

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*

Prepared for the Active Living Research pre-conference workshop
“Bridging the Gap”, Washington DC, April 9, 2008

Overview

- Introduction to the Bridging the Gap program
- Review of key data employed in analyses
- Brief discussion of findings from various analyses
- Discussion of data and findings from analyses focused on physical activity, and weight outcomes (Sandy Slater)
- Discussion of state and local policy measurement systems (Jamie Chriqui)

Public
Preventive
Medicine

AMERICAN JOURNAL OF
**PREVENTIVE
MEDICINE**

Supplement to American Journal of Preventive Medicine


October 2007

Bridging the Gap
Research Informing Practice and
Policy for Healthy Youth
Behavior

Guest Editors

Frank J. Chaloupka, Lloyd D. Johnston, Ross C. Brownson,
and Antronette K. Yancey

Bridging the Gap is ...

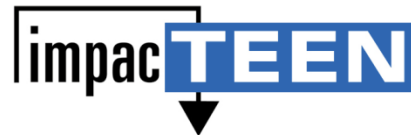
- **An initiative of the Robert Wood Johnson Foundation,**
 - **Begun in 1997**
 - **A cross-team initiative (began with Tobacco & APT)**
 - **Subsequently Childhood Obesity Team, as well**
 - **A collaborative effort to assess the impacts of policies, programs, & various other environmental factors on a variety of adolescent behaviors including smoking, drinking, and illicit drug use**
 - **Youth eating practices, physical activity, and weight outcomes (e.g. BMI, overweight) also are assessed**
 - **Linked to the ongoing *Monitoring the Future* study**
- 

University of Michigan

Institute for Social Research

**Monitoring the Future
(MTF)**

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



*A Policy Research Partnership
to Reduce Youth Substance Use*

University of Illinois at Chicago

Health Policy Center

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



*A Policy Research Partnership
to Reduce Youth Substance Use*



Bridging the Gap integrates across...

- > Multiple youth outcomes**
- > Multiple disciplines**
- > Multiple centers and collaborators**
- > Multiple levels of social organization**
- > Multiple data sources**

Looking at natural variation in levels & trends in:

- > Outcome measures**
- > Environmental conditions of potential relevance**

YES!

Youth,
Education,
& Society

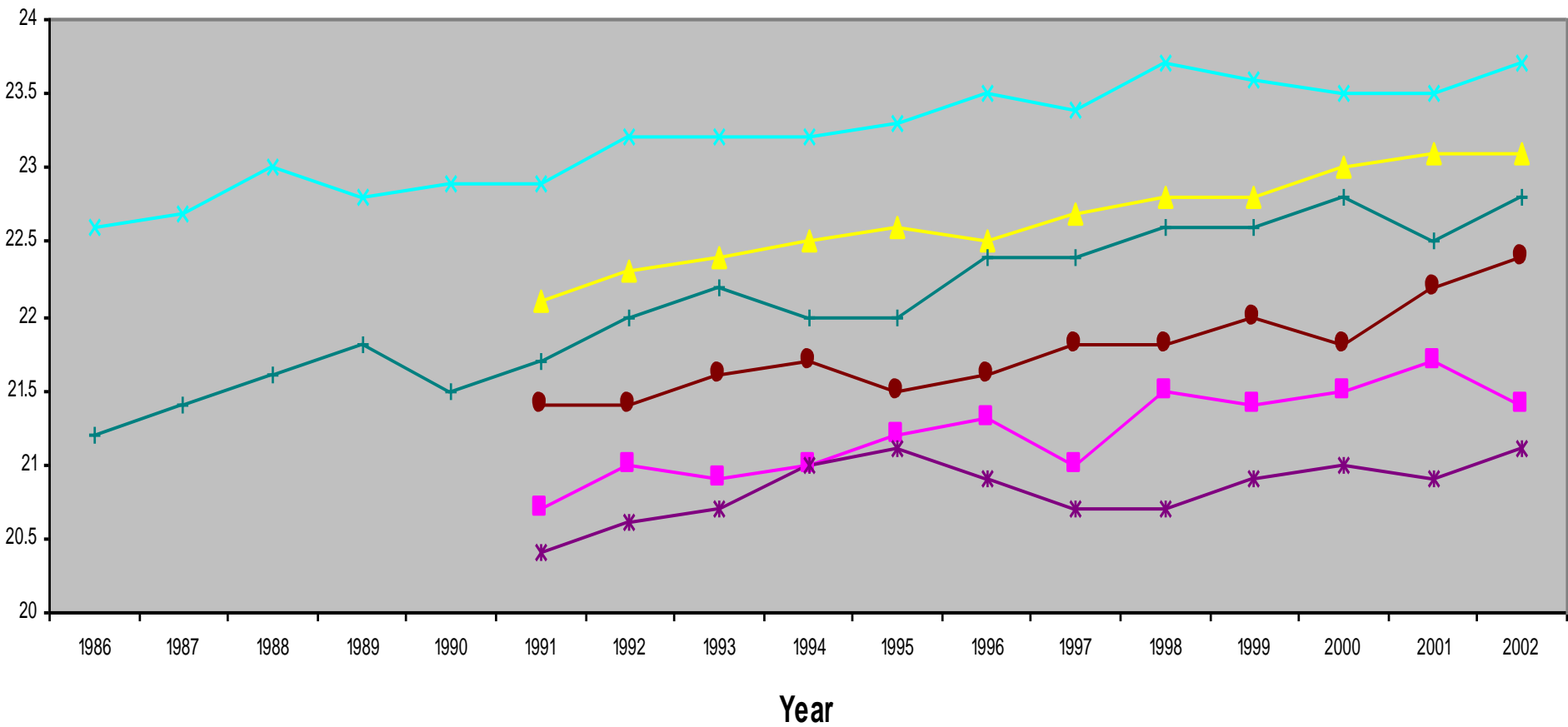
Lloyd D. Johnston, Principal Investigator
Patrick M. O'Malley
Jorge Delva
Jerald G. Bachman
John E. Schulenberg

BTG and Youth Obesity

Monitoring the Future Surveys include several relevant outcomes, including:

- *Height and weight – BMI and indicators of at risk for overweight and overweight*
- *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*

