ISSUE REPORT

The State of Obesity:

Better Policies for a Healthier America 2017

Trust for America's Health
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Acknowledgements

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Table of Contents

The State of Obesity: *Obesity Policy* SERIES

TABLE OF CONTENTS

AUGUST 2017

The State of Obesity: *Obesity Policy Series*

Introduction

Obesity is one of the biggest health concerns in communities across the country, with about 70 percent of county officials ranking it as a leading problem where they live. Factors related to obesity are also rated as communities' priority health issues, including nutrition and physical activity at 58 percent, heart disease and hypertension at 57 percent and diabetes at 44 percent.[1]

There has been progress to address the epidemic. After decades of increasing, the national obesity rate among 2- to 19-year-olds has begun to level off and the rise of obesity among adults has slowed over time. Yet obesity remains a bigger threat to our health and country now than it was a generation ago. If trends continue, children today could be the first generation to live shorter, less healthy lives than their parents.

Obesity rates vary state-to-state, but remain high nationwide. Across the United States, more than one in three adults and one in six children (ages 2-19) are obese — and one in 11 young children (ages 2-5) are obese.[2] Adult obesity rates range from a high of 37.7 in West Virginia to a low of 22.3 in Colorado.[3] Childhood rates are highest in Mississippi (21.7 percent) and lowest in Oregon (9.9 percent).[4] Obesity rates also differ from county to county, and neighborhood to neighborhood. More than 20 states have counties with adult obesity rates above 40 percent, including 29 counties in Mississippi and 14 counties in Alabama. Only two states have counties with adult obesity rates below 20 percent: 17 counties in Colorado and one in Massachusetts.[5] *(Note: County Health Rankings and Roadmaps data are available for every state at: http://www.countyhealthrankings.org/.)*

Individuals who are obese are at increased risk for type 2 diabetes, heart disease, some forms of cancer, dementia and a number of other health concerns. Children who are overweight or obese are at greater risk for high blood pressure, type 2 diabetes and heart disease. And the longer children are overweight or obese, the more likely they are to remain so into adulthood. At a broader level, high obesity rates also have a significant impact on the larger community.

- **Obesity is a financial issue.** The obesity crisis costs our nation more than $150 billion in healthcare costs annually[6] and billions of dollars more in lost productivity.[7] The public and officials are rightly concerned about making sure every taxpayer dollar is spent wisely. Investing in obesity prevention provides a significant return on investment for the American taxpayer. Each state and community is impacted by the cost of obesity — severe obesity alone costs state Medicaid programs between $5 million in Wyoming and $1.3 billion in California each year.[8] Overall obesity-related healthcare costs range from $279 per person per year in Wyoming to $768 in Oregon.[8] Employers want to operate businesses in places with healthier populations — with a workforce that is more productive and has lower healthcare costs.

- **Obesity is a national security issue**. The obesity crisis also impacts our nation's military readiness. Being overweight or obese is the leading cause of medical disqualifications, with nearly one-quarter of service applicants rejected for exceeding the weight or body fat standards.[9] Obese service members and members of their family who are obese cost the military about $1 billion every year in healthcare costs and lost productivity.[9] *Mission: Readiness* has found that more than 70 percent of today's youth are not fit to serve in the military due to obesity or being overweight, criminal records, drug misuse or educational deficits.[10]

- **Obesity is a community safety issue.** With millions of obese and overweight Americans serving as first responders, firefighters, police officers and in other essential community service and protection roles, public safety is at risk. Seventy percent of firefighters are overweight or obese, putting them at risk for cardiovascular events — the leading cause of line-of-duty deaths.[11] Police officers have a shorter life expectancy compared with the general population, likely due to their higher-than-average obesity rates.[12]

- **Obesity is a child development and academic achievement issue.** Obesity-prevention is an investment in our children's ability to learn and grow. Childhood obesity is correlated with poor educational performance[13] and increased risk for bullying and depression.[14] If all kids have the opportunity to grow up at a healthy weight — a lifestyle that includes nutritious food and plenty of time for active play — they are more likely to reach their full potential.

- **Obesity is an equity issue.** Obesity disproportionately affects low-income[15] and rural communities[16] as well as certain racial and ethnic groups, including Blacks,[17] Latinos[17] and Native Americans.[18] Societal inequities contribute to these disparities. For example, in many communities, children have few safe outdoor spaces to play or accessible routes to walk or bike to school. Their neighborhoods may often be food deserts, having small food outlets and fast-food

restaurants that sell and advertise unhealthy food and beverages, but lacking those with fresh and healthy foods at affordable prices. Thus, addressing the obesity epidemic is also a fight for health equity.

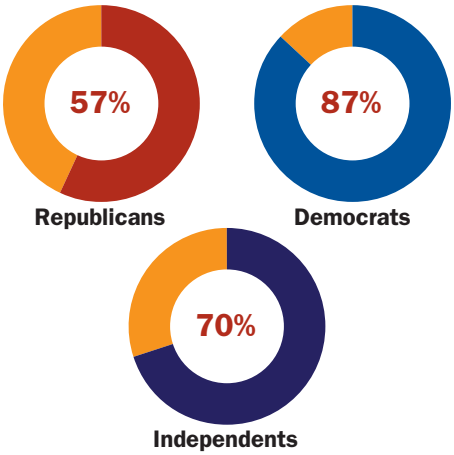
- **Obesity is a top national priority.** Americans (registered voters) rated obesity as the top health concern in the country in a recent public opinion survey conducted by the Greenberg, Quinlan, Rosner Research and Bellweather Research groups. And nearly three-quarters (73 percent) support increasing investments to improve the health of communities, including addressing the obesity crisis and other major health concerns. Support spans across party lines (57 percent of Republicans, 87 percent of Democrats and 70 percent of Independents) and regionally across the country (75 percent in the Northeast, 71 percent in the Midwest, 72 percent in the South and 75 percent in the West).[19]

Obesity rates have doubled among adults and more than tripled among children since the 1980s. In response, health officials have been developing strategies to counter the trends. There have been signs of progress. Concerted efforts have helped to slow the growth among adults (rates remained the same in 45 states and Washington, D.C. and declined in one state (Kansas) last year), and childhood rates have stabilized nationally and even declined in some places during the past decade. In fact, obesity rates among children ages 5 and under declined from nearly 14 percent in 2003-2004 to under 10 percent in 2013-2014.[20] Obesity rates among low-income 2- to 4-year-olds have also declined.[21]

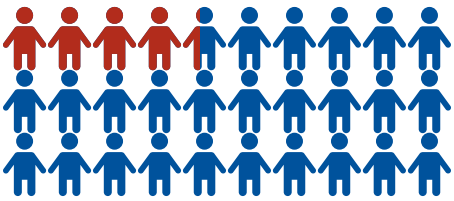
Federal, state and local agencies play a key role in creating and supporting policies that benefit millions of families and neighborhoods across America. Experts at the Centers for Disease Control and Prevention (CDC), National Institutes of Health (NIH), U.S. Department of Agriculture (USDA), U.S. Department of Education, the Administration for Children and Families (ACF), Food and Drug Administration (FDA), academic research centers and state and local public health agencies across the country have researched and developed top strategies for preventing and addressing obesity among children and adults. These include improving nutrition standards for the foods and beverages offered through the Child and Adult Care Food Program (CACFP) and in schools nationwide. These agencies also provide the evidence base and technical assistance for every school district in the country to develop effective, strategic, local wellness plans to identify "hot spots" where the problems are the most severe, the needs are the greatest and where promising efforts can be most effective. Communities, schools and families around the country rely on the expert technical assistance, guidance, toolkits and evaluations demonstrating effective efforts that can make a difference to improve health. These efforts allow communities to learn from the best evidence and programs, so they can build on them for the benefit of their own communities.

The individual decisions people make about eating and activity are not made in a vacuum. Where families live, learn, work and play all have a major impact on the choices they are able to make. Healthy foods are often more expensive and less available in some neighborhoods, and finding safe, accessible places and having time to be active can be challenging for many.

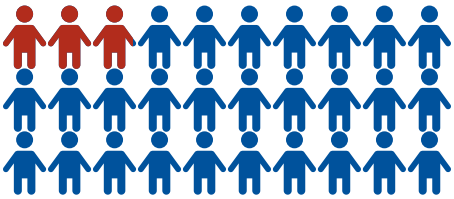
Support to Increase Investments to Improve the Health of Communities by Party Affiliation



Signs of Progress in Slowing the Progression of Obesity Rates in Children



14% of children 5 and under were obese in 2004



In 2014 the percentage dropped to 10%

For instance, most children spend significant periods of time in child-care and schools where food options may be beyond the control of their parents.

- **The most successful approaches are often comprehensive, localized, "place-based" efforts — where leaders and members of a community build partnerships that bring together public health and healthcare providers; hospitals, schools and universities; child-care providers and centers; social service groups; philanthropies; community-based, faith-based and community development organizations; and transportation and housing planners — to assess the priorities within the local area; leverage existing community resources; and determine the most effective, evidence-based strategies that can best meet their needs.** Experts have identified a range of policies and programs that communities can implement to help make healthy eating and physical activity part of people's daily routines, including improving school nutrition, complete streets initiatives, access to open space, incentives for healthy food purchases, food labeling and limits on advertising to children.

- **The most impactful strategies also typically focus on helping children maintain a healthy weight — since it is much easier and more effective to prevent obesity than to try to reverse it later — and to provide adults with opportunities for improved nutrition and increased physical activity, to be as healthy as possible no matter their weight.**

The annual *State of Obesity: Better Policies for a Healthier America* report highlights obesity trends and top strategies, policies, programs and practices aimed at reversing the epidemic — to help children grow up at a healthy weight and adults be as healthy as possible at any weight. While the report focuses on progress and promising policies — it also shows that these approaches have not yet received a sufficient level of investment or prioritization to reverse rates on a large scale.

This year's report shows there is still an urgent need to address the obesity crisis — and that the health and financial stakes are too high to allow complacency. It also underscores the fact that there is a wide range of efforts that can make a difference. After years of growth, rates have been stabilizing and can now move in the right direction — but only if efforts receive sufficient resources and support to move forward.

The State of Obesity report series has documented the significant progress achieved over the past 15 years to reduce obesity rates. Evidence-based policies and practices can make a difference — but they need to be maintained and receive a sufficient level of investment to achieve results. Actions to limit policies and reduce funding for obesity-prevention efforts will have adverse consequences for the health of Americans.

Some key strategies to counter the crisis include:

- Supporting parents, families and caregivers in efforts to offer healthier food and beverage choices, encourage ample physical activity and serve as good examples by spending less time on their screens and more time walking, biking and playing with their children;

- Ensuring healthy food and drink options are available for kids in schools and child-care settings — and increasing opportunities to be active and involved in high-quality physical activity programs;

After years of growth, rates have been stabilizing and can now move in the right direction — but only if efforts receive sufficient resources and support to move forward.

For example, in New Mexico, the nonprofit Healthy Kids, Healthy Communities (HKHC) partners with state and local public health departments, schools and other stakeholders to support efforts that help children eat well and move more, serving nearly one in four public elementary school students in communities with the highest poverty rates in the state.

- Making healthy food options more accessible — through efforts like healthy food financing strategies, nutrition assistance programs, nutrition education efforts and farmers' markets;
- Providing healthcare coverage for obesity counseling and services — and strong preventive healthcare for children;
- Engaging healthcare systems and hospitals to support access to services that promote their patients' health beyond doctors' appointments — such as through ongoing community-based programs, coaching and counseling efforts that can reduce healthcare costs and produce better results;
- Encouraging smart community development and design — such as land use policies that support the development of green space, parks and trails, and Complete Streets initiatives, which hundreds of communities have adopted nationwide, that promote active living, including more walkable, mixed-use and recreation-friendly areas;
- Supporting the efforts of food and beverage companies to produce and market healthy, affordable options, and reduce calories, sugar and fat in foods and drinks; and
- Increasing workplace wellness programs and employer-involvement in supporting community-wide health improvement initiatives, such as Live Well San Diego and NashVitality.

There are many bright spots to report — programs and policies that are making a real difference. For example, in New Mexico, the nonprofit Healthy Kids, Healthy Communities (HKHC) partners with state and local public health departments, schools and other stakeholders to support efforts that help children eat well and move more, serving nearly one in four public elementary school students in communities with the highest poverty rates in the state.[22] The program includes supporting Safe Routes to Schools, more high-quality produce in schools, building physical activity into the school day, making healthier foods more available and affordable, especially in rural and remote areas, and supporting healthier child-care settings. The result? An 11.1 percent decline in overweight and obesity among third-graders and a 15.5 percent decline among kindergarteners in the state. If this and other successful efforts were scaled up, it would dramatically improve the health of the nation.

Achieving this goal will require all of society's institutions — governments, businesses, communities and families — to help. Simply put, communities all need to work together to invest in policies, practices and programs that work. Over time, these investments pay off — in terms of saving lives and healthcare costs. By working together, communities can create a Culture of Health and reduce the obesity epidemic.

NATIONAL OBESITY TRENDS

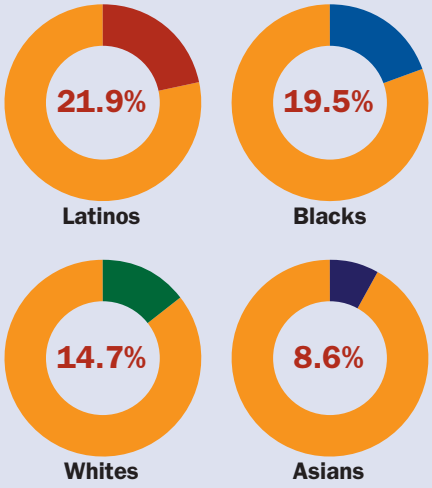
For children and youth:

Nationally, childhood obesity rates (ages 2 to 19) have remained stable for the past decade — at around 17 percent [National Health and Nutrition Examination Survey (NHANES), 2011-2014 data].[20]

- Since 1980, childhood obesity rates (ages 2 to 19) have tripled — with the rates of obese 6- to 11-year-olds more than doubling (from 7.0 percent to 17.5 percent) and rates of obese teens (ages 12 to 19) quadrupling from 5 percent to 20.5 percent.[14,23] [NHANES, 2011-2014 data]
- Obesity rates have also become much higher starting in earlier ages — 8.9 percent of 2- to 5-year-olds are now obese and approximately 2 percent are extremely obese.[20] [NHANES, 2011-2014 data]
- Nearly 2 percent of young children (ages 2 to 5) are extremely obese, 4.3 percent of 6- to 11-year olds are extremely obese and 9.1 percent of 12- to 19-year olds are extremely obese (body mass index (BMI) at or above 120 percent of the sex-specific 95th percentile on the CDC BMI-for-age growth charts).[20] [NHANES, 2011-2014 data]
- There are also significant racial and ethnic inequities. Rates are higher among Latino (21.9 percent) and Black (19.5 percent) children than among White (14.7 percent) and Asian (8.6 percent) children (ages 2 to 19) — and the rates are higher starting at earlier ages and increase faster.[20] [NHANES, 2011-2014 data]
  - 21.4 percent of Latina females and 22.4 percent of Latino males are obese.
  - 20.7 percent of Black females and 18.4 percent of Black males are obese.
  - 15.1 percent of White females and 14.3 percent of White males are obese.
  - 5.3 percent of Asian females and 11.8 percent of Asian males are obese.
  - Among preschoolers (ages 2 to 5), Latinos are three times as likely (15.6 percent) and Blacks are twice as likely (10.4 percent) to be obese than Whites (5.2 percent) and Asians (5.0 percent).
  - Among American Indian/Alaska Native children, 25 percent of 2- to 5-year-olds, 31 percent of 6- to 11-year-olds and 31 percent of 12- to 19-year-olds are obese.[24] [Indian Health Service, 2008]
- In addition, there are also significant inequities in rates of extreme obesity (BMI at or above 120 percent of the sex-specific 95th percentile on the CDC BMI-for-age growth charts):[20] [NHANES, 2011-2014 data]
  - Almost 9 percent of Black, 7.6 percent of Latino, 4.4 percent of White and 1.3 percent of Asian children are extremely obese (ages 2 to 19).
  - Among preschoolers (ages 2 to 5), Latinos (7.6 percent) and Blacks (8.6 percent) are almost twice as likely to be extremely obese than Whites (4.4 percent).

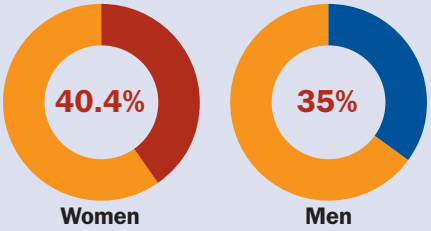
Nationally, childhood obesity rates have remained stable for the past decade

Obesity Rate for Children Ages 2 to 19 by Race and Ethnicity

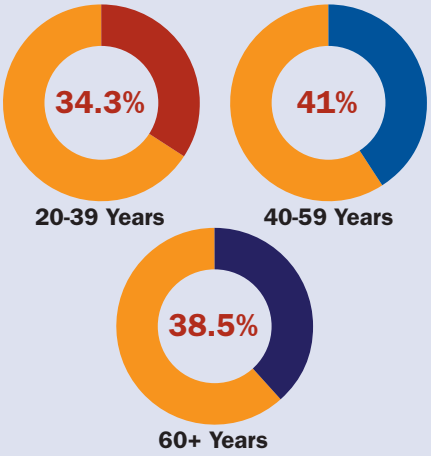


NATIONAL OBESITY TRENDS

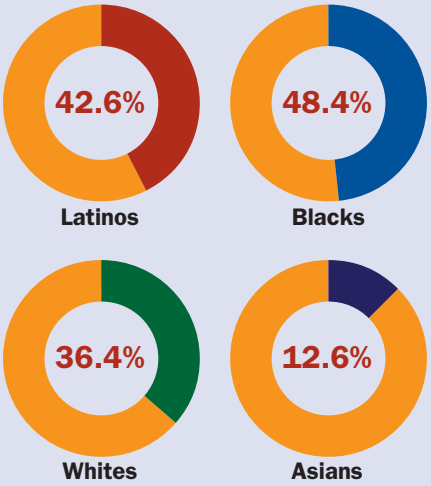
Obesity Rates for Adults by Gender



Obesity Rates for Adults by Age



Obesity Rates for Adults by Race and Ethnicity



For adults:

- Obesity rates exceeded 35 percent in five states, 30 percent in 25 states and 25 percent in 46 states. The lowest rate was 22.3 percent in Colorado. [Behavioral Risk Factor Surveillance System (BRFSS), 2016]
  - In 1985, no state had an adult obesity rate higher than 15 percent; in 1991, no state was over 20 percent; in 2000, no state was over 25 percent; and, in 2006, only Mississippi was above 30 percent.
- Nationally, nearly 38 percent of adults are obese.[17] [NHANES, 2013-2014 data]
  - Nearly 8 percent of adults are extremely obese (BMI greater than or equal to 40.0).[17]
  - Obesity rates are higher among women (40.4 percent) compared to men (35.0 percent).[17] Within the last decade (2005 to 2014), the obesity rate among women increased by 5.1 percent, while the rate among men only increased by 1.7 percent.
  - Women are also almost twice as likely (9.9 percent) to be extremely obese compared to men (5.5 percent).[17]
  - In addition, rates are the highest among middle-age adults (41 percent for 40- to 59-year-olds), compared to 34.3 percent of 20- to 39-year-olds and 38.5 percent of adults ages 60 and older.[17]
- There are significant racial and ethnic inequities. [NHANES, 2013-2014 data]
  - Obesity rates are higher among Blacks (48.4 percent) and Latinos (42.6 percent) than among Whites (36.4 percent) and Asian Americans (12.6 percent).[17]
  - The inequities are highest among women: Blacks have a rate of 57.2 percent, Latinas of 46.9 percent, Whites of 38.2 percent and Asians of 12.4 percent. For men, Latinos have a rate of 37.9 percent, Blacks of 38.0 percent and Whites of 34.7 percent.[17]
  - Black women (16.8 percent) are more likely to be extremely obese than White women (9.7 percent).[17]
- And there are income and/or education inequities.
  - Nearly 33 percent of adults who did not graduate high school were obese compared with 21.5 percent of those who graduated from college or technical college. [2008-2010 data]
  - More than 33 percent of adults who earn less than $15,000 per year are obese compared with 24.6 percent of those who earned at least $50,000 per year.[25] [2008-2010 data]

The State of Adult Obesity

A. OVERVIEW

After years of rapid increases, the growth in America's adult obesity rate has started to slow, and even decline, in some places. On a state level, adult obesity rates increased in four states (Colorado, Minnesota, Washington, and West Virginia), decreased in one state (Kansas), and remained stable in the rest. This supports trends that have shown steadying levels in recent years. Last year was the first time this annual report recorded any declines in adult obesity rates, with four states experiencing declines, and, overtime, growth has started to slow. In 2006, rates increased in 31 states; in 2010, rates increased in 16 states.

Yet, obesity remains one of America's most pervasive, expensive and deadly health problems. More than one-third of U.S. adults are obese (37.9 percent as of 2013-2014).[23] Obesity increases the risk of developing high blood pressure, heart disease, type 2 diabetes, stroke, arthritis, liver disease, kidney disease, Alzheimer's disease, gallbladder disease and mental health issues, as well as many types of cancer.[26] Each year, obesity is associated with more than 100,000 premature deaths.[27] Obesity during pregnancy increases the chances of complications, including gestational diabetes, preeclampsia, cesarean delivery and stillbirth.[28,29,30]

The causes of obesity are complex and include individual, social and environmental factors, but it is clear that most Americans do not eat enough healthy food or get enough physical activity. For example:

- Fewer than half of American adults meet national aerobic guidelines for physical fitness.[31]
- More than 80 percent of Americans do not eat enough vegetables and more than 70 percent do not eat enough fruit.[32]
- Nearly half (about 49 percent) of American adults drink a sugar-sweetened beverage on a given day.[33]
- Most Americans exceed the recommended levels of solid fats, added sugar and sodium.[34]

Physical and social environments also play a role in the obesity epidemic. Communities designed for transportation by cars, jobs that require hours sitting behind a desk, and entertainment options that revolve around watching a screen all encourage a sedentary lifestyle. Meanwhile, processed food and sugar-sweetened beverages are heavily advertised, and often less expensive and more readily available than healthier alternatives.[35] In many communities, there are no grocery stores where residents can buy affordable, nutritious foods. Research has shown that there is likely also a

genetic susceptibility to obesity, though studies have shown that a healthy diet and physical activity can counteract these risks.[36]

Obesity costs our nation more than $149 billion in healthcare costs each year.[37]

Indirect costs attributable to obesity also run in the billions due to absenteeism in school and jobs and reduced productivity. One study estimated indirect absenteeism costs to be as much as $6.3 billion annually.[38]

WHAT IS OBESITY?

Obesity means an amount of body fat that exceeds the level generally considered healthy for a particular height.[39,40] There are many methods of measuring body fat, some of which are expensive and time consuming. Body mass index, which is inexpensive and easy to calculate, is typically used as a proxy. Health officials recommend that individual health assessments should consider other factors as well. Research has demonstrated that a high BMI is strongly correlated with the same negative health consequences as high body fat, although the association between BMI does vary among ethnic groups.

BMI is a person's weight in kilograms divided by his or her height in meters squared. For measurements in pounds and inches, BMI is calculated using the following formula:

$$\text{BMI} = \left(\frac{\text{Weight in pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \right) \times 703$$

Note: In the metric system, BMI is kg / height in meters^2 (the 703 is the conversion needed when using pounds and inches.)

For adults, BMI levels are associated with the following weight classifications:

BMI LEVELS FOR ADULTS AGES 20+	
BMI Level	**Weight Classification**
Below 18.5	Underweight
18.5-24.9	Normal weight
25.0-29.9	Overweight
30-39.9	Obese
40+	Class 3 obesity*

* Also known as severe obesity or morbid obesity.

BMI LEVELS FOR CHILDREN AGES 2-19	
BMI Level	**Weight Classification**
Below 5th percentile	Underweight
5th-84.9th percentile	Normal weight
85th-94.9th percentile	Overweight
95th percentile or above	Obese

Obesity threatens our military readiness, as well as the number of individuals capable of serving as first responders, firefighters and police officers. In fact, being overweight or obese is the leading cause of medical disqualifications, with 23 percent of armed services applicants rejected because of excessive weight or body fat.[9] Research has estimated that obese service members cost the Defense Department $1.1 billion in medical costs and $105.6 million per year in lost productivity.[42] *Mission: Readiness* — a group consisting of retired admirals and generals — has warned that the obesity crisis threatens the future strength of our military.[10]

In the United States, there are two primary instruments at CDC used to track adult obesity rates:

1 **The Behavioral Risk Factor Surveillance System** is the source for the state-by-state adult obesity data in this report. This survey's advantages include: (a) it is the largest ongoing telephone health survey in the world; (b) each state survey is representative of the population of that state; and (c) the survey is conducted annually, so new obesity data are available each year. Downsides of this survey include: (a) small samples that in some states prohibit meaningful information collection about particular racial and ethnic groups; and (b) survey respondents self-report their weight and height, which may result in reported obesity rates lower than actual rates, due to people's tendency to underreport their weight and exaggerate their height.[43]

2 **The National Health and Nutrition Examination Survey** is the source for the national adult obesity data in this report, and also measures childhood obesity rates. As a survey instrument, NHANES has several advantages: (a) it examines a nationally representative sample of Americans ages 2 and older; and (b) it combines interviews with physical examinations, increasing the accuracy of the data. A downside of the survey is the delay between collection and reporting. For example, the most recent published obesity rates from the NHANES are from 2013-2014.

Nearly 1/4 of armed services applicants are rejected because they are overweight or obese.

CHART ON OBESITY AND OVERWEIGHT RATES

	ADULTS									
	Obesity (BRFSS 2016 Data)		Overweight & Obesity (BRFSS 2016 Data)		Diabetes (BRFSS 2016 Data)		Physical Inactivity (BRFSS 2016 Data)		Hypertension (BRFSS 2015 Data)	
States	Percent of Obese Adults (95% C.I.)	Ranking	Percent of Overweight and Obese Adults (95% C.I.)	Ranking	Percent of Adults with Diabetes (95% C.I.)	Ranking	Percent of Adults Who are Physically Inactive (95% C.I.)	Ranking	Precent of Adults Who have Hyptertension (95% C.I.)	Ranking
Alabama	35.7 (+/- 1.6)	3	69.5 (+/- 1.5)	3	14.6 (+/- 1.0)	2	29.4 (+/- 1.4)**	6	40.4 (+/-1.5)	3
Alaska	31.4 (+/- 2.9)	20	66.7 (+/- 2.9)	20	7.5 (+/- 1.4)	49	19.1 (+/- 2.7)	44	27.5 (+/-2.2)	48
Arizona	29.0 (+/- 1.5)	29	63.2 (+/- 1.7)	38	10.8 (+/- 0.8)	21	23.1 (+/- 1.4)	26	30.8 (+/-1.4)	27
Arkansas	35.7 (+/- 2.4)	3	68.2 (+/- 2.4)	11	13.5 (+/- 1.4)	4	32.5 (+/- 2.3)	1	39.3 (+/-2.2)	4
California	25.0 (+/- 1.1)	47	61.0 (+/- 1.2)	45	10.2 (+/- 0.7)	29	20.5 (+/- 1.0)	36	28.5 (+/-1.0)	46
Colorado	22.3 (+/- 0.9)*	51	58.1 (+/- 1.1)	49	6.6 (+/- 0.4)	51	15.8 (+/- 0.8)**	50	25.7 (+/-1.1)	50
Connecticut	26.0 (+/- 1.2)	42	61.8 (+/- 1.4)	43	9.8 (+/- 0.7)	30	21.3 (+/- 1.1)**	33	30.4 (+/-1.1)	30
Delaware	30.7 (+/- 2.1)	23	68.0 (+/- 2.2)	13	10.6 (+/- 1.2)	23	26.6 (+/- 1.8)	14	34.5 (+/-2.0)	12
D.C.	22.6 (+/- 1.7)	50	53.4 (+/- 2.2)	51	7.7 (+/- 0.8)	48	16.2 (+/- 1.5)**	49	29.4 (+/-2.5)	41
Florida	27.4 (+/- 1.0)	36	63.2 (+/- 1.1)	38	11.8 (+/- 0.7)	11	29.8 (+/- 1.0)*	3	33.5 (+/-1.3)	16
Georgia	31.4 (+/- 1.7)	20	65.8 (+/- 1.8)	24	12.1 (+/- 1.0)	8	29.4 (+/- 1.6)	6	36.2 (+/-1.8)	9
Hawaii	23.8 (+/- 1.4)	48	57.6 (+/- 1.6)	50	10.5 (+/- 0.9)*	25	20.8 (+/- 1.3)	34	32.0 (+/-1.5)	23
Idaho	27.4 (+/- 1.8)	36	64.5 (+/- 2.0)	32	8.9 (+/- 1.0)	40	20.2 (+/- 1.5)	38	31.2 (+/-1.7)	25
Illinois	31.6 (+/- 1.7)	18	65.0 (+/- 1.8)	28	10.4 (+/- 1.0)	27	23.9 (+/- 1.5)	21	30.8 (+/-1.5)	27
Indiana	32.5 (+/- 1.3)	10	67.2 (+/- 1.4)	16	11.5 (+/- 0.7)	13	26.8 (+/- 1.2)**	13	32.4 (+/-1.6)	21
Iowa	32.0 (+/- 1.5)	13	68.7 (+/- 1.5)	7	9.3 (+/- 0.7)	36	22.7 (+/- 1.2)**	30	30.6 (+/-1.4)	29
Kansas	31.2 (+/- 1.1)**	22	66.7 (+/- 1.2)	20	9.4 (+/- 0.6)	34	23.5 (+/- 1.0)**	23	31.6 (+/-0.7)	24
Kentucky	34.2 (+/- 1.5)	7	69.1 (+/- 1.5)	5	13.1 (+/- 0.9)	5	29.8 (+/- 1.4)**	3	39.0 (+/-1.6)	6
Louisiana	35.5 (+/- 2.1)	5	69.2 (+/- 2.1)	4	12.1 (+/- 1.2)	8	29.1 (+/- 2.0)**	8	39.3 (+/-1.8)	4
Maine	29.9 (+/- 1.4)	26	65.2 (+/- 1.5)	27	10.6 (+/- 0.8)	23	20.6 (+/- 1.2)**	35	34.1 (+/-1.3)	14
Maryland	29.9 (+/- 1.1)	26	64.6 (+/- 1.2)	31	10.8 (+/- 0.6)	21	23.1 (+/- 1.0)	26	32.5 (+/-1.6)	19
Massachusetts	23.6 (+/- 1.3)	49	60.2 (+/- 1.6)	48	9.3 (+/- 0.8)	36	20 (+/- 1.2)**	39	29.6 (+/-1.2)	38
Michigan	32.5 (+/- 1.1)	10	67.5 (+/- 1.1)	14	11.2 (+/- 0.7)	17	23.9 (+/- 1.0)**	21	33.1 (+/-1.2)	18
Minnesota	27.8 (+/- 0.8)*	34	64.8 (+/- 0.9)*	30	8.4 (+/- 0.5)*	43	18 (+/- 0.7)**	46	26.3 (+/-0.8)	49
Mississippi	37.3 (+/- 1.9)	2	71.3 (+/- 1.8)	1	13.6 (+/- 1.1)	3	30.3 (+/- 1.7)**	2	42.4 (+/-1.8)	2
Missouri	31.7 (+/- 1.7)	17	67.2 (+/- 1.8)	16	11.5 (+/- 1.0)	13	24.9 (+/- 1.5)	18	34.1 (+/-1.5)	14
Montana	25.5 (+/- 1.6)	44	62.7 (+/- 1.9)	40	8.1 (+/- 0.8)	46	19.9 (+/- 1.4)**	41	29.1 (+/-1.5)	45
Nebraska	32.0 (+/- 1.2)	13	68.5 (+/- 1.3)	9	8.8 (+/- 0.6)	41	22.4 (+/- 1.0)**	31	29.9 (+/-1.0)	34
Nevada	25.8 (+/- 2.0)	43	62.3 (+/- 2.3)	42	11.1 (+/- 1.2)	19	24.7 (+/- 1.9)	19	28.3 (+/-2.4)	47
New Hampshire	26.6 (+/- 1.6)	40	63.5 (+/- 1.9)	36	9.0 (+/- 0.8)	39	19.3 (+/- 1.3)**	43	29.2 (+/-1.4)	44
New Jersey	27.4 (+/- 1.7)	36	63.8 (+/- 1.8)	34	9.2 (+/- 0.9)	38	29.8 (+/- 1.6)*	3	30.9 (+/-1.3)	26
New Mexico	28.3 (+/- 1.8)	33	64.9 (+/- 1.9)	29	11.6 (+/- 1.1)	12	20.3 (+/- 1.5)**	37	30.0 (+/-1.5)	33
New York	25.5 (+/- 1.0)	44	60.8 (+/- 1.2)	46	10.5 (+/- 0.6)	25	26.3 (+/- 1.0)**	15	29.3 (+/-1.0)	43
North Carolina	31.8 (+/- 1.5)	16	66.8 (+/- 1.5)	19	11.3 (+/- 0.9)	15	23.3 (+/- 1.3)**	24	35.2 (+/-1.4)	11
North Dakota	31.9 (+/- 1.6)	15	68.1 (+/- 1.7)	12	8.6 (+/- 0.8)	42	22.2 (+/- 1.4)**	32	30.4 (+/-1.6)	30
Ohio	31.5 (+/- 1.3)	19	66.3 (+/- 1.4)	22	11.1 (+/- 0.7)	19	25.9 (+/- 1.2)	16	34.3 (+/-1.4)	13
Oklahoma	32.8 (+/- 1.6)	9	68.8 (+/- 1.6)	6	12 (+/- 0.9)	10	28.5 (+/- 1.4)**	9	36.2 (+/-1.6)	9
Oregon	28.7 (+/- 1.5)	31	62.6 (+/- 1.6)	41	9.5 (+/- 0.9)	33	17.2 (+/- 1.2)	48	30.1 (+/-1.5)	32
Pennsylvania	30.3 (+/- 1.5)	25	65.4 (+/- 1.6)	26	11.3 (+/- 1.0)	15	22.9 (+/- 1.3)**	29	32.5 (+/-1.6)	19
Rhode Island	26.6 (+/- 1.8)	40	63.7 (+/- 2.0)	35	9.8 (+/- 1.0)	30	24.4 (+/- 1.6)**	20	32.4 (+/-1.6)	21
South Carolina	32.3 (+/- 1.3)	12	67.4 (+/- 1.3)	15	13 (+/- 0.8)*	6	26.9 (+/- 1.2)	12	37.8 (+/-1.2)	8
South Dakota	29.6 (+/- 2.1)	28	66.9 (+/- 2.3)	18	7.9 (+/- 1.0)	47	18.9 (+/- 1.7)**	45	29.9 (+/-1.7)	34
Tennessee	34.8 (+/- 1.8)	6	68.6 (+/- 1.8)	8	12.7 (+/- 1.0)	7	28.4 (+/- 1.6)	11	38.5 (+/-1.8)	7
Texas	33.7 (+/- 1.7)	8	68.4 (+/- 1.7)	10	11.2 (+/- 1.0)	17	25.2 (+/- 1.5)**	17	29.5 (+/-1.3)	40
Utah	25.4 (+/- 1.1)	46	60.4 (+/- 1.3)	47	7.2 (+/- 0.6)	50	15.7 (+/- 0.9)**	51	23.6 (+/-0.9)	51
Vermont	27.1 (+/- 1.6)	39	61.7 (+/- 1.8)	44	8.4 (+/- 0.8)	43	19.5 (+/- 1.3)**	42	29.4 (+/-1.4)	41
Virginia	29.0 (+/- 1.3)	29	65.5 (+/- 1.4)	25	10.4 (+/- 0.7)	27	23.3 (+/- 1.2)**	24	33.2 (+/-1.3)	17
Washington	28.6 (+/- 1.0)*	32	63.5	36	9.4*	34	17.6**	47	29.7 (+/-0.9)	37
West Virginia	37.7 (+/- 1.4)*	1	70.9 (+/- 1.3)	2	15 (+/- 0.9)	1	28.5 (+/- 1.2)**	9	42.7 (+/-1.5)	1
Wisconsin	30.7 (+/- 1.7)	23	66.2 (+/- 1.9)	23	9.8 (+/- 1.0)*	30	20 (+/- 1.5)	39	29.6 (+/-1.5)	38
Wyoming	27.7 (+/- 2.0)	35	64.2 (+/- 2.3)	33	8.3 (+/- 1.0)	45	23.1 (+/- 1.9)**	26	29.9 (+/-1.8)	34

