

Price, Tobacco Control Policies and Youth Smoking

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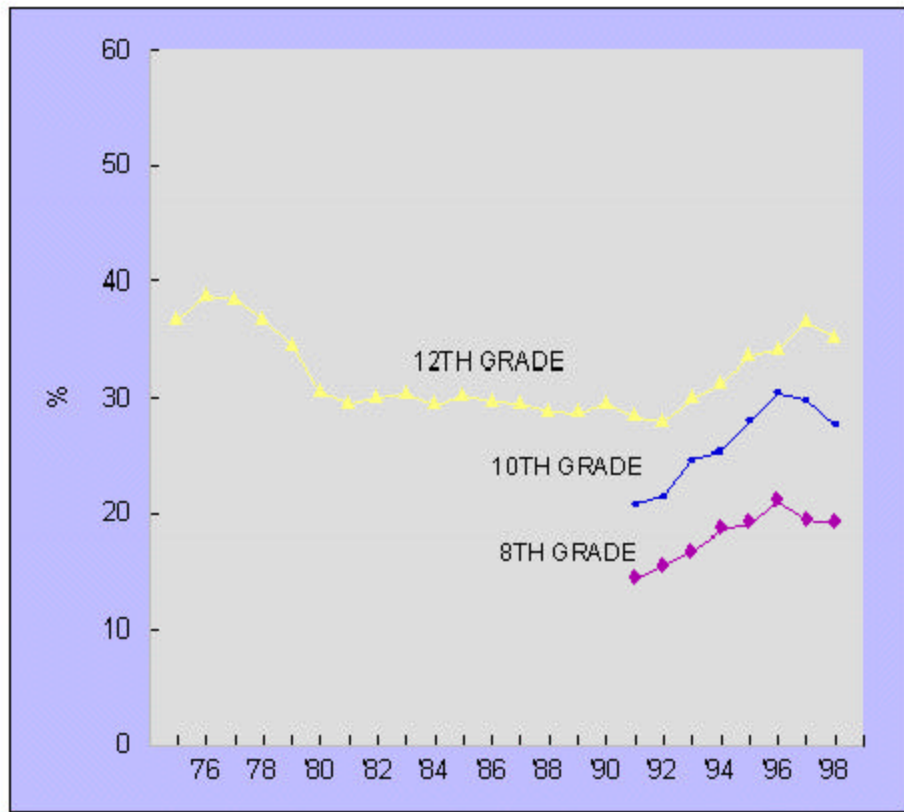
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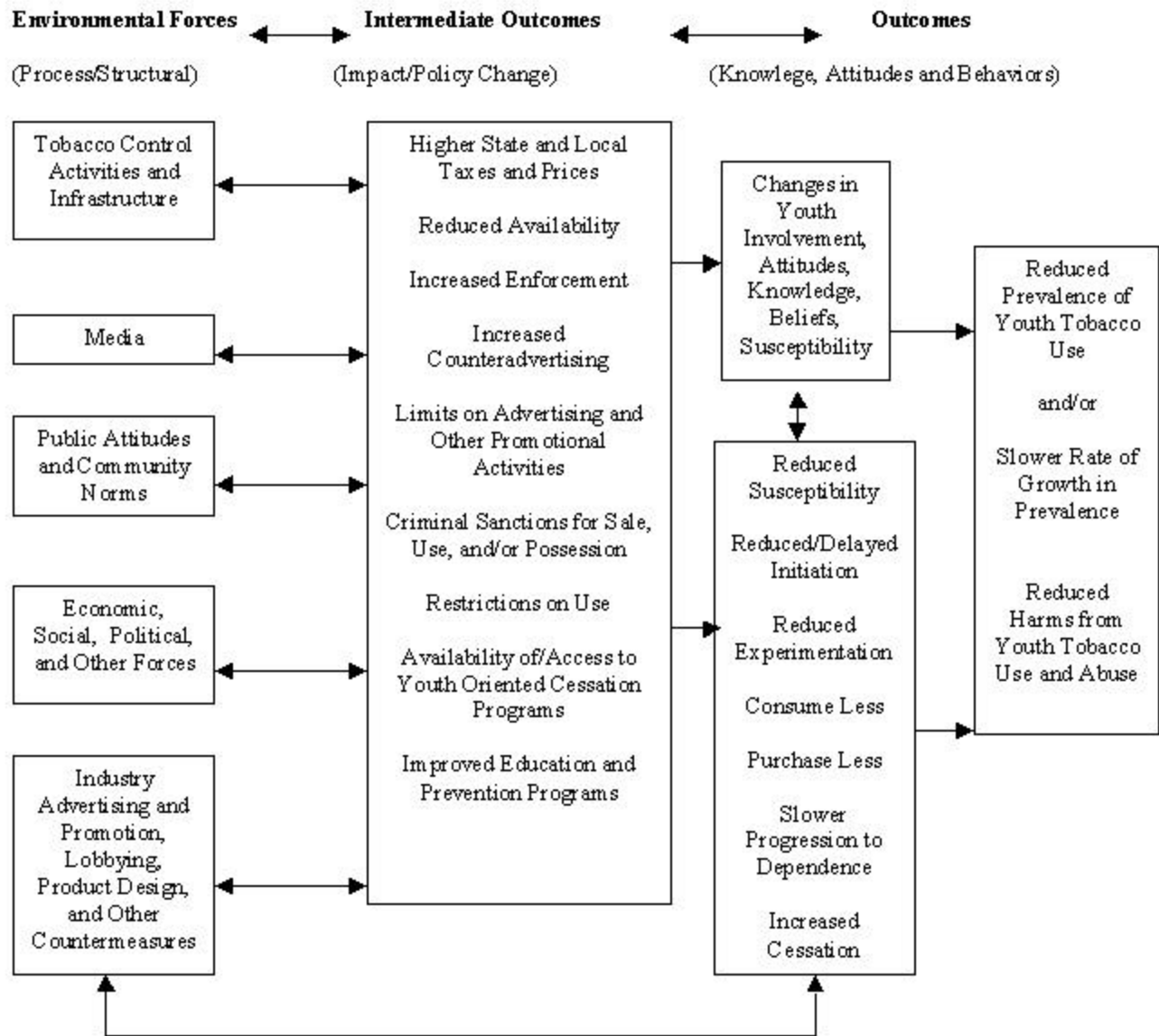