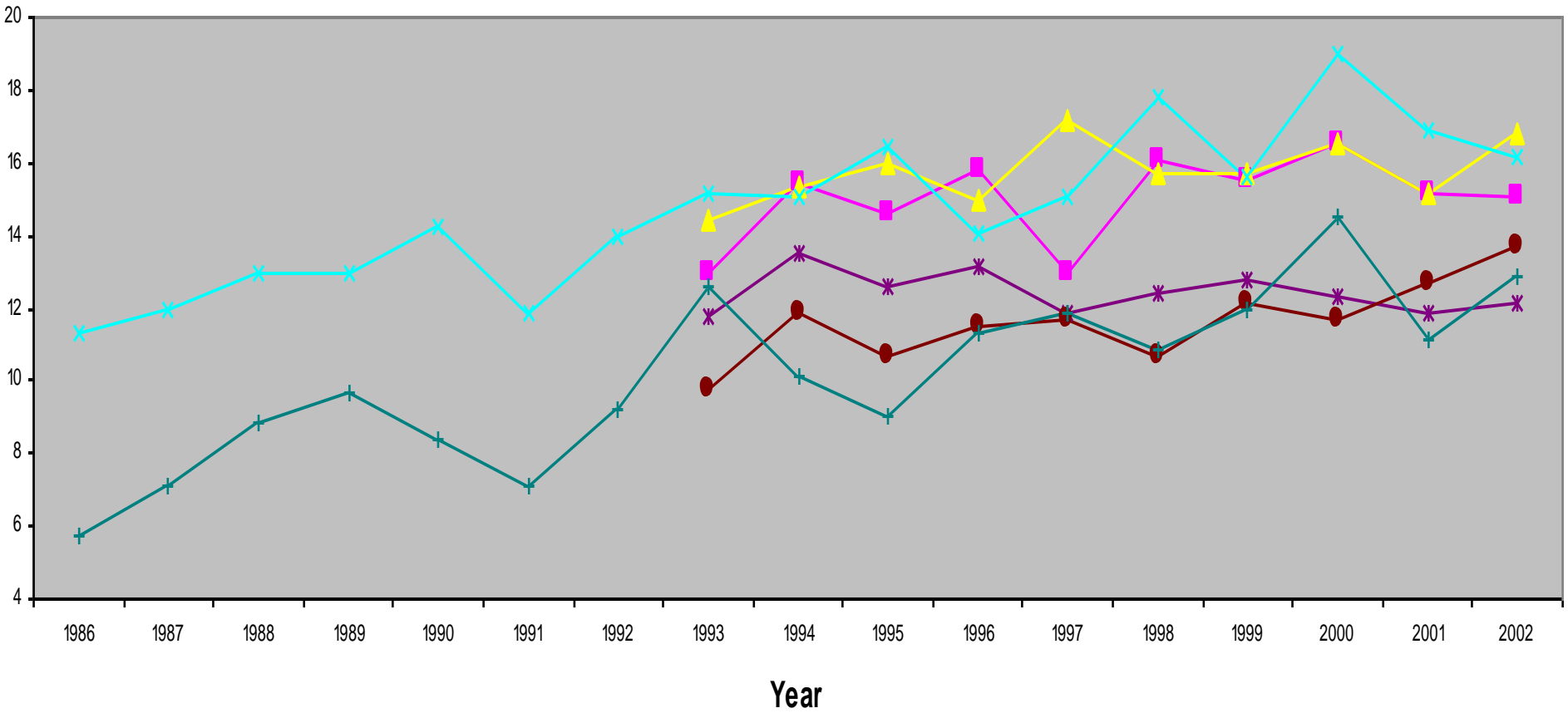
Mean Body Mass Index



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

Source: Johnston, et al., 2003

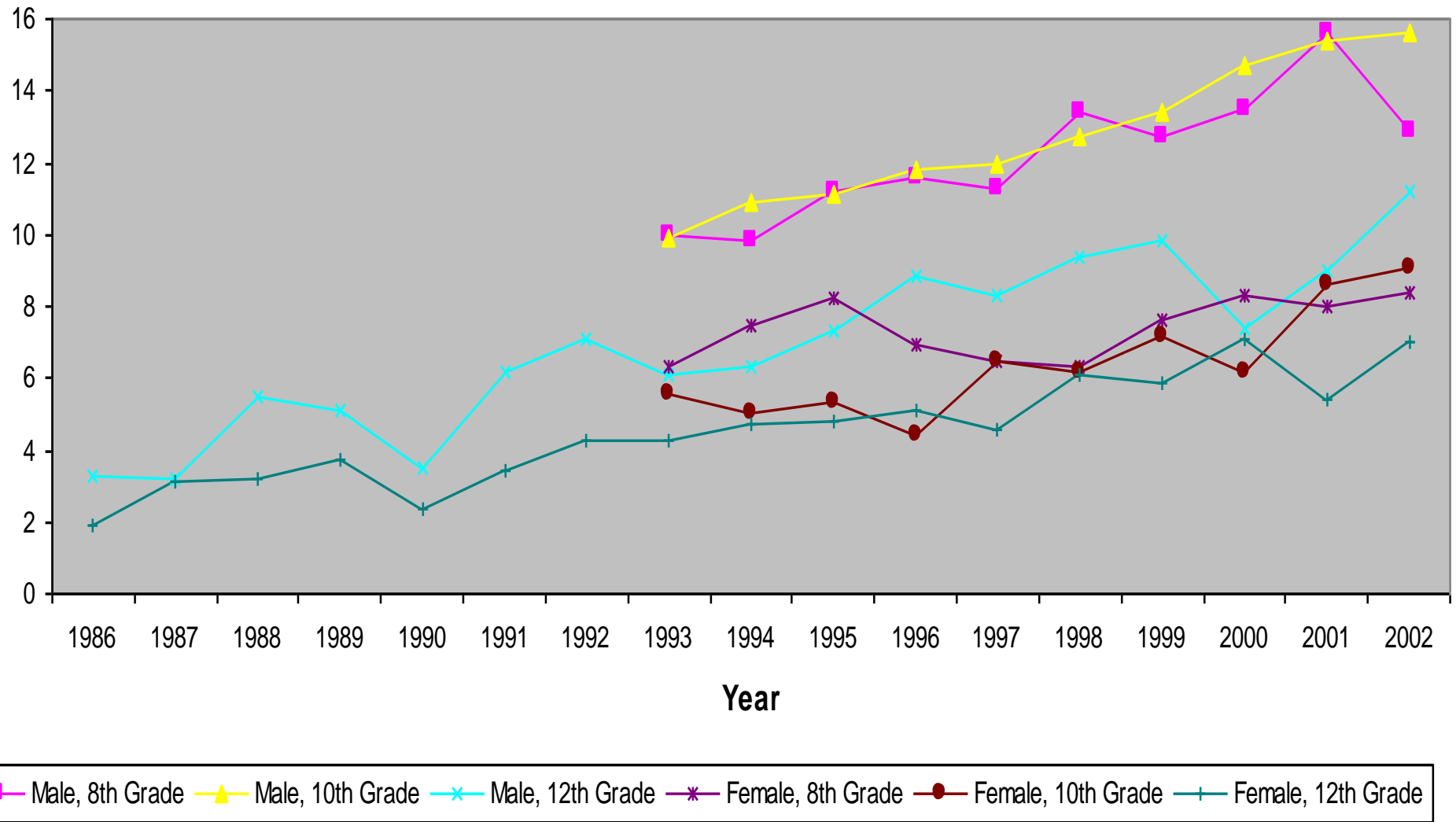
Percent at Risk of Overweight



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

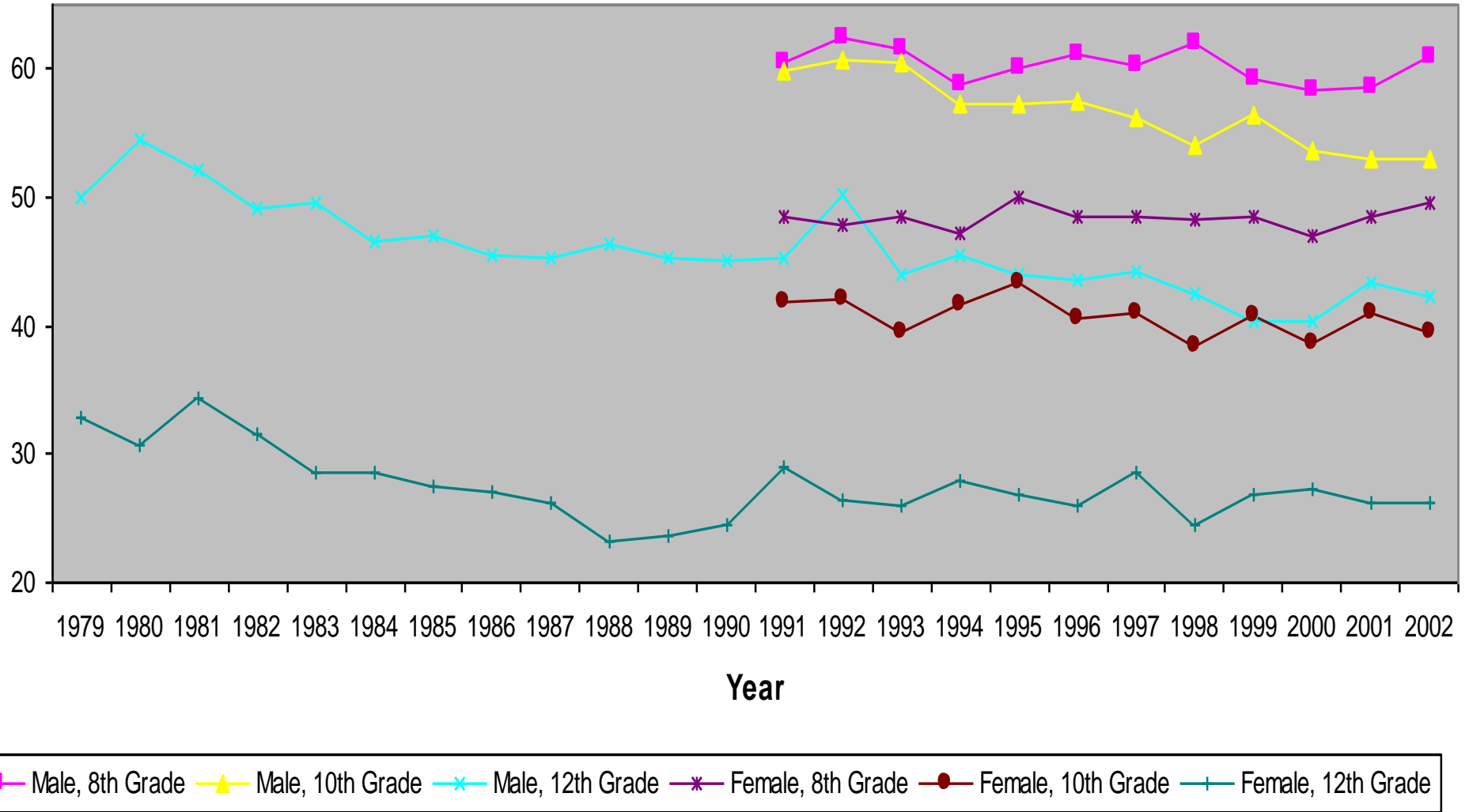
