

# Environmental Factors and Youth Obesity

## Bridging the Gap: Research Informing Practice for Healthy Youth Behavior



Supported by  
The Robert Wood Johnson Foundation

*Related support provided  
by NIDA, NCI, and CDC*

[www.impactteen.org](http://www.impactteen.org)



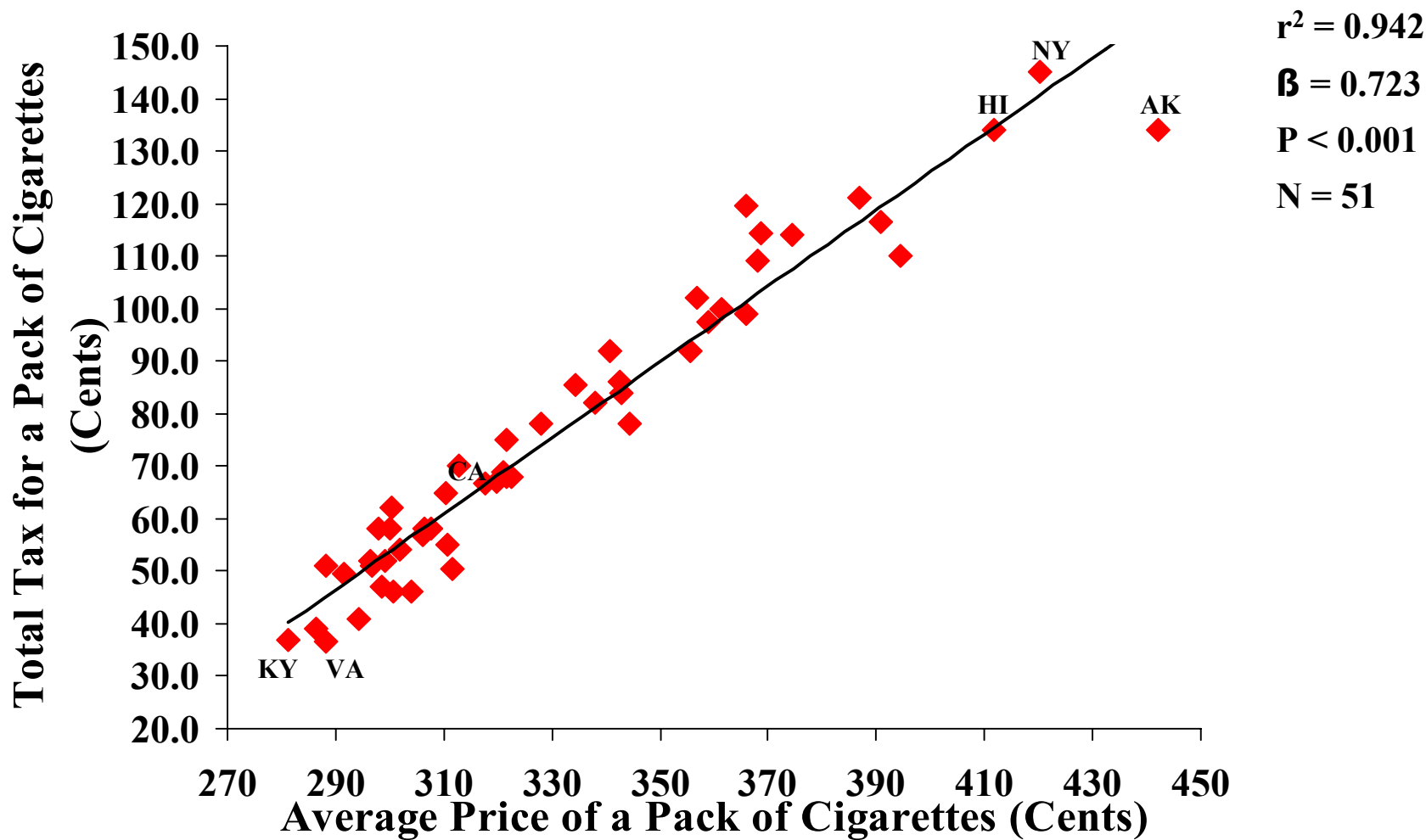
*A Policy Research Partnership  
to Reduce Youth Substance Use*