Note: For rankings, 1 = Higest rate and 51 = Lowest rate; Red and * indicates state rate between 2015 and 2016 has significantly increased; Green and ** indicates state rate between 2015 and 2016 has significantly decrease; C.I. = Confidence Intervals. If not referenced, confidence intervals could not be calculated

Source: Behavioral Risk Factor Surveillance (BRFSS), CDC

AND RELATED HEALTH INDICATORS IN THE STATES

CHILDREN AND ADOLESCENTS

States	Young Children Ages 2 to 4: Obesity (WIC PC 2012 Data)	Children and Teenagers Ages 6 to 17: Obesity and Physical Activity (NSCH 2016 Data)			High School Students: Obesity, Overweight, Physical Activity (YRBS 2015 Data)			Food Insecurity (USDA 2013-2015 Data)
	Percent of Obese Low-Income Children Ages 2-4 (95% C.I.)	Percent of Obese or Overweight Children Ages 10-17	Ranking	Percent of Children Ages 6-11 Participating in 60 Minutes of Physical Activity Everyday	Percentage of Obese High School Students (95% C.I.)	Percentage of Overweight High School Students (95% C.I.)	Percentage of High School Students Who Were Physically Active At Least 60 Minutes on All 7 Days	Percent of Households with Food Insecurity, Average
Alabama	15.6 (+/- 0.4)	35.5	6	40.0	16.1 (+/- 2.8)	17.5 (+/-2.4)	25.4 (+/- 3.2)	17.7
Alaska	20.6 (+/- 0.9)	26.3	42	31.7	14.0 (+/- 2.3)	16.7 (+/-2.2)	20.9 (+/- 2.3)	13.9
Arizona	14.9 (+/- 0.3)	26.9	40	22.9	10.9 (+/- 2.3)	14.7 (+/-1.8)	26.0 (+/- 3.4)	15.8
Arkansas	14.6 (+/- 0.4)	33.9	9	29.6	18.0 (+/- 2.0)	18.0 (+/-3.0)	28.6 (+/- 3.2)	18.4
California	17.6 (+/- 0.1)	31.2	24	30.5	13.9 (+/- 2.8)	16.5 (+/-3.0)	25.3 (+/- 3.8)	12.5
Colorado	8.9 (+/- 0.3)	27.2	36	28.8	N/A	N/A	N/A	12.2
Connecticut	16.6 (+/- 0.5)	30.2	29	32.2	12.3 (+/- 2.3)	14.3 (+/-2.0)	25.3 (+/- 2.7)	12.2
Delaware	16.9 (+/- 0.8)	30.9	25	29.5	15.8 (+/- 1.7)	15.8 (+/-2.0)	24.7 (+/- 2.3)	12.1
D.C.	14.4 (+/- 1.0)	33.8	11	23.8	N/A	N/A	N/A	12.6
Florida	13.7 (+/- 0.2)	36.6	4	32.5	12.3 (+/- 1.1)	14.5 (+/-1.1)	24.1 (+/- 1.6)	15.1
Georgia	13.4 (+/- 0.3)	32.2	18	36.4	N/A	N/A	N/A	16.2
Hawaii	10.2 (+/- 0.5)	25.5	44	25.1	12.9 (+/- 2.1)	15.3 (+/-1.4)	20.3 (+/- 1.6)	12.8
Idaho	11.8 (+/- 0.5)	26.0	43	30.8	11.1 (+/- 2.2)	15.3 (+/-2.0)	29.6 (+/- 3.2)	14.0
Illinois	15.9 (+/- 0.2)	27.0	39	31.2	12.6 (+/-1.9)	15.4 (+/-1.4)	26.8 (+/- 2.7)	11.7
Indiana	14.7 (+/- 0.3)	33.9	9	36.3	13.6 (+/-1.9)	17.3 (+/-3.0)	25.3 (+/- 2.6)	14.4
Iowa	15.1 (+/- 0.4)	29.9	30	26.0	N/A	N/A	N/A	12.0
Kansas	13.1 (+/- 0.4)	30.9	25	32.0	N/A	N/A	N/A	13.2
Kentucky	13.5 (+/- 0.4)	33.5	14	30.2	18.5 (+/-2.2)	17 (+/-2.7)	20.2 (+/- 3.3)	15.8
Louisiana	13.8 (+/- 0.4)	34.0	8	25.4	N/A	N/A	N/A	16.9
Maine	14.9 (+/- 0.7)	28.2	34	36.0	13.3 (+/-1.5)	14.9 (+/- 0.9)	21.6 (+/- 1.3)	14.8
Maryland	16.2 (+/- 0.4)	33.6	13	27.1	11.5 (+/-0.5)	14.9 (+/- 0.5)	19.5 (+/- 0.5)	11.4
Massachusetts	16.9 (+/- 0.4)	26.6	41	28.1	11.0 (+/-1.7)	15.3 (+/- 1.8)	24.1 (+/- 2.8)	10.3
Michigan	13.9 (+/- 0.2)	32.0	19	32.3	14.3 (+/-1.8)	16.0 (+/- 1.9)	24.6 (+/- 3.8)	15.1
Minnesota	12.2 (+/- 0.3)	27.7	35	32.6	N/A	N/A	N/A	9.9
Mississippi	14.8 (+/- 0.4)	37.0	3	34.3	18.9 (+/-2)	17.1 (+/- 1.4)	21.2 (+/- 2.7)	21.5
Missouri	13.5 (+/- 0.3)	29.4	32	29.6	13.1 (+/- 3.6)	13.3 (+/- 2.3)	26.0 (+/- 4.2)	15.6
Montana	11.3 (+/- 0.7)	23.2	48	30.3	10.3 (+/- 1.2)	15.0 (+/- 0.9)	28.7 (+/- 1.7)	13.0
Nebraska	17.2 (+/- 0.6)	29.2	33	36.4	13.0 (+/- 2.1)	16.9 (+/-1.9)	29.7 (+/- 2.9)	12.3
Nevada	12.9 (+/- 0.4)	30.5	28	31.0	12.2 (+/- 2.1)	15.0 (+/- 2.4)	28.6 (+/- 2.9)	13.7
New Hampshire	14.8 (+/- 0.9)	23.8	47	30.1	12.2 (+/- 2.5)	14.5 (+/- 1.1)	22.3 (+/- 1.1)	9.7
New Jersey	16.8 (+/- 0.3)	31.7	21	24.7	N/A	N/A	N/A	10.8
New Mexico	13.5 (+/- 0.5)	24.9	46	31.8	15.6 (+/- 0.9)	16.2 (+/- 1.1)	30.9 (+/- 1.8)	16.0
New York	15.1 (+/- 0.2	31.8	20	22.9	13.1 (+/- 1.6)	13.9 (+/- 1.5)	23.3 (+/- 2.5)	12.6
North Carolina	13.5 (+/- 0.3)	30.9	25	32.5	16.4 (+/- 2.9)	15.9 (+/- 2.7)	24.3 (+/- 1.5)	16.5
North Dakota	14.0 (+/- 1.0)	37.1	2	34.8	14.0 (+/- 2.0)	14.7 (+/- 1.6)	25.4 (+/- 2.5)	7.7
Ohio	13.0 (+/- 0.2)	33.1	16	34.9	N/A	N/A	N/A	16.0
Oklahoma	15.0 (+/- 0.4)	33.8	11	30.8	17.3 (+/- 3.1)	15.3 (+/- 2.3)	32.2 (+/- 2.9)	16.2
Oregon	15.9 (+/- 0.4)	20.3	50	29.7	N/A	N/A	N/A	14.2
Pennsylvania	13.1 (+/- 0.3)	31.7	21	30.8	14.0 (+/- 1.8)	15.8 (+/- 1.6)	24.8 (+/- 2.5)	13.1
Rhode Island	16.7 (+/- 0.8)	36.3	5	28.2	12.0 (+/- 2.4)	14.7 (+/- 1.8)	20.3 (+/- 2.5)	12.5
South Carolina	12.6 (+/- 0.3)	32.9	17	31.3	16.3 (+/- 1.9)	18.2 (+/- 1.1)	23.6 (+/- 3.6)	15.3
South Dakota	14.8 (+/- 0.8)	31.4	23	31.9	14.7 (+/- 2.7)	14.5 (+/- 2.7)	28.1 (+/- 3.9)	12.1
Tennessee	15.3 (+/- 0.3)	37.7	1	29.6	18.6 (+/- 2.0)	17.1 (+/- 1.2)	25.9 (+/- 1.8)	15.4
Texas	15.9 (+/- 0.1)	33.3	15	23.8	N/A	N/A	N/A	15.7
Utah	8.7 (+/- 0.4)	19.2	51	21.9	N/A	N/A	N/A	13.1
Vermont	13.7 (+/- 0.9)	22.2	49	39.7	12.4 (+/- 0.5)	14.0 (+/- 0.5)	23.1 (+/- 0.6)	11.9
Virginia	20.1 (+/- 0.4)	27.2	36	29.9	13.0 (+/- 1.8)	15.1 (+/- 1.6)	25.1 (+/- 2.3)	11.2
Washington	14.3 (+/- 0.3)	25.5	44	33.7	N/A	N/A	N/A	12.8
West Virginia	14.1 (+/- 0.6)	35.1	7	32.1	17.9 (+/- 3.1)	17.0 (+/- 2.1)	25.8 (+/- 2.7)	14.9
Wisconsin	15.2 (+/- 0.3)	29.5	31	32.5	N/A	N/A	N/A	11.0
Wyoming	10.6 (+/- 0.9)	27.1	38	29.2	11.0 (+/- 1.6)	14.6 (+/- 1.6)	27.1 (+/- 2.4)	12.3

Note: C.I. = Confidence Intervals

Source: USDA, Women, Infants, and Children Participant and Program Characteristics (WIC PC), 2012.

Note: For ranking, 1 = Highest rate and 51 = Lowest rate.

Source: National Survey of Children's Health (NSCH), 2016 data. Confidence intervals and additional information can be found online: http://www.childhealthdata.org/browse/survey/allstates?q=4568; http://childhealthdata.org/browse/survey/allstates?q=4551

Note: C.I. = Confidence Intervals.

Source: Youth Risk Behavior Survey (YRBS) 2015, CDC. YRBS data are collected every 2 years. Percentages are as reported on the CDC website and can be found at: http://www.cdc.gov/HealthyYouth/yrbs/index.htm.

Source: Calculated by USDA, Economic Research Service using data from the Current Population Survey Food Security Supplement.

B. STATE-BY-STATE ADULT OBESITY RATES

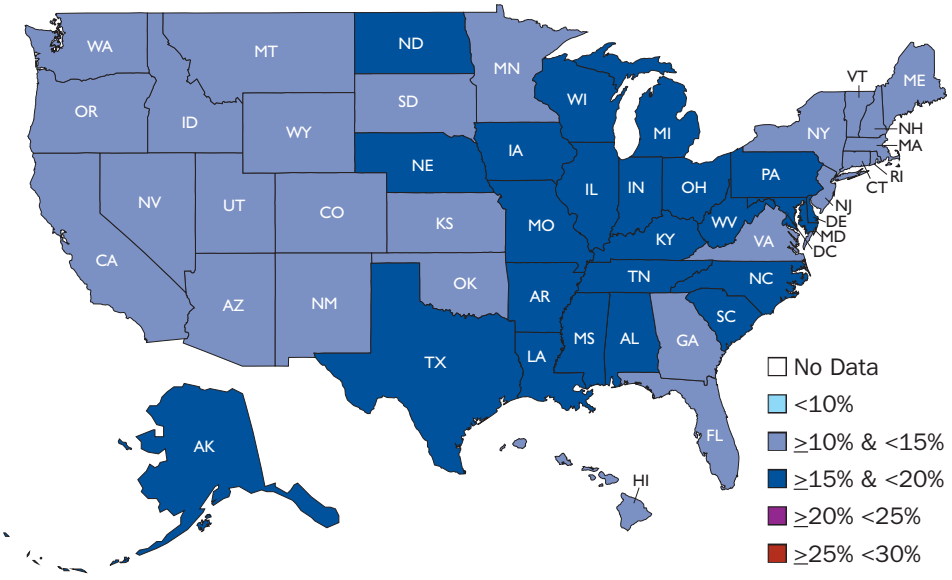
The two maps below illustrate the major growth in state obesity rates between 1993, when the BRFSS became a nationwide surveillance system, and 2017. Note that CDC made some methodological changes to the survey in 2011, which do not allow for direct comparisons. However, these maps reflect trends confirmed by other surveys, which all show large increases in obesity rates over the past 25 years.

TRENDS IN OBESITY AMONG U.S. ADULTS

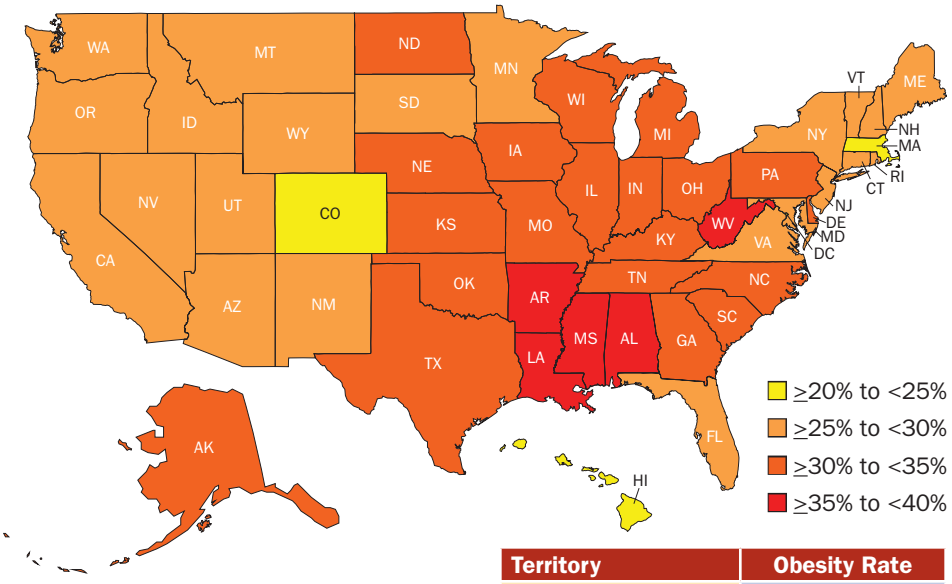
BMI >30 = Obese, or about 30lbs overweight for 5'4" person

Interactive maps and timelines for all years are available at stateofobesity.org

1993–1995 Combined Data



2016 Adult Obesity Rates



Territory	Obesity Rate
Guam	28.3
Puerto Rico	30.7

Source: CDC, BRFSS

C. NATIONAL ADULT OBESITY RATES

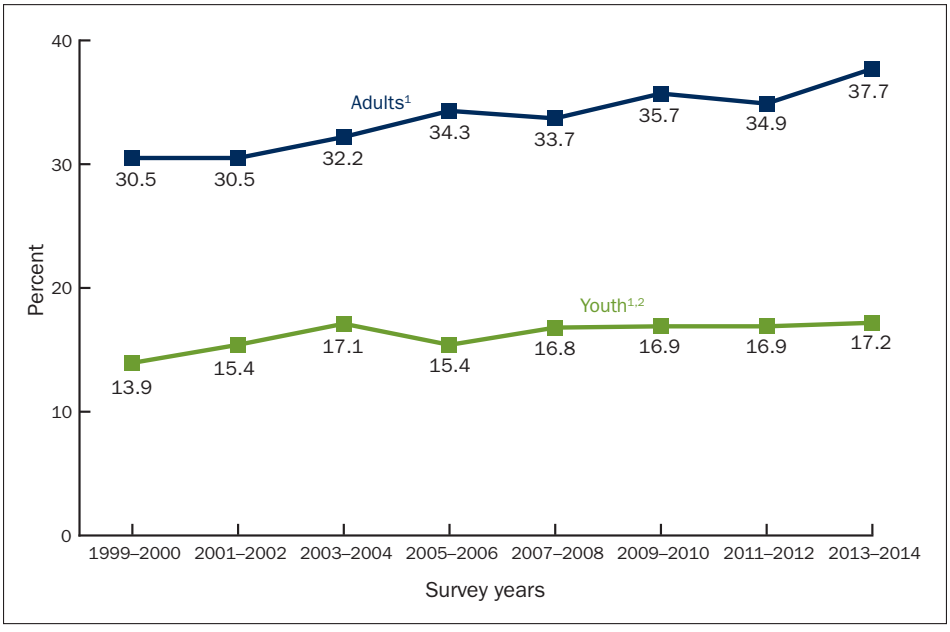
Nationally, 37.9 percent of American adults were obese in 2013-14 (NHANES).[17] Rates of extreme or severe obesity are 7.7 percent, and more than 70 percent are overweight or obese.

After decades of increases, rates stabilized during the time period between 2003-2004 and 2011-12, and grew slightly among women from 2011-12 to 2013-14 (using measures of statistical significance).[17] Obesity rates had nearly tripled since CDC first began tracking them in 1960, and have doubled since the 1980s.[44]

Obesity rates vary by sex, age and other characteristics. The obesity rate is higher among women (40.4 percent) than men (35.0 percent); women also have higher rates of class 3 obesity (9.9 percent vs. 5.5 percent for men).[17] In 2011-2014, middle-aged Americans (ages 40-59) had the highest obesity rate of any age group at 41.0 percent, followed by seniors (ages 60 and older) at 38.5 percent, and then young adults (ages 20-39) at 34.3 percent.

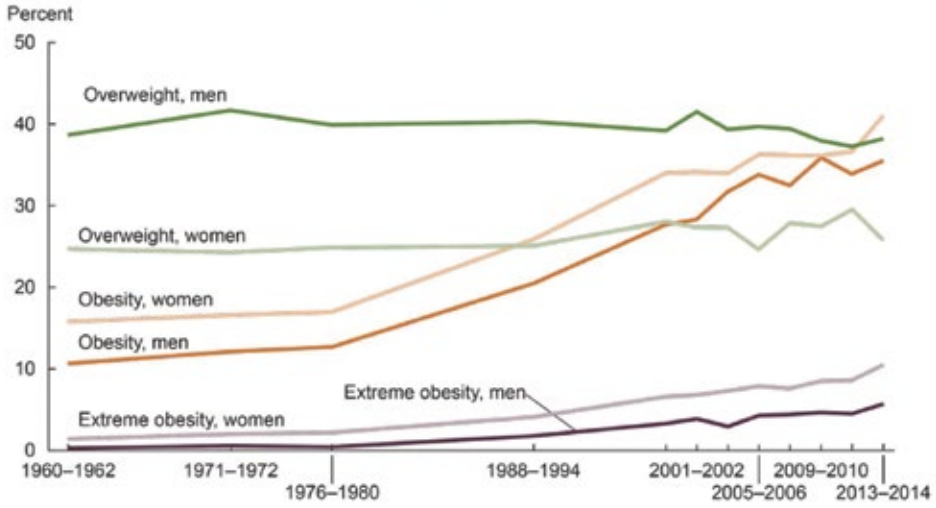
More than 70% of American adults are obese or overweight.

Trends in obesity prevalence among adults aged 20 and over (age-adjusted) and youth aged 2–19 years: United States, 1999–2000 through 2013–2014



[1] Significant increasing linear trend from 1999–2000 through 2013–2014.
[2] Test for linear trend for 2003–2004 through 2013–2014 not significant ($p>0.05$)
NOTE: All adult estimates are age-adjusted by the direct method to the 2000 U.S. census population using the age groups 20–39, 40–59, and 60 and over.
SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey.

Trends in adult overweight, obesity, and extreme obesity among men and women aged 20–74: United States, 1960–1962 through 2013–2014



NOTES: Age-adjusted by the direct method to the year 2000 U.S. Census Bureau estimates using age groups 20–39, 40–59, and 60–74. Overweight is body mass index (BMI) of 25 kg/m^2 or greater but less than 30 kg/m^2; obesity is BMI greater than or equal to 30; and extreme obesity is BMI greater than or equal to 40. Pregnant females were excluded from the analysis.
SOURCES: NCHS, National Health Examination Survey and National Health and Nutrition Examination Surveys.

WHY ARE REPORTED NATIONAL OBESITY RATES HIGHER THAN STATE-BY-STATE RATES?

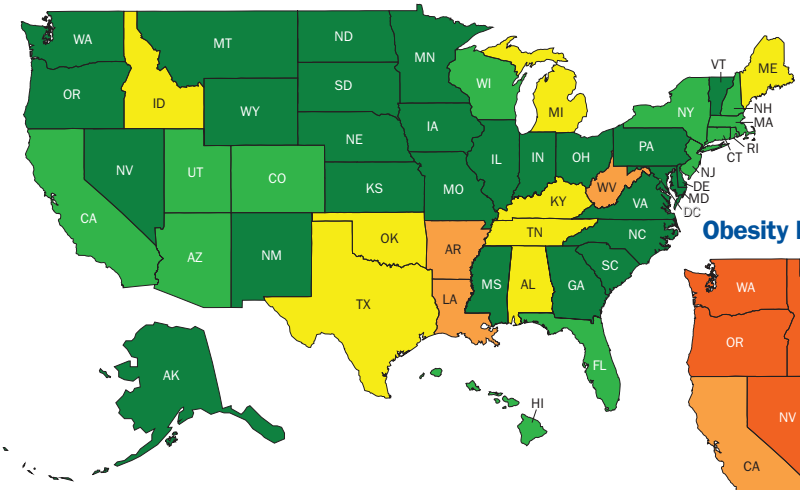
How is it that only five states have obesity rates exceeding 35 percent, yet the national obesity rate is 37.7 percent? This paradox is explained by the fact that people do not always accurately report their height and weight.

State obesity rates are collected by the BRFSS, which relies on self-reported height and weight. Research has demonstrated that respondents tend to overestimate their height and underestimate their weight.[43] In fact, one study found that, due to this phenomenon, the BRFSS may underestimate obesity rates by nearly 10 percent.[45] There is also research indicating that certain groups of people are more likely to misreport their weight and/or height. For example, one study found rural Blacks are more likely than rural Whites to misperceive their weight.[46] Another study of adolescents found that females underreported their weight more than males, and overweight individuals underestimated their weight more than non-overweight individuals.[47]

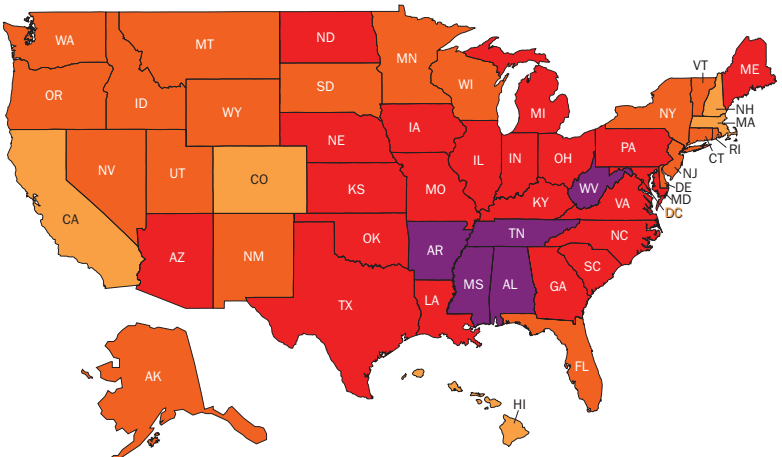
The NHANES survey, from which the national obesity rate is derived, calculates its obesity rate based on physical examinations of respondents. Accordingly, the higher rates reflected by the NHANES survey are likely a more accurate reflection of the true extent of the obesity epidemic.

ADULT OBESITY RATES BY AGE RANGE

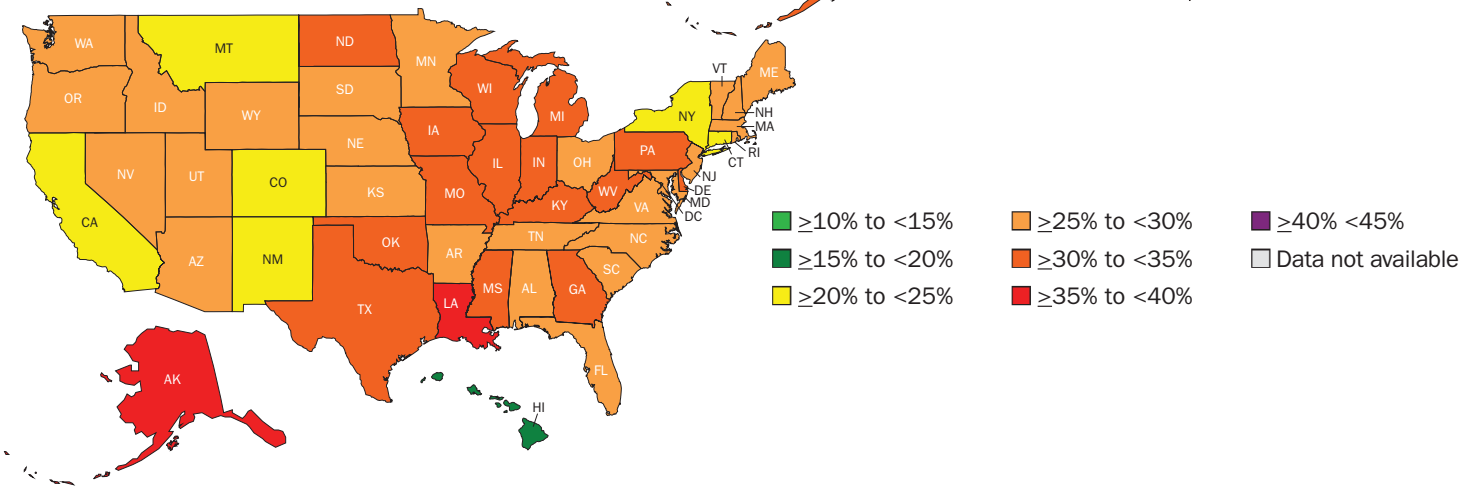
Obesity Rates for Young Adults (18- to 24-year-olds) BRFSS 2016

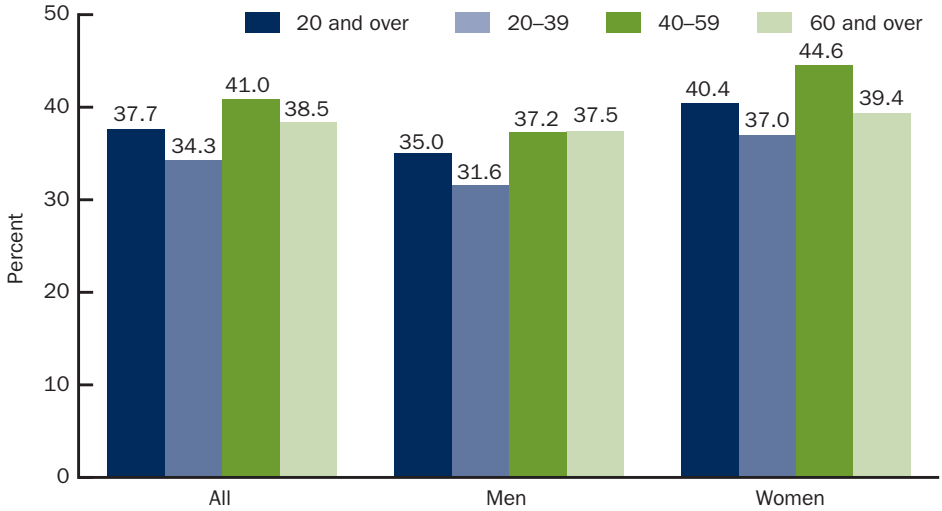


Obesity Rates for Baby Boomers (45- to 64-year-olds) BRFSS 2016



Obesity Rates for Seniors (65+ year-olds) BRFSS 2016





Prevalence of obesity among adults ages 20 and over, by sex and age: United States, 2013–2014

NOTES: Totals were age-adjusted by the direct method to the 2000 U.S. census population using the age groups 20–39, 40–59, and 60 and over. Crude estimates are 37.9% for all, 35.2% for men, and 40.5% for women.
SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2013–2014.