Source: Johnston, et al., 2003

Percent Overweight



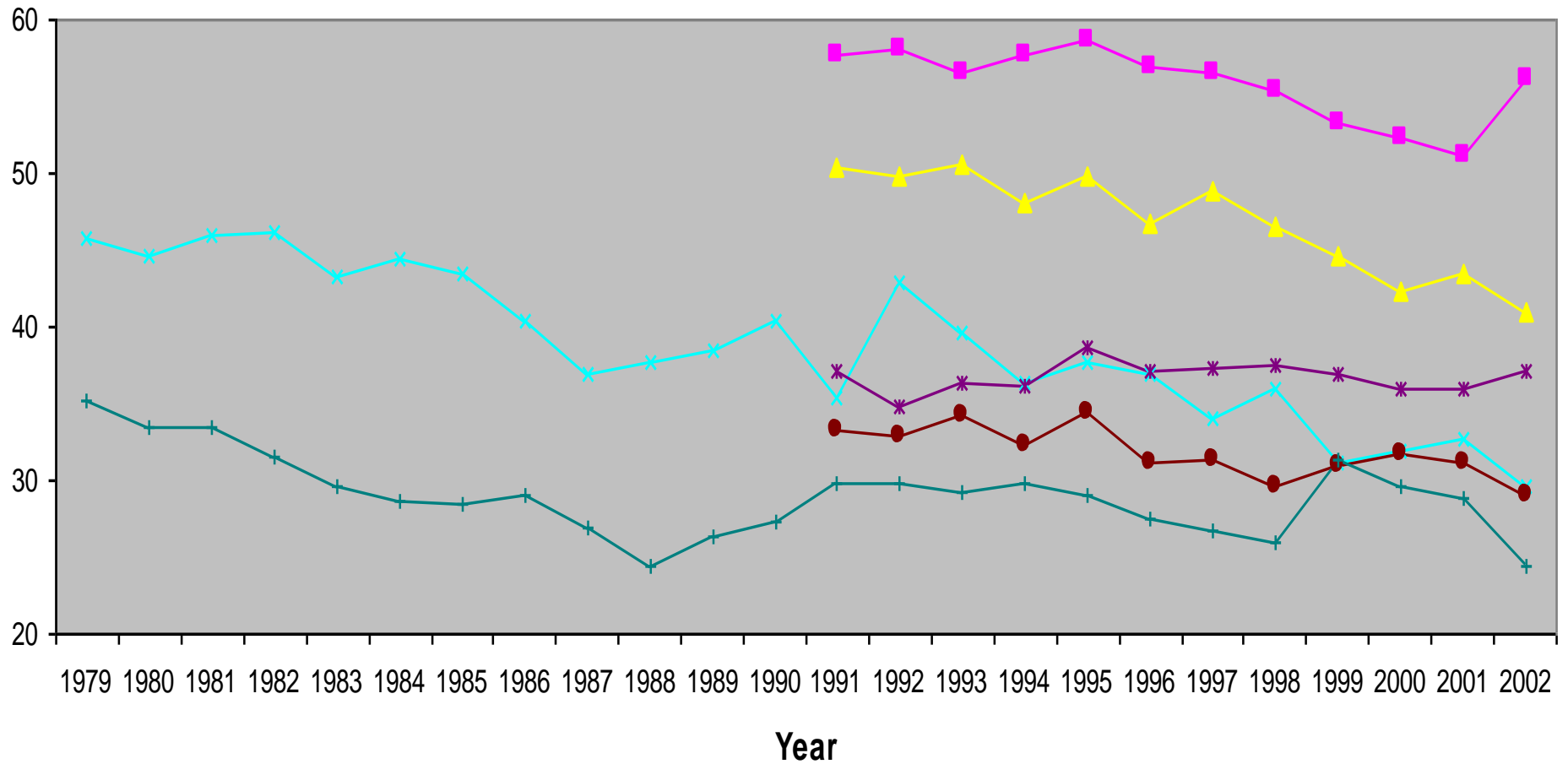
Source: Johnston, et al., 2003

Frequency of Vigorous Exercise, Nearly or Every Day



Source: Johnston, et al., 2003

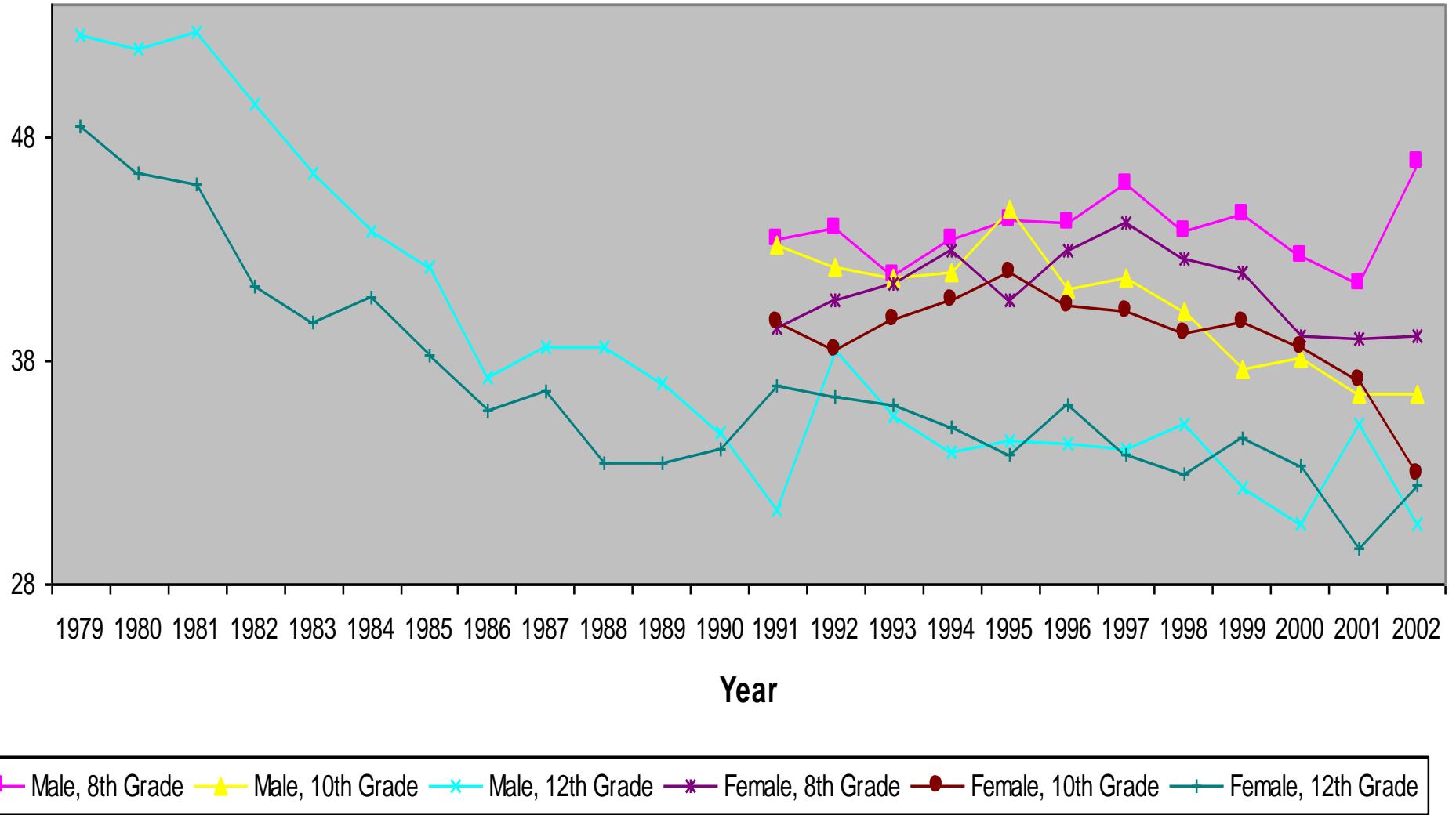
Frequency of Eating Breakfast, Nearly or Every Day