# Overview

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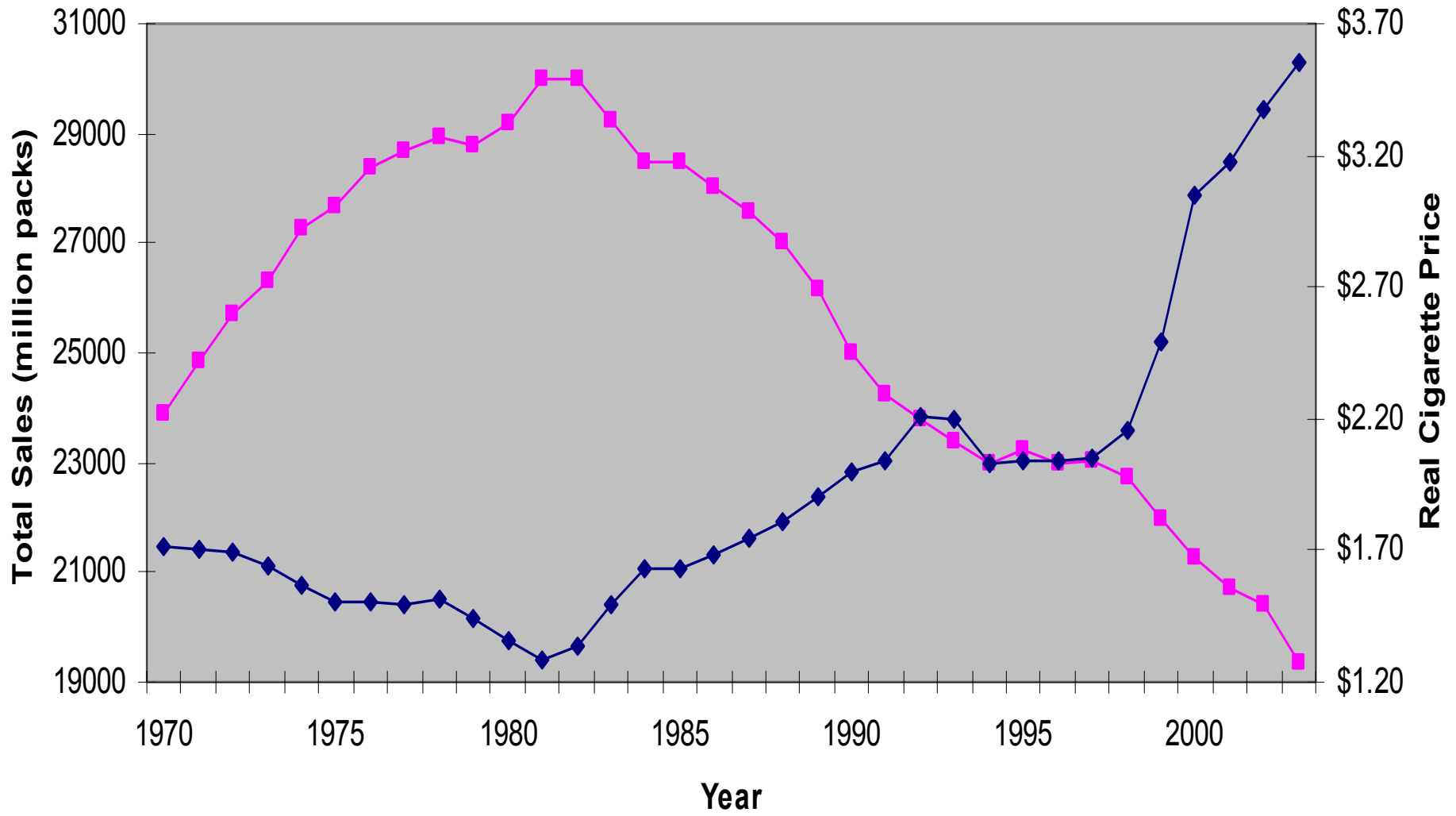
- Early work on tax, price and adult/youth tobacco use
- Brief overview of Bridging the Gap
  - highlights recent/ongoing work on impact of policy/environmental influences on youth tobacco use
- Description of Bridging the Gap's new work on youth obesity and related outcomes
  - overview of relevant MTF data
  - description of BTG data collection efforts
  - discussion of Powell et al. paper
  - ongoing/planned analyses

# Total Tax for a Pack of Cigarettes <sup>(1)</sup> and Average Price of a Pack of Cigarettes <sup>(2)</sup> in the United States, 2001



