What’s For Lunch?  
Determinants of the National School Lunch Program Menu

Janet G. Peckham  
PhD. Candidate, Clemson University

Selected Poster prepared for presentation at the  
Agricultural & Applied Economics Association’s  
2013 AAEA & CAES Joint Annual Meeting  
Washington, DC, August 4-6, 2013

Copyright 2013 by Janet G. Peckham. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.
Introduction

- Rising rates of childhood overweight and obesity have contributed to increased scrutiny over the contents of the National School Lunch Program (NSLP) menu.
- School districts must comply with federal guidelines defining a reimbursable school lunch, but decisions on the quality and quantity of food choices is left to the district and is determined in part by food availability, budgetary restrictions, and student preferences.
- Little research has examined what is served as a NSLP lunch among school districts, although differences are well documented (Gordon et al. 2007; Levine 2008; Poppendieck 2010).

This paper focuses on the relationship between school district income and the variety of entrees, fruit, and vegetables available to participants.

Using OLS regression, find evidence that wealthier school districts offer more entrees, fruits, and vegetables than their lower-income counterparts.

Methods

- Parent, student, and district characteristics in part determine an individual district’s demand for menu components such as entrees, fruits, and vegetables.
- The analysis emphasizes household income because if low-income school districts offer recipients a less nutritious meal then their higher-income counterparts, this may exacerbate rather than alleviate the trend toward low-income childhood obesity.
- Using 5 income specifications, I estimate the effect of income on the total number of entrées, fruits, vegetables served per week. Let \( x \) be the total number of entrées, fruits, or vegetables served in district \( i \).

\[
\begin{align*}
1. a & = \beta_{Income_{ctyi}} + \beta_{Attained_{EA}} + \beta_{Black} + \beta_{Hispanic} + \beta_{Other} + \beta_{Suburban} + \beta_{Rural} + \beta_{ln(Enrollment)} + \beta_{Midwest} + \beta_{South} + \beta_{West} + \beta_{Month2} + \beta_{Month3} + \beta_Policy + \beta_{Coordinator} + \beta_{Vending} + \epsilon \\
2. b & = \beta_{Income_{ctyi}} \\
3. c & = \beta_{Income_{ctyi}} + \beta_{Income_{ctyi}}^2 \\
4. d & = \beta_{Income_{ctyi}} \\
5. e & = \beta_{Income_{ctyi}}^2
\end{align*}
\]

Descriptive Statistics

- On average, each elementary school offers 12 entrees, 7 fruits, and 10 vegetables weekly.
- 52% of districts restrict access to vending machines.
- Average district enrollment is 18,189 students. 25% of districts are urban, 48% suburban, and 27% rural.
- The average district is composed of 62% white, 17% Hispanic, 13% black, and 8% other students.
- The average county income is $50,665. As expected, the distribution is right-skewed.
- On average, 46% of household incomes fall below 185% of the poverty line.

Results

Entrée

- Model 1: Across all income levels, a $10,000 increase in the median household income increases the number of entrées offered weekly by 0.5.
- Model 3: School districts with median household income > $65,000 offer 3.6 more entrées per week than districts with income between $55,000 and 65,000.
- Model 4: A 1 percentage point increase in the proportion of students with household income less than 185% of the poverty line decreases weekly entrée offerings by 0.06.
- Model 5: As the proportion of students from households with income less than 185% of the poverty line increases, the number of entrées offered weekly decreases.
- School district enrollment has a positive effect on the number of entrées offered weekly.
- School districts in states requiring a district food coordinator offer more entrées per week.
- School districts in the North offer the most entrée choices, districts in the West the least.

Fruit

- Model 1: Across all income levels, a $10,000 increase in the median household income increases the number of fruits offered weekly by 0.2.
- Model 3: As median household income increases, the number of fruits offered weekly increases, but not significantly.
- Model 4: A 1 percentage point increase in the proportion of students with household income less than 185% of the poverty line decreases weekly fruit offerings by 0.03.
- Model 5: As the proportion of students from households with income less than 185% of the poverty line increases, the number of fruits offered per week decreases, but not significantly.
- School district enrollment has a positive effect on the number of fruit offered weekly.
- Suburban school districts offer more fruits per week than urban or rural districts.

Vegetable

- Model 1: Across all income levels, a $10,000 increase in the median household income increases the number of vegetables offered weekly. However, it is never statistically significant.
- Model 3: As median household income increases, the number of vegetables offered weekly increases but is not statistically significant.
- Model 4: An increase in the proportion of students from households with income less than 185% of the poverty line increases, weekly vegetable offerings decrease, but not significantly.
- School district enrollment has a positive effect on the number of vegetables offered weekly.
- School districts in states requiring 2+ vegetables be served daily offer more vegetables per week.
- School districts in the South offer the most vegetables.

Conclusion

- School districts in wealthier counties (or with wealthier households) offer more entrées per week than their low-income counterparts.
- There is weak evidence that school districts in wealthier counties (or with wealthier households) offer more fruits and vegetables per week than their low-income counterparts.
- Larger school districts provide more entrees, fruits, and vegetables than smaller districts, suggestive of economies of scale.
- Providing lower-income districts additional subsidies to purchase fruits and vegetables may increase weekly offerings while preserving the education budget.
- Future research regarding the relationship between childhood obesity and NSLP participation should acknowledge the possible differences in nutritional content across NSLP meals.

References