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

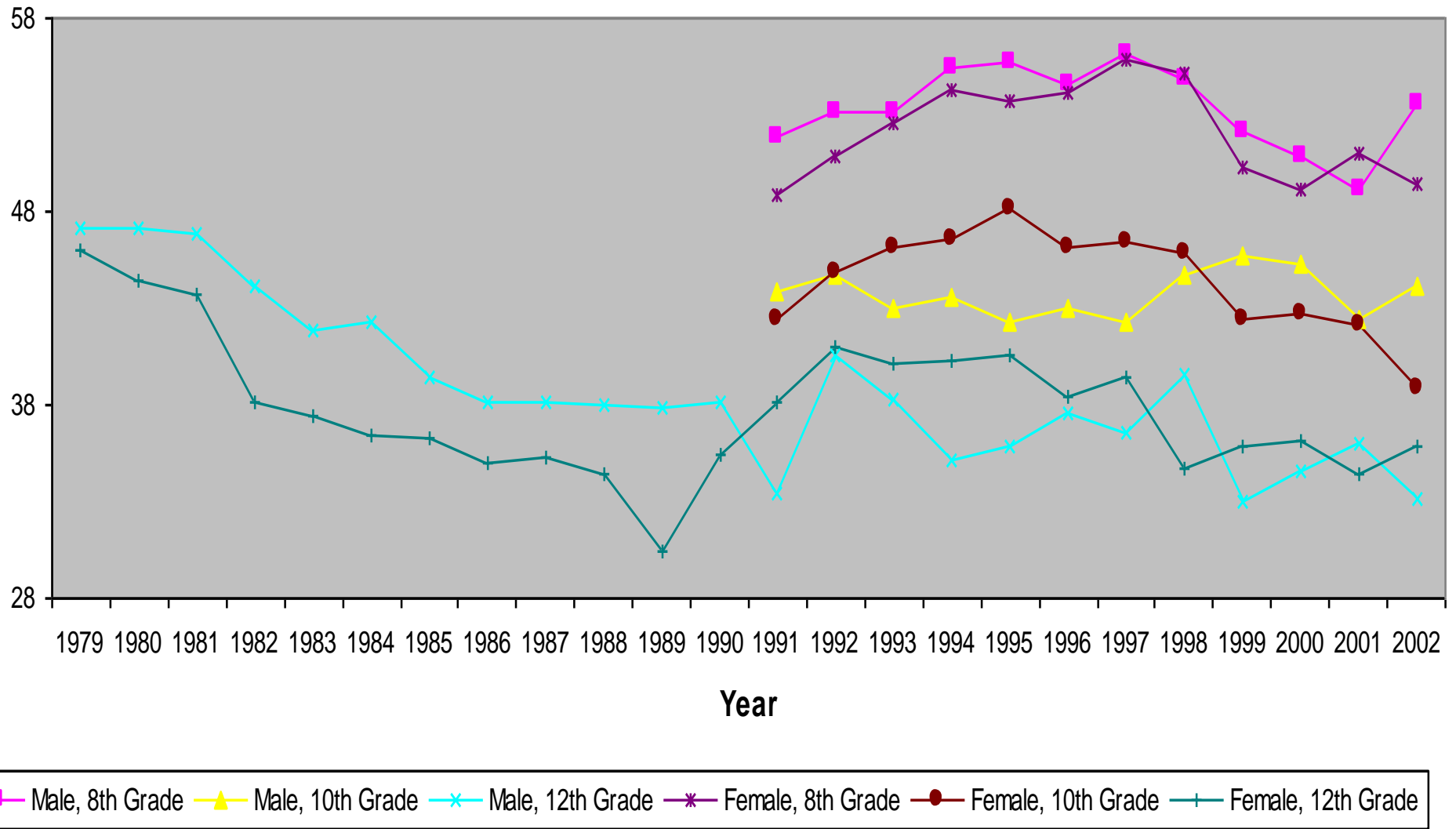
Source: Johnston, et al., 2003

Frequency of Eating Green Vegetables, Nearly or Every Day



Source: Johnston, et al., 2003

Frequency of Eating Fresh Fruit, Nearly or Every Day



Source: Johnston, et al., 2003

YES School Administrator Survey


- Annual surveys of **school administrators**:
 - ~ 200/yr since 1997 using schools (8th, 10th, & 12th grades) that are cycling out of the MTF surveys
 - An additional sample of ~ 500 schools (8th, 10th, & 12th grades) that began in 2006/07 school year
 - Longitudinal design
 - Currently in the field for 2007/08 school year

Obesity-related variables in the YES school administrator surveys

- **Physical Activity:** PE requirements & participation, intramural & extramural sports participation by gender, % walk/ride to school
- **Beverage environment:** pouring contracts, student access to vending machines, types of beverages in the vending machines, revenue generated, beverages in cafeteria, etc.
- **Food environment:** exclusive food vending contracts, student access to food in vending machines, healthy/unhealthy food offerings in vending machines and cafeteria, breakfast offered, revenue generated, beverages in cafeteria, etc.

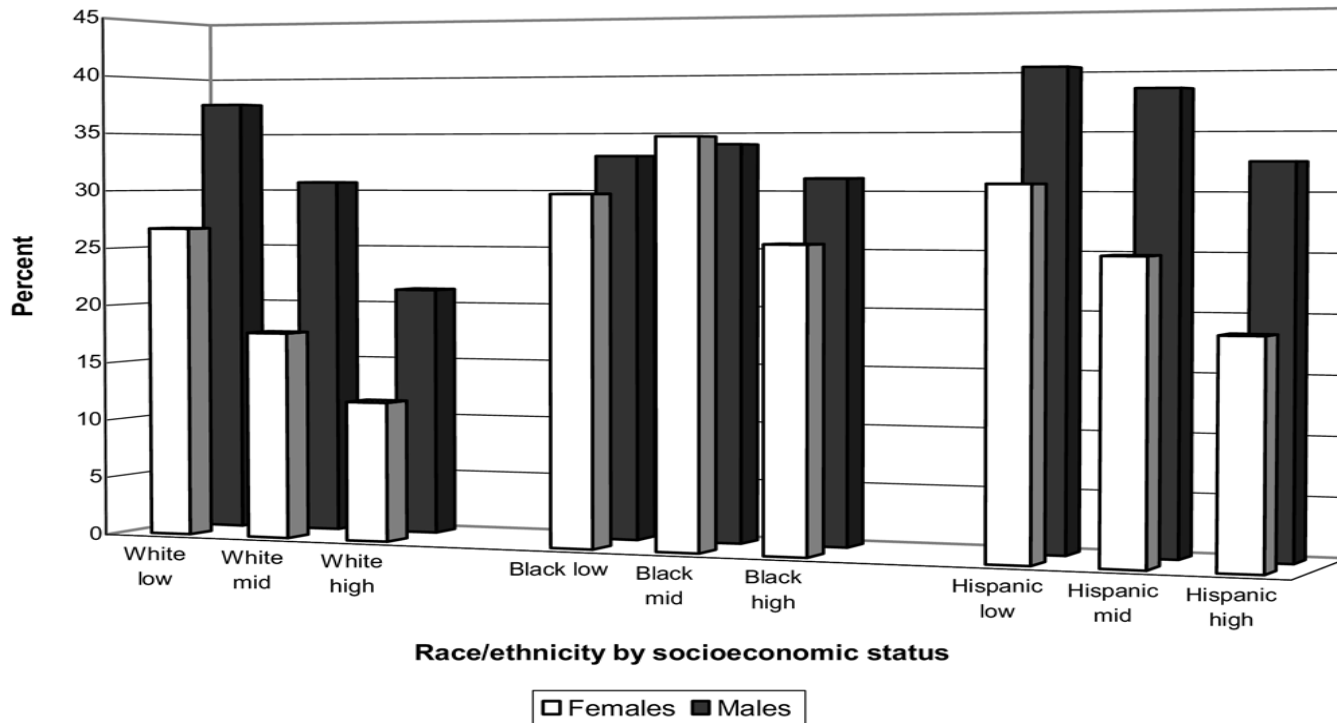


Additional Obesity-related variables in the YES school administrator surveys

- Extent to which schools and/or schools districts are aware of and implementing:
 - The 2004 School Wellness policy
 - The 2006 Alliance for a Healthier Generation (partnership between the American Heart Association and the William J. Clinton Foundation) and American Beverage Association agreement
 - The 2006 Alliance for a Healthier Generation and Snack Food Agreement.
- 

