

School Foods Sold Outside of Meals (Competitive Foods)

Healthy Eating Research

Building evidence to prevent
childhood obesity

A Research Brief, May 2007

The school food environment can have a large impact on children's and adolescents' dietary intake because up to 50 percent of total daily energy intake can be consumed at school.¹ Foods and beverages at school are typically available through the formal school breakfast and lunch programs and through foods and beverages sold outside of the federal school lunch and breakfast programs in venues such as vending machines, a la carte offerings in the cafeteria, snack bars, school stores and fundraisers. While school breakfasts and lunches must meet federal nutrition standards to receive federal subsidies, foods sold outside of those programs are largely exempt from such requirements. However, state and local authorities can impose additional restrictions. In response to concerns over rising rates of childhood obesity, there has been increasing attention focused on the need to establish school nutrition standards and restrict or limit access to low-nutrition, high-calorie competitive foods and beverages. The purpose of this research brief is to present an overview of the research on foods sold outside of the federal meal programs.

What are competitive foods?

The term "competitive foods" refers to all foods and beverages available or sold in schools with the exception of items served through the national school lunch and breakfast programs. They are called competitive foods because they compete with the nutritionally regulated school meal program. Parents and children don't think of them as competitive foods; to them these foods are "snacks and drinks" purchased outside of the regular meals provided by the school. This research brief will use the terms "competitive foods" and "snacks and drinks" to mean the same thing (i.e., foods sold outside of meals).

Federally reimbursable school breakfast and lunch programs must adhere to standards requiring lunches to provide one-third and breakfasts to provide one-fourth of the Recommended Dietary Allowances (RDA) for protein, vitamin A, vitamin C, iron, calcium and calories. In addition, these meals must meet the Dietary Guidelines for Americans and, therefore, must provide no more than 30 percent of calories from fat and less than 10 percent of calories from saturated fat. But snacks and drinks sold beyond these programs are not required to meet any such standards.²

The legal authority of the U.S. Department of Agriculture (USDA) to regulate competitive foods is very limited. Regulations limit only the sale of foods of minimal nutritional value (FMNV).²



- FMNV are defined in federal regulations as having less than 5 percent of the RDA per serving for eight key nutrients and include soft drinks, water ices, chewing gum and certain candies.² FMNV cannot be sold in foodservice areas during meal periods but may be sold anywhere else in a school at any time.
- All other competitive foods (e.g., chips, ice cream, cookies) offered for individual sale are not under USDA authority. Starting with the 2006-2007 school year, every school participating in the federal meals programs is required by law to have a wellness policy that includes nutrition guidelines for competitive foods. However, this law does not require that schools make their guidelines more restrictive than current USDA policy.³



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What is the current research on the availability, nutritional content and impact of snacks and drinks in elementary, middle and high schools?

Availability

The availability of competitive foods in U.S. schools has been increasing. A 2003-2004 nationally representative study found nearly nine out of 10 schools sell competitive foods. Availability is greatest in high schools and middle schools, but access is common at all school levels through different venues, including a la carte lines, vending machines, snack bars and student stores.⁴

These venues often sell competitive foods in or near the foodservice area. Nearly all schools with a la carte programs (94 percent) sell snacks and drinks in the cafeteria during the lunch period. Among schools with vending machines or a school store, one-half sell competitive foods in or near the cafeteria, and one-third allow students to make purchases during the lunch period.⁴

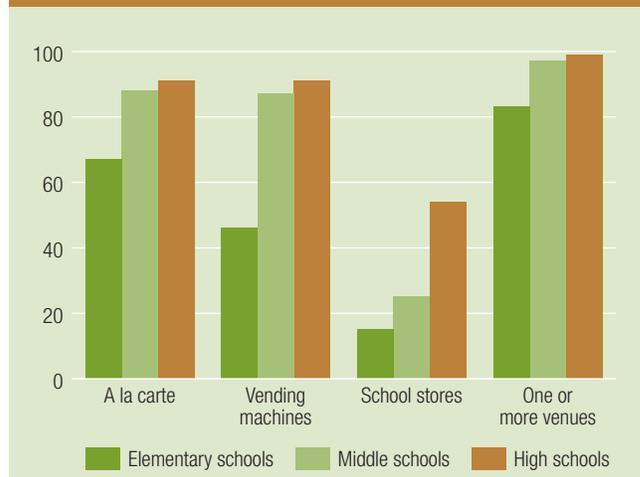
Schools with snack or beverage vending often have several machines located throughout the campus. A national survey found that the number of machines in schools ranged from 1 to 25. In general, secondary schools had more machines than elementary schools, and schools operated more beverage than snack vending machines.⁴

