

# The Economics of Substance Use and Abuse

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# Overview

- Overview of substance use patterns in the United States
- Description of the health, social, and economic consequences of tobacco, alcohol and illicit drug use
- Brief review of the findings from our research on the impact of prices and policies on use, abuse, and consequences

# Tobacco Use in the US

- Adult smoking prevalence: 22.8%
- Youth smoking prevalence: 28.5%
- Over 40% of adult smokers have tried to quit in past year; more than 70% say they want to quit
- Smoking in US declining over past two decades, becoming more concentrated in lowest income, least educated segments of population
- Youth smoking rose for much of 1990s; has fallen in recent years
- Tobacco use rising in many developing countries

# Alcohol Use in the US

- Adult drinking prevalence: 64%
  - Binge drinking prevalence: 16%
- Youth drinking prevalence (seniors): 73%
  - Report being drunk: 53.2%
- College student drinking prevalence: 81%
  - Binge drinking prevalence: 44%
  - Frequent binging: 23%
- Half of all alcohol consumed by ten percent of those who drink most frequently/heaviest
- Modest downward trend in drinking among adults
- Drinking among youth/college students not changing much in recent years

# Illicit Drug Use in the US

- Adult (26+) prevalence:
  - marijuana: 5.6% (37%)
  - Any other drug: 4.4% (24.9%)
  - Non-medical pharmaceutical use: 3.3%
- Youth drinking prevalence (12-17):
  - Marijuana: 15.2% (19.7%)
  - Any other drug: 12.0% (18.7%)
  - Non-medical pharmaceutical use: 7.9%
- Young adult prevalence (18-25):
  - Marijuana: 26.7% (50.0%)
  - Any other drug: 18.4% (35.4%)
  - Non-medical pharmaceutical use: 9.6%
- Mixed trends in use of various drugs in various population subgroups

# Consequences of Use: Tobacco

- Leading cause of preventable death in the United States
  - over 440,000 deaths caused by tobacco each year in the US
  - estimates suggest nearly 5 million premature deaths from tobacco each year globally
- Exposure to second-hand tobacco smoke results in over 3,000 annual lung cancer deaths and over 50,000 deaths from cardiovascular diseases
  - Significant health consequences for children exposed to tobacco smoke

# Consequences of Use: Alcohol

- Major cause of preventable death in the United States
  - over 100,000 deaths caused by alcohol each year in the US
  - almost 60% from diseases caused by or related to alcohol use
  - over 40% from accidents, violence and other outcomes resulting from alcohol use
- Consequences of alcohol use and abuse particularly important among youth/young adults
  - traffic crashes leading cause of death among youth/young adults
  - other accidents and violence

# Consequences of Use: Illicit Drugs

- Major cause of preventable death in the United States
  - Over 16,000 deaths directly result from illicit drug use (e.g. overdose deaths)
  - Many more related to drug use such as deaths from AIDS, hepatitis, homicide, injury
  - Often result from combination of use of two or more drugs, including alcohol
- Direct deaths from illicit drug use more than doubled over past two decades

# Consequences of Use:

- Host of social problems related to alcohol and drug use
  - violence (homicides, rape, assault)
  - property crime
  - traffic crashes
  - suicides
  - poor educational outcomes
  - lost productivity
  - workplace accidents
  - family instability
  - sexually transmitted diseases

and much more.....

# Economic Impact:

- Tobacco:
  - Estimated economic cost: \$150b/year
    - \$75.5b in medical care costs
    - \$81.9b in lost productivity
    - \$7.18 per pack of cigarettes sold
- Alcohol:
  - Estimated economic cost: \$166.5 billion/year
    - substantial costs imposed on non-drinkers from traffic crashes, violence, and other consequences
- Illicit Drugs:
  - Estimated economic cost: \$109.9b/yr
    - substantial external costs

# Rationale for Intervention:

- Public health, economic, and social impact
- Market Failures:
  - Imperfect Information
    - poor understanding of the health and other consequences of substance use
    - Compounded by fact that most substance begins during adolescence
    - Further complicated by role of addiction and overestimates of ability to quit
  - Externalities:
    - health and other consequences
    - financial externalities

# Research Focus

- Impact of the “full price” of alcohol, tobacco and illicit drugs on their use, abuse, and related consequences
  - misperception that addictive behaviors are unresponsive to economic incentives
  - “Full price” includes:
    - monetary price (tax, supply reduction)
    - time costs (availability)
    - expected legal sanctions
    - expected health consequences
  - Try to control for other influences
  - Much of research focused on youth and young adults



## Young People More Responsive To Price Increases

- Proportion of disposable income youth spends on given substance likely to exceed that for adults
- Peer influences much more important for youth than for adults
- Youth likely to be less addicted than adults
  - Young people tend to discount the future more heavily than adults