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

# Total Cigarette Sales and Cigarette Prices, U.S., 1970-2003



—■— Cigarette Sales (million packs) —◆— Real Cigarette Price



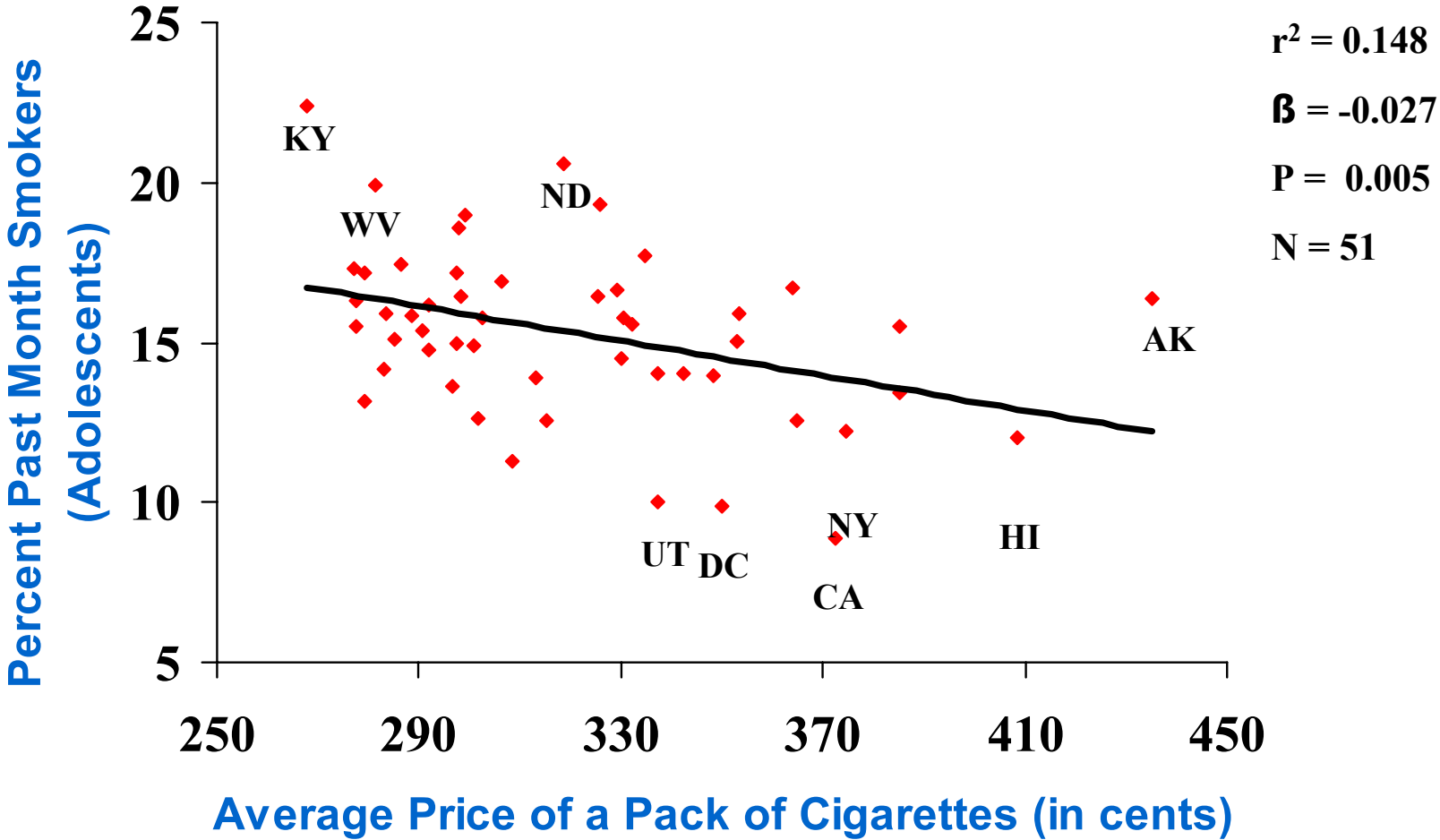
# Tobacco Taxes and Tobacco Use

- 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

# YOUNG PEOPLE MORE RESPONSIVE TO PRICE INCREASES

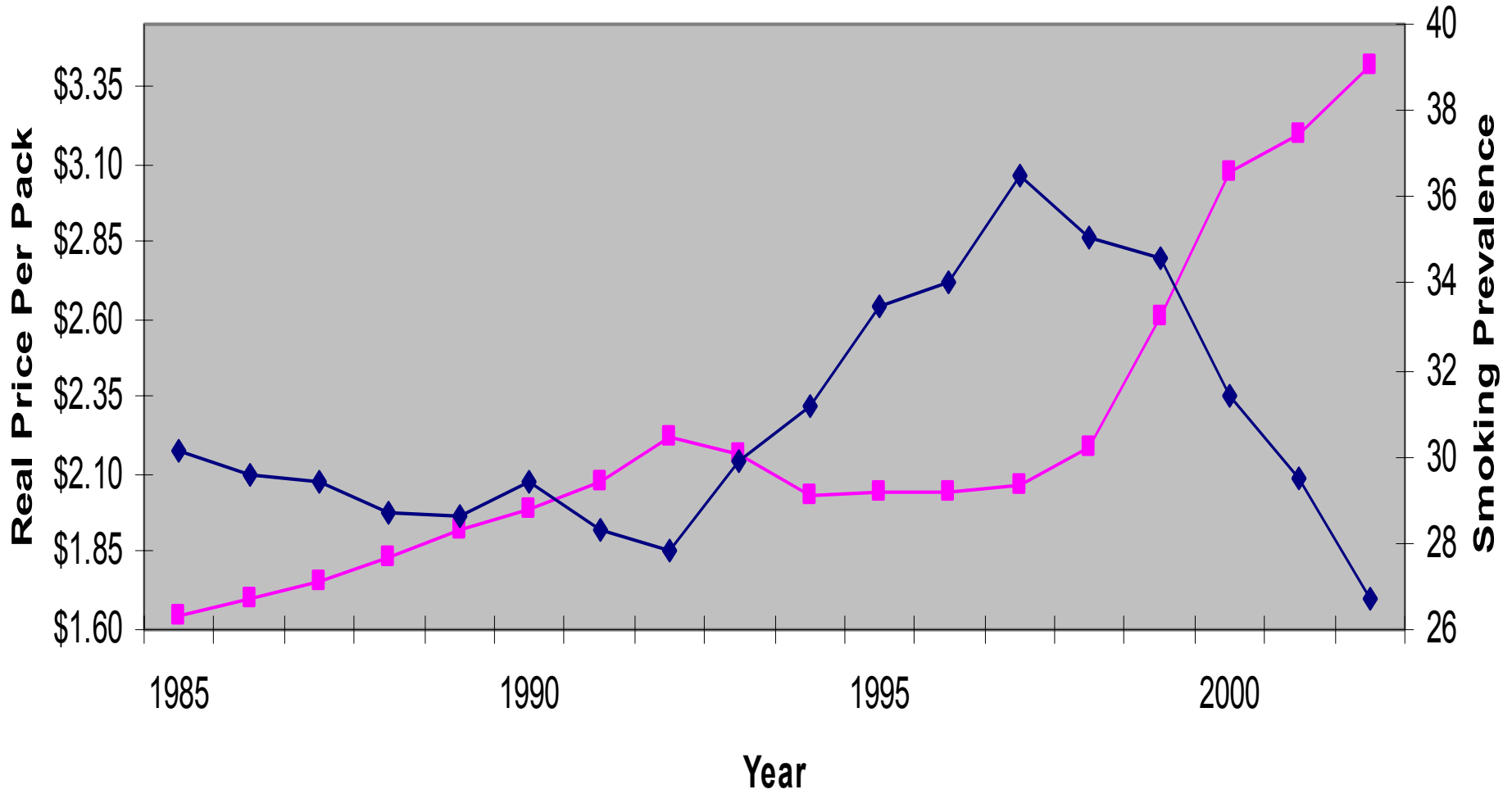
- Proportion of disposable income youth spends on cigarettes likely to exceed that for adults
- Peer influences much more important for young smokers than for adult smokers
- Young smokers less addicted than adult smokers
  - Young people tend to discount the future more heavily than adults

# Cigarette Smoking Among Youth by the Average Price of a Pack of Cigarettes in 50 States and the District of Columbia, 1999/2000



Sources: 1999/2000 NHSDA (12-17 year olds); 1999/2000 *Tax Burden On Tobacco*.  
Note: 1) Past Month Smoking = smoking on  $\geq 1$  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



—■— Cigarette Price —◆— 30 Day Smoking Prevalence



# Price and Youth Smoking

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- **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*



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# 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**

# University of Michigan

## Institute for Social Research

**Monitoring the Future (MTF)**

**Youth, Education and Society (YES!)**

# University of Illinois at Chicago

## Health Research and Policy Centers

**ImpacTeen**

**Coordinating Center,  
Community Data Collections  
Polysubstance Use Research  
Alcohol Policy Research  
Healthy Eating/Physical  
Activity and Youth Obesity**  
UIC

**Illicit Drug Policy Research  
Team**  
Andrews U and RAND

**Tobacco Policy Research  
Team**  
Roswell Park



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# 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.**