Soft drinks and other beverages sold in vending machines are often provided under an exclusive beverage contract. In 2003-2004, nearly 75 percent of high schools, 65 percent of middle schools, and 30 percent of elementary schools had exclusive beverage contracts. Such contracts, which grant a company the exclusive right to sell beverages in a school, may provide incentives to schools based on the amount of beverages students consume.⁴⁻⁶

Three soft-drink companies that control more than 90 percent of school beverage sales announced in May 2006 voluntary guidelines to limit portion sizes and reduce the number of calories available to school children during the school day.⁷ Under the agreement, to be implemented fully by the year 2009, companies will sell only water, low-calorie drinks (e.g., diet soda), 100 percent juices, sports drinks and low-fat milk to schools. The agreement specifies that only water, juices and milk will be sold in elementary schools and middle schools. In high schools, sports drinks and diet sodas would be permitted. Portion sizes sold will be limited to eight ounces in elementary schools, 10 ounces in middle schools, and 12 ounces in high schools.

In addition to selling competitive foods in school stores, vending machines and a la carte, 40 percent of schools allow on-campus fundraisers to sell competitive foods such as chocolate bars and other candy.⁴

Percentage of elementary, middle and high schools with competitive food venues



Reference 4

Currently, few schools have policies to regulate sales of competitive foods. A 2004 survey of the largest school district in every state and Washington, D.C., found only 39 percent had policies restricting sales. The majority of policies prohibited the sale of soft drinks in schools (63 percent) and had criteria for the nutritional content of foods and beverages (74 percent). However, no policies restricted the foods sold for fundraising after school or concession sales. Only 32 percent of policies recommended monitoring for compliance, and a mere 10 percent included consequences for non-compliance.⁸

Nutritional content

A wide variety of snacks and drinks are available in schools, from nutrient-dense items such as low-fat milk, vegetables and fruit to less healthful choices such as potato chips and high-fat desserts. Although most schools that sell competitive foods offer some nutritious food and beverage options, less nutritious alternatives are also common.

The quantity and variety of foods and beverages high in sugar, salt and fat that are available in middle and high schools tend to be greater than what is offered in elementary schools. Salty snacks, sweet baked goods, sugared soft drinks and candy are available in at least one-third of secondary schools that offer competitive foods, but in less than one-third of such elementary schools.⁴

Nearly all middle schools (88 percent) and high schools (91 percent) offer competitive foods a la carte. A la carte programs may offer students the opportunity to purchase individual components of a reimbursable school meal or other items offered strictly for individual purchases.⁴

- Although many types of foods commonly available through a la carte programs are nutritious (e.g., fruit and low-fat milk), the availability of a large number of high-fat foods through such venues also has been documented.
- One study describing the food environment in 20 Minnesota secondary schools found that only one-third of the foods available met the lower-fat criterion of 5 or less fat grams per serving. Fruits and vegetables represented less than 5 percent of the items offered.⁹

The proportion of middle schools (87 percent) and high schools (91 percent) that offer competitive foods through vending machines is high, and the types of food available through this venue are often of low nutritional quality. One study that surveyed the contents of 1,420 vending machines in 251 urban and rural secondary schools around the country observed that the most prevalent options available are soft drinks, fruit drinks containing less than 100-percent juice, candy, chips, cookies and snack cakes.¹⁰

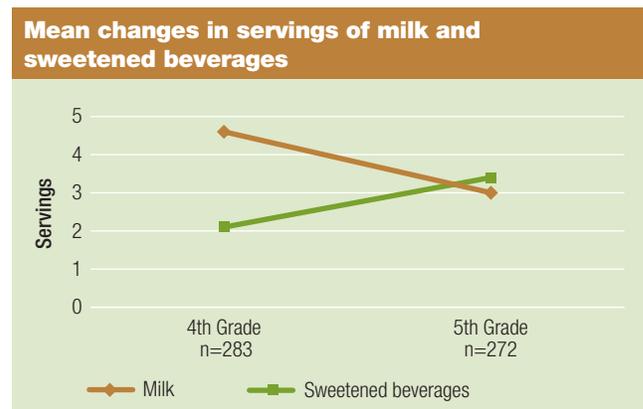
- In this study, 70 percent of the beverage options available were high in sugar, such as soft drinks, fruit drinks, iced tea and sports drinks. Only 12 percent of the beverage slots were for water, and only 5 percent were for milk. The majority (57 percent) of the milks offered were not low in fat.¹⁰
- The proportion of snack slots offering nutritious choices was similarly low. Less than 1 percent of snack slots contained a fruit or vegetable, and only 7 percent of slots contained a fruit drink with more than 50 percent real juice. The highest proportion of slots were filled by candy (42 percent), chips (25 percent) and sweet baked goods (13 percent).

