

Tobacco Taxation and Pricing What We Know and What We Need to Know

Frank J. Chaloupka

Director, ImpacTeen Project and
International Tobacco Evidence Network

Director, Health Policy Center
University of Illinois at Chicago

fjc@uic.edu

www.impacteen.org

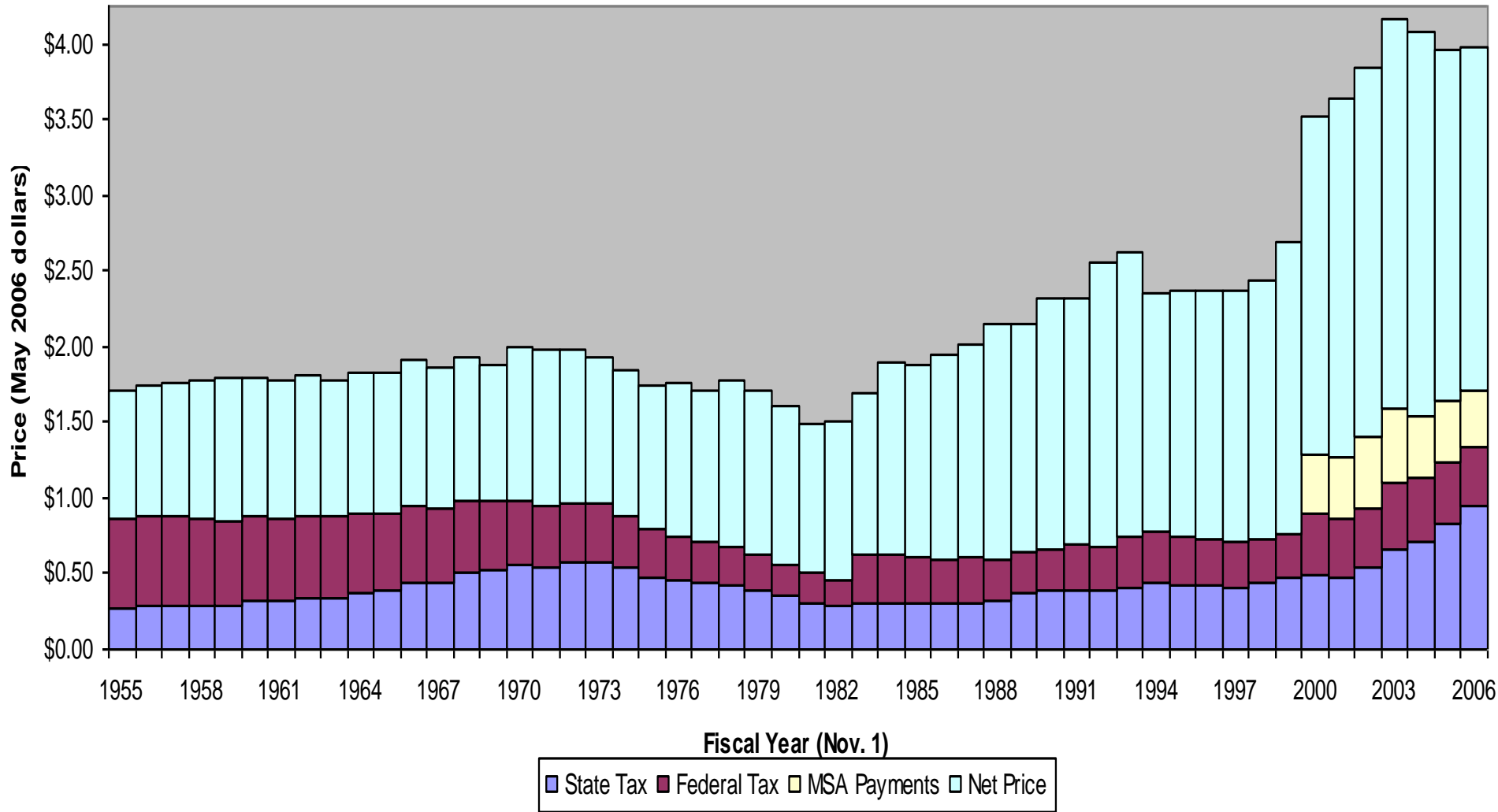
www.tobaccoevidence.net

National Cancer Institute State and Community Tobacco Policy
Research and Dissemination: The Next Generation Meeting
Bethesda, MD – April 16-18, 2007

Overview

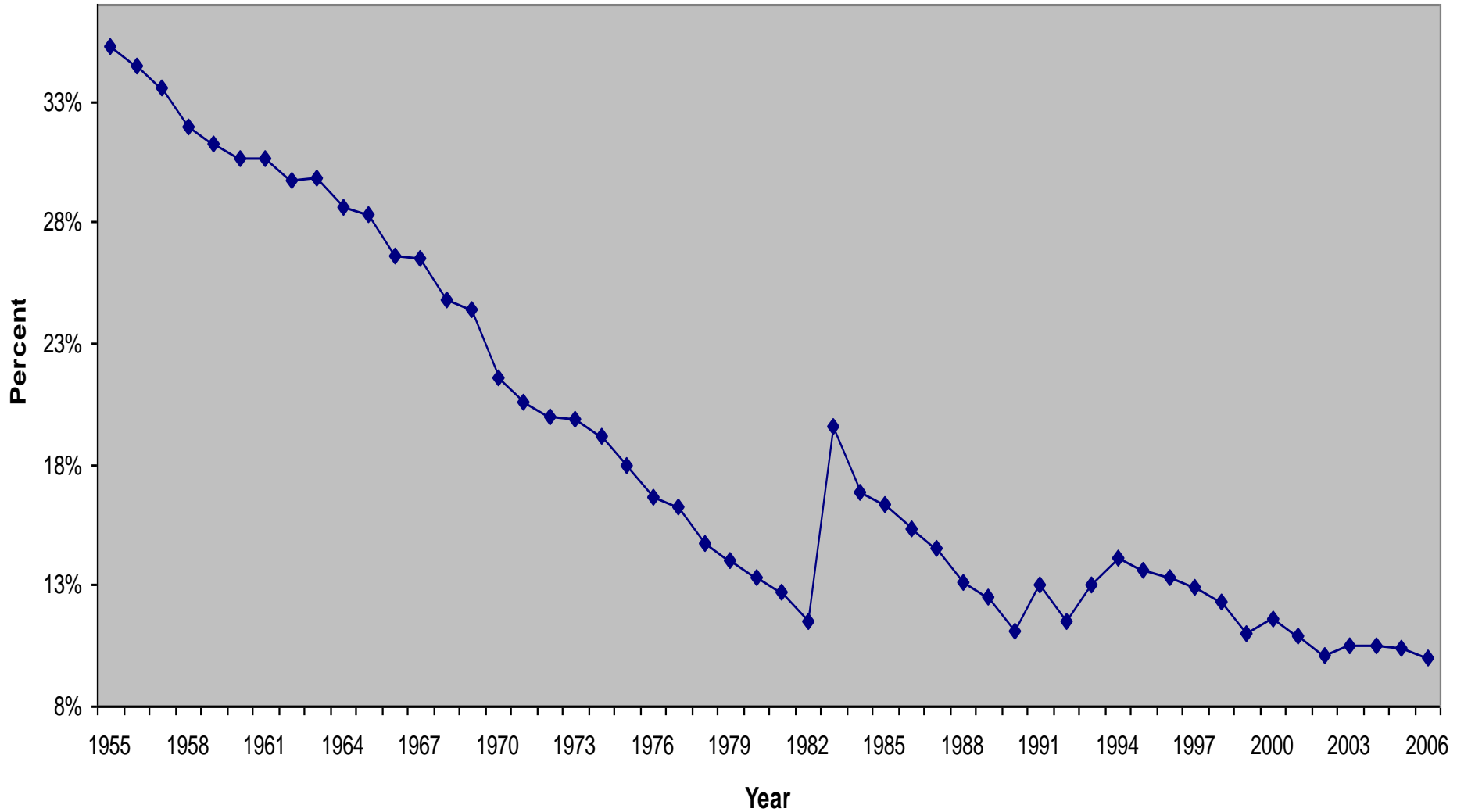
- Brief review of what we know about the impact of taxes on prices and tobacco use
 - Consumption
 - Prevalence
 - Cessation
 - Initiation
- Focus on what we *don't* know about tax and price
 - Impact of large increases, industry response to tax increases, revenue maximizing level of tax, tax avoidance and smuggling, regressivity of tobacco tax and tax increases, economic impact of tax, effect of tax structure, and more....

