

# Changing Nutrition Standards in Schools: The Emerging Impact on School Revenue

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## ABSTRACT

**BACKGROUND:** Although great focus has been placed on nutritional and other consequences of changes in food-related policies within schools, few reports exist describing the impact of such changes on school revenue. This review provides an overview of the few revenue-related studies published recently, as well as information from a sampling of state reports on the subject.

**METHODS:** A systematic review of the literature was conducted. Four peer-reviewed papers and 3 state-based reports were identified that assessed the impact on revenues of either targeted policy changes or overarching, district-wide changes in food-related policies.

**RESULTS:** Thus far, few data exist to substantiate the concern that changes in nutrition standards in schools lead to a loss in total revenue. An interesting phenomenon of increased participation in the National School Lunch Program was noted in a number of reports and might play a role in buffering financial losses.

**CONCLUSIONS:** A renewed focus on school policies related to health provides the opportunity for researchers to investigate how nutrition-related policy change can affect, if at all, food service and overall school revenues.

**Keywords:** child and adolescent health; health policy; nutrition and diet; school funding.

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Health professionals play a key role in the development and implementation of health policy for children. One policy topic that has received considerable attention is the nutrition environment in schools, where great opportunity exists to teach nutrition principles and support education with provision of healthy foods. To capitalize on that opportunity, it is important for health professionals to be aware of the current state of the nutrition environment in American public schools and to be aware of opportunities for involvement. Under the federal Child Nutrition and WIC Reauthorization Act of 2004, local school districts receiving federal school meal reimbursement were required by the first day of school in 2006 to implement school wellness policies; these policies set goals for nutrition education and guidelines for all food sold on campus with the objective of reducing childhood obesity.<sup>1</sup> This has brought attention to the issue of nutrition in schools and provided an opportunity for health professionals, such as dietitians, school nurses, and other school personnel, to influence school food policy in the districts where they live and work.

While the wisdom of selling only healthful foods in schools may seem clear, local districts that have attempted to make these changes have reported a number of challenges. One of the most difficult obstacles is the fear that revenue from a la carte and vending items will drop, reducing profits (ie, overall revenue—expenses incurred), and creating a financial hardship for the district. Advocates argue that it is wrong to sell children unhealthy foods in order to subsidize their education. Education professionals and food service directors argue that the economic reality demands this additional revenue. Opinions are plentiful, but there are few data to guide policy decisions. The aim of the present review was to examine the available data on what happens financially when strong nutrition standards are applied to foods sold in schools and across districts. We consider first the current school food environment and then examine peer-reviewed research as well as publicly available data collected by states that address this question.

### **Competitive Foods: Revenue Versus Child Health**

Studies of the school food environment show that current offerings do not fully support a healthy diet in children and adolescents. Competitive foods are defined as foods sold at the same time as National School Lunch Program (NSLP) foods are available. While these foods sometimes include fruits and vegetables, they are more likely to be snacks high in fat, sugar, and salt, such as potato chips, cookies, and ice cream.<sup>2</sup> Reports on the school food environment in individual states have found that schools often sell competitive foods to their students that have little nutritional value.<sup>3-5</sup> The Government Accountability

Office (GAO) found that 9 of every 10 US public schools in 2003-2004 offered competitive foods to their students, noting that middle schools have significantly increased their sale of competitive foods in recent years.<sup>6</sup>

The GAO reported that almost 30% of public high schools earned more than \$125,000 from competitive food sales.<sup>6</sup> A separate GAO review of 6 large states' food service revenues from 1996 to 2001 found that food sales accounted for more than 40% of total food service revenue, whereas state funding supplied only 3% of revenues. In these schools, à la carte sales accounted for 43% of total food sales. In 2 of 6 states reviewed by the GAO (Ohio and Virginia), food sales provided more revenue to schools than federal reimbursement, which provided on average 53% of total revenues.<sup>7</sup>

