Overweight among 6-11 year olds

Source: NHANES, various years. Reported in *The Surgeon General's Call To Action To Prevent and Decrease Overweight and Obesity 2001.*
Changes in the Distribution of BMI

Notes: Anderson, Butcher, Levine (2003). Vertical line is original 95th percentile.
Overweight by Race/Gender in 2000, Age 6-11
Children’s Obesity Growth by Family Income

Adult Obesity Growth by Family Income
Changes in the Distribution of Adult BMI

Notes: Anderson, Butcher, Levine (2003). Vertical line is original 95th percentile.
Families/Neighborhoods vs. Schools?

• Over time, the correlation between parents’ and children’s BMI has increased
  – Suggests larger role of genetics, shared environment

• For disadvantaged children (low income, parental education, Black and Hispanics), parental “influence” over child BMI is lower
  – Suggests relatively larger role for schools, other settings to influence
Research on Vending Machines

(Anderson and Butcher, 2006)
Food and Drink Access, 2000

- Junk Food Ads
- Junk Food Pouring rights

Elementary
Middle
High
Changes in Access, 1994-2000

- Vending Machines
- Brand Name Fast Food
Vending Machine Findings

• A 10 percentage point increase in the proportion of schools in a county that make junk food available to students is correlated with a nearly 1 percent increase in BMI
  – The effect translates into about 1.5 lbs on average
  – The impacts are twice as large on children with overweight parents (genetic component?)

• For the same increase in pouring rights, the increase in BMI is .75 percent

• The effect of advertising is smaller and not significant at conventional levels
Possible New School Vending Policy?

Back of the envelope calculations indicate junk food access in schools might explain at most a fifth of the increase in average teen BMI from 1988-1994. It is unclear whether current efforts to ban vending machines will have the desired effect of reducing children’s obesity even if strictly enforced.

“Infograph” from The Onion, http://www.theonion.com
School Lunch Research

Schanzenbach, 2006
Comparing Obesity Rates of School Lunch Eaters to Brown Baggers in the Same School

K Entry

End of 1st Grade
Could School Lunches Really Impact Obesity?

• Lunch eaters consume ~45 extra calories each day relative to brown baggers
  – All those calories consumed at lunch, not dinner, breakfast, non-school

• That small imbalance in calories in kids can lead to a 0.4 BMI increase, or 1.7 percentage point increase in obesity
Lunch Calories by School Socio-Economic Status

Calories served vs. Calories eaten across quartiles:
- Quartile 1: Calories served are significantly higher than calories eaten.
- Quartile 2: Similar trends as Quartile 1, with a slight decrease in calories eaten.
- Quartile 3: Calories served and calories eaten are almost equal.
- Quartile 4: Calories served are higher than calories eaten, with a significant gap.

Legend:
- Green: Calories served
- Blue: Calories eaten
Lunch Nutrient Quality by School Socio-Economic Status

- Meet protein std.
- Meet vit C std.
- Meet calcium std.
- Meet iron std.
School Accountability Research

Anderson, Butcher and Schanzenbach (2006)
Accountability Policy: No Child Left Behind

• Standards in math & reading
  – Standardized tests
  – Standards increase over time
  – Standards vary across states

• Increasing penalties for failure
  – Mandatory school choice
  – Reconstitution of school
How Accountability Might Effect Obesity

• Time for physical activity
  – Recess cut
  – Gym class
  • Texas: 1995 stopped requiring daily gym to “improve academic performance”
  • 2001 reinstated to “combat childhood obesity”

• Time for lunch
  – Unclear which way this will impact

• Mandated summer school
  – Kids gain weight more in summer

• Small and charter schools without play space
General Identification Strategy: Regression Discontinuity

• School-level test scores continuous
• Sharp line where accountability takes effect
  – in Chicago, 20% meeting standard
• While schools just above and just below cutoff are similar, exposed to different incentives afterwards that may impact kids’ obesity
• Test for discontinuity in obesity rates associated with cutoff
• Used successfully to measure impact of accountability (Jacob, Roderick, etc.)
Studies Planned

• Nationwide: ECLS data
  – Can match up to status under NCLB
  – Can match up with other school characteristics

• Arkansas
  – Very complete data

• Chicago Public Schools
  – Still assessing whether possible
Identification Strategy: Regression Discontinuity

• School-level test scores continuous
• Sharp line where accountability takes effect
• While schools just above and just below cutoff are similar, exposed to different incentives afterwards that may impact kids’ obesity
• Test for discontinuity in obesity rates associated with cutoff
Relationship Between Obesity and Performance, No Accountability

Obesity rate

% meeting performance standards
Relationship Between Obesity and Performance, With Accountability

Obesity rate

Passing standard

% meeting performance standards
Arkansas Preliminary Results (2004)

<table>
<thead>
<tr>
<th>Indicator for failure under NCLB = 1</th>
<th>% of students in school overweight</th>
<th>% of students in school at risk of overweight +</th>
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</thead>
<tbody>
<tr>
<td>.017 (0.007)</td>
<td></td>
<td>.021 (0.009)</td>
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</tbody>
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Notes: Standard errors in parenthesis. Other independent variables include the percent passing math and reading for the school’s worst-performing subgroup, and polynomials in those variables to the 8th degree.