



Children’s Food Environment State Indicator Report, 2011

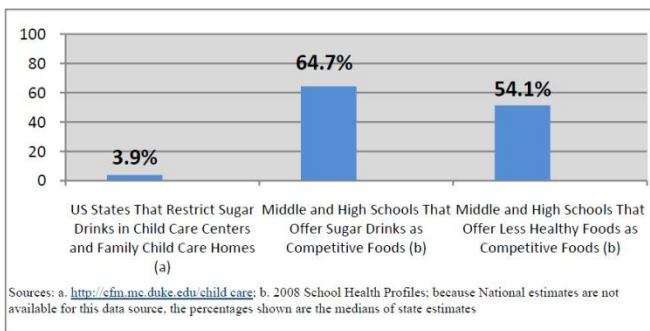
The current childhood obesity epidemic is the result of many factors and may not be resolved by any single action. Rather, resolution of the childhood obesity epidemic will require concerted action across many sectors and settings such as child care facilities, communities, and schools. The 2011 Children’s Food Environment State Indicator Report highlights selected behaviors, environments, and policies that affect childhood obesity through support of healthy eating. These indicators represent opportunities for action. Specific action steps and resources are detailed in the National Action Guide at <http://www.cdc.gov/obesity/>.

The environments to which children are exposed in their daily lives - schools, child care facilities, and their communities - can influence the healthfulness of their diets. With the high prevalence of childhood obesity in the U.S., supporting healthy food environments is a key strategy to reach the public health goals of reducing childhood obesity and improving nutrition. National and state-specific information is reported in the *Children’s Food Environment State Indicator Report* for both behavioral indicators and policy and environmental indicators. Indicators selected for this report had data available for most states. However, individual states may have additional information collected through state-wide surveys and/or policies or regulations enacted outside the monitoring period that can augment the data in this report and thus be used to further inform decision makers. On a state and local level, parents, school and child care staff, health professionals, state officials, and community members play a role in supporting policy and environmental change to ensure children and their families can choose more healthful foods.

BEHAVIORAL INDICATORS – The 2010 Dietary Guidelines for Americans recommends limiting the consumption of added sugar among Americans.¹ The leading source of added sugar among children is sugar-sweetened drinks (also referred to as sugar drinks).² State progress on added-sugar in the diet is measured here by assessing consumption of sugar-sweetened or “regular” sodas among high school students. We also assess the percentage of high school students viewing 3 or more hours of television each day. An objective of *Healthy People 2020* (PA-8) is to increase the proportion of children and adolescents who do not exceed the recommended limit for screen time of no more than 2 hours a day for children 2 years and older.³ Data for these indicators are from the 2009 national and state Youth Risk Behavior Surveys, components of CDC’s Youth Risk Behavior Surveillance System (students in grades 9-12). Other behavioral indicators reflect recommendations from leading medical associations to not place televisions in children’s bedrooms⁴ and for children to have meals together with their family.⁵ Data on those indicators are derived from the 2007 National Survey of Children’s Health.

The Children’s Food Environment State Indicator Report is the 4th in a series* of CDC Reports that highlight environmental and policy indicators to improve nutrition, physical activity and reduce obesity.

POLICY AND ENVIRONMENTAL INDICATORS – The policy and environmental indicators measure components of food environments across three domains: child care facilities, schools, and the community.



Data in the *Children’s Food Environment State Indicator Report* can be used to:

- Monitor progress and celebrate state successes.
- Identify opportunities to improve environmental and policy approaches.





Children's Food Environment State Indicator Report, 2011

Behavioral Indicators

In this *Children's Food Environment State Indicator Report*, four behavioral indicators are reported.

- **Percentage of high school students who drank ≥ 1 sugar-sweetened soda per day**

Sugar drinks are the largest source of added sugar and an important contributor of calories in the diets of children in the United States.² Adolescent males consume, on average, around 300 calories from sugar drinks each day.² High consumption of sugar drinks, which have few, if any, nutrients, has been associated with obesity.⁶

- **Percentage of high school students who watched television ≥ 3 hours per day**
- **Percentage of children ages 6-17 with television in their bedroom**