HESS

20217

  
Marlboro  
\$

UNLEADED  
REGULAR  
1.47 <sup>9</sup>/<sub>10</sub>  
UNLEADED  
PLUS  
1.58 <sup>9</sup>/<sub>10</sub>  
UNLEADED  
PREMIUM  
1.68 <sup>9</sup>/<sub>10</sub>  
DIESEL  
1.59 <sup>9</sup>/<sub>10</sub>

8.10  
KOOL  
ON SELECT SIGARETTES

CAMEL  
  
\$ 3.25  
SPECIAL OFFER

Thanks  
for your  
business











Get a RIDE

12  
9  
6  
3

22.88

PLEASELY NO DEBIT CHECKS  
THERE WILL BE A \$10.00 SERVICE CHARGE ON ALL DEBITED CHECKS

NEW MILD FLAVOR  
ULTRA LIGHTS

SKOAL

SPECIAL VALUE  
1.94

2.40

Marlboro

CAMEL  
\$2.35

CAMEL



Auto Trader  
Truck Trader  
Great Remains!  
More Values, More Choices

NO CHECKS ACCEPTED

CAMEL  
CIGARETTES

# 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**

**Source: Wakefield, et al., *AJPH*, 2001**

# Direct vs. Indirect Effects of Price

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- **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

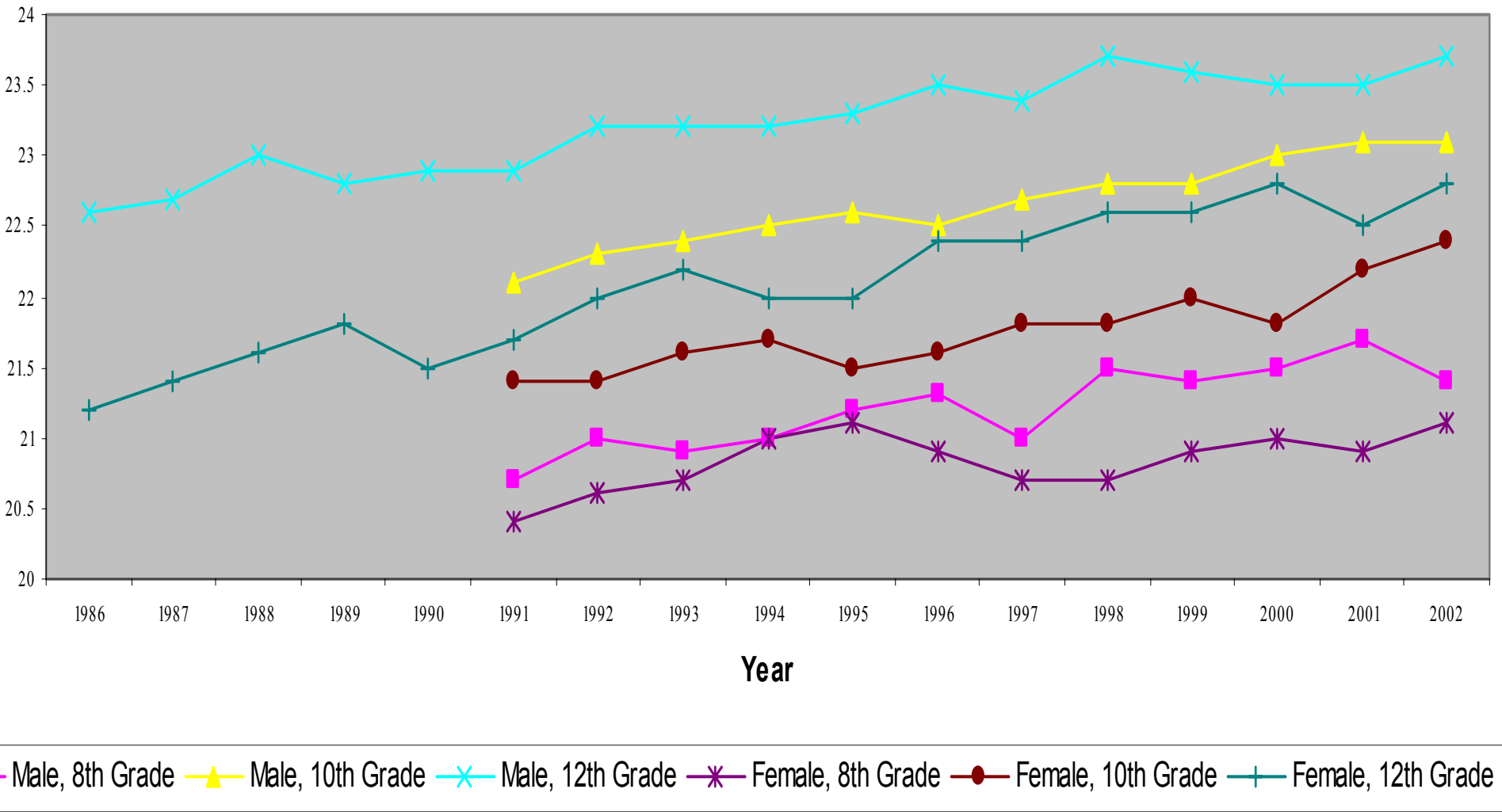
- Impact of purchase, possession, and use laws and their enforcement
- Impact of state and local smoke-free air laws
- Impact of school policies
  - Impact of school prevention programs
    - Impact of school and community youth cessation programs
      - Impact of point-of-purchase tobacco marketing
        - Impact of after-school programs
          - and much more

