

Healthier Standards for School Meals and Snacks

Impact on School Food Revenues and Lunch Participation Rates

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Introduction: In 2012, the updated U.S. Department of Agriculture school meals standards and a competitive food law similar to the fully implemented version of the national Smart Snack standards went into effect in Massachusetts. This study evaluated the impact of these updated school meal standards and Massachusetts' comprehensive competitive food standards on school food revenues and school lunch participation.

Methods: Revenue and participation data from 11 Massachusetts school districts were collected from 2011 to 2014 and analyzed in 2015 using multilevel modeling. The association between the change in compliance with the competitive food standards and revenues/participation was assessed using linear regression.

Results: Schools experienced declines in school food revenues of \$15.40/student in Year 1 from baseline ($p=0.05$), due to competitive food revenue losses. In schools with 3 years of data, overall revenues rebounded by the second year post-implementation. Additionally, by Year 2, school lunch participation increased by 15% ($p=0.0006$) among children eligible for reduced-price meals. Better competitive food compliance was inversely associated with school food revenues in the first year only; an absolute change in compliance by 10% was associated with a \$9.78/student decrease in food revenues over the entire school year ($p=0.04$). No association was seen between the change in compliance and school meal participation.

Conclusions: Schools experienced initial revenue losses after implementation of the standards, yet longer-term school food revenues were not impacted and school meal participation increased among children eligible for reduced-price meals. Weakening the school meal or competitive food guidelines based on revenue concerns appears unwarranted.

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Introduction

In Fall 2012, the updated U.S. Department of Agriculture (USDA) school meal standards went into effect.¹ These standards brought school meals in closer alignment with the 2010 Dietary Guidelines for Americans, including more whole grains, larger portions for fruits and vegetables, a greater vegetable variety, calorie limits, and the elimination of trans fats.² Research has documented improvements in healthier school food selection and consumption,^{3,4} yet evidence examining school meal revenues is mixed.^{5,6} Although preliminary research found decreases in participation following the new school meal standards, this may have been a pre-existing trend.⁷ Participation rates and school meal revenues may be impacted by other factors, including

competitive foods (i.e., foods sold in vending machines, à la carte, and in school stores) that students often purchase instead of school meals.⁷ Additionally, research suggests schools often use meal revenues to offset the cost of producing à la carte foods.⁸

To improve the school food environment, the USDA created standards for competitive foods, called Smart Snacks in School (“Smart Snacks”), which went into effect in Fall 2014.⁹ These standards emphasize whole grains, fruits, vegetables, and low-fat dairy while limiting calories, sugar, sodium, and saturated fats and eliminating trans fats. However, competitive foods do not need to meet these standards if they contain at least 10% of the Daily Value for “nutrients of concern” (i.e., calcium, potassium, vitamin D, or dietary fiber) until Fall 2016. Therefore, these Smart Snack standards have not been fully implemented nationally. Previous research has documented that when healthier competitive food standards are implemented, schools often experience competitive food revenue losses, but compensate with increases in meal revenues.^{10–12} However, no previous studies have examined the impact of comprehensive competitive food standards pre- and post-implementation of the updated USDA meal standards. It is therefore unknown if similar financial substitution effects would occur with both healthier competitive food and school meal standards.

In 2010, Massachusetts passed a comprehensive competitive food law that was almost identical to the fully implemented Smart Snack standards (105 CMR 225.000; a comparison of these standards has been published previously).¹³ These standards went into effect throughout Massachusetts simultaneously with the updated USDA school meal guidelines in Fall 2012. Thus, the combined effect of the updated school meal standards and competitive food standards on revenues and school meal participation rates could be examined. The Nutrition Opportunities to Understand Reforms Involving Student Health (NOURISH) study, a collaboration between the Harvard T.H. Chan School of Public Health, Northeastern University, Brandeis University, and the Massachusetts Department of Public Health, was developed to examine the impact of the Massachusetts competitive food standards. The NOURISH study examined compliance,¹³ students’ diets, barriers, and strategies for successful implementation, revenues, and meal participation rates. The present study examined changes in school food revenues and meal participation rates among a sample of NOURISH schools pre- and post-implementation of the Massachusetts competitive food standards and USDA school meal standards. It was hypothesized that schools may lose competitive food revenues but benefit from increases in school meal participation, leading to gains in school meal revenues.

Methods

Participants and Setting

In Spring 2012, Massachusetts school districts were recruited to participate in the NOURISH study if they had a middle and high school (districts with only K–8 schools or combined districts for high schools were excluded). From the 113 eligible districts in Massachusetts, districts were randomly selected to participate and 37 districts (one middle school and one high school per district; 74 schools total) agreed to participate (33% participation).¹³ Among the participating districts with multiple middle or high schools, one of each was randomly selected. Schools had site visits to document all pre-packaged competitive foods, baked goods sold à la carte (i.e., cookies), and beverages available before and after the Massachusetts competitive food law went into effect (Spring 2012, 2013, and 2014). Additional NOURISH study details have been previously published.¹³ This study was approved by the Harvard T. H. Chan School of Public Health’s IRB.

Among the participating districts, a subsample was invited to provide financial data. All participating districts that managed their competitive food revenues (e.g., did not have vending machine contracts with outside vendors) and therefore had access to competitive food and school meal financial data were asked to participate. A total of 11 districts (92% of eligible districts) agreed to participate and provided financial data at baseline and Year 1 post-implementation. Among the 11 districts, a subsample ($n=7$) also provided financial data for Year 2 post-implementation; four did not provide financial data in Year 2 owing to the effort required to compile the information. There were no substantial differences between the districts that provided financial data for only 2 years compared with those supplying 3 years of data. The districts were socioeconomically diverse, with on average 32% (range, 7%–58%) of the students eligible for free or reduced-price meals and located throughout Massachusetts (three urban, five suburban, and three rural districts). Student body size greatly varied, with the participating high schools ranging in size from approximately 350 to 1,400 students. Per inclusion criteria, all participating districts managed their school meal program.

Data

Schools provided their overall school food revenue information, including competitive foods sales (vending and à la carte combined) and school meal sales. In some districts, revenue data were only available at the district level, but these districts had only one middle and high school, and the elementary schools in these districts did not sell competitive foods (thus, only the participating schools contributed to the competitive food revenues). In districts with multiple middle or high schools, only the participating schools provided financial data, and these data were combined to calculate one value per district. Additionally, school-specific information was provided on the percentage of students eligible for free, reduced-price, and full-price meals, school meal participation rates, average student enrollment, and attendance rates; these data were combined and weighted by the student body sizes in the participating middle and high schools. The financial and participation data were for the school year from August (or early September) until the data collection date (late spring). Attempts were made each year following data collection to obtain the remaining information for the entire school year. Compliance with

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