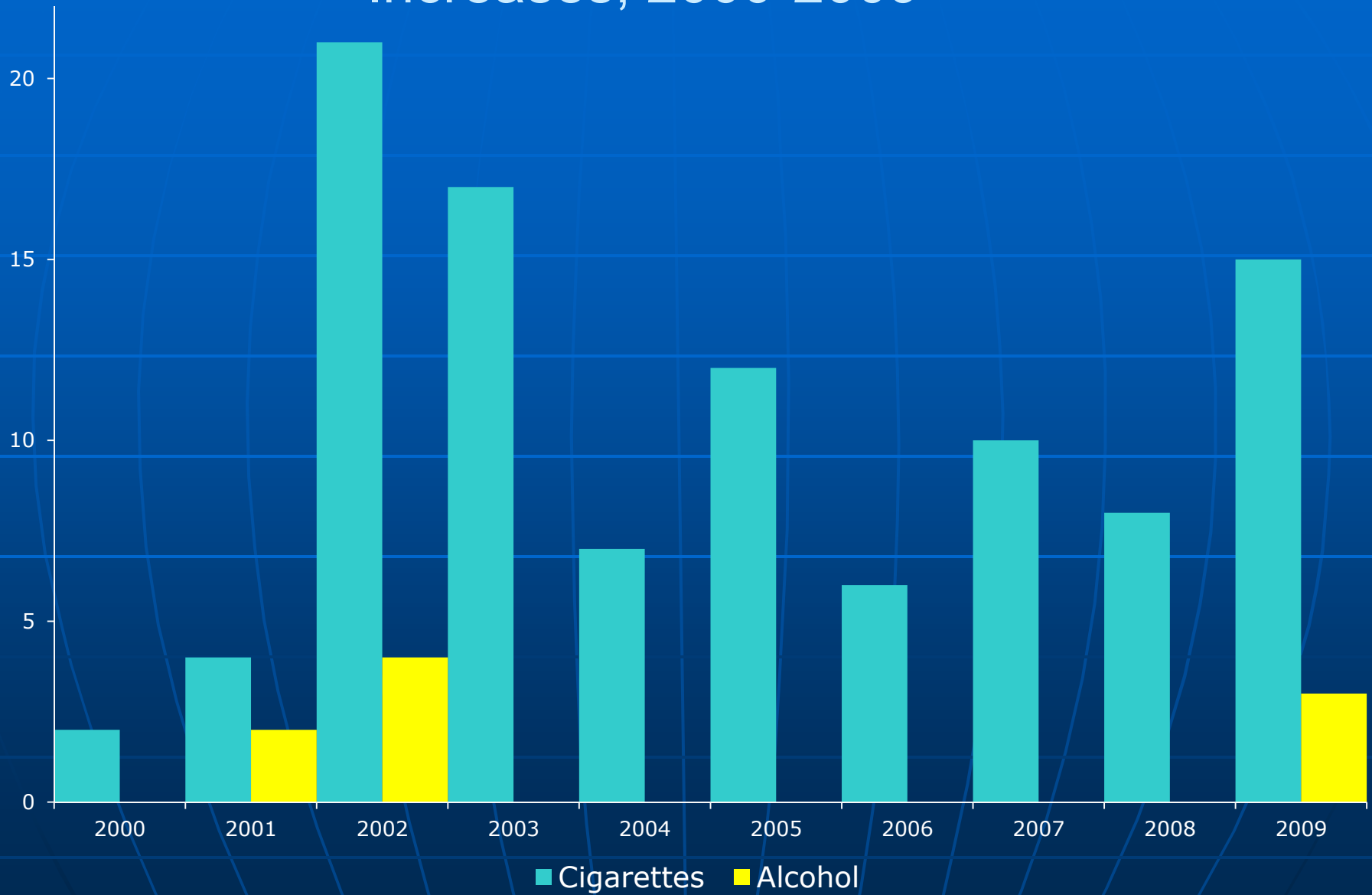
State Tobacco Taxation

- State taxes on other tobacco products
 - All but PA tax other tobacco products
 - Mostly *ad valorem* taxes, but increasing movement towards specific taxes
 - Typically applied to wholesaler/distributor price
 - Highest taxes include:
 - Wisconsin – 100%; Washington - 95%
 - Lowest taxes include:
 - South Carolina – 5%; Tennessee 6.6%
 - Average about 35%
 - Generally below equivalent rate on cigarettes

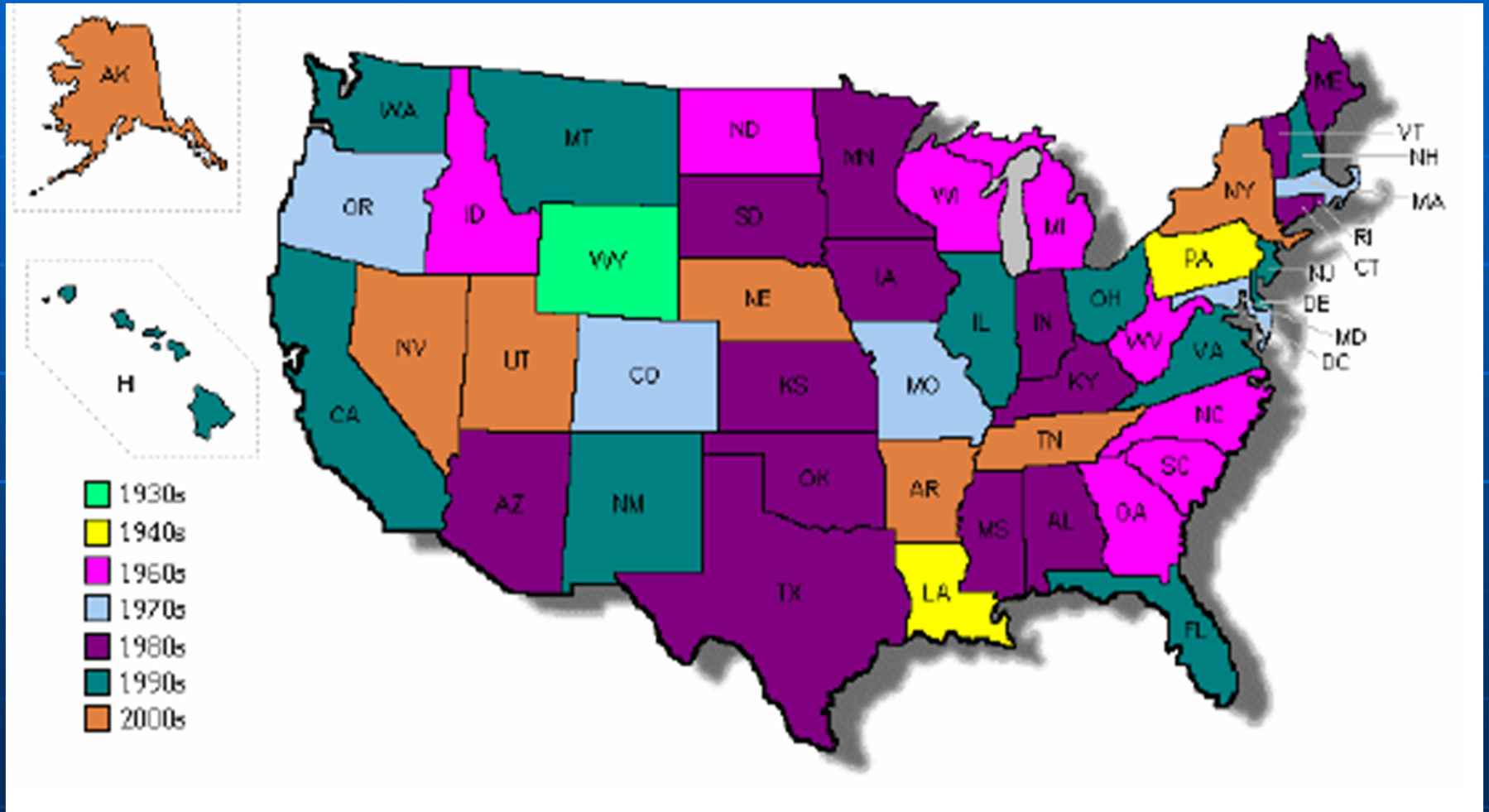
State Alcohol Taxation

- Generally adopted following repeal of Prohibition
 - Follow 3-tier system with excises on licensed products
 - Some excises in control states; mark-ups as/more important
- Mostly specific taxes, but many states include *ad valorem* component
 - Different taxes for on- and off-premise sales
- Tend to tax beer lowest, spirits highest
- Considerable variation across states
 - Beer: \$0.02 (WY) - \$1.07 (AK); \$0.19/gallon median
 - Wine: \$0.20 (CA, TX) - \$2.50 (AK); \$0.67/gallon median
 - Spirits: \$1.50 (DC, MD) - \$12.80 (AK); \$3.75/gallon median

Number of State Cigarette and Beer Excise Tax Increases, 2000-2009



Decade of Last Change in Beer Excise Tax



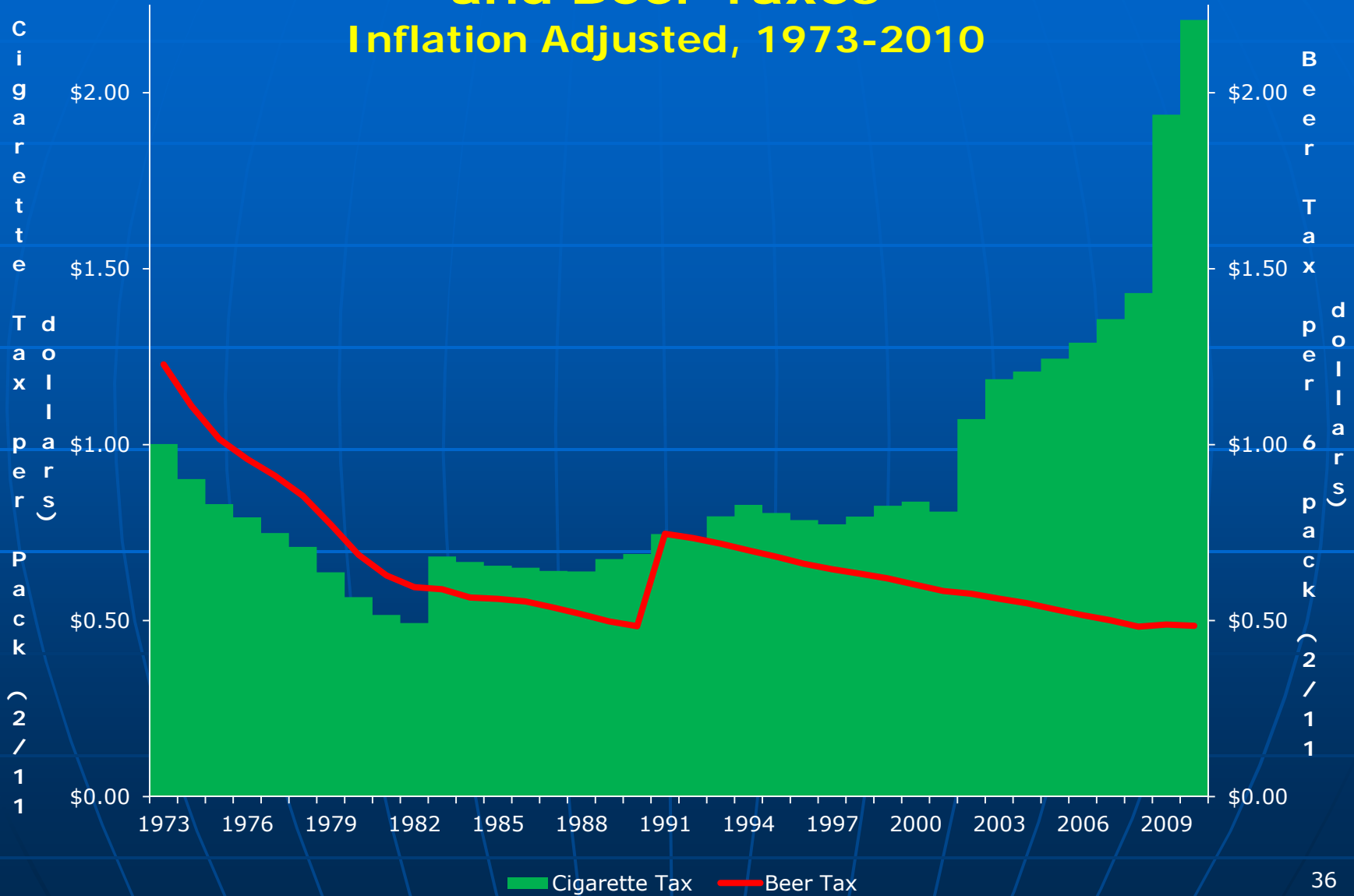
Source: CSPI *Factbook on State Beer Taxes*

Local Taxation in the U.S.

- Many localities add additional cigarette tax
 - Typically a few cents/pack; some exceptions:
 - » \$1.50 in New York City
 - » \$2.68 in Chicago/Cook county
- Some local alcoholic beverage taxes
 - Generally modest
 - Sales tax applied to tobacco products, alcoholic beverages in most states
 - Usually, but not always, applies to price inclusive of excise taxes

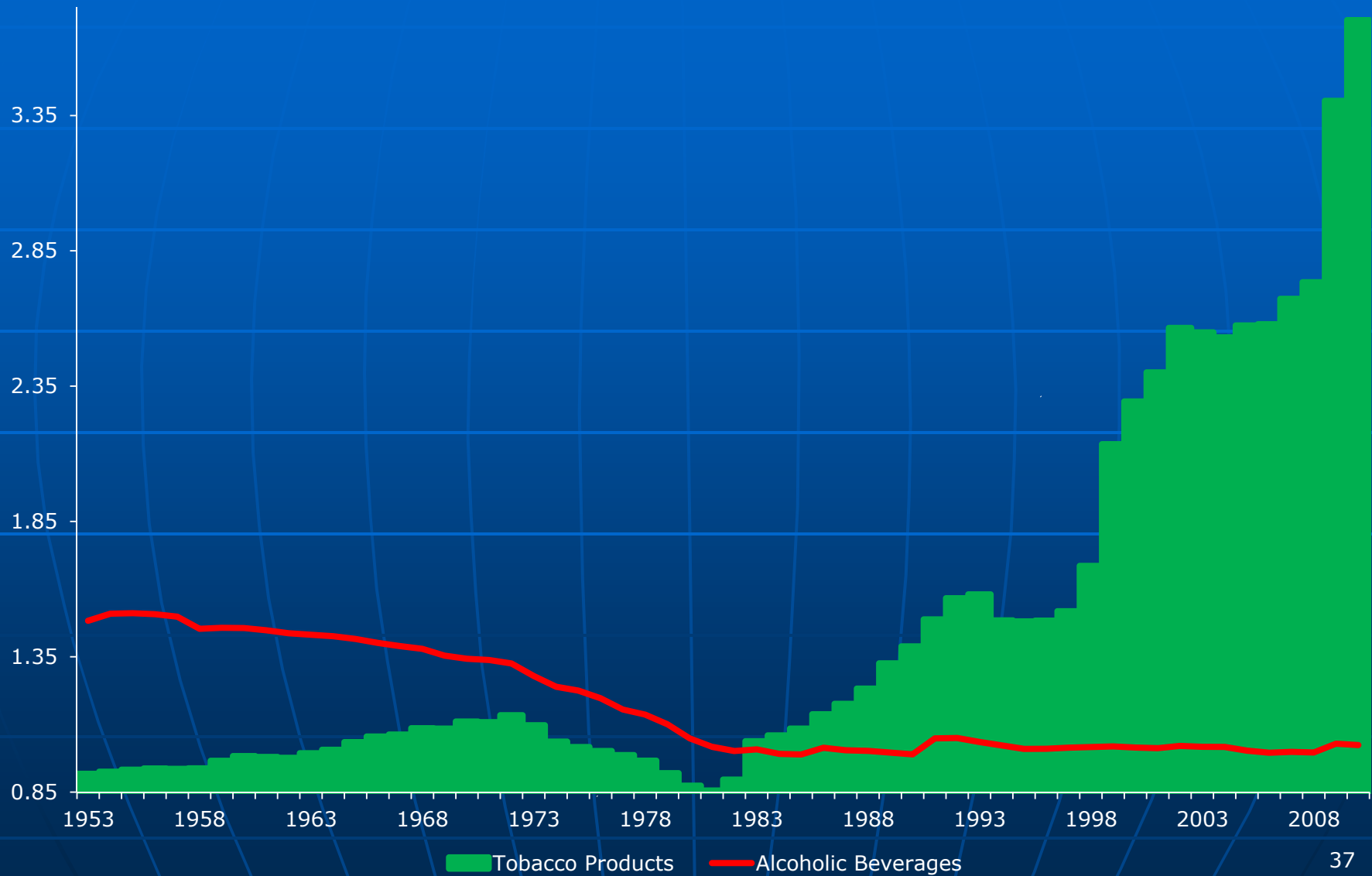
Average State and Federal Cigarette and Beer Taxes

Inflation Adjusted, 1973-2010



Source: *Tax Burden on Tobacco* (2010), *Brewers Almanac* (2010) and author's calculations

Alcoholic Beverage & Tobacco Product Prices Relative to CPI, 1953-2010



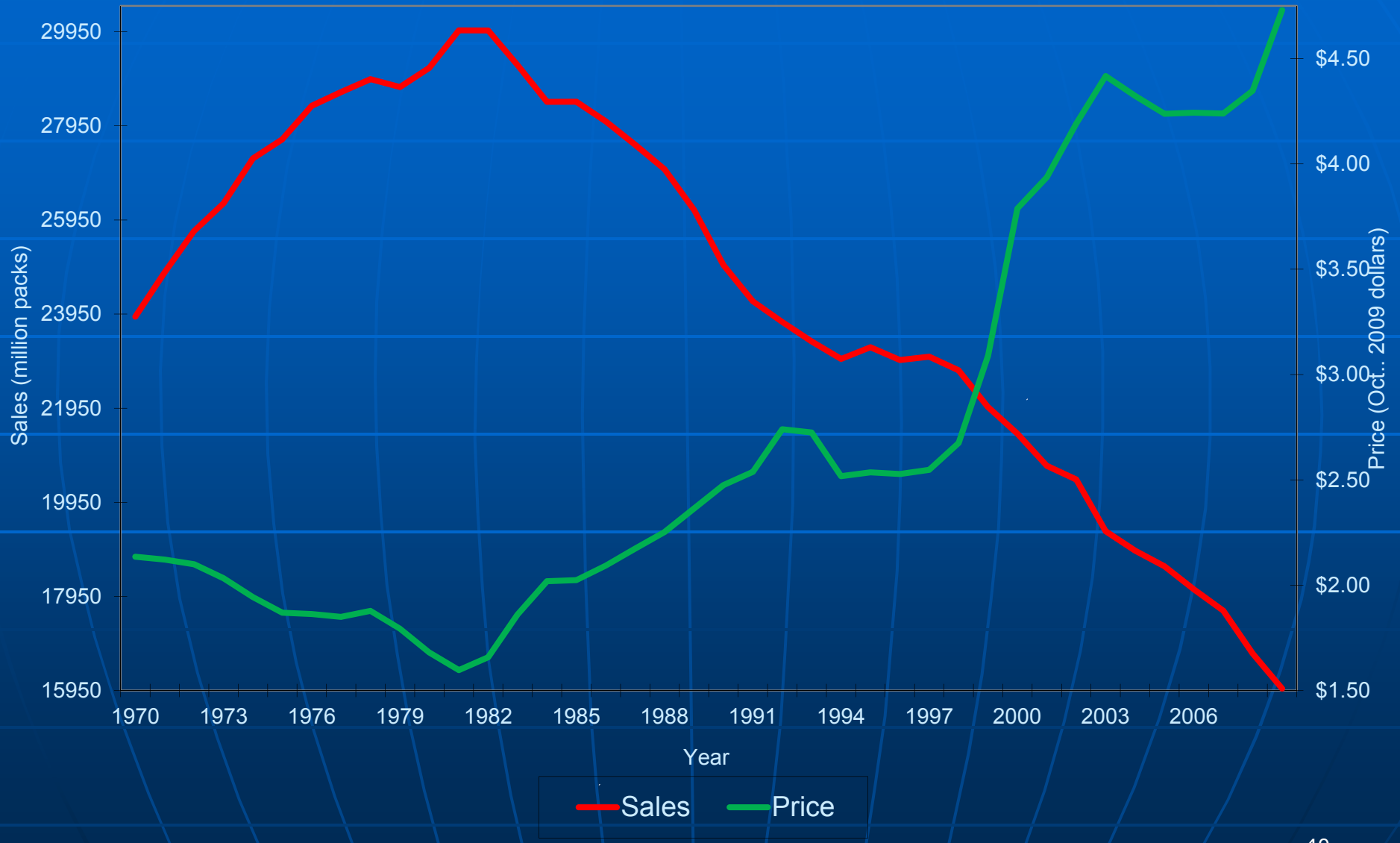
Source: *Tax Burden on Tobacco, 2011*, and author's calculations

