Environmental Factors and Youth Obesity

Bridging the Gap: Research Informing Practice for Healthy Youth Behavior

Related support provided by NIDA, NCI, and CDC

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Overview

• Early work on tax, price and adult/youth tobacco use
• Brief overview of Bridging the Gap
  - highlights recent/ongoing work on impact of policy/environmental influences on youth tobacco use
• Description of Bridging the Gap’s new work on youth obesity and related outcomes
  - overview of relevant MTF data
  - description of BTG data collection efforts
  - discussion of Powell et al. paper
  - ongoing/planned analyses
Total Tax for a Pack of Cigarettes (1) and Average Price of a Pack of Cigarettes (2) in the United States, 2001

Note: Tax and price of cigarettes were adjusted for inflation; Price of cigarettes included generic cigarettes.

The graph shows the trend of total cigarette sales (in million packs) and real cigarette prices ($ per pack) from 1970 to 2003. The sales data peaks around 1980 and then declines significantly, while the real price data shows an overall increase, especially after 1995.
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 (largely cessation); remainder is on average cigarette consumption among smokers

  • Impact largest on youth and lower income populations

Source: Chaloupka et al., 2000
YOUNG PEOPLE MORE RESPONSIVE TO PRICE INCREASES

- Proportion of disposable income youth spends on cigarettes likely to exceed that for adults
- Peer influences much more important for young smokers than for adult smokers
- Young smokers less addicted than adult smokers
- Young people tend to discount the future more heavily than adults
Cigarette Smoking Among Youth by the Average Price of a Pack of Cigarettes in 50 States and the District of Columbia, 1999/2000

![Graph showing the relationship between average price of a pack of cigarettes and percent past month smokers among adolescents.](image)

**Sources:** 1999/2000 NHSDA (12-17 year olds); 1999/2000 *Tax Burden On Tobacco.*

**Note:**
1. Past Month Smoking = smoking on ≥ 1 day during the previous 30 days;
2. Price of cigarettes was adjusted for inflation, and it did not include generic brands of cigarettes.
12th Grade 30 Day Smoking Prevalence and Price

![Graph showing the relationship between cigarette price and smoking prevalence from 1985 to 2000. The graph indicates that as the price of cigarettes increases, the smoking prevalence tends to decrease.]
• Consistently found that youth smoking was highly responsive to cigarette price
  > Youth generally 2-3 times more price sensitive than adults
  > About half of impact on prevalence, remainder on consumption
  > Similar evidence for impact of price on other tobacco use by youth
Purposes of the Bridging the Gap Initiative:

• To evaluate the impact on youth of: *Policies, Programs, and Practices*

• Simultaneously addressing various substances: *Alcohol, Illicit Drugs, and Tobacco*

• At different levels of social organization: *State, Community, School, and Individual*
Unique Aspects of Bridging the Gap

- It integrates across:
  - Multiple substances
  - Multiple disciplines
  - Multiple centers and collaborators
  - Multiple levels of social organization
  - Multiple data sources
BTG Data Collections

• Half-sample of MTF schools cycling out of the national sample
  > c.215 schools per year
  > National replicate sample

• Administrators in those schools surveyed

• Community data collected from their catchment areas
  > Observational studies of retail outlets, communities
  > Key informant interviews in the community

• Other existing archival data

• State level data on laws, etc.
1999 Cigarette Billboard Ban

- ImpacTeen in field as cigarette billboards came down under Master Settlement Agreement
  - 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

Direct vs. Indirect Effects of Price

• Price likely to impact youth smoking directly, but also indirectly
  > through peers
  > through parents
  > through availability/accessibility
  > and other mechanisms

• Estimates imply peer effects account for about one-third of overall price effect
  > see similar patterns (somewhat smaller magnitude) with respect to parental influences
Price, Intensity and Uptake

- Evidence of differential effect of price based on intensity of smoking and stage of smoking uptake
  - Impact of price larger as intensity of smoking increases
  - Price has larger impact on later stages of smoking uptake