Parents can positively impact children's sedentary activity, snacking, and exposure to advertising of unhealthy foods through rules related to TV viewing. One approach that parents can use to encourage healthy lifestyles for children at home is to not put televisions in children's bedrooms. The presence of a television in a child's bedroom has been associated with increased time spent watching television⁷ and increased prevalence of obesity.⁸ The link to obesity may occur through multiple mechanisms including displacement of physical activity, increased energy intake while viewing, or through greater exposure to television advertising of unhealthy foods which may affect food choices.^{9,10} The American Academy of Pediatrics (AAP) recommends that children should not have a television in their bedroom.⁴

- **Percentage of children ages 12-17 who do not eat meals with their families most days of the week**

Parents have tremendous influence on children's food behaviors.¹¹ Eating meals together as a family is associated with positive effects on children across

many domains of life, including the development of healthy eating behaviors¹² and the maintenance of a healthy weight status.¹³ Foods prepared and consumed at home may also be more nutritious than foods prepared away from home.¹⁴

Policy and Environmental Indicators

These indicators represent three different domains or settings for improving the food environment. They correspond with recommendations by groups such as the Institute of Medicine for improvements at the local, community, or school level.¹⁵⁻¹⁷ States may focus on a few or many of the indicators based on their existing capacity, partnerships, and resources.

The Child Care Facility Food Environment

According to the Federal Interagency Forum on Child and Family Statistics, 36% of all children younger than six not yet in kindergarten attend child care centers.¹⁸ Additionally, a substantial number of children also attend commercial child care facilities operated in caregivers' homes (family child care homes).¹⁸ However, state regulations regarding nutrition and physical activity are not consistent in their treatment of child care centers and family child care homes. Regulations that ensure both types of facilities maintain healthy food environments could help instill healthy eating habits among a large proportion of America's young children.

- **State regulations restrict sugar drinks in child care centers and family child care homes**
- **State regulations require access to drinking water throughout the day in child care centers and family child care homes**

Ensuring the availability of drinking water and limiting access to sugar drinks are ways to improve the food environment of child care facilities. Displacing sugar drinks with drinking water, a calorie-free and thirst-quenching beverage, can





substantially reduce excess energy intake among children.¹⁹ Staff can also teach the importance and healthfulness of drinking water and non-fat/low-fat milk as primary beverages.

- **State regulations limit television and video time in child care centers and family child care homes**

Young children are highly susceptible to the influence of advertising of unhealthy foods on television.²⁰ Television and video viewing during child care may also displace recreational time spent engaging in active play and physical activity.

The School Food Environment

The Institute of Medicine recommends that the sale of competitive foods in schools (food sold outside the USDA reimbursable school meal programs such as in vending machines, school stores, snack bars) be limited.¹⁷ Schools are uniquely positioned to facilitate and reinforce healthful eating behaviors by eliminating sugar drinks and high energy density foods (foods high in calories for their volume) from the selection of foods offered on the school campus.

- **Percentage of middle and high schools that offer sugar drinks as competitive foods**

Although sodas are prohibited in an increasing number of schools, other sugar drinks that may not be commonly perceived as sources of added sugar and excess calories²¹ may be available, such as sports drinks and fruit flavored drinks that are not 100% juice. Schools should consider adopting policies that limit access to all sugar drinks in vending machines and schools stores.

- **Percentage of middle and high schools that offer less healthy foods as competitive foods**

Because human appetite and satiation depend more on the volume of food consumed than on caloric content of the food²², reducing the consumption of energy dense, low nutrient foods has been identified as a strategy to prevent weight gain.²³ Foods of

lower energy density and higher nutrient content such as fruits and vegetables in their natural forms, nonfat/low-fat dairy products, and whole grain products are healthful alternatives to high energy density foods such as candy, cakes, salty fried snacks, and ice cream.

- **Percentage of middle and high schools that allow advertising of less healthy foods**

The Institute of Medicine has concluded that “food advertising to children affects their preferences, purchase behaviors, and consumption habits for different food and beverage categories, as well as for different product brands.”²⁴ In schools, advertising can take the form of posters and signage; logos or brand names on food and beverage coolers, cups, and plates or vending machines; food sales as fundraisers, corporate sponsorship of events; advertising in school publications, and corporate sponsored classroom curricula and scholarships.^{24,25} Such advertising may impact children’s ability to make healthy choices in their diets.