# BTG and Youth Obesity

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*

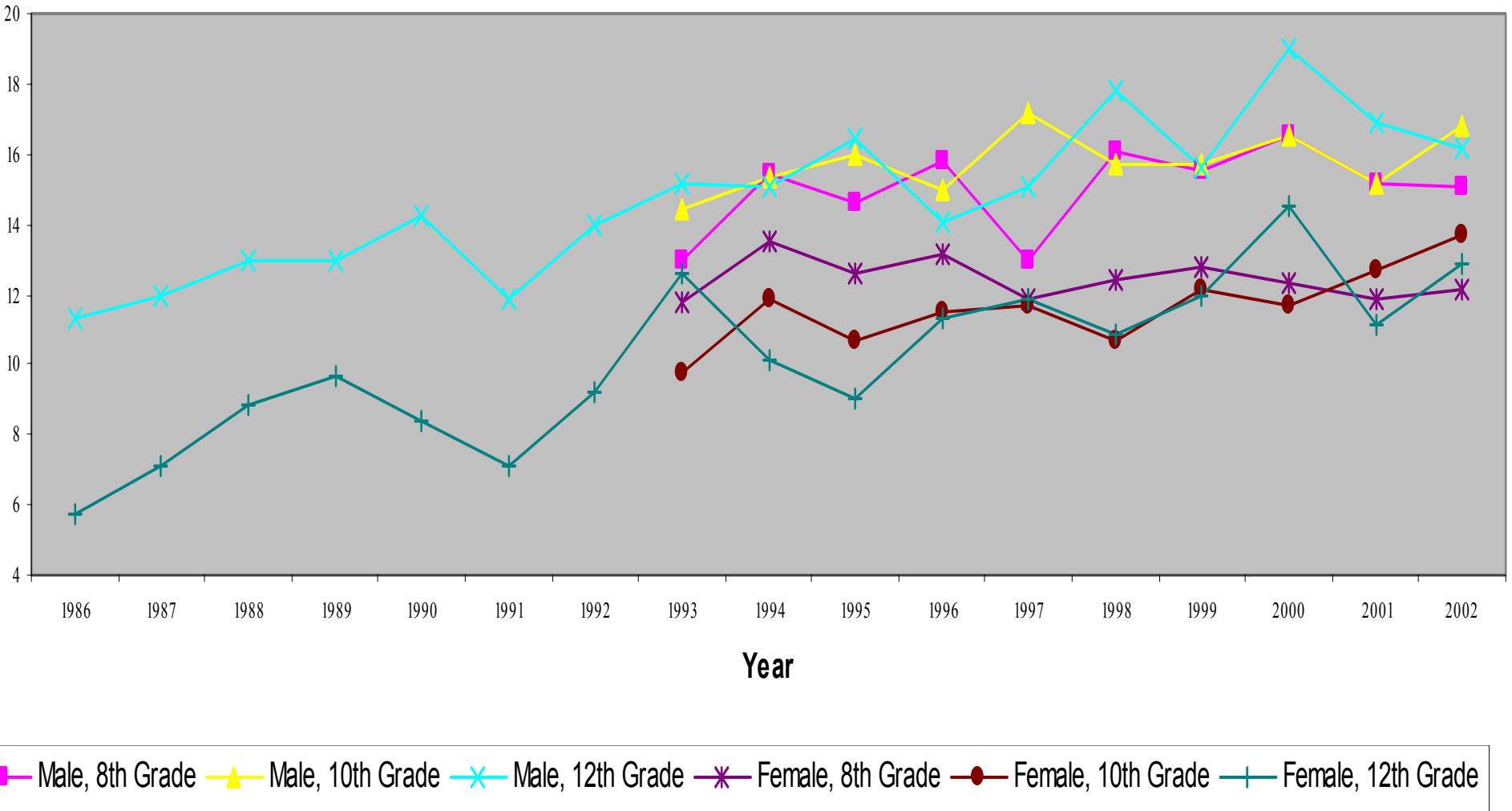
# Mean Body Mass Index



Source: Johnston, et al., 2003

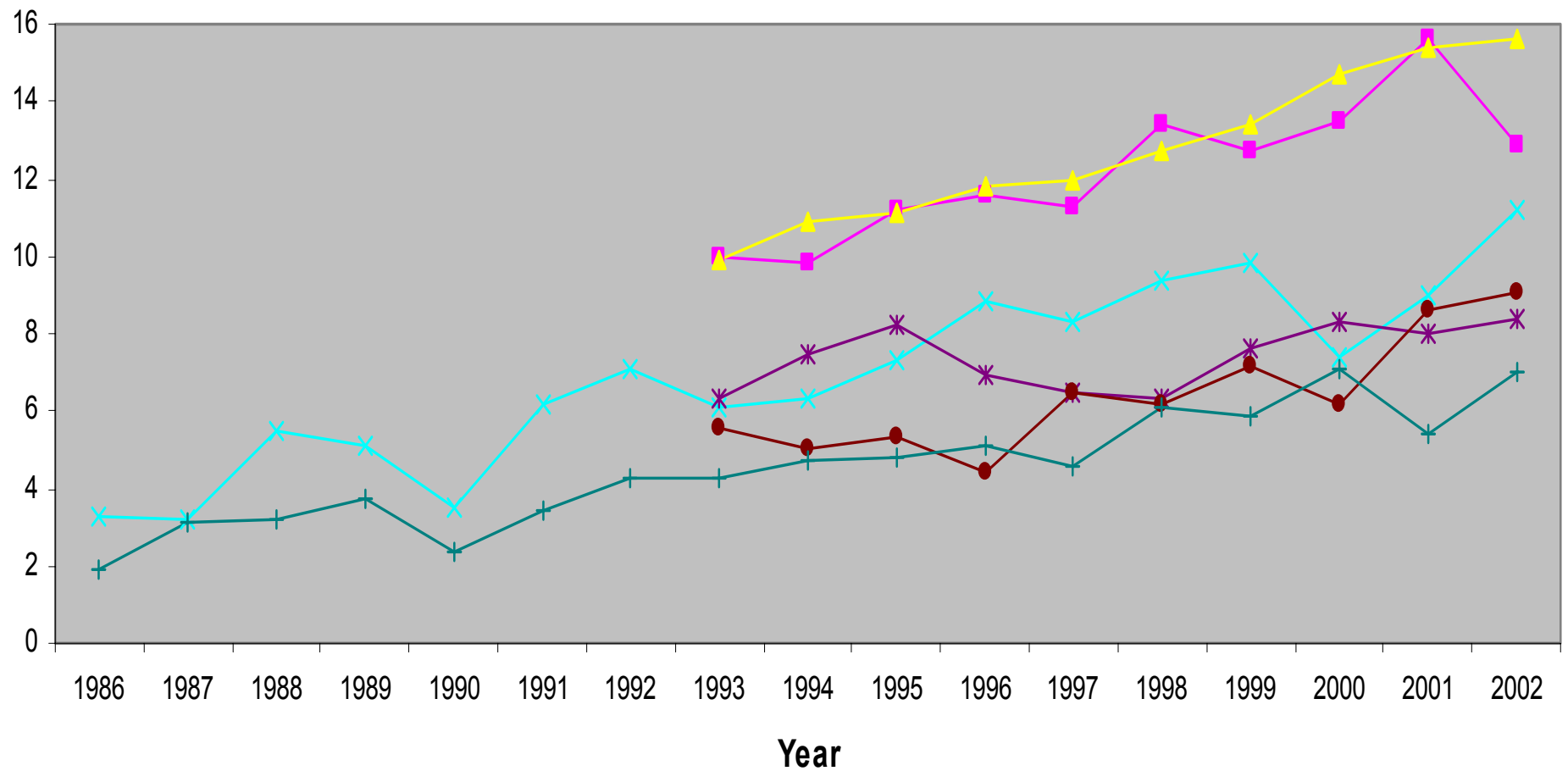