Inflation Adjusted Cigarette Prices, 1955-2006



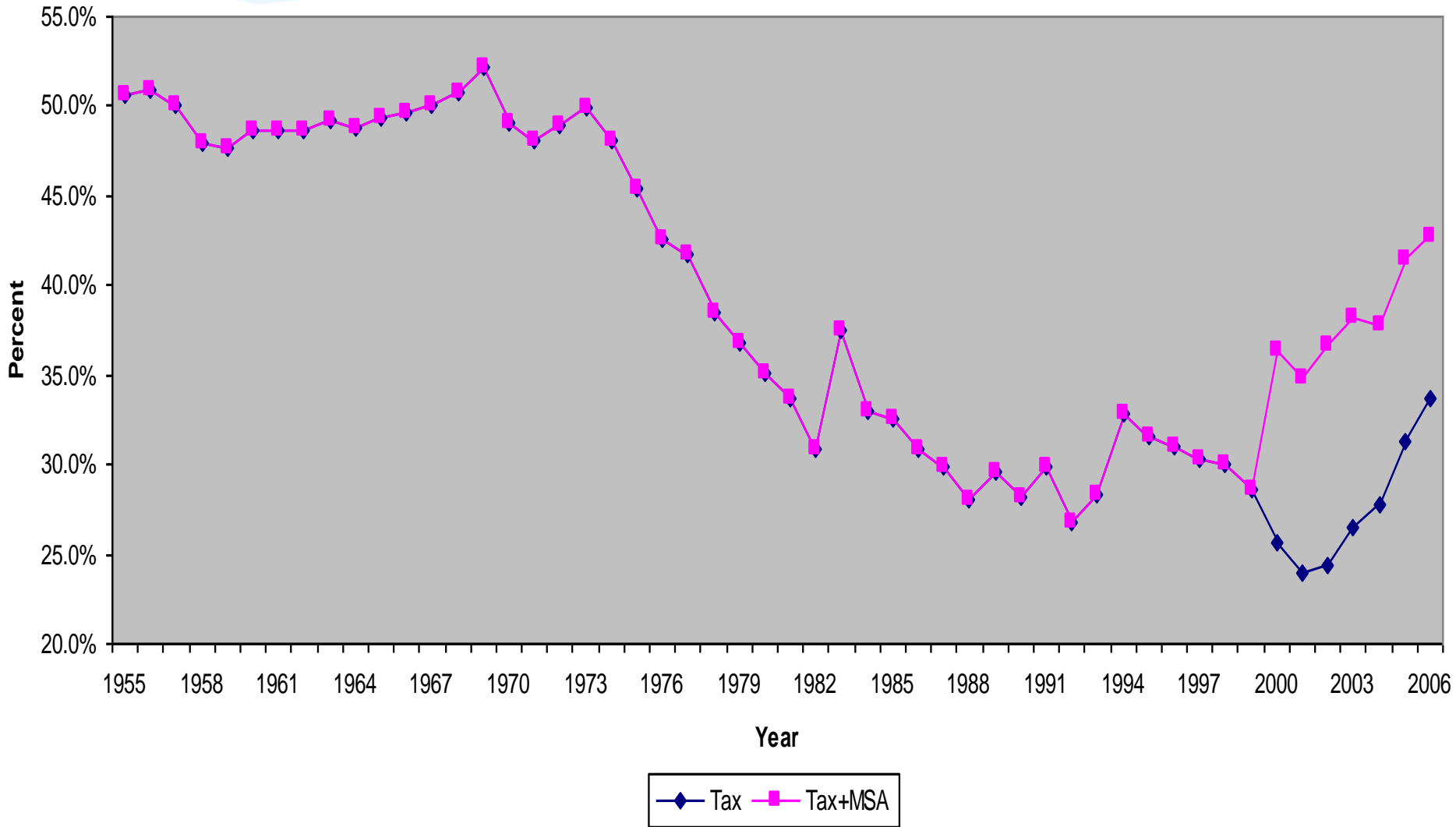
Source: *Tax Burden on Tobacco, 2006*, and author's calculations

Federal Tax as Percent of Cigarette Prices



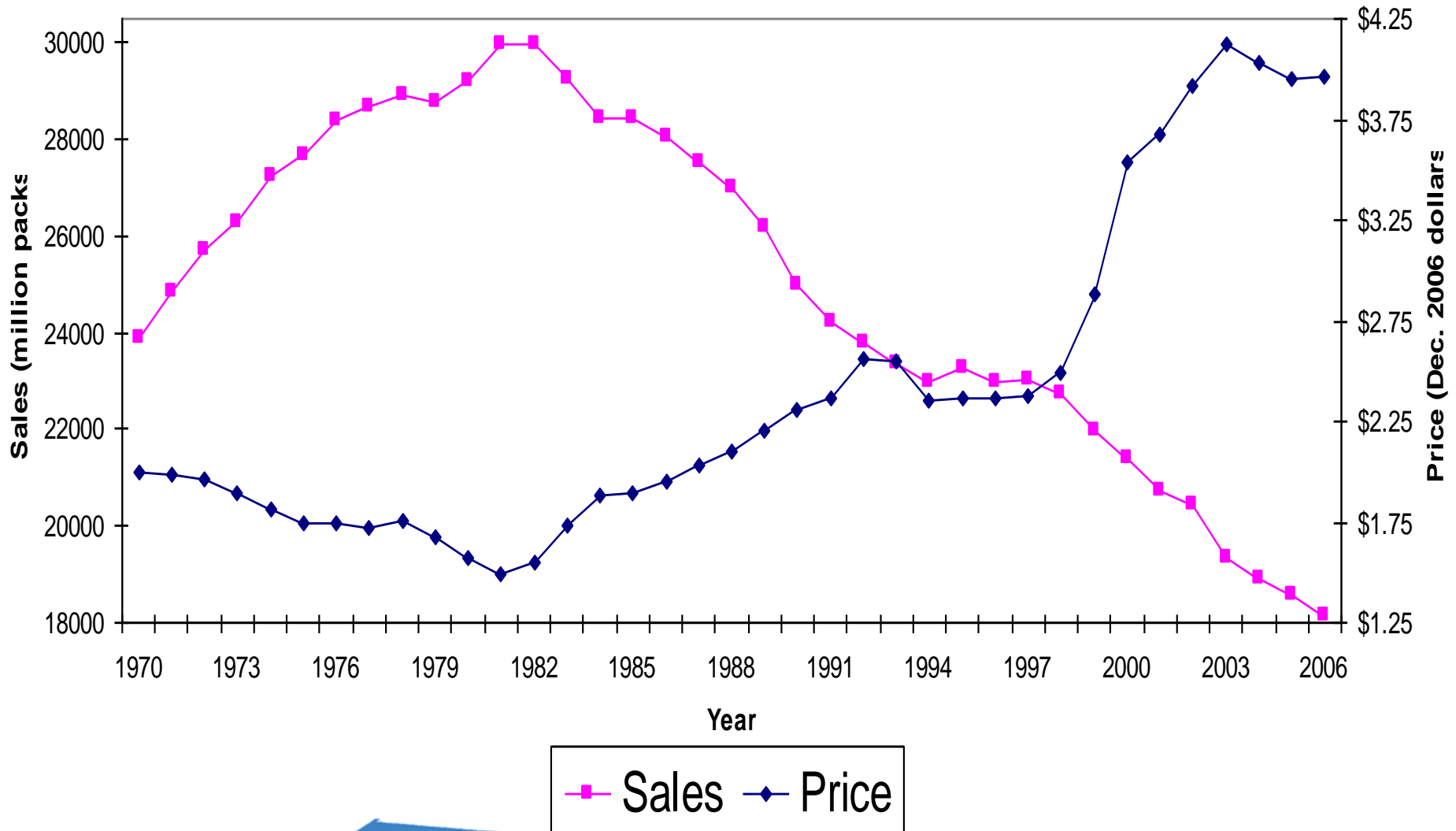
Source: *Tax Burden on Tobacco, 2006*, and author's calculations