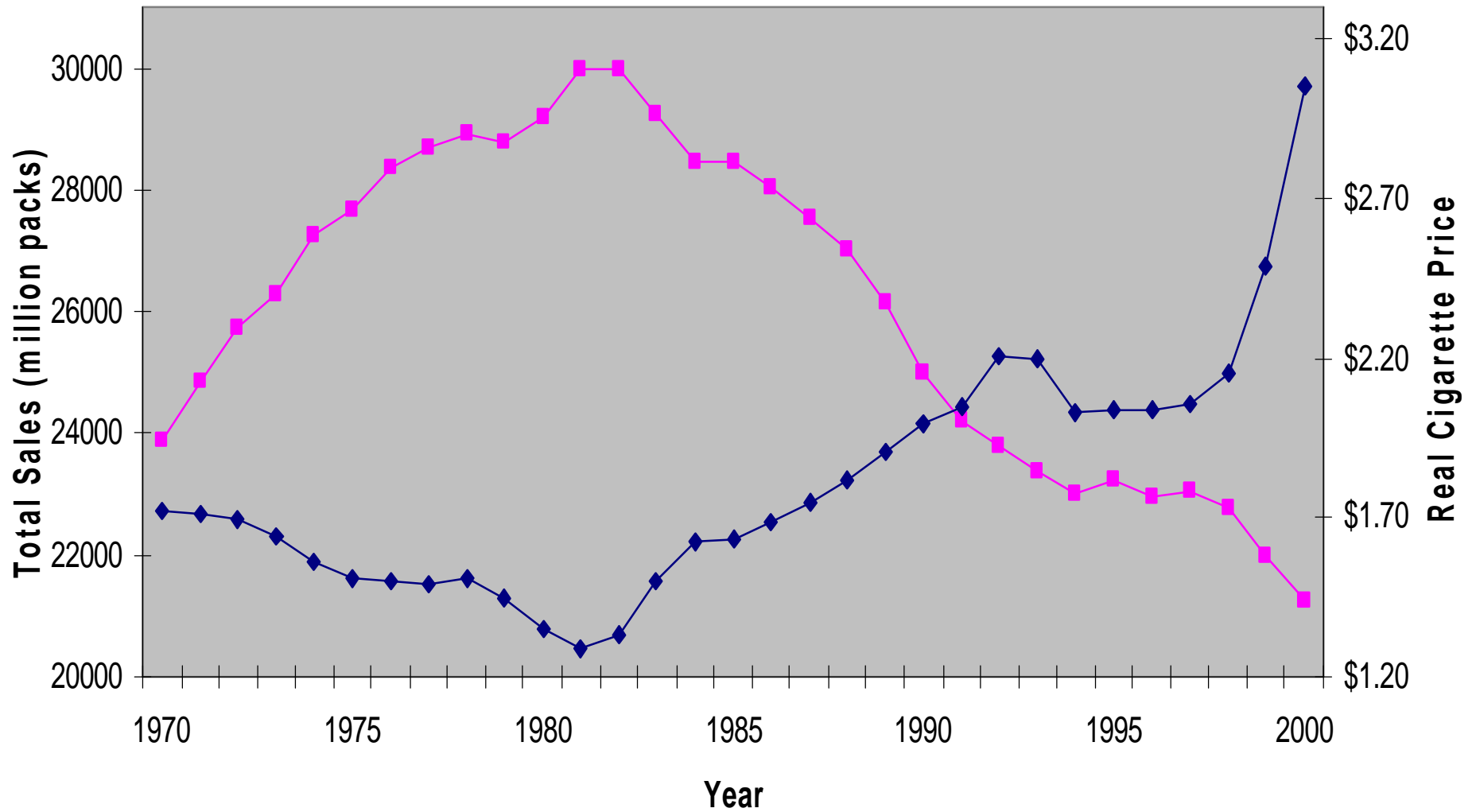
Sources: Grossman and Chaloupka, 1997

# 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%
  - long run impact about double
- About half of impact of price increases is on smoking prevalence; remainder is on average cigarette consumption among smokers
  - Lowest income populations most responsive to price changes

