

Availability of Less Nutritious Snack Foods and Beverages in Secondary Schools – Selected States, 2002–2008

On October 2, this report was posted as an MMWR Early Release on the MMWR website (<http://www.cdc.gov/mmwr>).

Foods and beverages offered or sold in schools outside of U.S. Department of Agriculture school meal programs are not subject to federal nutrition standards (1) and generally are of lower nutritional quality than foods and beverages served in the meal programs. To estimate changes in the percentage of schools in which students could not purchase less nutritious foods and beverages, CDC analyzed 2002–2008 survey data from its School Health Profiles for public secondary schools. This report summarizes the results of those analyses, which indicated that, during 2002–2008, the percentage of schools in which students could not purchase candy or salty snacks not low in fat increased in 37 of 40 states. From 2006 to 2008, the percentage of schools in which students could not purchase soda pop or fruit drinks that were not 100% juice increased in all 34 participating states. Despite these improvements, in 2008, the percentage of schools among states in which students could not purchase sports drinks ranged from 22.7% to 84.8% (state median: 43.7%), and the percentage in which students could not purchase soda pop ranged from 25.6% to 92.8% (state median: 62.9%). The percentage of schools in which students could not purchase candy or salty snacks also varied widely among states (range: 18.2%–88.2%, state median: 61.2%). School and public health officials should increase efforts to eliminate availability of less nutritious foods and beverages at school, as recommended by the Institute of Medicine (IOM) (2).

School Health Profiles surveys have been conducted biennially since 1994 to assess school health practices in the United States (3). States, territories, large urban school districts, and tribal governments participate in the surveys, either selecting systematic, equal-probability samples of their secondary schools* or selecting all public secondary schools within their jurisdiction. Self-administered questionnaires are sent to the principal and lead health education teacher at each selected school and returned to the agency conducting the survey. Principals (or their designees) are asked questions about foods available for purchase by students outside of the school meal

programs in their schools.[†] Participation in School Health Profiles is confidential and voluntary. Follow-up telephone calls and written reminders are used to encourage participation. Data are included in this report only if the state provided appropriate documentation of methods and a school response rate of $\geq 70\%$. For states that use a sample-based method, results are weighted to reflect the likelihood of schools being selected and to adjust for differing patterns of nonresponse. For states that conduct a census, results are weighted to adjust for differing patterns of nonresponse.

This report includes data from 40 states[§] that provided weighted Profiles data in 2008 and at least 1 other year during 2002–2006. For each of these states, a composite variable was created to measure the percentage of schools in which students could not purchase candy or salty snacks.[¶] For 31 states with at least 3 years of weighted data, temporal changes during 2002–2008 were analyzed using logistic regression analyses that simultaneously assessed significant ($p < 0.05$) linear and quadratic time effects.^{**} For nine states^{††} with only 2 years of data, t-test analyses were used to test for significant ($p < 0.05$) differences between years. For 34 states^{§§} that had weighted Profiles data in 2006 and 2008, the percentage of schools in which students could not purchase soda pop or sports drinks is reported.^{¶¶} Analysis by t-test was used to determine significant ($p < 0.05$) differences between results from 2006 and 2008. Statistical software used for all analyses accounted for the sample design and unequal weights.

[†] Principals were asked the following yes/no questions in 2006 and 2008: “Can students purchase each of the following snack foods or beverages from vending machines or at the school store, canteen, or snack bar: Chocolate candy? Other kinds of candy? Salty snacks that are not low in fat? Soda pop or fruit drinks that are not 100% juice? Sports drinks?”

[§] Alabama, Alaska, Arizona, Arkansas, Connecticut, Delaware, Florida, Hawaii, Idaho, Illinois, Iowa, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

[¶] Defined as chocolate candy or other kinds of candy and defined as salty snacks that are not low in fat.

^{**} A quadratic trend indicates a significant but nonlinear trend in the data over time; whereas a linear trend is depicted with a straight line, a quadratic trend is depicted with a curve with one bend. Trends that include significant quadratic and linear components demonstrate nonlinear variation in addition to an overall increase or decrease over time.

^{††} Florida, Kansas, Kentucky, Mississippi, New Jersey, Rhode Island, South Dakota, Texas, and West Virginia.