The Community Food Environment

Lack of access to retail venues in communities to purchase healthy foods, such as supermarkets, has been associated with a lower quality diet and increased risk of obesity.²⁶ Likewise, some studies suggest that greater access to convenience stores and fast food restaurants, where healthy choices may not be readily available and may cost more, has been associated with greater likelihood of obesity and lower dietary quality.²⁶

- **Modified Retail Food Environment Index across census tracts within state**
- **Modified Retail Food Environment Index across impoverished census tracts within state**

The modified Retail Food Environment Index (mRFEI) measures the number of healthy and less healthy food retailers in a given area. The mRFEI is





based upon the Retail Food Environment Index, a measurement that has been used previously to assess the food environment and its association with obesity and diabetes, especially in areas of high poverty.^{27,28}

Lower mRFEI scores for a state indicate either a greater number of census tracts that do not contain any healthy food retailers, a greater number of census tracts that contain many convenience stores and fast food restaurants relative to the number of healthy food retailers, or both.

States can work to identify areas where access to healthy food is limited. Strategies to improve the food environment in these areas can include increased access to places with healthier foods such as supermarkets and produce stores, stands and markets.²⁹⁻³⁰ Areas without these types of healthy food retailers may still provide adequate access if smaller stores and fast food restaurants provide quality and affordable healthy foods and beverages.

For more information and feedback contact
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†References to ‘states’ in the State Indicator Report when applicable include the District of Columbia as well as the 50 states.

Additional materials for the *Children’s Food Environment State Indicator Report, 2011* including National Action Guide are available at <http://www.cdc.gov/obesity/>

*Previous CDC reports that also highlight environmental and policy indicators to improve nutrition, physical activity and reduce obesity: *State Indicator Report on Fruits and Vegetables, 2009*: http://www.fruitsandveggiesmatter.gov/health_professionals/statereport.html#Policy *State Indicator Report on Physical Activity, 2010*: http://www.cdc.gov/physicalactivity/downloads/PA_State_Indicator_Report_2010.pdf *Breastfeeding Report Card—United States, 2010*: <http://www.cdc.gov/breastfeeding/data/reportcard.htm>

Data Sources

Behavioral Indicators

Percentage of high school students who drank ≥ 1 sugar-sweetened soda per day

Youth Risk Behavior Survey (students in grades 9–12), 2009. Weighted percentage.

The school-based 2009 Youth Risk Behavior Survey included the following question: “During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do not include diet soda or diet pop.)” Response categories ranged from “I did not drink soda or pop during the past 7 days” to “4 or more times per day.” National estimate is based upon a nationally representative sample of high school students and is not calculated from state estimates. Data were not available for states that did not conduct a 2009 YRBS, did not achieve a high enough overall response rate ($\geq 60\%$) to receive weighted results, or did not include the soda question on their 2009 YRBS questionnaire.

Available at <http://www.cdc.gov/HealthyYouth/yrbs/index.htm>

Percentage of high school students who watched television ≥ 3 hours per day

Youth Risk Behavior Survey (students in grades 9–12), 2009. Weighted percentage.

The school-based 2009 Youth Risk Behavior Survey included the following question: “On an average school day, how many hours do you watch TV?” Response categories ranged from “I do not watch TV on an average school day” to “5 or more hours per day”. National estimate is based upon a nationally representative sample of high school students and is not calculated from state estimates. Data were not available for states that did not conduct a 2009 YRBS, did not achieve a high enough overall response rate ($\geq 60\%$) to receive weighted results, or did not include the television question on their 2009 YRBS questionnaire.

Available at <http://www.cdc.gov/HealthyYouth/yrbs/index.htm>

Percentage of children ages 6-17 years with television in bedroom

National Survey of Children’s Health, (Middle Childhood and Adolescence (6-17 years)), 2007. Weighted percentage.

The National Survey of Children’s Health includes 1 question asked to parents (via telephone survey). “Is there a television in [CHILD’S NAME] bedroom?”

Available at: <http://nschdata.org/Content/Guide2007.aspx>.





Percentage of children ages 12-17 who do not eat with family most days of the week

National Survey of Children's Health, (Middle Childhood and Adolescence (6-17 years)), 2007. Weighted percentage.

The National Survey of Children's Health includes 1 question asked to parents (via telephone survey) "During the past week, how many days did all the family members who live in the household eat a meal together?" The percentage presented is based upon the number of parents of children ages 12-17 participating in the study who responded 0, 1, 2, or 3 days.

Available at: <http://nschdata.org/Content/Guide2007.aspx>.

