

Food Research and Action Center

Issue Briefs for Child Nutrition Reauthorization | Number 5

June 2010

How Competitive Foods in Schools Impact Student Health, School Meal Programs, and Students from Low-Income Families

- Competitive foods – those foods and beverages available or sold outside of the federally-reimbursed school meals programs – are widely available in U.S. public schools and are largely exempt from federal nutrition standards and regulation. They are commonly sold in vending machines, cafeteria à la carte lines, school stores, and snack bars. Fundraisers, classroom parties, and student rewards also are major sources of such products.
- Competitive foods are often energy-dense, nutrient-poor items, and their availability at school undermines efforts to promote healthy diets and prevent obesity.
- Not only do the sales of competitive foods and beverages decrease participation in the school meal programs, but the sales are often subsidized by school meal reimbursements.
- The presence of competitive foods is especially harmful to children from low-income families in terms of nutrition quality, unnecessary cost, and the related peer pressure and stigma driving students to purchase competitive foods instead of eating the free or reduced-price school meals.
- **FRAC’s Recommendations:** The Child Nutrition Reauthorization Act should improve the school food environment by authorizing the U.S. Department of Agriculture (USDA) to establish nutrition standards for all foods and beverages sold in schools, granting the Secretary of Agriculture jurisdiction over all foods and beverages sold on school campuses throughout the school day, strengthening school wellness policy standards and enforcement to maximize their effectiveness in schools across the nation, prohibiting the use of federal meal reimbursements to subsidize competitive foods, and guaranteeing that students receiving free or reduced-price meals not be overtly identified.

Introduction

My teaching career began in a suburban high school where the lunchroom was a happy place. Posters advertising fruits, vegetables, and exercise covered the walls, and every day the kids could choose from a hot meal or the salad bar. The line for the salad bar was often longer than the pizza line. Few of the kids were overweight, even fewer were obese. I spent the next two years teaching at an inner-city high school where, as my friend Sarah put it, "half the girls in my Algebra class are too obese to fit in their desks." The cafeteria served hot meals, but fruits and vegetables were few and far between. Posters advertising cookies and pizza covered the walls. Instead of a salad bar, there was a slushy machine.

Excerpt from the *Huffington Post* article "Childhood Obesity Is a Social Justice Issue, Too"¹

Improving the dietary intake of our nation’s children is of critical importance given that one-third of school-age children are overweight or obese.² The school nutrition environment, including school meals and competitive foods, has appropriately received

FRAC
Campaign to End
Childhood Hunger
1875 Connecticut Avenue
NW, Suite 540
Washington, DC 20009
202.986.2200

great attention because children consume, on average, one-third of their daily caloric intake at school.³ This brief is part of a series of issue briefs about Child Nutrition Reauthorization from FRAC. The first brief in the series addressed school meal quality and access.⁴ The current brief focuses on competitive foods, which are widely available in schools, largely exempt from federal nutrition standards, and have a negative impact on the health and well-being of all students, especially students from low-income families.

Definition of Competitive Foods

Competitive foods are those foods and beverages available or sold outside of the federally-reimbursed school meals programs, often in à la carte lines, snack bars, student stores, vending machines, or through fundraisers, classroom parties, or student rewards.⁵ À la carte lines, typically operated in the school cafeteria during meal time, allow students to purchase individual items from the reimbursable school meal as well as other products for individual sale, such as pizza, French fries, and ice cream. À la carte lines are often separate from the school meal line, though some à la carte items are sold alongside the school meal in a single line.

Current USDA statutory authority to regulate competitive foods is extremely limited.

Current USDA statutory authority to regulate competitive foods is extremely limited.⁶ During school meal periods, foods of minimal nutritional value (FMNVs) are not allowed to be sold in food service areas, but may be sold anywhere else in the school at any time.⁷ FMNVs are defined as foods providing less than five percent of recommended intakes for eight key nutrients. Examples include carbonated soda, gum, hard candies, and jelly beans.⁸ Other competitive foods, including candy bars, chips, and ice cream, are not considered FMNVs (and therefore not under USDA authority) and may be sold in the cafeteria during meal periods. In short, unlike the federal school lunch and breakfast programs, competitive foods are, for the most part, exempt from federal nutrition standards and regulation.