# Percent at Risk of Overweight



Source: Johnston, et al., 2003

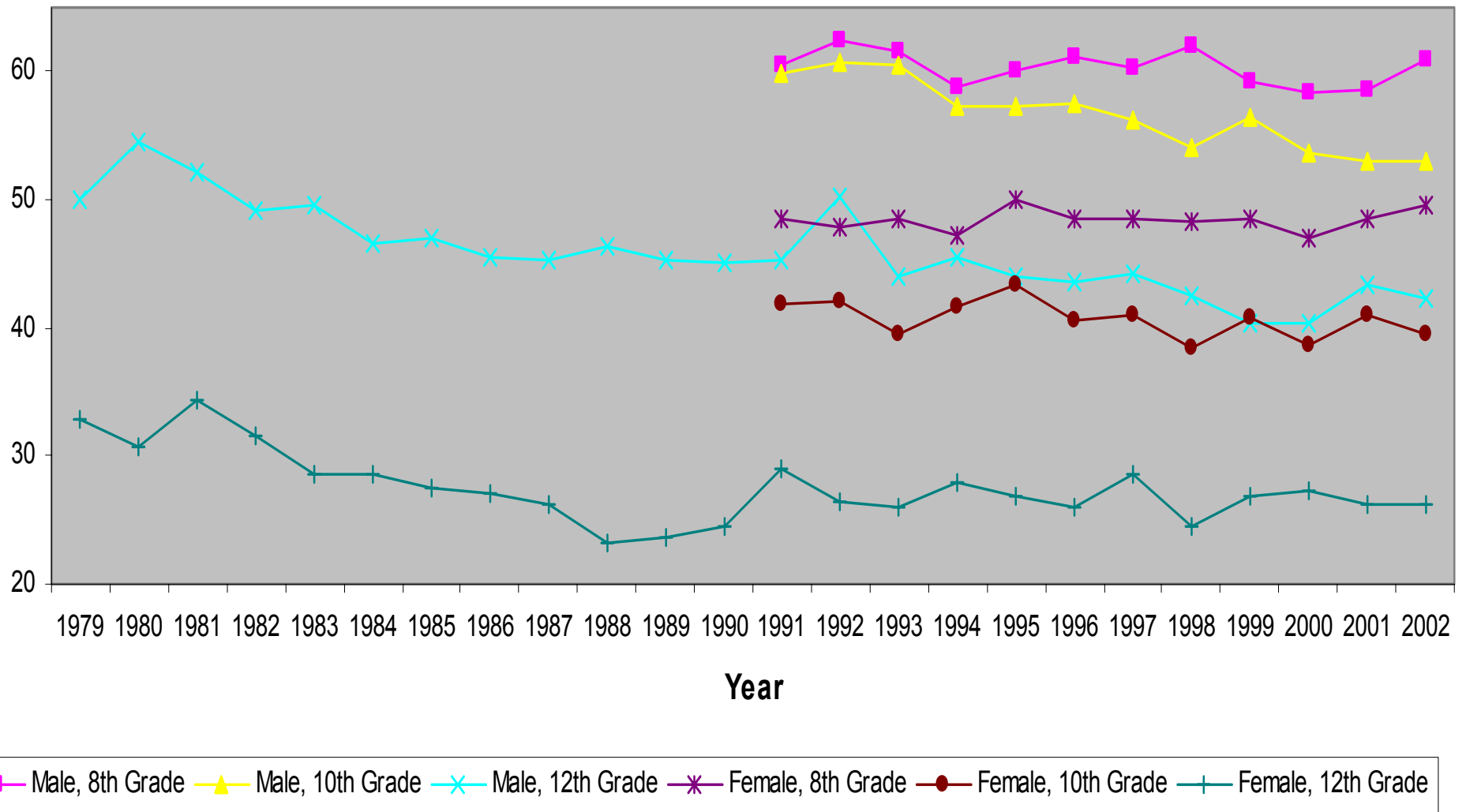
# Percent Overweight



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

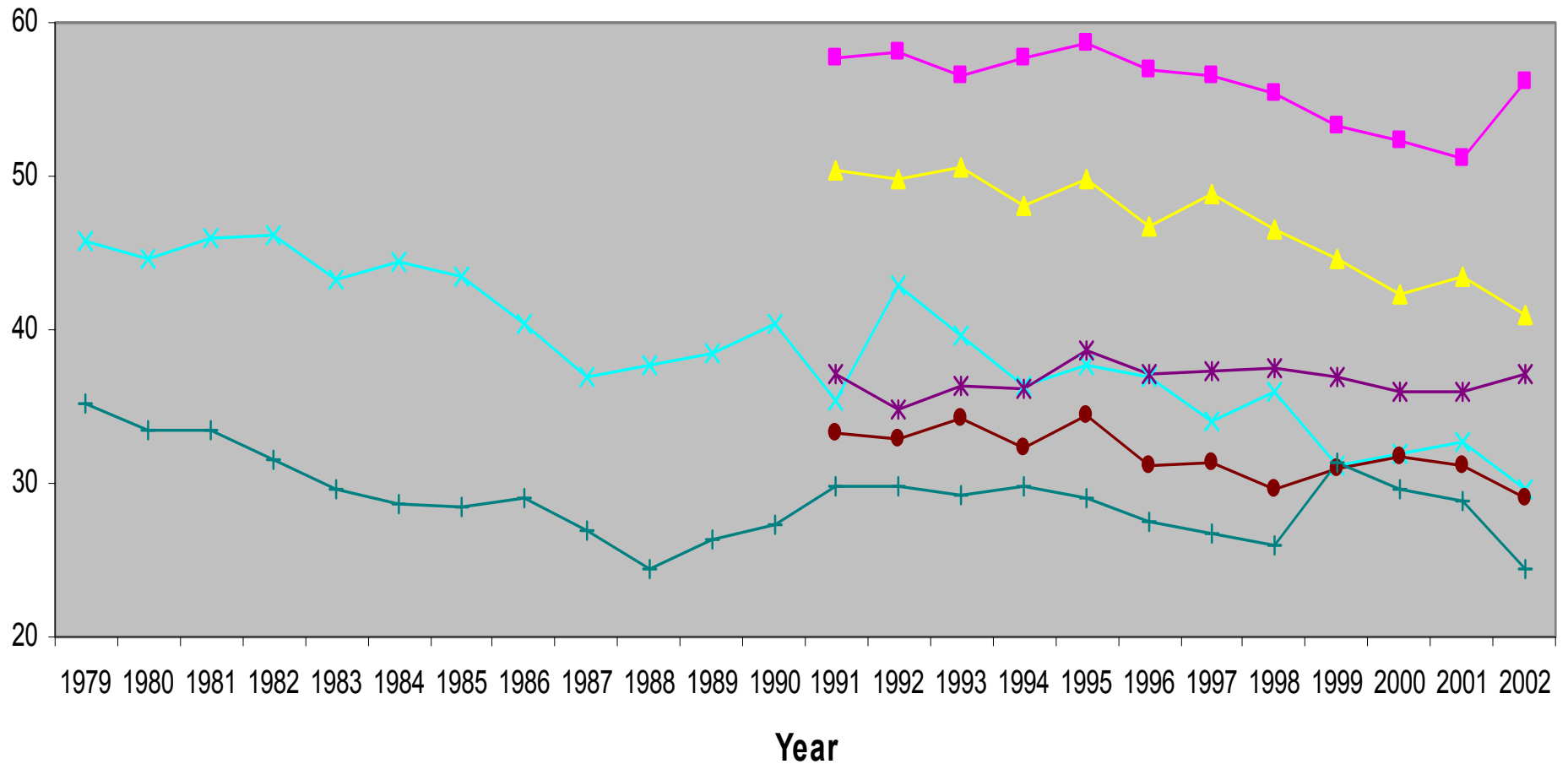