Fast-food use among young people is a particular concern, as frequent consumption has been related to weight gain and higher intakes of energy, total fat, saturated fat and sodium.¹¹⁻¹³

- At least one study has indicated that fast-food restaurants tend to cluster in areas within walking distance of schools.¹⁴ These restaurants are located conveniently for students who may be looking for a low-cost breakfast on the way to school or for a snack on the way home.
- Surveys indicate that many secondary schools also have contracts with fast-food vendors to sell brand name products from restaurants such as Taco Bell and Domino's Pizza in their own cafeteria or foodservice area.^{8, 15}

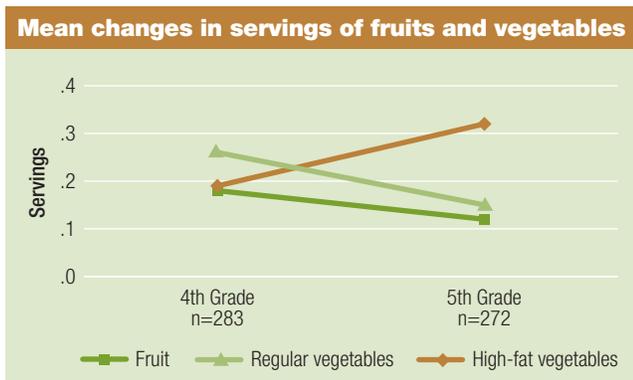
Impact

At least four studies have related the availability of snacks and drinks sold in schools to higher intakes of total energy (kcalories), soft drinks, total fat and saturated fat, and lower intakes of key nutrients (e.g., calcium, vitamin A), fruits, vegetables and milk.¹⁶⁻¹⁹



Reference 17

- One longitudinal study among 594 fourth- and fifth-grade students showed that, as fourth-grade students transitioned from elementary school to middle school and gained access to school snack bars at lunch, they decreased their consumption of fruits by 33 percent, regular (not fried) vegetables by 42 percent and milk by 35 percent. The study also found that students gaining access to snack bars increased their consumption of sweetened beverages (e.g., soft drinks) and high-fat vegetables (e.g., french fries and tater tots).¹⁷



Reference 17

- Another study among 598 seventh-graders in 16 Minnesota schools similarly found the availability of a la carte programs and snack food vending to be associated with lower intakes of fruits and vegetables. In addition, this study reported a la carte availability was positively associated with intakes of total and saturated fat.¹⁸

Other research has further demonstrated the impact of school food policies and practices on students' food choices and weight status.

- A cross-sectional study among 1088 high school students from 20 schools observed that school food policies that limit access to foods high in fats and sugars are related to less frequent student purchases of these foods at school. For example, in schools where soft drink machines were turned off during the lunch period, students purchased 0.5 fewer soft drinks per week compared with student purchases in schools where soft drink machines were left on during lunch.²⁰

- Researchers also have related the number of food practices (e.g., the use of food as incentives and rewards) permitted by a school to higher body mass index (BMI) in secondary students. In a study among 3088 eighth-graders, students' BMIs increased by 0.10 BMI units for every additional food practice permitted in their school. The results of this study suggest that regular exposure to common school food practices increases risk for weight gain among students.²¹

Schoolwide Food Practices Associated with Body Mass Index

1. Students are allowed to have food in the classroom.
2. Students are allowed to have beverages in the classroom.
3. Students are allowed to have snacks in the hallways.
4. Students are allowed to have beverages in the hallways.
5. Food and beverage coupons are used as rewards or incentives for students.
6. Food sales are used for classroom fundraising.
7. Food sales are used for schoolwide fundraising.

Reference 21

What is the current research on evaluating programs or policies to improve the school food environment?