The Child Nutrition Reauthorization Act of 2004 required all school districts receiving federal meal reimbursements to develop and implement school wellness policies by the 2006-2007 school year that, among other things, address standards for all foods in the school environment.⁹ As a result, many school districts have included guidelines for competitive foods that require healthier items in their wellness policies. Emerging research on school wellness policies has found mixed results, suggesting that more work needs to be done to strengthen and implement the policies.¹⁰

Availability and Characteristics of Competitive Foods in U.S. Schools

Competitive foods are widely available in U.S. schools: 73 percent of elementary schools, 97 percent of middle schools, and 100 percent of high schools have at least one source of competitive foods.

Based on USDA's third School Nutrition Dietary Assessment (SNDA-III),^a competitive foods are widely available in U.S. schools: 73 percent of elementary schools, 97 percent of middle schools, and 100 percent of high schools have at least one source of competitive foods.¹¹ À la carte lines and vending machines are the primary sources of competitive foods in most schools.¹² À la carte foods are available for sale during lunch in 64 percent of elementary schools, 90 percent of middle schools, and 92 percent of high schools.¹³ Vending machines are available in 27 percent of elementary schools, 87 percent of middle schools, and nearly all high schools.¹⁴ Over half of the vending machines in middle schools and over 80 percent of those in high schools are available in or near the cafeteria.¹⁵ While vending machines are not as common in elementary schools compared with secondary schools, school fundraisers and teacher rewards are key

^a SNDA-III, a nationally representative study, was conducted during the 2004-2005 school year, prior to the mandatory adoption of local wellness policies.

sources of competitive foods among those elementary school students who consume competitive foods.¹⁶

Given this widespread availability, about 40 percent of all students consume at least one competitive food on a typical school day, with higher consumption in secondary school than elementary school and more frequent consumption during lunch compared with other times during the school day or after school.¹⁷ A wide variety of competitive foods are available to students, including healthy options (e.g., low fat milk, water, 100 percent juice, fruits, vegetables) and less healthy options (e.g., candy, baked goods, salty snacks, fried potatoes).¹⁸ Unfortunately, a nationally representative study finds that the most commonly consumed competitive foods are the energy-dense, nutrient-poor items like cookies, cakes, brownies, candy, fruit and sports drinks, and carbonated soda.¹⁹ Less common competitive food purchases include fruit, 100 percent fruit juices, milk, and vegetables.²⁰

Impact of Competitive Foods on Student Health

Competitive foods – particularly those high in calories, fat, sugar, and salt – have a negative impact on students’ dietary quality and weight. In addition, the widespread availability of unhealthy competitive foods conveys a contradictory message to students about the importance of nutrition and health.

Dietary Quality

Because competitive foods are so often energy-dense and nutrient poor, a number of studies find a link between competitive food availability and poor dietary quality, including higher intake of calories, fat, high-fat vegetables (e.g., French fries, tater tots), and sugar-sweetened beverages, and lower intake of key nutrients (e.g., calcium, vitamin A), fruits, vegetables, and milk.^{21,22,23} Not surprisingly, a large national study finds that competitive foods provide a substantial number of “empty calories.” Children who consume competitive foods obtain an average of 177 calories a day (8 percent of total daily calorie intake) from energy-dense, low-nutrient competitive foods.²⁴ In contrast, students in schools that restrict unhealthy competitive food sales tend to have better diets, including lower consumption of energy-dense, low-nutrient foods.^{25,26,27,28}