Selected Findings from the 2003-2005 School Administrator Survey

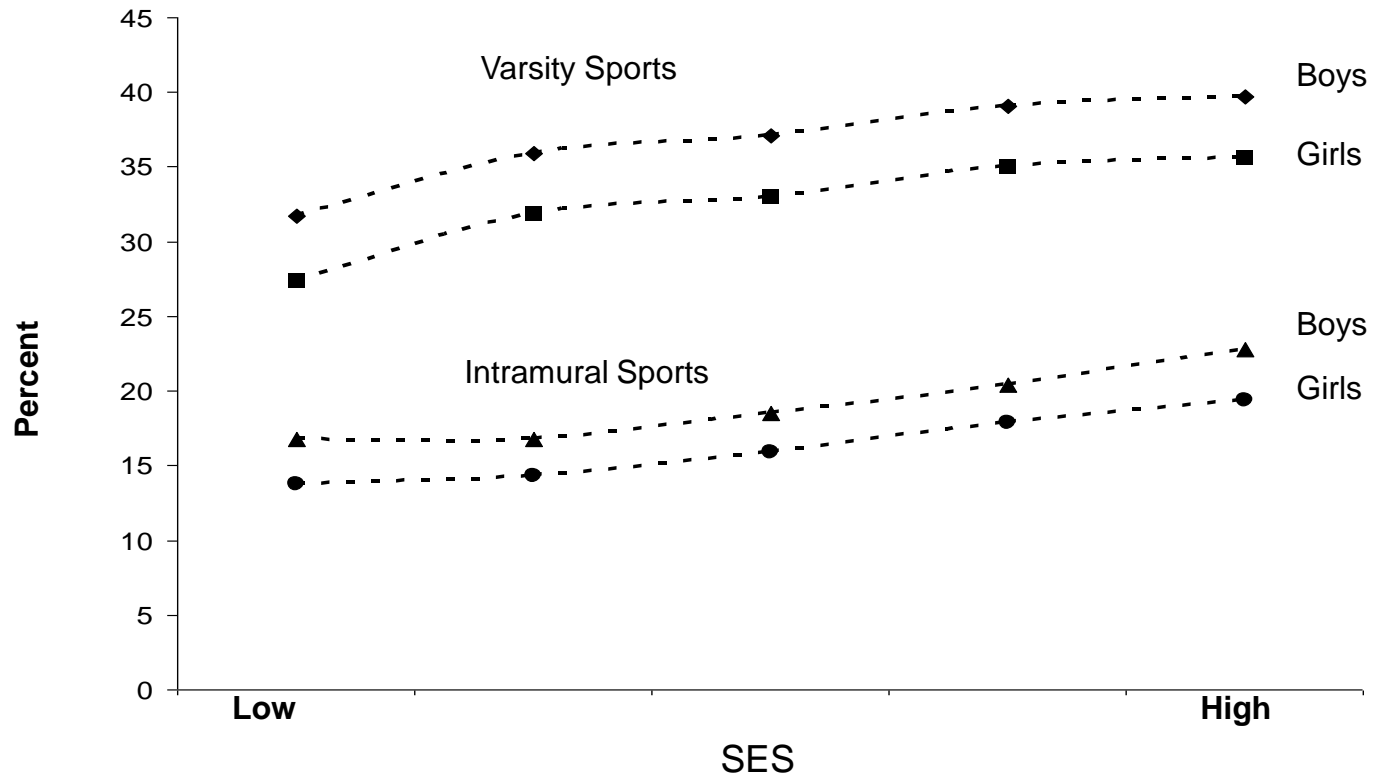
Percentage of students at or above the 85th percentile, 8th and 10th grades, by race/ethnicity and socioeconomic status



Source: Delva, J., Johnston, L.D., & O'Malley, P. (2007). The Epidemiology of Overweight and Related Lifestyle Behaviors Racial/Ethnic and Socioeconomic Status Differences Among American Youth. *AJPM*, 33(4S), S178-S186.

Selected Findings (cont'd)

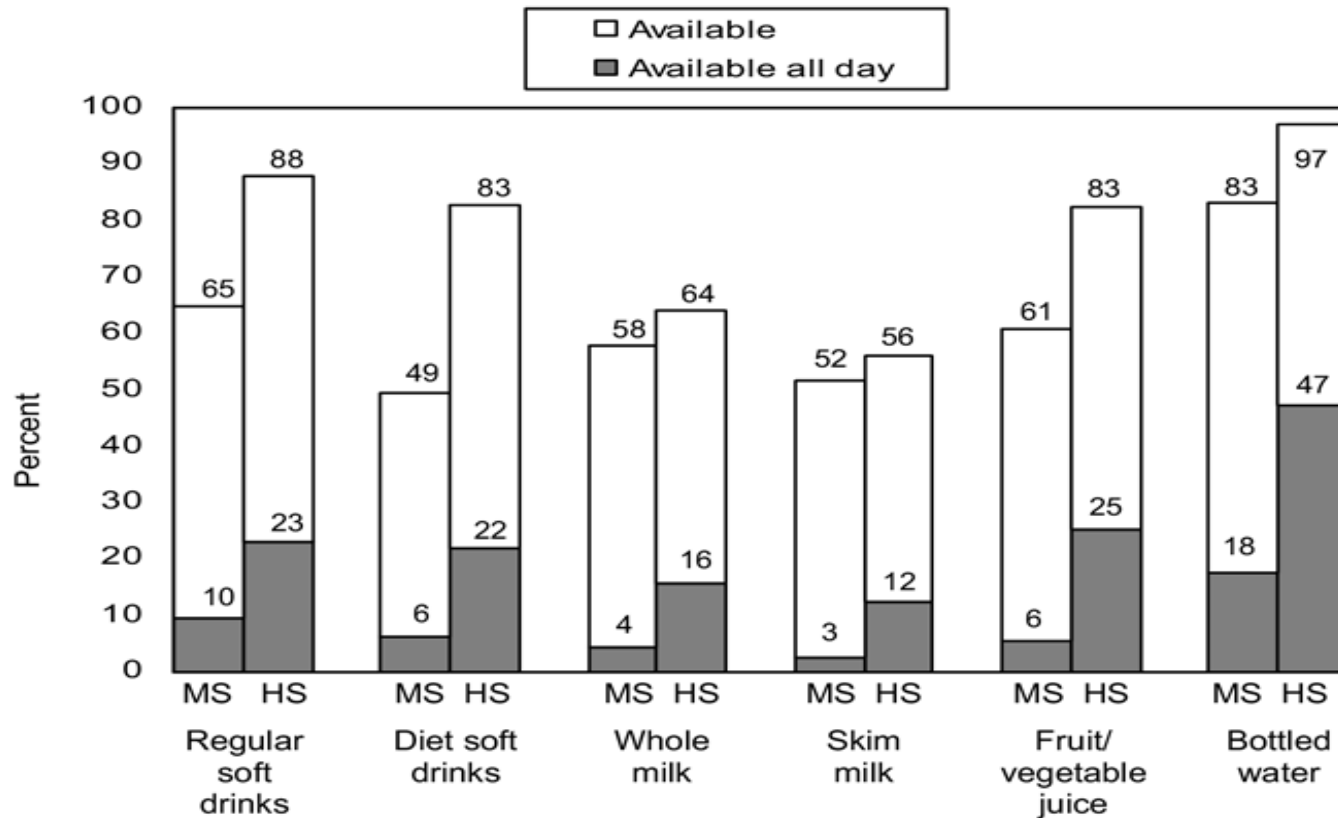
Varsity and intramural sports: average percentage of students in the school reported as participating, by gender and socioeconomic status (SES) of the student.



Source: Johnston, L.D., Delva, J. & O'Malley, P.M. (2007). Sports Participation and Physical Education in American Secondary Schools Current Levels and Racial/Ethnic and Socioeconomic Disparities. *AJPM*, 33(4S), S195-S208.