Impact of Tax and Price on Tobacco Use

Prices and Tobacco Use

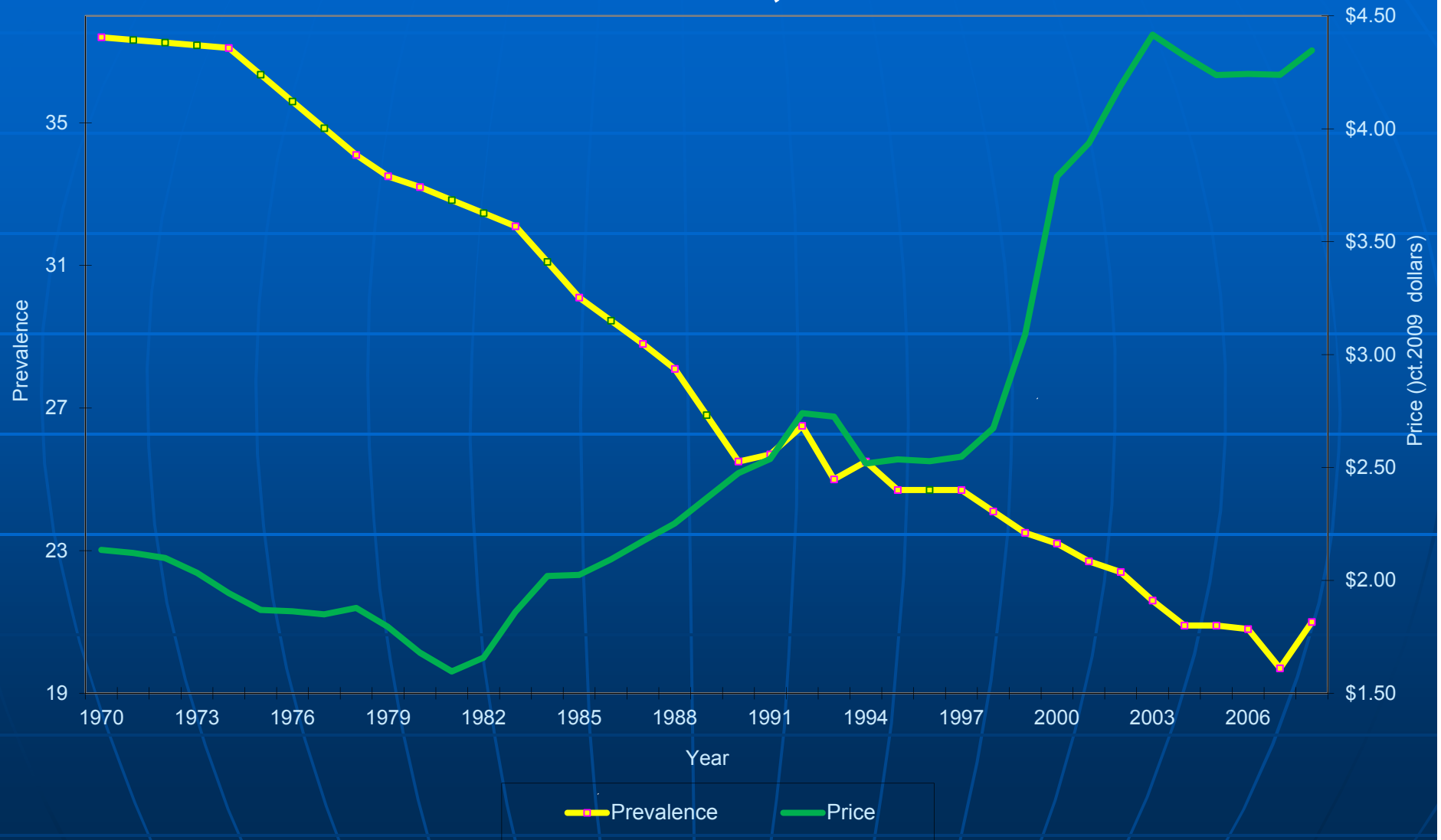
- **Increases in tobacco product prices:**
 - Induce current users to try to quit
 - Many will be successful in long term
 - Keep former users from restarting
 - Prevent potential users from starting
 - Particularly effective in preventing transition from experimentation to regular use
 - Reduce consumption among those who continue to use
 - Lead to other changes in tobacco use behavior, including substitution to cheaper products or brands, changes in buying behavior, and compensation

Cigarette Prices and Cigarette Sales, United States, 1970-2009



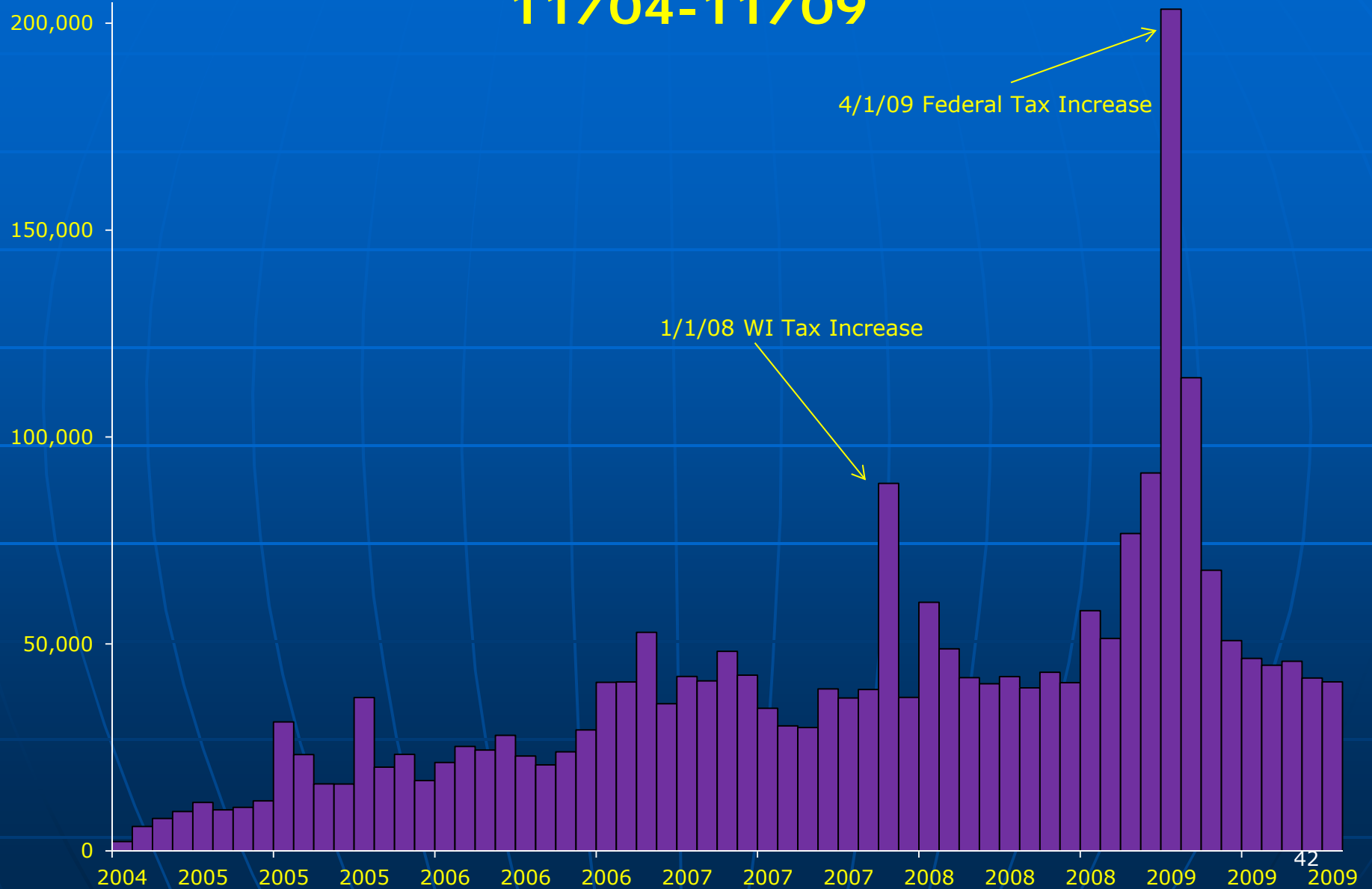
Source: *Tax Burden on Tobacco*, 2009, and author's calculations

Cigarette Prices and Adult Smoking Prevalence, United States, 1970-2008

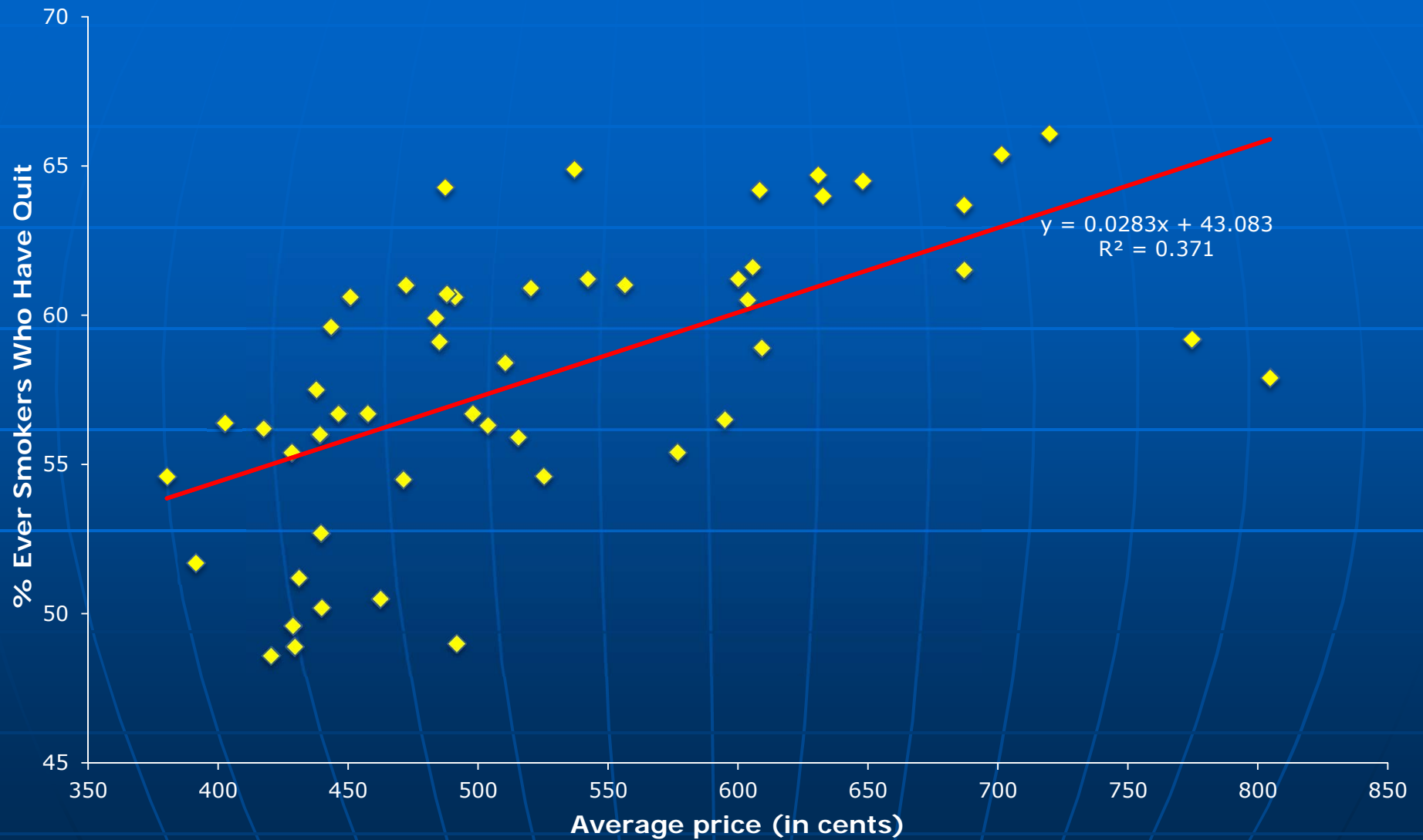


Source: NHIS, *Tax Burden on Tobacco*, 2009, and author's calculations
 Note: green data points for prevalence are interpolated assuming linear trend

Monthly Quit Line Calls, United States 11/04-11/09

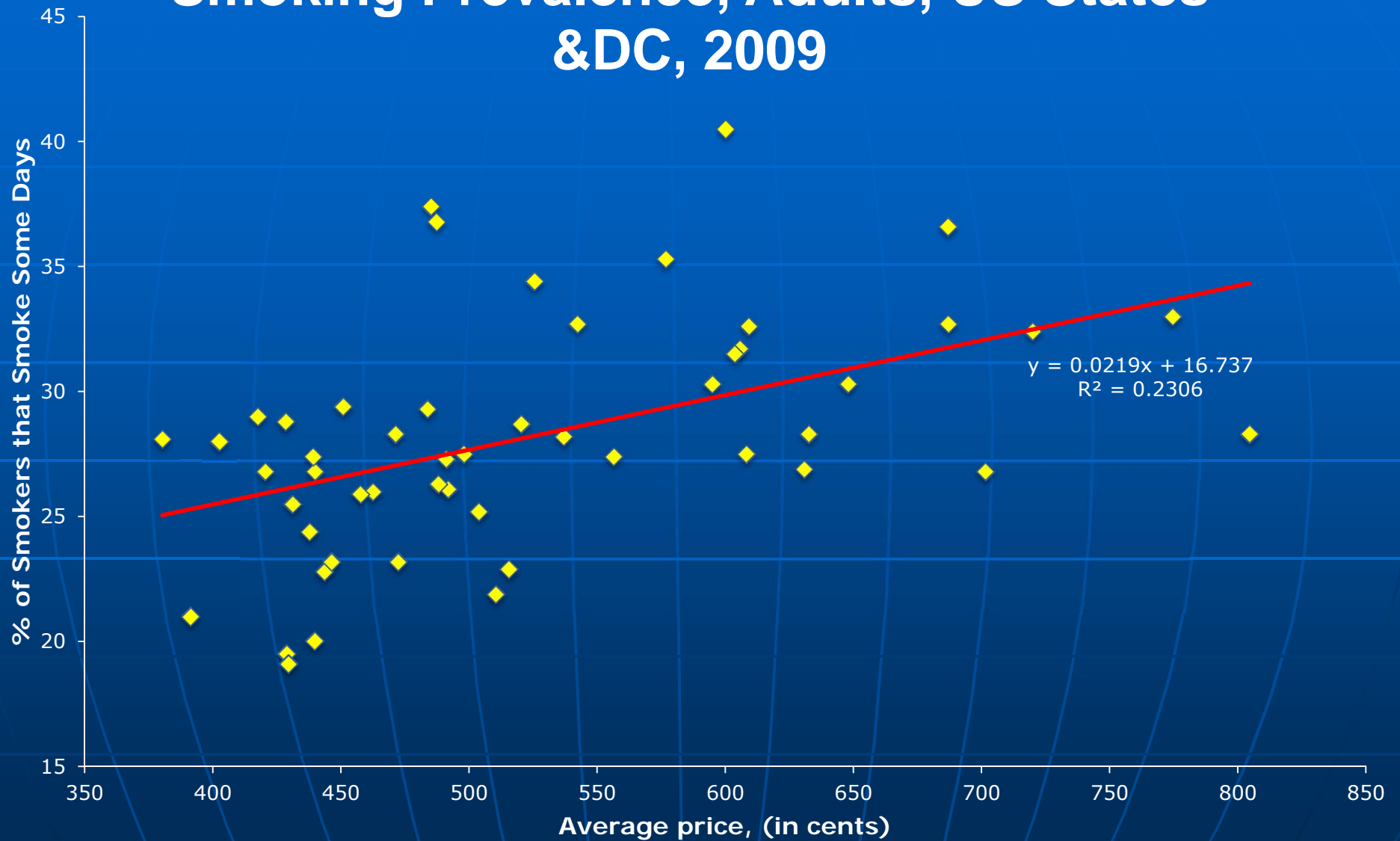


Cigarette Prices and Cessation US States & DC, 2009



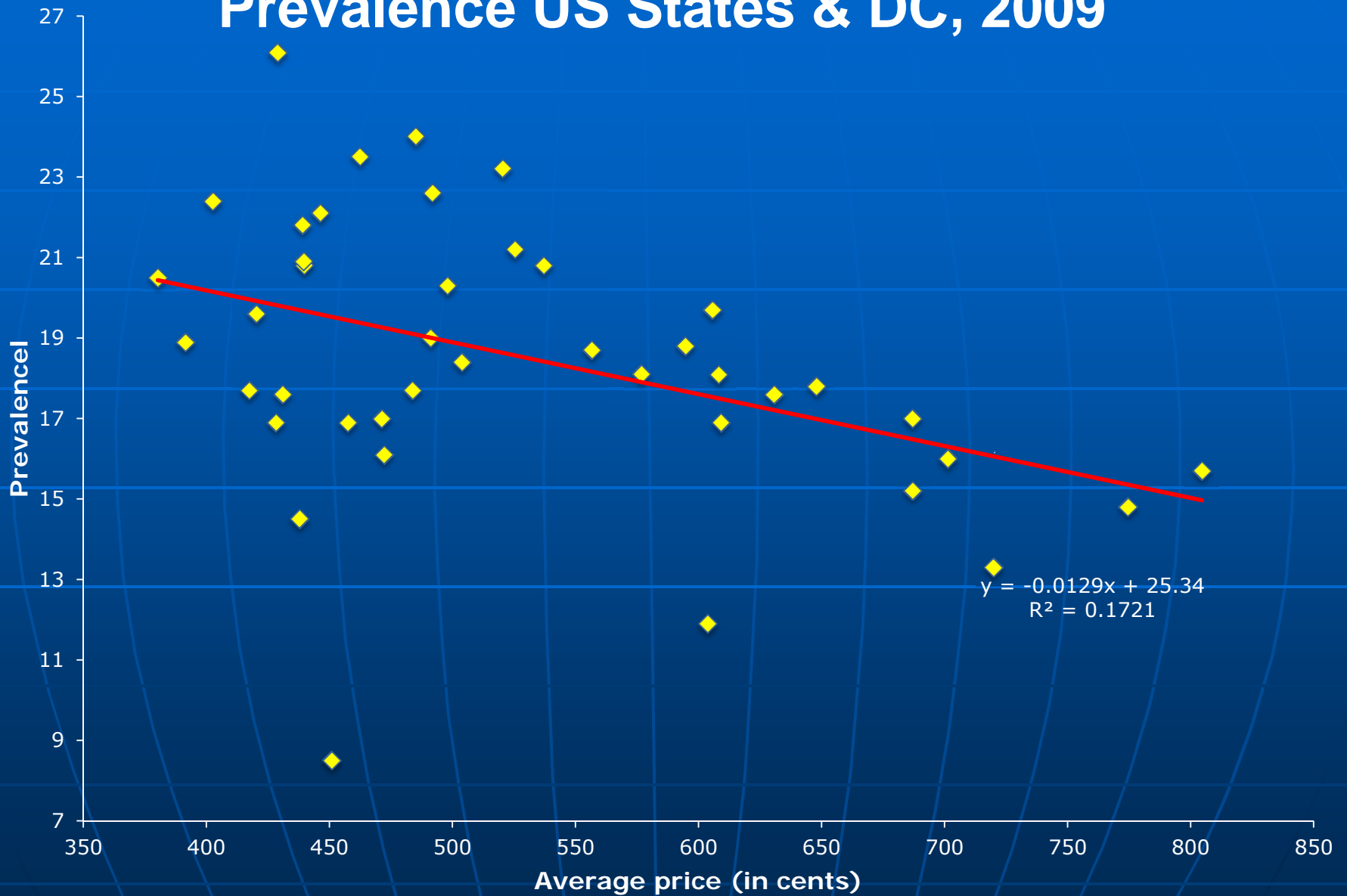
Source: BRFSS, *Tax Burden on Tobacco*, 2010, and author's calculations