While competitive foods may be earning schools needed revenue, the introduction of à la carte foods in middle school has been shown to significantly reduce the amount of fruit, vegetables, and milk that children consume at lunch while increasing consumption of sweetened drinks and high-fat vegetables.<sup>8,9</sup> Students in schools with policies that restrict access to foods high in fat and sugar have lower rates of consumption of these foods.<sup>10</sup> The picture is complicated, however, by the variety of factors that affect competitive food sales, such as eligibility rates for free or reduced-price meals, vending machine presence and contracts, open campus policies, time of lunch period, school size, and policies restricting fast food being brought into the lunch room.<sup>11</sup> Even so, school districts are beginning to address their impact on the obesity epidemic through the implementation of policies governing the types of competitive foods that can be sold on campus.<sup>12</sup> However, a sampling of 112 local wellness policies in 40 states implemented by the July 1, 2006, deadline found that only half met the minimal requirements of the federal mandate.<sup>13</sup>

In addition to federal legislation mandating local school district wellness policies, state legislatures are working to change the nutrition environment in schools at the state level. As of April 2006, legislatures in 28 states were considering bills addressing school nutrition.<sup>14</sup> Despite increased attention from policymakers, a review of state policies enacted through July 2006 found that only 16 states set nutritional requirements for foods sold outside of the school lunch program and only 20 states set limits on where and when foods may be sold outside of the school meal program.<sup>15</sup> State school nutrition policies enacted in 2006 include: expansion of existing nutritional guidelines for competitive foods sold in elementary and middle schools to high schools in Arizona, creation of minimal nutritional standards for all competitive foods sold in schools in Louisiana and Maine, sugar and calorie limitations on foods sold in vending machines in North Carolina,

**Table 1. Intervention Effects on Revenue and NSLP Participation**

Author (Year)	N	Change in Food Offerings	Change in Revenue	NSLP Participation
French et al. (1997)	2 intervention schools	Decrease in price of fruits and vegetables; use of promotions for reduced-price foods	No change in à la carte revenue	Not measured
French et al. (2001)	12 intervention schools	Low-fat snacks introduced into vending machines at reduced cost; promotions of low-fat options	No change in vending revenue	Not measured
French et al. (2004)	20 schools (10 control and 10 intervention)	Decrease in price for low-fat a la carte options; student-run promotions of low-fat foods	No change in à la carte revenue	Not measured
Wojcicki and Heyman (2006)	1 pilot school	Nutrient requirements for all foods sold in school and in fund-raisers; portion size limits	No changes in overall revenue	Increased participation
Arizona Pilot Report (2005)	8 intervention schools	No foods of minimal nutritional value sold during school day; nutrient requirements for all vending and à la carte options	No changes in overall revenue	Not reported
California Pilot Report (2005)	16 intervention schools	Nutrient requirements for all snack foods; portion size limits	Increases in revenue were noted at 3 of 5 sites and decreases were noted at 2 of 5 sites	Increased participation
Connecticut Pilot Report (2006)	5 intervention schools	Nutrient requirements for all snack foods; portion size limits	No changes in overall revenue	Increased participation

complete removal of beverages other than water and 100% fruit or vegetable juice from all schools in Connecticut, and the requirement that schools offer “healthier” beverage and snack alternatives in Indiana and Rhode Island. Connecticut’s law also includes an optional healthy snack program, where participating districts receive additional state funding. Additionally, Maryland and North Carolina enacted laws restricting when and where vending machines can operate in schools.<sup>15</sup>

**LITERATURE REVIEW**

Relevant literature was identified by performing literature searches in PubMed, PsycINFO, CINAHL, and the *Cochrane Systematic Literature Review* for the past 10 years. Key word searches included combinations of the terms such as “school,” “lunch,” “economics,” “cost,” “a la carte,” “competitive foods,” “participation,” and “revenue(s).” Other searches included reviewing “related articles” through PubMed links and references included in articles identified through original searches. In total, 121 publications were identified. Thirty-five articles were identified through PubMed, 60 through PsycINFO, 18 in CINAHL, and 8 through the *Cochrane Systematic Literature Review*.