Taxes as Percent of Cigarette Prices



Source: *Tax Burden on Tobacco, 2006*, and author's calculations

Cigarette Prices and Cigarette Sales, United States, 1970-2006



Source: *Tax Burden on Tobacco, 2006*, and author's calculations

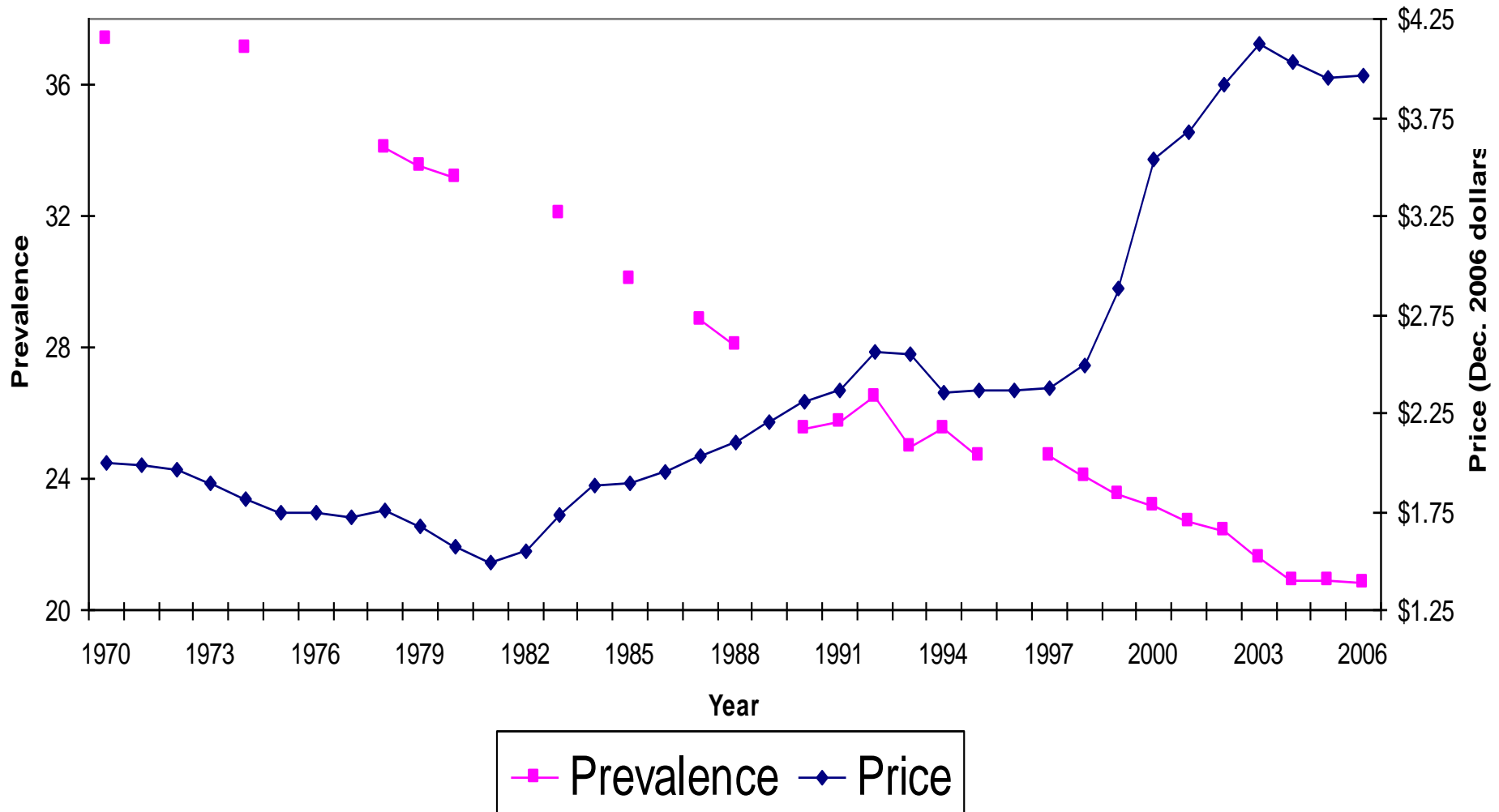
Tobacco Taxes and Tobacco Use

- Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.
- Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%
 - price elasticity of demand: percentage reduction in consumption resulting from one percent increase in price
 - Most elasticity estimates in range from -0.25 to -0.5, clustered around -0.4
 - More recent elasticity estimates for tax paid sales significantly higher
 - Reflects increased tax avoidance/evasion not accounted for in studies

Tobacco Taxes and Tobacco Use

- Higher taxes induce quitting, prevent relapse, reduce consumption and prevent starting.
- Estimates from high-income countries indicate that 10% rise in price reduces overall cigarette consumption by about 4%
- **About half of impact of price increases is on smoking prevalence; remainder is on average cigarette consumption among smokers**
 - **10% rise in price reduces prevalence by about 2%**

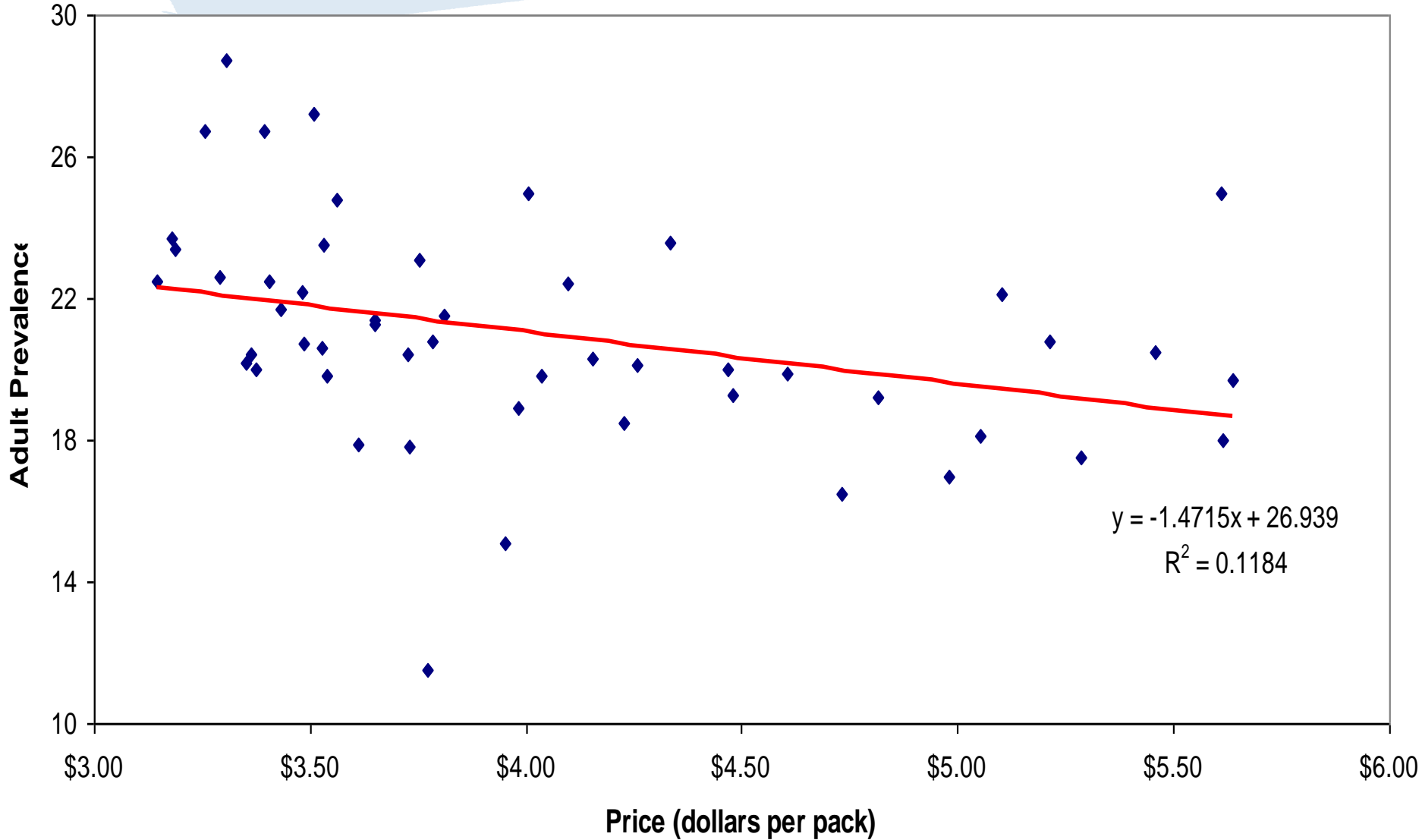
Cigarette Prices and Adult Smoking Prevalence, United States, 1970-2006