Weight Status

Poor dietary intake from competitive foods has implications for obesity. An emerging body of research reveals an association with competitive food availability and increased body mass index (BMI), an indicator of excess body fat, especially for middle school students.^{29,30,31,32} For example, student BMI increases by 0.10 BMI units for each additional food practice permitted in a school (e.g., using food as a reward, classroom and school-wide fundraisers) based on a study of over 3,000 eighth-graders in Minnesota.³³ A nationally representative study also finds that the availability of low-nutrient, energy-dense foods in vending machines in or near the cafeteria is associated with higher BMI z-scores^b among middle school students.³⁴ These findings are consistent with the extensive literature on environmental influences on obesity.^{35,36,37}

Impact of Competitive Foods on School Meal Programs

According to the USDA, “competitive foods undermine the nutrition integrity of the [school meals programs] and discourage participation.”³⁸ In addition, there is evidence

A number of studies find a link between competitive food availability and poor dietary quality.

An emerging body of research reveals an association with competitive food availability and increased body mass index.

^b A BMI z-score is a standardized version of BMI that adjusts for a child’s age and gender.

that school meal revenues meant for nutritious food for children from low-income families are being used to subsidize competitive foods, as discussed below.

School Meals Participation

Research clearly shows that school meal participation improves children's dietary intake and can prevent obesity.^{39,40,41,42,43,44,45} However, sales of competitive foods lead to decreases in school meal participation.^{46,47} This means that fewer children consume meals at school that meet nutrition standards and have proven health benefits, and schools receive less cash and commodity support through the federal school meal programs.⁴⁸ And although school lunch participants are less likely to consume competitive foods at school than nonparticipants, there is evidence that students who consume both school lunch and competitive foods at lunch select smaller portions and waste more of the school lunch items, thereby decreasing their consumption of the essential nutrients provided by the school lunch.^{49,50} Fortunately, emerging research on school nutrition policies that restrict competitive foods shows the reverse can happen: schools with competitive food restrictions (e.g., parents and students cannot bring fast food into the school cafeteria) have seen higher participation rates in school meals.⁵¹

Sales of competitive foods lead to decreases in school meal participation.

School Meals Revenue

Another deep concern comes from two USDA cost surveys showing that healthy school meals are subsidizing competitive foods.^{52,53} In the 2005-2006 school year, the revenue from competitive food sales covered only 71 percent of the costs of providing such foods.⁵⁴ Part of federal reimbursable meal revenues were being used to cover these losses so that school food service authorities could break even overall.⁵⁵ In other words, federal funds to provide nutritious meals to school children from low-income families are covering the costs of competitive foods purchased by children with the resources to do so. Any school meal revenues from the federal programs should be used to improve the quality of the school meal programs, not to support the sale of competitive foods that are often of low nutritional quality and contribute to poor health outcomes.

Healthy school meals are subsidizing competitive foods.

Impact of Competitive Foods on Students from Low-Income Families

The sale of competitive foods is especially harmful for students from low-income families. If students from families with limited budgets eat less healthy competitive foods instead of a free or reduced-price school meal that meets nutrition standards, they lose out nutritionally in a much bigger way than their more affluent peers who make the same kind of choices, but are more likely to be able to obtain healthy foods in other ways. Moreover, the children from the low-income families will be spending their family's very limited resources on a poor food choice, rather than eating the healthier free or reduced-price meal.

If students from families with limited budgets eat less healthy competitive foods instead of a free or reduced-price school meal that meets nutrition standards, they lose out nutritionally in a much bigger way than their more affluent peers. The presence of competitive foods also creates peer pressure and stigma for children from low-income families.

The presence of competitive foods also creates peer pressure and stigma for children from low-income families.^{56,57} Peers notice who chooses the school meals rather than purchasing vending machine or à la carte items, and peers notice who is and is not buying candy or other products from the snack cart or the school fundraiser. Children from low-income families must choose between spending money they can ill afford, in order to be seen as "one of the group," or singling themselves out by forgoing competitive foods. And in cases where competitive foods are sold in locations different from the school meal line (e.g., separate à la carte line, vending machine outside of the cafeteria), there is a clear separation between school meal participants (often children from low-income families) and non-participants (often children from higher-income families). This raises concerns over the overt identification of students receiving free or

reduced-price meals and the perception that school meals are only for poor children rather than for all children.^{58,59}

The following excerpt from an article in the *New York Times* captures a sense of the struggles that students from low-income families, especially older students, face in schools offering competitive foods.