Cigarette Price and Less than Daily Smoking Prevalence, Adults, US States & DC, 2009



Source: BRFSS, *Tax Burden on Tobacco*, 2010, and author's calculations

Cigarette Prices and Youth Smoking Prevalence US States & DC, 2009



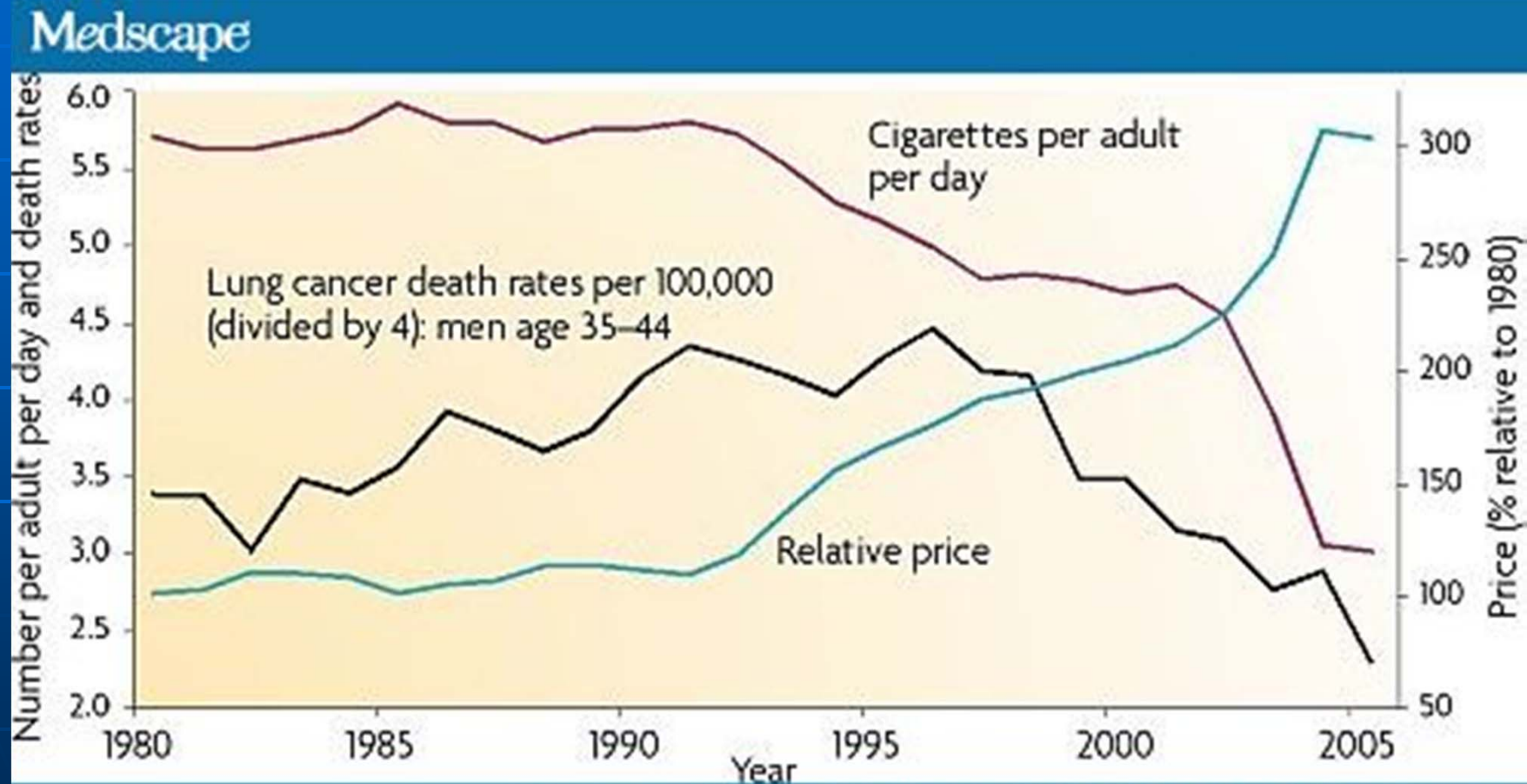
Source: YRBS, *Tax Burden on Tobacco*, 2010, and author's calculations

Cigarette Price and Youth Smoking Prevalence, United States, 1991-2010



Source: MTF, *Tax Burden on Tobacco*, 2011, and author's calculations

Taxes, Prices and Health: US, 1980-2005



Source: Nat Rev Cancer © 2009 Nature Publishing Group

Impact of Tax and Price on Alcohol Use

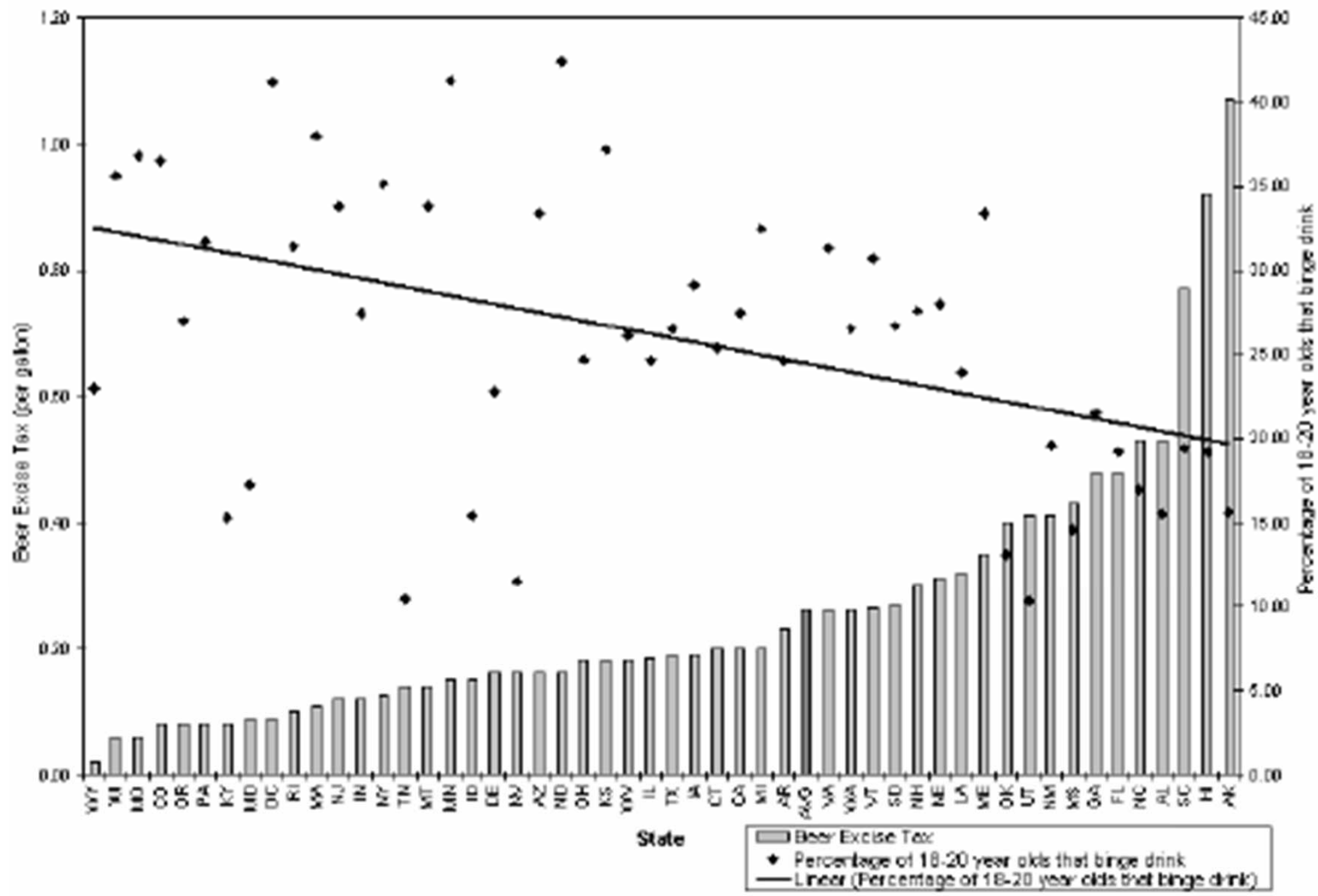
Alcohol Prices and Drinking

Extensive econometric and other research shows that higher prices for alcoholic beverages significantly reduce drinking:

- 10 percent price increase would reduce:
 - Beer consumption by 1.7 to 4.6 percent
 - Wine consumption by 3.0 to 6.9 percent
 - Spirits consumption by 2.9 to 8.0 percent
 - Overall consumption by 4.4 percent
 - Heavy drinking by 2.8 percent
 - Generally larger effects on youth and young adults

Beer Taxes and Binge Drinking

Graph 7. Current beer excise taxes and the percentage of 18-20 year olds that binge drink.



Source: CSPI Factbook on State Beer Taxes

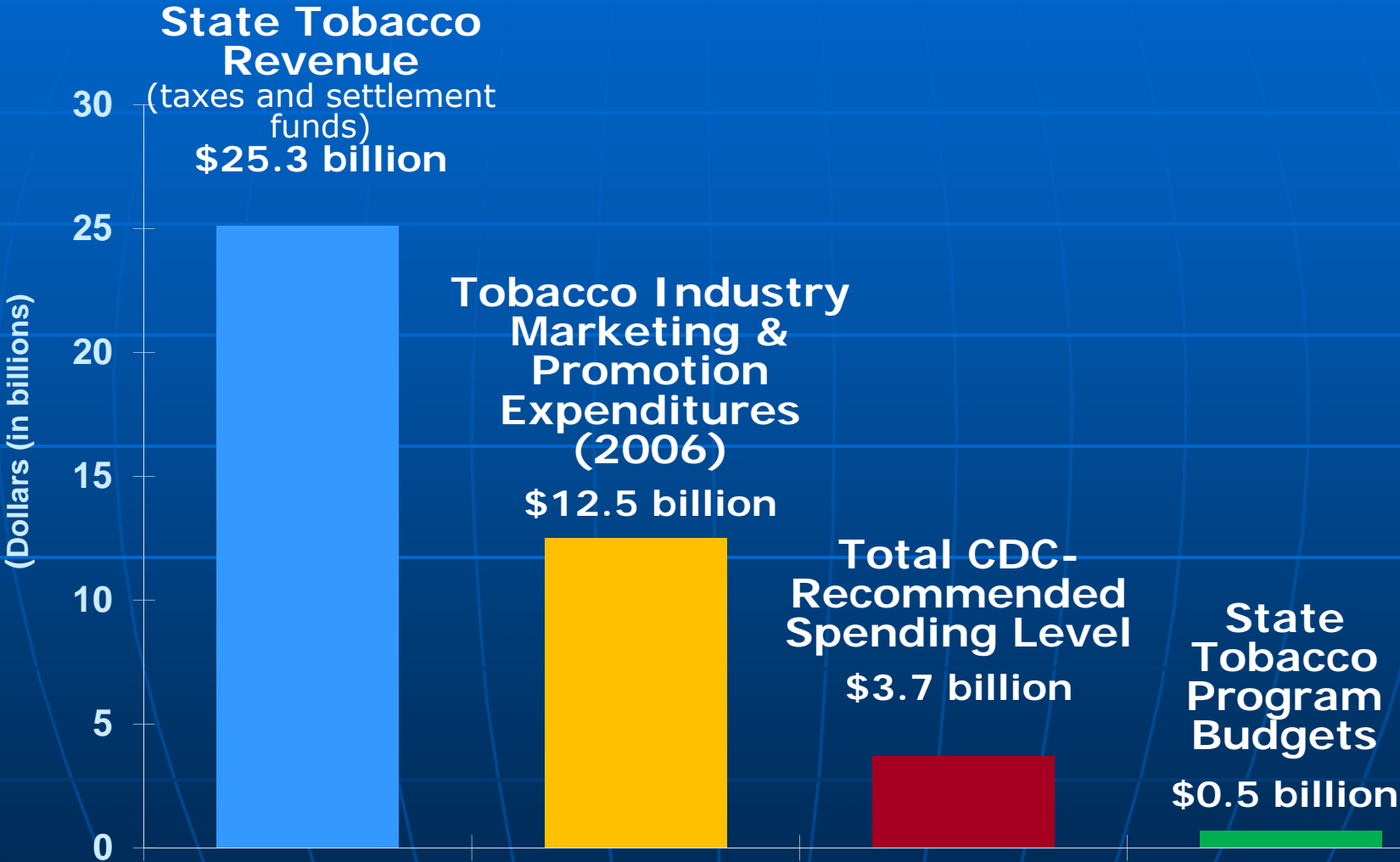
Alcohol Prices and Consequences

Extensive econometric and other research shows that higher prices for alcoholic beverages significantly reduce:

- Drinking and driving, traffic crashes, and motor-vehicle accident fatalities
- Deaths from liver cirrhosis, acute alcohol poisoning, alcohol-related cancers, cardiovascular diseases, and other health consequences of excessive drinking
- Violence, including spouse abuse, child abuse, and suicides
- Other consequences of drinking, including work-place accidents, teenage pregnancy, and incidence of sexually transmitted diseases

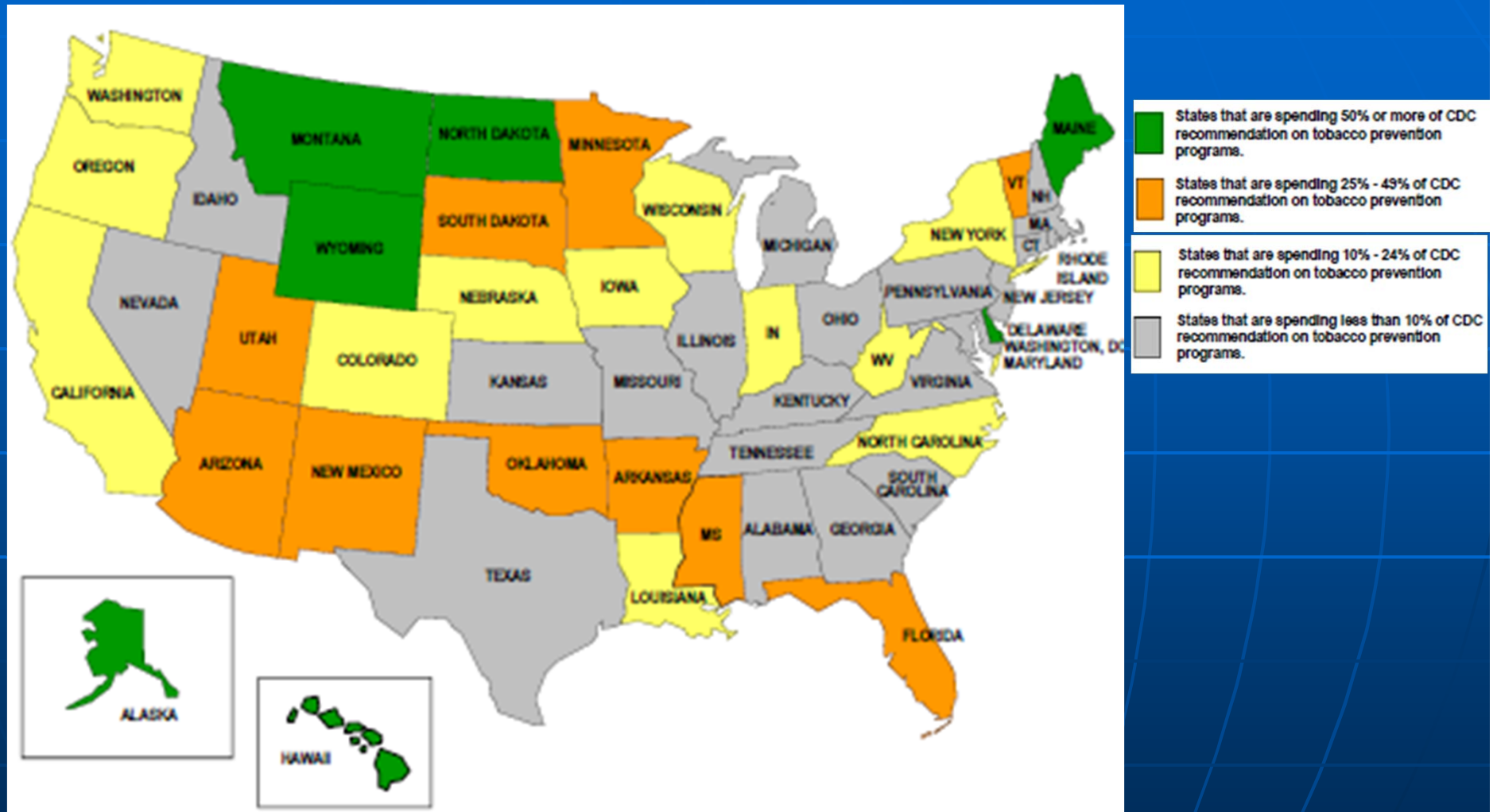
Earmarking Tobacco Tax Revenues for Tobacco Control

Tobacco Industry is Outspending Prevention Efforts 24:1 —FY2011



Campaign for Tobacco Free Kids, Federal Trade Commission, American Heart Association, American Cancer Society, American Lung Association, SmokeLess States National Tobacco Policy Initiative