^{§§} Alabama, Alaska, Arizona, Arkansas, Connecticut, Delaware, Florida, Hawaii, Idaho, Illinois, Iowa, Kansas, Maine, Massachusetts, Michigan, Mississippi, Missouri, Montana, Nebraska, New Hampshire, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, and West Virginia.

^{¶¶} Soda pop includes fruit drinks that were not 100% juice. Soda pop and sports drinks (which are also high in calories and added sugars) were assessed using identically worded questions only in 2006 and 2008.

*Middle schools, junior high schools, and high schools with one or more of grades 6–12.

From 2002 to 2008, the percentage of schools in which students could not purchase candy or salty snacks increased in 37 of 40 states. Among the 31 states with at least 3 years of weighted data during 2002–2008, a significant linear increase in the percentage of secondary schools in which students could not purchase candy and salty snacks was detected in all states except Nebraska (Table 1). A significant quadratic trend also was detected in nine of these 31 states. The quadratic trends indicated that, except in Washington, the rate of increase was greatest from 2006 to 2008 and from 2004 to 2008. Among the 34 states with weighted data for both 2006 and 2008, the median percentage of schools in which students could not purchase candy or salty snacks increased from 45.7% in 2006 to 63.5% in 2008 (Table 1).

Compared with 2006, in 2008 the percentage of secondary schools in which students could not purchase soda pop was significantly higher in all 34 states, and the percentage of schools in which students could not purchase sports drinks was significantly higher in 23 states (Table 2). Among the 34 states in 2008, the percentage of schools in which students could not purchase soda pop (range: 25.6%–92.8%) or sports drinks (range: 22.7%–84.8%) varied widely. The median percentage of schools in which students could not purchase soda pop increased from 37.8% in 2006 to 62.9% in 2008, and the median percentage of schools in which students could not purchase sports drinks increased from 28.4% in 2006 to 43.7% in 2008.

Reported by: *N Brenner, PhD, T O'Toole, PhD, L Kann PhD, R Lowry, MD, H Wechsler EdD, Div of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.*

Editorial Note: School food environments and practices that promote consumption of less nutritious foods and beverages are associated with poorer diets and higher body mass index among students (4). The findings in this report indicate that progress was made during 2002–2008 in increasing the percentage of secondary schools in which students cannot purchase less nutritious foods and beverages from vending machines at the school or from a school store, canteen, or snack bar.

This progress, however, has varied among states. For example, in Connecticut, Hawaii, and Maine, in more than 80% of schools students could not purchase candy and salty snacks in 2008; however, this was true in only 18.2% of schools in Utah. Similarly, in 92.8% of schools in Connecticut and 82.4% in Hawaii, but in only 25.6% of schools in Utah, students could not purchase soda pop in 2008. Although Connecticut and Hawaii had nutrition standards for foods sold outside of the school meal programs that specifically addressed calories, fat, saturated fat, trans fat, sugars, sodium, and nutrient content, Utah had no such standards at the time these data were collected. However, in July 2008, Utah enacted a revised policy

TABLE 1. Percentage of schools in which students could not purchase candy or salty snacks* from vending machines at the school or at a school store, canteen, or snack bar — 40 states, 2002–2008