Policy and Environmental Indicators

State regulations restrict sugar drinks in child care centers and family child care homes

States with specific regulations that apply to both child care centers and family child care homes and restrict sugar drinks. Based upon data from: "Preventing Obesity in the Child Care Setting: Evaluating State Regulations." Regulations current as of: December 2008; Date accessed: July 15, 2010.

Available at http://cfm.mc.duke.edu/child_care.

State regulations require access to drinking water throughout day in child care centers and family child care homes

States with specific regulations that apply to both child care centers and family child care homes and require drinking water to be available for children throughout the day. Based upon data from: "Preventing Obesity In the Child Care Setting: Evaluating State Regulations." Regulations current as of: December 2008; Date accessed: July 15, 2010.

Available at http://cfm.mc.duke.edu/child_care.

State regulations limit television and video time in child care centers and family child care homes

States with specific regulations that apply to both child care centers and family child care homes and require that television, video, and/or computer time be limited. Based upon data from: "Preventing Obesity In The Child Care Setting: Evaluating State Regulations." Regulations current as of: December 2008; Date accessed: July 15, 2010.

Available at http://cfm.mc.duke.edu/child_care.

Percentage of middle and high schools that offer sugar drinks as competitive foods

School Health Profiles, School Principal Survey, 2008. Weighted percentage.

The School Health Profiles School Principal Survey includes a question regarding specific food items available as competitive foods: "Can students purchase each of the following snack foods or beverages from vending machines or at the school store, canteen, or snack bar?" The percentage presented is based upon the number of schools in each state who responded "Yes" to either response category "Soda pop or fruit drinks that are not 100% juice" or "Sports drinks, such as Gatorade." States with estimates are those with weighted data ($\geq 70\%$ response rate). Because national estimates are not available for the Profiles survey, the data presented in the "U.S. National" row is the median of the state estimates.

Available at <http://www.cdc.gov/healthyyouth/profiles/>

Percentage of middle and high schools that offer less healthy foods as competitive foods

School Health Profiles, School Principal Survey, 2008. Weighted percentage.

The School Health Profiles survey includes a question regarding specific food items available as competitive foods: "Can students purchase each of the following snack foods or beverages from vending machines or at the school store, canteen, or snack bar?" The percentage presented is based upon the number of schools in each state who responded "Yes" to one or more of the following response categories: "Chocolate candy", "Other kinds of candy", "Salty snacks that are not low in fat, such as regular potato chips", "Cookies, crackers, cakes, pastries, or other baked goods that are not low in fat", "Ice cream or frozen yogurt that is not low in fat", or "Water ices or frozen slushes that do not contain juice".

States with estimates are those with weighted data ($\geq 70\%$ response rate). Because national estimates are not available for the Profiles survey, the data presented in the "U.S. National" row is the median of the state estimates. Available at <http://www.cdc.gov/healthyyouth/profiles/>.

Percentage of middle and high schools that allow advertising of less healthy foods

School Health Profiles, School Principal Survey, 2008. Weighted percentage.

The School Health Profiles survey includes a question regarding advertising of less healthy foods in schools: "Does this school prohibit advertisements for candy, fast food restaurants, or soft drinks in the following locations?" The percentage presented is based upon the number of schools in each state who responded "No" to one or more of the following response categories: "In the school building", "On school grounds including on the outside of the school building, on playing fields, or other areas of the campus", "On school buses or other vehicles used to transport students", or "In school publications (e.g., newsletters, newspapers, web sites, or other school publications)". States with estimates are those with weighted data ($\geq 70\%$ response rate). Because national estimates are not available for the Profiles survey, the data presented in the "U.S. National" row is the median of the state estimates.

Available at <http://www.cdc.gov/healthyyouth/profiles/>.





Modified Retail Food Environment Index across census tracts within state; Modified Retail Food Environment Index across impoverished census tracts within state

The number shown is the median across census tracts within each state. Impoverished census tracts are defined as those with 20% or more individuals below the federal poverty line based upon the 2000 US Census. The data presented in the “U.S. National” row are the medians of state scores.

$$mRFEI = 100 \times \frac{\# \text{ Healthy Food Retailers}}{\# \text{ Healthy Food Retailers} + \# \text{ Less Healthy Food Retailers}}$$

Numerator: Number of supermarkets, supercenters, and produce stores within census tracts or ½ mile from the tract boundary. The following stores as defined by North American Industry Classification Codes (NAICS) were included: Supermarkets and larger grocery stores (NAICS 445110; supermarkets further defined as stores with >= 50 annual payroll employees and larger grocery stores defined as stores with 10-49 employees); Fruit and Vegetable Markets (NAICS 445230); Warehouse Clubs (NAICS 452910). Fruit and vegetable markets include establishments that retail produce and includes stands, permanent stands, markets, and permanent markets. Produce is typically from wholesale but can include local. The 2007 North American Industry Classification Codes descriptions are available at <http://www.census.gov/eos/www/naics/>. Date accessed July 1, 2009.

