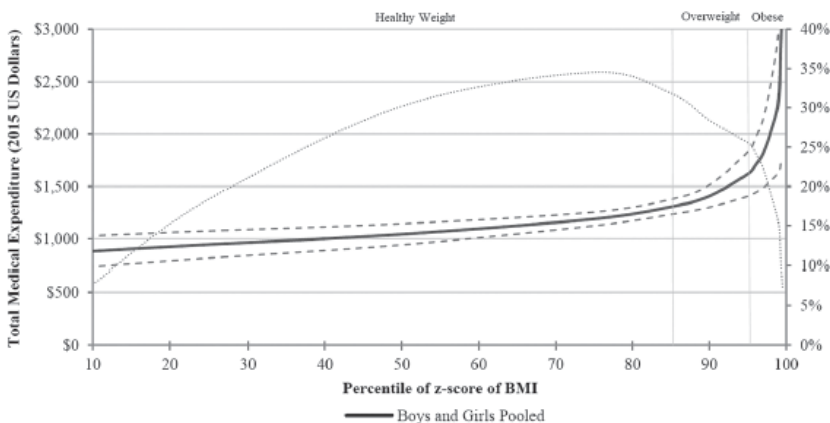


## Economic Perspective on Socioeconomic Impacts of Childhood Obesity

### Direct Effect: Medical care and expenditures

- Childhood
  - o Limited evidence that obesity increases medical care use or expenditures
  - o Some evidence for a nonlinear relationship between BMI and medical expenditures (see Figure 1)
- Adult
  - o Consistent evidence that obesity increases medical care expenditures
    - Medical care for obesity higher for older adults and women, but lower for African Americans
    - Obesity related health conditions (example diabetes, heart disease, cancer) account for much of medical care expenditures
  - o Evidence for a nonlinear relationship between BMI and medical expenditures (see Figure 2)

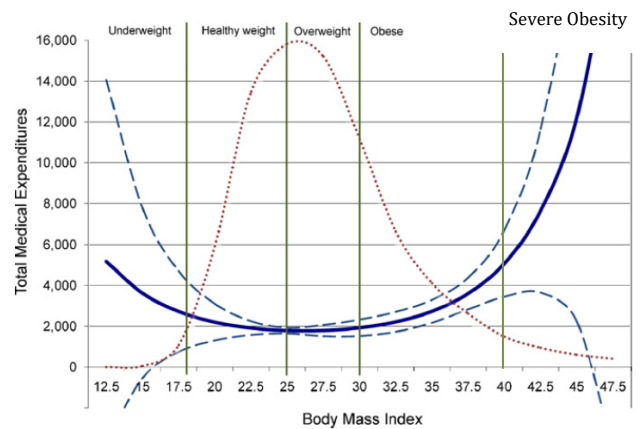
**Figure 1: Childhood BMI z-score and Medical Care Expenditures**



**Data:** Medical Expenditure Panel Survey (MEPS) 2001–2015. **Notes:** Expenditures are in 2015 U.S. dollars. Medical expenditures are denoted by the solid lines and are measured on the left axis, and are predictions generated from the two-part IV model of total medical expenditures. Dashed lines represent 95% confidence intervals, which have been adjusted for the complex design of the MEPS. Medical expenditures are denoted by the solid line and are measured on the left axis. The dotted line indicates the distribution of individuals in the population. Distribution density is indicated on the secondary vertical axis.

Source: Biener, Cawley, and Meyerhoefer, 2020

**Figure 2: Adult BMI and Medical Care Expenditures**



**Fig. 1.** Predicted relationship between BMI and annual medical expenditures for all adults with biological children. **Notes:** Data: MEPS 2000–2005. Expenditures are in 2005 USD. Dashed lines represent the 90% confidence interval, which has been adjusted for the complex design of the MEPS. Medical expenditures are denoted by the solid line, while the distribution of individuals in the population is indicated by the dotted line. BMI is calculated using self-reports or proxy reports of weight and height.

Source: Cawley and Meyerhoefer, 2012

### Indirect Effects

- Childhood: Primary school outcomes
  - o School absences
    - 27% greater odds in overweight children and 54% greater odds in obese children relative to children in normal BMI range
    - Unclear if relationship due to negative physical health effects of obesity or stigma and bullying
  - o Academic performance: evidence for negative effect of obesity is weak
    - Studies find that after controlling for socioeconomic status, parent's educational attainment, physical activity, and other health conditions relationship between obesity and academic performance weakens or no longer exists
- Adults: Employment and worker productivity
  - o Employment and wages
    - Weight penalty: increasing weight associated with lower wages
      - Effect differs between men and women and by race
      - Greatest penalty for white women
        - o Additional 10lbs decreases wages 2.8%
        - o Relationship strongest for weight near the obese thresholds. Suggest penalty not due to negative health
  - o Worker productivity
    - Measured using absenteeism (days of missed worked) or presenteeism (reduced productivity while at work)

	Increased cost relative to BMI in normal range	
	Overweight	Obesity
Absenteeism	\$54 to \$161	\$89 to \$1586
Presenteeism	-\$611 to \$1669	\$11 to \$4175

- Wide range of estimated cost due to different statistical methods for measuring impacts

### Lifetime Cost of Childhood Obesity

- Lifetime cost of childhood obesity capture the cost associated with obesity as child ages
- Small number of studies, vary by which cost are included (direct and/or indirect) and how lifetime costs are estimated (observational studies or simulations)
  - o Results in wide range of estimates, but studies suggest lifetime cost higher for more severe range of BMI and most cost occur later in life
- Influenced by likelihood that obese children remaining obese into adulthood and develop obesity related health conditions as adults
  - o 70% of obese adolescent still obese at age 30
  - o 80% of obese adults (age of at least 30) were not obese in adolescent
  - o Childhood obesity not a strong predictor of adult health conditions
    - 31% adult diabetes cases and 22% adult hypertension and heart disease occurred in children (ages 12+) classified as obese

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