Price, Tobacco Control Policies and Youth and Young Adult Tobacco Use

Frank J. Chaloupka
University of Illinois at Chicago

www.uic.edu/~fjc
www.uic.edu/orgs/impacteen

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Bridging the Gap Overview

**YES**

University of Michigan Institute for Social Research

- YES
  - Monitoring the Future
    - Youth Survey (Rapid Response)
    - School Administrator Survey
  - Mining the Past

**ImpacTeen**

University of Illinois at Chicago Coordinating Center

- STATE A University of Minnesota
- STATE T Roswell Pk. Cancer Institute
- STATE D Andrews University
- COMMUNITY ATOD UIC

- Americans for Nonsmokers’ Rights
- Archival Data
- Original Data Collection (includes YES and MTF communities)
Investigators

Frank Chaloupka, Project Director
Brian Flay, Co-Director
Sandy Slater, Deputy Director
Anna Sandoval, Community Data Coordinator
Erin Ruel, Database Manager/Analyst
Elizabeth Wewers, Local Ordinance Database Mgr.
Jenny Williams, Research Associate
John Tauras, Research Associate
Hana Ross, Research Associate
Lan Liang, Research Associate
Bradley Gray, Research Associate
Christina Czart, Research Associate
Maggie Murphy, Communications Director
Several Research Assistants
Investigators

Dianne Barker, Barker Bi-Coastal
Melanie Wakefield, Anti-Cancer Council of Victoria
Michael French, University of Miami
Henry Saffer, National Bureau of Economic Research
Yvonne Terry McElrath, University of Michigan
Katherine Smith, UIC - media grant
Glen Szczypka, UIC - media grant

Battelle Memorial Institute - Community Data Collection
(Jaana Myllyluoma, Project Director)

Research Triangle Institute - Community Mapping

Americans for Nonsmokers’ Rights Foundation - Local
Tobacco Ordinance Database (Julia Carol)

SPAR-Burgoyne - Tobacco Price Study

Mayatech - Local Ordinance Tracking/Verification
Investigators

Gary Giovinio, Roswell Park Cancer Institute
Cindy Tworek, Roswell Park Cancer Institute
Alex Wagenaar, University of Minnesota
Eileen Harwood, University of Minnesota
Darrin Eriksen, University of Minnesota
Duane McBride, Andrews University
Rosalie Pacula, RAND Corporation
Lloyd Johnston, University of Michigan
Patrick O’Malley, University of Michigan
Jerald Bachman, University of Michigan
John Schulenberg, University of Michigan
Many others at each site
Michael Grossman, National Bureau of Economic Research
Henry Wechsler, Harvard School of Public Health
Advisors

David Altman, Wake Forest University
Marjorie Gutman, University of Pennsylvania
Herb Kleber, Columbia University

Representatives from:
National Cancer Institute
National Institute on Drug Abuse
National Institute on Alcohol Abuse and Alcoholism
Centers from Disease Control and Prevention
Substance Abuse and Mental Health Services Administration
Office of National Drug Control Policy
National Association of State Alcohol and Drug Abuse Directors
Many others
Objectives

• To build on existing information about the effectiveness of policies, environmental influences, and other factors in reducing youth substance use and abuse.

• To develop three databases -- one each for alcohol, tobacco, and illicit drugs -- for the 50 United States and District of Columbia, containing:
  – matrices of policies, environmental, social and institutional influences, and market mechanisms
  – measure of use, harms associated with use, and related outcomes

• To make the state-level data publicly available
Objectives

- To develop comparable, in-depth community-level information on policies, market mechanisms, and environmental, social and institutional influences on youth substance use.

- To merge community-level data with other Bridging the Gap data to examine effects of policies, programs and practices at the state, community and/or school levels on youth substance use.
ImpacTeen Data Collections

• Community Observations:
  • Retail outlets for tobacco and alcohol (product placement, pricing, promotions, advertising, counteradvertising, signage, and more)
  • Local alcohol, tobacco, other drug, and youth specific ordinances and regulations
  • General community observations (advertising, counteradvertising, social capital, and more)

• Key Informant Interviews:
  • Modular interviews, targeted and snowball approach
  • Detailed information on policy implementation and enforcement, wide range of other information

• Archival Data:
  • FDA data, population characteristics, and much more
YES! and ImpacTeen Data Collections

• State-level databases:
  • Separate databases for tobacco, alcohol and illicit drugs
  • State laws and regulations related to alcohol, tobacco, and other drug use and related outcomes
  • State level measures of alcohol, tobacco, and other drug use and the harms resulting from use
  • Wide variety of other state level information