Program Funding

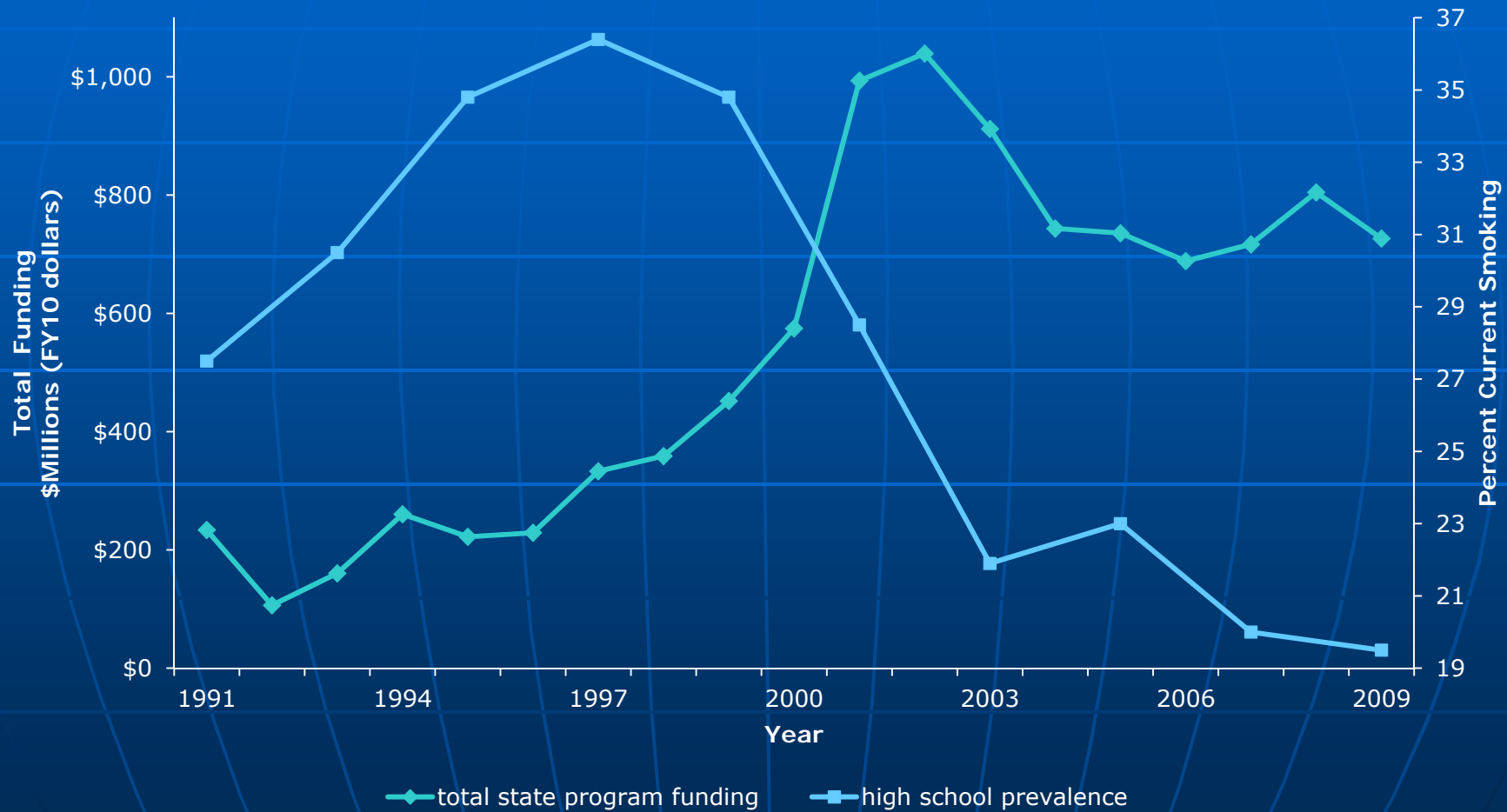


Source: Tobacco Free Kids, 2010

Comprehensive Programs

- Impact of state program funding
 - Increased funding associated with:
 - Reductions in overall cigarette sales
 - Lower youth smoking prevalence
 - Lower adult smoking prevalence
 - Increased interest in quitting, successful quitting
 - Much of impact results from large scale mass-media anti-smoking campaigns

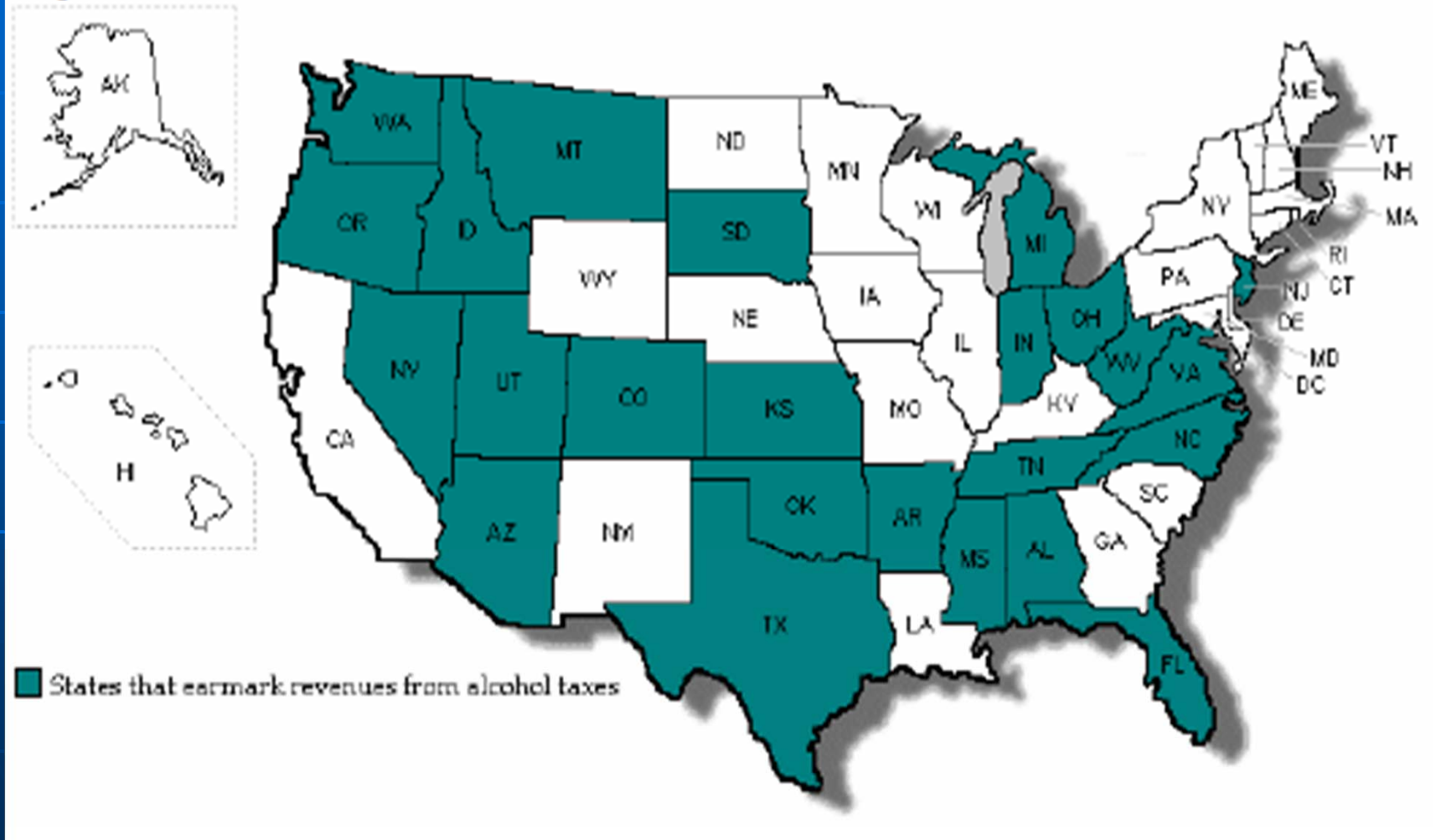
State Tobacco Control Program Funding and Youth Smoking Prevalence



Earmarking Alcohol Tax Revenues for Alcohol Control

Earmarked Alcohol Taxes

Graph 5. States that earmark revenues from alcohol taxes.¹⁶



Source: CSPI *Factbook on State Beer Taxes*

Earmarked Alcohol Taxes

- Small share of tax revenues earmarked
- Fund variety of alcohol prevention, treatment and enforcement efforts

State	Program
Arizona	Drug and Alcohol Treatment Fund
Idaho	Alcoholism Treatment Account
Kansas	Community Alcoholism and Intoxication Programs Fund
Mississippi	Alcoholism Treatment and Rehabilitation Fund
Montana	Treatment, rehabilitation, and prevention of alcoholism and chemical dependency
New Jersey	Alcohol Education, Rehabilitation and Enforcement Fund
Nevada	Increase services for prevention and treatment of alcoholism and alcohol abuse.
Oregon	Mental Health Alcoholism and Drug Services Account
Tennessee	To assist municipalities and counties in carrying out the provisions of the state's 1973 Comprehensive Alcohol and Drug Treatment Act
Utah	Programs or projects related to prevention, treatment, detection, and prosecution

- No research linking funding to reduced alcohol use, problems
 - research demonstrates cost-effectiveness of interventions that could be funded by earmarked taxes

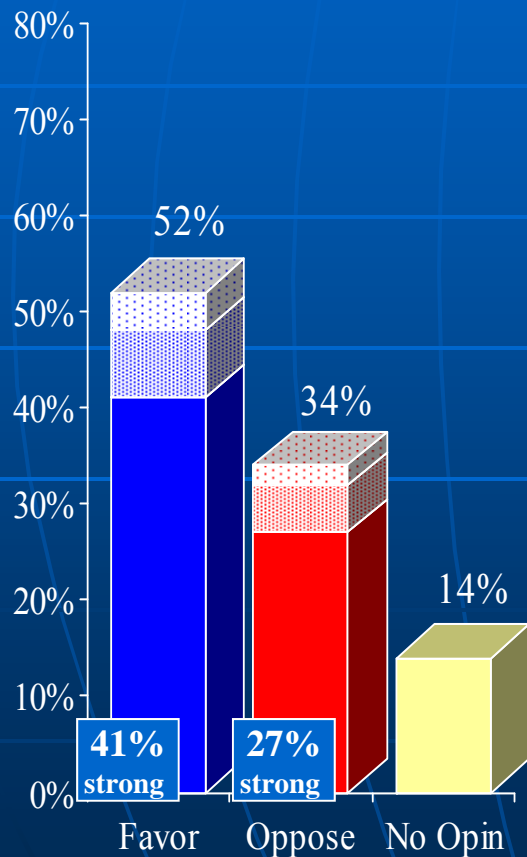
Popular Support for Tobacco & Alcohol Taxes

Popular with Voters

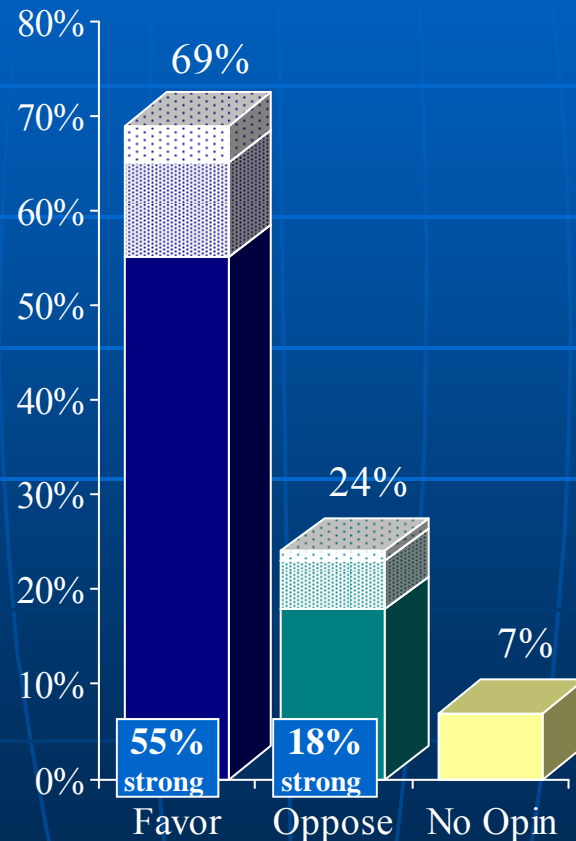
- Tobacco Excise Tax Increases:
 - *Generally supported by voters*
 - *Supported by those likely to vote for either party*
 - *More support when framed in terms of impact on youth tobacco use*
 - *More support when some of new revenues are used to support tobacco control and/or other health-related activities*
 - Comprehensive state tobacco control programs
 - Expanded public health insurance programs (e.g. S-CHIP; Arkansas)
 - *Greater support than for other revenue sources*

Earmarking for Youth Smoking Prevention Increases Support For Tobacco Tax Hikes

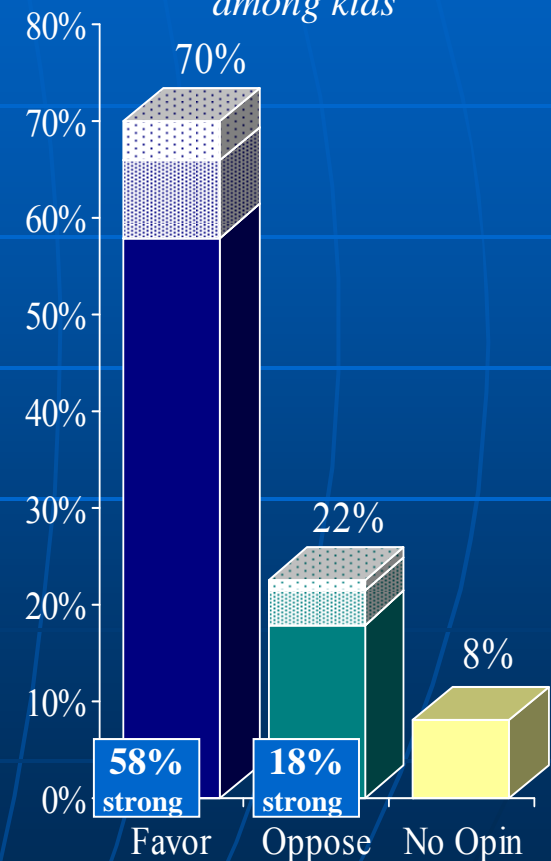
Would you favor or oppose an increase in the state tobacco tax?



... as part of an effort to help reduce smoking, particularly among kids

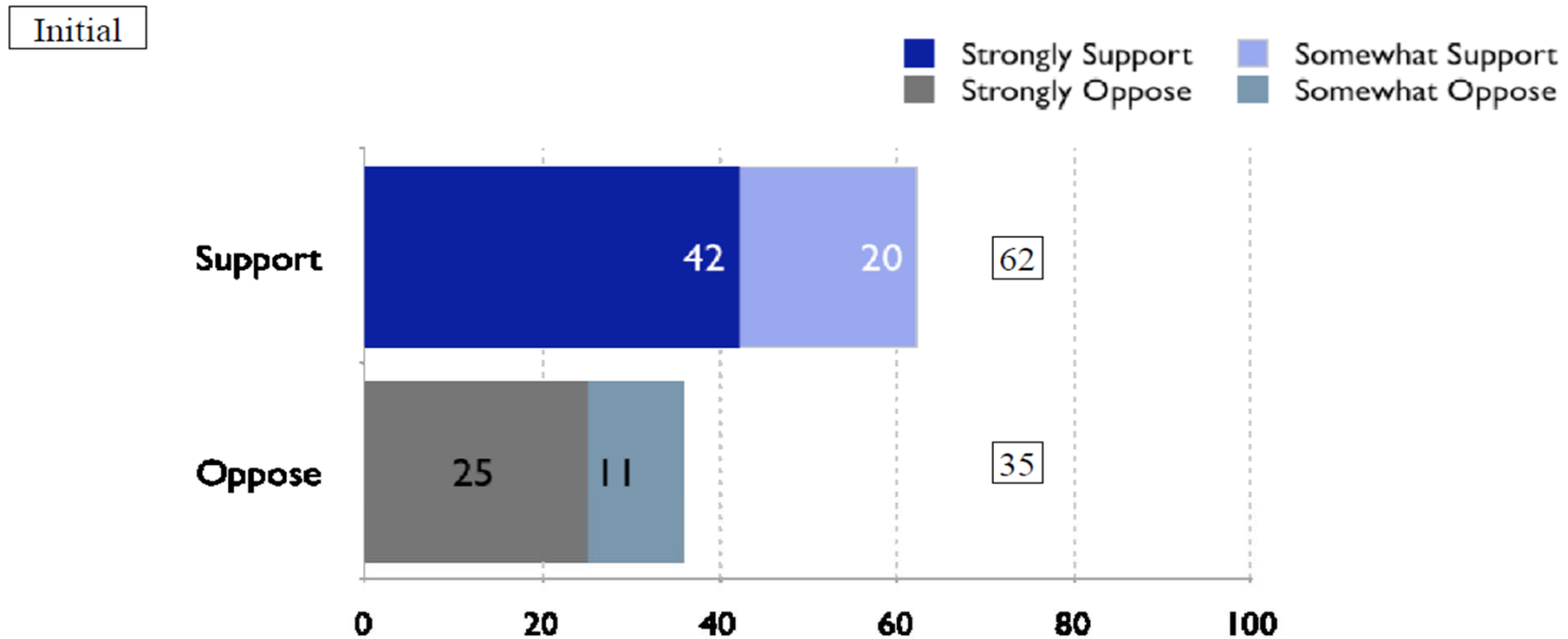


...if part of the money is used to fund programs to reduce tobacco use, particularly among kids



Similar Support for Alcoholic Beverage Taxes

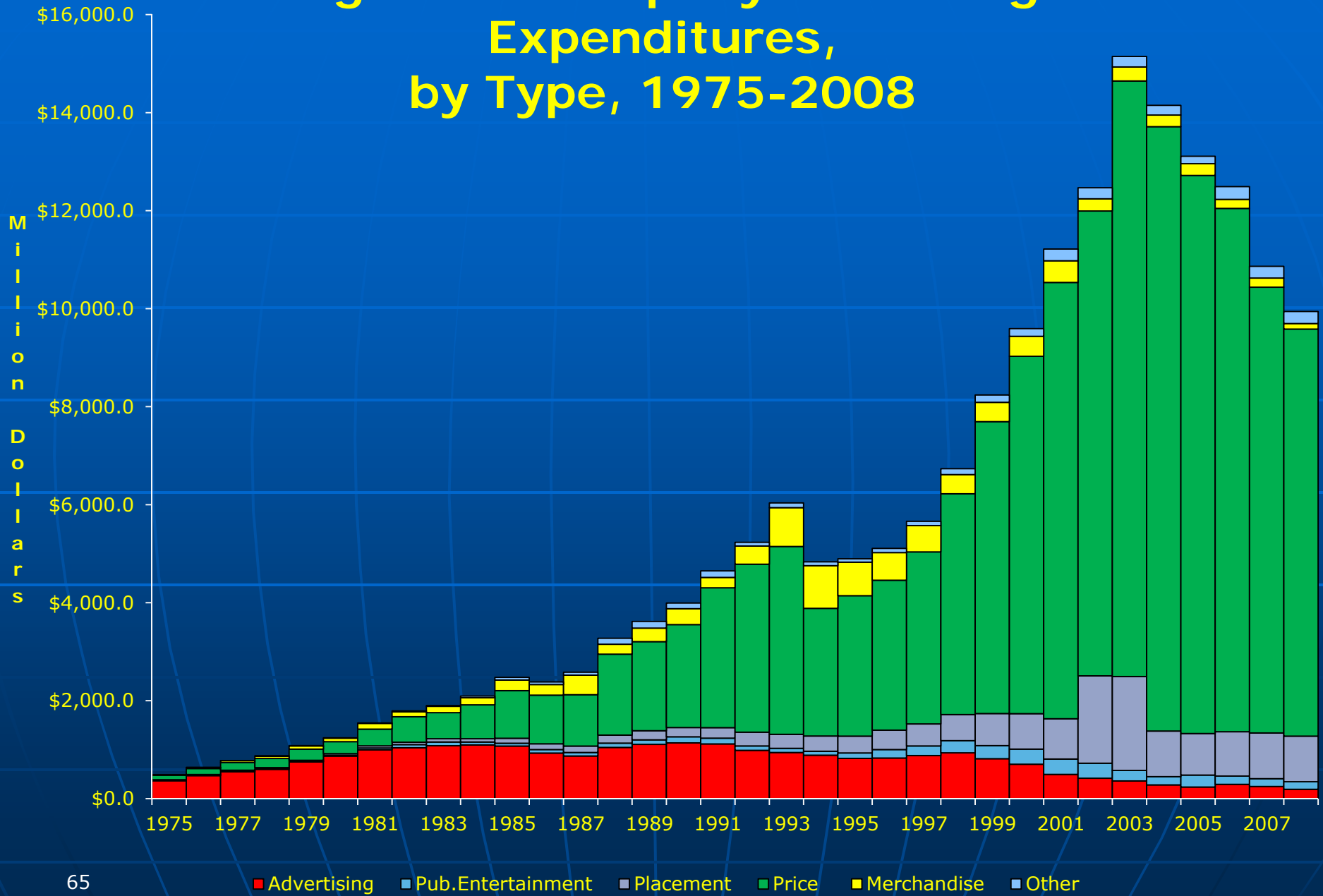
A Majority Also Supports Increasing the Tax on Alcohol, and
4 in 10 Voters Strongly Favor the Increase