Selected Findings (cont'd)

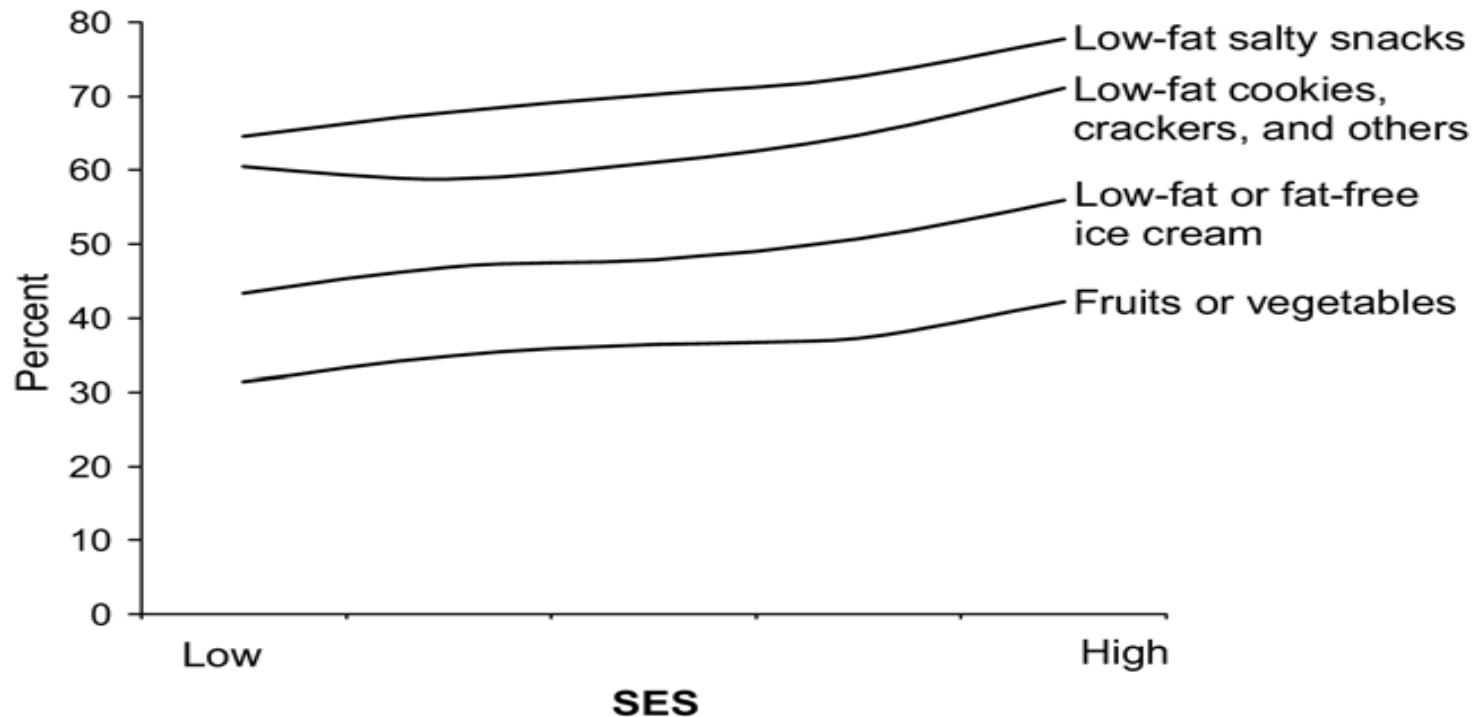
Percent of students who attend schools with different types of beverages available in vending machines at any time, and throughout the day, by grade level.



Source: Johnston, L.D., Delva, J. & O'Malley, P. (2007). Soft Drink Availability, Contracts, and Revenues in American Secondary Schools. *AJPM*, 33(4S), S209–S225.

Selected Findings (cont'd)


More healthy snacks: percentage of students that attend schools that have them available in vending machines, school or student stores, or snack bars or carts, by SES.



Source: Delva, J., O'Malley, P., & Johnston, L.D. (2007). Availability of More-Healthy and Less-Healthy Food Choices in American Schools A National Study of Grade, Racial/Ethnic, and Socioeconomic Differences. *AJPM*, 33(4S), S226–S239.



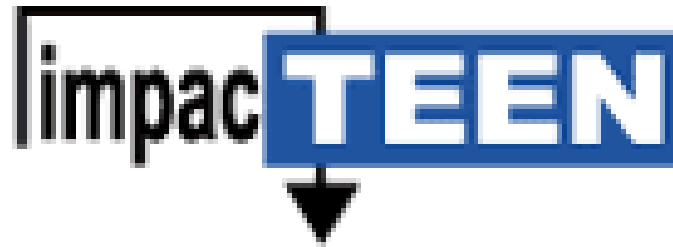
Future Research

- Ongoing monitoring of school activities related to physical activity, beverages and food contracts and availability of these products particularly in light of the recent agreements between the Alliance for a Healthier Generation and Beverages and Food companies as well as state policies.
 - Further increase our understanding of student variation in BMI as a function of both individual (e.g., race/ethnicity, SES) and school level characteristics (e.g., types of beverages and foods available)
- 



Comprehensive findings from the School Administrator Survey can be found at...

- *Youth, Education, & Society (YES)*
(<http://www.yesresearch.org/>)
- **Monitoring the Future (MTF)**
(<http://monitoringthefuture.org/>)



*A Policy Research Partnership
for Healthier Youth Behavior*

Frank J. Chaloupka, Project Director
Lisa M. Powell, Sandy J. Slater
Jamie F. Chriqui, Lindsey Turner
Sherry L. Emery, Glen Szczypka
Euna Han, Peggy Loudermilk
M. Christopher Auld, Carol Bao,
Donka Mirtcheeva, and more.....

ImpacTeen Data

ImpacTeen original community-level data collections in communities around the MTF schools

- *1999-2003; approximately 950 communities*
- *focused on alcohol, tobacco, and illicit drug use*
- *combination of observations and key informant surveys*
- *plans to resume with obesity focus in 2009*

Community Observations include:

- *presence of sports areas, parks and green spaces, public pools and beaches, bike paths/lanes*

Key Informant Survey Data include:

- *Health Department activities targeting healthy eating, physical activity, and obesity among youth*
- *Availability of after school athletic and other physical activity opportunities*

Archival Data

Data on many environmental influences from variety of sources:

- *Business lists: outlet density for variety of food and physical activity-related establishments (D&B Marketplace)*
- *Prices for fast food, healthy food, and other products (ACCRA price reports)*
- *TV food advertising (AC Nielsen)*
- *Obesity-related PSAs (AC Nielsen)*
- *Aerial photographs*
- *State and local obesity-related policies (NCI and legislative/regulatory research)*

ImpactTeen Research

Focus to date has been on:

- Availability
 - *Relationship between community characteristics and availability of food and physical activity related outlets*
 - *Associations with student physical activity, eating and weight*
- Prices
 - *Impact on healthy eating and weight-related outcomes*
- Marketing
 - *Exposure to televised food-related advertising*
- Public Health Efforts
 - *Local health department activities and televised public service announcements targeting obesity*
- State-level policy system
- School-level policies and practices
- School district wellness policies



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Associations between Availability and Community Characteristics

Community Food Environment and Community Characteristics

Dun & Bradstreet 2000 zip code level data on variety of food outlets (28,050 zip codes)

- *Supermarkets (chain and independent), groceries, and convenience stores*
- Census data on zip code population characteristics
- Find fewer large chain supermarkets in lower income communities
 - *About $\frac{3}{4}$ as available in lowest vs. middle income*
- Larger differences by race/ethnicity
 - *Chain supermarkets about $\frac{1}{2}$ as available in predominantly African-American communities compared to predominantly white; $\frac{1}{3}$ as available in Hispanic vs. non-Hispanic*
 - *Smaller groceries, independent supermarkets more available in minority communities*

Community Food Environment and Community Characteristics

- Dun & Bradstreet 2000 zip code level data on restaurants
 - *Fast food vs. full service restaurants*
- Census data on zip code population characteristics
 - *28,050 zip codes*
- Find greater availability of fast food restaurants in low-to middle income neighborhoods
 - *25 to 30 percent more in low income than in high income neighborhoods*
 - *Higher proportion of fast food restaurants as share of all restaurants*
- Differences by race/ethnicity
 - *Fewer restaurants of all types in predominantly minority communities*
 - *Of the restaurants available, significantly higher proportion of fast food restaurants in African American communities*

Community Food Environment around US Secondary Schools

- Dun & Bradstreet 2005 census-tract level data on food outlets
 - *Fast food restaurants, convenience stores*
- NCES Data on Secondary Schools, 2004/05 school year
 - *31,243 schools in US; 1,718 in 20 largest cities*
- Find ready availability of fast food restaurants and convenience stores around many secondary schools
 - *37% of schools have at least one fast food restaurant within ½ mile*
 - *33% have at least one convenience store within ½ mile*
 - *Higher proportions in large cities (68% and 56%, respectively)*
- Differences by race/ethnicity
 - *Greatest availability in lowest income neighborhoods and in non-White, non-African American neighborhoods*
 - *Greater availability around high schools (vs. middle schools)*