Source: Chaloupka *et al.*, 2000

## Total Cigarette Sales and Cigarette Prices, 1970-2000

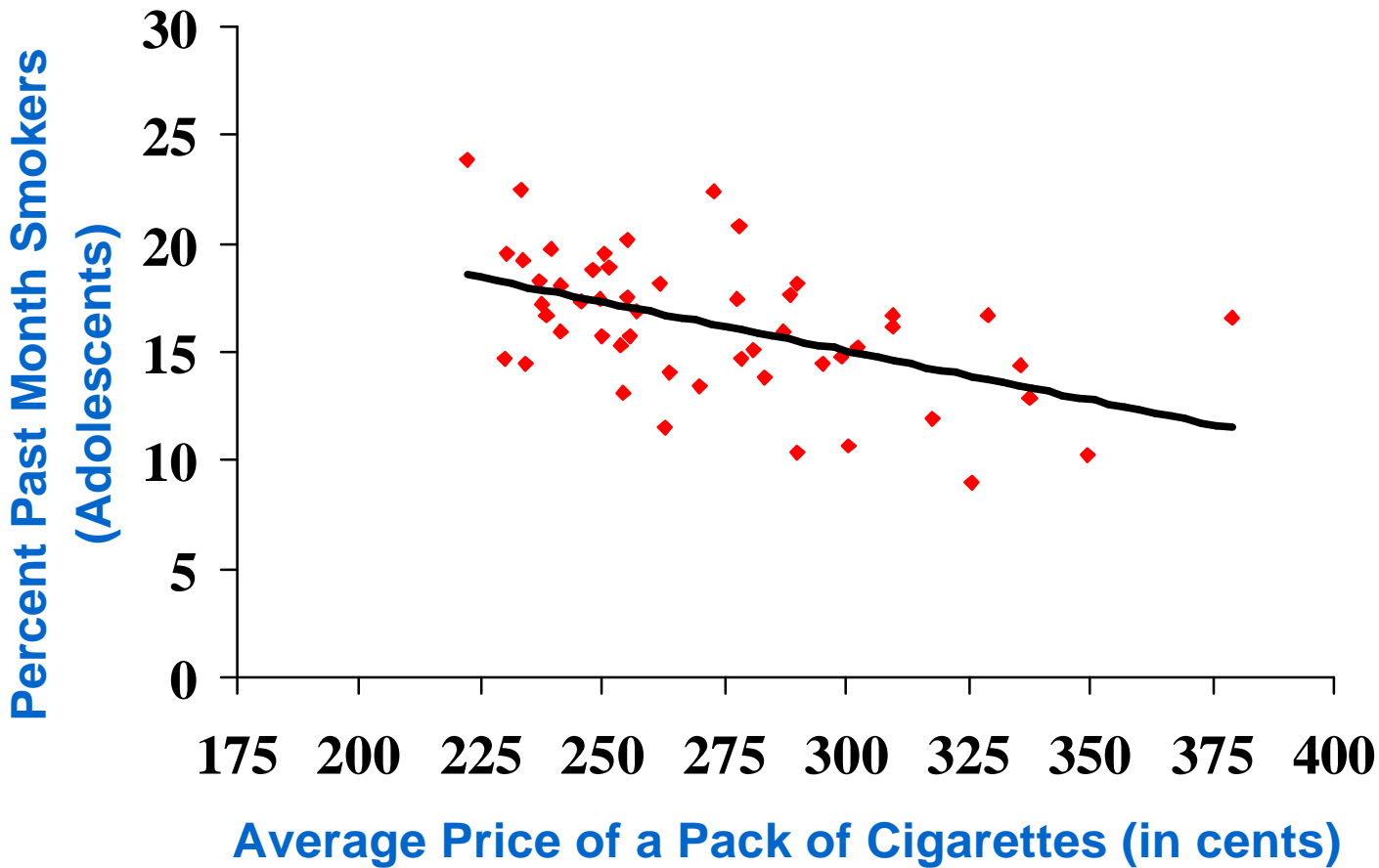


# Cigarette Prices And Kids

- A 10% increase in price reduces smoking prevalence among youth by nearly 7%
- A 10% increase in price reduces conditional demand among youth by over 6%
- Higher cigarette prices significantly reduce teens' probability of becoming daily, addicted smokers; prevent moving to later stages of uptake.
- 10% price increase reduces probability of any initiation by about 3%, but reduces probability of daily smoking by nearly 9% and reduces probability of heavy daily smoking by over 10%

Sources: Chaloupka and Grossman, 1996; Tauras, *et al.*, 2001; Ross, *et al.*, 2001

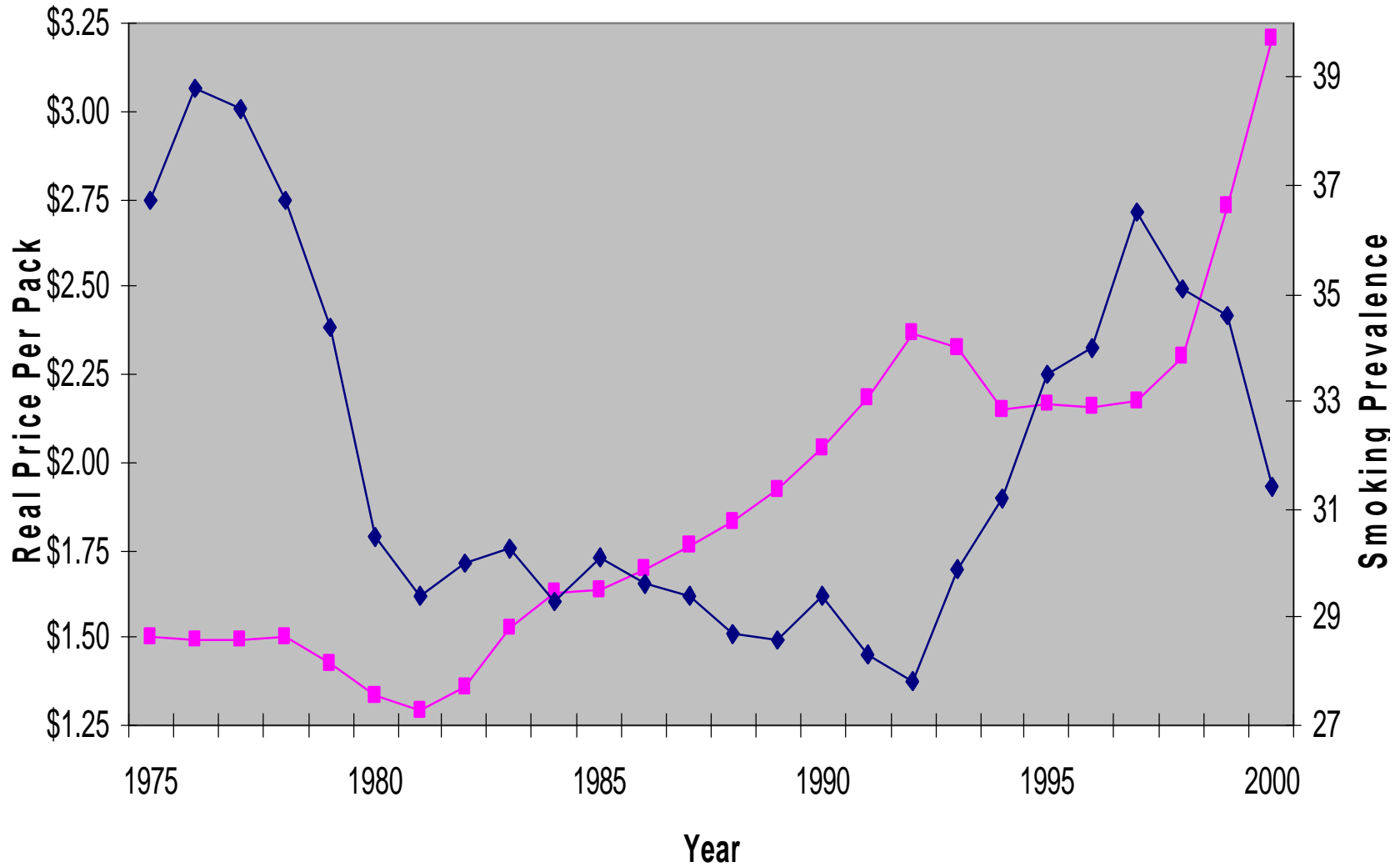
## Cigarette Smoking Among Youth by the Average Price of a Pack of Cigarettes in 50 States and the District of Columbia, 1999