• School-level information
  • Annual surveys of school administrators
    • Information on school alcohol, tobacco, and other drug related policies
    • Detailed information on school prevention curricula
    • Detailed information on other school programs targeting youth alcohol, tobacco and other drug use
  • School observations
Background

Trends in Cigarette Smoking Anytime in the Past 30 days* by Grade in School--United States, 1975-2000

Source: Institute for Social Research, University of Michigan, Monitoring the Future Surveys

*Smoking 1 or more cigarettes during the previous 30 days
Background

Current* use among middle and high school students by type of tobacco product—National Youth Tobacco Survey, 1999

* Used tobacco on \(^3\) 1 of the 30 days preceding the survey.
† Use of cigarettes, smokeless, cigars, pipes, Bidis, or Kreteks.
Tobacco Use Data

• Monitoring the Future Surveys (8th, 10th & 12th grade students)

  • Conducted by the Institute for Social Research at the University of Michigan
  • Funded by the National Institute on Drug Abuse
  • Independent samples are drawn for each grade; samples are taken within the contiguous United States
  • Data from 1991-1998 were used for various studies
  • Multiple measures of youth tobacco use, including:
    – Indicator of past month smoking participation
    – Indicator of past month smokeless tobacco use
    – Average daily cigarette consumption
    – Frequency of past month smokeless tobacco use
    – Categorical measures of intensity of smoking and smokeless tobacco use
    – Index of smoking uptake
Tobacco Use Data

• Longitudinal Monitoring the Future Surveys (8th, 10th & 12th grade students)
  • Panels formed from 1976 through 1993 high school senior surveys
  • Follow-up surveys through 1995
    – select approximately 2,000 students from baseline surveys for biennial follow-up surveys
  • Up to eight observations on some individuals, mostly ages 18-32 years
  • Nearly 200,000 observations on about 50,000 persons

• Panels formed from 1991 through 1993 8th and 10th grade surveys
• Follow-up surveys through late 1990s (same process as for 12th graders)
• About 25,000 observations on nearly 10,000 persons
Tobacco Use Data

• 1993, 1997 and 1999 Harvard College Alcohol Surveys
  – 16,000+ students in each survey
  – 140 4-year colleges and universities (fewer in later years)
  – Measures of cigarette smoking:
    • Indicator of 30 day smoking participation
    • Categorical measure of intensity of cigarette smoking
    • Average daily cigarette consumption
  – Basic characteristics of each school
  – Information on campus tobacco-related policies:
    • Advertising restrictions, presence of smoke-free dorms, restrictions on smoking on campus and their enforcement, availability of tobacco products on campus
Tobacco Use Data

• 1996 Robert Wood Johnson Foundation/Audits & Surveys Worldwide Youth and Young Adult Tobacco Use Surveys
  – Five separate surveys:
    • In-school high school student survey
      – Approximately 17,000 students in 201 schools; nationally representative
    • On campus college student survey
      – Approximately 2,000 students at 50 universities; convenience sample
    • In-home survey of 14-25 year olds not in school
      – Approximately 2,400 persons in about 200 locations
    • School administrator survey
      – Detailed data on school policies and prevention curricula/programs
    • In-store environmental survey
      – Measures of cigarette prices and promotions, advertising, tobacco-related signage, product placement, and more
Tobacco Use Data

- 1996 RWJF/A&SW Youth and Young Adult Tobacco Use Surveys (continued)
  - Very comprehensive, detailed information on tobacco use; multiple measures examined:
    - 30 day smoking participation
    - Number of days smoked
    - Average cigarettes consumed per smoking day
    - Past month cigarette consumption
    - Smoking uptake
    - Smoking cessation
    - Sources of tobacco products
    - Purchase experiences
    - Much more
Tobacco Use Data

• Youth Risk Behavior Surveillance System (YRBSS):
  – State-specific data on public high school students (approximate ages 14-18 years old).
  – Nationally representative surveys of high school students

• National Youth Tobacco Surveys (NYTS)
  – Nationally representative surveys of middle school and high school students

• National Household Surveys on Drug Abuse
  – Nationally and state representative surveys, 12-17, 18-24 and 25 and older populations

• State tax-paid cigarette sales
Tobacco Policy Data

- Tobacco Control Expenditure Data: *Complied by CDC, NCI and the Research Triangle Institute*:
  - A composite measure of state-specific expenditures from various sources (e.g., ASSIST, IMPACT, Smokeless States, excise taxes, state funds).