Studies that tested effects of nutrition policy changes to à la carte and vending options were included if they met the following criteria: (1) assessments of NSLP participation were made or (2) food service or school revenues were assessed in association with nutrition policy changes. Additionally, state-based reports known to contain financial and NSLP assessments were also reviewed. Based on these inclusion criteria, a total of 4 peer-reviewed articles and 3 state reports were included in the present review (Table 1).

**Financial Impact of Policy Change**

School administrators have consistently expressed concerns that improving the nutritional quality of the competitive foods offered may negatively impact competitive food revenues. These revenues comprise a significant proportion of total food service revenues and in many cases provide discretionary funds for use throughout the school.<sup>6,7</sup> This question has been addressed empirically in the following peer-reviewed studies and state-based reports.

*Peer-Reviewed Studies.* Wojcicki and Heyman<sup>16</sup> conducted an analysis of the impact of nutrition policies implemented within the San Francisco, California, Unified School District in 2003. These strong policies included limits on portion sizes of various foods, nutrient requirements based on Recommended Dietary Allowances and the Dietary Guidelines for Americans,<sup>17</sup> and a variety of specific criteria dictating allowable beverages in schools.<sup>18</sup> These policies were implemented at the beginning of the 2003-2004 school year across the district and affected all foods served as part of federal food assistance programs; foods sold at snack bars, in vending machines, and in school stores; and foods sold in fund-raising efforts.<sup>16</sup>

The policies were first pilot tested within a single middle school in San Francisco during the 2002-2003 school year. Researchers collected data on participation rates in the NSLP and overall food-related revenue prior to and across the implementation school year for this school. Results showed that, with increased participation in the NSLP over the course of the year, revenue during May 2003 totaled more than \$2000 compared to the final month prior to implementation, during which the school lost about \$1000. Overall profit data were not available over the entire school year, but based on personal communication, the authors noted that revenue remained unaffected

over the course of the year despite the sweeping changes to food offerings.

At the time of publication, data for the district-wide implementation of nutrition policies were incomplete. Similar trends of increased participation in the NSLP were noted, and these results could not be explained by shifts in student enrollment in schools. Of the 40 middle and high schools for which data were collected, 67.5% had increased participation in the NSLP, 17.5% did not register a change in participation, and 15.0% had a decrease in participation.<sup>16</sup> Revenue data had not been calculated, but the majority of schools showed an average net loss of \$13,155 in a la carte sales. It is not known if these losses might have been offset by greater federal food assistance program participation.<sup>16</sup>

French et al have published a series of studies employing different strategies related to foods in schools.<sup>19-21</sup> The Trying Alternative Cafeteria Options in Schools study included 20 schools in a 2-year intervention. Schools were randomized into control (n = 10) and intervention (n = 10) groups, and changes in food availability were coupled with peer-based promotions for specific foods. In particular, lower fat à la carte offerings (those foods containing 5 g of fat or less per serving) were increased to 42% in intervention schools, and student groups were trained to promote lower fat food options to their peers through posters, taste tests, newspaper articles, and other activities. Results showed intervention schools had significantly higher average percentage of sales from lower fat foods (33.6%) compared to control schools (22.1%) after year 2 of the intervention. The authors indicated that the intervention and the presence of more lower fat options had no impact on overall food service revenue.<sup>20</sup>

Two earlier studies by French et al assessed the effects of reducing prices of healthier food options, such as low-fat snacks or fruits and vegetables.<sup>19,21</sup> In the first of these studies, fruit and vegetable à la carte options were lowered in price by 50% over a period of 3 weeks, and a variety of promotional strategies were employed to increase interest in the reduced-price foods. During the intervention period, sales of reduced-price produce items increased significantly, suggesting increased fruit and vegetable intake among students. Interestingly, this occurred without a significant change in total à la carte revenues.