Data: 1999 NHSDA (12-17 year olds); 1999 *Tax Burden On Tobacco*

Source: *Giovino, et al., 2001*

## 12th Grade 30 Day Smoking Prevalence and Price

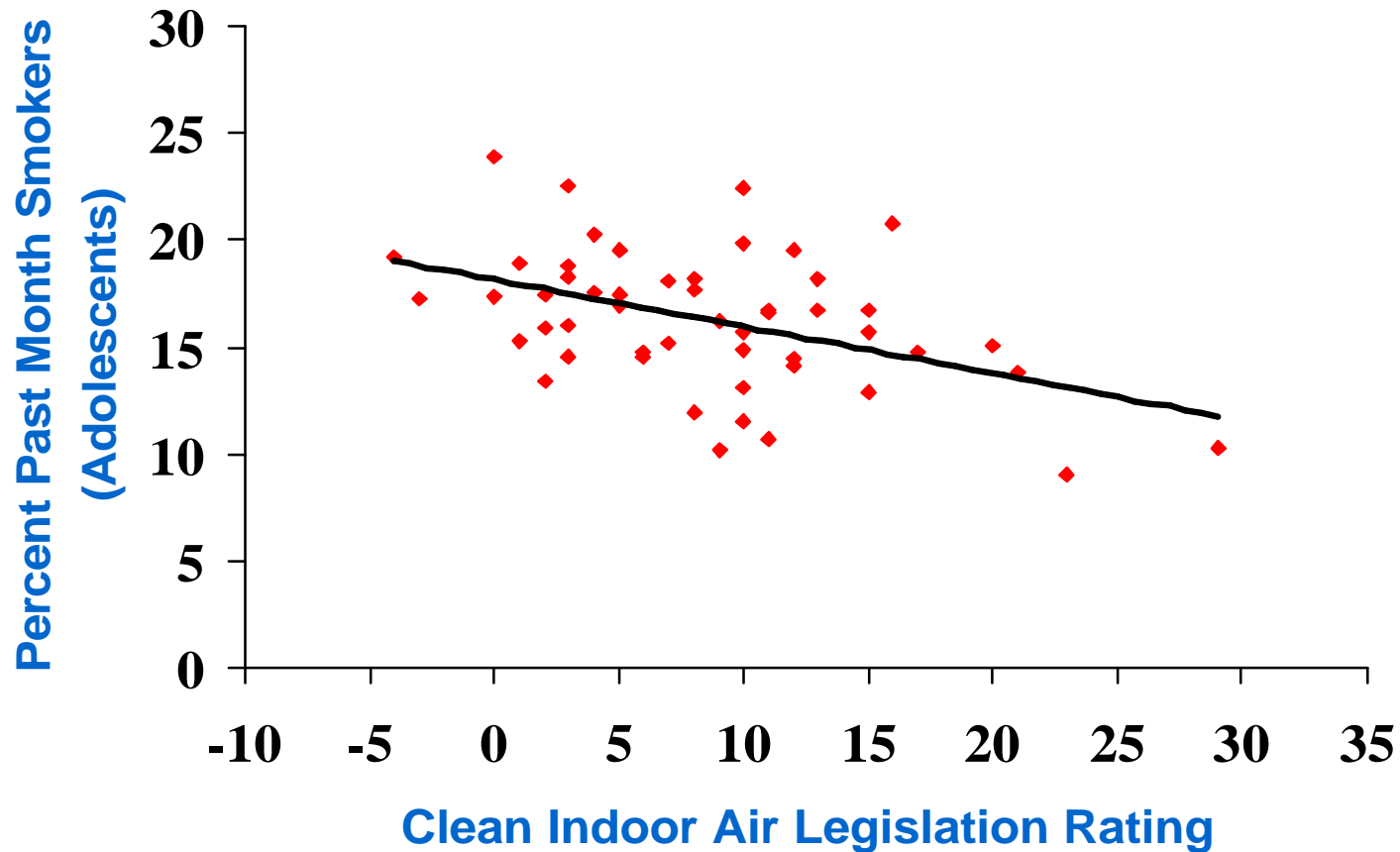


# Research – Smoking Restrictions

- Stronger and more comprehensive restrictions on smoking reduce smoking prevalence, increase smoking cessation, and reduce cigarette use among continuing smokers
  - Workplace restrictions particularly important in promoting cessation among adults
  - Consistent evidence that restrictions on smoking in public places also reduce smoking among youth and young adults
  - Strong evidence that restrictions on smoking at home significantly reduce the probability of youth smoking, smoking uptake, and youth cigarette consumption

*Sources: Evans et al., 2000; Wakefield et al. 2000; Woollery et al. 2000*