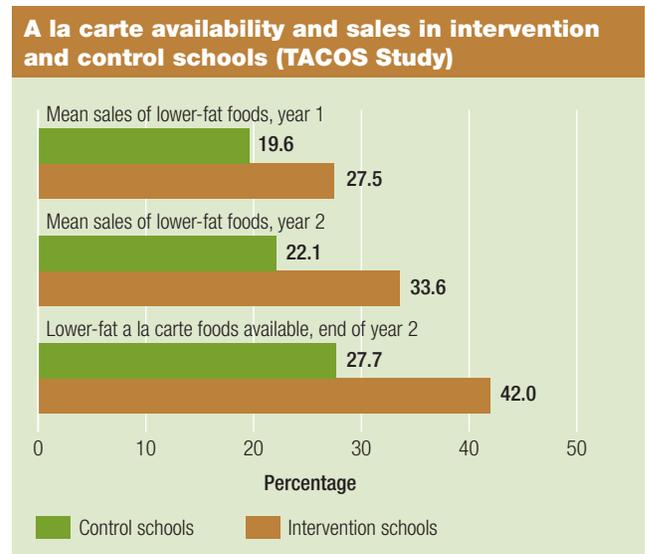
Intervention research relating to sales of school snacks and drinks has tended to focus on environmental strategies for improving the nutritional quality of students' food choices.²²⁻²⁷

The majority of these studies indicate that interventions designed to improve the school nutrition environment are feasible and effective and may be implemented without reducing school revenues. Three studies have reported that competitive pricing and promotions can lead to increases in student purchases of fruits, vegetables and low-fat foods.²⁴⁻²⁷ A single study that evaluated a policy requiring school snack bars to offer only individual portions of foods and beverages also has demonstrated that changes in school food policies could produce reductions in energy intake and potentially reduce excess weight gain over time.²²

Few multicomponent research studies have intervened on competitive food choices in schools.^{24, 28} However, the available evidence suggests that the greatest gains in student consumption of nutritious foods and beverages are achieved when multiple strategies are combined to promote healthy choices.

- An evaluation of the Teens Eating for Energy and Nutrition at School (TEENS) program showed that students in the seventh and eighth grades who were exposed to the most program components had higher intakes of fruits, vegetables and other nutritious low-fat foods when compared with students exposed to fewer components. This program used several strategies to reach students, including peer-led classroom education; take-home activities for students to complete with their families; increased availability of healthy foods in the cafeteria; promotions for healthy foods on the lunch line, on the a la carte line and in vending machines; and the development of school nutrition policies with input from students.²⁸

- The Trying Alternative Cafeteria Options in Schools (TACOS) nutrition intervention demonstrated the effectiveness of combining competitive pricing with student-led promotions to increase sales of lower-fat foods and change student norms about eating healthy foods. Ten participating secondary schools were assigned to the intervention, and 10 schools were assigned to serve as controls for two years. Comparisons showed that intervention schools increased the availability of lower-fat foods and that the mean percentage of lower-fat food purchases was greater among intervention schools than among control schools. Further, students from intervention schools were more likely than students from control schools to report that it is easy to purchase lower-fat foods and that their friends usually buy lower-fat foods in the school cafeteria.²⁴



Reference 24

Prepared by Nicole Larson, M.P.H., R.D., and Mary Story, Ph.D., R.D., University of Minnesota