Although Francisco Velazquez, a 14-year-old freshman with spiky hair and sunglasses, qualifies for a free lunch at Balboa High School here [in San Francisco], he was not eating. He scanned the picnic table full of his friends in a school courtyard one day a few weeks ago, and said, "I'm not hungry." On another day, a group of classmates who also qualify for federally subsidized lunches sat on a bench. One ate a slice of pizza from the line where students pay for food; the rest went without. Lunchtime "is the best time to impress your peers," said Lewis Geist, a senior at Balboa and its student body president. Being seen with a subsidized meal, he said, "lowers your status."... Many districts have a dual system like the one at Balboa: one line, in the cafeteria, for government-subsidized meals (also available to students who pay) and another line for mostly snacks and fast-food for students with cash, in another room, down the hall and around the corner.... "Anywhere you sell a la carte foods, that automatically means kids who can't afford to purchase them are being identified," said Kate Adamick, a lawyer, chef and food systems consultant based in New York.⁶⁰

Concerns about Restricting Competitive Foods

Given the unfavorable impacts of competitive foods on student health and well-being, restrictions on competitive food sales and availability have been proposed at all levels of government. There are concerns that restrictions might have unintended negative consequences: loss of revenue from competitive food sales; student preoccupation with body weight; and a compensatory increase in junk food consumption by students at home. The evidence, however, does not substantiate such concerns.

There is evidence that competitive foods do generate revenues for schools to support food service operations and student activities – hence the concern over financial losses with the implementation of stronger standards.⁶¹ (But as mentioned, schools use school meal revenue to subsidize competitive foods, calling into question the significance of competitive foods as a funding source.) A recent review of the literature finds that the vast majority of schools that improve the nutritional quality of competitive food offerings do not experience subsequent losses in total revenue – with the compensating revenues coming most likely as a result of increased participation in the National School Lunch Program.⁶² In fact, a federal report describing 32 case studies of schools and school districts concludes that students will purchase and consume healthier competitive foods and beverages when made available, and many schools even report increases in revenue when making such changes.⁶³

While financial losses receive the most attention in policy debates about competitive foods, there also are concerns that well-intentioned school nutrition policies restricting unhealthy foods will result in undesirable dietary behaviors, including an unhealthy preoccupation with body weight and overconsumption of junk foods outside of school. While the research is just emerging on this issue, a recent study finds no evidence of a compensatory increase in the consumption of snack foods at home and no evidence for

A recent review of the literature finds that the vast majority of schools that improve the nutritional quality of competitive food offerings do not experience subsequent losses in total revenue – with the compensating revenues coming most likely as a result of increased participation in the National School Lunch Program.

an increase in body dissatisfaction or weight concerns when unhealthy competitive foods and beverages are removed from schools and replaced with healthier items.⁶⁴

Current Progress in Improving Competitive Foods

As a result of the local school wellness policy mandate in the Child Nutrition Reauthorization Act of 2004, many schools have improved the nutritional quality of foods available in schools and even experienced desirable behavioral outcomes. Preliminary research, however, shows that there is still great room for improvement.

Many schools have improved the nutritional quality of foods available in schools and even experienced desirable behavioral outcomes. Preliminary research, however, shows that there is still great room for improvement.