D. INEQUITY AND OBESITY

Obesity disproportionately affects different communities — including communities of color, communities with high levels of poverty, and adults with lower education levels.

OBESITY BY RACE/ETHNICITY — 2013-2014 DATA[17]	
Race/Ethnicity	**Obesity Rate**
Asian*	12.6%
Black*	48.4%
Latino**	42.6%
White*	36.4%

* Black, White and Asian rates are for non-Hispanic members of each race.
** Persons of Hispanic origin may be of any race.

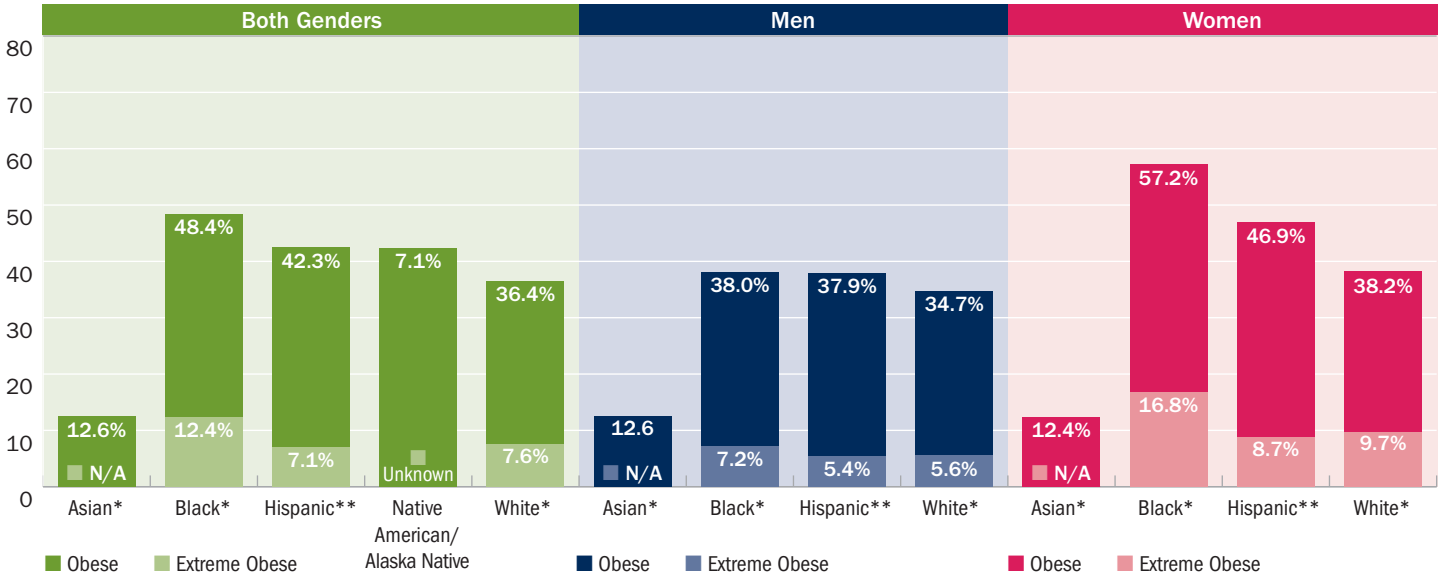
1. Racial and Ethnic Groups

Obesity rates vary widely among racial/ethnic groups, with Latinos and Blacks having significantly higher rates than Whites and Asians. According to the most recent national data (2013-2014, age adjusted), obesity rates are:[17]

- Asian — 12.6 percent
- Black — 48.4 percent
- Latino — 42.6 percent
- White — 36.4 percent

Broken down by sex and race/ethnicity, Black women have the highest obesity rates at 57.2 percent, while Asian-American women have the lowest rates at 12.4 percent. Below are obesity rates by sex and race/ethnic origin.

Obesity and Extreme Obesity Rates for Adults, National Health and Nutrition Examination Survey (NHANES), 2013-2014[17] (with Native American/Alaska Native Rates per 2014 National Health Interview Survey[48])



* Black, White and Asian rates are for non-Hispanic members of each race.
** Persons of Hispanic origin may be of any race.
N/A data only included 2 participants.

RACIAL AND ETHNIC INEQUITIES AND OBESITY

OBESITY RATES BY AGE AND ETHNICITY

	Obesity Rates by Age — BRFSS 2016								Obesity Rates by Ethnicity — BRFSS 2016					
	18-24 Year Olds		25-44 Year Olds		45-64 Year Olds		65+ Year Olds		Obesity Among Blacks		Obesity Among Latinos		Obesity Among Whites	
	Percent Obese, 2016 (95% C.I.)	Rank	Percent Obese, 2016 (95% C.I.)	Rank	Percent Obese, 2016 (95% C.I.)	Rank	Percent Obese, 2016 (95% C.I.)	Rank	Percent Obese, 2016 (95% C.I.)	Rank	Percent Obese, 2016 (95% C.I.)	Rank	Percent Obese, 2016 (95% C.I.)	Rank
Alabama	22.6	6	38.2	3	42.1 (+/- 2.5)	3	29.6 (+/- 2.5)	20	44.1 (+/- 1.9)	5	28.1	38	32.4 (+/- 1)	5
Alaska	15.1	36	35.4 (+/- 5.6)	8	32.5 (+/- 4.1)	36	35.3 (+/- 7.2)	1	43.6	6	27.9	40	28.7 (+/- 1.5)	27
Arizona	14.4	42	31.3	24	35.1 (+/- 2.4)	23	25.9 (+/- 1.8)	36	33.1	34	35.0 (+/- 2.2)	9	26.0 (+/- 0.9)	37
Arkansas	28.6 (+/- 9.8)	1	38.4 (+/- 5)	2	41.1 (+/- 3.5)	3	27.6 (+/- 2.8)	32	44.2 (+/- 4)	4	32.4 (+/- 7.6)	15	34.0 (+/- 1.4)	2
California	14.5 (+/- 2.5)	40	25.4 (+/- 1.9)	45	29.6 (+/- 1.9)	47	23.5 (+/- 2.4)	49	31.0 (+/- 2.9)	39	32.3 (+/- 1.2)	17	22.7 (+/- 0.8)	48
Colorado	12.8	48	21.9	49	26.9 (+/- 1.5)	51	21.0 (+/- 1.4)	50	29.1	45	27.1	42	19.8 (+/- 0.6)	49
Connecticut	13.4 (+/- 3.7)	46	27.0 (+/- 2.7)	39	30.3 (+/- 1.8)	43	24.9 (+/- 1.7)	44	37.7 (+/- 3)	19	30.3 (+/- 2.4)	31	24.3 (+/- 0.8)	45
Delaware	19.3	14	30.9 (+/- 4.2)	27	34.8 (+/- 3.4)	27	30.4 (+/- 3.2)	14	36.5 (+/- 3.2)	27	32.1 (+/- 4.8)	19	29.4 (+/- 1.4)	21
D.C.	11.6 (+/- 5.1)	50	21.1 (+/- 2.8)	51	29.1 (+/- 2.7)	48	24.0 (+/- 3.4)	47	35.5 (+/- 2.1)	29	20.0 (+/- 5.6)	49	9.7 (+/- 1.4)	51
Florida	14.9	38	28.3	33	32.1 (+/- 1.8)	38	25.8 (+/- 1.7)	38	35.2	30	26.8	43	25.7 (+/- 0.8)	39
Georgia	17.3	24	31.7	22	37.1 (+/- 2.8)	16	31.0 (+/- 2.7)	7	37.7 (+/- 2.1)	20	28.4	36	28.9 (+/- 1.2)	25
Hawaii	13.9	44	27.9	35	28.3 (+/- 2.2)	49	16.0 (+/- 2)	51	31.3	38	31.4 (+/- 3.1)	21	17.6 (+/- 1.4)	50
Idaho	21.4	9	25.9 (+/- 3.5)	42	32.8 (+/- 3.0)	34	25.2 (+/- 2.6)	41	N/A	N/A	33.6 (+/- 4.5)	11	27.6 (+/- 1.1)	32
Illinois	17.3	24	31.4 (+/- 3.3)	23	37.5 (+/- 2.8)	13	30.8 (+/- 2.9)	11	41.3 (+/- 3.1)	13	36.3 (+/- 3.2)	7	29.2 (+/- 1.1)	22
Indiana	17.6	21	33.7 (+/- 2.7)	12	38.4 (+/- 2.0)	10	30.6 (+/- 1.8)	12	41.7	11	28.7	35	31.8 (+/- 0.9)	9
Iowa	18.4	16	33.4 (+/- 3)	14	37.1 (+/- 2.3)	16	30.9	10	32.1	35	29.9	32	31.9 (+/- 0.9)	7
Kansas	19.8	13	32.3	19	36.4 (+/- 1.8)	19	28.9 (+/- 1.7)	22	43.1 (+/- 3.2)	7	35.2 (+/- 2.4)	8	31.5 (+/- 0.6)	10
Kentucky	20.2	11	37.1	6	38.4 (+/- 2.3)	10	31.0 (+/- 2.5)	7	42.4	9	25.0	45	33.4	3
Louisiana	25.9	3	36.4	7	38.5 (+/- 3.1)	8	35.3 (+/- 3.1)	1	42.9	8	32.2	18	32.6 (+/- 1.2)	4
Maine	20.7	10	27.8	36	35.0 (+/- 2.2)	25	28.7 (+/- 2)	23	34.3	32	30.5	30	29.5 (+/- 0.8)	18
Maryland	16.3 (+/- 3.4)	31	29.9 (+/- 2.2)	28	35.0 (+/- 1.6)	25	29.2 (+/- 1.6)	21	38.1 (+/- 1.8)	18	25.4 (+/- 3.9)	44	27.8 (+/- 1)	31
Massachusetts	14.5	40	21.8 (+/- 2.4)	50	27.7 (+/- 2.2)	50	25.1 (+/- 2.6)	43	36.6	25	31.4 (+/- 2.7)	21	22.9 (+/- 0.8)	47
Michigan	21.7	8	33.4	14	35.7 (+/- 1.7)	21	32.2 (+/- 1.9)	5	37.4	22	38.4	2	30.7 (+/- 0.8)	15
Minnesota	16.1	32	26.5 (+/- 1.6)	40	32.7 (+/- 1.4)	35	28.6 (+/- 1.6)	25	30.4 (+/- 3)	41	33.1 (+/- 3.2)	12	27.3 (+/- 0.5)	33
Mississippi	19.9	12	42.9	1	42.6	2	31.0 (+/- 2.9)	7	44.6 (+/- 1.9)	2	22.3	48	31.9 (+/- 1.4)	7
Missouri	17.7	18	31.2 (+/- 3.6)	26	38.5 (+/- 2.8)	8	30.0 (+/- 2.5)	16	38.6 (+/- 3.4)	17	32.7	14	30.7 (+/- 1)	15
Montana	15.3	35	25.2 (+/- 3.4)	46	30.3 (+/- 2.7)	43	24.3 (+/- 2.5)	46	N/A	N/A	24.8 (+/- 6.4)	46	24.4 (+/- 1)	44
Nebraska	17.2	26	32.9	17	38.6 (+/- 2)	7	29.9 (+/- 1.8)	18	37.2	23	31.8	20	30.8 (+/- 0.7)	13
Nevada	16.9 (+/- 5.4)	27	24.8 (+/- 3.5)	48	30.0 (+/- 3.4)	45	25.7 (+/- 3.7)	40	30.8	40	30.6 (+/- 3.4)	28	26.2 (+/- 1.6)	36
New Hampshire	13.7	45	28.0 (+/- 3.7)	34	29.9 (+/- 2.3)	46	26.5 (+/- 2.2)	35	30.3	42	24.7	47	27.2 (+/- 0.9)	35
New Jersey	14.2	43	25.6 (+/- 3.3)	44	32.9 (+/- 2.7)	33	27.9 (+/- 3)	29	37.2 (+/- 2.6)	24	31.4 (+/- 2.3)	21	25.4 (+/- 1)	41
New Mexico	17.6	21	32.6 (+/- 3.6)	18	31.3 (+/- 2.7)	41	24.0 (+/- 2.6)	47	34.4 (+/- 9)	31	31.3 (+/- 1.7)	24	23.9 (+/- 1.2)	46
New York	12.7	49	24.9	47	31.4 (+/- 1.7)	40	24.6 (+/- 1.9)	45	32.1	36	30.6	28	25.1 (+/- 0.8)	42
North Carolina	17.7	18	33.4 (+/- 2.7)	14	37.3 (+/- 2.5)	14	28.6 (+/- 2.6)	25	40.2 (+/- 2)	14	31.2	25	28.1 (+/- 1)	29
North Dakota	17.7 (+/- 5.2)	18	33.6 (+/- 3.1)	13	37.1 (+/- 2.4)	16	32.1 (+/- 2.4)	6	15.9	46	37.2	5	31.5 (+/- 1)	10
Ohio	16.6	29	32.1 (+/- 2.7)	20	37.3 (+/- 2.1)	14	29.7 (+/- 2)	19	37.6	21	27.8	41	30.8 (+/- 0.9)	13
Oklahoma	22.9	5	34.4 (+/- 3.1)	10	36.3 (+/- 2.4)	20	30.4 (+/- 2.2)	14	36.6 (+/- 3.7)	26	36.7	6	32.3 (+/- 1)	6
Oregon	17.4 (+/- 4.6)	23	28.9 (+/- 2.9)	32	33.1 (+/- 2.5)	30	27.7 (+/- 2.5)	31	30.2 (+/- 9.9)	43	32.4 (+/- 4)	15	29.0 (+/- 1)	24
Pennsylvania	15.9	34	29.9 (+/- 2.9)	28	35.4 (+/- 2.4)	22	30.5 (+/- 2.9)	13	36.4	28	39.5	1	29.5 (+/- 0.9)	18
Rhode Island	13.1	47	26.4 (+/- 3.8)	41	33.1 (+/- 2.6)	30	25.2 (+/- 2.6)	41	31.9	37	30.8 (+/- 3.5)	27	26.0 (+/- 1.1)	37
South Carolina	16.8	28	34.6 (+/- 2.6)	9	38.0 (+/- 2)	12	28.7 (+/- 1.8)	23	41.7 (+/- 1.5)	12	28.2	37	28.9 (+/- 0.8)	25
South Dakota	15.0	37	32	21	34.5	28	27.3 (+/- 3.4)	33	N/A	N/A	29.5	34	29.5 (+/- 1.2)	18
Tennessee	22.5	7	38.0 (+/- 3.8)	5	40.0 (+/- 2.9)	5	28.6 (+/- 2.7)	25	45.1	1	33.0	13	31.3 (+/- 1.1)	12
Texas	23.9	4	34.2 (+/- 3)	11	38.9 (+/- 3)	6	30.0 (+/- 3.3)	16	42.4	10	37.4 (+/- 1.7)	4	29.2 (+/- 1.1)	22
Utah	8.9	51	25.9 (+/- 2)	42	33.0 (+/- 2.1)	32	26.8 (+/- 2.2)	34	30.1	44	28.1	38	24.9 (+/- 0.6)	43
Vermont	18.7	15	27.6	37	30.5 (+/- 2.3)	42	25.9 (+/- 2.5)	36	N/A	N/A	N/A	N/A	25.7 (+/- 0.9)	39
Virginia	18.2	17	27.5	38	35.1	23	27.8	30	39.4	16	29.6	33	27.3 (+/- 0.8)	33
Washington	16.4	30	29.6	30	32.1	38	28.3	28	34.2	33	34.4	10	28.2 (+/- 0.7)	28
West Virginia	26.0 (+/- 5.3)	2	38.2 (+/- 2.7)	3	44.7 (+/- 2.1)	1	32.4 (+/- 2.3)	4	44.6 (+/- 5.4)	3	37.7 (+/- 9.7)	3	36.0 (+/- 0.9)	1
Wisconsin	14.8	39	31.3	24	33.6	29	34.6 (+/- 3)	3	39.9	15	31.2	25	30.5 (+/- 1)	17
Wyoming	16.0 (+/- 6.9)	33	29 (+/- 4.1)	31	32.3 (+/- 3.1)	37	25.8 (+/- 2.9)	38	N/A	N/A	N/A	N/A	27.9 (+/- 1.2)	30

Note: For ranking, 1 = Highest rate and 51 = Lowest rate; If not referenced, confidence intervals could not be calculated; C.I. = Confidence Intervals.
Source: Behavior Risk Factor Surveillance System (BRFSS), CDC

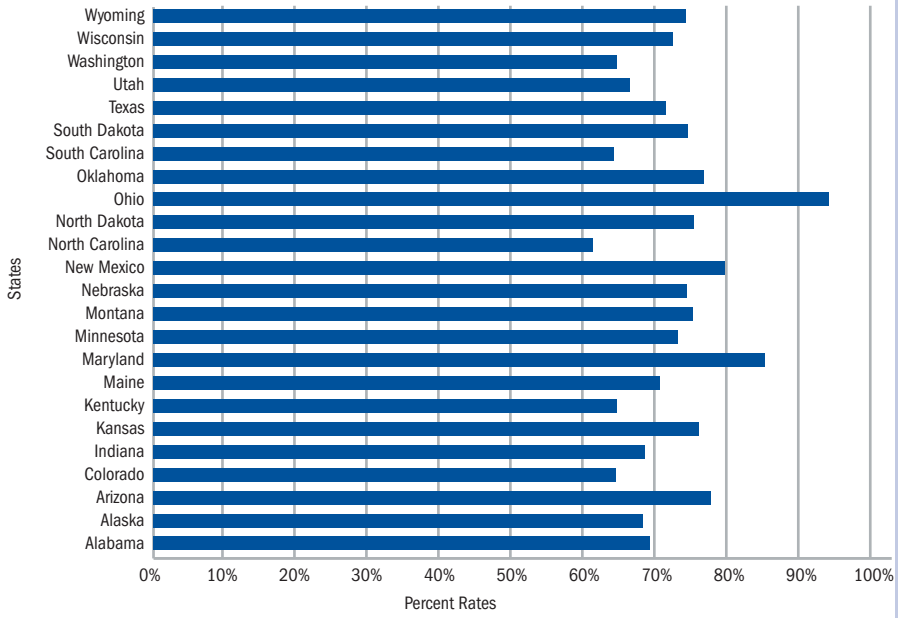
LIMITED DATA FOR RACIAL AND ETHNIC POPULATIONS

The total sample sizes for BRFSS in states is often 600-800 people. Many states do not have large enough populations of Asian/Pacific Islanders and American Indian/Alaska Natives to be reflected in the survey findings. For some states, the sample sizes for Black and Latino populations are too small to be reported. Increasing sample sizes for each state (requiring additional funding) would provide an opportunity to collect more meaningful information about different racial and ethnic groups in each state.

AMERICAN INDIAN/ALASKA NATIVES OBESITY STATE-DATA

According to an analysis by the Kaiser Family Foundation (KFF) of 2014 BRFSS surveys in states with reportable data for American Indian/Alaska Native populations, 14 of the 24 states analyzed had adult overweight and obesity rates above 70 percent. Ohio had the highest adult rate at 93.9 percent and North Carolina had the lowest at 60.9 percent.[49]

Overweight and Obesity Rates for American Indian/Alaska Native Adults
2014 BRFSS Data



Source: Kaiser Family Foundation. Confidence intervals not reported.

PROFILE: Promoting Healthy Weight in American Indian/Alaska Native Children

What began as a golf program for American Indian/Alaska Native youth in Albuquerque in 2005 has expanded into a national effort to prevent childhood obesity and type 2 diabetes in Native children. Founded by former PGA golfer Notah Begay III, the NB3 Foundation (NB3F) works to reduce the staggering rates of obesity in Native communities where childhood obesity rates often exceed 50 percent.[50]

NB3F has invested $2.3 million in grants and $7 million in direct spending on evidence-based obesity-prevention programs, including sports programs, culturally appropriate nutrition education and community garden projects. The Foundation has improved the lives of 24,000 American Indian/Alaska Native in 59 different communities.[51]

In 2013, NB3F launched Native Strong: Healthy Kids, Healthy Futures, a national initiative that supports Native communities' obesity-prevention efforts through grants, technical assistance, research and advocacy.[50] The program supports community efforts that promote physical activity, nutrition education and eating healthy foods. Native Strong is aimed at building the capacity in Native communities to help their children lead longer and healthier lives.

OBESITY AND ASIANS

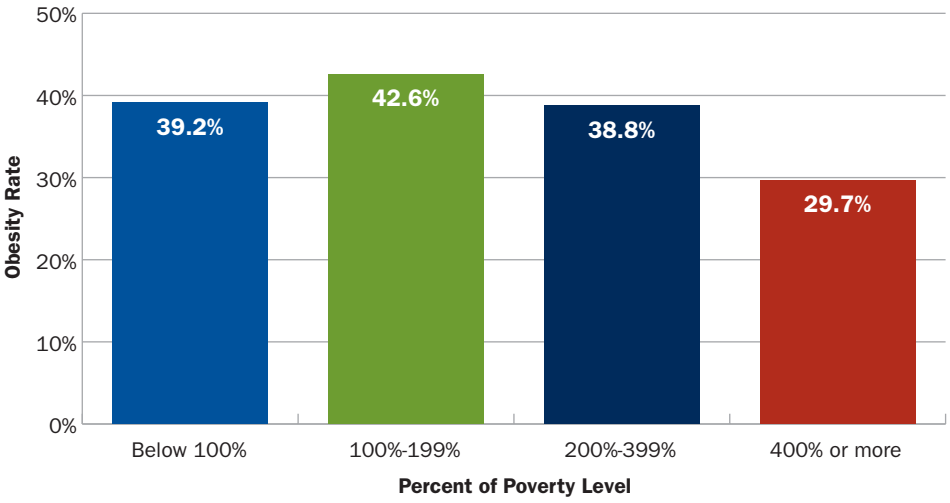
Asian-Americans have dramatically lower obesity rates than other U.S. racial and ethnic groups. This is consistent with world trends: in general, Asian populations have median BMIs lower than other population groups.[52] While the reasons for this disparity are not fully understood, research has shown that foreign-born Asian-Americans have lower rates of obesity than those born in the United States, and obesity increases with more years in the country.[53] In addition, low obesity rates among Asian-Americans could create a false sense of health security. Research shows that a substantial number of Asians with weights in the "normal" BMI range (i.e., below 25) have an elevated risk for obesity-related health problems, including type 2 diabetes and heart disease.[52]

A World Health Organization expert consultation met in 2002 to determine whether there should be a unique population-specific BMI cut-off point for Asians. While the group found that Asians generally have a higher level of body fat than Whites with the same BMI, it determined there is not enough scientific data to suggest a clear cut-off point for all Asians for obesity. However, Asian-Americans — particularly those with Indonesian, Hong Kong Chinese or Singaporean ancestry — should recognize that BMI represents a continuum of risk and their risk of developing obesity-related disease could be elevated at BMIs as low as 23.[52]

2. Education and Income

Obesity rates also vary by income levels. Obesity rates are generally inversely correlated with income, with low-income individuals far more likely to be obese than higher-income individuals. There was one aberration to this rule in the most recent national survey: the very poor (those living below 100 percent of the poverty level) had lower obesity rates (39.2 percent) than those with incomes between 100 percent to 199 percent of the poverty level, who had a rate of 42.6 percent.[54] But both groups had far higher obesity levels than those with incomes at 400 percent or more of the poverty level, whose obesity rate was 29.7 percent.

Poverty Level & Obesity
2011–2014 data[54]



Children from low-income families are also more likely to be obese. In 2007, 27.4 percent of children living in households below the federal household poverty level were obese, compared to only 10 percent of children living in households exceeding 400 percent of the federal poverty level.[55]

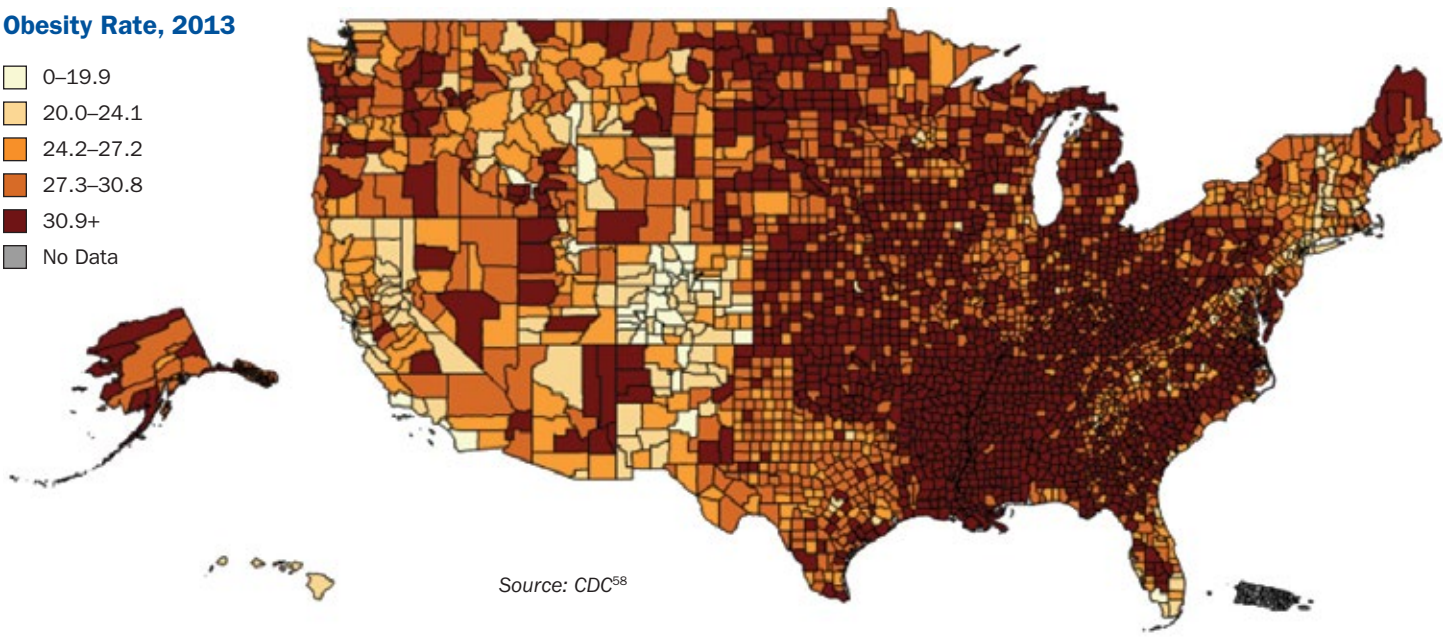
Individuals with lower education levels are also disproportionately more likely to be obese. In 2015, 34.0 percent of those with less than a high school education were obese compared to 21.7 percent among college graduates (BRFSS analysis).[56] An analysis of the 2007 National Survey of Children's Health found that children of parents with less than 12 years of education had an obesity rate 3.1 times higher (30.4 percent) than those whose parents have a college degree (9.5 percent).[57]

3. Regional Differences

Rural, suburban and urban communities all have different environmental factors impacting their residents' health. Urban residents also face different challenges that vary according to the size of the city in which they live.

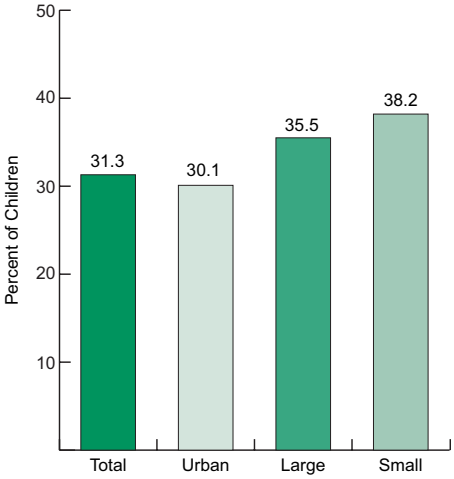
Rural counties have higher rates of obesity than urban or suburban counties, with the highest adult obesity rates in the United States found in rural counties of Mississippi and Alabama.[58]

Obesity Rate, 2013



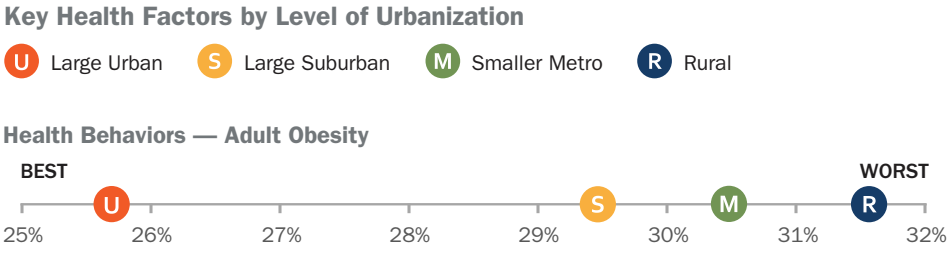
Source: CDC[58]

Children Ages 10-17 Who are Overweight of Obese, by Location



Source: The Health and Well-Being of Children in Rural Areas: A Portrait of States and the Nation 2011-2012[59]

Obesity Rate by Level of Urbanization, 2012 (County Health Rankings Report, 2016)[58]



Source: The 2016 County Health Rankings Key Findings Report

Low-income neighborhoods are 4.5 times more likely not to have pools, tracks, tennis courts, sports fields and other recreational facilities.

Rural communities face different challenges than their urban and suburban counterparts. Fewer children in rural areas walk to school, and the populace relies heavily on automobiles for transportation. Lifestyle differences may also contribute, including higher rates of television watching, higher calorie consumption and lower rates of exercise in rural areas.[60] There are also likely structural differences at play, which may include lack of nutrition education, fewer nutrition services, fewer sidewalks and reduced access to facilities that foster healthy behavior, such as recreation centers and supermarkets that sell healthy, affordable food.[60,61] Some strategies to improve diet and physical activity that have been effective in rural areas include farmers' markets, farm-to-school programs, activity programs for older adults, and increasing access to new or existing facilities for physical activity.[62]

While urban communities have lower rates of obesity than rural communities, inner-city residents have higher rates of obesity than their suburban counterparts. One reason may be the lower rates of physical activity among urban residents compared to suburban dwellers. This disparity may be caused by the fact that there are often fewer safe places to play and be physically active in urban environments, along with fewer venues selling healthy, affordable foods.