*Implies price particularly important in preventing transitions to regular, addicted smoking*
State Tobacco Control Programs and Youth Smoking

- Tauras, et al. (in press); Tauras and Chaloupka (in press)

  > use data from 1991 through 2000 MTF surveys, per capita state tobacco control funding, prices, and state tobacco control policies

  > Significantly lower youth smoking in states investing more in tobacco control programs
    - prevalence
    - consumption among young smokers

  > Stronger anti-smoking attitudes and increased perceptions of risks from tobacco use among youth in states that have invested more in tobacco control programs
Ongoing BTG Analyses of Youth Smoking

- Impact of purchase, possession, and use laws and their enforcement
- Impact of state and local smoke-free air laws
- Impact of school policies
  - Impact of school prevention programs
  - Impact of school and community youth cessation programs
  - Impact of point-of-purchase tobacco marketing
    - Impact of after-school programs
    - and much more
Monitoring the Future Surveys include several relevant outcomes, including:

- Height and weight
- Frequency of vigorous exercise and participation in exercise
- Participation in school-based and other athletics
- Frequency of eating green vegetables
- Frequency of eating fresh fruits
- Frequency of eating breakfast
- Sleep patterns
- TV watching and computer use
- and much more
Mean Body Mass Index

![Graph showing the Mean Body Mass Index from 1986 to 2002 for different grades and genders. The graph includes lines for male 8th grade, male 10th grade, male 12th grade, female 8th grade, female 10th grade, and female 12th grade. The data is sourced from Johnston, et al., 2003.](source: Johnston, et al., 2003)
Percent at Risk of Overweight

Source: Johnston, et al., 2003
Percent Overweight

Year

Source: Johnston, et al., 2003
Frequency of Vigorous Exercise, Nearly or Every Day

- Male, 8th Grade
- Male, 10th Grade
- Male, 12th Grade
- Female, 8th Grade
- Female, 10th Grade
- Female, 12th Grade

Source: Johnston, et al., 2003
Frequency of Eating Breakfast, Nearly or Every Day

Source: Johnston, et al., 2003
Frequency of Eating Green Vegetables, Nearly or Every Day

Source: Johnston, et al., 2003
Frequency of Eating Fresh Fruit, Nearly or Every Day

Source: Johnston, et al., 2003
School Administrator Survey includes:
- Physical education requirements
- Other student physical activity
- School food environment

Community Observations include:
- presence of sports areas, parks and green spaces
  public pools and beaches, bike paths/lanes

Key Informant Surveys include:
- Health Department activities targeting healthy eating, physical activity, and obesity among youth
  - Opportunities for after school athletic and other physical activity
Powell, Slater and Chaloupka (in press, *EBPM*):

  - Sports areas, parks/green spaces/playgrounds, public pools/beaches, bike paths/lanes, overall scales

- 2000 Census data:
  - race/ethnicity, urbanicity, income, poverty
Some Key Findings:

- Race/ethnicity and SES significantly associated with availability of physical activity-related settings in communities.

- Parks/green spaces and public pools/beaches significantly less likely in communities with higher percentages of African-Americans.

- Fewer physical activity-related settings in communities with higher poverty rates and higher percentages of African Americans and Hispanics.

*May help explain observed disparities in obesity and related outcomes by SES and race/ethnicity.*
Ongoing BTG Youth Obesity Research

- MTF trend analysis for subgroups based on race/ethnicity and socio-economic status

- “Inventory” of public and commercial databases

- Secondary data analyses linking environmental factors to MTF/other survey data:
  - Fast food, fruit, vegetable, other food prices
  - Outlet density (fast food restaurants, grocery stores, exercise facilities, and much more)
  - Local weather data (key control variable)
  - ImpacTeen community data

- Nielsen TV advertising data
  - Adaptation/expansion of community data collections
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