- Price Data: *The Tax Burden On Tobacco*
  - State-specific price estimates as of November 1st of each year:
  - Average price is constructed by weighting present year and past year prices, and then adding the average to the average of federal and state excise taxes for the current year.
  - Average cigarette tax (weighted average for relevant period)
  - Smokeless tobacco tax
Tobacco Policy Data

• **Price Data:**
  - *American Chamber of Commerce Researchers’ Association*
    - Quarterly, city-specific prices for a carton of king-sized Winston cigarettes for approximately 350 cities each quarter

  – **Observational Data:**
    - Prices per pack for leading cigarette brands
    - Price related promotions (cents-off specials, multi-pack discounts, gifts with purchase, in-store coupons, etc.)

  – **Scanner Data:**
    - UPC level data on prices for all cigarettes in 50 markets
    - Similar data for NRT products

  – **Self-reported Data:**
    - Now collected in several surveys, including RWJF/A&S, NYTS, and NHSDA

• Nearby prices to account for cross-border shopping
Tobacco Policy Data

Real Cigarette Taxes and Prices, 1955-1998

Year

Cents


Real Average State Tax+Sheet1!$B$2:$B$45

Real Average Federal Tax+Sheet1!$C$2:$C$45

Real Average Cigarette Price+Sheet1!$D$2:$D$45

Year

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Tobacco Policy Data

• **Clean Indoor Air Laws**
  – indicators of restrictions on cigarette smoking in private worksites, restaurants, government buildings, retail stores, and many other public places
  – index reflecting comprehensiveness of individual restrictions
  – indicators of home smoking policies
  – measures of enforcement of and compliance with smoking restrictions

  – Sources:
    • CDC’s State Tobacco Activities Tracking and Evaluation system and unpublished data
    • American Lung Association’s State Legislated Actions on Tobacco Issues
    • Americans for Nonsmokers’ Rights Foundation local tobacco ordinance database
    • On-site data collection
    • State law books
    • Key informant surveys
Tobacco Policy Data


YEAR
NUMBER OF STATES

Extensive
Moderate
Basic
Nominal
Tobacco Policy Data


Clean Indoor Air Index (Mean)
Tobacco Policy Data

• Youth Access to Tobacco Products
  – indicators of restrictions on youth access to tobacco products, including
    minimum legal purchase age for cigarettes and other tobacco products, signage
    requirements, limits on vending machines, and others
  – indicators of prohibitions on youth purchase, possession, and use of tobacco
  – measures of enforcement of and compliance with youth access provisions
  – Sources:
    • CDC’s STATE system and unpublished data
    • ALA State Legislated Actions on Tobacco Issues
    • ANRF local tobacco ordinance database
    • SAMHSA Synar reports
    • FDA data
    • On-site data collection
    • Key informant surveys
    • Jonathan Gruber
Tobacco Policy Data

Mean Number of Purchase, Possession, and Use Laws per State* -- United States, 1988-1999

Year
Purchase, Possession, Use Index (Mean)
Other Key Variables

• Age, sex, race/ethnicity, father’s education, mother’s education, respondent’s earned income, respondent’s income from other sources, labor force status, mother’s work status, religiosity, and much more

• School-level information on school characteristics, policies, prevention curricula, and related-activities

• Demographic/SES and other state/community information
Statistical Analyses

- Probit and logit models for dichotomous outcomes
- Ordered probit/logit models for categorical frequency and intensity of use measures
- Poisson and negative binomial models for count data
- Least squares models for continuous data
- Threshold of change models for uptake analyses
- Discrete time hazard models for smoking cessation and smoking initiation
- Fixed effects models to control for state-specific unobservables
- Multiple model specifications/multiple subsamples
- Standard errors adjusted for clustering
Results - Price

• Consistent evidence that higher cigarette prices reduce cigarette smoking and other tobacco use
  
  – short-run price elasticity estimates for overall cigarette smoking cluster in the range from −0.25 to −0.40
    • About half of impact is on prevalence
    • Long-run estimates about double the short-run estimates
  
  – Price elasticity greater in the younger age groups:
    • Youth about 3 times more sensitive to price
      – prevalence elasticity estimates cluster in −0.50 to −0.70 range
    • Young adults about twice as sensitive to price
      – Prevalence estimates cluster in −0.3 to −0.6 range
  
  – Similar estimates for impact of price on smokeless tobacco use
Results - Price

• Evaluation of the Impact of the March 1, 2000 55-cent Increase in the New York State Cigarette Excise Tax:

  • Initial efforts focus on schools participating in both 1999 and 2000 MTF surveys at 8th and 10th grade levels