- Between 2004 and 2009, the number of states with nutritional standards for competitive foods in schools increased from six to 27.⁶⁵
- Based on the most comprehensive review of the wellness policies to date, Bridging the Gap research found that the majority of U.S. school districts developed a wellness policy by the 2006-2007 school year, as required by law.⁶⁶ Unfortunately, many policies were weak and inconsistent with regards to specific action, enforcement, evaluation, and policy revision strategies (e.g., policies used “try” rather than “will” in plans), possibly because of lack of resources (e.g., time, labor).⁶⁷ And yet the federal mandate has strengthened school nutrition standards, including an increase in competitive food restrictions, which positively influences student health and school meal participation.⁶⁸
- The proportion of secondary schools not allowing students to purchase soda or fruit drinks from vending machines, stores, canteens, or snack bars increased between 2006 (median of 38 percent) and 2008 (median of 63 percent) in all 34 states participating in a recent study by the Centers for Disease Control and Prevention, yet the proportion ranged widely by state in 2008 from 26 percent (Utah) to 93 percent (Connecticut).⁶⁹ Similarly, the proportion of states with secondary schools not allowing high-fat candy or salty snack purchases increased overall between 2006 and 2008, but ranged from 18 percent (Utah) to 88 percent (Hawaii) in 2008.⁷⁰

Child Nutrition Reauthorization Recommendations

The reauthorization of the child nutrition programs provides an opportunity to make much-needed improvements to the school food environment, especially with regards to competitive foods. To this end, FRAC recommends that the Child Nutrition Reauthorization Act:

- **Authorize USDA to establish nutrition standards for all foods and beverages sold in schools** to assure that they contribute to the health and well-being of children and are consistent with the Dietary Guidelines. As detailed in this brief, many of the foods currently available and sold in schools are largely exempt from federal nutrition standards and do not contribute to the health and well-being of children. Instead, they negatively impact the food choices they make today and will make in the future. As the Institute of Medicine explained in its report, *Nutrition Standards for Foods in Schools*, “schools contribute to current and lifelong health and dietary patterns and are uniquely positioned to model and reinforce healthful eating behaviors in partnership with parents, teachers, and the broader community.”⁷¹ USDA should implement nutrition standards for all foods and beverages offered at school, including clear policies, technical and financial support, and a monitoring, enforcement, and evaluation program.
- **Grant the Secretary of Agriculture jurisdiction over all foods and beverages sold on school campuses, throughout the school day.** USDA currently regulates the school meals programs, but has limited authority over when and where

About this series

Issue Briefs for Child Nutrition Reauthorization will explore various aspects of the child nutrition programs as Congress considers reauthorization. To learn more, visit FRAC's website (www.frac.org).

This brief was written by FRAC Senior Nutrition Policy Analyst Heather Hartline-Grafton, DrPH, RD.

Primary funding for this brief came from the California Endowment and the Robert Wood Johnson Foundation.

competitive foods can be offered in schools. USDA regulation of all foods sold on school campuses will enhance children's health while strengthening the school meals programs.

- **Strengthen school wellness policy standards and enforcement to maximize their effectiveness in schools across the nation.** This brief addresses some of the limitations of current school wellness policies. To assure accountability and effectiveness, local educational agencies must establish a permanent school wellness committee, include on-going opportunities for public input, open public access to the wellness policy, and designate a school official responsible for compliance with the policy. Compliance with the school wellness policies should be measured and publicly reported. State and local agencies also should receive ongoing support, technical assistance, and education materials including best practices and model school wellness standards.
- **Prohibit the use of federal meal reimbursements to subsidize competitive foods.** Research shows that federal meal reimbursements meant for nutritious food for children from low-income families are being used to cover the losses associated with providing competitive foods. School meal reimbursements and revenues should be used to improve the quality of the school meals programs, not to support the sale of unhealthy competitive foods. School food programs should be required to track and allocate only their food costs between reimbursable meals and à la carte items, a simpler approach than full-cost accounting.
- **Guarantee that students receiving free or reduced-price meals not be overtly identified.** Federal law requires schools to protect the identity of students receiving free or reduced-price meals. Competitive foods, however, raise concerns about the overt identification of students, especially when there is a clear separation between school meal participants and non-participants in the cafeteria. Federal and state review requirements should be revised to include a focused evaluation and enforcement of state and local agencies' responsibilities to protect student identity, otherwise students in great need might be reluctant to participate in the school meals programs out of fear of being stigmatized as poor.

