Do School Nutrition Programs Influence Child Weight? A Treatment Effect Analysis

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INTRODUCTION

- Childhood misnourishment:
  - Caused by insufficient nutritional quality
  - Includes overweight, obese and underweight
- United States estimates:
  - 13+ million overweight children
  - 2.4 million underweight children
- Childhood misnourishment brings serious health consequences:
  - Chronic diseases
  - Weaken immune system → more frequent and worse infections
- School Breakfast Program (SBP) & National School Lunch Program (NSLP)
  - Good potential intervention targets
  - However mixed results on relationship between meal program participation and child weight

- Innovation:
  - Interdisciplinary theoretical framework;
  - Multiple simultaneous treatment effects;
  - Acknowledge self-selection into SBP and NSLP;
  - Examine longer-term impacts of participation (1st to 8th grade)

RESEARCH QUESTIONS

- TO WHAT EXTENT DO SBP AND NSLP CONTRIBUTE TO THE OBSERVED OUTCOME OF CHILD WEIGHT?
- DO IMPACTS DIFFER IF A CHILD PARTICIPATES IN BOTH PROGRAMS COMPARED TO ONLY ONE PROGRAM?
- COULD DIFFERENCES IN FOOD QUALITY ACROSS LOCAL EDUCATION AGENCIES BE IMPACTING RESULTS?

ANALYSIS APPROACH

Multiple Simultaneous Treatments

- Impacts on child weight could vary depending on whether the child participates in one or both programs
- Important to account for self-selection into multiple programs
- 25% of the sample participates in both programs

Average Treatment Effect on the Treated (ATT)

- Examines program effects on a well-defined population exposed to the treatment where individuals are not obligated to participate
- Utilizes propensity score matching and conditional probabilities
- Three treatment categories:
  - No participation over the entire period
  - NSLP only over the entire period
  - SBP and NSLP over the entire period

Difference-in-Differences (DID)

- Examines impacts on child weight induced by a change in school meal program participation status; accounts for trends over time
- Controls for selection through a two-stage model
- Method being more frequently used with observational data

DATA

- Early Childhood Longitudinal Study-Kindergarten Class
  - Nationally representative sample of 21,260 children followed from kindergarten (98-99) to 8th grade
  - Information on children, parents, teachers and schools
  - Staff measured weight and height of the students
  - SBP and NSLP participation info

SUMMARY OF FINDINGS

- ATT and DID results are similar
- Participation in only NSLP:
  - Decreases probability of being overweight and obese
  - Increases probability of being healthy weight
  - No differences between free- and reduced price (FRP) recipients and students paying full-price
- Participation in SBP and NSLP increases the probability of overweight and decreases the probability of healthy weight
  - Particularly for FRP students

ROBUSTNESS CHECKS

- Elementary versus Middle School Results
  - Minimal impacts of meal programs on 5th grade child weight (i.e., end of elementary school)
  - Most impacts occur in middle school
- Control Proxy for Food Quality
  - Results do not differ when controlling for food expenditure per pupil in each local education agency or by separating sample by percentage of FRP eligible students at school
- Control for Region
  - Midwest: participating in SBP & NSLP increases weight
  - South & West: NSLP only participation increases weight
- Control for Urbanity
  - Rural: only NSLP participation increases weight
  - Urban: participation in SBP & NSLP increases the probability of overweight
  - Suburbs: NSLP only participation decreases probability of overweight

POLICY IMPLICATIONS

- Critics of SBP and NSLP not entirely correct
  - Participating in only NSLP decreases probability of being overweight
- Concentration on meal quality in South and West as well as in rural areas
- Need a closer examination of the quality of school breakfasts in elementary versus middle schools
- What can we do?
  - Gradual changes to menus
  - Continue campaigns that encourage children to take an interest in where food comes from and how it is prepared
    - Chefs Move to Schools
    - Small Farms/School Meals Initiative
- Healthier meals may entice more participation

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