• Preliminary Findings:
  • Cigarette price increases:
    • NY: Marlboro- $1.00 (30.7%); Newport - $1.00 (31.0%)
    • US: Marlboro - 33 cents (11.5%); Newport 31 cents (10.2%)
  • Smoking Prevalence (NY matched schools, after 4/1; US all schools after 4/1):
    • 8th Grade - NY: -17.8%; US: - 11.2%
    • 10th Grade - NY: -18.9%; US: -1.0%
Results - Price

• Strong evidence that higher cigarette prices increase the probability of smoking cessation among young adults
  – elasticity of smoking cessation estimates in range from 0.27 to 0.47

• Strong evidence that higher prices reduce the probability of smoking initiation among youth
  – elasticity of youth smoking initiation estimates range from –0.30 (any smoking) to –1.00 (heavy daily smoking)

• Strong evidence that higher prices significantly reduce youth smoking uptake
  – larger impact of price on transitions into more regular smoking

• Strong evidence that higher prices significantly reduce the frequency and intensity of youth and young adult smoking
  – impact of price increases as intensity of consumption increases
Results - Price

• Estimates indicate that young males and young African-Americans are more sensitive to price than young women and young whites

• No evidence that higher cigarette prices lead youth/young adults to substitute to other substances
  – if anything, cigarettes appear to be complements to other substances, including marijuana and alcohol

• Evidence from econometric analyses consistent with qualitative evidence from focus groups of young smokers conducted by the CDC’s Network of Prevention Research Centers

• Evidence from econometric analyses consistent with self-reported anticipated responses to alternative cigarette price increases from the A&S surveys
Results – Smoking Restrictions

• Generally consistent evidence that restrictions on smoking in workplaces and public places significantly reduce youth, young adult, and adult cigarette smoking
  – More comprehensive restrictions lead to largest reductions
  – Reduce both prevalence and consumption among smokers

• Strong evidence that comprehensive restrictions on smoking in private worksites increase the probability of smoking cessation among young adults

• Strong evidence that restrictions on smoking at home significantly reduce the probability of youth smoking, smoking uptake, and youth cigarette consumption
Results – Youth Access Restrictions

• Generally little evidence that restrictions on youth access to tobacco products reduce youth smoking
  – likely due to the generally poor enforcement of these laws

• Relatively strong evidence that increased retailer compliance with limits on youth access (resulting from stronger enforcement) leads to significant reductions in youth smoking prevalence and consumption
  – little impact on youth experimentation
  – impact increases as youth progress to more regular smoking

• Some weak evidence that combination of policies prohibiting youth purchase, possession and use of tobacco products lead to significant reductions in youth smoking
  – effect appears largest on lowest risk youth
Results – Other Tobacco Related Policies

- Strong evidence that expenditures on comprehensive tobacco control programs and tobacco control coalitions lead to significant reductions in overall cigarette smoking, youth cigarette smoking
  – impact of mass-media counteradvertising campaigns most significant

- Consistent evidence that state preemption of stronger local tobacco control policies increases youth smoking prevalence and consumption

- Some evidence that smoker protection laws create favorable environment for tobacco use and lead to increased cigarette consumption
Results – Tobacco Marketing Practices

• Evidence that MSA ban on billboard advertising by cigarette companies increased advertising and promotional activities at the point of purchase
  – multipack discounts, gifts with purchase, cents off coupons more likely after billboard ban
  – exterior and interior store advertising more pervasive after billboard ban
  – functional objects more frequent after billboard ban
  – consistent with recent studies of impact of other advertising bans
Results – Tobacco Marketing Practices

• Find that tobacco company marketing efforts vary with respect to key community characteristics
  – Marlboro prices significantly lower in neighborhoods with greater youth and young adult populations
  – cigarettes more likely to be available for self service in neighborhoods with larger youth population
  – more interior and exterior cigarette advertising in low-income neighborhoods

• Evidence that pro-tobacco marketing efforts at the retail level are stronger in states with comprehensive tobacco control programs
  – greater likelihood of gift-with-purchase and other promotions
  – more extensive cigarette advertising on storefronts and in stores
Next Steps

• Continue to refine and improve analyses of the impact of school, community, state, and federal policies, regulations, and environmental factors on youth and young adult smoking

• Examine the impact of televised counteradvertising and other tobacco-related messages on youth knowledge, attitudes and beliefs about smoking and on their smoking behavior

• Examine the effects of newspaper coverage of tobacco issues on youth smoking related outcomes

• Continue to study tobacco company marketing strategies and their impact on youth smoking related outcomes

• and much more……