References

1. Gleason P, Sutor C. Food for thought: children's diets in the 1990s. Princeton, NJ: Mathematica Policy Research, Inc.; 2001.
2. Food Research and Action Center. Competitive Foods in Schools. Child Nutrition Policy Brief. <http://www.frac.org>. Accessed Apr, 2006.
3. Food Research and Action Center. Local school wellness policies. http://www.frac.org/html/federal_food_programs/cnreauthor/wellness_policies.htm. Accessed Apr, 2006.
4. U.S. General Accountability Office. School meal programs: Competitive foods are widely available and generate substantial revenues for schools. Aug 2005. Report no. GAO-05-563.
5. Nestle M. Soft drink "pouring rights": marketing empty calories to children. Public Health Rep. 2000;115(4):308-319.
6. Wechsler H, Brener ND, Kuester S, Miller C. Foodservice and foods and beverages available at school: results from the School Health Policies and Programs Study 2000. J Sch Health. Sep 2001;71(7):313-324.
7. American Beverage Association. School Beverage Guidelines. Washington, DC: ABA; 2006.
8. Greves HM, Rivara FP. Report card on school snack food policies among the United States' largest school districts in 2004-2005: room for improvement. Int J Behav Nutr Phys Act. Vol 3:1; 2006.
9. French SA, Story M, Fulkerson JA, Gerlach AF. Food environment in secondary schools: a la carte, vending machines, and food policies and practices. Am J Public Health. Jul 2003;93(7):1161-1167.
10. Center for Science in the Public Interest. Dispensing Junk: How School Vending Undermines Efforts to Feed Children Well. (<http://www.cspinet.org/schoolfoods> [March 22, 2005]) 2004.
11. Paeratakul S, Ferdinand DP, Champagne CM, Ryan DH, Bray GA. Fast-food consumption among US adults and children: dietary and nutrient intake profile. J Am Diet Assoc. Oct 2003;103(10):1332-1338.
12. Schmidt M, Affenito SG, Striegel-Moore R, et al. Fast-food intake and diet quality in black and white girls: the National Heart, Lung, and Blood Institute Growth and Health Study. Arch Pediatr Adolesc Med. Jul 2005;159(7):626-631.
13. Thompson OM, Ballew C, Resnicow K, et al. Food purchased away from home as a predictor of change in BMI z-score among girls. Int J Obes Relat Metab Disord. Feb 2004;28(2):282-289.
14. Austin SB, Melly SJ, Sanchez BN, Patel A, Buka S, Gortmaker SL. Clustering of fast-food restaurants around schools: a novel application of spatial statistics to the study of food environments. Am J Public Health. Sep 2005;95(9):1575-1581.
15. Craypo L, Purcell A, Samuels SE, Agron P, Bell E, Takada E. Fast food sales on high school campuses: results from the 2000 California high school fast food survey. J Sch Health. Feb 2002;72(2):78-82.
16. Cullen KW, Eagan J, Baranowski T, Owens E, de Moor C. Effect of a la carte and snack bar foods at school on children's lunchtime intake of fruits and vegetables. J Am Diet Assoc. Dec 2000;100(12):1482-1486.
17. Cullen KW, Zakeri I. Fruits, vegetables, milk, and sweetened beverages consumption and access to a la carte/snack bar meals at school. Am J Public Health. Mar 2004;94(3):463-467.
18. Kubik MY, Lytle LA, Hannan PJ, Perry CL, Story M. The association of the school food environment with dietary behaviors of young adolescents. Am J Public Health. Jul 2003;93(7):1168-1173.
19. Templeton SB, Marlette MA, Panemangalore M. Competitive foods increase the intake of energy and decrease the intake of certain nutrients by adolescents consuming school lunch. J Am Diet Assoc. Feb 2005;105(2):215-220.
20. Neumark-Sztainer D, French SA, Hannan PJ, Story M, Fulkerson JA. School lunch and snacking patterns among high school students: associations with school food environment and policies. Int J Behav Nutr Phys Act. Oct 6 2005;2(1):14.
21. Kubik MY, Lytle LA, Story M. Schoolwide food practices are associated with body mass index in middle school students. Arch Pediatr Adolesc Med. Dec 2005;159(12):1111-1114.
22. Cullen KW, Thompson DI. Texas school food policy changes related to middle school a la carte/snack bar foods: potential savings in kilocalories. J Am Diet Assoc. Dec 2005;105(12):1952-1954.
23. Davee AM, Blum JE, Devore RL, et al. The vending and a la carte policy intervention in Maine public high schools. Prev Chronic Dis. Nov 2005;2 Spec no:A14.
24. French S, Story M, Fulkerson JA, Hannan P. An environmental intervention to promote lower fat food choices in secondary schools: Outcomes from the TACOS study. American Journal of Public Health. 2004;94:1507-1512.
25. French SA, Jeffery RW, Story M, et al. Pricing and promotion effects on low-fat vending snack purchases: the CHIPS Study. Am J Public Health. 2001;91(1):112-117.
26. French SA, Jeffery RW, Story M, Hannan P, Snyder MP. A pricing strategy to promote low-fat snack choices through vending machines. Am J Public Health. 1997;87(5):849-851.
27. Sallis JF, McKenzie TL, Conway TL, et al. Environmental interventions for eating and physical activity: A randomized controlled trial in middle schools. American Journal of Preventive Medicine. 2003;24:209-217.
28. Birbaum AS, Lytle LA, Story M, Perry CL, Murray DM. Are differences in exposure to a multicomponent school-based intervention associated with varying dietary outcomes in adolescents? Health Educ Behav. Aug 2002;29(4):427-443.

About Healthy Eating Research

Healthy Eating Research is a national program of the Robert Wood Johnson Foundation. Technical assistance and direction are provided by the University of Minnesota School of Public Health under the direction of Mary Story, Ph.D., R.D., program director, and Karen Kaphingst, M.P.H., deputy director. The Healthy Eating Research program will support research to identify, analyze and evaluate environmental and policy strategies that can promote healthy eating among children and prevent childhood obesity. Special emphasis is given to research projects that benefit children in low-income and racial-ethnic populations at highest risk for obesity.

University of Minnesota, School of Public Health
1300 South 2nd St., Suite 300
Minneapolis, MN 55454
www.healthyeatingresearch.org

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