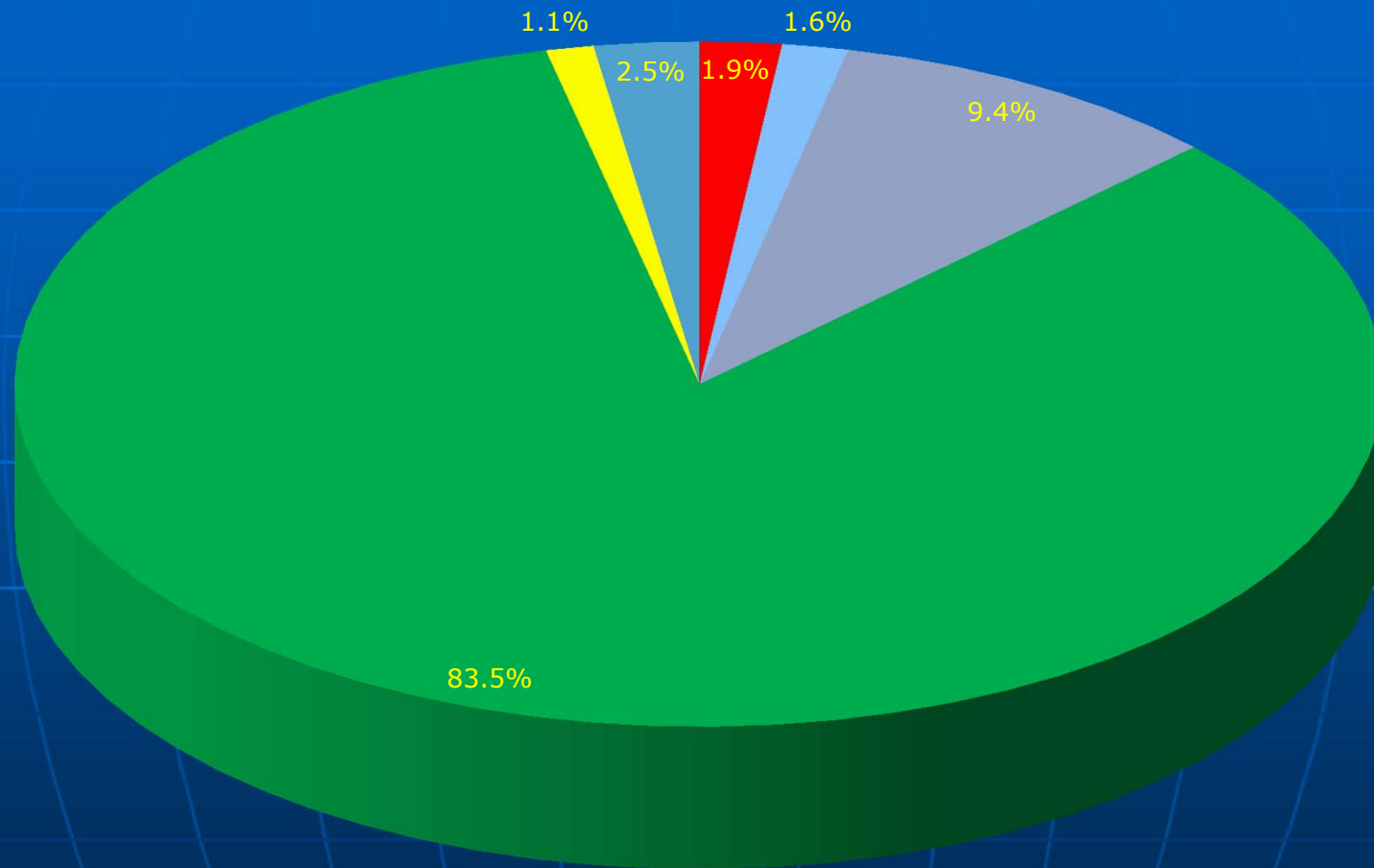
*Some leaders in New York State are considering increasing the tax to 10 cents per drink on **alcoholic beverages**, including beer, wine and liquor, and using a portion of the money to prevent youth alcohol use and provide for the treatment of alcohol abuse. Based on what you know, would you support or oppose this new tax?*

Industry Price Marketing

Cigarette Company Marketing Expenditures, by Type, 1975-2008



Cigarette Company Marketing Expenditures, % of Total by Type, 2008



Tobacco Industry Efforts to Offset Tax Increase

On February 4th, 2009, the Federal Government enacted legislation to fund the expansion of the State Children's Health Insurance Program (SCHIP) that increases excise taxes on cigarettes by 158%.

As a result, you will see the price of all cigarettes, including ours, increase in retail stores.

We know times are tough, so we'd like to help. We invite you to register at Marlboro.com to become eligible for cigarette coupons and special offers using this code: **MAR1558**

Thank You,

Philip Morris USA

Price-Related Cigarette Marketing and Tobacco Control

- Greater price-related marketing since the Master Settlement Agreement and related price increases (Ruel, et al., 2004; Loomis et al., 2006; FTC, 2007)
- More price-related marketing in states with greater spending on comprehensive tobacco control programs (Loomis, et al., 2006; Slater et al., 2001)
- Growing use of point-of-sale ads to highlight sales promotions (e.g. special price, special offer, cents off, reduced price, multi-pack special) (Feighery et al., 2008)

Restricting Marketing?

- Family Smoking Prevention and Tobacco Control Act, 2009
 - Eliminates federal pre-emption of stronger state, local restrictions on tobacco company marketing
 - Allows limits on time, place or manner of tobacco company marketing
 - Comprehensive state and/or local marketing bans possible?

Minimum Pricing Policies

- 25 states with minimum pricing policies
- Typically mix of minimum markups to wholesale and retail prices
 - Median wholesale markup 4%
 - Median retail markup 8%
- 7 states prohibit use of price promotions in minimum price calculation
- Little impact on actual retail prices
 - Greater impact where promotions excluded

Common Oppositional Arguments

Myths & Facts

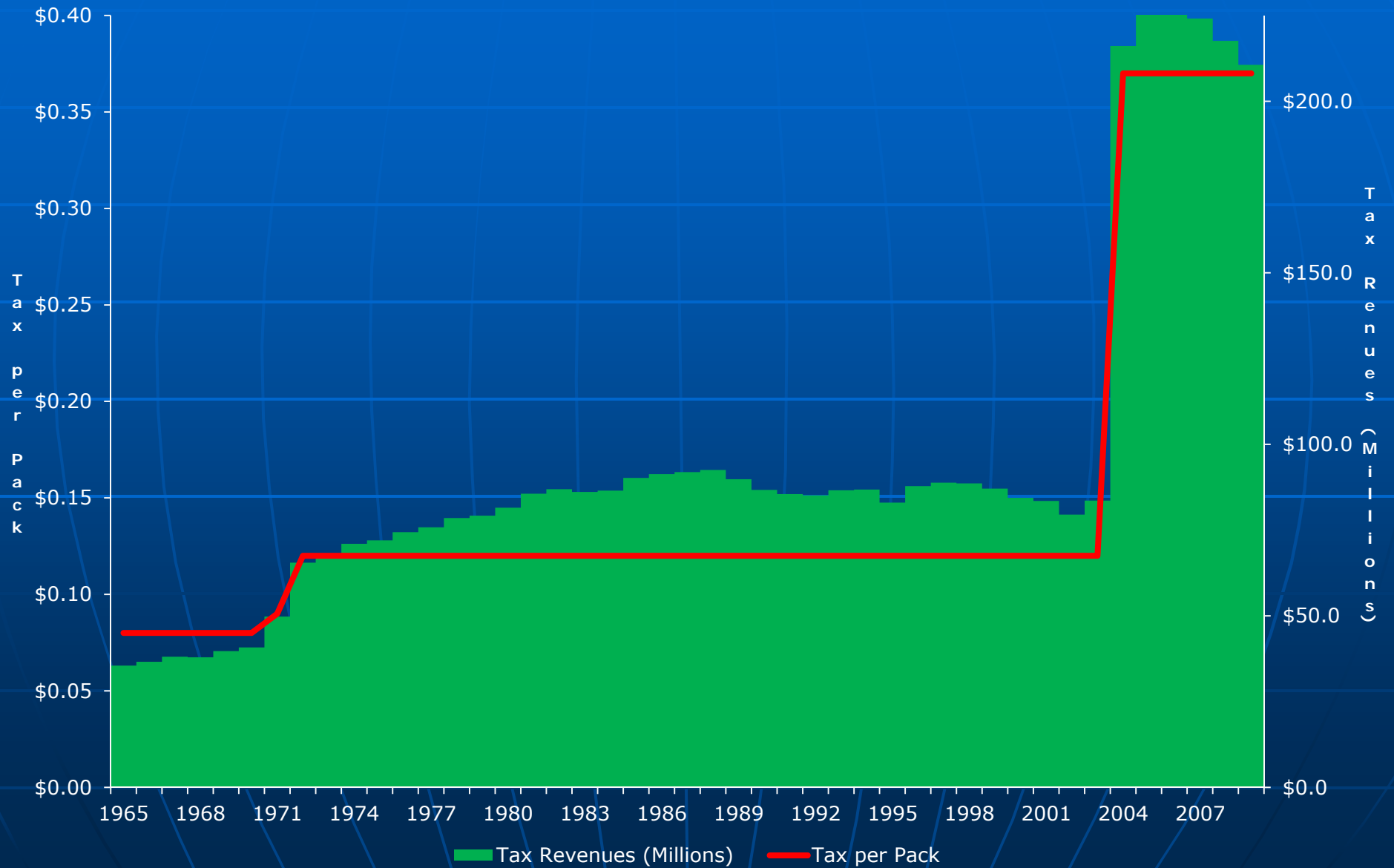
Impact on Revenues

By *J Scott Moody*, 4/2/08, from an [AP story](#):

AUGUSTA — “A coalition of health groups today urged lawmakers to increase the cigarette tax by a \$1 per pack, saying the increase will encourage more people to quit smoking and generate more money for health programs.

Translation: Fewer people smoking equals more cigarette tax revenue? Someone needs a math lesson.”

Cigarette Tax and Tax Revenues Georgia, 1965-2009



Positive Effect of Tax Increase on Revenue Results from:

Low share of tax in price:

- state taxes account for about 25% of price
- total taxes account for less than half of price
- *Implies large tax increase has much smaller impact on price*

Less than proportionate decline in consumption:

- 10% price increase reduces consumption by 4%

Positive Effect of Tax Increase on Revenues

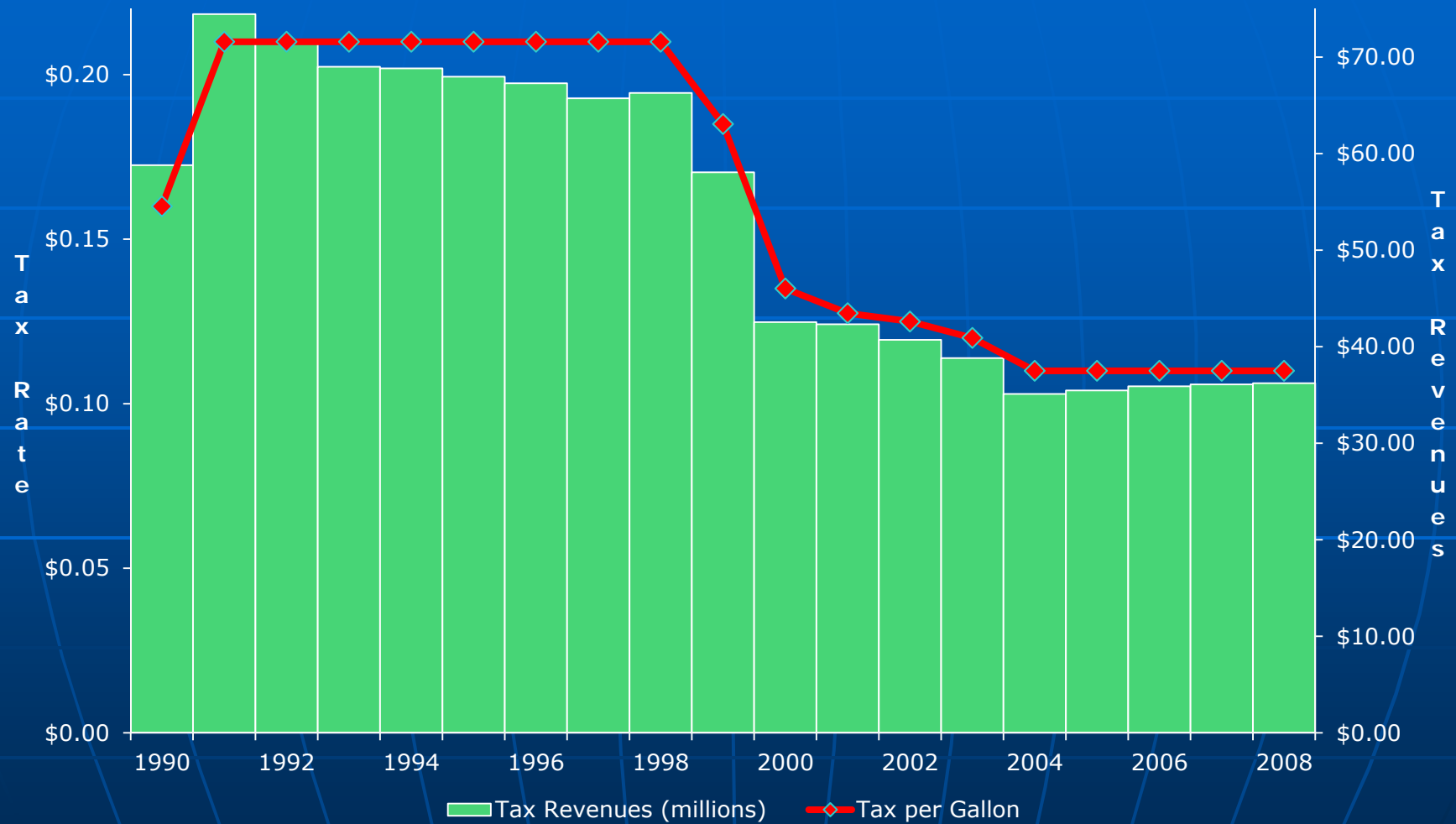
Example – with significant tax avoidance

- Price \$4.00, State tax \$1.00, Sales 500 million packs
 - Revenues: = \$500 million
- Double tax to \$2.00; price rises to \$5.00
 - 100% tax increase; 25% price increase
- 25% price increase reduces sales by 20% (reduced consumption plus tax avoidance)
 - new sales 400 million packs
 - *80% of original sales at double the tax increases revenues by 60%*
 - new revenues = \$800 million

Revenue Impact

- **Increases in alcoholic beverage taxes:**
 - Increase government tax revenues
 - Even smaller share of tax in price
 - Less than proportionate reductions in consumption in response to price increase
 - Broader tax base implies greater potential revenues
 - Revenue increases sustained over time
 - Changes in revenues gradual and predictable

New York Beer Tax and Tax Revenues, 1990-2008, Not Inflation Adjusted



Source: *Brewers' Almanac*, 2009, and author's calculations

Impact on Jobs

JULY, 14, 2010 – The Associated Press

- RICHMOND, Va. — The tobacco industry is running a full-court press ahead of a federal scientific panel's meeting to discuss how to regulate menthol cigarettes, a still-growing part of the shrinking cigarette market.
- The union representing nearly 4,000 tobacco workers sent a letter to the Food and Drug Administration committee examining the public health effects of the minty smokes, warning that a ban could lead to "severe jobs loss" and black market cigarettes.

Impact on Jobs

- Tobacco excise tax will lead to decreased consumption of tobacco products
 - Small loss of jobs in tobacco sector
- Money not spent on tobacco products will be spent on other goods and services
 - Gains in jobs in other sectors
- Increase in tax revenues will be spent by government
 - Additional job gains in other sectors
- Net increase in jobs in most states

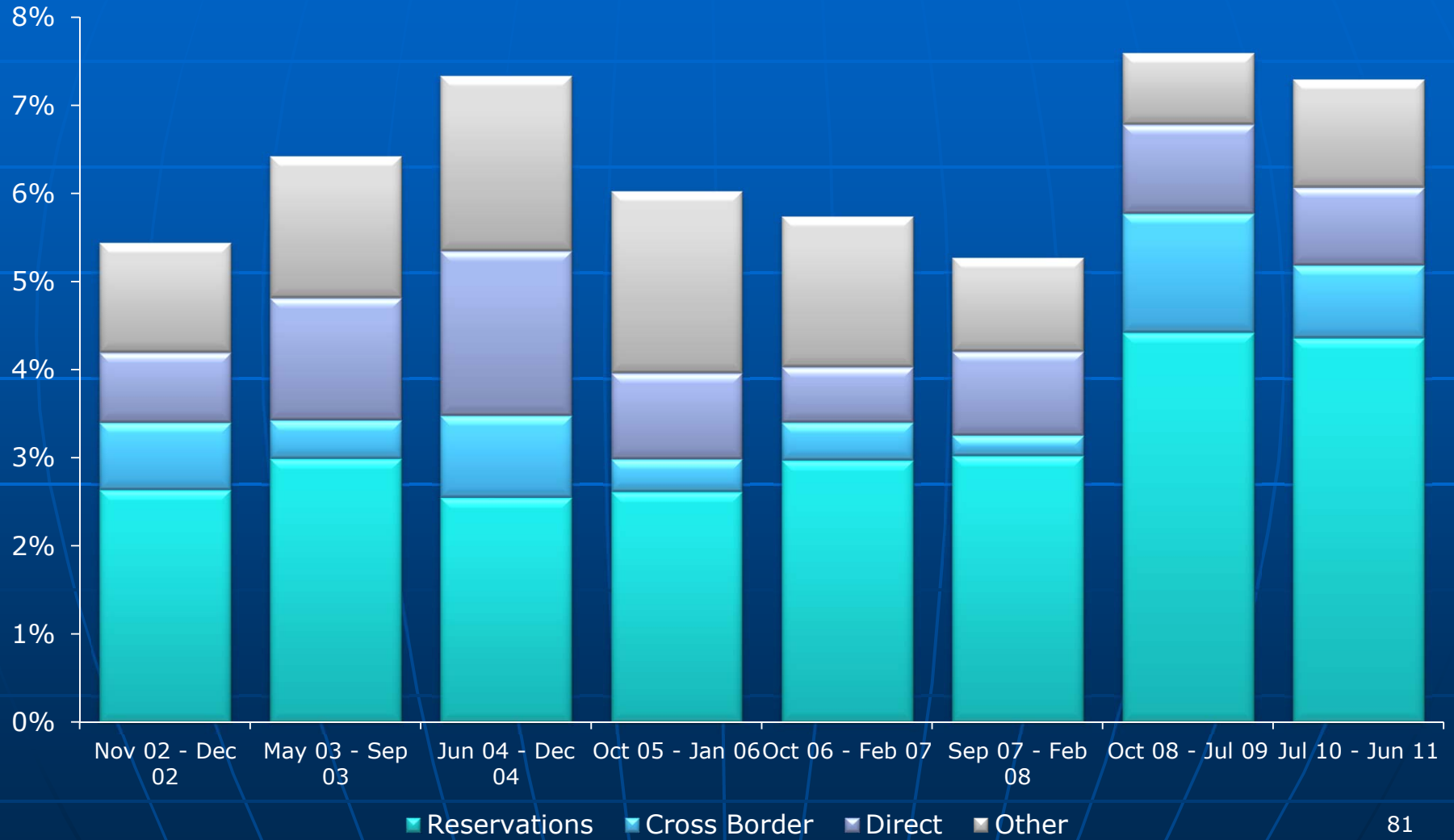
Tax Avoidance & Evasion

April 1, 2008 – New York Sun

- A pack of premium cigarettes in New York City now costs \$7 or \$8; prices would rise to above \$9. Opponents of the tax increase argue that **higher prices would drive smokers to seek ways to evade the law and purchase cheaper cigarettes from smugglers or in neighboring states, blunting potential revenue gains for the state.** "It's a **black market gold mine,**" a senior fellow at the Manhattan Institute, E.J. McMahon, said of the proposed tax.