Source: NHIS, *Tax Burden on Tobacco, 2006*, and author's calculations



Cigarette Prices and Adult Smoking Prevalence

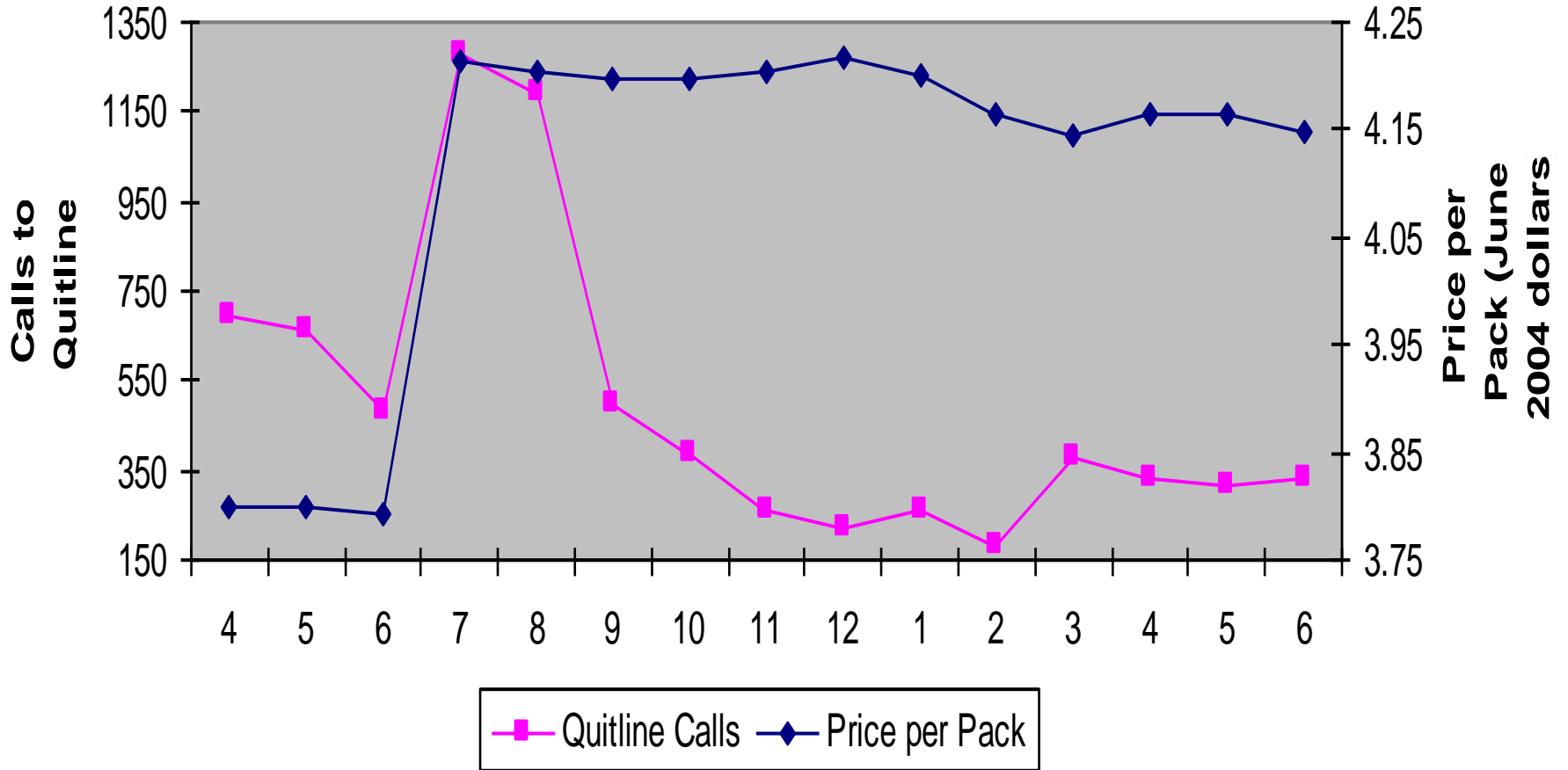


$y = -1.4715x + 26.939$
 $R^2 = 0.1184$

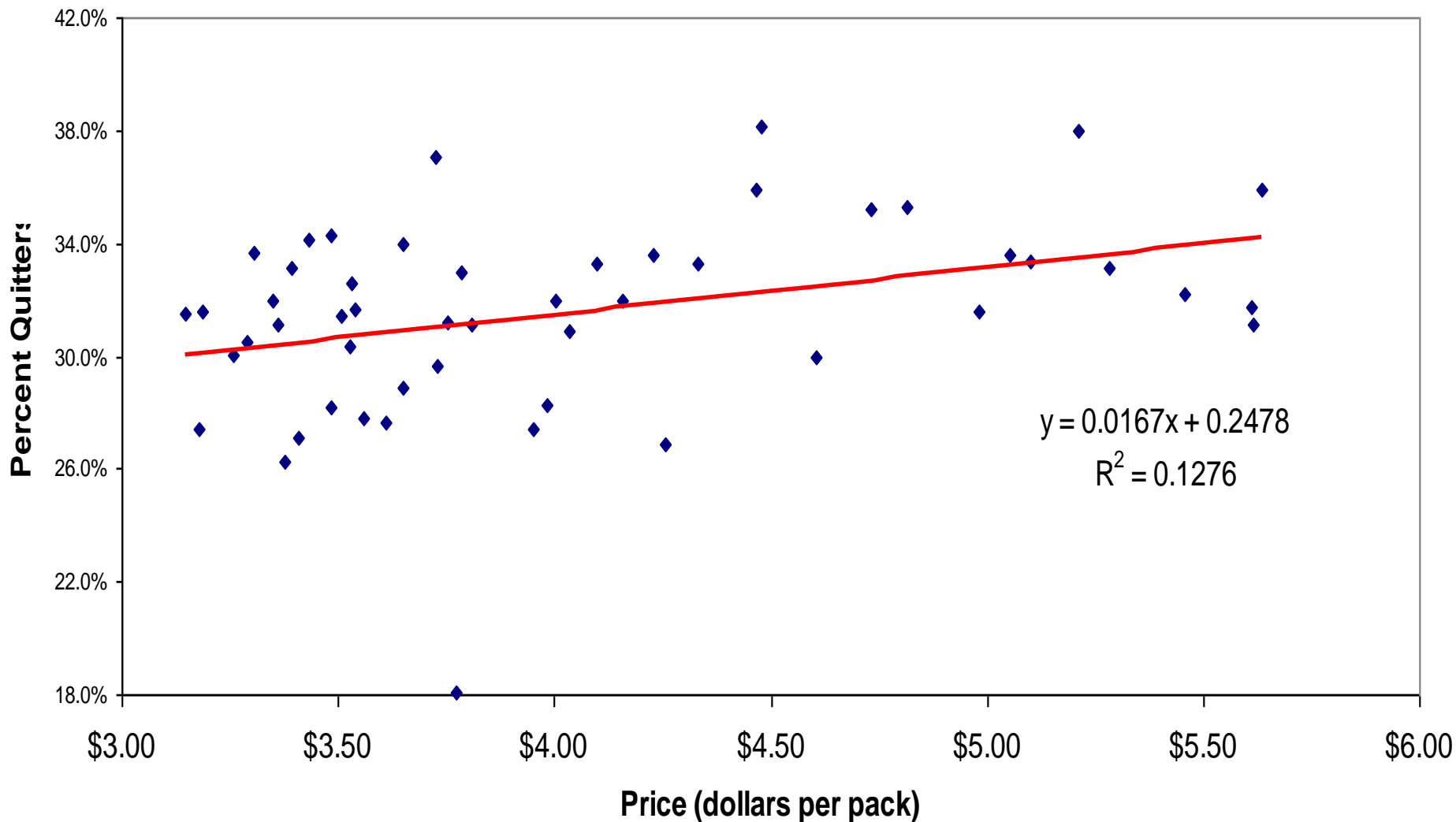
Cigarette Prices and Smoking Cessation

- Growing evidence that higher cigarette prices Induce smoking cessation
 - 10% price increase reduces duration of smoking by about 10%
 - 10% price increase raises probability of cessation attempt by 10-12%
 - 10% price increase raises probability of successful cessation by 1-2%
 - Higher cigarette taxes/prices increase demand for NRT and cessation services

Cigarette Price and Quitline Calls - Illinois, 2002-2003



Cigarette Prices and Percentage of Ever Smokers Who Have Quit Smoking



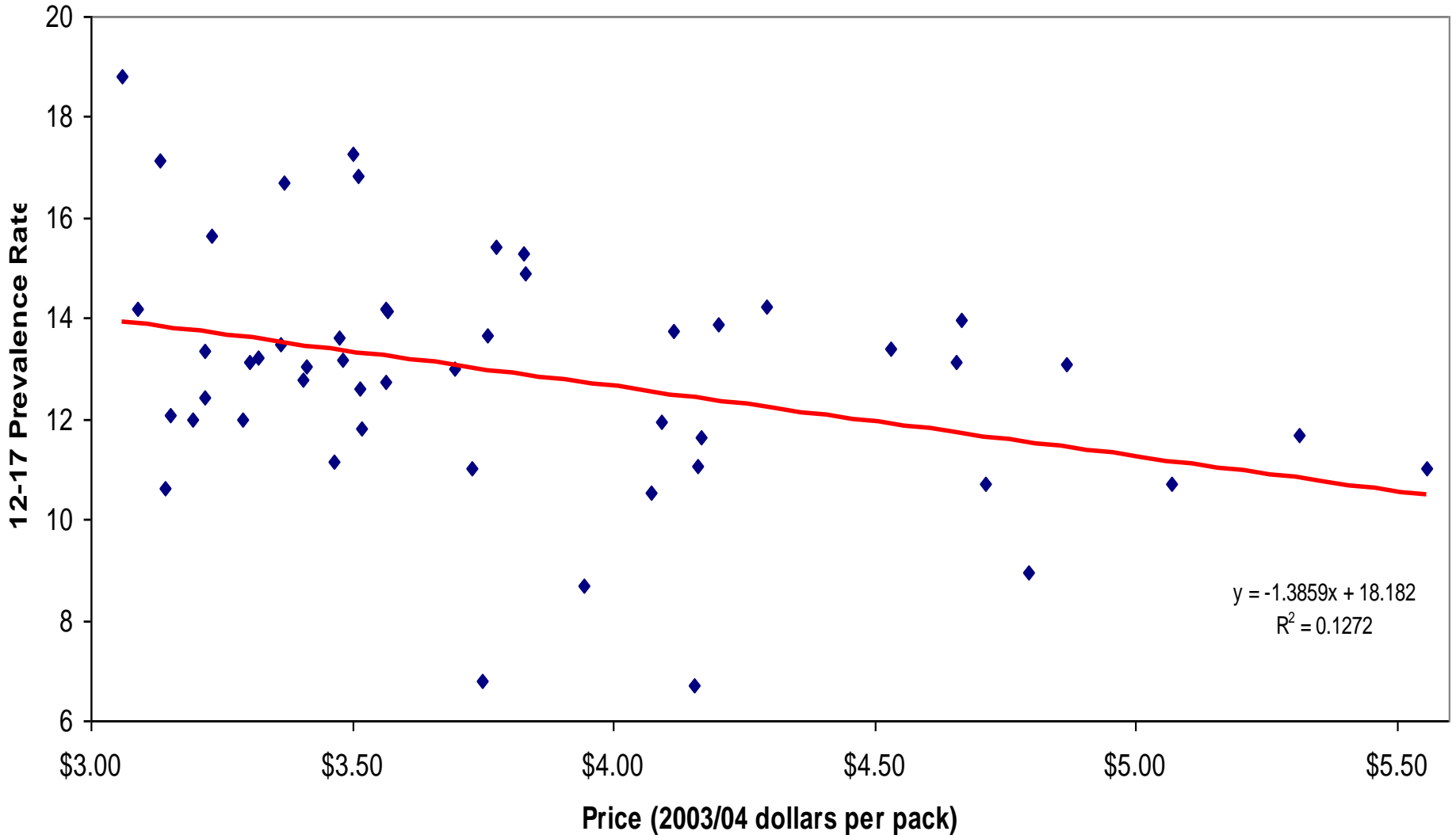
$y = 0.0167x + 0.2478$
 $R^2 = 0.1276$

Cigarette Prices And Youth

- Estimates indicate youth smoking two to three times more responsive to price than adult smoking
 - Largely reduced initiation
- Recent focus on where in the uptake process price has its greatest impact
 - Relatively limited impact on experimentation
 - Greatest impact of transitions to regular smoking – e.g. daily or heavy daily smoking