Researchers are still trying to understand aspects of small cities that may be different from larger urban areas. One study found that low-income women in small cities (less than 40,000) had a higher risk of obesity, which actually increased if they lived within a one-mile radius of a supermarket.[63] This study contrasts with other research that revealed that living close to a supermarket has been shown to lower the risk of obesity.[64]

Low-income communities face their own unique challenges. Numerous studies have found that healthy foods are less available in low-income communities.[65] One study found that low-income neighborhoods were 4.5 times more likely than high-income neighborhoods to lack recreational facilities such as pools, tracks, tennis courts and sports fields.[66] A *New England Journal of Medicine* study found that when low-income families were provided housing vouchers that allowed them to move out of a high-poverty neighborhood, adults experienced lower rates of extreme obesity and diabetes than adults who received vouchers for housing within the high-poverty neighborhood or adults who received no housing vouchers at all.[67]

Living in a predominantly racial/ethnic minority community also correlates with certain environmental factors that may contribute to obesity. For example, one study found that fast-food establishments were more prevalent in both high-income and low-income Black communities than in White communities.[68] Another found that minority neighborhoods were significantly less likely to have recreational facilities than White neighborhoods.[66] A study of food stores found four times more supermarkets located in White neighborhoods than Black neighborhoods.[69]

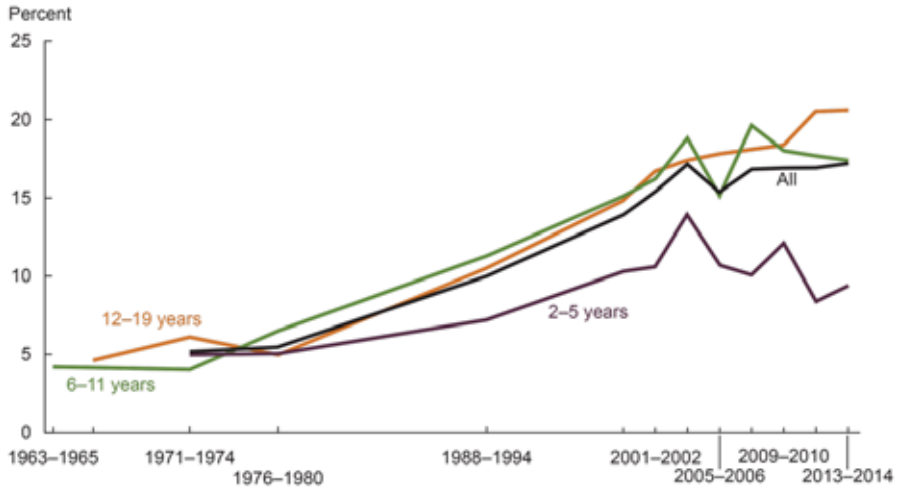
The State of Childhood Obesity

A. OVERVIEW

Recent national data show that childhood obesity rates have stabilized at 17 percent over the past decade. Rates are declining among 2- to 5-year-olds, stable among 6- to 11-year-olds, and increasing among 12- to 19-year-olds. This shows signs of positive progress following a long period where rates had grown significantly among youth ages 2-19 when they more than tripled between the early 1970s and 2005 (from 5 percent to 17 percent).[70]

There are even signs that childhood obesity rates are starting to decline, particularly among young children and in communities that have taken comprehensive obesity-prevention approaches. Between 2010 and 2014, 31 states and three territories reported declines in obesity rates among toddlers (ages 2 to 4) whose families participate in the Special Supplemental Nutrition Program (SNAP) for Women, Infants, and Children (WIC) nutrition program for low-income families. The national obesity rate among children in the WIC program has also declined from a high of 15.9 percent in 2010 to 14.5 percent in 2014, the most recent year for which data are available.[21] There are increasing examples of signs of progress — where areas have implemented a wide range of strategies to make healthy foods and beverages available in schools and communities, and have integrated physical activity into daily life — ranging from a 24.1 percent decline in obesity for children under 6 in Eastern Massachusetts to a 13.4 percent decline among kindergarten to fifth-graders in Kearney, Nebraska.[71]

Figure. Trends in obesity among children and adolescents aged 2–19 years, by age: United States, 1963–1965 through 2013–2014



NOTES: Obesity is defined as body mass index (BMI) greater than or equal to the 95th percentile from the sex-specific BMI-for-age 2000 CDC Growth Charts.
SOURCES: NCHS, National Health Examination Surveys II (ages 6–11) and III (ages 12–17); and National Health and Nutrition Examination Surveys (NHANES) I–III, and NHANES 1999–2000, 2001–2002, 2003–2004, 2005–2006, 2007–2008, 2009–2010, 2011–2012, and 2013–2014.

Despite these positive trends, childhood obesity remains an American epidemic. More than 12 million U.S. children are obese — one out of every six children.[72] Obese children have an increased risk of developing a range of health problems, including high blood pressure and high cholesterol, which are both risk factors for heart disease.[72] Obesity can also cause sleep apnea, bone and joint problems, and chronic health conditions such as asthma and type 2 diabetes.[72] Obese children are at increased risk of being bullied and suffering from depression, while a healthy diet and physical activity in childhood is associated with better mental health.[72] More than 200,000 youth under the age of 20 have type 2 diabetes, and many more are at risk for developing diabetes.[73] Obese children are also likely to grow up to be obese adults,[74] at risk for all health problems associated with obesity.

More than 90% of American children have poor diets.

Socioeconomic factors are also strongly correlated with childhood obesity. In fact, one recent study found that family income plays a larger role than race or ethnicity in predicting childhood obesity, and that the relationship between Black and Latino children and obesity disappeared after controlling for income.[75]

There are multiple factors that may explain why the United States has significant numbers of overweight and obese children. Like their adult counterparts, most children in the United States are not eating enough nutritious foods or getting sufficient physical activity: family and environmental factors are key. For example:

- 91 percent of American children have poor diets and less than half get the recommended 60 minutes of daily physical activity.[76]
- Almost two-thirds of American youth consume a sugary beverage on any given day.[77]
- A quarter of American high school students (24.7 percent) watch three or more hours of television on an average school day.[78]
- Schools have reduced recess time in favor of academic instruction, particularly among older children.[79]

As with adults, environmental factors also play a role in childhood obesity. Some children have limited access to safe places to play, while others live in food deserts where there are few nearby places for their parents to buy affordable, healthy foods to serve their families. One study found that the odds of a child being obese or overweight increases by 20 percent to 60 percent if he or she lives in a neighborhood with unfavorable conditions such as poor housing, unsafe surroundings and/or limited access to sidewalks, parks and recreation centers.[80] Unhealthy foods are heavily marketed to children, with Black youth exposed to a greater amount of unhealthy food marketing than White youth.[81] Accordingly, efforts to prevent childhood obesity must address all of these factors.

Because kids are still growing, obesity is measured differently among children than adults. Instead of a simple BMI measurement, a child's BMI is compared to others of the same age and sex. Children with BMIs at the 95th percentile or above are considered obese, and those with a BMI between the 85th and 95th percentiles are considered overweight.

One-quarter of American high school students watch three or more hours of TV on an average school day.

One study found that the odds of a child being obese or overweight increases by 20% to 60% if he or she lives in a neighborhood with unfavorable conditions such as poor housing, unsafe surroundings and/or limited access to sidewalks, parks and recreation centers.

As with adult obesity rates, this report relies on multiple survey instruments to paint a complete picture of childhood obesity in America:

1 **The National Health and Nutrition Examination Survey** at CDC measures obesity rates among Americans ages two and older and is the primary source for national obesity data in this report of children ages 2 to 19. NHANES is particularly valuable in that it combines interviews with physical examinations and covers a wide age range of Americans. However, due to the delay between collection and reporting, the timeliness of its data can lag. The most recent NHANES obesity rates are from the 2013-2014 survey.

2 **The WIC Participant and Program Characteristics (WIC PC)**, a USDA survey analyzed for obesity trends by CDC, is a report of the Special Supplemental Nutrition Program for Women, Infants, and Children on the results of its biennial census of families served by the program. The data it collects include height and weight information. Because the program provides assistance only to low-income mothers and children under the age of 5, this dataset is limited. However, because obesity disproportionately affects the poor, and early childhood is a critical time for obesity prevention, the dataset provides valuable information for evaluating the effectiveness of programs aimed at reducing obesity rates and health disparities.

3 **The National Survey of Children's Health (NSCH)** surveys parents of children ages 0 to 17 about all aspects of their children's health. An advantage of this survey is that it includes both national and state-by-state data, so obesity rates between states can be compared. The latest survey was conducted in 2016 and published in 2017. In addition, obesity rates are calculated based on parent-reported height and weight.

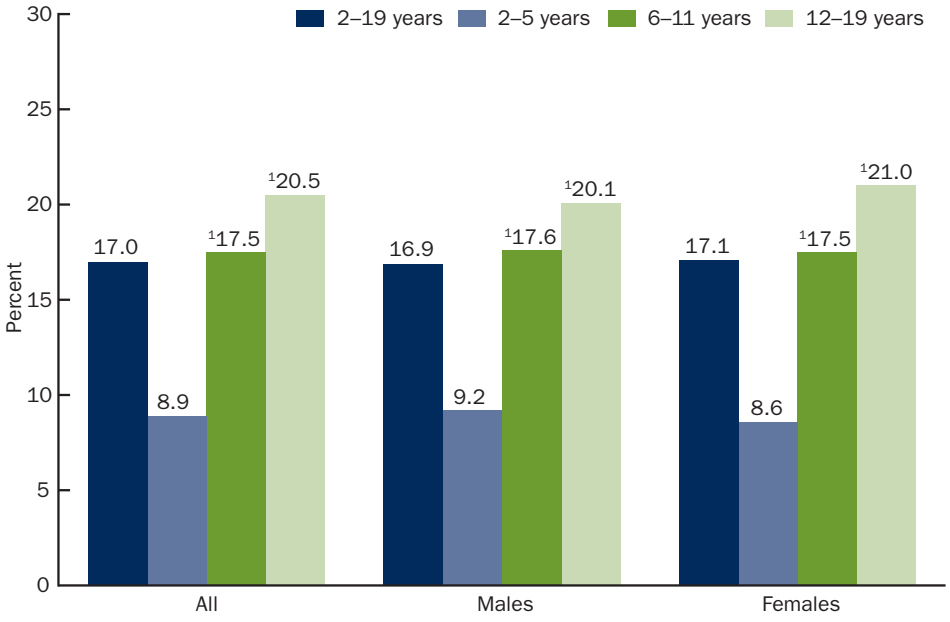
4 **The Youth Risk Behavior Surveillance System (YRBSS)** tracks high-risk health behaviors among students in grades 9-12, including unhealthy dietary behavior and physical inactivity. The survey also measures the prevalence of obesity by asking respondents about their height and weight. As in other surveys that use self-reported data to measure obesity rates, this survey likely underreports the true rates. The survey is conducted in odd-numbered years. The most recent public YRBSS obesity data are from the 2015 survey.

B. NATIONAL CHILDHOOD OBESITY RATES (NHANES)

Nationally, the childhood obesity rate is 17 percent. The rate varies among different age groups, with rates rising along with age. This same pattern is seen in both boys and girls. Recent national data show that childhood obesity rates have stabilized at 17 percent over the past decade. Rates are declining among 2- to 5-year-olds, stable among 6- to 11-year-olds and increasing among 12- to 19-year-olds.

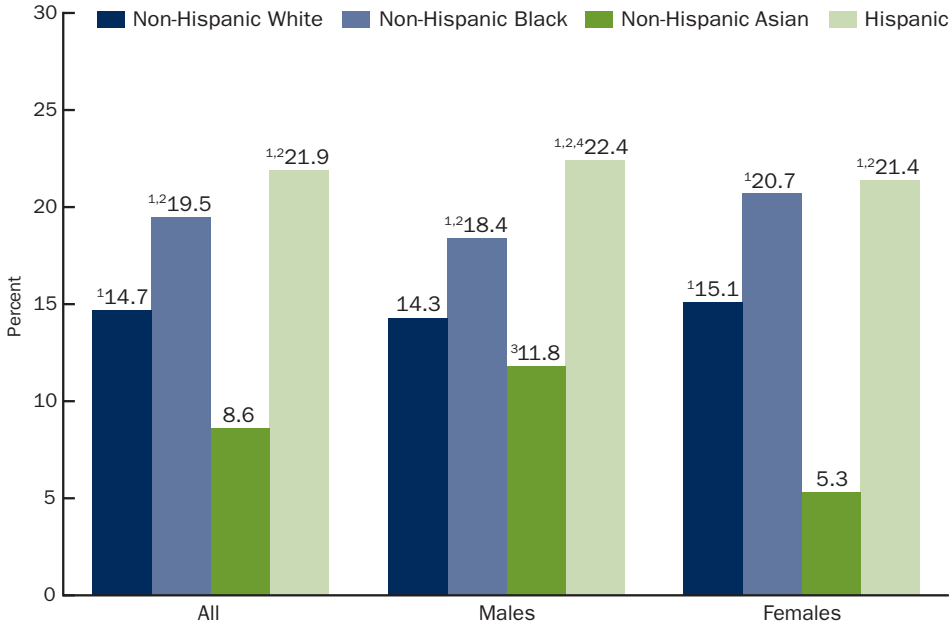
CHILDHOOD OBESITY RATES — 2011-2014 DATA[23]	
Age Group	**Obesity Rate**
Ages 2-5	8.9%
Ages 6-11	17.5%
Ages 12-19	20.5%
All youth (ages 2-19)	**17.0%**

Prevalence of obesity among youth ages 2–19 years, by sex and age: United States, 2011–2014



[1] Significantly different from those aged 2–5 years.
SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2011–2014.

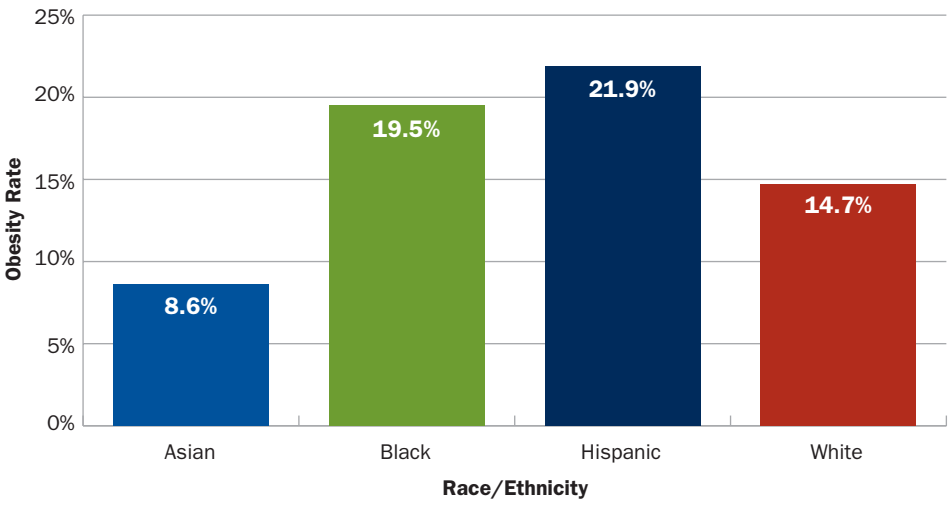
Prevalence of obesity among youth aged 2–19 years, by sex and race and Hispanic origin: United States, 2011–2014



[1] Significantly different from non-Hispanic Asian persons.
[2] Significantly different from non-Hispanic White persons.
[3] Significantly different from females of the same race and Hispanic origin.
[4] Significantly different from non-Hispanic Black persons.
SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey, 2011–2014.

As with adults, obesity rates vary by race and ethnicity, with Latino and Black children having higher obesity rates than White and Asian children.[23]

Childhood Obesity Rates[20] 2011-2014 Data



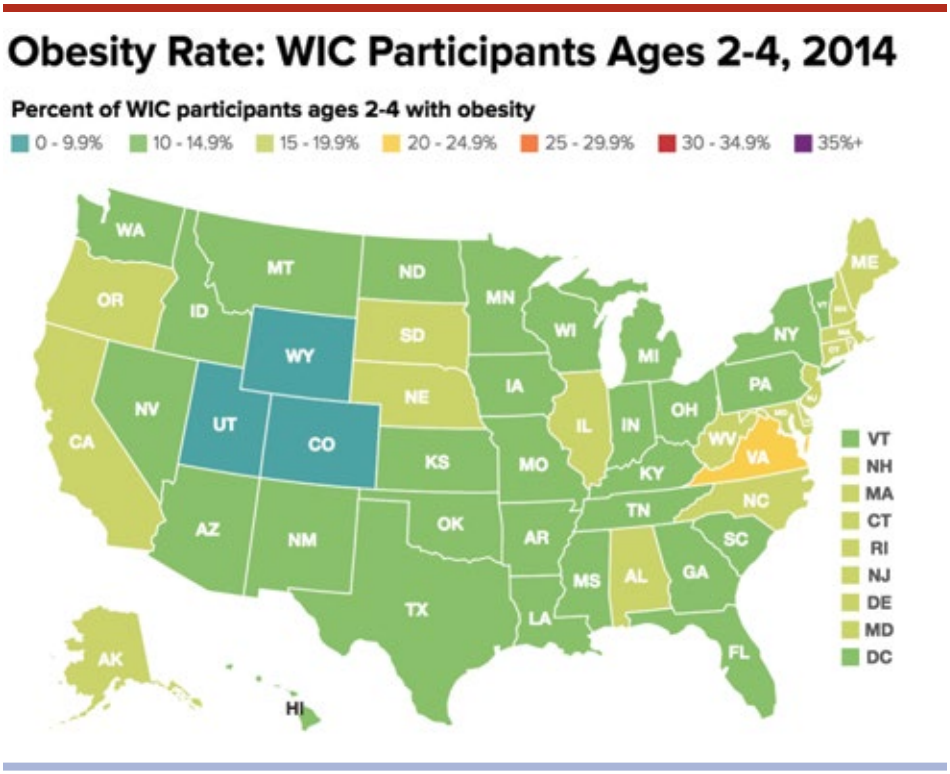
C. EARLY CHILDHOOD OBESITY RATES (WIC)

Research has demonstrated that creating healthy eating patterns early on can help establish lifelong food preferences and habits.[82] Given that more than one in 11 of all low-income children ages 2-5 are already overweight or obese,[21] forming good eating behaviors at an early age is critical.[83]

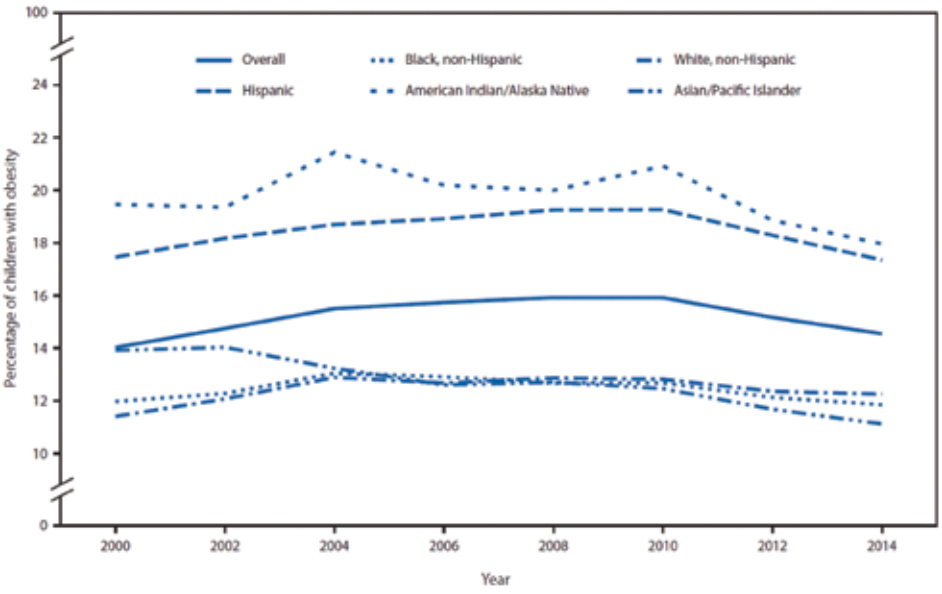
Early childhood obesity rates have begun to level off and even decline. Nationally, the obesity rate among low-income 2- to 5-year-old children enrolled in the WIC program declined from 15.9 percent in 2010 to 14.5 percent in 2014.[21] Among these children, a majority of states and all major racial/ethnic groups saw a reduction between 2010 and 2014 in the obesity rates.

- **On a state level, rates ranged from a low of 8.2 percent in Utah to a high of 20.0 percent in Virginia.** Rates decreased significantly in 31 states and increased significantly in only four states between 2010 and 2014.[21]
- **Racial and ethnic differences remain significant:** 18 percent of American Indian/Alaska Natives, 17.3 percent of Latinos, 12.2 percent of Whites, 11.9 percent of Blacks, and 11.1 percent of Asians/Pacific Islanders in 2014.[21]

CDC analyses cite that a set of initiatives have contributed to the recent reduction in obesity rates, including revisions to the WIC program's food package, providing WIC recipients with more healthy food options, and WIC efforts to promote and support breastfeeding.



Prevalence of obesity among WIC participants aged 2–4 years, overall and by race/ethnicity — United States, 2000–2014

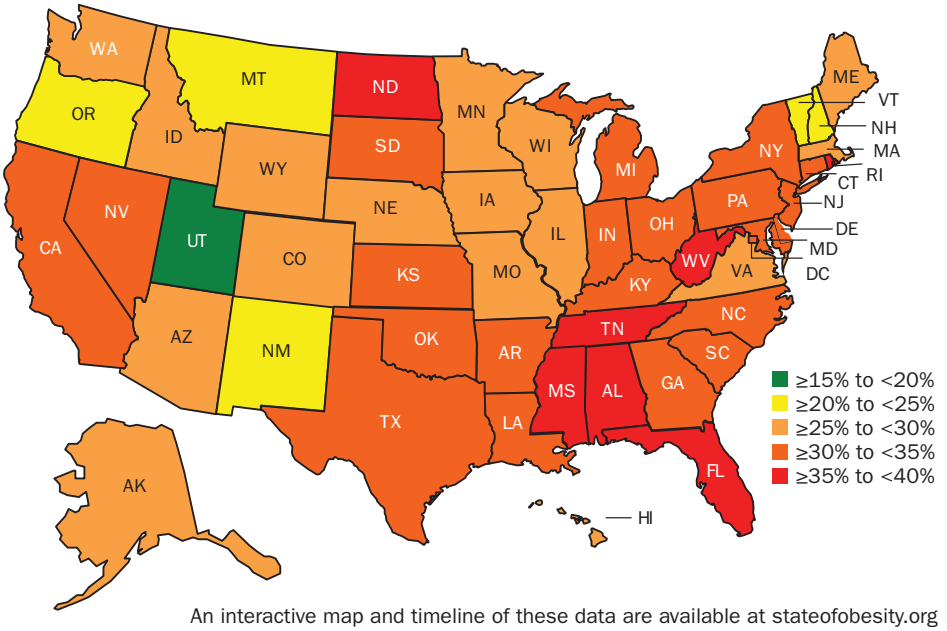


D. OBESITY RATES IN CHILDREN AGES 10-17 (NSCH)

In 2016, nearly one-third (31.2 percent) of children ages 10-17 were either overweight or obese, according to the National Survey of Children's Health.[84] At a state level, Utah had the lowest rate of overweight or obese children in this age group at 19.2 percent, while Tennessee had the highest rate at 37.7 percent.[84]

NSCH is based on a survey of parents in each state. The data are from parental reports, so they are not as reliable as measured data, but they are the only source of comparative state-by-state data for children in this age group. NSCH has typically been conducted and released every four years.

Percentage of Children Ages 10 to 17 Classified as Obese and Overweight by State, 2016 National Survey of Children's Health (NSCH)



An interactive map and timeline of these data are available at stateofobesity.org

Source: National Survey of Children's Health, 2016

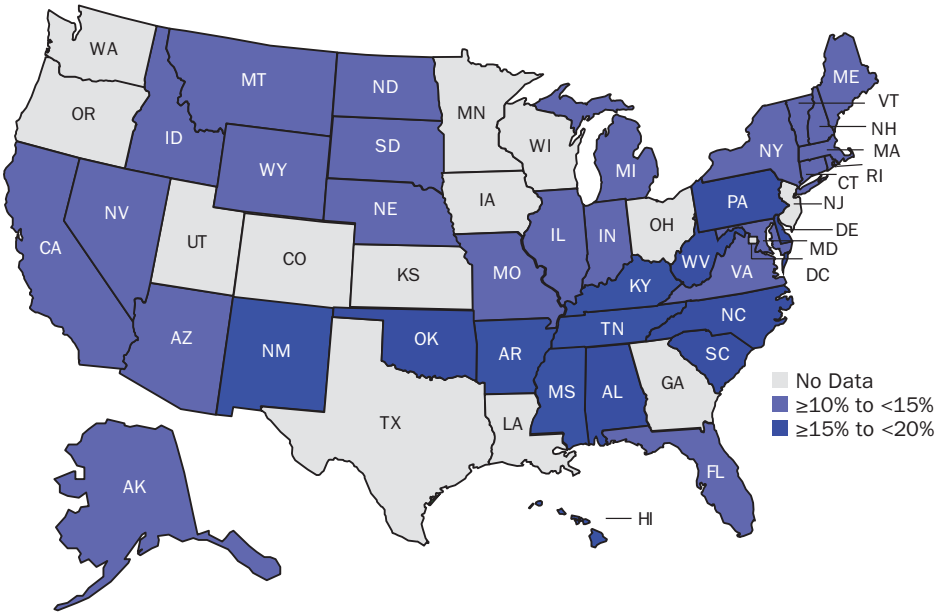
E. HIGH SCHOOL OBESITY RATES (YRBSS)

According to the Youth Risk Behavior Surveillance System, 13.9 percent of high school students were obese, and an additional 16.0 percent were overweight in 2015. There was a significant increase in high school obesity rates between 1999 and 2015 (from 10.6 percent to 13.9 percent), but no significant change between 2013 and 2015.[85]

State obesity rates among high school students in 2015 ranged from a low of 10.3 percent in Montana to a high of 18.9 percent in Mississippi, with a median of 13.3 percent.[85] The information from YRBSS is based on a survey of participating states and uses self-reported information.

Male students had higher obesity rates than female students (16.8 percent vs. 10.8 percent). American Indian/Alaska Native, Black and Hispanic students had higher rates than White and Asian students, as seen in the chart below.

Percentage of High School Students Classified as Obese by State, 2015 YRBSS



Note: Data not available for Colorado, District of Columbia, Georgia, Iowa, Kansas, Louisiana, Minnesota, New Jersey, Ohio, Oregon, Texas, Utah, Washington and Wisconsin.

Source: CDC, Youth Risk Behavior Surveillance System

An interactive map is available at stateofobesity.org

Obesity Rates for High School Students by Race/Ethnicity and Gender, YRBSS 1999 to 2015

	1999	2001	2003	2005	2007	2009	2011	2013	2015
TOTAL	10.6%	10.5%	12.0%	13%	12.8%	11.8%	13%	13.7%	13.9%
BY RACE/ETHNICITY									
American Indian/ Alaska Native§	N/A	17.2%	17.5%	13%	19.5%	8.2%	17.5%	9.10%	15.9%
Asian§	3.6%	6.7%	6.8%	5.4%	7.2%	7.2%	9.8%	5.6%	5.5%
Black§	12.3%	16.0%	16.1%	15.9%	18.3%	15.0%	18.2%	15.7%	16.8%
Latino	13.2%	15.1%	16.2%	16.7%	16.3%	14.9%	14.1%	15.2%	16.4%
Native Hawaiian/ Other Pacific Islander§	12.5%	7.5%	N/A	N/A	N/A	20.1%	21.4%	7.5%	N/A
White§	10.0%	8.8%	10.3%	11.7%	10.6%	10.2%	11.5%	13.1%	12.4%
Multiple Race§	11.2%	9.2%	9.6%	13.5%	13.5%	13.4%	13.6%	15.2%	17.5%
BY GENDER									
Female	7.4%	6.9%	8.1%	9.9%	9.4%	8.1%	9.8%	10.9%	10.8%
Male	13.7%	14.2%	15.7%	15.9%	16.2%	15.2%	16.1%	16.6%	16.8%

Note: The CDC uses the term Hispanic in analysis. § = non-Hispanic

Key Obesity-Prevention Policies

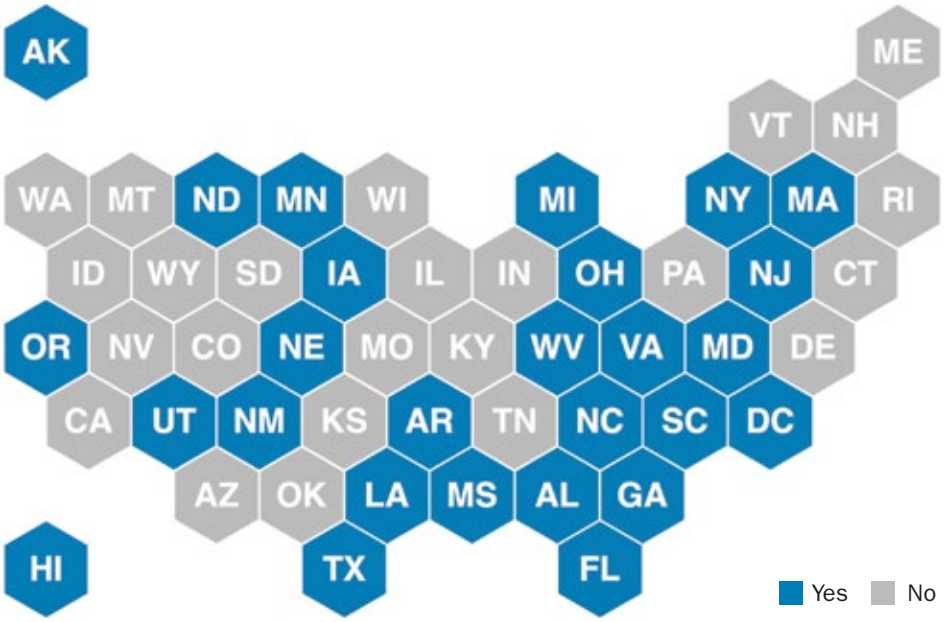
A range of strategies can help support opportunities for healthy eating and increased physical activity. They focus on making healthier choices easier in people's daily lives.

This section reviews a range of recent policy trends and changes that can promote healthy weight in children and healthy lives for all adults. CDC, NIH, FDA, HHS, USDA, the U.S. Department of Education, U.S. Department of Transportation, state and local public health agencies, other state and local government services, and a range of community and philanthropic organizations have helped develop, evaluate and advance top strategies that communities around the country can use to help prevent obesity and improve health in their areas.

A. EARLY CHILDHOOD POLICIES & PROGRAMS

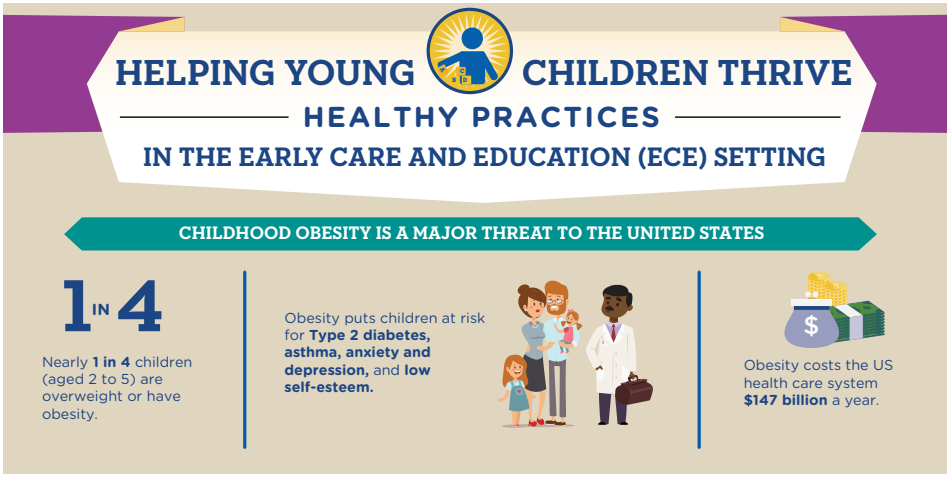
A number of federal, state and community policies and programs focus on improving nutrition, activity and health for infants, toddlers and young children at home, in child-care settings, in their local communities and through healthcare services.