State (2008 sample size)	2002	2004	2006	2008
Alabama (292 schools)	13.5	—†	42.5	73.9§
Alaska (154)	41.7	48.8	53.2	68.6¶
Arizona (264)	29.3	40.8	56.2	71.7¶
Arkansas (213)	26.4	25.2	70.0	70.8¶
Connecticut (236)	29.6	38.8	54.3	80.4§
Delaware (76)	43.7	36.6	49.3	64.0¶
Florida (310)	—	—	57.5	57.6
Hawaii (78)	70.5	—	85.8	88.2¶
Idaho (239)	24.2	25.9	28.4	39.0¶
Illinois (336**)	40.1	—	45.7	57.1¶
Iowa (259)	27.1	31.1	39.5	59.3§
Kansas (245)	—	—	31.9	44.2††
Kentucky (238)	19.8	—	—	73.2††
Maine (267)	30.6	40.6	73.1	82.0¶
Massachusetts (292)	29.0	33.6	56.5	66.6¶
Michigan (333)	19.4	17.5	24.7	43.4§
Minnesota (300)	15.9	20.2	—	48.2¶
Mississippi (216)	—	—	23.3	72.2††
Missouri (337)	27.6	27.8	34.2	53.3§
Montana (245)	38.8	44.1	42.6	55.2¶
Nebraska (208)	48.8	43.6	48.8	54.1
New Hampshire (183)	26.7	33.6	51.5	71.8¶
New Jersey (323)	35.0	—	—	75.3††
New York (352)	29.6	35.6	—	59.4¶
North Carolina (297)	26.4	25.9	43.1	51.8¶
North Dakota (164)	48.5	49.0	52.5	68.9§
Oklahoma (276)	15.5	14.7	—	46.7§
Oregon (277)	—	20.9	37.2	54.0¶
Pennsylvania (500)	—	26.8	45.7	65.6¶
Rhode Island (82)	—	—	48.0	79.3††
South Carolina (230)	—	16.8	24.2	44.2¶
South Dakota (203)	—	—	65.7	72.0
Tennessee (345)	20.4	23.5	30.6	71.6§
Texas (372)	—	—	41.3	56.0††
Utah (183)	7.6	7.9	14.7	18.2¶
Vermont (108)	48.7	—	63.5	63.0¶
Virginia (315)	27.9	—	35.9	50.6¶
Washington (310)	—	22.0	45.5	52.8§
West Virginia (180)	—	—	62.9	72.9††
Wisconsin (293)	31.4	33.1	—	57.3¶
No. of participating states	29	26	34	40
State median	29.0	29.5	45.7	61.2
State range	7.6–70.5	7.9–49.0	14.7–85.8	18.2–88.2

* Defined as chocolate candy or other kinds of candy and salty snacks that are not low in fat.

† Data not available.

§ Logistic regression analysis detected significant linear and quadratic time effects ($p < 0.05$).

¶ Logistic regression analysis detected significant linear time effects ($p < 0.05$).

** Does not include Chicago Public Schools.

†† Analysis by t-test detected significant differences between 2002 and 2008 for Kentucky and New Jersey ($p < 0.05$) and between 2006 and 2008 for Kansas, Mississippi, Rhode Island, Texas, and West Virginia.

TABLE 2. Percentage of schools in which students could not purchase soda pop or sports drinks from vending machines at the school or at a school store, canteen, or snack bar — 34 states, 2006–2008

State (2008 sample size)	Soda pop*		Sports drinks	
	2006	2008	2006	2008
Alabama (292 schools)	30.3	68.3 [†]	18.1	35.2 [†]
Alaska (154)	49.6	66.0 [†]	46.7	50.2
Arizona (264)	56.9	81.0 [†]	41.2	54.8 [†]
Arkansas (213)	35.8	52.3 [†]	41.5	48.6
Connecticut (236)	60.5	92.8 [†]	42.7	84.8 [†]
Delaware (76)	54.6	80.5 [†]	32.4	42.0
Florida (310)	42.6	58.7 [†]	34.0	30.0
Hawaii (78)	60.5	82.4 [†]	69.5	79.6
Idaho (239)	17.5	49.2 [†]	9.8	39.8 [†]
Illinois (336 [§])	36.3	56.6 [†]	32.5	48.4 [†]
Iowa (259)	25.1	49.1 [†]	18.7	25.5
Kansas (245)	20.9	37.4 [†]	21.1	22.7
Maine (267)	74.7	84.8 [†]	40.5	45.5
Massachusetts (292)	62.6	81.0 [†]	40.9	58.6 [†]
Michigan (333)	32.3	57.3 [†]	21.1	31.9 [†]
Mississippi (216)	21.8	74.7 [†]	21.5	46.6 [†]
Missouri (337)	25.8	45.1 [†]	23.8	24.4
Montana (245)	28.7	53.5 [†]	14.7	24.5 [†]
Nebraska (208)	21.7	37.8 [†]	18.7	29.4 [†]
New Hampshire (183)	56.6	71.5 [†]	26.9	44.0 [†]
North Carolina (297)	44.0	58.0 [†]	27.8	39.1 [†]
North Dakota (164)	30.9	57.3 [†]	26.6	40.4 [†]
Oregon (277)	38.0	64.4 [†]	29.1	49.4 [†]
Pennsylvania (500)	49.3	71.7 [†]	37.7	48.5 [†]
Rhode Island (82)	56.0	82.5 [†]	29.0	55.3 [†]
South Carolina (230)	24.0	50.4 [†]	13.4	32.9 [†]
South Dakota (203)	33.4	51.9 [†]	22.9	25.3
Tennessee (345)	26.7	74.0 [†]	18.1	66.1 [†]
Texas (372)	43.7	70.4 [†]	29.1	47.4 [†]
Utah (183)	14.0	25.6 [†]	12.1	22.8 [†]
Vermont (108)	60.7	73.5 [†]	43.7	47.6
Virginia (315)	37.6	54.6 [†]	33.0	43.5 [†]
Washington (310)	42.2	61.4 [†]	24.9	36.1 [†]
West Virginia (180)	62.7	70.5 [†]	51.4	62.0 [†]
State median	37.8	62.9	28.4	43.7
State range	14.0–74.7	25.6–92.8	9.8–69.5	22.7–84.8