Another study by French et al, called Changing Individuals' Purchase of Snacks, focused on vending machine fare.<sup>19</sup> The researchers introduced 2 rows of low-fat snacks (those containing 3 g of fat or less) in all vending machines of 12 schools within the Minneapolis-St Paul, Minnesota, area. In 4-week intervals, the prices and type of promotion of the low-fat snacks were changed. In one condition, the price of the low-fat snacks was reduced between 10% and 50%. The promotion condition included 3 levels: not

promoted, promoted with low-fat labels, or promoted with labels and signs encouraging purchase. Sales data from all vending machines were collected from the vending company's central database.

Consistent with previous research, price reductions resulted in significantly greater sales of low-fat snacks, with the greatest volume of sales occurring with a 50% price reduction.<sup>19</sup> Similarly, when low-fat snacks were promoted with labels and signs, sales also rose significantly. Importantly, no significant differences were noted in overall vending revenue with the changes in price or promotions, suggesting that low-priced healthier snack options have no impact on general sales in vending machines.

**State-Based Pilot Studies.** Results from nutrition policy pilot studies are now available from at least 3 states.<sup>22-24</sup> The Healthy Snack Pilot project, conducted by the State Department of Education in Connecticut, was implemented in 5 schools, including 2 elementary schools, 2 middle schools, and 1 high school.<sup>24</sup> Three additional schools from the same towns did not make any changes during the year and were used as comparison schools. The intervention schools changed all snack food offerings, in both vending and à la carte, to specific nutrient and portion size criteria.<sup>25</sup> For instance, snack foods could not contain more than 35% of calories from fat or 10% of calories from saturated fat. They were also required to contain less than equal to 35% of sugar by weight. Portion sizes for snacks and beverages were limited as well.

At the end of the year, the intervention schools reported increases in the number of students participating in the NSLP. Further, the Healthy Snack Pilot did not affect overall school revenue.<sup>24</sup> The researchers hypothesize that the increase in NSLP participation offset the decrease in revenue from à la carte and vending. Statistical analyses to test this hypothesis were not conducted due to the lack of randomization, the small sample size, and the fact that 2 of the intervention schools did not have comparison schools. Because these data represent only a 2-year period, the argument that changes in meal participation rates are due to fluctuations resulting from factors other than the intervention cannot be ruled out; however, the overall picture is encouraging.

The Department of Education in Arizona conducted a similar pilot study, although it allowed greater latitude for implementation within each of 8 intervention schools.<sup>22</sup> A School Environment Model Policy was provided to all participating schools. The policy mandated that foods offered during the normal school day meet the Dietary Guidelines for Americans (eg, foods could not contain more than 30% of calories from fat or 10% of calories from saturated fat) and no foods of minimal nutritional value could be sold during the normal school day. The policy covered foods sold within the school and as part of fund-raising

efforts.<sup>25</sup> Of the 8 schools, 3 made changes to vending options or time of operation, 3 made changes to à la carte or school store food offerings, 1 changed breakfast and lunch menu items to better conform to Dietary Guidelines, and 1 (in which no foods were sold other than those as part of the NSLP) began a program introducing a variety of novel fruits and vegetables to children with taste tests in the cafeteria and coordinated classroom lessons. Five of the 8 schools incorporated novel nutrition-related curriculum to support environmental changes as well.<sup>22</sup>

Financial data were gathered for 2 months before policy implementation and again for 4 months following implementation. Variables included a la carte and vending sales as well as overall food sales. No loss of revenue was found for 4 of the 6 schools where vending options were available prior to policy implementation, while the other 2 schools did report a loss in vending revenue. In 1 case, the losses likely were due to shutting off vending machines during meal times when previously this had not occurred. Despite the cases of vending machine revenue loss, all schools reported no overall food service revenue losses after making policy changes. Similarly, no net losses were recorded in any school making curriculum or other changes.

California carried out a similar pilot project using the nutrition standards that were included in state legislation.<sup>23</sup> These standards were similar to those found in other states: snack foods in vending machines or à la carte stations could not contain more than 35% of calories from fat, more than 10% of calories from saturated fat, or more than 35% of sugar by weight. There were also restrictions in the types and sizes of beverages sold. A 21-month pilot project implementing these criteria was conducted between January 2003 and September 2004 in 16 California middle and high schools.