# Cigarette Smoking Among Youth by the Clean Indoor Air Legislation Rating in 50 States and the District of Columbia, 1999



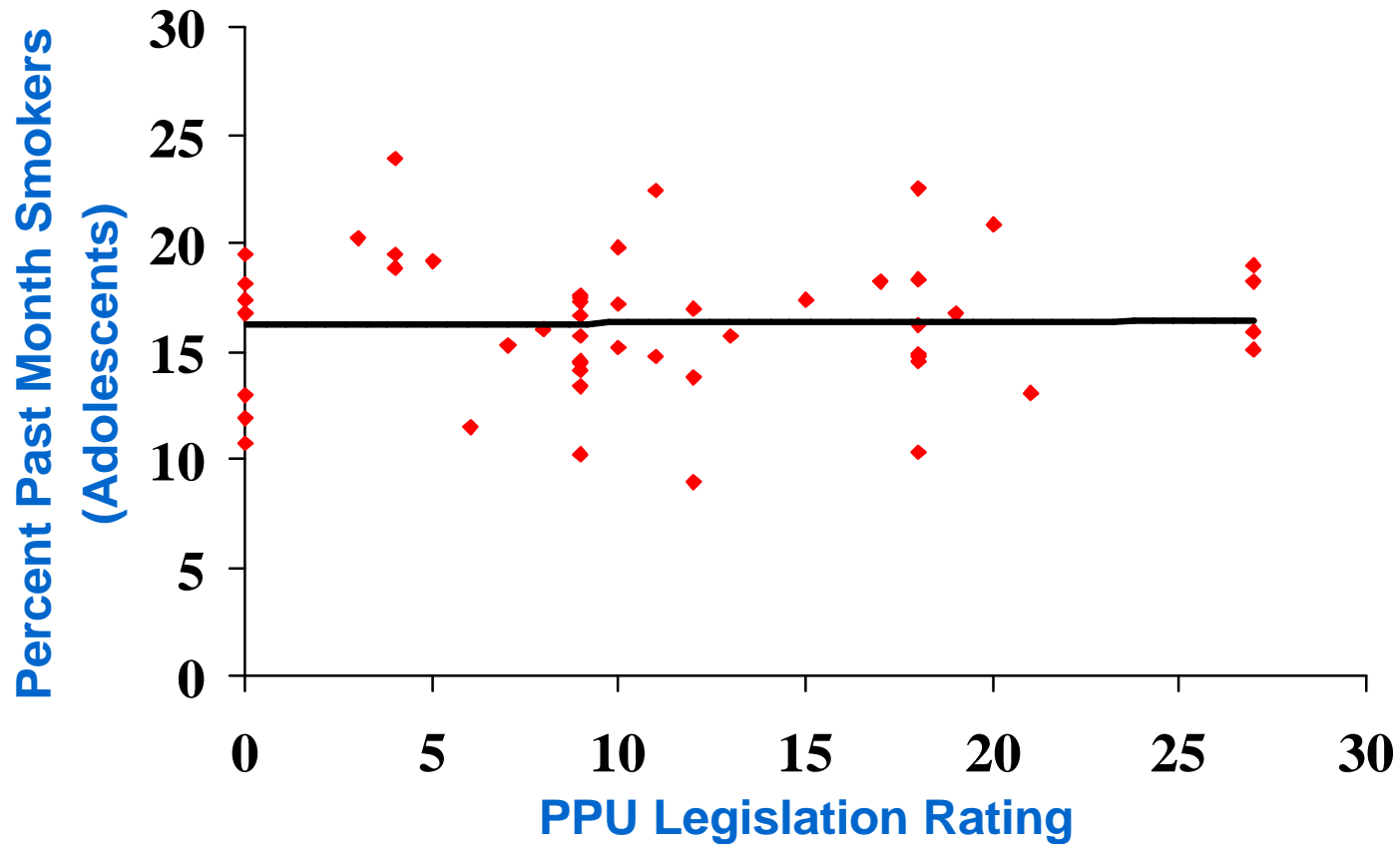
Source: Giovino, et al., 2001

# Research – Youth Access and PPU

- Generally little evidence that restrictions on youth access to tobacco products reduce youth smoking
  - likely due to the generally poor enforcement of and compliance with these laws
- Growing evidence that increased retailer compliance with limits on youth access leads to significant reductions in youth smoking prevalence and consumption
  - little impact on youth experimentation
  - impact increases as youth progress to more regular smoking
- Little evidence that policies prohibiting youth purchase possession and/or use of tobacco products have any impact on youth smoking
  - only effect appears to be among lowest risk youth