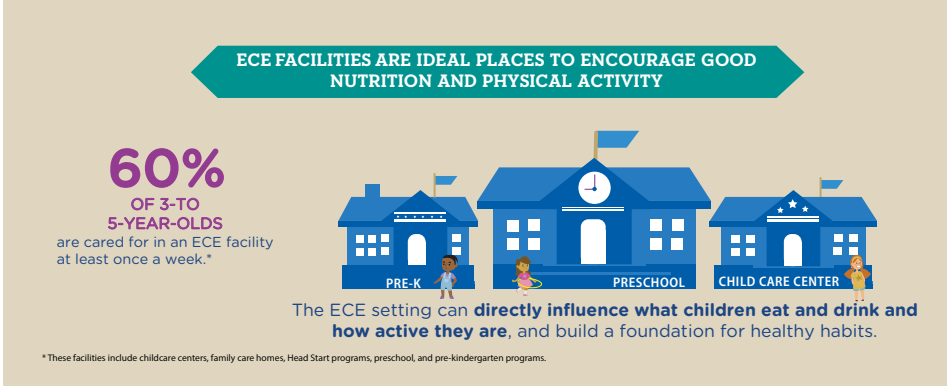
State has regulations requiring licensed Early Care and Education programs to provide meals and snacks that meet USDA standards



Budgets for Some Key Federal Child Care and Obesity-Related Programs[86, 87, 88, 89, 90]	Enacted Budget FY 2017	Enacted Budget FY 2016	Numbers Served by Program
Child and Adult Care Food Program (USDA)	*$3.491 billion	$3.340 billion	4.2 million children and 130,000 adults
Child Care and Development Block Grant	$2.856 billion	$2.761 billion	Around 1.4 million children every month
Head Start	$9.253 billion	$9.168 billion	More than 1 million children under 5
WIC (USDA)	$6.35 billion	$6.35 billion	8.1 million women, infants and children monthly participation

**Estimated (vs. enacted)*





1. Nutrition and Physical Activity for Young Children

Engaging in physical activity and eating nutritious foods beginning in early childhood establishes healthy habits that can last a lifetime. It is also much easier and more effective to prevent obesity during early childhood than to reverse trends later in life. Early childhood is also a critical window for obesity-prevention interventions, as children who are obese entering kindergarten are four times more likely to be obese in eighth grade.[91]

Federal, state and local governments fund a number of programs that help infants and toddlers grow up at a healthy weight, including programs that provide direct nutritional support and others that encourage healthy eating and active play at home and in child-care settings. Many of the national programs are in the form of block grants, with the federal government providing the funding and states administering the programs.

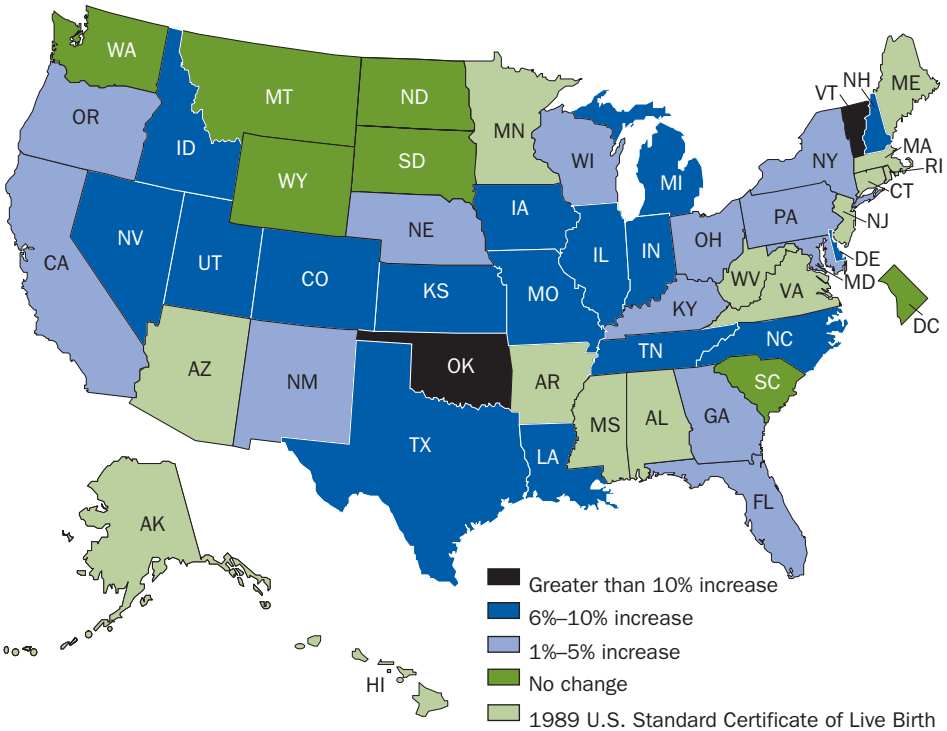
PRENATAL AND MATERNAL HEALTH

Pre-pregnancy obesity can lead to a host of health problems for babies, including congenital heart defects and stillbirth. If all pregnant women were at a healthy weight before becoming pregnant, it would prevent nearly 7,000 fetal deaths in the United States per year.[92] In mothers, obesity is associated with an increased risk of gestational diabetes, caesarean delivery and preeclampsia.[30,93,94]

Approximately half of U.S. women who gave birth in 2014 were overweight (25.6 percent) or obese (24.8 percent) pre-pregnancy, based on information from states that includes maternal pre-pregnancy height and weight on birth certificates (96 percent of all U.S. births).[95] Pre-pregnancy obesity rates ranged from a low of 19.2 percent in Massachusetts to a high of 32.1 percent in Mississippi. Of the 37 states or territories that also collected this information in 2011, 30 saw increases in obesity rates between 2011 and 2014 and seven had no significant change.

Prenatal behavior by mothers can also affect their children's future eating habits. Research has shown that children of mothers who ate fruits and vegetables during their pregnancy were more likely to eat those foods.[82]

Percentage change in pre-pregnancy obesity between 2011 and 2014, by reporting area: 36 states and the District of Columbia



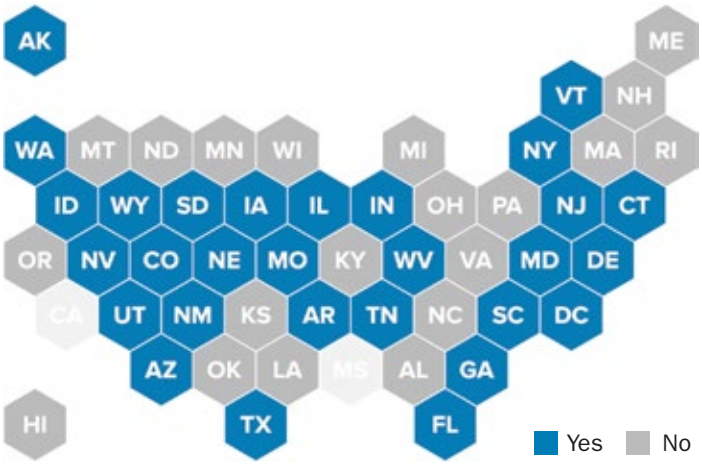
SOURCE: NCHS, National Vital Statistics System.

2. Child and Adult Care Food Program (CACFP)

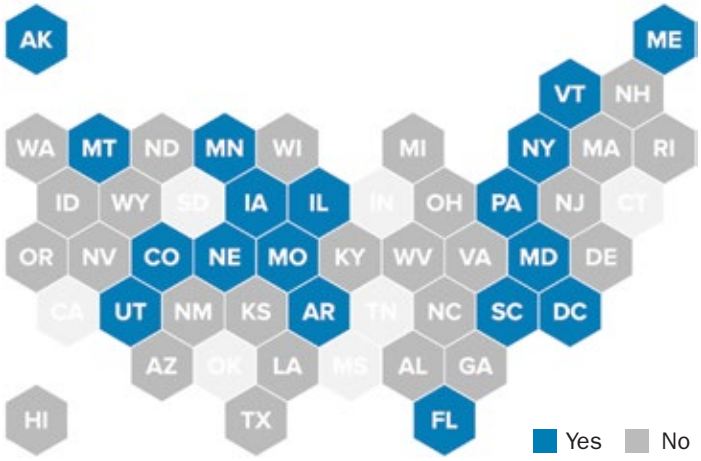
The Child and Adult Food Care Program provides federal funding to states to reimburse providers for the cost of providing nutritious meals and snacks to children and adults in their care. The program, which helps feed 4.2 million children and 130,000 adults each year, sets minimum nutritional standards that providers must meet to receive reimbursement.[96] These standards were recently updated to require more whole grains, a wider variety of fruits and vegetables, and less added sugar and saturated fat. The new standards are slated to go into effect on October 1, 2017.[96] Initial results from a health impact assessment conducted by the Kids' Safe and Healthful Foods Project suggest that the updated CACFP nutrition standards will have a positive effect on children's health by increasing the likelihood that children will eat more vegetables and whole grains, and consume fewer whole grain-based desserts, such as cakes, pies and cookies.[97] The Food and Nutrition Service recently announced a transition period through September 30, 2018, during which violations of the new standards will result in technical assistance instead of fiscal action.[98]

Some states have gone even further than the new federal standards require. For example, the federal standards require only unflavored milk be served to children under age 2, while New York state requires all children under age 5 be served unflavored milk as part of its Healthy Infant and Healthy Child Meal Pattern initiative.[99] In 2016, CDC found that 29 states had implemented enhanced nutritional standards, and that 23 states include some type of obesity-prevention information in their CACFP training.[99]

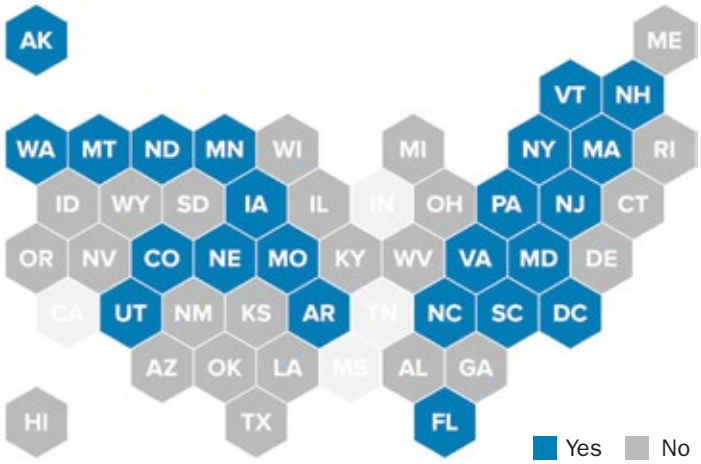
Enhanced CACFP Nutrition Standards
State encourages early care and education providers participating in CACFP to meet nutrition standards that exceed the federal requirements.



CACFP Promotes Obesity Prevention
State promotes or provides a specific early care and education obesity prevention intervention to providers who participate in CACFP.



CACFP Trainings
State includes obesity prevention topics, such as nutrition, physical activity or breastfeeding support into CACFP trainings.



HEALTHY EATING RESEARCH: FEEDING INFANTS & TODDLERS

The first 1,000 days of life serve as a critical developmental period in a person's life. However, there are currently no federal nutritional guidelines for children under the age of 2. To address this gap, the Robert Wood Johnson Foundation's (RWJF's) Healthy Eating Project assembled an expert panel to develop guidelines on healthy feeding of infants and toddlers.[82]

The panel's overriding piece of advice: listen to your child. In other words, practice "responsive parenting," which is based on the theory that very young children will eat until they are full.

The panel also recommends:

- healthy eating by mothers during pregnancy and breastfeeding;
- breastfeeding infants;
- repeatedly exposing children to healthy foods, so they learn to like them; and
- avoiding foods high in added sugars, sodium and saturated fat.

3. Child Care and Development Block Grant (CCDBG)

The Child Care and Development Block Grant provides federal dollars to states to assist low-income families with child care, benefitting approximately 1.4 million children every month. To participate in the program, child-care providers must meet health and safety requirements, and states are encouraged to include nutrition and physical activity requirements. To apply for funding, states must submit plans that describe their program and the services available to eligible families. Through their Healthy Child Care, Healthy Communities program, Child Care Aware of America — supported by RWJF grant funding — is working with six states on their plans to enhance health and wellness components of their plans, including requiring health and nutrition training for child-care staff.[100]

STATE PROFILE: South Carolina

South Carolina has above-average obesity rates. It is ranked 12th in the nation for adult obesity, second for school-aged childhood obesity (ages 10 to 17) and eighth for obesity among high school students. The state also has high rates of diabetes and hypertension, ranking eighth in the nation for both of these chronic conditions.

South Carolina is working to bring down its obesity rates. Its SCaledown.org website helps engage and educate partners about obesity and how to "make the healthy choice the easy choice for South Carolinians."[101] The state also developed the South Carolina Obesity Action Plan in 2014 to promote environmental and policy changes to prevent and reduce obesity. Successes from 2016 include:

- Identifying 116 farmers' markets in South Carolina that accept SNAP benefits;
- Increasing the number of active diabetes prevention programs in the state from two to 40; and
- Increasing the number of schools participating in Farm-to-School programs from 124 to 194.[102]

New research demonstrates that South Carolina's policy changes are making a difference. In October 2016, the American Journal of Public Health published the results of a study of physical activity practices in South Carolina child-care centers after new state standards went into effect in 2012. Compared with another state that lacked such standards, the South Carolina child-care centers significantly improved their physical activity practices by providing a wide variety of playground equipment, and more physical activity training and education for children, staff and parents.[103]

4. Head Start

Head Start is a comprehensive early childhood education program that helps prepare more than one million low-income children under the age of 5 for school every year. It began as a program for preschoolers in the 1960s and was expanded in the 1990s with the creation of Early Head Start, which serves pregnant women, infants and toddlers. The federal government provides funding and oversight to local agencies that administer the program. Head Start and Early Head Start programs participate in either CACFP or the federal School Meals Program.

Obesity is a major health challenge for Head Start participants and their families. In a 2016 survey of Head Start program directors and health managers, 86 percent of health managers identified obesity among children as a major health concern for the program, while 82 percent identified obesity among adult family members as a major concern.[104] The vast majority (88 percent) of programs that identified obesity as a major concern have policies in place requiring physical activity and nearly all (99 percent) provide obesity-related services to their families, including programs focused on nutrition, physical activity and/or weight management.

The ACF, which oversees the Head Start program, sets minimum standards that programs must meet with respect to nutrition and outdoor active play. In November 2016, updated regulations went into effect, the first major rewrite since they were first issued in the 1970s.[105] The revised standards require Head Start programs to actively engage in obesity prevention both in the classroom and through its family partnership process.[106]

Investing in high quality early childhood programs can provide a 13% return on investment and reduce obesity

5. State Requirements for Early Care and Education (ECE)

Beyond different federal requirements, states set standards for day-care centers, preschools and other early child-care settings. By designing standards for early care and education settings that encourage healthy eating and abundant physical activity, states can help young children get a healthy start in life. Investing in quality ECE programs pays off. Research conducted by Nobel Prize winning economist James J. Heckman shows that investing in high-quality early childhood programs for disadvantaged children can provide a 13 percent per year return on investment, including reduced rates of obesity and chronic health conditions such as heart disease and diabetes.[107]

To help support states in reducing obesity, CDC designed a framework to guide states in assisting ECE providers in improving nutrition, breastfeeding support and physical activity and reducing screen time. CDC issued a report in 2016 evaluating states' success on this score.

It found that:

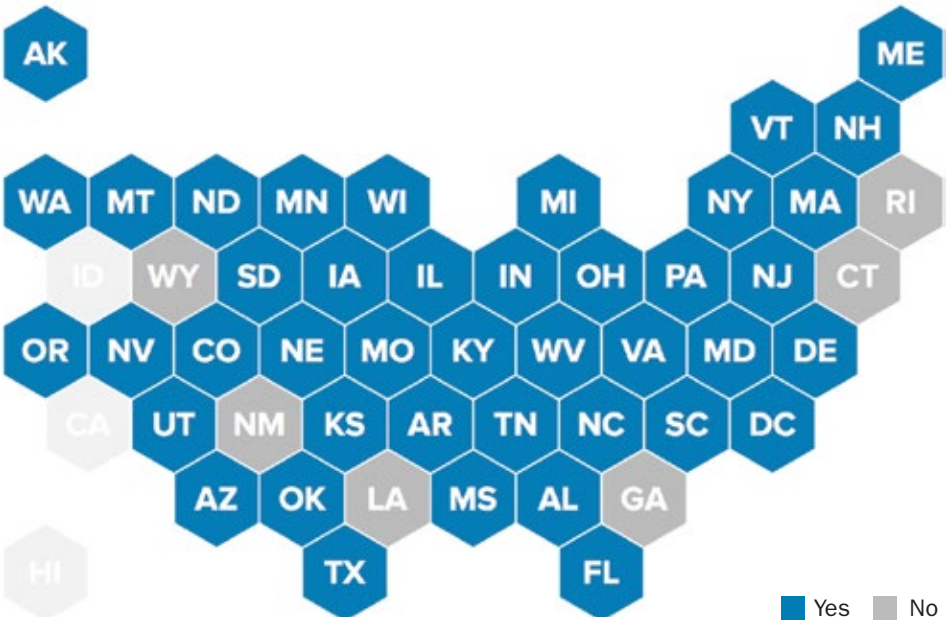
- Since 2010, 25 states had updated ECE licensing regulations to better incorporate nationally-recommended obesity-prevention standards;
- 29 states had incorporated obesity prevention into their Quality Rating and Improvement Systems (QRIS) standards, which measure the quality of ECE programs (39 states had QRIS ratings); and
- 42 states offered training to ECE providers in obesity prevention.[99]

These findings illustrate that most states are implementing changes aimed at reducing obesity in early childhood facilities. At the same time, out of 47 practices that experts have identified as having the most impact on reducing obesity in early childhood settings, the most any state had fully incorporated into their licensing regulations was 15 (by Mississippi).

Professional Development

State allows early care and education providers to meet professional development requirements through online training.

States can include requirements for ongoing training for early care and education providers in their licensing regulations or QRIS.



6. Every Student Succeeds Act — Early Childhood Education Components

The Every Student Succeeds Act (ESSA) became law in December 2015 to reauthorize federal elementary and secondary education programs, included many provisions related to healthy schools and physical education and several provisions affecting early childhood education, health and well-being:

- Establishment of a Preschool Development Grant program aimed at improving early education for low-income children;
- Use of Title I funds, which are for low-income schools, to support early education programs;
- Use of Title II funds, which are for teacher and principal training, for early learning capacity building;[108] and
- Authorizing the Full-Service Community School program and the Promise Neighborhood program, both of which aim to improve educational outcomes for children in distressed communities and which have early education components.[109] Organizations serving disadvantaged populations, which can include those with high rates of childhood obesity, are eligible for Promise Neighborhood grants to help provide social, health, nutrition and mental health services.[110]

7. WIC

The Special Supplemental Nutrition Program for Women, Infants, and Children is a federal grant program that funds state nutrition and education services for low-income pregnant, postpartum and breastfeeding women and their children under the age of 5. WIC is one of the largest federal nutrition programs, with an average monthly participation of 8.1 million women, infants and children.[111]

The WIC program, which is administered by state agencies, helps its recipients achieve a healthy weight in several ways, including by:

- Providing healthy foods and nutrition education;
- Promoting breastfeeding and supporting nursing mothers; and
- Providing healthcare and social service referrals.

Research has demonstrated the success of WIC efforts.[112] For example, more than 30 percent of WIC recipients initiate breastfeeding and WIC recipients who received postpartum benefits were less likely to be obese at the onset of their next pregnancy,[113] reducing their chance of delivering a stillborn baby or one with birth defects.

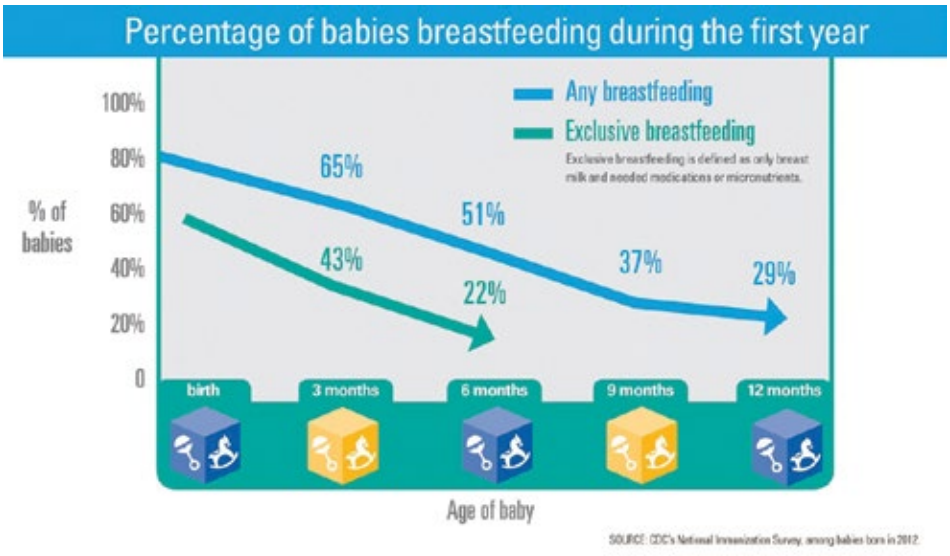
BREASTFEEDING

Breastmilk is the healthiest food for infants. The American Academy of Pediatrics (AAP) recommends exclusive breastfeeding for the first six months of life and continuing to breastfeed through the first year of life. Breastfeeding is associated with a number of long-term medical benefits for babies, including reduced risk of respiratory tract infections, gastrointestinal tract infections and diabetes.[114]

Breastfeeding is also associated with a significantly reduced risk of childhood obesity, according to a 2014 meta-analysis of 25 studies,[115] although there is debate about whether breastfeeding actually prevents obesity or if other socioeconomic and cultural factors are key factors.[116] There also may be weight-related benefits for mothers who breastfeed: some studies have found they lose more weight postpartum than mothers who do not breastfeed and are more likely to return to their pre-pregnancy weight,[117,118] although other studies found little or no relationship between breastfeeding and weight change.[118,119]

Rates of breastfeeding in the United States have increased in recent years. Of babies born in 2013, 81.1 percent were breastfed at birth, more than half (51.8 percent) were still breastfeeding at six months, and nearly a third (30.7 percent) were breastfeeding at one year.[120] But, only 22.3 percent of babies were exclusively breastfed at six months.

Breastfeeding rates also vary widely between states. Mississippi has the lowest rates, with only 52.0 percent of babies born in 2013 ever breastfed and 9.3 percent breastfed exclusively at six months.[120] Idaho has the highest rate of ever breastfed at 92.9 percent, and Montana has the highest rate of babies being breastfed exclusively at six months at 33.8 percent.



B. SCHOOL-BASED POLICIES & PROGRAMS

1. Overview

Given that children spend significant portions of their day in school, where they consume nearly half their calories,[121] school-based obesity-prevention programs are an excellent way to reach large numbers of children. Research has demonstrated that school programs are effective in preventing childhood obesity, encouraging healthier diets and fostering more physical activity.[122] And because preventing childhood obesity is much easier than helping obese adults lose weight, investing in the programs below make sense for both fiscal and public health reasons.

Budgets for Some Key Federal School-Based Obesity-Related Programs[111,123,124,125,126,127,128,129,130]	Enacted Budget FY 2017	Enacted Budget FY 2016
National School Lunch Program (USDA)	*$12.340 billion	$12.528 billion
School Breakfast Program (USDA)	*$4.470 billion	$4.339 billion
Student Support and Academic Enrichment Grants (U.S. Department of Education)	$400 million	[these are new grants authorized in late 2015 as a component of ESSA]
Farm-to-School Program (USDA)	$8.4 million	$9.1 million
Transportation Alternatives Set-Aside (may include Safe Routes to School) (Department of Transportation)	$835 million	$835 million
Division of Population Health, Healthy Schools (CDC)	$15.4 million	$15.4 million

**Estimated (vs. enacted)*

Research has also repeatedly shown that American children are not getting enough activity or eating enough nutritious foods. In 2016, the American Heart Association released a scientific statement outlining seven measures of cardiovascular health, which include physical activity, diet, BMI, cholesterol level, blood pressure, blood glucose and smoking status. It found that very few children meet all measures of a healthy heart. For example, 91 percent of American children have poor diets and less than half get the recommended 60 minutes of daily aerobic physical activity.[76]

Fewer than half of American children get the recommended amount of daily aerobic physical activity.

2. Obesity & Academic Achievement

School children are healthier and perform better in school when they are eating nutritious food and getting plenty of physical activity. A CDC review of 50 studies found substantial evidence that physical activity not only provides significant health benefits, but can also help improve academic achievement, concentration and classroom behavior, as well.[131]

Students with better academic grades have healthier behaviors. According to data from the 2015 National Youth Risk Behavior Surveillance System, students with higher grades are more likely than students with lower grades to be physically active and play on a sports team, and less likely to watch TV or play video games for three or more hours a day. Students with higher grades are also more likely to have healthy dietary behaviors, including eating breakfast, eating fruits and vegetables, and avoiding soda.[132]

Meanwhile, obesity is associated with poorer educational outcomes, including more school absences, parents more frequently contacted by the school about problems, and lower educational engagement.[13,133,134] Studies have also found that obese students have more behavioral problems, are more likely to repeat a grade, have lower grade point averages and reading scores, and demonstrate lower academic effort.[135,136,137]

3. School Nutrition

a. School Meal Programs

More than 30 million American children participate in the National School Lunch and School Breakfast Programs, which provide federally-funded low-cost or free meals and snacks to students in more than 100,000 public schools, private schools and child-care centers across the United States.[134,138] Participating schools receive subsidies from the federal government for each meal they serve and, in return, they must serve meals that meet federal standards at a reduced cost or no cost to eligible students. Children from families that earn 130 percent of the federal poverty level or less are eligible for free meals, and children from families that earn between 130-185 percent of the poverty level are eligible for reduced-price meals.[134]

Some children experience social stigma for taking part in the school meals programs, but making breakfast and lunch free to all students can reduce the problem. This can be done in three ways: (1) via the Community Eligibility Provision of the Healthy, Hunger-Free Kids Act of 2010 (HHFKA), which allows any school district with at least 40 percent or more of children eligible for school lunch to provide free meals for all (which now covers more than 6 million children); (2) via Provision 2 of the National School Lunch Act, which allows schools to reduce its administrative burdens by basing four years of reimbursements off of one year of submissions, provided the schools serve free meals to all students; or (3) via "nonpricing," where schools simply do not charge any students for meals but receive federal reimbursements based on the number of meal applications submitted.[139] Administrative savings help offset the costs of offering meals to all, and help remove stigma associated with participating in the program.

As required by HHFKA, updated nutrition standards for the school meals programs were issued in 2012. The updated rules require increased availability of whole grains, fruits and vegetables, fat-free and low-fat milk, and decreased levels of sodium, saturated

fats and trans fats. The changes are being phased in over several years.[140] Research has demonstrated that the healthier school lunches are popular among students[141] and parents,[142] and they have succeeded in increasing students' fruit and vegetable intake.[143]

In 2017, U.S. Agriculture Secretary Sonny Perdue announced that the Agriculture Department would be taking regulatory action with respect to the whole grain, sodium and milk requirements. He authorized states to grant exemptions to schools on the whole grain requirements, deemed schools that meet the first of three phased-in sodium requirements to be compliant, and directed USDA to begin the regulatory process to permit schools to serve one percent flavored milk.[144]

Passage of the HHFKA in 2010 was the last congressional authorization of child nutrition programs, which are supposed to be reauthorized every five years. While reauthorization efforts have stalled in Congress, the vast majority of program operations will continue as long as Congress keeps funding them through annual appropriations laws.[145]

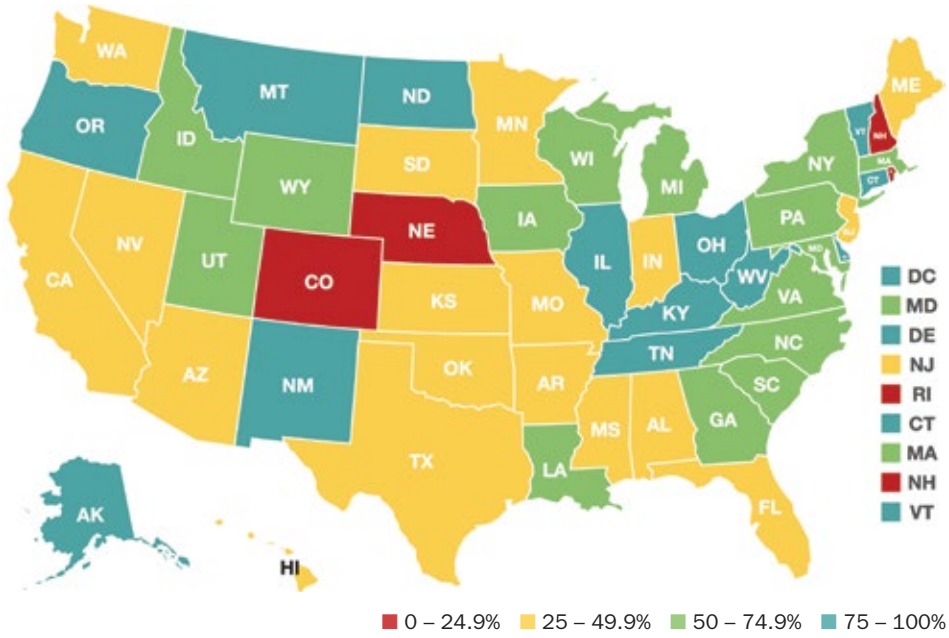
Although more than 90 percent of schools that offer a School Lunch Program also offer the School Breakfast Program, student participation lags behind for breakfast.[146] Only about half of the students (56 percent) who participate in the lunch program take advantage of the breakfast program,[147] likely due to barriers such as social stigma and the logistical and timing challenges posed by having to arrive at school early enough to eat breakfast before school starts.