Tax Avoidance

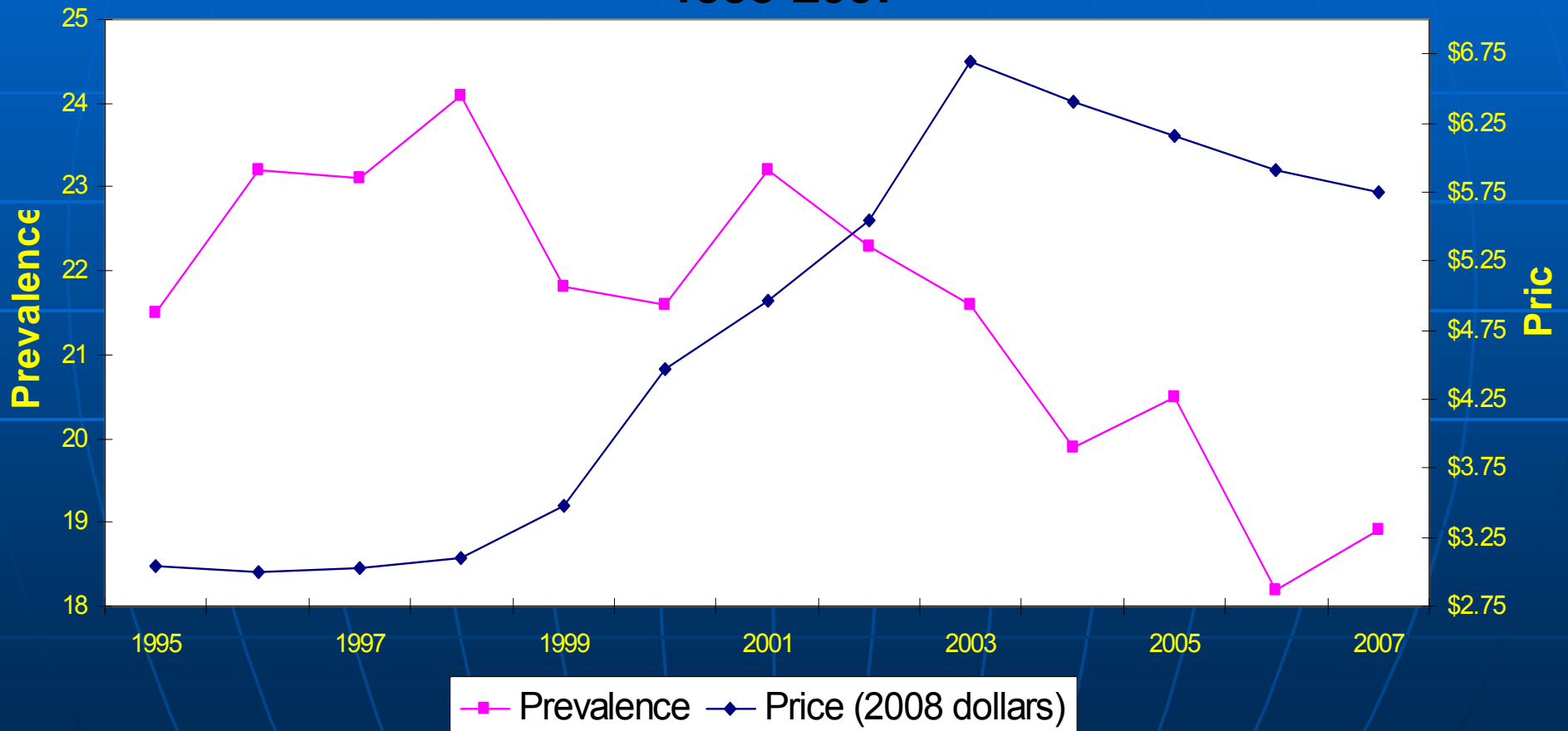
US Smokers, Last Purchase, November 2002-June 2011



Source, ITC project, US survey, Waves 1-8

Tax Avoidance & Evasion Do NOT Eliminate Health Impact of Higher Taxes

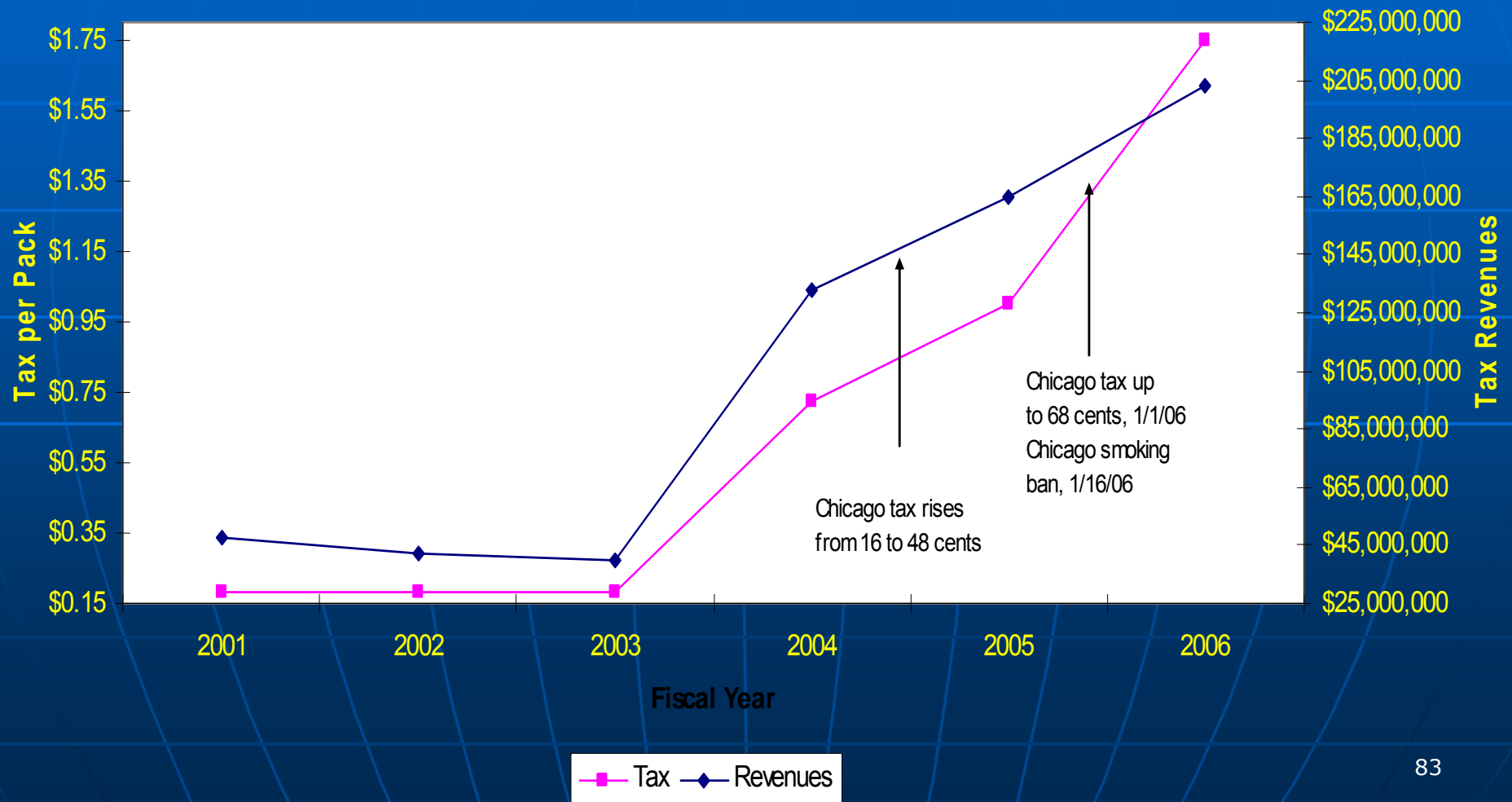
Cigarette Prices and Adult Prevalence, New York, 1995-2007



Source: Tax Burden on Tobacco, 2008 and BRFSS

Tax Avoidance & Evasion Do NOT Eliminate Revenue Impact of Higher Taxes

Cook County Cigarette Tax and Tax Revenues - FY01-FY06



Combating Tax Evasion

- High-tech tax stamps
- Licensing of all involved in distribution and sale
- Strong enforcement
- Swift, severe penalties
- Focus on large scale, criminal activity
- Coordinated efforts
 - NAAG efforts targeting Internet
 - Agreements with tribes



Impact on the Poor

July 23, 2010 – San Francisco Examiner

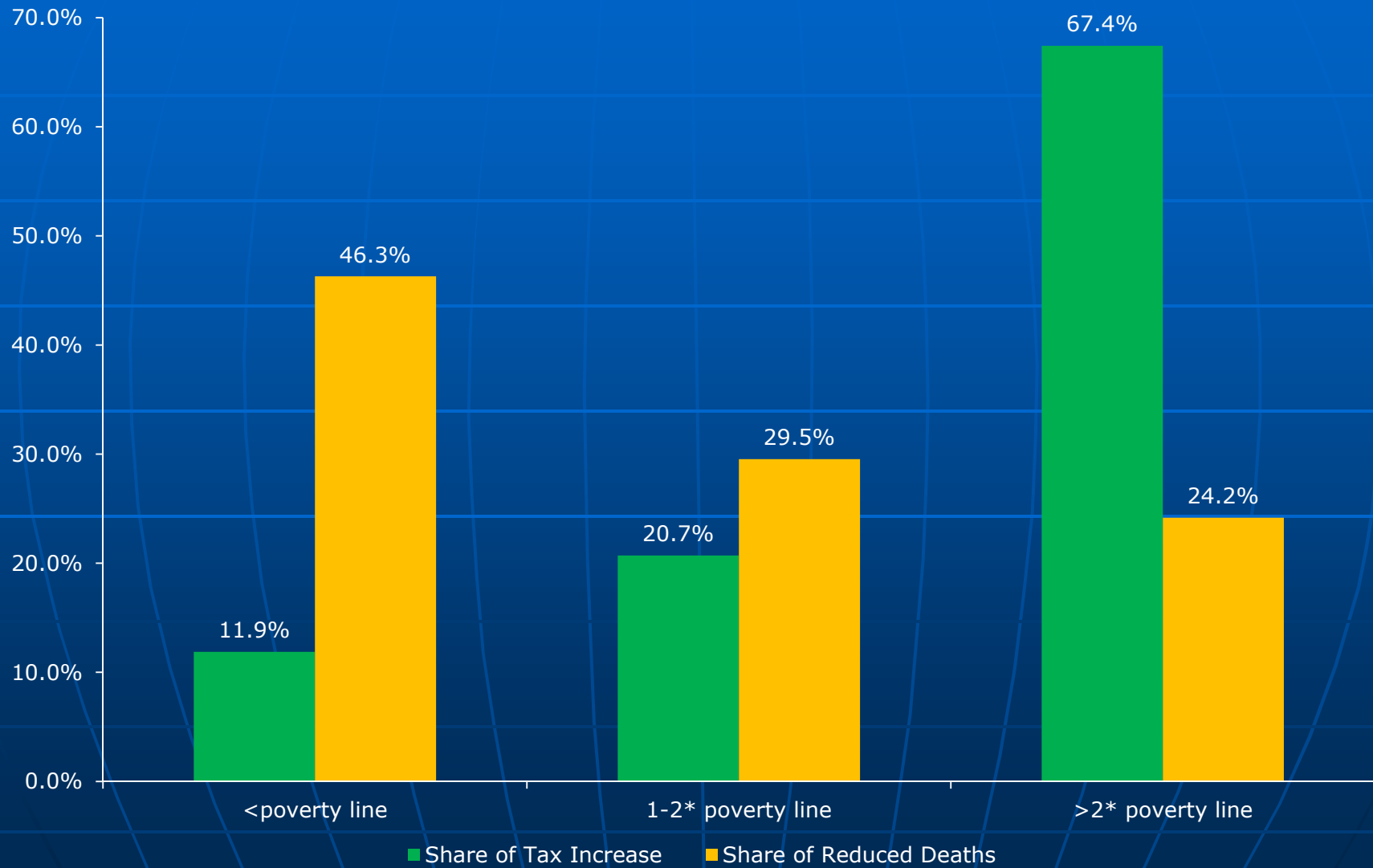
- “Democrats are relying more heavily in their midterm 2010 election message that Republicans care nothing about the poor. Conveniently absent from this analysis is Republican opposition to President Barack Obama’s cigarette tax increase..... **While higher cigarette taxes do discourage smoking, they are highly regressive.** Analyzing a slightly less severe proposal in 2007, the Tax Foundation noted that **‘no other tax hurts the poor more than the cigarette tax.’**” Peyton R. Miller, special to the Examiner.

Impact on the Poor

- Concerns about the regressivity of higher tobacco taxes
 - Tobacco taxes are regressive, but tax increases can be progressive
 - Greater price sensitivity of poor – relatively large reductions in tobacco use among lowest income populations, small reductions among higher income populations
 - Health benefits that result from tax increase are progressive

Who Pays & Who Benefits

Impact of Federal Tax Increase, U.S., 2009



Source: Chaloupka et al., in progress; assumes higher income smokers smoke more expensive brands

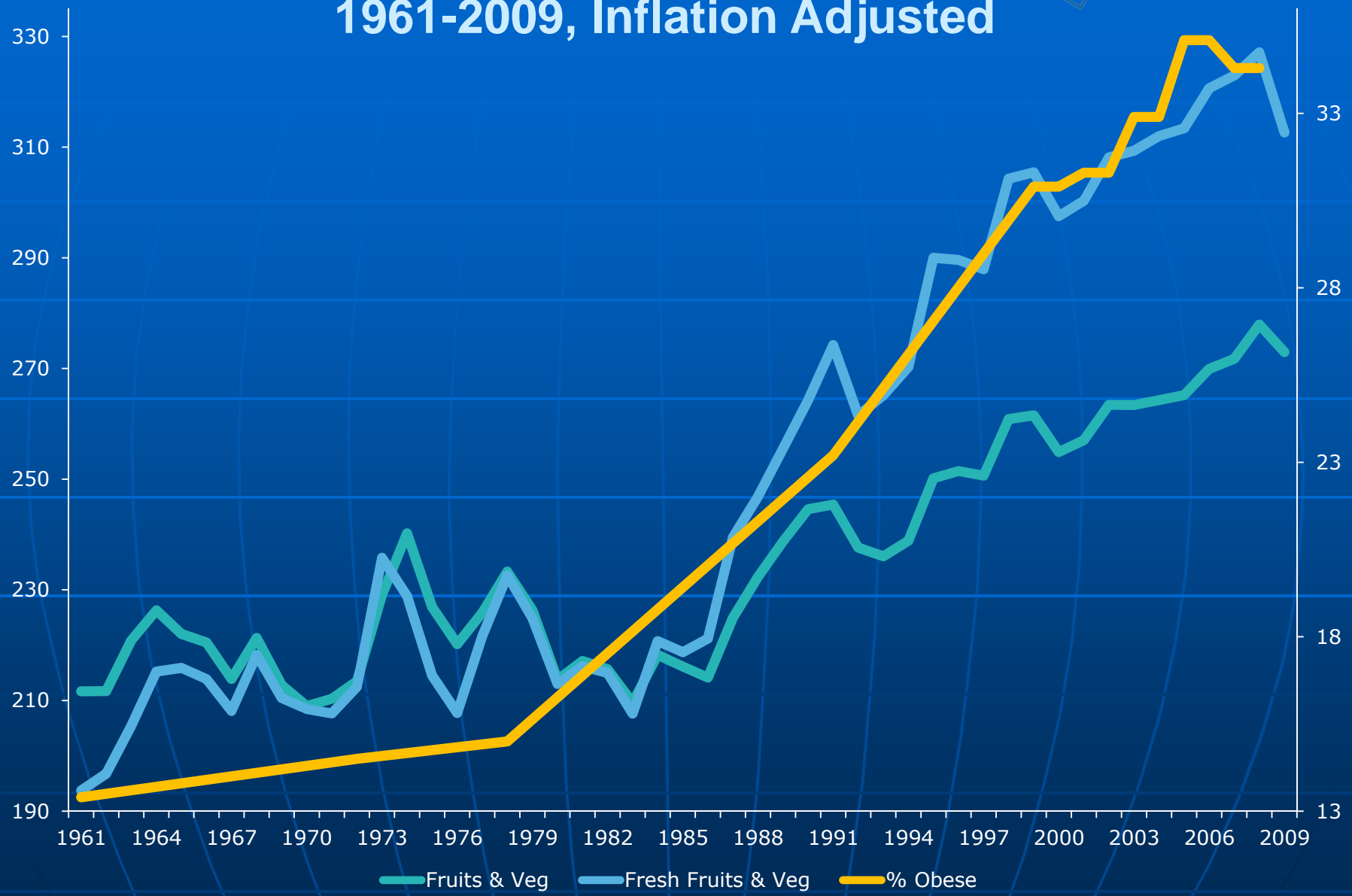
Impact on the Poor

- Need to consider overall fiscal system
 - Key issue with tobacco taxes is what's done with the revenues generated by the tax
 - Greater public support for tobacco tax increases when revenues are used for tobacco control and/or other health programs
 - Net financial impact on low income households can be positive when taxes are used to support programs targeting the poor
 - Concerns about regressivity offset by use of revenues for programs directed to poor

Taxation and Obesity?