From the Monitoring the Future Study The University of Michigan

Trends in Thirty-Day Prevalence of Cigarette Smoking
for Eighth, Tenth, and Twelfth Graders



Conceptual Framework



Cigarette Prices and Adult Smoking

Numerous econometric studies over past three decades conclude that overall cigarette demand responsive to changes in cigarette taxes and prices:

- **Price Elasticity of Demand:** the percentage change in consumption resulting from a one percent increase in price

- **Estimated Price Elasticity of Cigarette Demand:**

Short Run: -0.3 to -0.5

Prevalence: -0.1 to -0.2

Long Run: -0.7 to -0.8

Cigarette Prices and Adult Smoking

- **10 percent increase in price reduces duration of smoking by 10 percent**
- **Consistent with economic theory, lower income/less educated persons relatively more responsive to price increases**

Estimates imply that large cigarette excise tax increases would lead to significant reductions in overall cigarette demand and would lead to sizable increases in cigarette tax revenues

Youth Smoking and Cigarette Prices

Economic theory suggests that younger persons will be more responsive to changes in price than adults:

- **Proportion of disposable income youth spends on cigarettes likely to exceed corresponding portion of adult's income**
- **Peer influences much more important for young smokers than for adult smokers**

Youth Smoking and Cigarette Prices

- **Young smokers less addicted than adult smokers**
- **Young people tend to discount the future more heavily than adults**

Earliest studies produced mixed evidence concerning the relative price responsive of youth and young adults

Past Research on Other Factors Influencing Tobacco Use Among Youth, Young Adults and Adults

Restrictions on smoking in public places, workplaces:

**Consistent evidence that restrictions
reduce smoking, even after
accounting for potential reverse
causality**

- **Workplace restrictions particularly
important among adults, reduce
prevalence by as much as six
percent**

- **School and other public place
restrictions also important for
youth/young adults**

Past Research on Other Factors Influencing Tobacco Use Among Youth, Young Adults and Adults

Limits on youth access to tobacco products:

- **Evidence that policies, merchant education, enforcement and related activities raise retailer compliance**
- **Mixed evidence for their impact on youth tobacco use**

Past Research on Other Factors Influencing Tobacco Use Among Youth, Young Adults and Adults

Advertising:

Mixed evidence from analyses of aggregate data suggests that advertising has little or no impact on aggregate measures of smoking

- Econometric methods not well-suited for examining the impact of advertising in aggregate data**

Almost no econometric analyses of the impact of advertising on youth tobacco use

Past Research on Other Factors Influencing Tobacco Use Among Youth, Young Adults and Adults

Advertising (continued):

More recent studies of advertising bans conclude that comprehensive bans on advertising and promotion lead to reductions in cigarette smoking, while partial bans have little or no impact