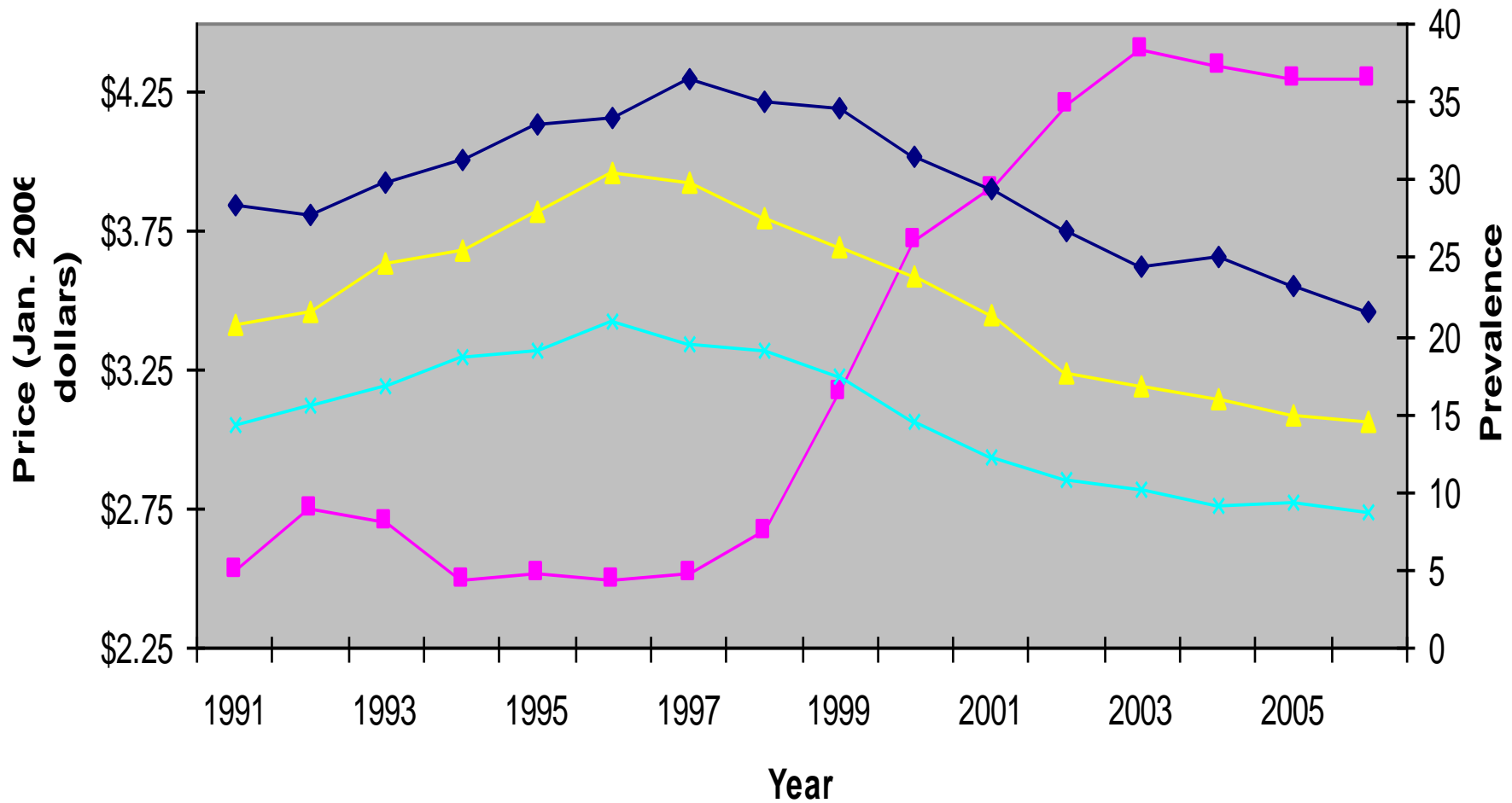
Cigarette Prices and Smoking Prevalence

12-17 Year Olds, 2003-04



$y = -1.3859x + 18.182$
 $R^2 = 0.1272$

8th, 10th, and 12th Grade Smoking Prevalence and Cigarette Price

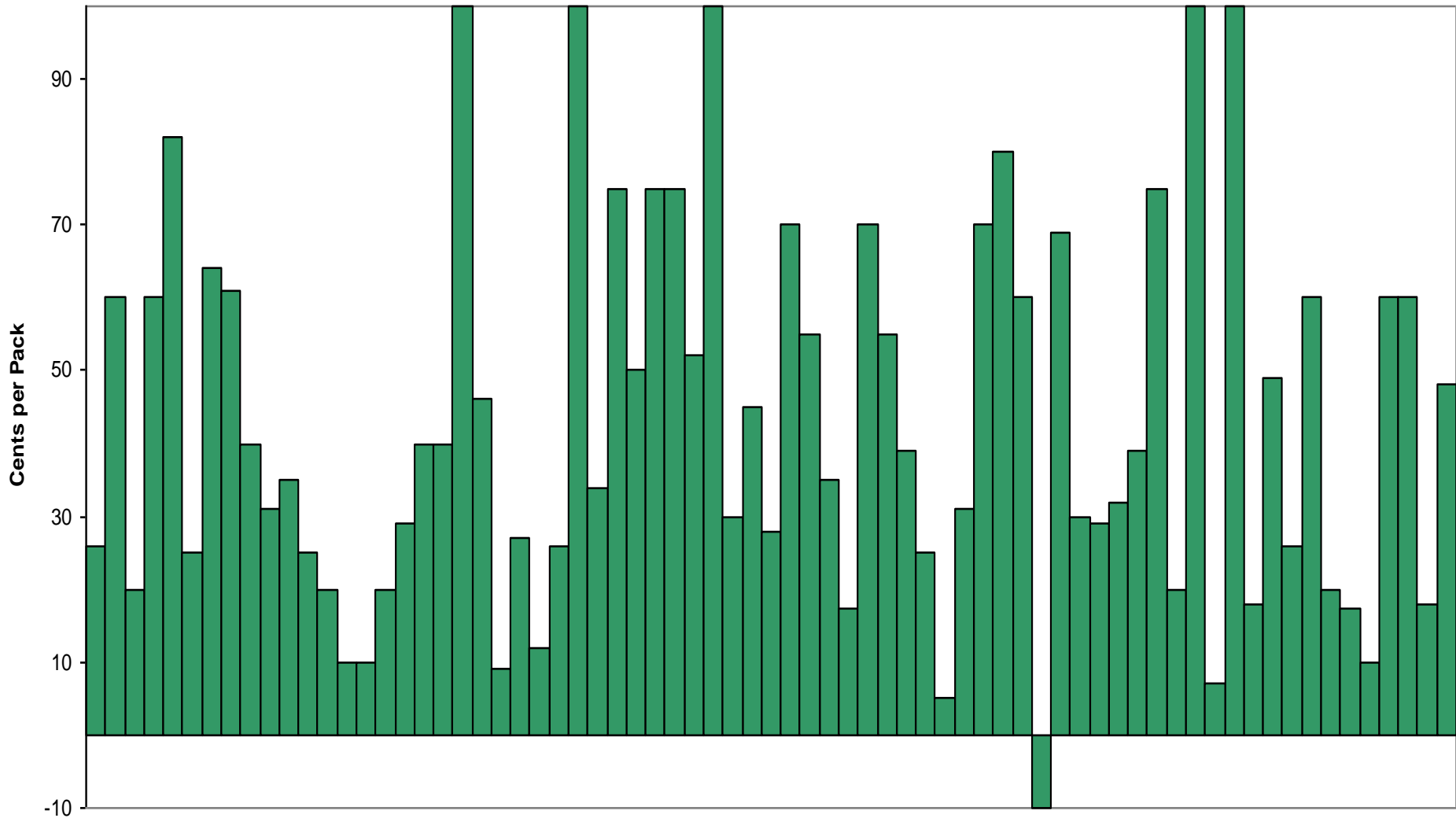


■ Price
 ◆ 12th grade
 ▲ 10th grade