Yet some research demonstrates that children who eat breakfast at school are less likely to be overweight or obese than students who skip breakfast. In fact, a recent study found that middle school students who regularly skipped breakfast were twice as likely to be overweight or obese than those who ate breakfast either at home or school.[148] A number of studies have indicated that eating a healthy breakfast is correlated with increased school attendance.[149,150,151]

New "breakfast after the bell" programs are tackling some of these barriers. Three models include: (1) providing breakfast in classrooms after school starts; (2) offering breakfast during a mid-morning break; and/or (3) making "grab & go" breakfast options available. In a 2016 survey of high school principals that had implemented one or more of these models, 82 percent reported increased program participation.[152] Many schools also enjoyed ancillary benefits including fewer visits to the school nurse, increased attentiveness and fewer discipline programs. Some even experienced improved reading and math scores.[152]

Participation in the breakfast program has been increasing over the past several decades. The 56 percent of children who participate in both the lunch program and breakfast program is up from 31.5 percent in the 1990-91 school year. The Food Research and Action Center, which tracks breakfast participation rates, announced a 3.7 percent increase in breakfast participation during the 2015-16 school year compared with the prior school year. This translates into an additional 433,000 children receiving a healthy breakfast.[147]

Percentage of Eligible School Districts Adopting Community Eligibility



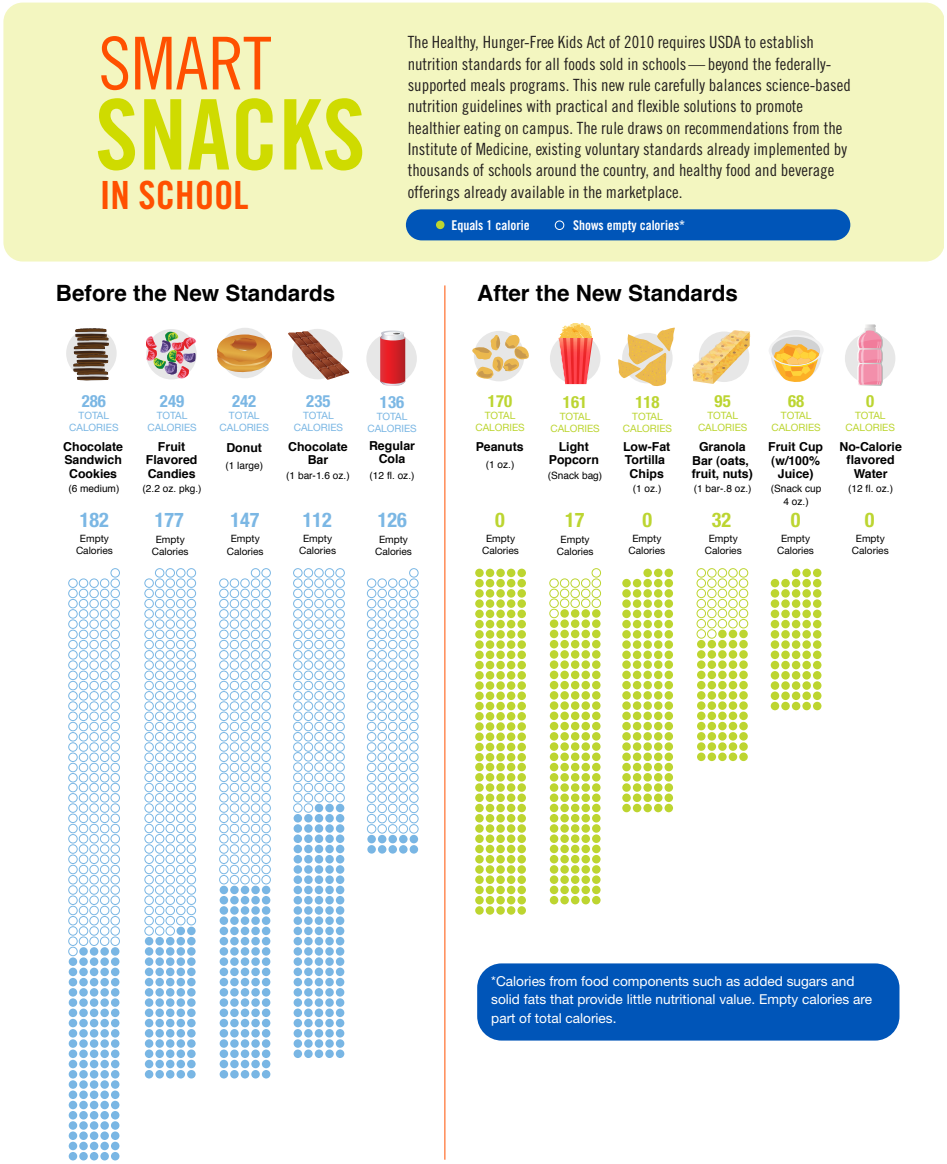
The Community Eligibility Provision (CEP) allows schools in high-poverty areas to serve free breakfast and lunch to all students. The percentage of eligible schools in each state that have adopted CEP ranges from 10 percent in New Hampshire to 95.6 percent in Ohio.

Children who eat breakfast at school are less likely to be overweight than those who skip breakfast.

b. Smart Snacks in Schools

The Smart Snacks in School rule requires all food sold at schools during school hours to meet federal nutrition standards,[153] although states are permitted to exempt certain school fundraisers from the standards.[154] A review by the Institute for Health Research and Policy at the University of Chicago found that, as of March 2017, 21 states and Washington, D.C., have policies requiring zero exemptions to the rule—meaning all foods sold at school, even for fundraising efforts, must comply with the USDA's Smart Snacks nutrition standards: Alaska, California, Connecticut, Delaware, Hawaii, Iowa, Kentucky, Louisiana, Maryland, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, Oregon, Rhode Island and Washington.[155]

All fundraising efforts that take place outside of school hours are exempt from the federal Smart Snacks in School standards.[154] The standards also do not apply to food that is not being sold—for example, cupcakes brought in for a student's birthday or other celebration. But a review of school snack policies by Voices for Healthy Kids (VFHK) found that, in the fall of 2014, seven states and Washington, D.C., had standards for school snacks that align with USDA's Smart Snack in School nutrition standards and also included standards for programs and events beyond school hours and/or for school celebrations. These states were Hawaii, Maine, Mississippi, Oregon, Rhode Island, Washington and West Virginia.[156]



c. Summer Food Service Program

The Summer Food Service Program (SFSP) ensures that low-income children can continue to receive nutritious meals during summer vacation from school. Like the other school meal programs, SFSP is federally funded but administered by the states, which contracts with sponsors to run the program. Sponsors include schools, camps, community centers or other nonprofit organizations that have the ability to run a food service program.[157] In summer 2017, the program aims to serve 200 million free meals to children around the country.[158]

d. Water in Schools

Federal law requires schools participating in the National School Lunch or School Breakfast programs to make free water available to children during meals. Drinking water helps children stay hydrated, provides an alternative to sugary drinks and may improve children's concentration. However, not all schools meet the requirements: one study found that 10 percent of middle and high schools and nearly 15 percent of elementary schools did not meet the drinking water requirements during the 2011-12 school year.[159] For schools that need help meeting the drinking water requirements, CDC has created the Water Access in Schools toolkit to guide schools through the process of evaluating their current policies and creating action plans to increase access to drinking water.[160]

Water quality issues unfortunately affect the availability of clean drinking water at schools. While 8,000 schools and child-care centers maintain their own water supply and are thus regulated by the U.S. Environmental Protection Agency (EPA), more than 100,000 additional schools and centers are unregulated by the EPA and may or may not be conducting their own water quality testing for lead or other unhealthy contaminants.[161] A recent study found that nearly one-quarter of Americans drink water that is either unsafe to drink or has not been properly tested for contaminants.[162] EPA has developed a toolkit, 3Ts for Reducing Lead in Drinking Water in Schools, which can help schools reduce lead in drinking water.[163]

e. Fruit and Vegetable Programs

The Fresh Fruit and Vegetable Program (FFVP), which started as a pilot program in 2002, has now expanded to elementary schools nationwide. It provides free fresh fruits and vegetables to schools with high percentages of students who qualify for free or reduced-price lunch.[164] The produce must be served outside the lunch and breakfast hours. An evaluation of the program published in 2013 found "strong evidence" that the program increased fruit and vegetable consumption in participating schools.[165]

In addition, farm-to-school programs help bring fresh, local food into schools and provide hands-on learning activities including school gardens, farm visits and cooking classes. The Healthy Hunger-Free Kids Act of 2010 formally established the USDA's Farm-to-School program, which helps incorporate local foods into school nutrition programs.[166]

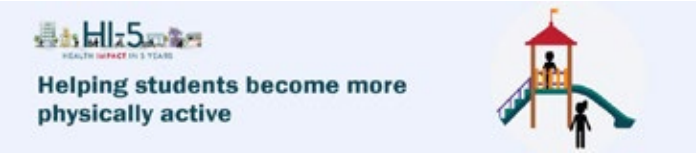
During the 2013-14 school year, farm-to-school programs served more than 42 percent of schools and 23.6 million children. In addition, more than 7,000 schools reported having school gardens. During the 2013-14 school year, school districts purchased nearly $800 million in local food from farmers, ranchers, fishermen, and food processors and manufacturers—a 105 percent increase over the $386 million purchased during the 2011-2012 school year.[167]

Research has shown that farm-to-school programs can encourage healthy eating habits in students, and participants are more likely to try and like fruits and vegetables as a result.[168,169] These programs also enhance academic performance and dietary outcomes.[170]

More than 7,000 schools in the U.S. have school gardens.

4. School-Based Physical Activity Programs

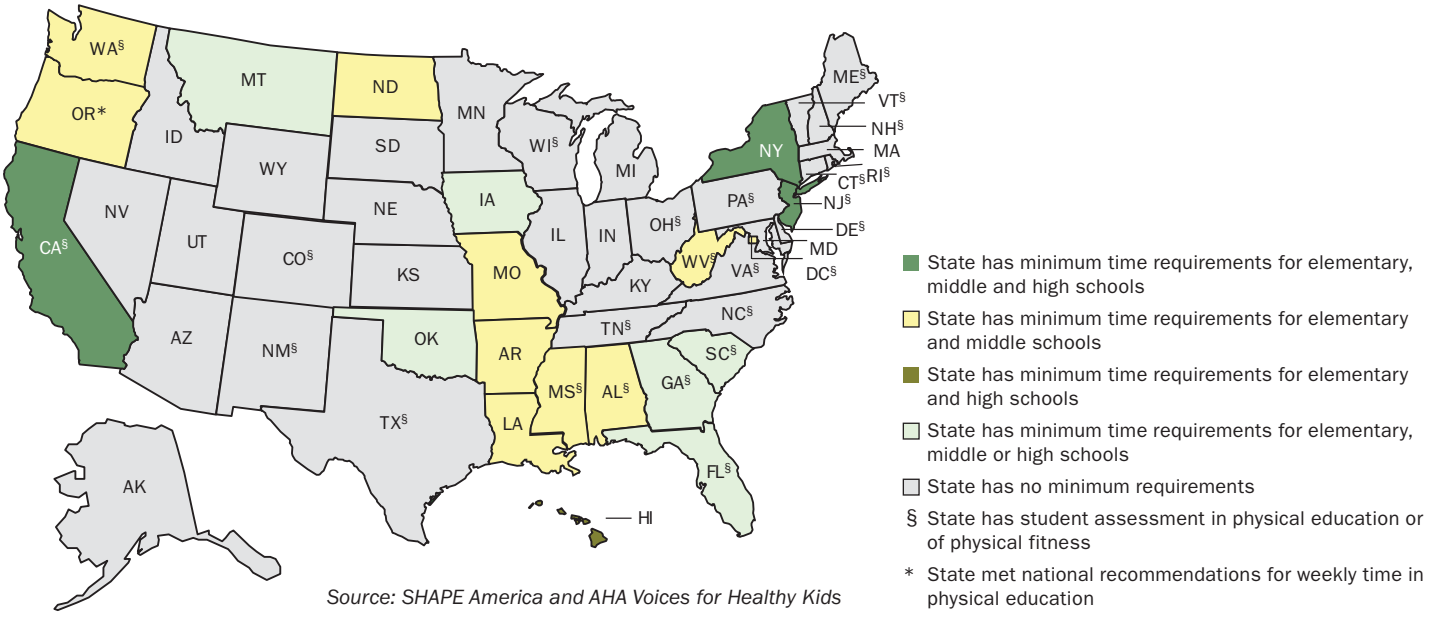
a. Physical Education & Physical Activity Breaks



Physical education (PE) provides important benefits for children, including delivering dedicated time for physical activity, teaching the rules of sports and games, allowing practice of gross motor skills, and helping cultivate a lifelong interest in exercise. School-Based Programs to Increase Physical Activity is an umbrella name that CDC has termed for programs implemented by states or school districts that expand physical education or incorporate physical activity into the classroom.[171] This collection of programs is one of CDC's HI-5 Initiatives, a collection of cost-effective community-based health interventions that research shows should make a positive health impact in five years or less.[172] Research has demonstrated the cost-effectiveness of such programs and their efficacy in preventing childhood obesity.[173,174]

Despite the documented benefits of PE, there are no federal requirements for PE, not all states require students to participate in PE, and few states require a minimum number of PE minutes per week. Only Oregon and Washington, D.C., require the time necessary to meet the national standards for physical education at both the elementary and middle school levels.[175] Even where standards are in place, however, schools are not necessarily in compliance. A 2016 Washington Post investigation found that only 10 of Washington, D.C.'s, more than 200 public and charter schools were meeting the law's physical education requirements.[176]

State Requires Physical Education for Elementary, Middle and High Schools



Source: SHAPE America and AHA Voices for Healthy Kids

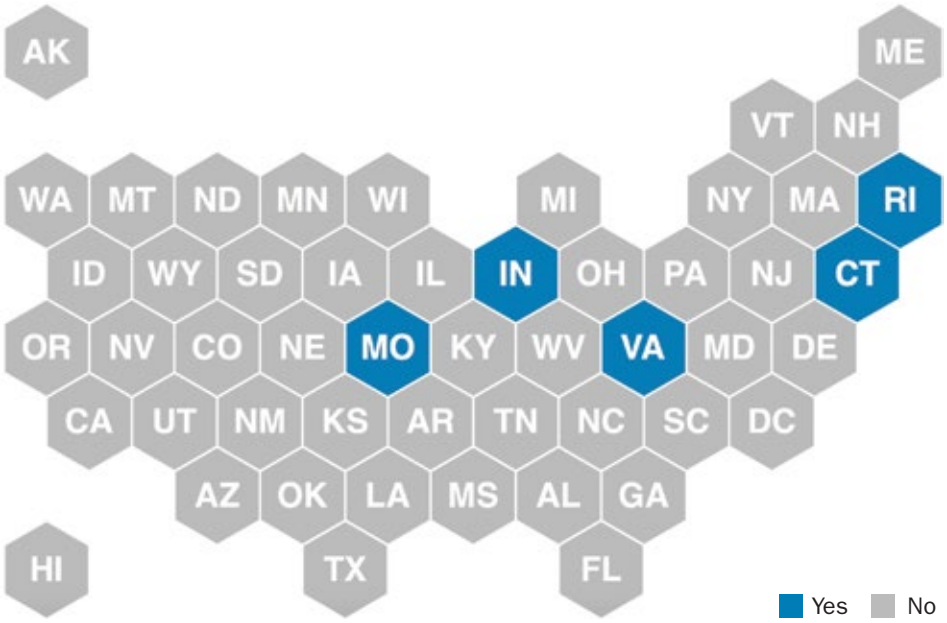
b. Recess

Research has demonstrated that children benefit in numerous ways from having time to be physically active during the school day. In addition to increasing physical activity, recess helps students by increasing their attention in the classroom, reducing disruptive behavior, and providing opportunities for social and emotional development.[177] The American Academy of Pediatrics describes recess as "a crucial and necessary component of a child's development" and explains that "recess is unique from, and a complement to, physical education — not a substitute for it."[79] AAP specifically credits recess with helping students meet their recommended 60 minutes of daily physical activity, and thus lowering rates of obesity.[79]

Primary school recess requirements are set at the state level, and only a handful of states require schools to provide recess specifically, as opposed to physical education or unspecified physical activity.[175,178] In addition, many state laws group together requirements for recess and physical education, so even in those states that require recess time, sufficient free play time is not necessarily guaranteed.

In 2017, CDC, in partnership with SHAPE America (Society of Health and Physical Educators), released a report recommending strategies for planning and providing recess in schools, including documenting recess policies, designating spaces for outdoor and indoor recess, providing planned recess activities, involving students in planning and leading recess, and tracking physical activity during recess.[177] State and local policymakers and educators can use these recommendations to help support recess in their local schools. Five states (Connecticut, Indiana, Missouri, Rhode Island and Virginia) have recess requirements.

State Requires Recess in Elementary Schools.



STATE PROFILE: Alaska

The Alaska Department of Health and Social Services helps young Alaskans stay healthy through its Obesity Prevention and Control program. Initiatives include:

- The Play Every Day! Campaign, which encourages children to engage in active play by educating parents about the benefits of physical exercise and encouraging them to serve fewer sugary drinks to their kids;
- The Healthy Futures Challenge, which encourages kids to participate in school-based physical fitness challenges, promotes physically active Alaskan role models, and supports low-cost community physical activity events; and
- Supporting Alaskan schools by providing physical education training to staff and teachers, assisting schools in developing and implementing wellness policies, and supporting the serving of local foods in Alaskan schools.[179]

c. Safe Routes to Schools

In 1969, nearly half of American school children (47.7 percent) usually walked or biked to school. By 2009, that number had fallen to 12.7 percent.[180] Safe Routes to School (SRTS), another of CDC's HI-5 initiatives, promotes walking and biking to school by educating students and families about its benefits and ensuring that the school environment allows kids to do so safely. To implement an SRTS initiative, states, localities and school districts can compete for federal funding, which is available via a transportation alternatives set-aside funding under the Fixing America's Surface Transportation (FAST) Act.[181]

SRTS programs have resulted in significant improvements in active transportation to school. One national review of SRTS programs found that three high-performing/achieving schools that adopted the program doubled the number of students walking and biking to school over a three year period — with walking rates at 15 percent and biking at 2 percent as of 2012.[182] Another review of SRTS programs in Florida, Mississippi, Washington and Wisconsin found a significant increase in walking and biking rates in schools that had adopted the program, with walking to school increasing from 9.8 percent to 14.2 percent, and bicycling from 2.5 percent to 3.0 percent (as of 2014).[183]

In 2016, the Safe Routes to School National Partnership issued a report card assessing states on how well they support walking, biking, and active kids and communities.[184] Only three states — California, Minnesota and Washington — were awarded the top grade and found to have "made a significant commitment to support walking, bicycling, and physical activity and [are] providing support in multiple ways."[184]

Nearly half of American school children walked or biked to school in 1969, compared to only 12.7% in 2009.

d. Shared Use

One strategy for promoting physical activity is the shared use of recreational facilities. For example, schools can make their gymnasiums, tracks, fields and playgrounds available for community use before and after school times and on weekends. This can be particularly helpful in low-income communities where there is less access to recreational opportunities. Shared use agreements can help reduce barriers to use by laying out clear rights and responsibilities on issues such as liability, maintenance, safety and scheduling.[185]

Thirty states and Washington, D.C., have laws encouraging schools to make facilities available for use by the community through shared-use agreements, while Georgia, Maryland, Kansas, Ohio, Oklahoma and Utah go further and require shared use.[184] States can encourage shared use by providing funding or other incentives to schools that share their facilities, but Arkansas and Washington are the only states to do this.[184] In addition, 42 percent of U.S. municipalities have shared use agreements.[186]

e. Health Assessments

In order to monitor levels of childhood obesity, a number of states have put in place school-based BMI measurement programs. These can be used for surveillance of population trends or screening of individual patients for purposes of intervention. CDC does not make a recommendation regarding BMI assessment programs in schools, but does offer guidance on how to implement a program that provides appropriate safeguards for students.[187] Fewer than half of the states either require or encourage the collection of BMI data or have a program in place to collect either BMI or height and weight information.[175,188]

5. ESSA Implementation

In addition to its early childhood components, the Every Student Succeeds Act has elementary and secondary school provisions that can help students maintain a healthy weight by improving their nutrition and increasing their physical activity levels.

ESSA's new Student Support and Academic Enrichment Grants can be used for health and physical education. Districts receiving grants larger than $30,000 must conduct a needs assessment — which could include how the school environment helps support nutrition and physical activity — and must spend 20 percent of its grant on safe and healthy school activities.[189] Block grants will be distributed to states under the Safe and Healthy Students program. School districts and schools can apply to their state department of education for funding for a wide range of safety, health and school-climate programs that include health education and physical education. While the program is authorized at $1.6 billion under ESSA, Congress provided only $400 million for Student Support and Academic Enrichment Grants in fiscal year 2017 — necessitating one year exemptions to several of the requirements of the grant program, including that States award their funds via formula and instead giving them the option to award their funding competitively (where no school may receive less than $10,000).[190]

The law also authorizes a Promise Neighborhood program to provide "pipeline services" to low-income communities suffering one or more signs of distress, which can include high rates of childhood obesity. ESSA's Full-Service Community Schools Program supports local school districts partnering with community-based organizations to provide coordinated academic, social and health services to improve educational outcomes for children in neighborhoods facing high rates of obesity and other challenges.[110]

ESSA allows schools the flexibility to choose how portions of their Title II professional development money is allocated, which can include support for promoting health and wellness priorities, providing for additional school health professionals, or educators and staff training to support improving health.[110]

State education agencies must also develop state accountability systems, which must include at least one non-academic performance measure. For instance, Connecticut's system assesses physical activity and chronic absenteeism.[191]

6. CDC School-Based Initiatives

CDC provides a number of resources to support schools in obesity-prevention efforts. Some examples include:

- A Virtual Healthy School (VHS), a tool that allows school administrators and policymakers to see policies that can improve student health in (virtual) action. These include a virtual cafeteria offering healthy food choices and a virtual playground that promotes physical activity. VHS is part of CDC's Whole School, Whole Community, Whole Child model.
- School Health Guidelines to Promote Healthy Eating and Physical Activity — a compendium of top strategies, goals, best practices and resources for schools and communities around the country to meet the needs of their students and utilize existing resources within their local areas.[192]
- Local School Wellness Policy guidelines and support. Each local education agency or school district is required to develop and implement a wellness policy — which includes supportive school nutrition and physical activity environments — if they participate in federal Child Nutrition Programs.[193] CDC has developed profiles of 11 schools' wellness policy efforts.[194]
- *School Health Index* to allow schools to conduct a self-assessment and plan school health initiatives.[195]

CDC also funds state-based school obesity-prevention efforts. For example, every state is provided with federal funding to support efforts to prevent and control obesity, heart disease and stroke, known as State Public Health Actions or DP-13-1305 funding.[196] The program's goal is to make it easy for Americans to live healthy lives, and it focuses on creating healthy environments in local institutions, including schools. School-based strategies to accomplish this include adopting food service nutrition standards and promoting physical education and activity in schools.[197]

PROFILE: Whole School, Whole Community, Whole Child Model

CDC's Whole School, Whole Community, Whole Child (WSCC) model is a collaborative approach to learning and health. Recognizing a child's health is linked to his or her academic achievement, the model encourages communities, schools and families to work together to address children's educational and health needs.

This approach places the child at the center, focusing on ways to help children be healthy, safe, engaged, challenged and supported. The white band indicates the coordination needed between school, health and community sectors as they develop policies that affect children. The blue section indicates the multiple school components representing the full range of learning and health supports that surround a child. Finally, the yellow represents the community that exists around the school environment and provides needed resources and input.[198]

Source: U.S. Centers for Disease Control and Prevention

C. COMMUNITY POLICIES & PROGRAMS

Budgets for Some Key Federal Community-Based Obesity-Related Programs	Enacted Budget FY 2017	Enacted Budget FY 2016
Division of Nutrition, Physical Activity and Obesity (CDC)	$49.920 million[199]	$49.920 million[129]
Chronic Disease Programs at CDC Including the Division of Nutrition, Physical Activity and Obesity and School Health Programs	$1.116 billion[128]	$1.177 billion[129]
Healthy Food Financing Initiative	$22 million[200]	$22 million[200]
New Markets Tax Credits	$3.5 billion (for Calendar Year 2017)[201]	$7 billion (2015-2016 combined funding)[202]
SNAP (USDA)	*$78.488 billion[203]	$80.839 billion[203]

**Estimated (vs. enacted)*

1. Overview

a. Importance of Place

While the causes of the obesity crisis are complex, public health experts have become increasingly aware of the role that environmental factors play in obesity. For example, the place a person lives will help determine whether:

- Public transportation is available for commuting to work;
- There are nearby supermarkets that sell affordable, healthy foods;
- There are sidewalks allowing children to safely walk or bike to school;
- There are nearby parks in which to play and exercise;
- Local schools provide free meals for all students;
- There is easy access to fresh, local produce from a farmer's market;
- Local roads include bike lanes; and
- Purchases of sugar-sweetened beverages are discouraged through taxation.

b. Food Deserts and Food Swamps

Food deserts are areas where residents have little or no access to affordable, healthy food. Food deserts typically lack nearby grocery stores and residents are forced to rely on processed food from convenience stores or fast-food retailers to feed their families.

The U.S. Department of Agriculture estimates that more than 23 million Americans live in a low-income area that is more than a mile from the nearest supermarket in urban areas and more than 10 miles away in rural areas.[204] About half of the people who live in such food deserts earn less than 200 percent of the poverty level.[205]

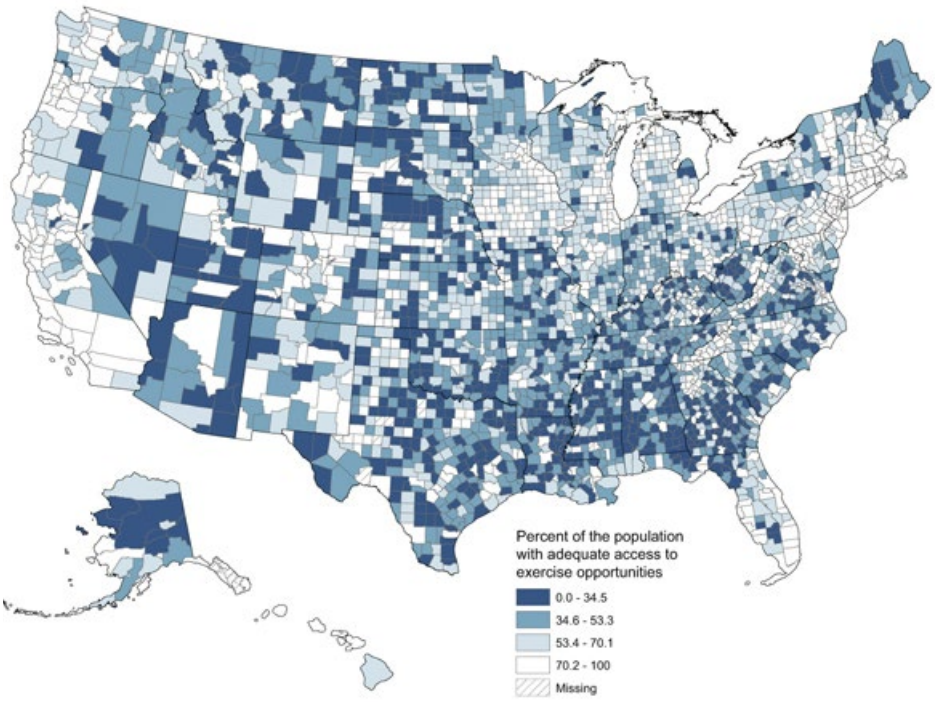
Some communities can also be classified as food swamps — areas that have an overabundance of unhealthy food options, such as fast-food and convenience stores, while having limited availability of healthy options and fresh foods. For instance, many low-income communities have nearly twice the number of fast-food restaurants and convenience stores as higher-income areas.[206, 207, 208] The high availability of inexpensive and unhealthy options influence the choices that families in those neighborhoods make.

c. Impact of the Environment

The term "built environment" means all the physical aspects of the places where we live, work and go to school. The way our environments are built can help determine our level of physical activity and influence obesity rates. One simple example is stairs. When an apartment building or office building has a centrally located, well-lit elevator bank and a dark stairwell stuck in a corner, people tend to take the elevator. But when stairwells are clean, safe, well-lit and centrally located, research shows they are used more frequently.[209] Research has unsurprisingly found a link between built environments and obesity, with the odds of a child being obese or overweight increasing by 20 percent to 60 percent if he or she lives in a neighborhood with unfavorable environmental aspects, such as poor housing, unsafe conditions and/or no access to sidewalks, parks and recreation centers.[80]

The Community Preventive Services Task Force, a group of public health and prevention experts appointed by CDC's director, has recommended built environment approaches that combine transportation system interventions with land use and environmental design.[210] In other words, as communities update or plan new transportation systems, they should do so in conjunction with land use decisions in ways that make physical activity easier and more accessible. For example, if a town decides to build a bike path, it might build it so it connects a neighborhood to a nearby park, encouraging families to bike instead of drive. Or it might install a sidewalk that allows people to walk to a light rail station, making it easier both to walk and use public transportation.

Access to Parks and/or Recreation Facilities



Source: Development of a Nationally Representative Built Environment Measure of Access to Exercise Opportunities, Preventing Chronic Disease, Vol 12211

STATE PROFILE: Arizona

In Arizona, the Department of Health Services has engaged in a thoughtful and methodical assessment of the state's health needs and has developed a plan to improve Arizona's public health. It started by conducting a statewide assessment of the state's 15 counties and analyzing quantitative and qualitative data to thoroughly understand the state's public health status.[212] In 2016, the Department presented a statewide Health Improvement Plan, based on the assessment. Recognizing that nearly two-thirds (62 percent) of Arizonans were overweight or obese, the plan included obesity prevention as one of 10 public health priorities for the state. The plan describes how the health department will work with local communities to implement three strategies: (1) enhancing the state's built environment to improve health; (2) encouraging employers to adopt worksite wellness programs; and (3) supporting schools in promoting the health and safety of their students.[213]

PROFILE: Encouraging Youth Sports Participation

Organized sports programs provide a host of benefits for children. In addition to regularly scheduled physical activity, sports also provide children with the opportunity to build motor skills, develop self-confidence, and practice cooperation and teamwork. However, for many low-income families, program costs may prevent their children from joining. One study found that nearly one in five low-income parents reported a decrease in their child's sports participation due to cost.[214] Although fee waivers and scholarships are sometimes available, embarrassment at requesting aid and/or requirements to produce evidence of need may deter qualifying families from accessing aid.

A recent study demonstrated that removing cost barriers in a simple way can dramatically increase youth sports participation. When a city youth sports program in Gaithersburg, Maryland, made it easy to obtain a waiver for sports registration fees — city residents simply had to click a box to qualify — waivers increased 1,200 percent and program participation in low-income schools increased by 78 percent.[215] When funding is available to cover program costs, this successful experiment easily could be replicated to boost organized sports participation rates in other low-income communities.

2. Community-Based Programs

Schools and federal, state and local governments support a number of community-based programs to help address the obesity epidemic. Strategies underlying these programs include making healthy foods more available and appealing, educating consumers about healthy eating and food ingredients, supporting projects that bring grocery stores into food deserts, providing places for physical activity, and expanding public transportation.

Community-based efforts are designed to be flexible enough to address the needs of specific local areas — matching their priorities and leveraging existing resources. The most successful strategies bring key partners and assets together and take a comprehensive approach to maximize impact. Multi-sector collaborations can include public health agencies, healthcare providers and payers, social services, private businesses, philanthropies, schools and community groups — all of which have a vested interest and different expertise for improving the health and vitality of a community.

For instance, working together, cross-sector partnerships can better address key issues, such as affordable housing, quality education, income, transportation, the availability of affordable, nutritious food, safe places to be physically active and other healthy conditions in neighborhoods.

There are a range of additional sources that can help provide investments and resources for obesity-prevention efforts along with federal, state and local grants. It is essential to engage a broader set of private and public resources to be able to scale effective, evidence-based efforts more broadly. The entire federal budget for all chronic disease prevention activities at CDC is around $1.2 billion (about $4 per person per year, as of FY 2017), while more than 80 percent of the annual nearly $3 trillion in healthcare spending is spent on individuals with one or more chronic conditions (about $8,000 per person per year for chronic disease).[216] Optimally, revenue sources, programs and goals can be coordinated and leveraged for greater effect. For instance, partners in a community form a collaborative, where one organization can take a lead partner or "integrator" role, helping to manage the program and use of resources for maximum effect and accountability.