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Associations between Availability and Youth Behavior and Weight Outcomes

Community Food Environment and Youth Behavior

- Dun & Bradstreet zip code level data on food store and restaurant availability
 - supermarkets (chain and independent), groceries and convenience stores
- MTF data on student self reports of height and weight (1997-2003)
 - body mass index
 - Indicator for overweight

Community Food Environment and Youth Behavior

- Find that:

- greater availability of chain supermarkets associated with lower BMI and reduced likelihood of overweight

- Increase of one chain supermarket per 10,000 population reduces BMI by 0.11 units and reduces prevalence of overweight by 0.6 percentage points

- Larger impact on some population subgroups

- Greater impact for African Americans and for students in households where mother works full-time

Community Food Environment and Youth Behavior

- Find that:

- greater availability of convenience stores associated with higher BMI and greater likelihood of overweight

- Increase of one convenience store per 10,000 population raises BMI by 0.03 units and increases prevalence of overweight by 0.15 percentage points

- Larger impact on some population subgroups

- Greater impact for students in households where mother works full-time

Community Food Environment and Youth Behavior

- Related findings:

- Using measures of frequency of fruit and vegetable consumption from MTF surveys

- Greater availability of chain supermarkets associated with more frequent fruit and vegetable consumption among adolescents



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Marketing

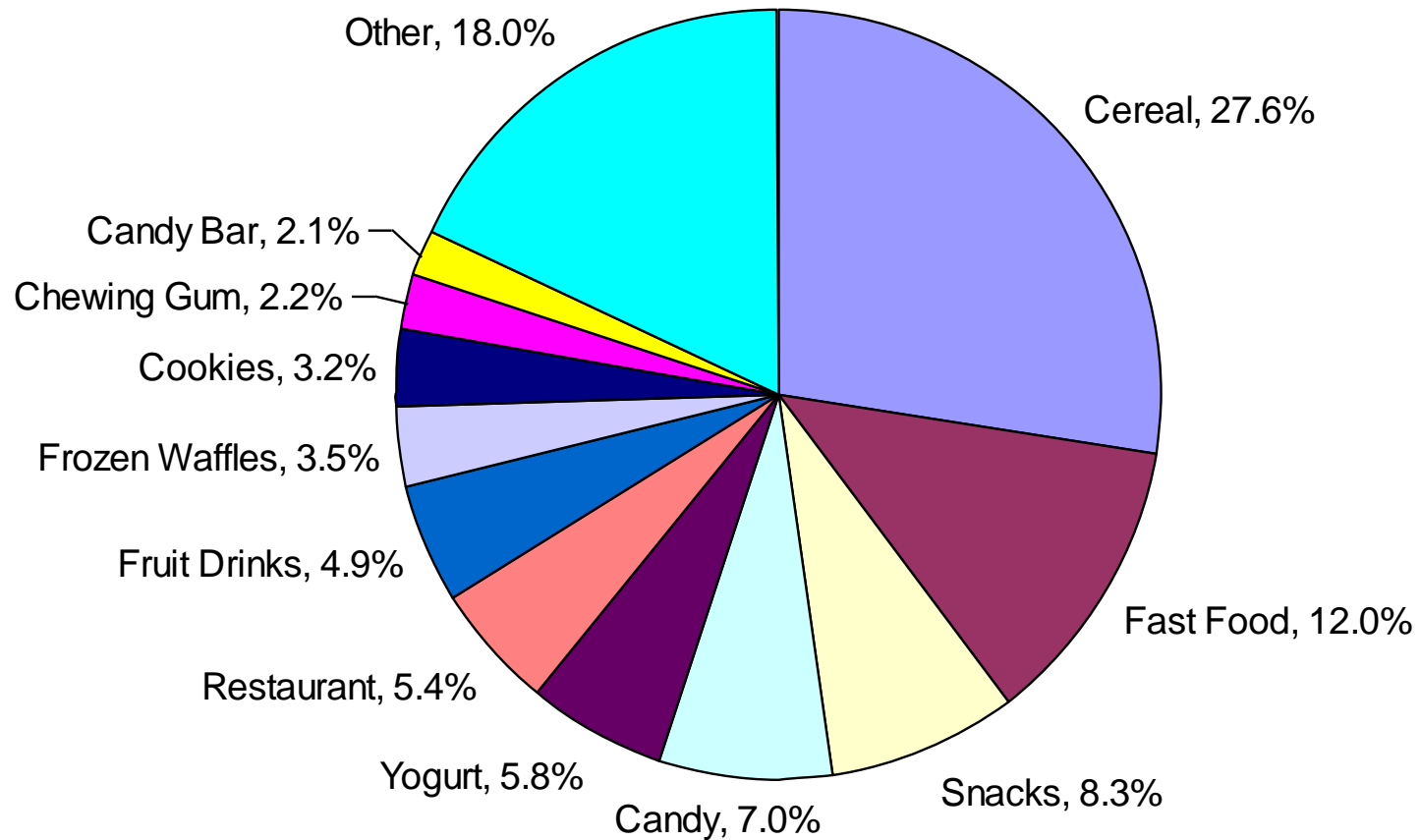
Marketing Data

- Televised Food-Related Advertising
 - 2003/04 TV season (nine months)
 - *2005/06 underway and 2007/08 planned*
 - Data for most watched shows by age and race
 - *600 shows – network, cable; regular programming, syndicated*
 - *2-11, 12-17, and 18+; White and African American*
 - Standardized to 30-second spots
 - Exposure measures reflect weighted averages for all ads based on targeted ratings points
 - *e.g. ad with 80 TRPs per month for a given audience implies that the ad was seen an average of one time that month by 80 percent of that audience*
 - All ads coded for nutritional content
 - *multiple dimensions including calories per serving; percent of calories from fat, sugar, sodium, fiber; more*

Advertising Exposure

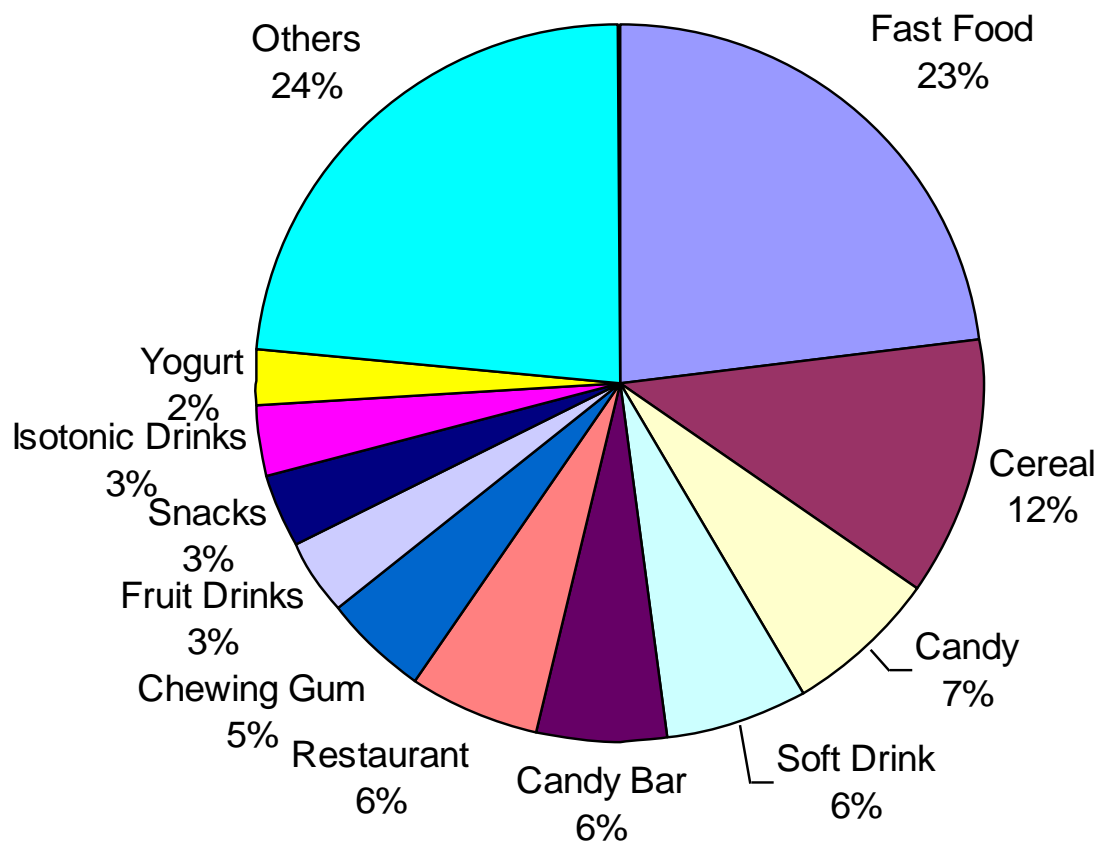
| Distribution of Exposure to Television Advertising: 2-11 and 12-17 | | | | |
|--|------------------------|--------------------------|------------------------|--------------------------|
| | Children | | Adolescents | |
| | % of Total Advertising | % of Product Advertising | % of Total Advertising | % of Product Advertising |
| Food Products | 22.4% | 30.0% | 14.0% | 18.3% |
| Non-fast Food Rest | 1.5% | 2.0% | 1.1% | 1.5% |
| Fast Food Rest | 3.3% | 4.4% | 4.6% | 6.0% |
| (Food Subtotal) | (27.2%) | (36.4%) | (19.6) | (25.7%) |
| Other Products | 47.7% | 63.6% | 56.9% | 74.3% |
| (Product Subtotal) | (74.9%) | 100% | (76.5%) | 100% |
| PSAs | 0.8% | Excluded | 1.6% | Excluded |
| TV Promos | 24.3% | Excluded | 21.9% | Excluded |
| TOTAL | 100% | N/a | 100% | N/a |