 ✕ 8th grade

What We Need to Know

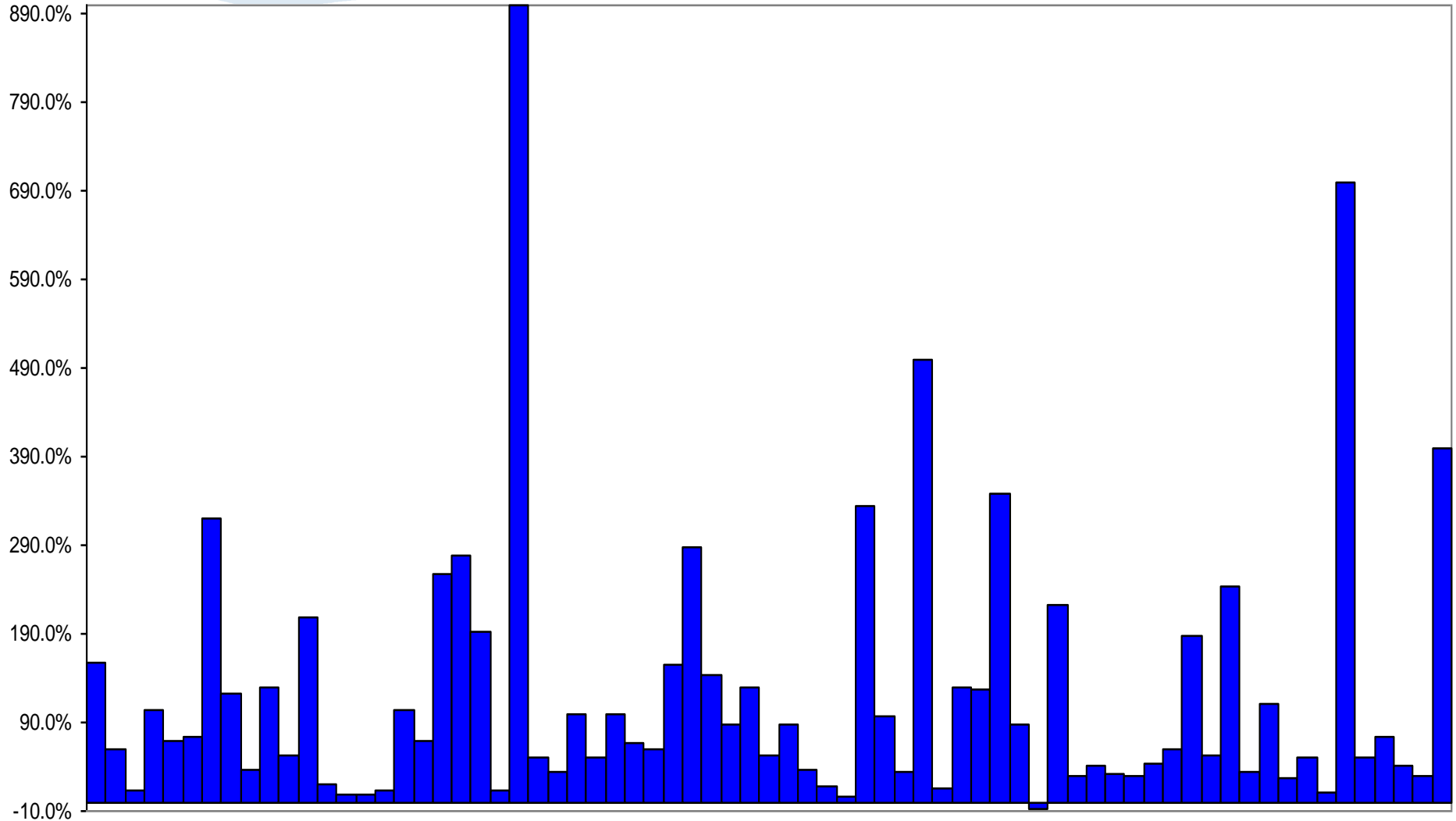
Nonlinearities in effects of tax and price increases

Amount of State Tax Change Per Pack, 2000-2007



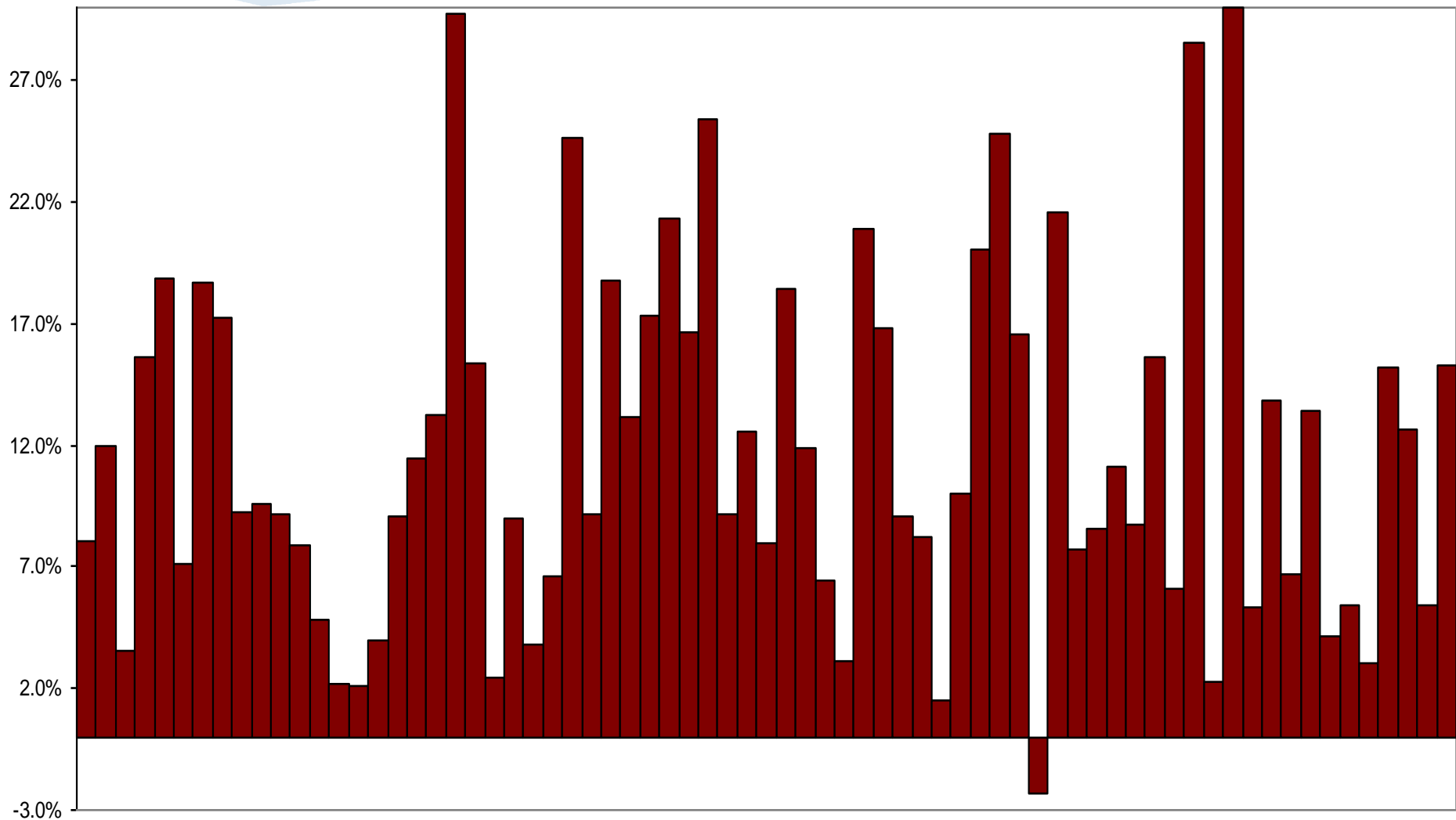
Source: *Tax Burden on Tobacco, 2007*, and author's calculations