Selected Food Price & Adult Weight Trends

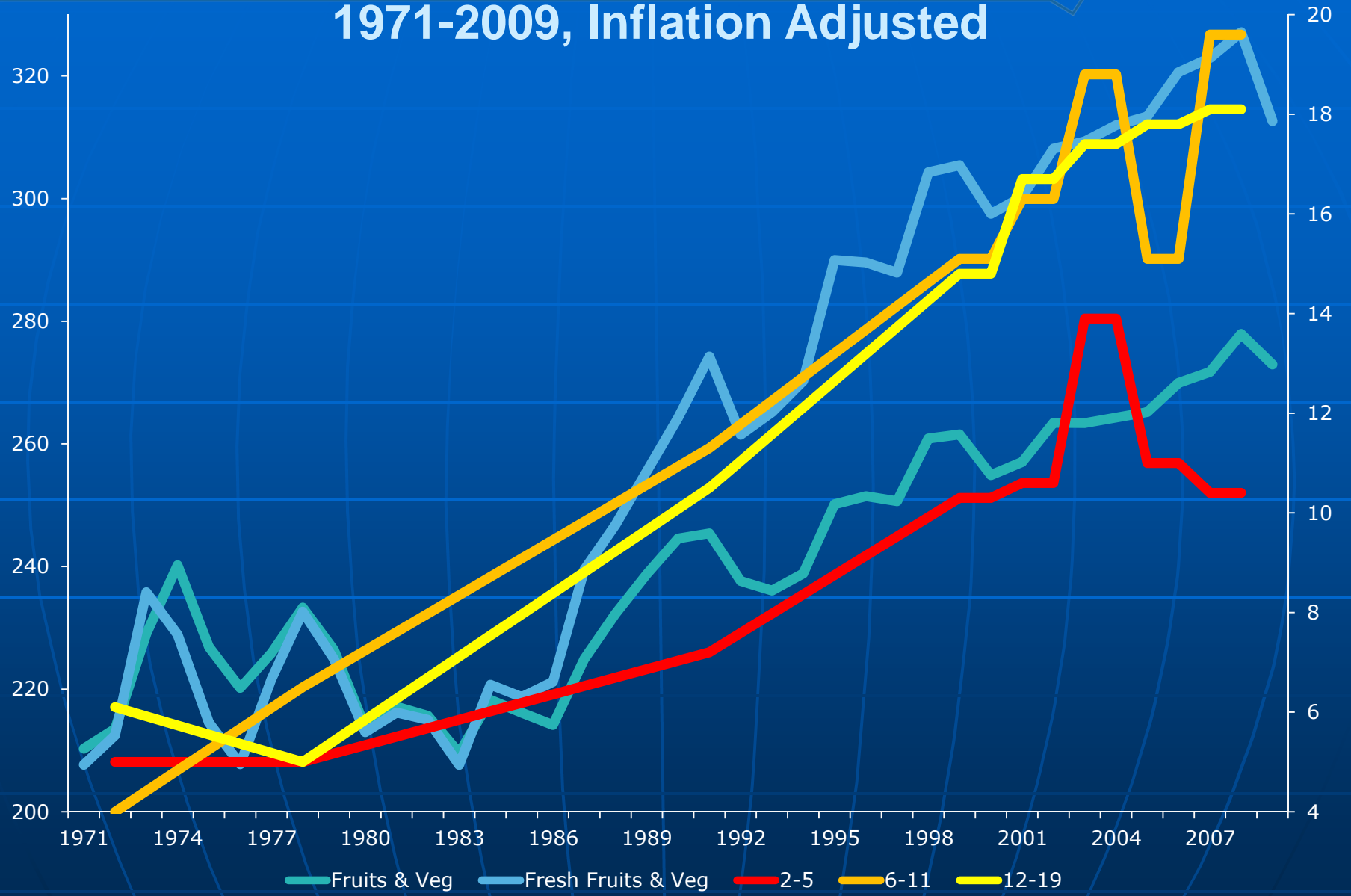
1961-2009, Inflation Adjusted



Source: BLS; NHES-I 1960-62; NHANES, 1971-74, 1976-80, 1988-94, 1999-2000, 2001-02, 2003-04, 2005-06, 2007-08

Selected Food Price & Youth Weight Trends

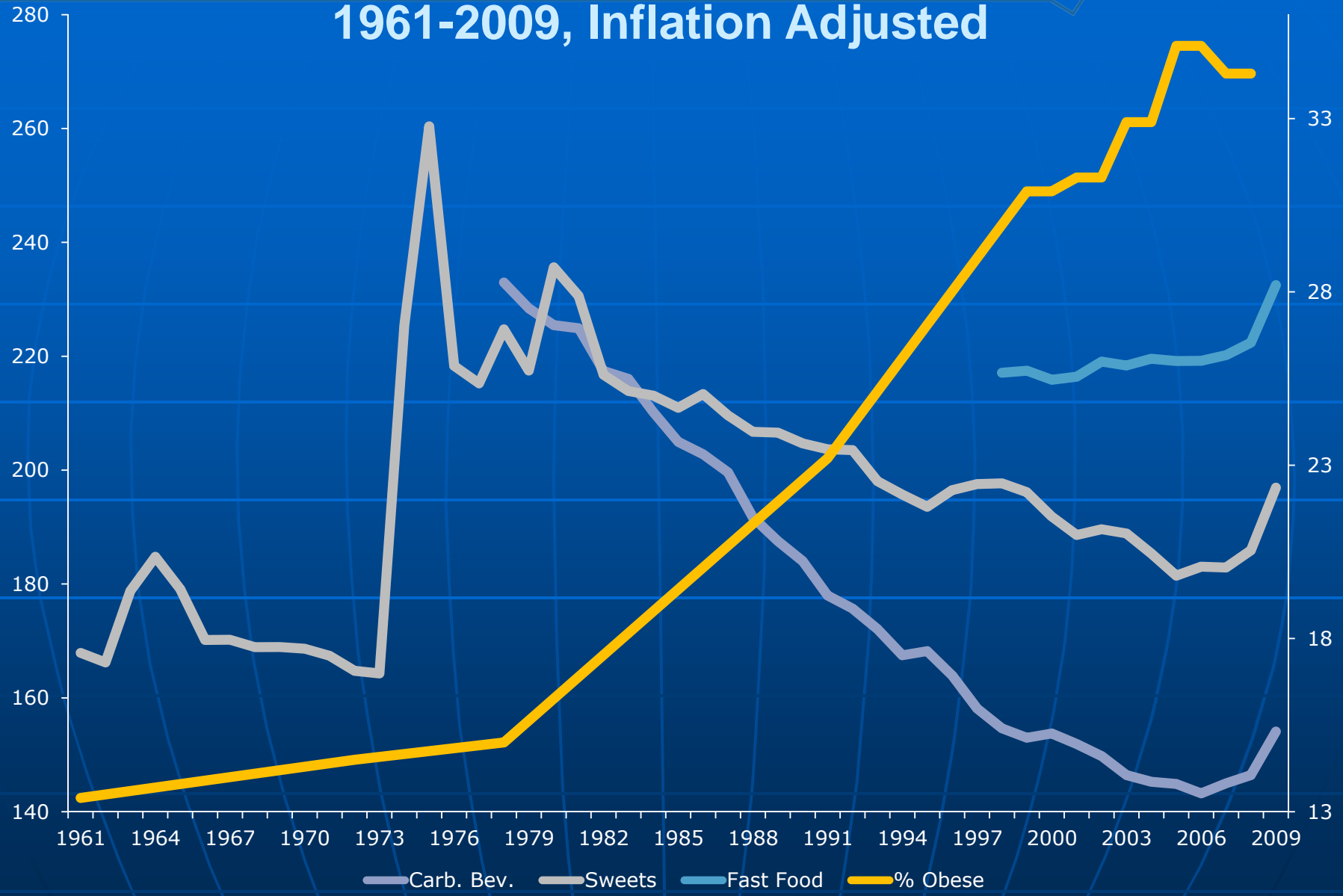
1971-2009, Inflation Adjusted



Source: BLS; NHES-I 1960-62; NHANES, 1971-74, 1976-80, 1988-94, 1999-2000, 2001-02, 2003-04, 2005-06, 2007-08

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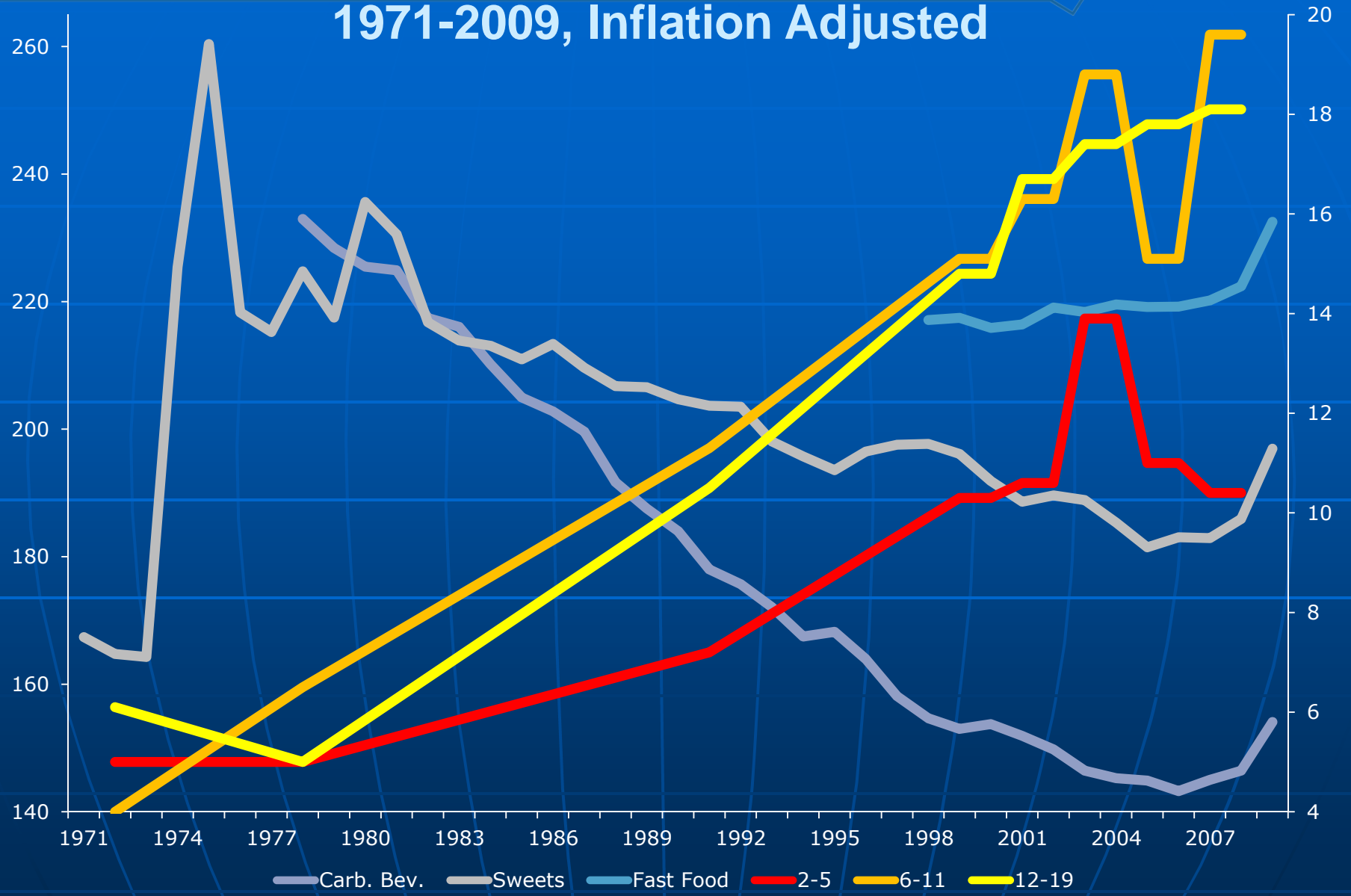
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Selected Food Price & Youth Weight Trends

1971-2009, Inflation Adjusted



Source: BLS; NHES-I 1960-62; NHANES, 1971-74, 1976-80, 1988-94, 1999-2000, 2001-02, 2003-04, 2005-06, 2007-08

Food Prices and Consumption

Extensive economic research on the impact of food and beverage prices on consumption of various products; estimates suggest 10% own-price increase would reduce:

- Cereal consumption by 5.2%
- Fruit consumption by 7.0%
- Vegetable consumption by 5.9%
- Soft drink consumption by 7.8%
- Sweets consumption by 3.5%
- Food away from home consumption by 8.1%

Food Prices and Weight Outcomes

Relatively limited research to date on impact of food and beverage prices and weight outcomes:

- Higher prices for sugary foods would significantly reduce prevalence of overweight and obesity among adults (Miljkovic et al., 2008)
- 10% increase in fast food prices would reduce prevalence of adolescent obesity by almost 6% (Powell, et al., 2007)
- Weight outcomes among low-income populations and those with higher BMI more responsive to prices
 - BMI of kids in families below poverty level about 50% more responsive to F&V prices
 - BMI for kids at unhealthy weight levels 39% more responsive to F&V prices
 - BMI of adolescents at unhealthy weight levels about 4 times more responsive to F&V and fast food prices.

Policy Options

Emerging evidence on prices suggests that significant changes in relative prices of healthy and unhealthy foods could reduce BMI and likelihood of obesity

- Increases in prices of less healthy foods and beverages
 - taxes
 - elimination of corn subsidies
 - disallow purchases under food assistance programs
- Reductions in prices of more healthy foods and beverages
 - subsidies
 - expanded or favored treatment under food assistance programs

Sugar Sweetened Beverage Taxes

Public Health Rationale for SSB Taxes

- Link to obesity

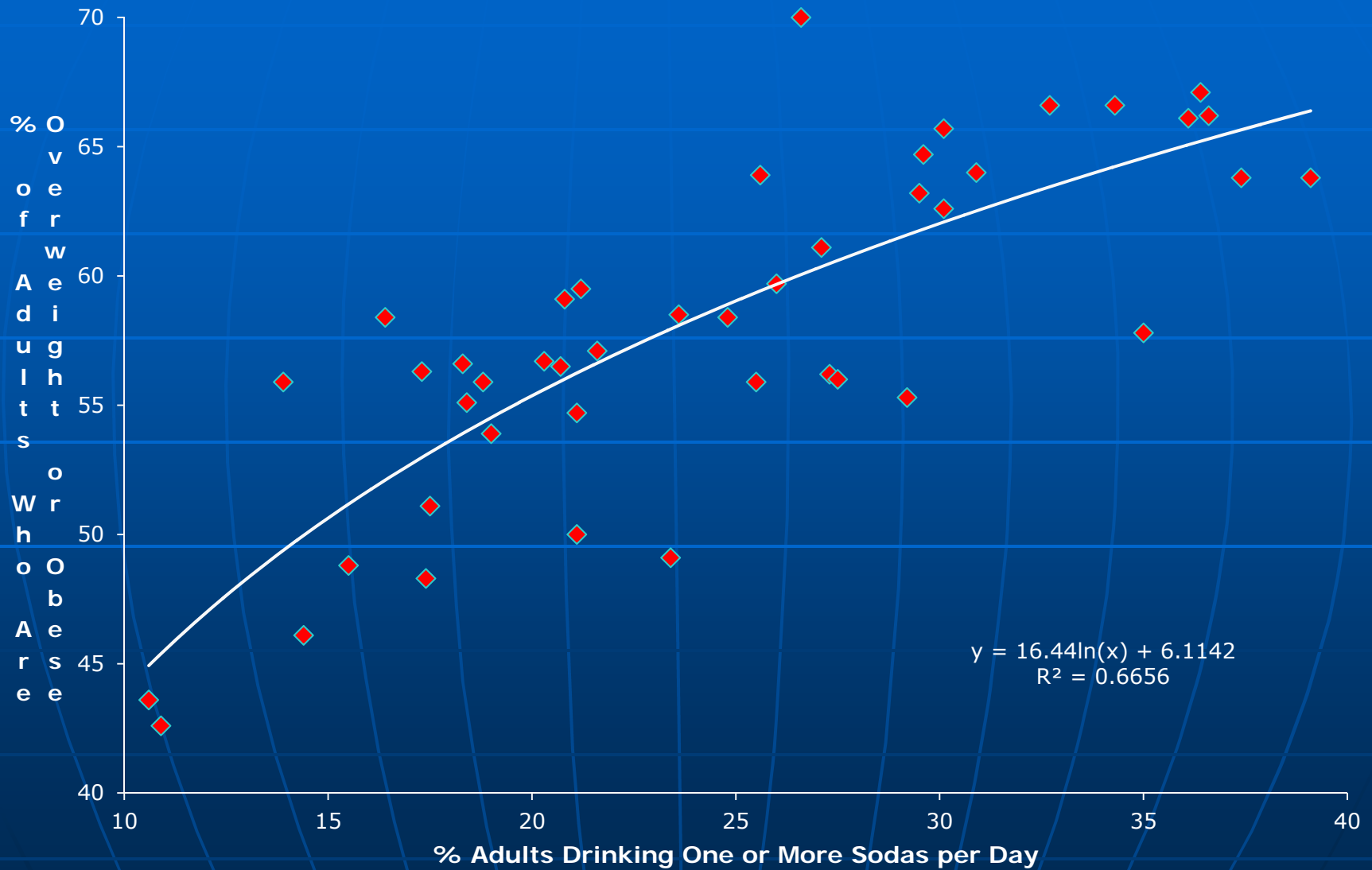
- Several meta-analyses conclude that increased SSB consumption causes increased weight, obesity
- Increased calories from SSBs not offset by reductions in calories from other sources

- Other health consequences

- type 2 diabetes, lower bone density, dental problems, headaches, anxiety and sleep disorders