References

- ¹ Tipler, E. (2010, March 30). Childhood obesity is a social justice issue, too. *Huffington Post*.
- ² Ogden, C. L., Carroll, M. D., Curtin, L. R., Lamb, M. M., & Flegal, K. M. (2010). Prevalence of high body mass index in US children and adolescents, 2007-2008. *Journal of the American Medical Association*, 303(2), 519-527.
- ³ Briefel, R. R., Wilson, A., & Gleason, P. M. (2009). Consumption of low-nutrient, energy-dense foods and beverages at school, home, and other locations among school lunch participants and nonparticipants. *Journal of the American Dietetic Association*, 109(2 Supplement 1), S79-S90.
- ⁴ Hartline-Grafton, H. (2010). How improving federal nutrition program access and quality work together to reduce hunger and promote healthy eating. *Issue Briefs for Child Nutrition Reauthorization*, 1. Washington, DC: Food Research and Action Center. Available at: http://www.frac.org/pdf/CNR01_qualityandaccess.pdf. Accessed April 8, 2010.
- ⁵ Institute of Medicine. (2007). *Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth*. Washington, DC: The National Academies Press.
- ⁶ Institute of Medicine, 2007.
- ⁷ 7 CFR 210.11.
- ⁸ 7 CFR 210.11.
- ⁹ Child Nutrition and WIC Reauthorization Act of 2004. Public Law 108-265. June 30, 2004. 118 Stat. 729. Available at: http://www.fns.usda.gov/cnd/Governance/Legislation/Historical/PL_108-265.pdf. Accessed April 6, 2010.
- ¹⁰ Belansky, E., Chriqui, J. F., & Schwartz, M. B. (2009). Local school wellness policies: how are schools implementing the congressional mandate? *Robert Wood Johnson Foundation Research Brief*. Available at: <http://www.rwjf.org/files/research/20090708localwellness.pdf>. Accessed April 7, 2010.
- ¹¹ Fox, M. K., Gordon, A., Nogales, R., & Wilson, A. (2009a). Availability and consumption of competitive foods in US public schools. *Journal of the American Dietetic Association*, 109(2 Supplement 1), S57-S66.
- ¹² Fox et al., 2009a.
- ¹³ Fox et al., 2009a.
- ¹⁴ Fox et al., 2009a.
- ¹⁵ Fox et al., 2009a.
- ¹⁶ Fox et al., 2009a.
- ¹⁷ Fox et al., 2009a.
- ¹⁸ Gordon, A., Crepinsek, M. K., Nogales, R., & Condon, E. (2007). *School Nutrition Dietary Assessment Study-III, Vol. I: School Foodservice, School Food Environment, and Meals Offered and Served*. Report No. CN-07-SNDA-III. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, Office of Research, Nutrition and Analysis.
- ¹⁹ Fox et al., 2009a.
- ²⁰ Fox et al., 2009a.
- ²¹ Templeton, S. B., Marlette, M. A., & Panemangalore, M. (2005). Competitive foods increase the intake of energy and decrease the intake of certain nutrients by adolescents consuming school lunch. *Journal of the American Dietetic Association*, 105(2), 215-220.
- ²² Cullen, K. W. & Zakeri, I. (2004). Fruits, vegetables, milk, and sweetened beverages consumption and access to à la carte/snack bar meals at school. *American Journal of Public Health*, 94(3), 463-467.
- ²³ Kubik, M. Y., Lytle, L. A., Hannan, P. J., Perry, C. L., & Story, M. (2003). The association of the school food environment with dietary behaviors of young adolescents. *American Journal of Public Health*, 93(7), 1168-1173.
- ²⁴ Fox et al., 2009a.