Denominator: Number supermarkets, supercenters, produce stores, fast food restaurants, and convenience stores within census tracts or ½ mile from the tract boundary. Supermarkets, supercenters, and produce stores were defined as in the numerator. Fast food stores were defined according to NAICS code 722211(fast food restaurants). Convenience stores were defined according to NAICS code 445120 (convenience stores) or NAICS code 445110 (small groceries) where the number of employees was 3 or fewer.

Data sources: Supermarkets, supercenters, and produce store data is derived from InfoUSA business database, 2009. Fast food retail data is from NavTeq database, 2009. Convenience store data is from Homeland Security Information Program database, 2008.

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Behavioral Indicators

State	% HS Students Who Drank ≥ 1 Soda/Day	% HS Students Who Watched 3+ Hours of TV/Day	% Children Ages 6-17 with TV in Bedroom	% Children Ages 12-17 Not Eating Family Meals Most Days of Week
U.S. National	29.2	32.8	50.2	30.7
Alabama	38.8	37.8	67.7	39.0
Alaska	20.1	24.8	33.0	28.7
Arizona	28.1	33.3	47.3	27.9
Arkansas	33.5	36.4	65.9	30.7
California			46.4	26.7
Colorado	24.6	25.1	36.6	23.9
Connecticut		30.2	42.9	32.6
Delaware	28.8	37.7	51.9	34.9
D.C.			58.8	35.7
Florida	28.6	38.2	61.4	27.3
Georgia	29.7	39.2	56.1	31.0
Hawaii	20.8	30.1	39.3	25.0
Idaho	18.3	21.9	35.2	27.6
Illinois	31.1	35.7	50.9	34.9
Indiana	29.7	29.0	52.8	33.5
Iowa			43.9	31.7
Kansas	30.7	28.3	43.1	32.7
Kentucky	35.7	28.8	62.4	32.1
Louisiana	36.6	40.3	70.6	37.7
Maine		25.4	39.9	30.7
Maryland	21.3	39.1	46.0	31.8
Massachusetts	21.0	30.4	36.3	30.0
Michigan	27.6	29.6	47.5	28.0
Minnesota			30.5	34.4
Mississippi	40.2	44.9	69.3	32.8
Missouri	31.5	32.4	52.5	33.2
Montana	25.7	23.7	36.3	26.3
Nebraska			40.5	31.7
Nevada	22.1	35.1	59.1	28.0
New Hampshire	22.1	23.0	35.5	29.5
New Jersey	19.9	32.6	48.5	30.5
New Mexico	30.4	32.6	50.0	23.5
New York	24.5	32.7	48.9	33.2
North Carolina	32.5	36.2	58.2	28.3
North Dakota	26.3	25.6	43.1	27.7
Ohio			51.0	30.4
Oklahoma	38.1	29.0	58.8	27.3
Oregon			41.6	27.5
Pennsylvania	25.7	30.8	50.9	33.7
Rhode Island	21.2	29.1	47.7	32.0
South Carolina	33.2	39.7	60.6	34.9
South Dakota	28.8	22.6	38.2	29.1
Tennessee	41.3	37.7	61.2	35.1
Texas	32.8	36.3	54.2	33.7
Utah	14.5	16.3	24.4	22.3
Vermont	22.9		31.0	25.9
Virginia			47.6	33.3
Washington			32.0	25.8
West Virginia	34.5	31.5	66.7	27.0
Wisconsin	23.1	23.1	40.4	33.3
Wyoming	27.0	22.0	41.5	26.6

Data were not available for states that did not conduct a 2009 YRBS, did not achieve a high enough overall response rate ($\geq 60\%$) to receive weighted results, or did not include the television or soda question on their 2009 YRBS questionnaire.