Percent Change in State Tax per Increase, 2000-2007



Source: *Tax Burden on Tobacco, 2007*, and author's calculations

Tax Increases as Percent of Price, 2000-2007



Source: *Tax Burden on Tobacco, 2007*, and author's calculations

What We Need to Know

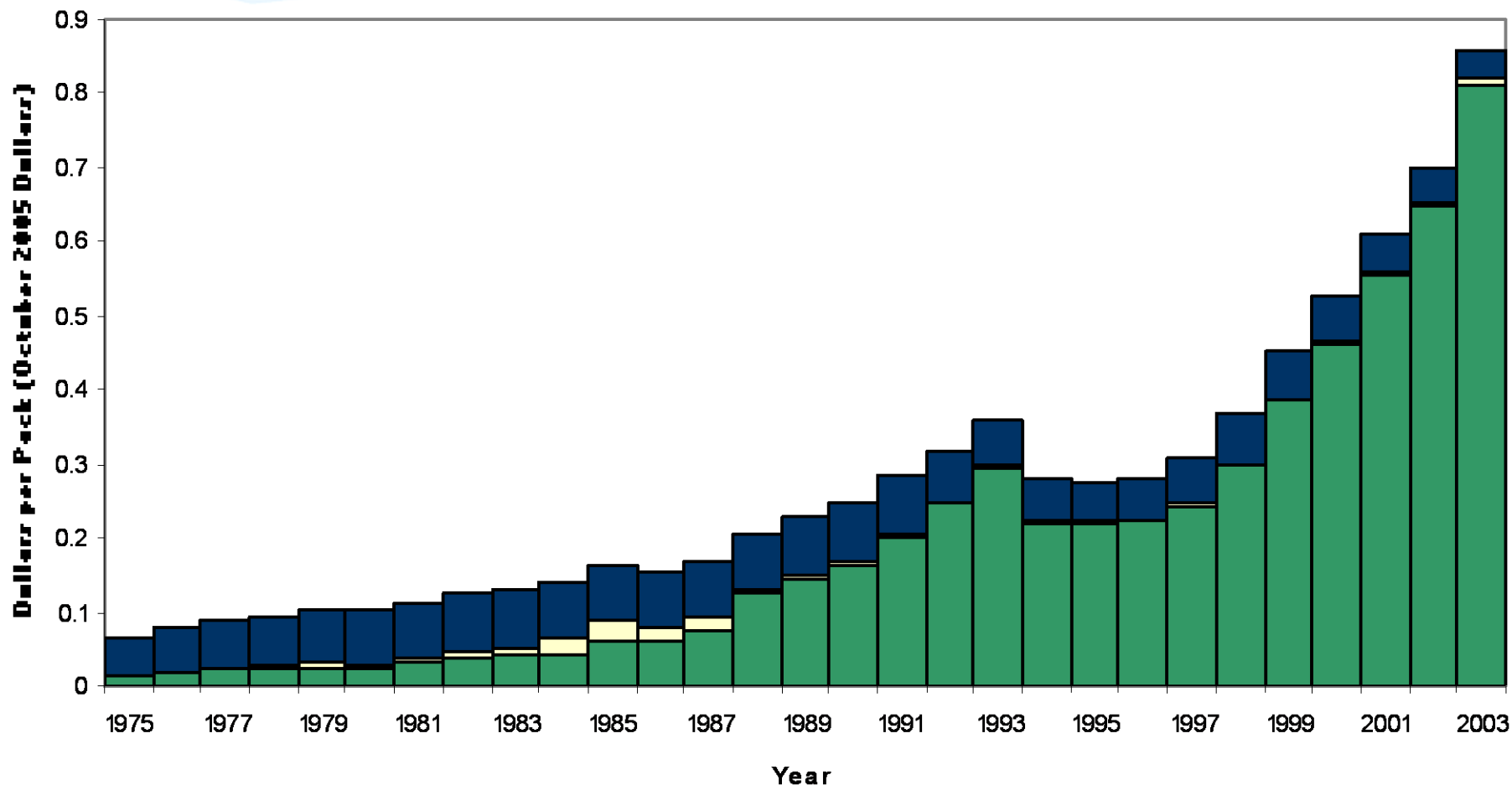
Nonlinearities in effects of tax and price increases

- Does a larger increase in tax have a disproportionately larger or smaller impact on cigarette sales? Revenues? Prevalence?
- Does a one time large increase in the tax have a bigger or smaller effect than incremental increases that add up to the same total increase over multiple years?
- Is there a revenue maximizing level of tax?

What We Need to Know

Industry Pricing and Price Promotion
Strategies

Cigarette Company Marketing Expenditures, Inflation Adjusted, 1975-2003



Price-Related

Other

Image-Oriented

What We Need to Know

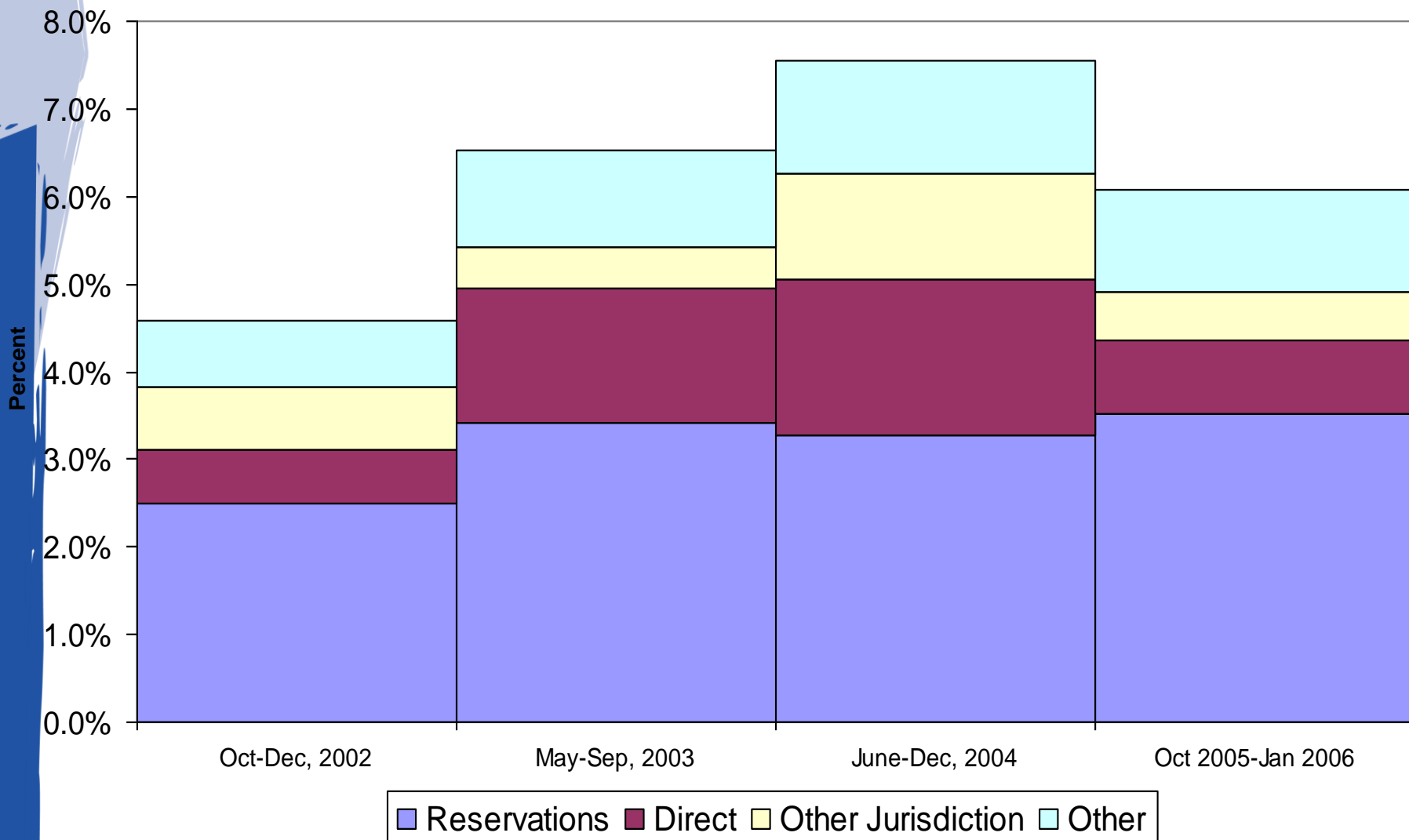
Industry Pricing and Price Promotion Strategies

- How do industry pricing and promotion strategies vary across states?
- Does the industry increase promotions in response to a tax increase or other tobacco control policies and programmatic efforts?
- What's the impact of these price promotions on youth initiation? Adult cessation? Consumption? Buying behavior of smokers?
- How might minimum pricing and other policies be used to limit impact of promotions on price?