Source: Johnston, et al., 2003

# Frequency of Vigorous Exercise, Nearly or Every Day



Source: Johnston, et al., 2003

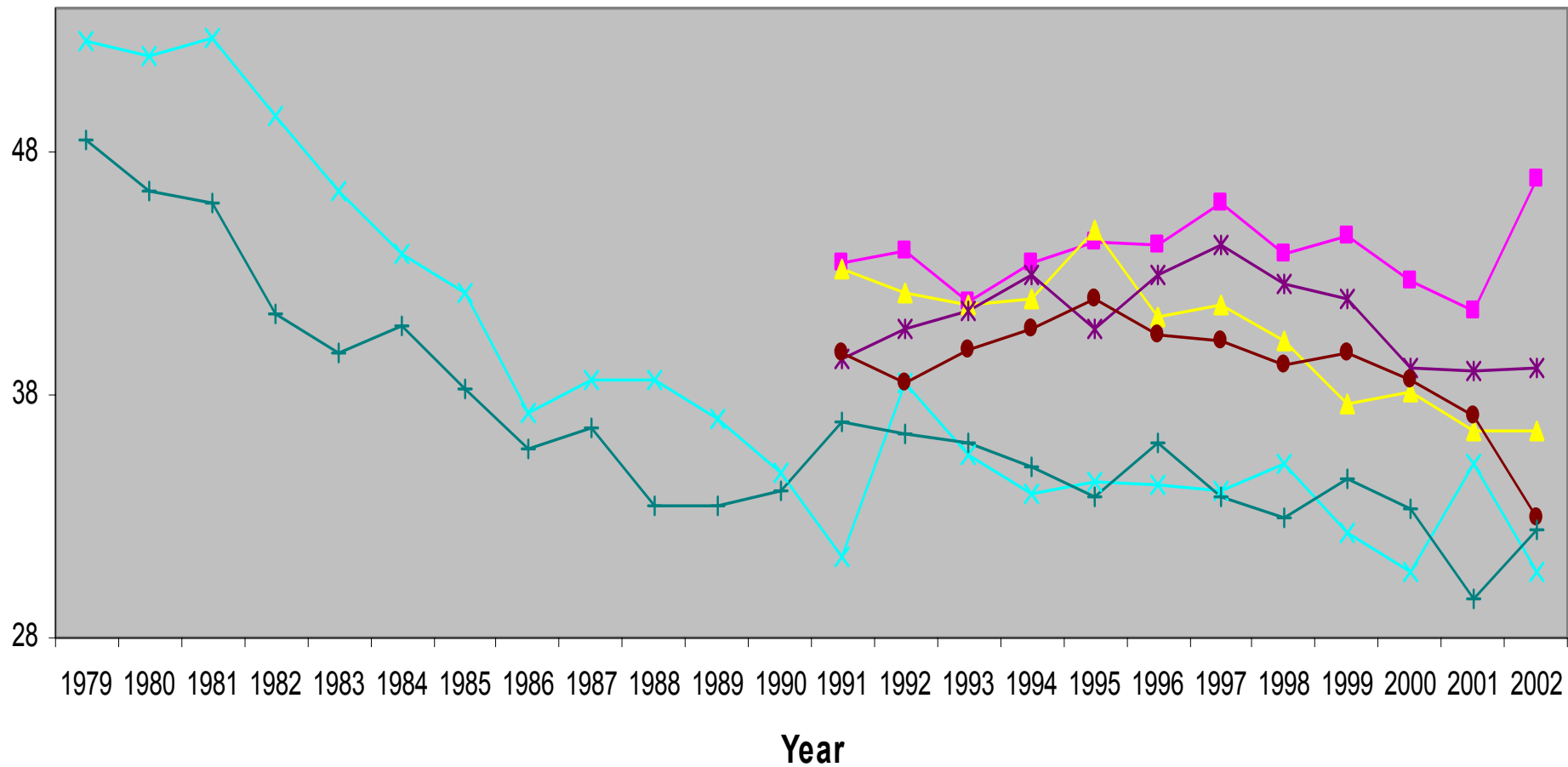
# Frequency of Eating Breakfast, Nearly or Every Day