State	Child Care Environment			School Environment			Community Environment	
	Regulations to Restrict Sugar Drinks	Regulations to Require Access to Drinking Water Throughout Day	Regulations to Limit Screen Time	% Middle & High Schools That Offer Sugar Drinks as Competitive Foods	% Middle & High Schools That Offer Less Healthy Competitive Foods	% Middle & High Schools That Allow Advertising of Less Healthy Foods	Modified Retail Food Environment Index	Modified Retail Food Environment Index - Impoverished Census Tracts
U.S. National	2 states	27 states	18 states	64.4*	51.4*	49.0*	10	7
Alabama	No	No	Yes	67.2	35.6	49.0	10	8
Alaska	No	No	Yes	53.2	41.8	40.8	6	0
Arizona	No	No	No	47.5	33.9	35.1	12	10
Arkansas	No	Yes	No	57.4	35.7	55.5	9	9
California	No	No	No	59.5	32.5	31.9	11	10
Colorado	No	Yes	Yes	69.8	63.3	52.2	11	8
Connecticut	No	Yes	No	16.7	30.7	28.9	6	4
Delaware	No	Yes	Yes	58.0	44.1	38.0	12	5
D.C.	No	No	No				4	4
Florida	No	No	No	72.4	58.6	51.5	10	8
Georgia	Yes	Yes	Yes				8	7
Hawaii	No	Yes	No	24.1	22.3	39.2	14	14
Idaho	No	No	No	66.4	67.0	59.9	13	13
Illinois	No	Yes	No	55.2	47.7	50.9	8	6
Indiana	No	Yes	No	71.9	65.0	64.0	10	6
Iowa	No	No	No	77.6	53.9	56.1	10	6
Kansas	No	No	Yes	80.3	62.7	65.8	10	7
Kentucky	No	No	Yes	48.6	33.4	68.2	10	8
Louisiana	No	No	No				9	7
Maine	No	No	Yes	56.0	34.1	30.8	15	15
Maryland	No	No	Yes	56.2	57.0	41.5	10	4
Massachusetts	No	Yes	No	46.3	46.5	28.6	7	5
Michigan	No	No	Yes	69.9	64.9	41.4	10	8
Minnesota	No	Yes	No	65.9	58.3	49.0	10	8
Mississippi	No	No	Yes	56.2	40.5	48.0	8	8
Missouri	No	Yes	No	79.3	56.3	61.1	10	8
Montana	No	Yes	No	76.3	50.9	66.8	16	14
Nebraska	No	No	No	74.0	53.7	66.7	10	9
Nevada	Yes	Yes	No	70.8	40.8	37.8	11	10
New Hampshire	No	No	No	59.5	51.7	40.1	9	7
New Jersey	No	Yes	No	44.4	43.9	26.6	8	5
New Mexico	No	No	Yes				12	10
New York	No	Yes	No	66.8	58.5	23.6	8	6
North Carolina	No	Yes	No	65.0	54.7	58.5	11	9
North Dakota	No	No	No	63.3	37.9	54.7	8	0
Ohio	No	Yes	No	72.0	67.0	69.2	9	6
Oklahoma	No	Yes	Yes	76.1	59.8	65.4	6	6
Oregon	No	No	No	55.0	54.3	52.0	13	14
Pennsylvania	No	Yes	No	54.7	46.9	47.6	11	5
Rhode Island	No	Yes	No	48.8	41.4	27.6	5	5
South Carolina	No	Yes	Yes	71.9	61.9	54.2	9	6
South Dakota	No	No	No	76.3	41.5	59.0	8	0
Tennessee	No	Yes	Yes	36.3	36.2	56.3	10	7
Texas	No	Yes	No	56.0	54.9	46.6	7	7
Utah	No	Yes	No	81.0	83.4	46.5	13	11
Vermont	No	Yes	Yes	53.2	50.9	41.8	13	0
Virginia	No	Yes	No	64.4	61.2	47.6	11	7
Washington	No	No	No	68.0	56.0	44.1	12	11
West Virginia	No	Yes	Yes	43.6	40.8	51.1	13	11
Wisconsin	No	No	Yes	72.1	58.7	56.6	11	6
Wyoming	No	No	No	71.3	51.4	66.5	10	8

*Because national estimates are not available for these variables, the data presented in the "U.S. National" row is the median of the state estimates

Data were not available for states that did not achieve a high enough overall response rate ($\geq 70\%$) on the 2008 School Health Profiles Survey to receive weighted results





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