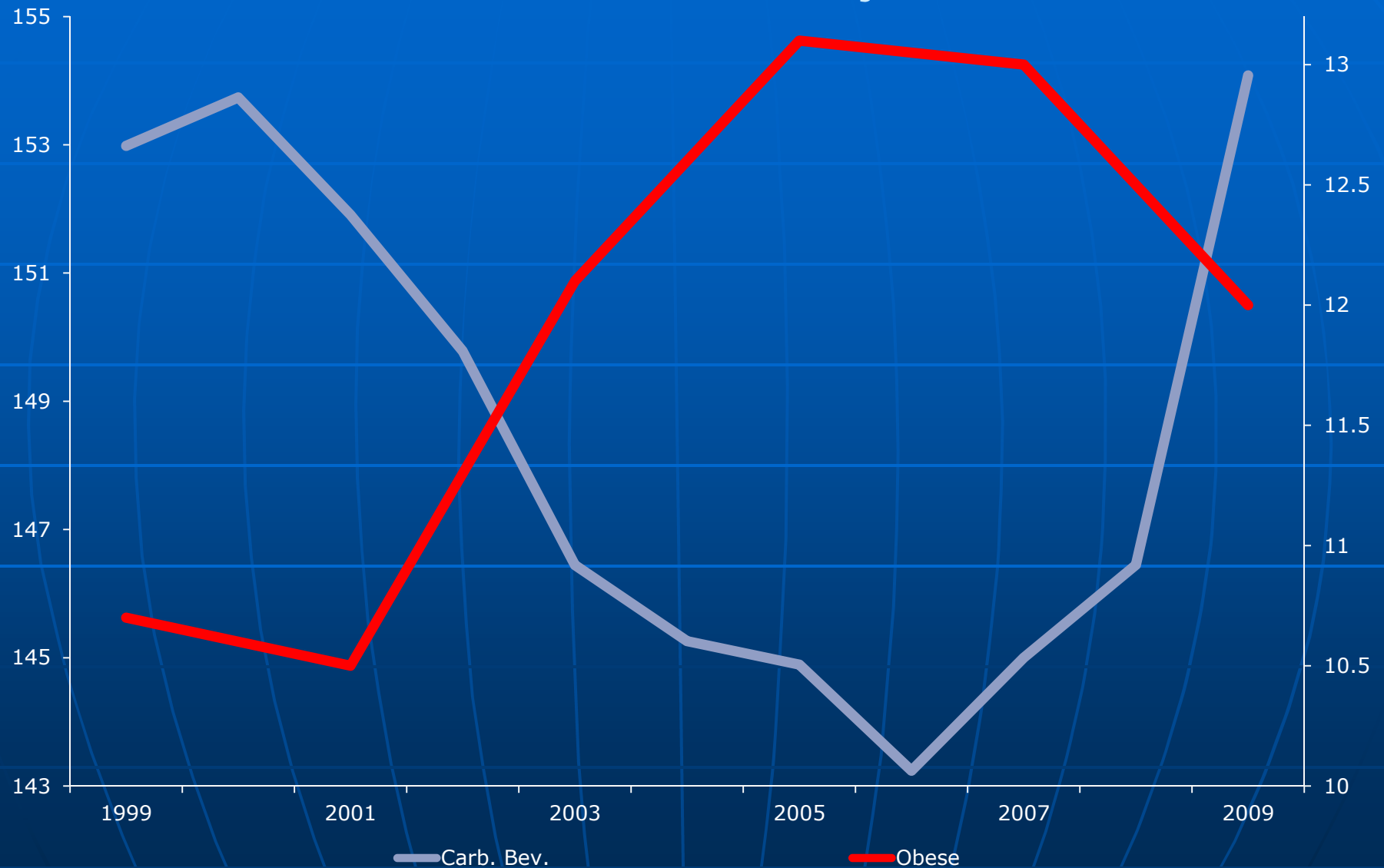
Soda Consumption & Obesity

California Counties, 2005



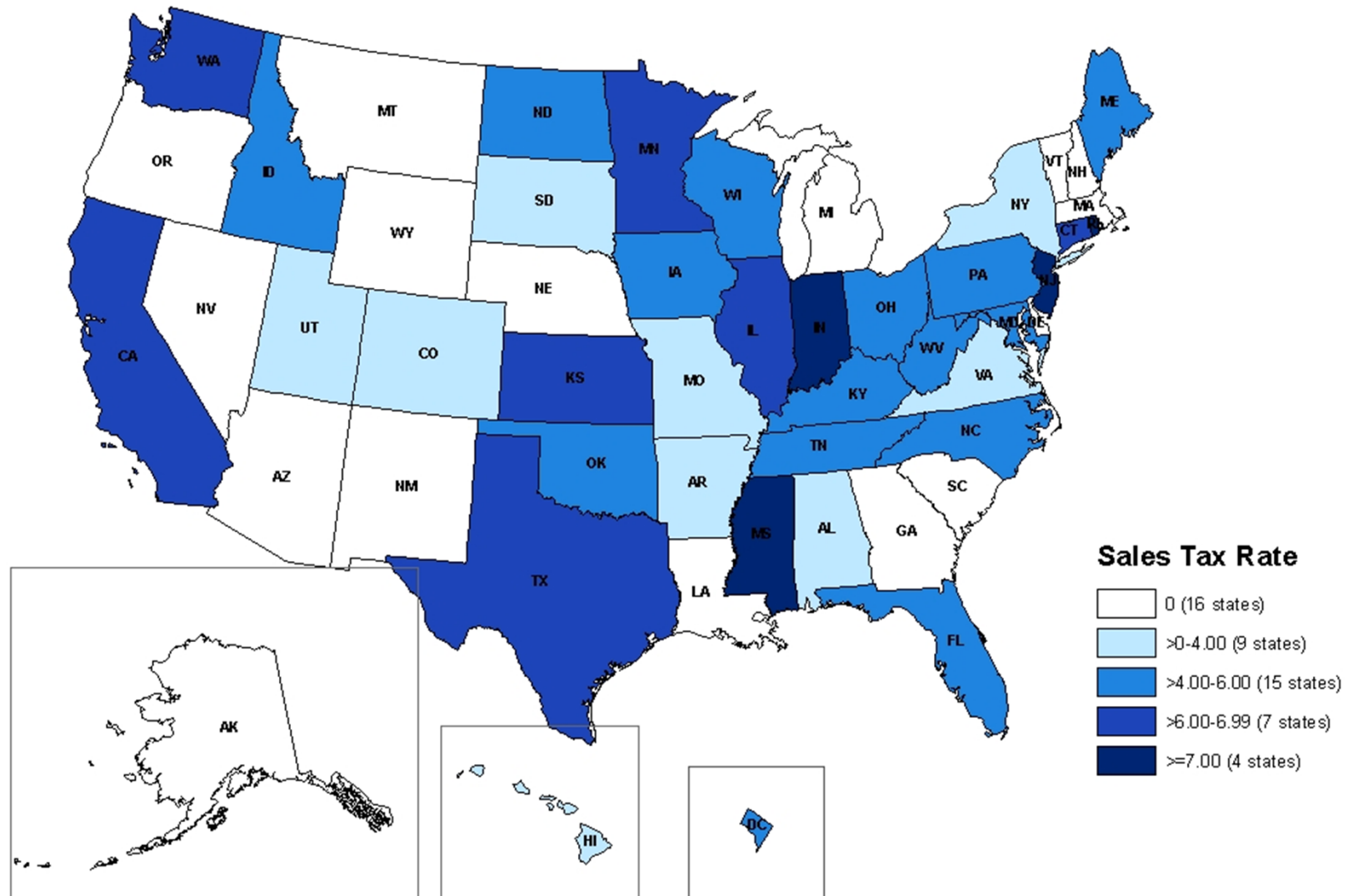
Source: Babey, et al., 2009 and authors' calculations.

Carbonated Beverage Prices & Youth Obesity 1995-2009, Inflation Adjusted



Source: BLS; YRBS

State Regular, Sugar-Sweetened Soda Sales Tax Rates (as of July 1, 2011)



Data Source: Bridging the Gap Program, University of Illinois at Chicago, 2011

SSB Taxes & Prices

Consumption and Weight

Existing evidence

- Growing literature demonstrating the higher prices for SSBs lead to reductions in SSB consumption
- Andreyeva, et al.'s (2010) comprehensive review concluded that price elasticity of soft drink consumption was -0.78
 - Price elasticity: % change in consumption resulting from 1% price change
 - 10% increase in soft drink prices would reduce consumption by nearly 8%
- Limited, mixed evidence on impact of taxes/prices on weight outcomes

Bridging the Gap Research

- Empirically examine associations between state-level soda taxes and consumption and weight outcomes, using nationally representative data sets including:
 - A.C. Nielsen Homescan Data
 - Early Childhood Longitudinal Study-Kindergarten Cohort (ECLS-K)
 - Monitoring the Future (MTF)
 - National Longitudinal Survey of Youth 1997 (NLSY97)

AC Nielsen HomeScan

- **Objective**

- To examine the association of soda taxes with household soda purchases

- **Data Description**

- Cross-section of household purchase information based on scanner data from a variety of stores, 2nd Q 2007
- Household demographic data
- Final sample includes 66,211 non-military households
- Outcome variable: soda volume in ounces of carbonated beverages purchased per household over the sample period (m=566 ounces ~ 2 cases of 12 oz cans)
- Control variables: household income, size, race, educational attainment, presence of children/age, female head of household employment status, and census regions

Preliminary Results

OLS Regression Results: Soda Volume

	All Households	Households with Children	Households without Children
Disfavored Soda Tax Amount	-9.352**	-10.983**	-8.417**

Source: Loudermilk, Powell, Chriqui, and Chaloupka, *in progress*, 2011

Policy Simulations

- Results imply small tax elasticities for purchases of -0.06.
- If all states increased sales taxes to the maximum tax rate of 7% (an increase of 60.6% from the current sample mean of 4.36%), household purchases of regular soda are estimated to be 3.6% lower.
- Consider the imposition of a **new 20% tax** → assuming constant elasticity, household regular soda purchases are estimated to be **33% lower**.
 - ❖ The extent to which this applies to all regular soda consumption depends on constant elasticity noted above, and whether regular soda consumed away-from-home is similarly price/tax responsive.

ECLS-K

- **Objective**
- To examine association between soda taxes, consumption and weight of children
- **Data Description**
- Nationally representative panel of elementary school students.
- Food consumption 5th grade; measured height and weight
- Final sample: 7,414 children who reported their food consumption and 7,300 children for which height and weight information exists
- Outcome variables: soda consumption in last week (m=6), soda purchases at school (m=0.4), and weight change 3rd to 5th grade (m=1.9)
- Control variables: age in months, race/ethnicity, family income, mother's education level, physical activity, TV watching, parent-child interactions.

Associations by Sub-populations

Outcome Variable	Total Consumption		School Consumption		BMI Change	
	Higher Soda Tax Amount	Higher Soda Tax Indicator	Higher Soda Tax Amount	Higher Soda Tax Indicator	Higher Soda Tax Amount	Higher Soda Tax Indicator
Full Sample	-0.004	-0.006	-0.010	-0.064*	-0.013*	-0.085**
At Risk of Overweight	-0.026	-0.078	-0.011	-0.067	-0.033**	-0.222**
Low-Income	-0.142*	-0.811	-0.039**	-0.239**	-0.000	-0.005
African American	-0.125	-0.767	-0.103**	-0.585**	0.029	0.086
9+ Hrs TV	-0.073	-0.376	-0.029**	-0.178**	-0.014	-0.091

Source: Sturm, Powell, Chiqui, and Chaloupka, *Health Affairs*, 2010

Associations by Sub-populations

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Source: Sturm, Powell, Chiqui, and Chaloupka, *Health Affairs*, 2010

Policy Simulations

- Assuming a constant elasticity, an 18% differential soda tax would correspond to a -0.23 BMI units in the change in BMI between 3rd and 5th grade, or a 20% reduction in the excess BMI gain.

NLSY-97

- **Objective**

- To examine association of soda taxes with youths' BMI using cross-sectional *and* longitudinal models

- **Data Description**

- Nationally representative longitudinal data on youth aged 12 to 17 in 1997; 4 waves of including 1997, 1998, 1999 and 2000
- Estimation sample includes 11,900 person-year observations living at home
- Information on parental characteristics available from parental questionnaire and annual household roster data
- Outcome variable: weight status: BMI and overweight prevalence
- Control variables: age, gender, race, ethnicity, income, mother's education, mother's employment status
- Neighborhood controls: median household income

Preliminary Regressions Results- Cross Sectional Analysis

	Female		Male	
	BMI	Overweight	BMI	Overweight
Full Sample				
0<tax≤4%	0.0552	0.0019	-0.0337	-0.0055
4%<tax≤5%	0.1339	0.0017	-0.1457	-0.0160
5%<tax≤6%	-0.0797	-0.0105	0.2203	0.1010
tax>6%	-0.0548	-0.0053	0.5410*	0.0257
Low Income				
0<tax≤4%	-0.5963	-0.0371*	-0.5030	-0.0556**
4%<tax≤5%	0.2401	-0.0094	-0.2245	-0.0073
5%<tax≤6%	-0.3359	-0.0436**	-0.1683	-0.0470**
tax>6%	-0.4483	-0.0369*	-0.4099	-0.0435**

Source: Powell, et al., in progress

Preliminary Regressions Results- Longitudinal Analysis (FE)

	Female		Male	
	BMI	Overweight	BMI	Overweight
Full Sample				
0<tax≤4%	-0.7805**	-0.0078	-0.4054***	-0.0503
4%<tax≤5%	-0.7938**	-0.0153	-0.0942	-0.0369
5%<tax≤6%	-0.2033	0.0308*	-0.2297	-0.0591
tax>6%	-0.5647	0.0667*	0.4693	-0.0212
Low Income				
0<tax≤4%	-2.1950***	-0.0628***	-1.0196***	-0.0922***
4%<tax≤5%	-2.3600***	-0.0737**	-0.5907*	-0.0732***
5%<tax≤6%	-1.1818	-0.0162	-1.5229***	-0.0879***
tax>6%	-0.2139	0.0847	0.5069	-0.0969**

Source: Powell et al., *in progress*, 2010

Policy Implications of Empirical Results

- Generally very small associations between soda taxes and consumption or weight outcomes based on the existing low tax rates which range up to just 7% in the study samples.
- Larger associations for populations at greater risk for obesity.
- *Substantial* increases in soda tax rates may have some measureable effects on outcomes and even greater effects at the population level.

Alternative SSB Tax Structures

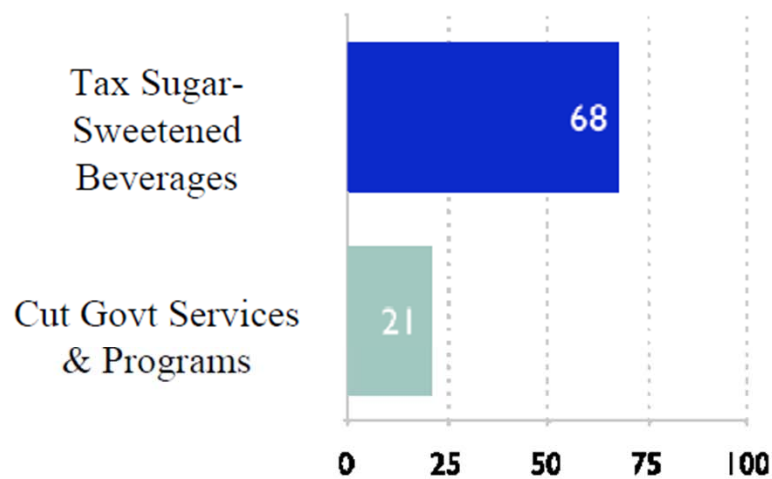
- From a public health perspective, specific excise tax preferable to sales tax or ad valorem excise tax for several reasons:
 - More apparent to consumer
 - Easier administratively
 - Reduces incentives for switching to cheaper brands, larger quantities
 - Revenues more stable, not subject to industry price manipulation
 - Greater impact on consumption; more likely impact on weight outcomes
 - Disadvantage: need to be adjusted for inflation

SSB Taxation & Revenues

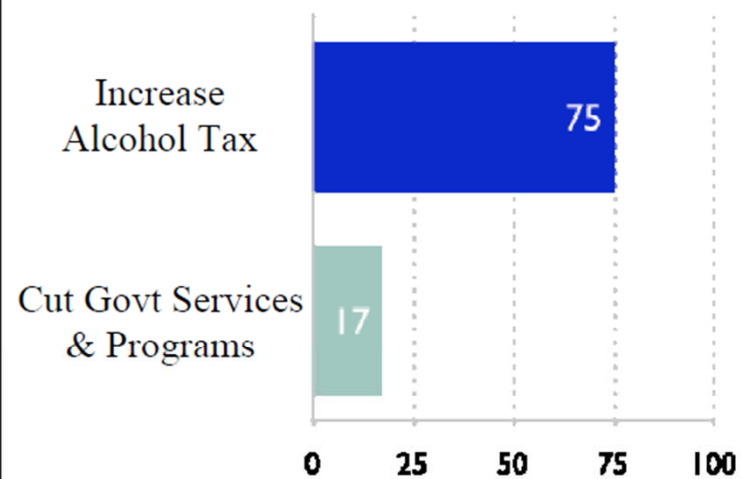
- Revenue generating potential of tax is considerable
 - SSB Tax calculator at:
 - <http://www.yaleruddcenter.org/sodatax.aspx>
 - Tax of one cent per ounce could generate:
 - \$14.9 billion nationally if on SSBs only
 - \$24.0 billion if diet included
 - Tax of two cents per ounce:
 - \$21.0 billion nationally, SSBs only
 - \$39.0 billion if diet included
 - Earmarking tax revenues for obesity prevention efforts would add to impact of tax

Voters Prefer Taxes on Alcohol and Sugar-Sweetened Beverages over Cuts in Government Services by Margins of More than 3 to 1

- As you may know, New York state faces a \$14 billion budget shortfall. Let me read you some statements about possible new taxes to generate revenue and proposed cut-backs to deal with this crisis. Please tell me which statement comes closer to your view.*



*I would prefer to tax sugar-sweetened beverages. /
I would prefer to cut government services and
programs.*



*I would prefer to increase the alcohol tax. /
I would prefer to cut government services and
programs.*

Voters Prefer Taxes on Alcohol and Sugar-Sweetened Beverages over Increased Property or Sales Taxes

Property Tax	Sales Tax
Sweetened Beverages: 73% Property Tax: 9%	Sweetened Beverages: 65% Sales Tax: 16%
Alcohol: 79% Property Tax: 6%	Alcohol: 78% Sales Tax: 7%

As you may know, New York state faces a \$14 billion budget shortfall. Let me read you some statements about possible new taxes to generate revenue and proposed cut-backs to deal with this crisis. Please tell me which statement comes closer to your view.

Counterarguments

- Same as have been raised against tobacco and alcohol taxes
 - Employment impact
 - Ongoing research assessing impact of reduced SSB consumption on employment
 - Impact on the poor
 - Tax avoidance/evasion

For more information:

http://www.bridgingthegapresearch.org/research/sodasnack_taxes/

The screenshot shows a Windows Internet Explorer browser window displaying the website http://www.bridgingthegapresearch.org/research/sodasnack_taxes/. The website header features the logo "bridging the gap" and the tagline "Research Informing Policies and Practices for Healthy Youth". A navigation menu includes "HOME", "ABOUT US", "RESEARCH", "RELATED SITES", and "CONTACT US". Below the menu, there are sub-navigation tabs for "District Wellness Policies", "Elementary School Survey", and "Soda/Snack Taxes". The main content area has a blue background with the title "Soda/Snack Taxes" and a paragraph: "This page highlights our research around state-level taxes on snack foods, soda, and other sweetened beverages. To see products from other BTG research activities, click on the 'Research' tab above." Below this, there are two columns of text. The left column has a section titled "Sugar-Sweetened Beverage Taxes and Public Health: Research Brief" with a paragraph describing a 2009 research brief and a link to "Research Brief (PDF)". The right column has a section titled "DEFINITIONS" with a paragraph explaining that the files contain definitions of food and food products for use with snack tax data, compiled from 2008 tax data. At the bottom of the right column, there are two links: "2008 DEFINITIONS >" and "2009 DEFINITIONS >".

bridging the gap
Research Informing Policies and Practices for Healthy Youth

HOME ABOUT US RESEARCH RELATED SITES CONTACT US

District Wellness Policies Elementary School Survey Soda/Snack Taxes

Soda/Snack Taxes

This page highlights our research around state-level taxes on snack foods, soda, and other sweetened beverages. To see products from other BTG research activities, click on the "Research" tab above.

Sugar-Sweetened Beverage Taxes and Public Health: Research Brief

This 2009 research brief provides an overview of the current research on the health impacts of sugar-sweetened beverage (SSB) consumption, how food and beverage prices affect consumption and related weight outcomes, and the potential impact of both large and small SSB taxes.

[Research Brief \(PDF\)](#)

State Sales Taxes on Soda and Snack Foods

This file contains annual data on sales tax rates for each of the 50 states and the District of Columbia for sodas and selected snack products sold

DEFINITIONS

These files contain definitions of food and food products for use in conjunction with the snack tax data. These definitions were compiled beginning with the 2008 tax data file year and reflect codified state law as of January 1 of each year. Additional variables include state abbreviation, enacted and effective date (where applicable or if able to be determined), and the statutory/administrative law citations. The data were compiled by The MayaTech Corporation for the Bridging the Gap Program at the University of Illinois at Chicago.

[2008 DEFINITIONS >](#)
[2009 DEFINITIONS >](#)

Summary

Summary

- Tobacco tax increases have significantly reduced tobacco use in the US
- Similar evidence for effectiveness of higher alcoholic beverage taxes to reduce alcohol use and its consequences
 - Few governments have done so
- Potential for using excise taxes on sugar-sweetened beverages to curb SSB consumption and reduce obesity

Summary

- Taxes generate significant revenues and revenues increase when tax increases
 - Added reductions in use/consequences when revenues earmarked for prevention/control efforts
- Generally more public support than for other taxes or budget cuts
 - Particularly when revenues earmarked for prevention and control
- Adverse economic impact false or overstated

For more information:

www.bridgingthegapresearch.org

www.impactteen.org

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