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

Source: Johnston, et al., 2003

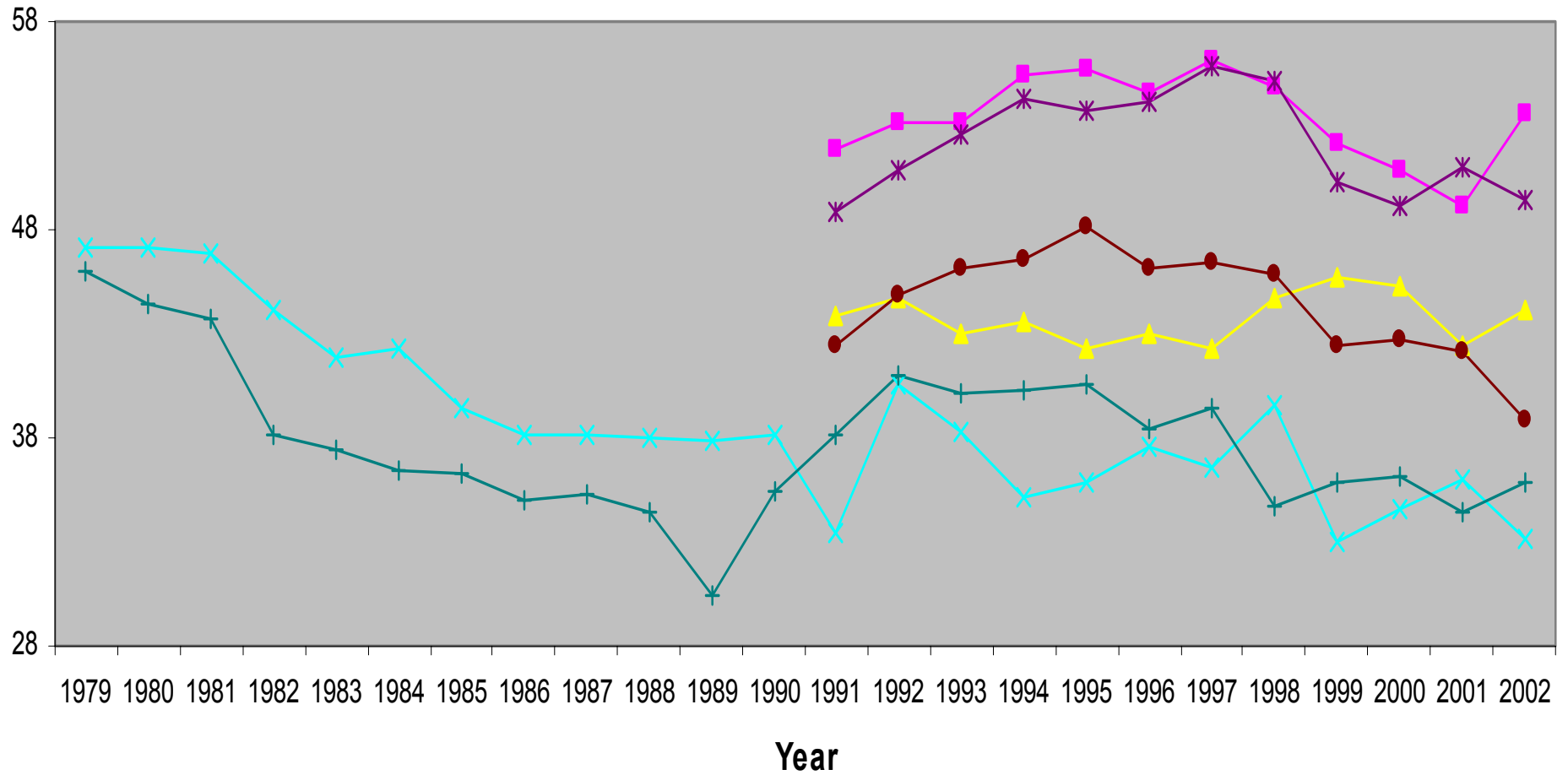
# Frequency of Eating Green Vegetables, Nearly or Every Day



■ 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 Fresh Fruit, 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

# BTG and Youth Obesity

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*

# Physical Activity Opportunities and Community Characteristics

Powell, Slater and Chaloupka (in press, *EBPM*):

- 2002/2003 ImpacTeen community observation data (409 communities):
  - Sports areas, parks/green spaces/playgrounds, public pools/beaches, bike paths/lanes, overall scales
- 2000 Census data:
  - race/ethnicity, urbanicity, income, poverty



# Physical Activity Opportunities and Community Characteristics

## 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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