Food Product Advertising: 2-11

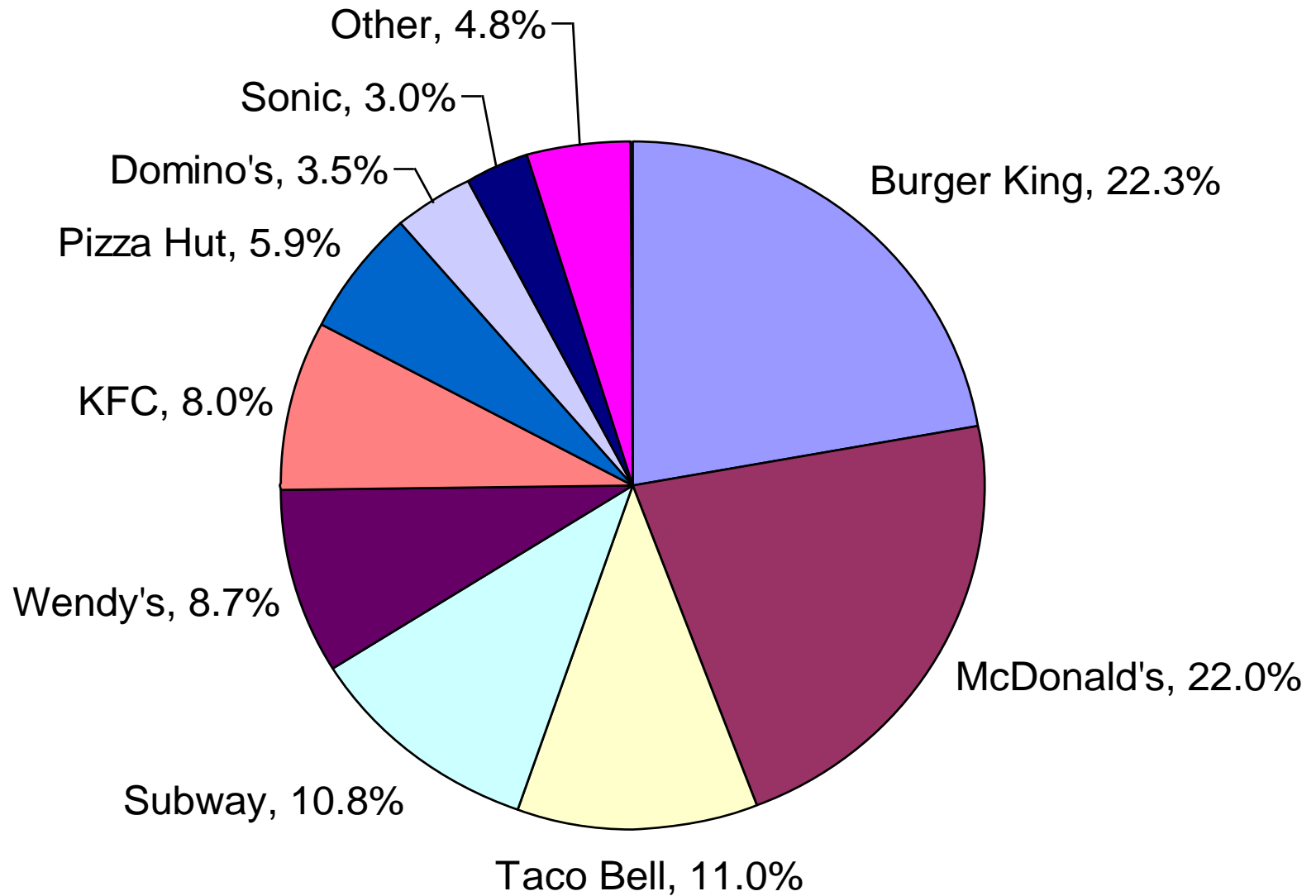


Source: Powell et al., *Archives of Pediatrics and Adolescent Medicine*, 2007

Food Product Advertising: 12-17



Fast Food Advertising: 12-17



Nutritional Content of Food Products Viewed on TV By Children Aged 2-11

| | All foods (100%) | Cereal (33.3%) | Sweets (22.7%) | Snacks (13.9%) | Drinks (9.6%) | Other (20.4%) |
|------------------------------|---------------------|-------------------|-------------------|-------------------|------------------|------------------|
| High Fat | 17.1% | 0.0% | 41.6% | 36.0% | 0.0% | 13.0% |
| High Sat Fat | 21.2% | 0.0% | 47.4% | 25.0% | 3.2% | 33.1% |
| High Sugar | 80.7% | 97.6% | 88.6% | 65.4% | 99.5% | 44.9% |
| High Sodium | 12.3% | 2.2% | 0.0% | 0.0% | 0.1% | 57.8% |
| Low Fiber | 81.6% | 78.6% | 82.2% | 98.0% | 99.9% | 65.0% |
| Either High Fat/Sugar/Sodium | 97.8% | 97.6% | 96.3% | 96.7% | 99.5% | 99.6% |

Public Health Efforts: TV PSAs

- Market-level data from A.C. Nielsen Media Research
 - *75 largest US media markets, 1998 through 2003*
- State ad campaigns
 - *No exposure in most media markets; 9 states by 2003*
 - *Generally well below exposure to state anti-smoking ad campaigns (about 1/4 in 2003)*
- National ad campaigns (CDC VERB)
 - *Much greater exposure than to state campaigns among youth*
 - *Similar exposure among youth as to the Legacy Foundation's truth campaign*
- Well below exposure to food-related advertising

Source: Emery et al., *American Journal of Preventive Medicine*, 2007



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School Practices and Policies

The “Food and Fitness” Project

The Food and Fitness Project

- *Principal Surveys*

- Nationally-representative sample of 1,451 elementary schools for 2006/07 school year
 - 837 mail-back surveys received (576 public schools, 259 private)
 - 57.7% response rate
- 2007/08 survey currently in the field
- Survey comparable to the YES! Survey of middle and high school principals
 - Includes additional items more relevant to primary schools
 - Recess, classroom snack policies, etc.

The Food and Fitness Project

Preliminary (unweighted) Results

- 94.6% of schools require students to take PE class; for 3rd graders:
 - 14.9% daily
 - 19.0% three to four times per week
 - 60.4% one to two times per week
 - Average class nearly 40 minutes
 - Most (81%) report students active for at least 75% of class period
- 86% of schools report daily recess for 3rd grade students
 - Average 27.8 minutes of recess per day

The Food and Fitness Project

Preliminary (unweighted) Results

- Walking/biking to school:
 - 27.5% report students NOT allowed to walk/bike to school
 - 21.9% report allowing only students in some grades to walk/bike
 - For 3rd graders, report 15.5% walk or bike to school
 - Reported barriers include:
 - Distance and traffic dangers a great or very great barrier for majority of schools
 - Lack of sidewalks and crossing guards a great or very great barrier for about 1/4 of schools

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www.impactteen.org

www.yesresearch.org

www.monitoringthefuture.org