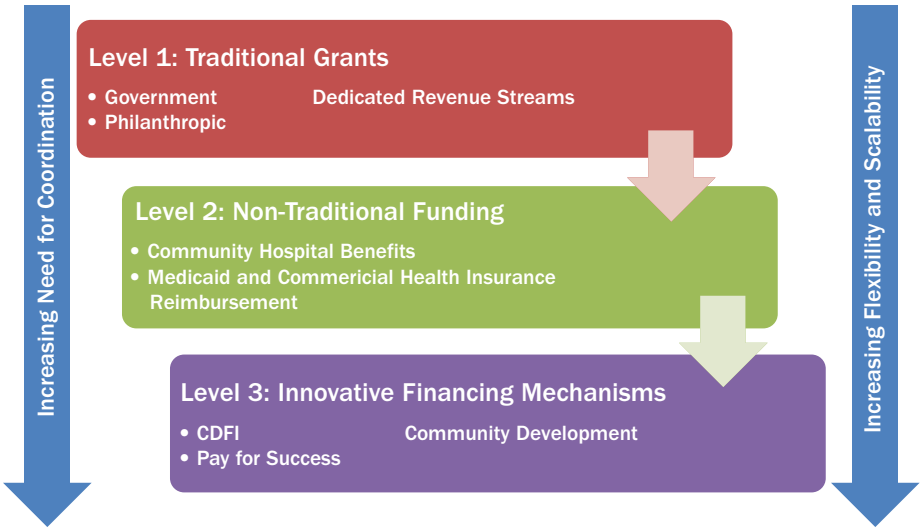
Some additional potential financial partners and funding sources include:

- The healthcare system, including public and private providers and insurers, hospitals and community benefit funds (see discussion in Section D);
- Social service, housing, agriculture, transportation and/or environmental agencies via cross-sector opportunities;
- Businesses;
- Community and philanthropic organizations;
- Community Development Financial Institutions (CDFI) Fund, tax credits, revolving loan funds, program-related investments, social impact bonds and pay-for-performance initiatives; and
- A Wellness Trust or other formal structure where there is direct community investment, from government support, tax revenue or other ongoing sources.

Effective, evidence-based obesity-prevention and health improvement strategies can lower healthcare costs and improve the vitality of neighborhoods. For example, evidence-based community prevention programs that increase physical activity, improve nutrition and prevent smoking could save the country more than $16 billion annually within five years — a $5.60 return for every $1 spent.[217]

A strong focus should be placed on early childhood policies and programs — which can have the highest impact for setting the course for lifelong health — as well as continued support through every stage of life.

Potential Sources for Funding for Local Obesity-Prevention and Health Improvement Initiatives



a. CDC Programs

CDC supports a range of obesity-prevention programs in communities around the country. The National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) — including the Division of Nutrition, Physical Activity and Obesity (DNPAO) — is the lead center working on obesity prevention and control. NCCDPHP works in partnership with other parts of CDC, including:

- School Health Branch of the Division of Population Health;
- Division of Heart Disease and Stroke; and
- Division of Diabetes Translation.

Some major CDC obesity-prevention programs include:

- **State Public Health Actions to Prevent and Control Diabetes, Heart Disease, Obesity and Associated Risk Factors and Promote School Health ("DP13-1305 funding"):** These grants fund state initiatives to coordinate the care and prevention of these diseases across multiple community institutions, including schools, early childhood centers, worksites and health systems.[196]
- **State and Local Public Health Actions to Prevent Obesity, Diabetes and Heart Disease and Stroke ("1422" awards):** This program helps state and local health departments implement community-based obesity-prevention activities that complement activities receiving DP13-1305 funding.[218]
- **Good Health and Wellness in Indian Country (DP14-1421PPHF14):** A five-year, $16 million program to prevent and manage heart disease, diabetes and associated risk factors in American Indian tribes and Alaska Native villages.[219]
- **Partnership to Improve Community Health (PICH):** Provided $220 million from FY 2014 to FY 2016 to support evidence-based strategies to improve the health of communities and reduce the prevalence of chronic diseases by addressing tobacco use and obesity.[220]
- **Racial and Ethnic Approaches to Community Health (REACH):** A national program to reduce health disparities, which provides funds to community organizations, tribes, universities, and state and local health departments to implement culturally-appropriate programs, including obesity-prevention efforts.[221]
- **Million Hearts Campaign:** A five-year national initiative, co-led by CDC and the Centers for Medicare & Medicaid Services (CMS), aimed at preventing one million heart attacks and strokes by 2022. The program estimates that it prevented as many as 500,000 heart events during the first five years of the program, 2012-2016.[222]
- **Preventive Health and Health Services (PHHS) Block Grant:** This program provides every state with flexible support to address what they determine to be their most important health needs. In FY 2016, nutrition and weight status was a top funded health topic area, receiving more than $10 million of PHHS grant funds.[223]
- **Programs to Reduce Obesity in High Obesity Areas (CDC-RFA-DP14-1416 funding or High Obesity Program):** This three-year program, now in its final year, is a pilot program that funds land grant colleges and universities in counties where the obesity rate exceeds 40 percent to conduct interventions at the county level.[224] The agency has funded work in 49 counties, across 11 states, reaching more than 1.8 million people. By identifying and addressing risk factors — such as having less access to healthy foods and fewer opportunities to be physically active — the program helps improve the long-term health of residents in these counties. Grantees collaborate with existing cooperative extension and outreach services at the county level in their states to develop obesity solutions. They put into action a set of evidence-based strategies in early care and education centers or the community setting. Activities include: convening partners to assess community assets and needs and leverage resources; providing training, technical assistance and support for program development, implementation and evaluation; evaluating and monitoring progress on program implementation and assessing program effectiveness; and translating and communicating evaluation results for stakeholders, decision-makers, partners, funders and the public. The first round of grant recipients included colleges and universities in Alabama, Arkansas, Georgia, Indiana, Kentucky, Louisiana, North Carolina, South Dakota, Tennessee, Texas and West Virginia.[225]

PROFILE OF HIGH OBESITY AREAS IN: ARKANSAS

Estimated Adult Obesity Prevalence

- The estimated adult obesity prevalence in these counties ranges from 40.4 percent to 47.4 percent. The overall state adult obesity prevalence is 34.5 percent. These 4 counties are between 30.9% and 69 percent rural.

County	County population[1]	County adult obesity prevalence[2]	% Population living in rural areas[3]
Chicot	11,800	47.4%	54.3%
Craighead	96,443	40.4%	32.2%
Jefferson	77,435	40.9%	30.9%
Monroe	8,149	42.5%	69.0%

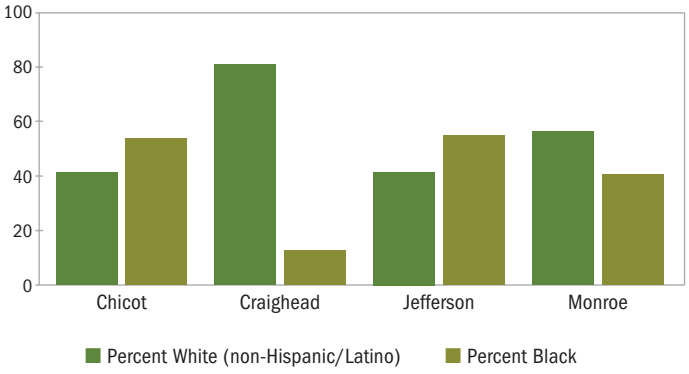
Poverty Levels

Poverty levels are significant social determinants of health.

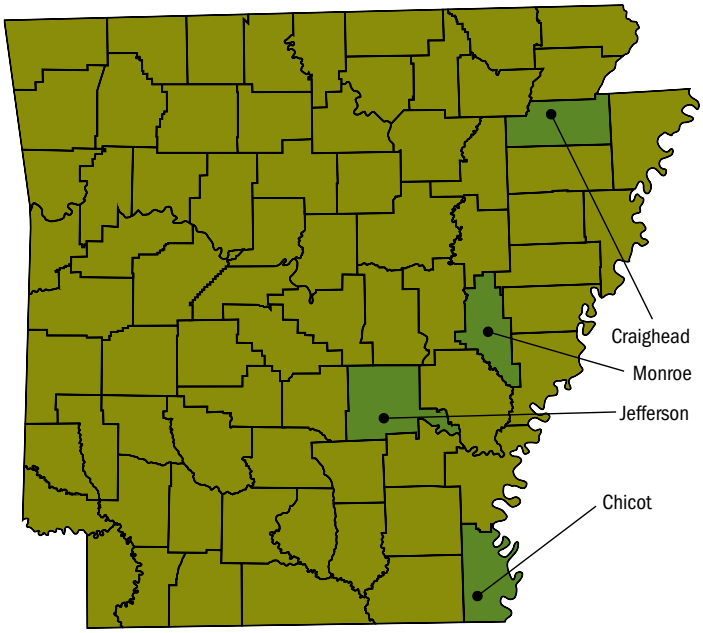
- Chicot, Jefferson, and Monroe counties are classified as “persistent poverty” and “persistent-child-poverty” counties.

County	% County population below poverty line[5]	% Children below poverty line[5]
Chicot	32.4%	45.0%
Craighead	21.5%	31.5%
Jefferson	24.5%	37.3%
Monroe	30.2%	46.8%

Selected Racial/Ethnic Demographics in High Obesity Counties in Arkansas



High Obesity Counties of Arkansas



PROFILE OF HIGH OBESITY AREAS IN: ALABAMA

Estimated Adult Obesity Prevalence

- Ranges from 40.2 percent to 48.9 percent. The overall state adult obesity prevalence is 33.8 percent.
- Children in rural areas are 25 percent more likely to be overweight or obese than children in metropolitan areas.
- All but Chambers County are between 51 percent and 100 percent rural.

Poverty Levels

Poverty levels are significant social determinants of health.

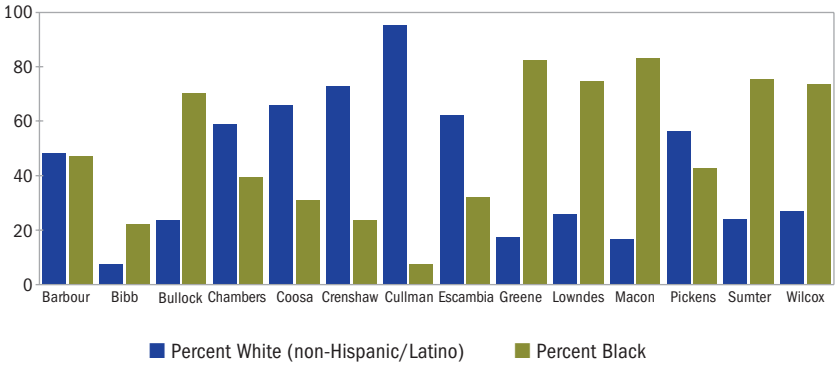
- Nine of these counties are classified as "persistent poverty" counties by the US Census Bureau.
- All but Coosa and Cullman counties are classified as "persistent child-poverty counties" by the US Census Bureau.

County	County population[1]	County adult obesity prevalence[2]	% Population living in rural areas[3]
Barbour	27,457	40.5%	67.8%
Bibb	22,915	41.4%	68.4%
Bullock	10,914	48.5%	51.4%
Chambers	34,215	41.4%	49.1%
Coosa	11,539	41.7%	100.0%
Crenshaw	13,906	44.8%	100.0%
Cullman	80,406	40.3%	73.2%
Escambia	38,319	44.7%	63.5%
Greene	9,045	47.4%	100.0%
Lowndes	11,299	42.5%	100.0%
Macon	21,452	40.2%	55.5%
Pickens	19,746	41.7%	100.0%
Sumter	13,763	45.0%	100.0%
Wilcox	11,670	48.9%	100.0%

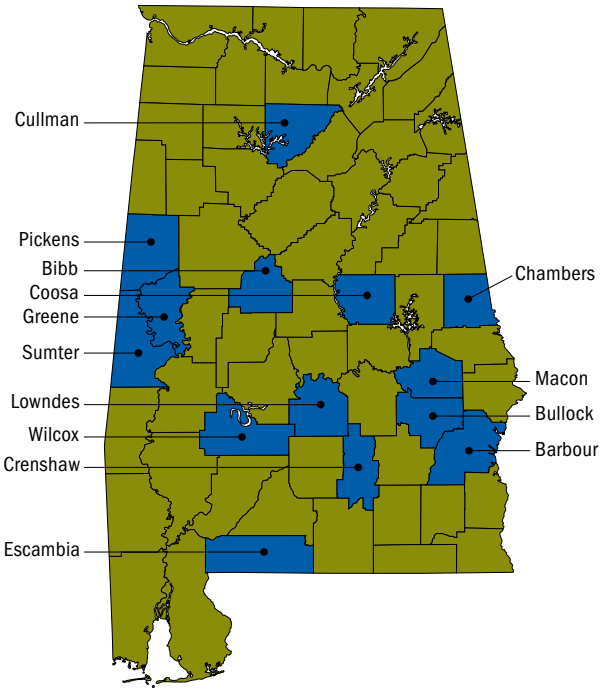
County	% County population below poverty line[5]	% Children below poverty line[5]
Barbour	26.7%	44.1%
Bibb	18.1%	30.8%
Bullock	21.6%	31.9%
Chambers	24.1%	42.1%
Coosa	20.9%	30.4%
Crenshaw	19.1%	24.8%
Cullman	18.8%	25.8%
Escambia	25.4%	37.4%
Greene	32.9%	56.0%
Lowndes	26.7%	37.6%
Macon	27.3%	43.5%
Pickens	27.2%	36.7%
Sumter	38.0%	46.9%
Wilcox	39.2%	50.3%

Selected Racial/Ethnic Demographics in High Obesity Counties in Alabama

Bullock, Greene, Lowndes, Macon, Sumter and Wilcox are located in the mid-section of Alabama known as the "Black Belt." These are counties that, historically, have majority Black populations.



High Obesity Counties of Alabama



STATE PROFILE: Alabama

Alabama — which has had one of the highest obesity rates in the country — is working to address the epidemic. It has created a state Obesity Task Force to support programs, advocacy and environmental changes, including by:

- Developing a guide to assist Alabama employers in creating workplace wellness programs;[229]
- Helping launch Get Moving Alabama, a public awareness campaign to increase physical activity and promote a healthy lifestyle throughout Alabama; and[230]
- Creating the Alabama Healthy Vending Machine Program, in partnership with Auburn University and the Supplemental Nutrition Assistance Program Education (SNAP-Ed), to educate employers about the benefits of healthy vending options. The program has increased the number of healthy items in vending machines at 13 worksites across the state and made them easier to identify with a "good choice" sticker.[231] These changes have reached nearly 30,000 people in Alabama.[232]

In addition, Auburn University, with funding from CDC's High Obesity Program, has collaborated with the university's extension program and other community partners to form ALProHealth: Alabama Preventing and Reducing Obesity: Helping to Engage Alabamians for Long-Term Health. This initiative is helping create obesity-prevention and control activities in 14 Alabama counties with rates of obesity exceeding 40 percent, including:

- Community and school gardens;
- Healthy vending and concessions;
- Farmers' markets and other healthy retail options; and
- Safer and more trails for walking.[233]

STATE PROFILE: Mississippi

The state of Mississippi has one of the highest rates of obesity in the United States. It has one of the highest adult rates in the country and has the highest childhood obesity rate in the nation among children ages 10 to 17 (21.7 percent) and among high school students (18.9 percent).[226]

Mississippi also has high rates of obesity-related health problems. It has a higher rate of diabetes than any other state (14.7 percent) and its hypertension rate (42.4 percent) ranks second.[226] Mississippi also has the lowest breastfeeding rates in the nation, with only 52.0 percent of babies born in 2013 ever breastfed and 9.3 percent breastfed exclusively at 6 months.[120]

With State Public Health Actions funding from CDC, Mississippi has been implementing several obesity-prevention initiatives, including:

- Providing assistance to state hospitals to help improve their breastfeeding rates;
- Developing a healthy catering policy for foods and beverages served at state health department events and meetings;
- Helping early childhood centers increase children's physical activity levels; and
- Conducting and evaluating an eight-week fitness pilot program, which resulted in a 3 percent decrease in weight and a 4 percent decrease in blood pressure among participants.[227]

The Mississippi Department of Health has also collaborated with other state government offices and external organizations to implement obesity control and prevention initiatives, such as:

- Working with the Mississippi Department of Education to implement physical activity and nutrition policies;
- Collaborating with Blue Cross and Blue Shield State and School Employees' Health Insurance Plan to implement a wellness plan for state employees; and
- Partnering with the Mississippi Department of Rehabilitation Services to establish a healthy catering and vending initiative. Since implementation of this program, more than 95 percent of state agency vending machines include Fit Pick snack selections, which help consumers make healthier choices.[228]

With these programs, the state health department is working hard to increase the number of Mississippians living at a healthy weight.

EXAMPLES OF PROGRAMS TO REDUCE OBESITY IN HIGH-OBESITY AREAS

- **The University of Arkansas Cooperative Extension Service** works with four County Extension Offices to promote and increase access to healthy food and more active lifestyles. The Extensions and their partners promote acceptance of Supplemental Nutrition Assistance Program Women, Infants and Children benefits at food retailers and work with retailers and farmers' markets to promote programs such as Cooking Matters at the Store and Faithful Families Eating Smart and Moving More. The Extensions are also working with faith-based groups and city government planners and programs, such as Kids Walk Across Arkansas and Yoga for Kids to create and enhance safe places for physical activity.[234]

- **The University of Kentucky Cooperative Extension Service** is convening multi-sector community partners to promote healthier food options at local retail stores, provide incentives to buy fruits and vegetables at farmers' markets, enhance existing park and recreation amenities, and plan and implement more walking and biking trails.[235]

- **Louisiana State University (LSU)** and their agriculture extension partners, including the LSU AgCenter and the Southern University AgCenter, as well as the Louisiana Department of Health and Hospitals, work with three parishes to implement the Healthy ABCs program. Community assessments serve to tailor each program to increase access to healthy food and physical activity opportunities. The Healthy ABCs program provides training and technical assistance on interventions such as the Louisiana Department of Health and Hospital's Well Ahead program, Let's Eat for the Health of It, Dining with Diabetes, Organwise Guys, Smart Portions, Family Nutrition Night, SNAP-Ed C.H.E.F camp and community garden work. Communities will create promotional campaigns to encourage physical activity, using the Let's Move! Faith and Communities toolkit to identify physical activities for their communities and joint-use agreements to increase access to more locations for physical activity.[236]

Source: CDC

b. Fiscal Policies and Innovative Financing Strategies

1. Taxes and Subsidies

Sugar-sweetened beverages account for approximately 40 percent to 50 percent of the excess sugar in Americans' diets, so reducing their consumption could have a significant effect on public health.[33] One study found that, if every American reduced their sugar-sweetened beverage consumption by three 12-ounce drinks per month, there would be 2.6 million fewer obese Americans, saving the country more than $25 billion in healthcare costs over the next 15 years.[237] Soda sales in the United States have declined for the past 12 years in a row.[238]

Providing consumers with financial incentives to make healthier food choices has proven effective. A 2017 review of 30 studies measuring the effect of food subsidies and taxes found that a 10 percent tax increase on sugar-sweetened beverages reduced their sale by 7 percent.[239] The same review found that raising taxes on unhealthful food generally (such as fast food) has also proven successful, with every 10 percent price increase reducing sales by 6 percent.[239]

Many taxes on unhealthy food and beverages are too small to have a significant effect on purchasing behavior. However, two recent jurisdictions that implemented volume-based excise taxes on sugar-sweetened beverages experienced significant behavioral changes. Mexico implemented a peso-per-liter tax on sugar-sweetened beverages in 2014, which was followed by a 7.6 percent reduction in the purchase of these drinks over the following two years.[240] Berkeley, California implemented a penny-per-ounce excise tax on sugar-sweetened beverages in 2015. Four months after implementation, consumption of these beverages in low-income Berkeley neighborhoods had decreased by 21 percent, while water consumption had increased 63 percent.[241] One year after implementation, sales of taxed sugar-sweetened beverages had fallen by 9.6 percent while sales of untaxed beverages rose 3.5 percent (driven by a 15.6 percent rise in sales of water). In relation to comparison cities without such a tax, Berkeley did not see a decrease in stores' revenue or an increase in consumers' average grocery bill.[242] The Berkeley tax revenue has helped fund cooking, gardening and nutrition programs in public schools and health promotion programs sponsored by community groups, including Healthy Black Families and the YMCA.

Other jurisdictions that have implemented volume-based taxes on sugar-sweetened beverages include Philadelphia, Pennsylvania (1.5 cents per ounce), Boulder, Colorado (two cents per ounce), Cook County, Illinois (one cent per ounce), Seattle (1.75 per ounce) and three additional cities in the California Bay Area: San Francisco, Oakland and Albany (one cent per ounce).[243]

In addition to discouraging consumers from purchasing unhealthy foods, fiscal policies can also incentivize healthy choices by lowering the cost of nutritious foods. Research has demonstrated that every 10 percent decrease in the cost of fruits and vegetables increased their purchase by 14 percent, while a 10 percent reduction in the cost of other healthy foods increased their purchase by 16 percent. Moreover, subsidizing the cost of fruits and vegetables was shown to effectively reduce BMI, with a reduction of 0.04kg/m^2 for every 10 percent decrease in price.[239]

Every 10% decrease in the cost of fruits and vegetables increases their purchase by 14%.

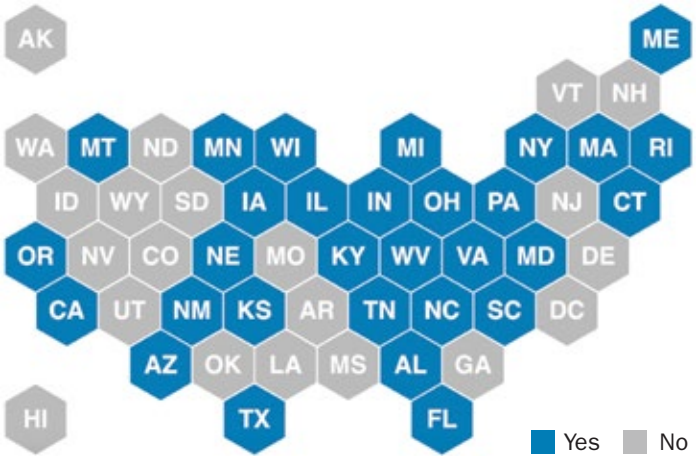
Double Up Bucks, a SNAP-doubling program, utilizes the proven theory that healthy food purchases can be incentivized.[244] The program is simple: it doubles the value of SNAP benefits when they are spent on fruit and vegetables at participating grocery stores and farmers' markets.[245] The program helps stimulate the bottom lines of participating retailers while improving the public health of the surrounding communities.

Alameda County in East Oakland, California has a Measure A Essential Health Care Services Tax — a half-cent sales tax passed by California voters in 2004 to support public health efforts, emergency medical, hospital inpatient and outpatient, and mental health and substance use services for low-income individuals in the country.[246] The revenue from the tax helps support the ability of the Alameda County Public Health Department to serve as a Host Hub of the California Endowment's Building Healthy Communities initiative — part of a 10-year, $1 billion place-based initiative supported by the California Endowment (See more in philanthropic investments section below).[247]

2. Healthy Food Financing Initiative

The Healthy Food Financing Initiative (HFFI) works to bring grocery stores to urban and rural communities that lack access to affordable, healthy food. It also assists retailers in selling healthy food in these communities. Three federal agencies — HHS, USDA and the Treasury Department — make funding available for these projects. HHS awards competitive Community Economic Development grants that serve the dual purposes of stimulating job and business development in low-income communities and helping ameliorate food deserts. USDA provides financial and technical assistance to food retailers to increase the availability of local foods and to help stimulate demand for healthy foods. The Treasury Department's Community Development Financial Institutions Fund provides funding and technical assistance to CDFIs that invest in businesses that sell healthy foods.[248]

State awarded Healthy Food Financing Initiative grants, from 2011 to 2016



LOCAL PROFILE: Jim's Local Market — Newport News, Virginia

A 2014 study by Virginia Tech and Virginia State University found that the cities of Newport News and Hampton, Virginia, have higher rates of food insecurity than the rest of the state (17 percent versus 12.7 percent). The southeast section of Newport News has also been a food desert since the only area grocery store closed in 2014. The nearest supermarket was a Walmart five miles away and separated from the neighborhood by an eight-lane road.[249]

That all changed in May 2016, when experienced grocer Jim Scanlon opened a new full-service grocery story in southeast Newport News with help from the community development financial institution Virginia Community Capital.[250] Jim's Local Market is a source of affordable and healthy food for an underserved neighborhood and has created 26 full-time jobs, most of which have been filled by local residents.[249]

The market has also provided services to help revitalize the neighborhood, including a community room for local organizations to use and a branch of Bayport Credit Union right in the market. Thanks to a partnership with nonprofit health system Bon Secours, the store also hosts healthy eating courses in its community room and financial literacy training offered by Bayport.[250]

3. New Markets Tax Credit

The New Markets Tax Credit (NMTC) is designed to encourage investment in low-income communities. By incentivizing companies to build projects such as supermarkets or fitness facilities in communities that lack access to affordable, healthy food and safe places to play and exercise, this program can help remove some of the barriers to a healthy life that exist in low-income communities. Between 2003 and 2010, the NMTC helped finance 49 grocery stores and seven fitness or recreation facilities nationwide.[251] Between 2003 and 2015, $42 billion in direct NMTC investments were made in low-income communities.[252]

4. Wellness Trusts

A number of groups have proposed the model of establishing a Wellness or Health Trust — a pool of funds set aside to finance evidence-informed community prevention in a strategic and coordinated way — that does not rely on federal grants or state general revenue, but rather provides a steady, predictable source of funding.[253, 254, 255] Funds for proposed Wellness Trusts can be raised in different ways from various public and private sources, including taxes or fees on products with known health risks (such as tobacco), private or corporate philanthropy, fees charged to health insurers or hospitals, community benefit funds from hospitals, voluntary contributions or purchases, and legal penalties or settlements.

Once community prevention efforts demonstrate savings, some models suggest that a portion of savings could be reinvested in the Wellness Trust, providing one source of funding. Having multiple funding streams can increase participation and flexibility, and reduce vulnerability to the loss of any single funding stream. Other considerations in establishing Wellness Trusts include administrative oversight and transparency; community engagement; deciding on priority activities and how funds will be distributed; ultimately creating a balanced portfolio of prevention investments that include interventions with short-, medium- and long-term returns on investment; assessing process and outcomes; and capturing and reinvesting savings in community prevention.[254, 255]

LOCAL PROFILE: Massachusetts Prevention and Wellness Trust

The **Massachusetts Prevention and Wellness Trust Fund** was the first established state-based trust — a four-year, $60 million commitment to community prevention and wellness efforts, financed via a one-time assessment on the state's large insurers and hospitals. The Trust was established by the passage of new healthcare cost containment legislation in 2012, and thus did not require annual approval through an appropriations process. Identified health priorities for the Trust included tobacco use, childhood asthma, hypertension and elder fall prevention. At least 75 percent of the funds were awarded in grants to local communitywide initiatives, up to 10 percent was used for workplace wellness efforts, and up to 15 percent was spent on grant administration, including evaluation. The Department of Public Health oversees the fund, in consultation with an Advisory Board established specifically for the Trust. Public comment meetings were also held to facilitate public participation.[256] Through a competitive application process, four-year grants from the Trust were awarded to nine community partnerships in January 2014, in the amount of up to $250,000 for the first phase and a potential additional $1.5 million for each of the following three years. Applicants were required to demonstrate robust community-clinical linkages as well as outline their plans to improve health outcomes and reduce costs related to at least two of the four priority health conditions: to reduce health disparities and to sustain their efforts.[257]

5. Pay-for-Performance and Social Impact Bonds

Pay-for-performance models are innovative mechanisms for addressing social challenges — where through contracts or loans, the government pays for the delivery of certain services based on positive, measured performance outcomes.[258, 259] There are not any current pay-for-performance programs that focus on obesity, but it is one mechanism being explored for potential investments.

Social impact bonds are one form of a pay-for-performance approach. Through this mechanism, the government identifies a challenge and contracts with a private-sector financing intermediary to issue a bond to obtain social services to address the challenge.[260, 261] The social service might be a local program that has demonstrated success and can be expanded, or one that has worked elsewhere and can be replicated.[260] The bond-issuing organization then raises the funds to finance costs of the program from private investors. Finally, the government pays the bond-issuing organization back based on whether established performance targets are met — and the investors are repaid with a certain rate of return for taking on the risk.[260, 261] The goal is for successful programs to allow investors to get their money back and earn a return, for the government to address a policy priority and possibly achieve long-term savings, and for the larger community to benefit from improved social outcomes.[260]

LOCAL PROFILE: South Carolina Nurse-Family Partnership

The **South Carolina Department of Health and Human Services** launched a pay-for-success initiative in February 2016 to improve health for mothers and children living in poverty[262] by sending trained nurses to conduct home visits with vulnerable, first-time mothers from early pregnancy through a child's second birthday. Over six years, they will expand the evidence-based Nurse-Family Partnership to an additional 3,200 low-income mothers. The project is mobilizing $30 million in funds, and, if positive results are found, South Carolina (state government) will make up to $7.5 million in success payments to sustain Nurse-Family Partnership's services.[263] Funding sources include a 1915 (b) Medicaid waiver that will contribute approximately $13 million and a combined $17 million from the BlueCross BlueShield of South Carolina Foundation, the Duke Endowment, Greenville First Steps, Children's Trust Fund of South Carolina, Laura and John Arnold Foundation, the Boeing Company (which manufactures in the state) and a consortium of private funders, along with technical assistance from the Government Performance Lab at the Harvard School of Government and a randomized control trial evaluation by Massachusetts Institute of Technology. Evaluation metrics will include: reduction in preterm births; reduction in child hospitalization and emergency department use due to injury; increase in healthy spacing between births; and increase in first-time mothers living in poverty who are served by the program.

6. Philanthropic Investments

A number of national and regional philanthropic institutions also invest in state and local efforts to prevent and reduce obesity — and the factors that contribute to it. For instance, for more than a decade, RWJF made investments to build initiatives and strategic partnerships to ensure that all children grow up at a healthy weight. In alliance with a growing coalition of civic and business leaders, the foundation is working to advance changes in public policy, community environments and industry practices that can help children have a healthy start in life.

EXAMPLES OF PHILANTHROPIC INITIATIVES TO SUPPORT LOCAL HEALTH IMPROVEMENT EFFORTS

Building Healthy Communities (BHC) is a 10-year, $1 billion place-based initiative of The California Endowment working in 14 California communities to promote prevention policy, system and environmental changes through cross-sector collaborations and community engagement. Launched in 2010, BHC aims to reduce health inequities through improvements in neighborhood safety, unhealthy environmental conditions, access to healthy foods, education, housing and employment opportunities. Each BHC appoints a BHC Hub Host to act as the central coordinator for implementation of health improvement initiatives.[247] A five-year review of BHC found some key achievements: improved coverage for the underserved; strengthened health coverage policy for the undocumented; school climate, wellness and equity improvements; prevention and reform support in the justice system; public-private investments and policy changes for boys and young men of color; and local and regional progress in "health in all policies."[264]

Invest Health, a collaboration between Reinvestment Fund and RWJF, incorporates health into community development by providing $60,000 grants, technical assistance and other support to new multi-sector partnerships in 50 mid-sized cities across the country. The goal is to increase and leverage private and public investment in neighborhoods facing the biggest barrier to health, particularly by helping these cities attract capital to advance systems-focused strategies, and by helping them use data as a driver for change. Grantees will bring together multiple sectors over 18 months to collect data, test solutions and advance strategies that address factors that drive health in low-income neighborhoods, including a lack of quality jobs, affordable housing and nutritious food, high crime rates and unhealthy environmental conditions.[265] At the end of the grant period, the cities are expected to have investment plans and interested investors. **Reinvestment Fund**, one component of the project, is a Community Development Financial Institution that manages $946 million from over 850 investors to support low-income communities through investments, real estate development, data analysis and advocacy.[266] Reinvestment Fund's investments have generated 71,550 jobs; 17 million square feet of commercial space; and 163 supermarkets, grocery stores and fresh food retail.[267]

Pioneering Healthier Communities (PHC) initiative uses funding from CDC and corporate and foundation donors to support a collaborative community process to develop policy, system and environmental changes that promote healthy living.[268] Launched in 2004, PHC empowers communities with strategies and models to support sustainable change in their communities. Participating YMCAs, as major partners, bring together a cross-sector team of leaders from the private, public and nonprofit sectors. These teams each have two coaches to guide, support and facilitate the team through its process, including a coach from YMCA, as well as one of the partnering institutions. There are currently 129 communities participating in PHC.