Sources: *Chaloupka and Grossman, 1996; Ross and Chaloupka, 2001; Giovino, et al, 2001, Wollery et al. 2000; USDHHS, 2001 and others*

# Cigarette Smoking Among Youth by the Historical PPU Legislation Rating in 50 States and the District of Columbia, 1999



Source: Giovino, et al., 2001

## Research Findings – Comprehensive Programs and Youth Smoking

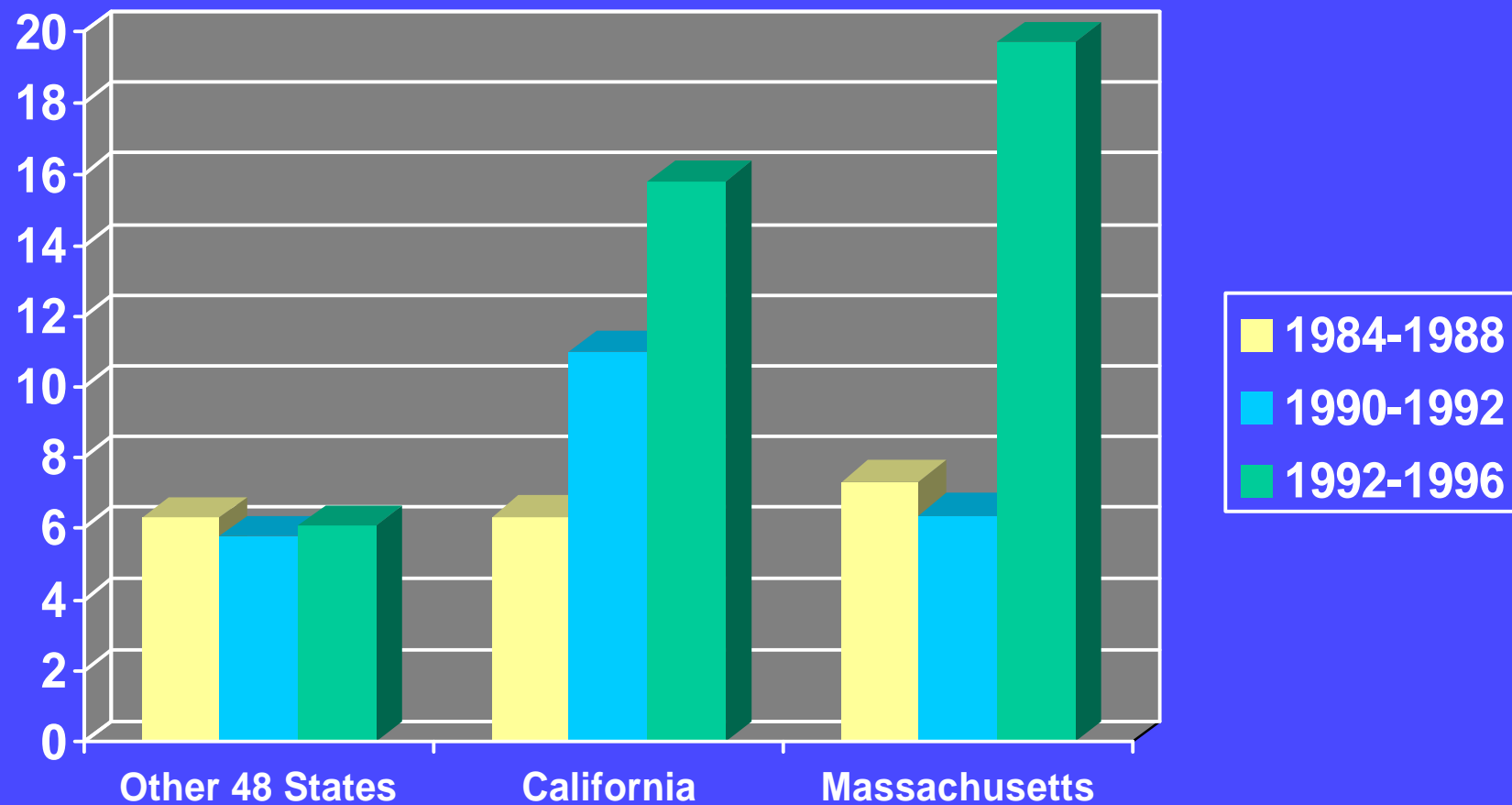
- Higher spending on tobacco control efforts significantly reduces youth smoking prevalence and cigarette consumption among young smokers

Elasticity estimate for youth smoking prevalence: -0.011;  
estimate for conditional demand: -0.012 (MTF data)

- Estimated impact of spending at CDC recommended levels: minimum: 7.7% reduction in youth smoking prevalence; maximum: 22.2% reduction
- Similar, but smaller, impact of comprehensive programs on smoking among adults