* Includes fruit drinks that were not 100% juice.

[†] Analysis by t-test detected significant difference between 2006 and 2008 ($p < 0.05$).

[§] Does not include Chicago Public Schools.

setting nutrition standards (5). From 2006 to 2008, the largest increases in the percentage of schools in which students could not purchase candy, salty snacks, and soda pop were observed in Mississippi and Tennessee. These two states have been among those with the highest rates of adult obesity in the United States (6) but have now adopted statewide nutrition standards for foods in schools outside of school meal programs (7,8).

The findings in this report are subject to at least two limitations. First, these data apply only to public secondary schools and, therefore, do not reflect practices at private schools or elementary schools. Second, these data were self-reported by principals or their designees and the accuracy of their identi-

fication of the food products described in this report was not verified by other sources.

In response to growing concern over obesity, federal and state agencies and national nongovernmental organizations have continued to provide technical assistance to schools who seek to adopt and implement nutrition standards. From 2004 to 2009, the number of states with nutrition standards for foods outside of school meal programs increased from six to 27 (9). Despite these improvements, greater efforts are needed to ensure that all foods and beverages offered or sold outside of school meal programs meet nutrition standards, such as those recommended by IOM (2). Schools should implement nutrition standards that provide students with healthy choices throughout the school day and throughout the school campus.

Acknowledgments

The findings in this report are based, in part, on data collected by state School Health Profiles coordinators.

References

1. US Department of Agriculture. National School Lunch Program: foods sold in competition with USDA school meal programs. A report to Congress. Washington, DC: US Department of Agriculture; 2001. Available at http://www.fns.usda.gov/cnd/lunch/_private/competitive-foods/report_congress.htm.
2. Institute of Medicine Committee on Nutrition Standards for Foods in Schools. Stallings VA, Yaktine AL, eds. Nutrition standards for foods in schools: leading the way toward healthier youth. Washington, DC: Institute of Medicine of the National Academies; 2007.
3. CDC. School Health Profiles 2008: characteristics of health programs among secondary schools. Atlanta, GA: US Department of Health and Human Services, CDC; 2009. Available at <http://www.cdc.gov/healthyyouth/profiles>.
4. Fox MK, Dodd AH, Wilson A, Gleason PM. Association between school food environment and practices and body mass index of US public school children. *J Am Diet Assoc* 2009;109(2 suppl):S108–17.
5. National Association of State Boards of Education. School health policy database. Available at http://www.nasbe.org/healthy_schools/hs/bytopics.php?topicid=3115&catexpand=acdnbtm_catc. (Accessed October 2, 2009).
6. CDC. State-specific prevalence of obesity among adults—United States, 2007. *MMWR* 2008;57:765–8.
7. Rules of the State Board of Education. Child nutrition programs. Chapter 0520-1-6-.04: Minimum nutritional standards for individual food items sold or offered for sale to pupils in grades pre-kindergarten through eight (effective March 28, 2008). Available at <http://state.tn.us/sos/rules/0520/0520-01/0520-01-06.pdf>. (Accessed October 2, 2009).
8. State Board of Education. Beverage regulations for Mississippi schools; snack regulations for Mississippi schools (approved October 20, 2006). Available at <http://www.cn.mde.k12.ms.us/documents/vendingregformsschools06.pdf>. (Accessed October 2, 2009).
9. Trust for America's Health. F as in fat: how obesity policies are failing in America. Washington, DC: Trust for America's Health; 2009. (Updated July 2009).