- ²⁵ Briefel, R. R., Crepinsek, M. K., Cabili, C., Wilson, A., & Gleason, P. M. (2009). School food environments and practices affect dietary behaviors of US public school children. *Journal of the American Dietetic Association*, 109(2 Supplement 1), S91-S107.
- ²⁶ Jones, S. J., Gonzalez, W., & Frongillo, E. A. (2010). Policies that restrict sweetened beverage availability may reduce consumption in elementary-school children. *Public Health Nutrition*, 13(4), 589-595.
- ²⁷ Gonzalez, W., Jones, S. J., & Frongillo, E. A. (2009). Restricting snacks in U.S. elementary schools is associated with higher frequency of fruit and vegetable consumption. *Journal of Nutrition*, 139(1), 142-144.
- ²⁸ Neumark-Sztainer, D., French, S. A., Hannan, P. J., Story, M., & Fulkerson, J. A. (2005). School lunch and snacking patterns among high school students: associations with school food environment and policies. *International Journal of Behavioral Nutrition and Physical Activity*, 2(1), 14.
- ²⁹ Kubik, M. Y., Lytle, L. A., & Story, M. (2005). Schoolwide food practices are associated with body mass index in middle school students. *Archives of Pediatrics and Adolescent Medicine*, 159(12), 1111-1114.
- ³⁰ Anderson, P. M. & Butcher, K. F. (2006). Reading, writing, and refreshments: are school finances contributing to children's obesity? *Journal of Human Resources*, 41(3), 467-494.
- ³¹ Fox, M. K., Dodd, A. H., Wilson, A., & Gleason, P. M. (2009b). Association between school food environment and practices and body mass index of US public school children. *Journal of the American Dietetic Association*, 109(2 Supplement 1), S108-S117.
- ³² Terry-McElrath, Y. M., O'Malley, P. M., Delva, J., & Johnston, L. D. (2009). The school food environment and student body mass index and food consumption: 2004 to 2007 national data. *Journal of Adolescent Health*, 45(3 Supplement), S45-S56.
- ³³ Kubik et al., 2005.
- ³⁴ Fox et al., 2009b.
- ³⁵ French, S. A., Story, M., & Jeffery, R. W. (2001). Environmental influences on eating and physical activity. *Annual Review of Public Health*, 22, 309-335.
- ³⁶ Larson, N. I., Story, M. T., & Nelson, M. C. (2009). Neighborhood environments: disparities in access to healthy foods in the U.S. *American Journal of Preventive Medicine*, 36(1), 74-81.
- ³⁷ Sallis, J. F. & Glanz, K. (2009). Physical activity and food environments: solutions to the obesity epidemic. *Milbank Quarterly*, 87(1), 123-154.
- ³⁸ U.S. Department of Agriculture. (2001). *Foods Sold in Competition with USDA School Meal Programs: A Report to Congress*. Available at: http://www.cspinet.org/nutritionpolicy/Foods_Sold_in_Competition_with_USDA_School_Meal_Programs.pdf. Accessed April 8, 2010.
- ³⁹ Basiotis, P. P., Lino, M., & Anand, R. S. (1999). Eating breakfast greatly improves schoolchildren's diet quality. *Nutrition Insight*, 15. Alexandria, VA: U.S. Department of Agriculture, Center for Nutrition Policy and Promotion.
- ⁴⁰ Clark, M. A. & Fox, M. K. (2009). Nutritional quality of the diets of U.S. public school children and the role of the school meal programs. *Journal of the American Dietetic Association*, 109(2 Supplement 1), S44-S56.
- ⁴¹ Condon, E. M., Crepinsek, M. K., & Fox, M. K. (2009). School meals: types of foods offered to and consumed by children at lunch and breakfast. *Journal of the American Dietetic Association*, 109(2 Supplement 1), S67-S78.