Sources: *Farrelly, et al. 2001; Chaloupka et. al 2001*

# Change in Per Capita Cigarette Consumption Before and After an Excise Tax Increase and an Antismoking Campaign California & Massachusetts versus Other 48 States, 1986 to 1996



Source: CDC



# Alcohol Prices and Drinking

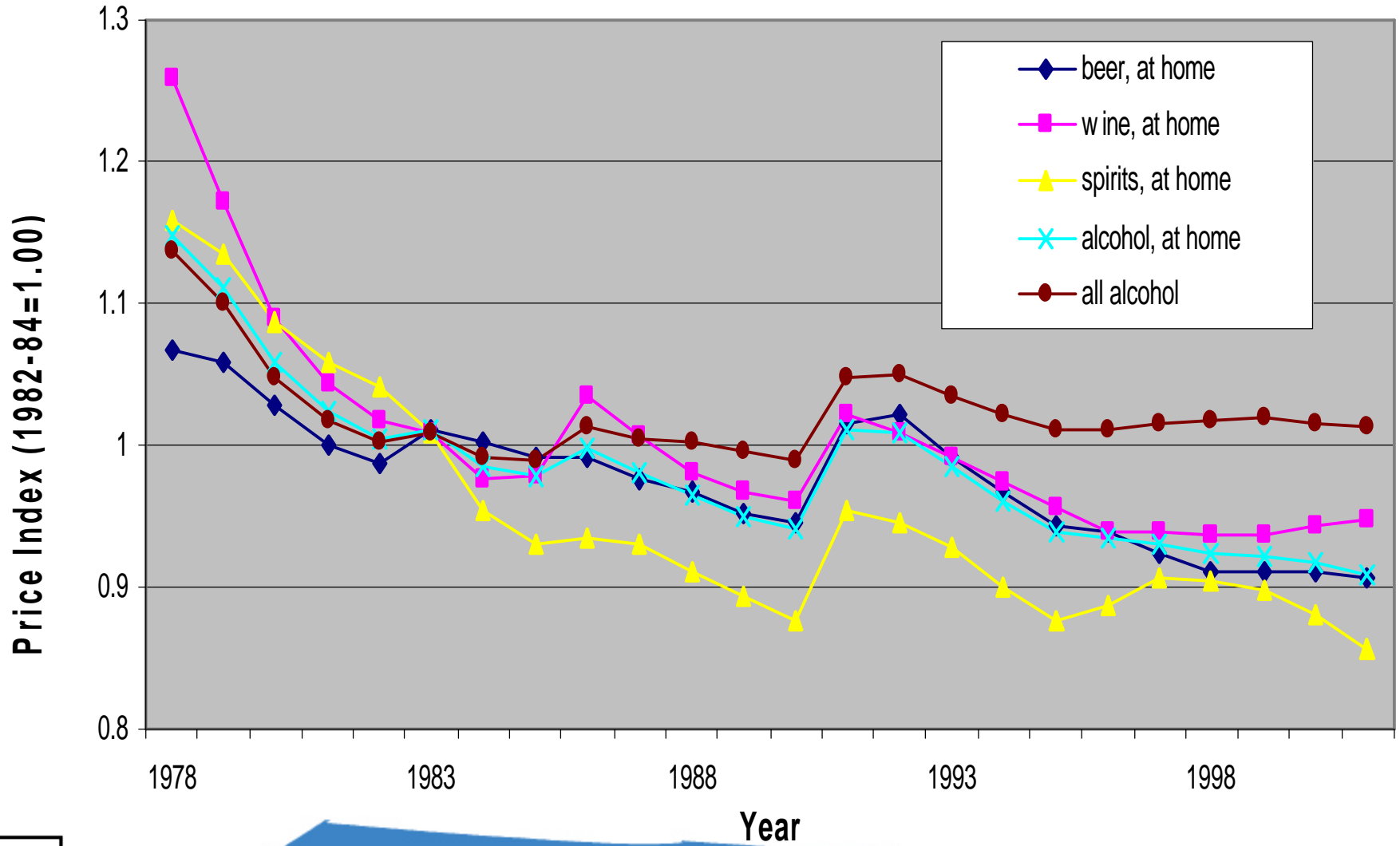
- Estimates of overall price elasticity of alcohol demand based on aggregate data (Leung and Phelps, 1993):
  - Beer: -0.3
  - Wine: -1.0
  - Distilled Spirits: -1.5
- Higher prices reduce drinking prevalence, frequency of consumption, and number of drinks per drinking occasion
  - Estimates from models that account for addictive nature of alcohol consumption suggest that long run impact of price even larger
  - Estimates for youth generally find them more responsive to price than adults



## Alcohol Prices And Consequences of Drinking

- Higher alcoholic beverage prices found to reduce:
  - drinking and driving
  - fatal and non-fatal motor vehicle accidents
  - non-fatal workplace accidents
  - other accidental death rates
  - liver cirrhosis mortality rates
  - other alcohol-related health consequences
  - homicide rates
  - child and spouse abuse
  - rape, assault, and other violence
  - variety of delinquent behaviors among youth
  - suicide rates, attempts, and ideation
  - unprotected sex, date rape, and sexually transmitted disease rates
    - Find also that higher alcoholic beverage prices result in improved educational outcomes, human capital accumulation, and labor market outcomes