Counteradvertising:

Consistent evidence from national and state-level data that counteradvertising significantly reduces cigarette smoking

Data

**1992, 1993, 1994 Monitoring the Future
Surveys of 8th, 10th, and 12th grade
students**

110,717 students, mostly ages 12-18 years

cigarette smoking:

- **indicator for smoking in past 30 days**
- **average daily cigarette consumption for smokers**

smokeless tobacco use:

- **indicator for smokeless tobacco use**
- **frequency of past month use**

**wide variety of socioeconomic and
demographic information**

Data

Longitudinal data from MTF

- Panels formed from 1976-1993 high school senior surveys
- Followups through 1995
- up to 8 observations on some individuals
- nearly 200,000 observations/almost 50,000 persons
- mostly ages 18-32 years

Data

1993, 1997 and 1999 Harvard College Alcohol Surveys

**16,000+ students in 140 4-year colleges
and universities**

cigarette smoking:

- **indicator of smoking in past 30 days**
- **average daily cigarette consumption by smokers**

**wide variety of socioeconomic and
demographic data**

**some information on school
characteristics and college smoking
policies**

Data

1996 RWJF/Audits & Surveys Youth and Young Adults Surveys

five separate surveys - in school youth, in college young adults, in home youth/young adults, school administrator survey, in-store observations

detailed information on cigarette smoking and other tobacco use, including anticipated responses to price increases of varying size

unique information on cigarette prices, promotions, advertising, placement, and more from stores



Data

Tobacco Prices and Taxes

Tobacco Institute

- state-level weighted average price per pack of 20 cigarettes
- state cigarette and smokeless tobacco tax rates

American Chamber of Commerce Researchers' Association

- city-level price per carton for Winston king-sized

Observational data

- prices per pack/carton for Marlboro, Camel, Winston, Newport and generic brands
- information on promotional discounts and other promotions

Data

Tobacco Prices

"Scanner" data

- prices per pack/per carton at the UPC code level for all brands
- 50 major markets, supermarkets/large groceries and pharmacies only
- includes relatively detailed data on store-specific promotional discounts (i.e. 3 for 2 deals, in-store coupons)

Self Reported Prices

- RWJF/A&S Survey



Data

Tobacco Control Policies

CDC/OSH and Coalition on Smoking OR Health

variety of state tobacco related policies

- restrictions on smoking in public places/worksites
- limits on advertising
- limits on youth access to tobacco products
- "smoker protection" policies
- indicators of state preemption

Data

NCI/ANR

local tobacco control policies

- **restrictions on smoking in public places/worksites**
- **limits on youth access to tobacco products**
- **limits on advertising**

School Administrators (HCAS and A&S surveys)

High school/college smoking policies and enforcement

- **restrictions on smoking on campus and their enforcement**
- **limits on availability and advertising**
- **anti-smoking programs, etc.**

Data

Downey and Gardiner (1996) -- 1994 only

State implementation of Synar Amendment

- indicator of statewide vs. local activity
- indicator of stings vs. observation
- indicators of vending machine policy/enforcement
- over the counter compliance rates
- vending machine compliance rates

Center for Substance Abuse Prevention 1996-present

Synar-related data on retail compliance

Data

Advertising data

- **Magazine advertising measures constructed from CMR, ABC, Mediamark Research, and Simmons Research**
- **Observational data on in-store, storefront, and billboard advertising and counteradvertising**

Estimation

- **Cragg's Two-Part Model:**
 - Probit estimates of smoking/smokeless tobacco use prevalence equations
 - Least squares estimates of conditional cigarette demand and frequency of smokeless tobacco use
- **Ordered probit estimates for categorical measures of use**
- **Threshold of change methods for smoking uptake analyses**
- **Multiple model specifications**
 - multicollinearity vs. omitted variables bias

Estimation

- **Full vs. Restricted Samples to account for potential cross-border shopping**
- **Subsamples defined by race and gender**
- **Longitudinal analysis:**
 - individual, state, and year fixed effects models
 - duration modelling for cessation behavior

Results

- **Cigarette Prices:**
 - **Negative and significant effects in nearly all equations for youth and young adult samples**
 - **Estimated price elasticities of demand:**

Youth:

- **Smoking prevalence: -0.675**
- **Conditional demand: -0.638**

Young Adults (college students):

- **Smoking prevalence: -0.53**
- **Conditional demand: -0.58**

Price, Tobacco Control Policies and Youth Smoking

Longitudinal sample:

- Smoking prevalence: -0.122
 - Conditional demand: -0.661
-
- Some evidence of border crossing in response to interstate price differentials
 - Effects of price vary with stage of smoking uptake, with larger effects on heavier smoking
 - Young males smokeless tobacco demand also responsive to price of smokeless tobacco products

Results

- **Strong evidence that increases in cigarette prices significantly raise the probability of cessation among young adults; magnitude of the estimates consistent with estimates for effects of price on prevalence**
- **Consistent with qualitative evidence from CDC's Network of Prevention Research Centers**
- **Consistent with self-reported anticipated responses to price increases from the A&S surveys**

Results

- **Smoking Restrictions:**
 - **Strong limits on smoking in public places/private worksites significantly reduce the probability of youth and young adult smoking**
 - **Worksite restrictions for employed young adults significantly raise the probability of cessation**
 - **Daily cigarette consumption by youth smokers reduced by restrictions on smoking in schools, when enforced**

Results

- **Daily cigarette consumption by college students also reduced by restrictions on smoking in other public places (i.e. shopping malls...)**
- **Comprehensive, well-enforced restrictions on smoking on college campuses reduce smoking prevalence among college students**
- **Home bans lead to significant reductions in youth smoking prevalence, with greatest reductions associated with most comprehensive bans; magnitude of effect larger than for public place or school bans**

Results

- **For youth, estimate that strong comprehensive public place/worksites restrictions would lead to about a 3-4 percent reduction in youth smoking prevalence; effects of home bans 2 to 3 times larger**

Limits on Youth Access to Tobacco and/or Availability:

- **generally insignificant effects of:**
 - **minimum legal purchase ages**
 - **signage requirements**
 - **restrictions on vending machine sales**
 - **limits on distribution of free samples**
 - **tobacco licensing requirements**
 - **limits on availability on campus**

Results

- **some weak evidence that comprehensive approach to limiting youth access (combination of policies above) reduces youth smoking**
- **likely due to weak enforcement**

Enforcement of Limits on Youth Access:

- **Growing evidence that comprehensive statewide approach that's aggressively enforced and that achieves high compliance rates significantly reduces youth smoking prevalence**

Results

- **Estimate that an ideal implementation of Synar amendment could reduce youth smoking prevalence by about 18 percent**
- **Based on very early data; more recent/better data needed for more careful analysis**

Other Tobacco Related Policies

- **Cigarette Tax Earmarking:**
 - **Strong negative and significant impact on both smoking prevalence and cigarette consumption by smokers**

Results

- **Smoker protection legislation:**
 - **little impact on youth smoking prevalence**
 - **positive effect on cigarette consumption by young smokers**
- **Preemption:**
 - **significant, positive impact on both measures of youth smoking**

Advertising

- **find a positive, albeit generally not significant, relationship between cigarette advertising in magazines and youth smoking**

Results

Advertising (continued)

- **some evidence that state and local restrictions on advertising lead to some reductions in smoking among youth/young adults, but very preliminary**
- **measures of exposure relatively weak**

Tobacco Control and Other Substance Use

- **Consistent evidence of complementary relationship between cigarette smoking and marijuana use; higher cigarette prices reduce both cigarette smoking and marijuana use**

Results

Gender and Race Differences:

- **Consistent evidence that young men respond more to price than young women; consistent with limited evidence from US for men**

- **Consistent evidence that young African-Americans respond more to price than young Whites**
 - **Similar evidence for adults that African-Americans and Hispanics much more responsive to price than Whites**
 - **May reflect income differences; limited evidence that lower-income persons more responsive to price than higher income persons, as predicted by economic theory**

ImpacTeen Project

- **Collecting detailed state and community data on variety of policy and other environmental influences on youth tobacco, alcohol, and other drug use**
 - **Community observations**
 - **Key informant interviews**
 - **Retailer interviews**
 - **Archival sources**
- **Will be merged with data on youth substance use to determine which policies/programs/other influences most significantly impact on youth tobacco, alcohol and other drug use**



ImpacTeen Project

- **Early analyses:**
 - **Impact of MSA billboard advertising ban on advertising at the point-of-purchase**
 - **Found that indoor and outdoor store advertising, promotions (cents-off, multipack discounts, and gifts with purchase), and functional items more likely after billboard advertising ban**
 - **Relationship between store environment and community characteristics**
 - **interior advertising more likely/more extensive in lower income neighborhoods, and those with a higher percentage of African-Americans and youths aged 12-17.**
 - **Exterior advertising more likely/more extensive in lower income neighborhoods.**