What We Need to Know

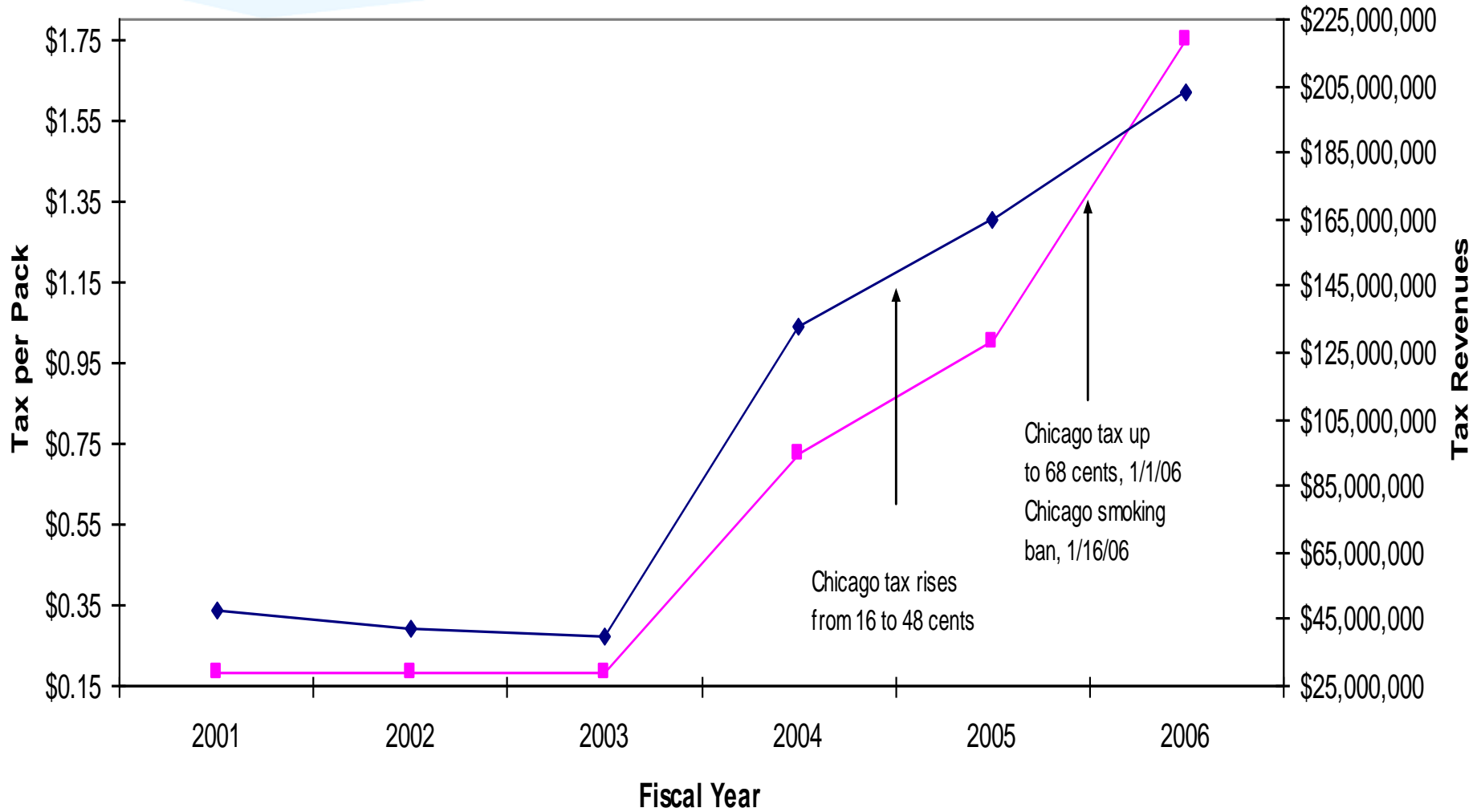
Policies targeting tax avoidance, smuggling, and counterfeit

Percent of Smokers' Last Cigarette Purchase from Untaxed or Lower Taxed Sources



Source: International Tobacco Control Policy Evaluation Study, US Survey, Waves 1-4

Cook County Cigarette Tax and Tax Revenues - FY01-FY06



■ Tax ◆ Revenues

What We Need to Know

Policies targeting tax avoidance, smuggling, and counterfeit

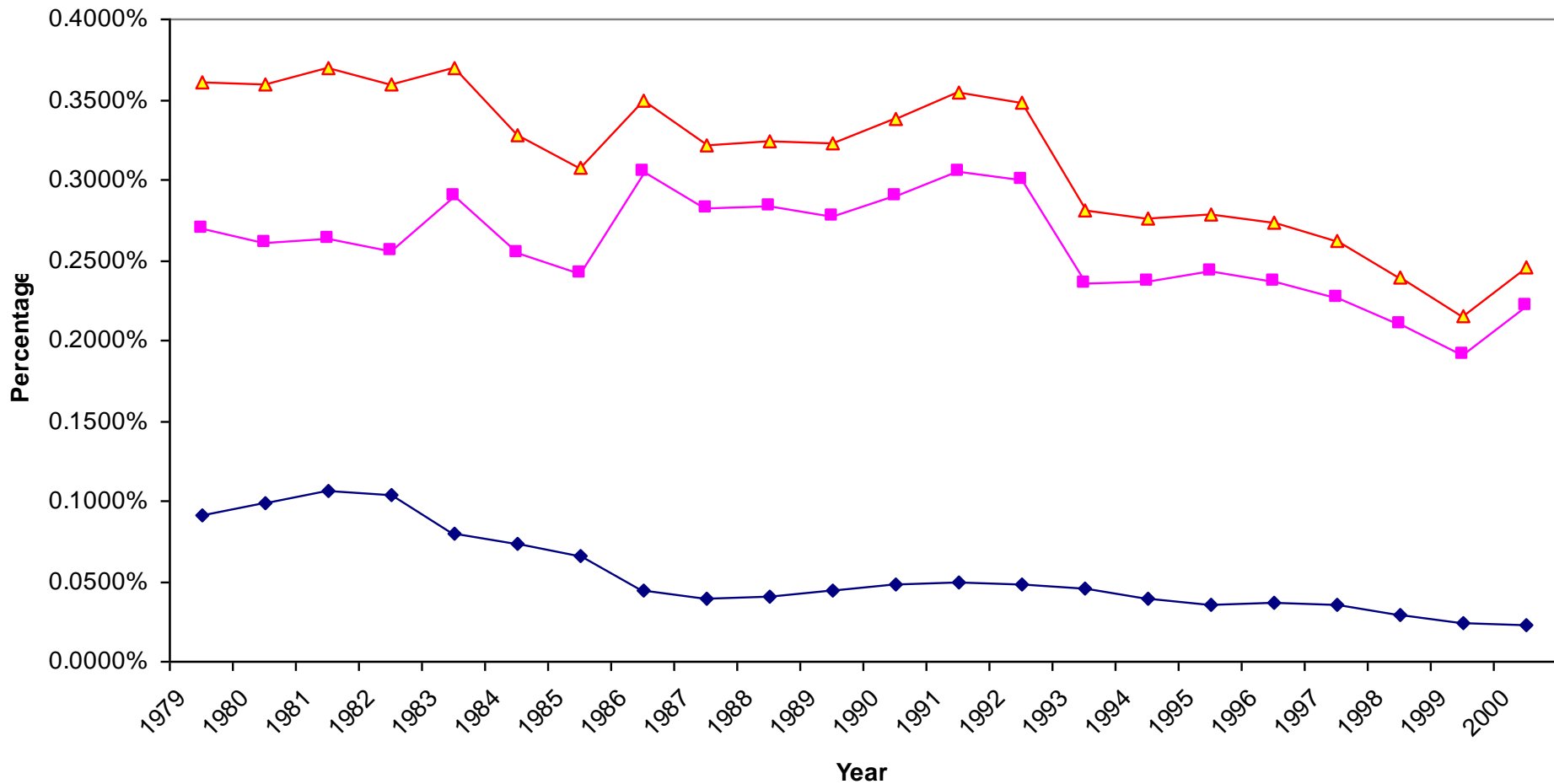
- How have direct sales laws and voluntary agreements of shipping and credit card companies affected Internet purchasing? Internet vendors? State revenues? Prevalence?
- How have compacts with tribes affected reservation purchases? Reservation revenues from tobacco product sales?
- What policies are effective in curbing larger scale smuggling? Counterfeiting?

What We Need to Know

Economic impact of tobacco tax increases (and tobacco control policies more generally)

Build on work by Warner and his colleagues from mid-1990s for Michigan, regional economies

Tobacco Farming and Manufacturing as Share of Gross Domestic Product, United States



◆ Tobacco Farming ■ Tobacco Manufacturing ▲ Tobacco Farming and Manufacturing



Source: Chaloupka et al., 2007

What We Need to Know

Economic impact of tobacco tax increases (and tobacco control policies more generally)

- How do tax increases impact state economies? How have reductions in tobacco use over past few decades affected state economies?
- What sectors (e.g. retail sales) of the economy are most affected by tax increases?
- What are the impact of interstate differences in tobacco taxes on border economies?

What We Need to Know

Fairness of tobacco taxes and tax increases

Build on very limited work on differential impact of tax and price on low income/less educated smokers

- How do low SES smokers respond to tax and price increases? What is the impact on household spending on other goods and services?
- How does the burden of tobacco taxation change as tobacco taxes increase?
- How are the revenues generated by tobacco tax increases used? What are the implications for the fairness of the tax?

What We Need to Know

Structure of tobacco taxation

Starting to see changes in tobacco tax structure in some states, particularly for smokeless tobacco products

- Does the impact on tobacco use of specific (per unit) taxes differ from that of *ad valorem* (percent of price) taxes?
- What are the revenue implications of different tax structure?
 - Would benefit from international examination given wider mix of tax structures across countries

What We Need to Know

Effects on continuing smokers behavior, compensation, puff topography and health

- How do continuing smokers change their smoking behavior in response to tax and price increases? Changes in brands? purchase behaviors? Intensity with which cigarettes are smoked? Substitution to other products?
- What are the health implications of these changes in behavior?

What We Need to Know

Long term impact on health and health care costs

- How effective are tobacco tax increases in reducing the death and disease caused by tobacco use?
- How large are the short term reductions in health care costs resulting from tax increases?
What's the long run impact?

Relevant questions for other tobacco control policy interventions

What We Need to Know

Synergies between tobacco tax increases and other tobacco control policies?

- Are there multiplicative effects or diminishing returns to tax increases in the presence of other tobacco control efforts?
- What other interventions would maximize the impact of tobacco tax increases? Quitlines, free cessation counseling/products? Others?

Relevant questions for other tobacco control policy interventions

Frank J. Chaloupka

fjc@uic.edu

www.impactteen.org

www.tobaccoevidence.net