# Inflation Adjusted Alcoholic Beverage Prices 1978-2001





# Impact of Other Alcohol-Related Policies

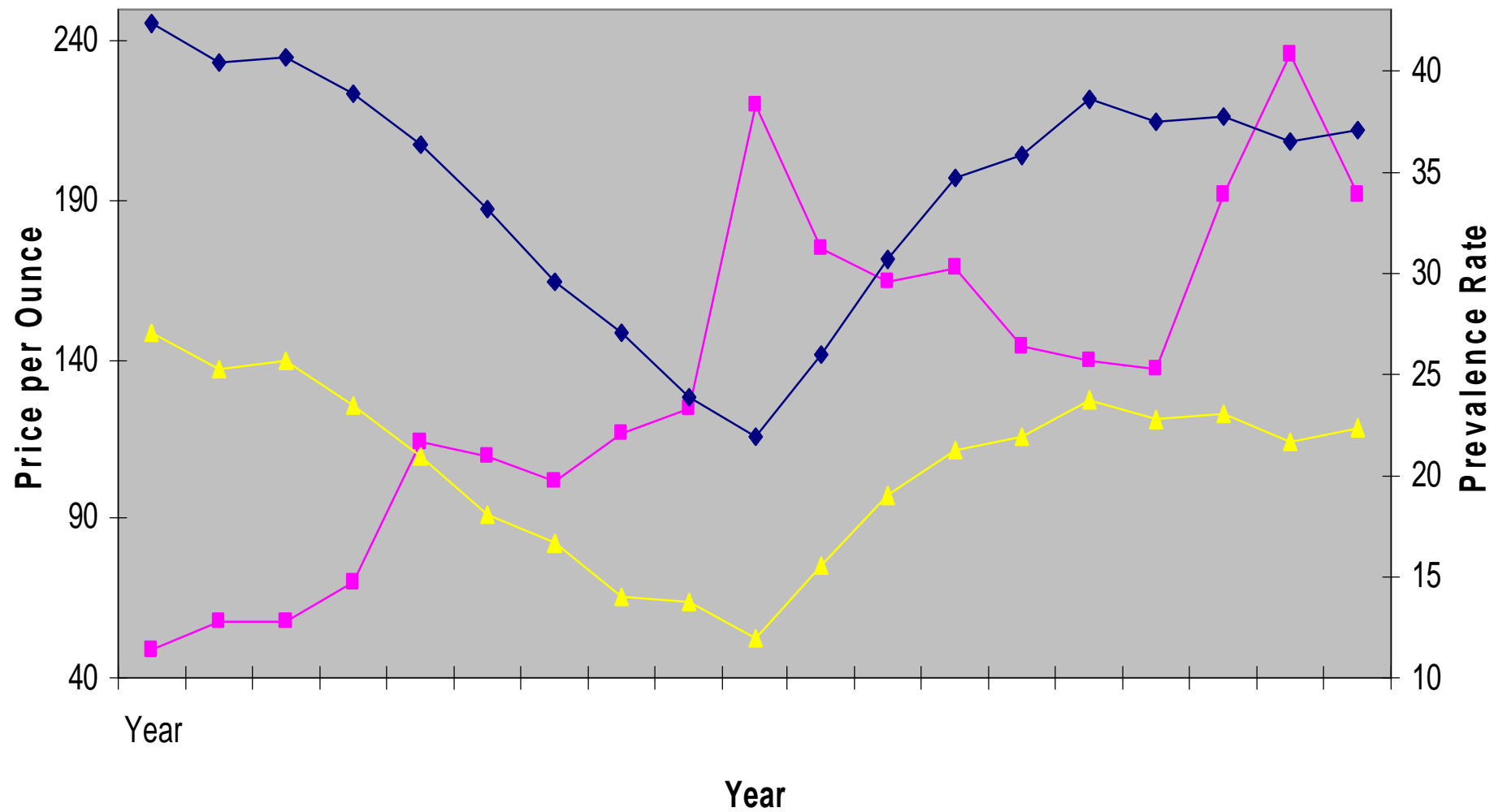
- Policies that reduce availability and/or raise expected legal consequences also effective in reducing the consequences of alcohol use and abuse
  - minimum legal drinking ages
  - policies affecting outlet density
  - drinking and driving related policies
  - limits on happy hours/sale of beer by the pitcher
  - campus restrictions on alcohol
  - many others...



# Prices, Policies and Illicit Drug Use

- Similar research on marijuana, cocaine, and/or heroin use among youth, young adults and adults
- Consistently find that higher prices reduce prevalence, frequency, and intensity of use
  - Generally find evidence that use of various substances is complementary for adults; mixed findings for youth
    - Find little impact of stronger legal penalties for possession or sale
    - Find that greater spending on prevention/education/treatment activities is effective in reducing use

# Marijuana Price and Prevalence of Youth Marijuana Use



■ Commercial Grade   
 ◆ Annual Prevalence   
 ▲ 30 Day Prevalence



Supported by  
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*A Policy Research Partnership  
to Reduce Youth Substance Use*

## Summary

Substance use is widespread, particularly among youth and young adults

Substance use results in a variety of health, social and economic consequences

Increases in the full prices of tobacco, alcohol, and illicit drugs are effective in reducing use, abuse, and the consequences that result