- ⁴² Gleason, P. M. & Dodd, A. H. (2009). School breakfast program but not school lunch program participation is associated with lower body mass index. *Journal of the American Dietetic Association*, 109(2 Supplement 1), S118-S128.
- ⁴³ Jones, S. J., Jahns, L., Laraia, B. A., & Haughton, B. (2003). Lower risk of overweight in school-aged food insecure girls who participate in food assistance: results from the Panel Study of Income Dynamics Child Development Supplement. *Archives of Pediatric and Adolescent Medicine*, 157(8), 780-784.
- ⁴⁴ Kimbro, R. T. & Rigby, E. (2010). Federal food policy and childhood obesity: a solution or part of the problem? *Health Affairs*, 29(3), 411-418.
- ⁴⁵ Hartline-Grafton, 2010.
- ⁴⁶ U.S. Department of Agriculture, 2001.
- ⁴⁷ Fox, M. K., Crepinsek, M. K., Connor, P. & Battaglia, M. (2001). *School Nutrition Dietary Assessment Study-II: Summary of Findings*. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition and Evaluation.
- ⁴⁸ U.S. Department of Agriculture, 2001.
- ⁴⁹ Fox et al., 2009a.
- ⁵⁰ Templeton et al., 2005.
- ⁵¹ Probart, C., McDonnell, E., Hartman, T., Weirich, J. E., & Bailey-Davis, L. (2006). Factors associated with the offering and sale of competitive foods and school lunch participation. *Journal of the American Dietetic Association*, 106(2), 242-247.
- ⁵² Glantz, F. B., Logan, C., Weiner, H. M., Battaglia, M., & Gorowitz, E. (1994). *School Lunch and Breakfast Cost Study, Summary of Findings*. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis and Evaluation.
- ⁵³ Bartlett, S., Glantz, F., & Logan, C. (2008). *School Lunch and Breakfast Cost Study-II: Final Report*. Report No. CN-08-MCII. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service, Office of Research, Nutrition and Analysis.
- ⁵⁴ Bartlett et al., 2008.
- ⁵⁵ Bartlett et al., 2008.
- ⁵⁶ U.S. Department of Agriculture, 2001.
- ⁵⁷ Stein, K. (2008). Erasing the stigma of subsidized school meals. *Journal of the American Dietetic Association*, 108(12), 1980-1983.
- ⁵⁸ U.S. Department of Agriculture, 2001.
- ⁵⁹ Stein, 2008.
- ⁶⁰ Pogash, C. (2008, March 1). Free lunch isn't cool, so some students go hungry. *New York Times*.
- ⁶¹ Government Accountability Office. (2005). *School Meal Programs: Competitive Foods Are Widely Available and Generate Substantial Revenues for Schools*. Report No. GAO-05-563. Washington, DC: Government Accountability Office.
- ⁶² Wharton, C. M., Long, M., & Schwartz, M. B. (2008). Changing nutrition standards in schools: the emerging impact on school revenue. *Journal of School Health*, 78(5), 245-251.
- ⁶³ U.S. Department of Agriculture, Food and Nutrition Service; U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; and U.S. Department of Education. (2005). *Making It Happen! School Nutrition Success Stories*. FNS-374. Available at: <http://www.fns.usda.gov/TN/Resources/makingithappen.html>. Accessed August 24, 2009.
- ⁶⁴ Schwartz, M. B., Novak, S. A., & Fiore, S. S. (2009). The impact of removing snacks of low nutritional value from middle schools. *Health Education and Behavior*, 36(6), 999-1011.
- ⁶⁵ Trust for America's Health. (2009). *F as in Fat 2009: How Obesity Policies are Failing in America*. Washington, DC: Trust for America's Health.
- ⁶⁶ Belansky et al., 2009.
- ⁶⁷ Belansky et al., 2009.
- ⁶⁸ Belansky et al., 2009.
- ⁶⁹ Brener, N., O'Toole, T., Kann, L., Lowry, R., & Wechsler, H. (2009). Availability of less nutritious snack foods and beverages in secondary schools - selected States, 2002-2008. *Morbidity and Mortality Weekly Report*, 58(39), 1102-1104.
- ⁷⁰ Brener et al., 2009.
- ⁷¹ Institute of Medicine, 2007.