Ten of the 16 schools reported on the fiscal impact of changes in nutrition policy. Eighty-one percent of the food service directors reported an increase in gross revenue after the nutrition standards were implemented compared to the previous school year. Within this group, 85% reported that this revenue increase occurred due to greater sales of reimbursable meals, even when decreases were noted in à la carte sales. Interestingly, the greatest increases in revenues came at those sites where à la carte foods were eliminated completely. Net income from food service increased between \$19,000 and \$133,000 in 3 of the 5 school districts that provided quantitative data. Two districts, however, reported net losses between \$6,000 and \$17,000.<sup>23</sup> The researchers attributed the net losses to increased labor costs and the expense of greater amounts of fruits and vegetables. Importantly, costs associated with provision of produce were essentially unrelated to the nutrition requirements delineated within state legislation; rather, they were related to

a separate initiative to promote use of California produce.<sup>23</sup>

## DISCUSSION

The collective results of these reports suggest 2 important points of discussion: (1) fears of net negative financial impact due to changes in food options and overall school nutrition are unfounded; to the contrary, available data suggest that most schools do not experience any overall losses of revenue. (2) In some schools, there was increased participation in the NSLP after the intervention, which might compensate for revenue losses in snack sales where they occurred. In addition to these data, anecdotal evidence has been compiled by the Centers for Disease Control and Prevention in their publication *Making it Happen: School Nutrition Success Stories*. These stories provide accounts of either no net losses or even net gains in school revenue after nutrition standards were put into place.<sup>26</sup>

Some limitations in the literature should be noted. Primarily, the state of the literature related to the financial impact of school nutrition policy changes is in its infancy. As such, no long-term controlled studies have been conducted, and it is impossible to guarantee that making major changes to nutrition policies within schools will not negatively impact overall food service profits. Similarly, researchers have focused on measures of revenue rather than profit, which might provide an incomplete picture of the financial impact of policy changes. For example, the increased sale of school meals generates revenue, but it comes with a cost that likely is higher than costs associated with vending machines. Changing or eliminating vending sales could, theoretically, reduce revenues without greatly reducing costs, while increasing sales of school meals might increase revenues while also increasing costs. This potentially could result in a reduction in total profits. Future studies should therefore take revenue and profit into account. Last, no studies have yet determined whether financial success of any policy or environmental change within schools continues over time and whether success depends on nonfinancial factors. Future research should examine the issue of whether there is increased participation in the NSLP when à la carte options are limited. It will also be important to track financial changes over time as societal attitudes about eating and nutrition, as well as the student body affected by nutrition policies, will change as well.

Another important question relates to implementation of nutrition policy changes. Little research has been conducted assessing the management of such changes by principals and food service directors. Survey data used to assess perceptions of food policies by principals and food service directors suggest a lack of communication between these groups in relation

to existence and enforcement of nutrition-related policies. In 1 such study, although nearly 40% of principals surveyed reported enforcement of an à la carte-related policy, only 15% of food service directors noted this as an enforced policy.<sup>11</sup> These results suggest the possibility that mismanagement or poor communication could affect the actual implementation of policy initiatives and, perhaps, concomitant revenue. Other nonfinancial barriers to successful environmental interventions could affect revenue in schools as well. These include mass marketing of unhealthy foods outside of schools sufficient to drive down demand of newly introduced healthier options;<sup>27</sup> teasing and bullying, which are related to unhealthy weight management behaviors;<sup>28-31</sup> lack of healthy culturally diverse food choices;<sup>28</sup> and time limitations for eating a full meal.<sup>31</sup> Further, the impact of socioeconomic status and grade level (ie, elementary, middle, and high school levels), as well as off-campus policies, should be assessed. As research commences on school wellness policies across the country, it will be imperative to incorporate financial analyses when school nutrition policies are implemented. Researchers should also consider nonfinancial factors that might play a role in the financial success, and perhaps continued implementation, of strong school nutrition policies.

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