The **Blue Zones Project** is a community improvement initiative that brings together community leaders and citizens to impact the environment, policy and social networks to help make healthy choices easier.[269] Each certified Blue Zones Community implements long-term, evidence-based policies and interventions to improve the built environment; create and enforce health-promoting municipal policies and ordinances; form and nurture social groups that support healthy habits; and build healthier options in schools, grocery stores and workplaces. Current project sites include California, Florida, Hawaii, Iowa, Minnesota, Oregon, Texas and Wisconsin.

Voices for Healthy Kids works with communities across the country to make it easy and enjoyable for children to eat healthy foods and be active where they live, learn and play. VFHK supports policy changes and provides technical assistance, capacity-building and public education. A 2016 study found that VFHK financial and technical support could increase the chances of passing state policies to improve the nutrition and physical activity environment by 50 percent. Recent state and local policies passed with VFHK support include securing $3.5 million in funding for Safe Routes to School in Oregon, prioritizing investments in walking and biking in the Los Angeles County Transportation Improvement Plan, and requiring healthy offerings in vending machines on Baltimore city property. VFHK is a joint initiative of RWJF and the American Heart Association.[270]

The **Alliance for a Healthier Generation's Healthy Schools Program** provides schools with wellness modules that combine the latest research on childhood health with the most effective school policies, giving schools an action framework to create and sustain healthy environments and improve the health of their students. The program is being used by more than 31,000 schools nationwide,[271] and a 2015 study found that the more schools engaged with the program, and the longer they engaged, the greater reductions they saw in student rates of obesity.[272]

The Kids' Safe and Healthful Foods project provides nonpartisan analysis and evidence-based recommendations to ensure that all foods sold in schools are safe and healthy and that the USDA adopts rigorous school food safety policies and science-based nutrition standards. The project also helps give schools the resources they need to train cafeteria employees and replace outdated and broken kitchen equipment. The Kids' Safe and Healthful Foods project is a joint initiative of RWJF and The Pew Charitable Trusts.[273]

c. HHS, USDA and FDA Obesity-Prevention and Nutrition Education Initiatives

1. Dietary Guidelines

In 2015, HHS and USDA jointly released the eighth edition of the Dietary Guidelines for Americans (DGA). Guidelines are revised every five years to reflect the latest assessments of nutrition science. The 2015-2020 edition emphasizes the idea that Americans should shift food choices toward more nutrient-dense foods and beverages in place of less healthy choices.[32]

Most federal food programs are required by law to have nutrition standards that meet the DGA, including CACFP, the National School Meals Program and WIC. The guidelines also highlight the importance that all sectors play in helping Americans meet healthy eating and physical activity recommendations.

In December 2015, Congress directed the National Academy of Medicine (then the Institute of Medicine) to conduct a review of the process by which HHS and USDA develop the Dietary Guidelines.[274] The Committee to Review the Process to Update the Dietary Guidelines for Americans is conducting an 18-month review study that began in late 2016.

2. Menu Labeling

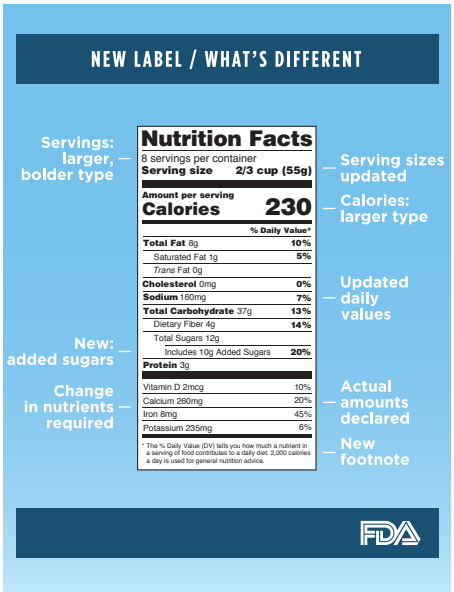
Recognizing that many consumers do not know — or underestimate — the calories in foods, and to enable consumers to make informed and healthy food choices, the Affordable Care Act's (ACA) nutrition labeling provisions require large chain restaurants, convenience stores and grocery stores to list the calorie count of ready-to-eat items sold on the premises.[275] While the FDA published a rule implementing this requirement in 2014, the compliance date of the rule has been delayed. In May 2017, just before the rule was scheduled to start being enforced, the FDA announced it would push back the effective date of the menu labeling requirements until May 7, 2018, in order "to consider how we might further reduce the regulatory burden or increase flexibility" of the rule.[276]

Recent studies on consumers' support for providing nutrition information at the point of purchase, awareness of nutritional information, purchase intentions and actual purchases find:[277]

- Most customers and the majority of the general public want restaurants and cafeterias to have menu labeling;
- Customers rarely seek out nutrition information from sources not available at the point of purchase, such as websites or brochures, but they do see menu labels at the point of purchase and those labels increase their awareness of nutritional information;
- Evidence from surveys and simulation studies suggests menu labeling reduces calories purchased or consumed, but evidence from real-world cafeteria and restaurant studies regarding calories purchased or menu items selected is mixed; and
- The impact of menu labeling is not uniform. Research has found it may have a greater effect on women than men, on higher-calorie items and among certain types of restaurant chains.

3. Food Labels

To better reflect the latest scientific knowledge about healthy eating, the FDA updated the Nutrition Facts label



Source: FDA

requirements for packaged food in 2016.[278] Though originally scheduled to take effect for most products in July 2018, the FDA announced in June 2017 that the deadline would be delayed and no new timing has been announced.[279] The changes to the nutrition label include:

- Designing changes to make it easier to identify calorie count and serving size;
- Requiring "added sugars" (sugars and syrups added to foods or beverages when they are processed or prepared, not including naturally occurring sugar) to be listed;
- Modifying the list of required nutrients (adding Vitamin D and potassium, making Vitamin A and C voluntary) to reflect the latest nutrition science; and
- Updating serving size requirements.[278]

These new requirements represent the first comprehensive update to the nutrition label in more than two decades.[278]

d. Operation Live Well and Healthy Base Initiative

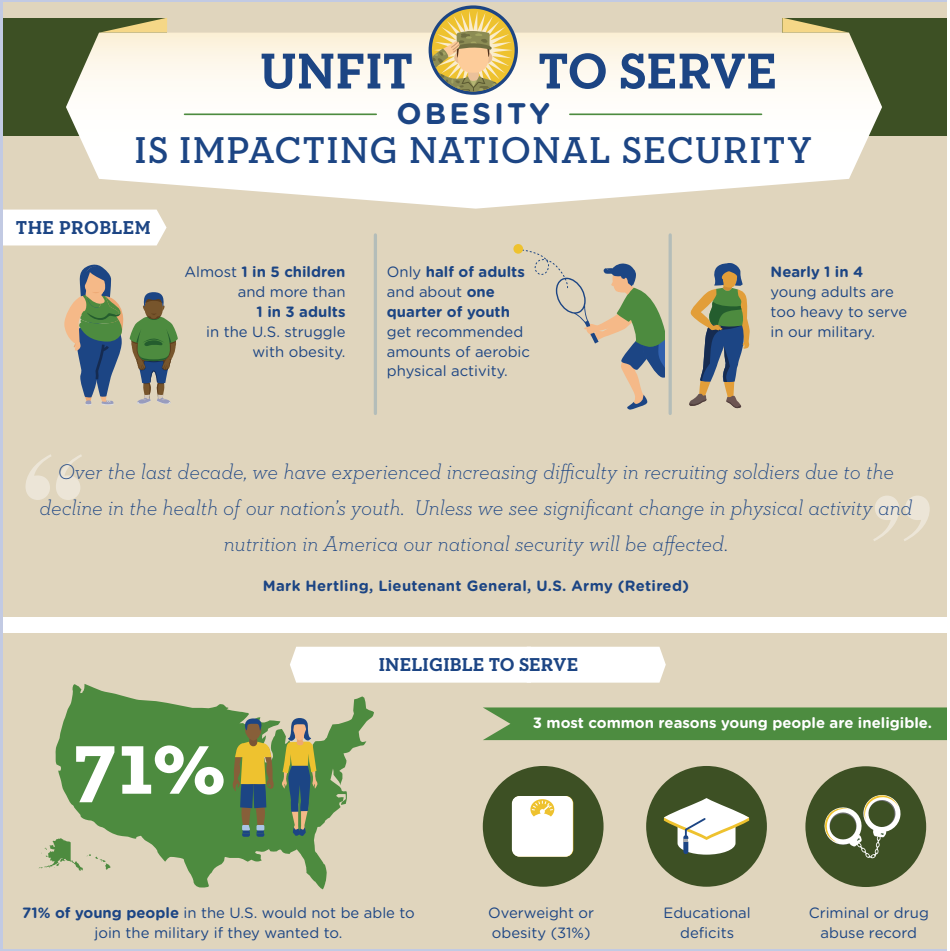
Operation Live Well (OLW) is the Department of Defense's (DoD) prevention initiative to promote health, well-being, and readiness among service members and in military communities. OLW brings together the resources and capabilities of local military communities, including commanders, health and medical experts, commissaries and dining facilities, education resources, places of worship and morale, welfare and recreation programs.[280]

The initiative includes demonstration projects such as the Healthy Base Initiative (HBI), which was implemented at 14 DoD sites worldwide. The initiative assessed health and wellness status in the selected sites, tested evidence-based initiatives (to reduce obesity and tobacco use and improve fitness, readiness and resilience), measured results and provided lessons and recommendations for OLW.[281] In a survey of more than 600 employees at one of the HBI sites (the Defense Logistics Agency (DLA)), 93 percent of employees said the initiative helped change their behaviors, including eating habits and physical activity, while 83 percent used the farmers' market(s) and 65 percent participated in the stairwells program.[280]

OBESITY AND MILITARY READINESS

Mission: Readiness — a set of retired admirals and generals — has warned that the obesity crisis threatens the future strength of our military and that more than 70 percent of today's youth are not fit to serve in the military.[10] Indeed, being overweight or obese is the leading cause of medical disqualifications from the military, with 23 percent of armed services applicants rejected because of excessive weight or body fat.[9] The number of overweight and obese active duty service members increased by 61 percent between 2002 and 2011, threatening our military's ability to deploy.[282] Research has estimated that overweight and obese service members cost the armed services $1.1 billion in medical costs and $105.6 million per year in lost productivity.[42] Obesity causes 658,000 lost workdays per year for active duty personnel.[282]

The authors of "Too Fat To Fight," a 2010 letter from a group of retired admirals and generals warning that the obesity crisis threatens the future strength of our military, reminded readers that military concerns about good nutrition are not new. In the 1940s, the letter explains, General Lewis Hershey was a leading advocate of the original National School Lunch Act, because he understood that providing American children with healthy, nutritious meals would increase their height and weight and therefore help ensure our national security. They conclude that the ability of the military to recruit fit and strong young men and women to serve requires addressing the obesity crisis.[283]



e. Complete Streets

Walking and biking to work or school can be an easy way to incorporate more physical activity into a person's life. However, many communities were designed around the automobile, making safely walking or biking a challenge. Complete Streets is a transportation and design approach that focuses on making streets accessible to all, so that not just drivers, but also walkers, bikers and people in wheelchairs can safely travel through their communities.

Congress recognized the value of this approach by including Complete Streets language in the Fixing America's Surface Transportation Act, a $305 billion transportation bill passed in 2015. The bill requires the National Highway System to take all types of transportation into account when designing new roads, which will make our nation's transportation systems safer for people walking, biking and using wheelchairs.[284]

Complete Streets, State has adopted a complete streets policy.

LOCAL PROFILE: Making Phoenix Safer for Walking & Biking

Recognizing that making streets safer and more accessible increases physical activity and fosters community engagement, Vitalyst Health Foundation supports efforts to build Complete Streets in Phoenix and throughout the state of Arizona.[285] Their work has included:

- Helping pass two city ordinances that require the city to use Complete Streets principles in designing transportation improvements, including street lighting and other pedestrian and bicycle safety measures;
- Working with the newly created Complete Streets Advisory Board to implement these improvements; and
- Developing a Complete Streets policy guide to help educate stakeholders and the public about the benefits of Complete Streets.[286]

With these efforts, Vitalyst hopes to make Phoenix a healthier city for its residents to live, work and play.

HIGH IMPACT INITIATIVE: EXPANDING PUBLIC TRANSPORTATION

HI-5

Increasing access to safer and healthier modes of transport

Introducing or expanding public transportation has been shown to increase physical activity, and is one of the high-priority HI-5 CDC community prevention programs.[287] Research has found that people using public transportation often walk or bike at either end of the trip — building more physical activity into their daily routine. A review of 10 years of studies of the relationship between public transportation and physical activity found that using public transportation results in 8 to 33 minutes of additional walking per day.[288] Public transportation is typically a local or regional responsibility, but is often supported by state and/or federal funding.

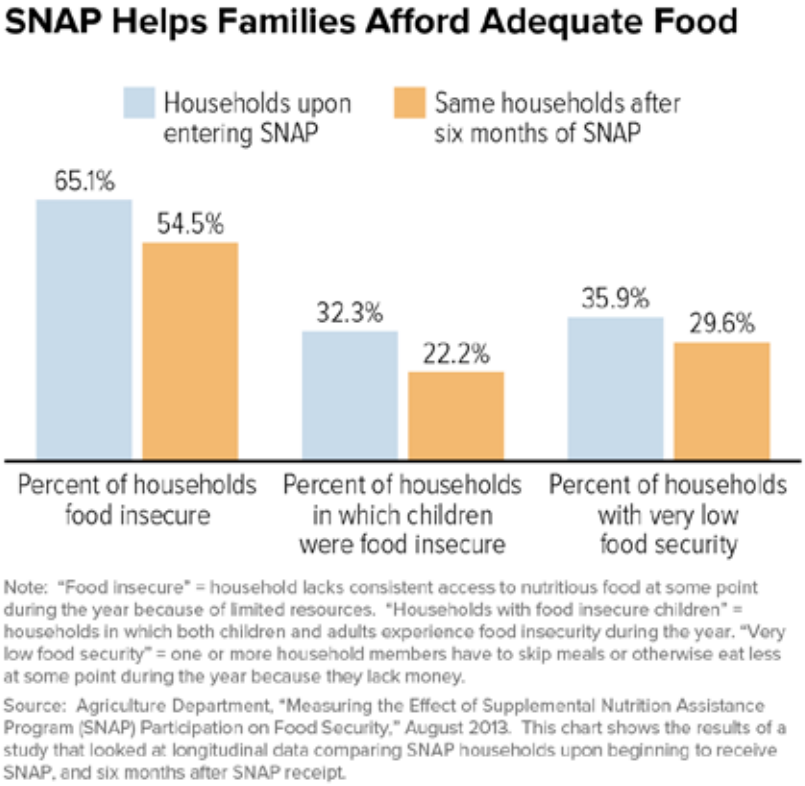
Taking public transportation can lead to 33 minutes of extra walking per day.

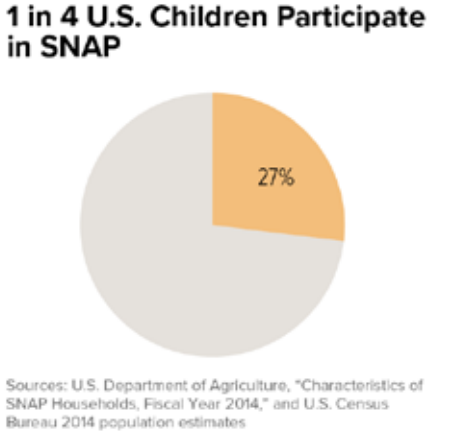
f. Nutrition Assistance

The Supplemental Nutrition Assistance Program, formerly known as the Food Stamp Program, is our nation's largest nutrition assistance effort, helping feed more than 42 million low-income Americans each month.[289] The federal government funds the benefits and splits the cost of administering the program with the states.[290] SNAP serves as a safety net and ensures millions of Americans have access to and can afford nutritious food.[289] Approximately three-quarters of SNAP benefits go to families with children.

SNAP kept around 8.4 million people out of poverty — including 3.8 million children — in 2014 (most recent available year), according to an analysis by the Center on Budget and Policy Priorities.[291] From 2008 to 2012, 14.6 percent of rural households received SNAP benefits.[292] That is a higher percentage than households receiving SNAP in both metropolitan and small city areas. Studies have found that:

- SNAP benefits can reduce food insecurity — allowing low-income families to be able to spend more on food. One study found that SNAP reduced households' food insecurity by 5 to 10 percentage points and very low food security (skipping meals due to inability to purchase food) by 5 to 6 percentage points. Another study found SNAP helped reduce food insecurity among high-risk children by 20 percent and improve their overall health status by 35 percent;
- Adults who had access to SNAP as young children reported better health and had lower rates of "metabolic syndrome" (a combined measure of the incidence of obesity, high blood pressure, heart disease and diabetes), and women who had access to food stamps as young children reported improved economic self-sufficiency (as measured by a combination of employment, income, poverty status, high school graduation and program participation), according to an analysis by the Center on Budget and Policy Priorities;[291]
- Small incentives via the SNAP program (an extra 30 cents on the dollar spent on produce) increased fruit and vegetable consumption by 26 percent;
- Providing SNAP benefits to students eligible for free or reduced-price school meals cut very low food security among these children by nearly one-third;
- Young children in food insecure households receiving SNAP benefits are less likely to be in poor or fair health, overweight or at developmental risk than children in food insecure homes not receiving SNAP benefits;[293,294]
- Children who had access to food assistance in early childhood and whose mothers had access during their pregnancy were more likely to graduate from high school;[295,296] and
- Mothers in food insecure households that receive SNAP benefits are less likely to experience symptoms of maternal depression and are less likely to be in poor or fair health than mothers in food insecure households not receiving SNAP benefits.[293]





More than 3,500 farmers' markets in the United States accept SNAP benefits.

Additionally, all states participate in SNAP-Ed, which is the nutrition education and obesity-prevention component of the program.[290] SNAP-Ed includes educational campaigns to encourage recipients to make healthy food choices. In addition, USDA works to make farmers' markets and other sources of fresh, local produce available to SNAP recipients. More than 3,500 farmers' markets nationwide accept SNAP benefits.[297]

The Agricultural Act ("Farm Bill") of 2014 also directed USDA to create the Food Insecurity Nutrition Incentive (FINI) grant program, which is funding three different categories of grantees to pilot innovative approaches to increase the purchase of fruits and vegetables among SNAP participants. Funded projects vary in length and scale (not to exceed four years) and are expected to document and evaluate their performance in meeting program goals.[298]

WHAT IS FOOD INSECURITY?

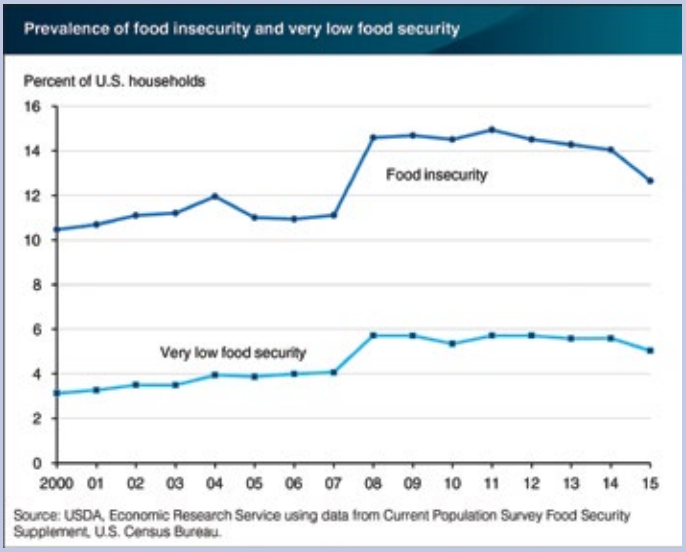
Food insecurity means limited access to adequate healthy food because of a lack of money or other resources. It impacted 15.8 million (12.7 percent) American households in 2015.[299] In addition, 6.3 million of these households (5 percent of U.S. households) had very low food security, which means food intake was reduced and normal eating habits were disrupted for at least some members of the household.

After a steep increase during the 2008 recession, food insecurity has recently declined, with a significant decline between 2014 and 2015. Very low food security has followed a similar path and declined significantly between 2014 (5.6 percent) and 2015 (5 percent).

The rate of food insecurity varies widely between states, ranging from a low in Montana of 8.5 percent to a high in Mississippi of 20.8 percent in the years 2013 to 2015[299] (three years of data were combined to produce more accurate state numbers).

Food insecurity rates are higher than the national average (12.7 percent) in households:

- With incomes below 185 percent of the poverty threshold (32.8 percent);
- Headed by a single woman (30.3 percent) or single man (22.4 percent);
- Headed by Blacks (21.5 percent) or Latinos (19.1 percent);
- With children (16.6 percent); and
- Located in rural areas (15.4 percent) and the South (13.3 percent).



Among women, food insecurity is associated with obesity, while the results are mixed with respect to men and children. This is likely due to several behavioral factors by women in food insecure households, including:

- Eating more high-calorie, energy-dense foods, which are the least expensive and easy to overconsume;
- Eating fewer fruits and vegetables; and
- Suffering psychological effects of food insecurity, such as depression and stress, which are associated with obesity.[300]

Pregnant women in food insecure households tend to gain more weight during their pregnancies and are more likely to suffer from pregnancy complications, such as gestational diabetes.[301]

PROFILE: Center for Healthy Food Access

Recognizing the need for diverse stakeholders to work together to increase access to nutritious foods, the Food Trust, a national nonprofit, launched the Center for Healthy Food Access in January 2017, with support from RWJF. The new national collaborative will focus on healthy food access in underserved rural and urban communities, including by:

- Strengthening federal nutrition programs, including SNAP, WIC and SNAP-Ed;
- Improving food and water quality in schools;
- Creating jobs and economic development by bringing grocery stores and other healthy food businesses to underserved areas;
- Collaborating with hospitals and healthcare systems to prevent diet-related disease in low-income communities;
- Partnering with businesses to focus marketing efforts on healthier choices;
- Expanding SNAP-incentive programs that provide support to make healthier food more affordable for those on food stamps;
- Promoting the Healthy Food Access Portal so organizations and businesses can share successes with one another; and
- Providing $1 million in grants to more than 15 organizations across the country.[302]

The goal of the initiative is to ensure that every child in America has equal access to affordable, healthy food.

3. Business Initiatives

Research demonstrates that multi-component workplace wellness programs can be an important strategy in preventing and reducing obesity. A number of reviews have found these initiatives can pay for themselves by increasing productivity and reducing absenteeism.[303] They also have been shown to reduce weight, body fat and BMI, and increase physical activity.[306] Many state health departments have developed resources to assist employers in creating effective wellness programs, such as the Work Well Texas program discussed in a subsequent section. Worksite nutritional programs have similarly positive effects, boosting employee health and productivity and reducing absenteeism.[306] Like governments, businesses can require that all food sold on its premises — in workplace cafeterias and vending machines — meet established nutritional standards. Businesses that offer employer-based healthcare can make sure their plans cover obesity-prevention services including BMI screening, and nutrition and physical activity counseling.

Workplace wellness programs boost employee health and productivity and reduce absenteeism.

Business investments are also needed to create healthier communities. There need to be increased investments and incentives for the food industry to build supermarkets and set up farmers' markets in low-income communities. Examples of business initiatives include incentivizing fitness companies to develop gyms and other recreation facilities in underserved neighborhoods; supporting transportation initiatives to work with government on all levels to plan and build communities that encourage walking, biking and taking public transportation; and engaging the healthcare industry to support a broad range of community programs.

State governments — as employers and contractors — can establish policies and serve as a role model by setting nutrition standards for food sold in government office buildings and other state-run facilities. Reviews of state efforts, however, reveal that only a small number of states are taking full advantage of this authority. A 2013 CDC review of state public health policies assessed whether states had implemented a nutrition standards policy for the sale of food and beverages on state executive branch policy. Only two states earned the highest score (green), two states earned yellow, and 47 states earned the lowest score (red), because they either had no policy at all or it did not meet CDC's criteria.[304]

STATE PROFILE: Missouri

In 2014, Missouri's adult obesity rate was 30.2 percent.[305] Full service grocery stores that offer fresh fruit and vegetables can be up to 30 miles away in some of its rural communities. Such distances can make it difficult for residents to get recommended foods like fruits, whole grains and vegetables.

The University of Missouri Extension partnered with the Missouri Department of Health and Senior Services to expand Stock Healthy, Shop Healthy (SHSH) programs to expand the availability of fresh produce at corner stores in rural and low-income areas across the state. SHSH provides webinar trainings and two SHSH toolkits: one for retailers and one for communities. The Retailer Toolkit provides healthier foods information, safe handling and storing guidelines for produce, product placement and marketing suggestions. The Community Toolkit guides community partners in working with stores and building demand for healthy foods. This effort aims to increase sales for corner stores, improve the availability of healthier foods in these areas, and encourage residents to eat fresh fruits and vegetables.

With the support of SHSH, about 22 corner stores across Missouri are now considered healthy corner stores. That means that nearly 319,000 residents — spanning 11 rural and 11 urban neighborhoods — can buy fresh fruits and vegetables close to home. Almost 30 community partners, including hospitals and schools, worked together to provide store owners educational information and other resources on the benefits of healthy corner stores. Also, more than 40 in-store improvements were made. Examples include updates to food displays, painting walls to attract customers to healthy food choices, and repositioning produce to make it easier for residents to choose healthier foods. With these improvements, early evaluation data showed that corner stores now dedicate 8.7 percent more shelf space to healthier food selections.

Source: CDC

HIGH IMPACT INITIATIVE: Workplace Obesity Programs

HI-5
HEALTH IMPACT IN 5 YEARS

Support and incentivize healthy choices for employees

CDC has identified Multi-Component Worksite Obesity Prevention as one of its HI-5 initiatives. Private or public employers can implement these programs, which incentivize employees to make healthy choices. A review of evidence-based studies by CDC found some programs have a positive effect for reducing weight, body fat and BMI and increasing physical activity. A number of these worksite nutritional programs have also been found to be associated with an increase in employees' overall health and productivity, and a reduction in absenteeism.[306]

STATE PROFILES: Indiana, Texas and Colorado

INShape Indiana is the state's program to help Hoosiers eat healthier, increase physical activity and stop using tobacco products. The initiative promotes these healthy lifestyle changes in a variety of ways. Its Walk Indiana program promotes walking as an easy way to stay physically active. The INShape Indiana website has a Community Corner to help residents find parks, trails, farmers' markets and other local resources to help them live healthier lives. The program also provides resources for the business community. For example, it has designed a toolkit to help small businesses increase opportunities for their employees to engage in healthy eating and physical activity. Finally, the program helps families by providing tips for parents on healthy eating and resources on how to incorporate more physical activity into Indiana schools.[307]

In 2013, the **Texas Department of State Health Services** created its Obesity Prevention Program with a goal of making it easier for Texans to make healthy choices where they live, work and play. The program supports projects that aim to:

- Reduce obesity;
- Lower consumption of added sugars and high-calorie, low-nutrient food;
- Increase consumption of water, fruits and vegetables;
- Promote breastfeeding; and
- Encourage physical activity.[308]

With funding from CDC, the Texas Department of State Health Services created Work Well Texas, a statewide resource to help public and private employers create healthier worksites. The program educates employers about the business benefits of reducing obesity, provides tools to help employers create wellness programs, and serves as a resource on topics such as healthy eating, breastfeeding, physical activity, health screenings and stress management.[309,310]

Other state obesity-prevention initiatives include working with vendors to make food service changes across state agencies and strengthening state nutrition and physical activity standards for early child-care centers.[310]

Live Well Colorado is a nonprofit organization that promotes equal access to healthy eating and active living and works to advance health equity among Colorado's most vulnerable populations. The organization partners with other local groups on projects such as:

- Renovating outdated recreation centers into community hubs where youth can learn about healthy eating and active living, resulting in 92 percent of participants eating more vegetables, 85 percent cutting back on screen time and 70 percent cooking meals with their families;[311]
- Teaming up with nearly 50 other organizations to create the Colorado Double Up Food Bucks program, which promotes fruit and vegetable consumption by providing coupons to SNAP recipients to spend on fresh produce;[311] and
- Training food service providers from Colorado school districts on how to prepare fresh meals that both taste good and are good for students.[312]

D. HEALTH, HEALTHCARE & OBESITY

1. Overview

Obesity is one of America's most costly and devastating health problems. It increases risk for a host of chronic and life-threatening conditions, including high blood pressure, heart disease, type 2 diabetes, stroke, arthritis, liver disease, kidney disease, dementia, gallbladder disease, mental health issues and some forms of cancer.[26] Each year, obesity contributes to more than 100,000 premature deaths,[27] and during pregnancy it increases the chances of complications, including gestational diabetes, preeclampsia, cesarean delivery and stillbirth.[28,29,30]

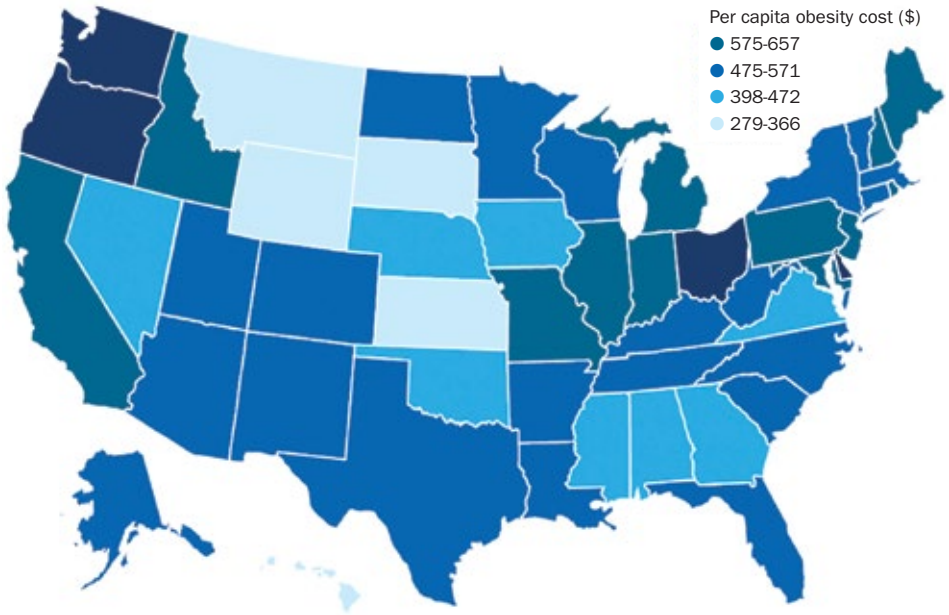
Obesity-related healthcare costs exceed $150 billion a year, based on a meta-analysis of 12 recent studies.[37] Another study found that overweight and obese service members alone cost the armed services $1.1 billion in annual medical costs.[42]

Each state and community is impacted by the cost of obesity, with obesity-related healthcare costs ranging from $768 per person in Oregon to $279 per person in Wyoming. Across the country, obesity costs an average of $558 per person.[8]

The healthcare system can play a vital role in our battle against obesity — and can work in concert with community health and other sector initiatives for even stronger reinforcing impact. Healthcare providers are on the front lines of the obesity epidemic and can help implement prevention strategies, including obesity screening and nutrition and exercise counseling. Health insurance plans can also play an important role by providing coverage for obesity-related disease and incentivizing its healthcare facilities and providers to implement obesity-prevention interventions.

Obesity costs our nation $150 billion in health care costs every year.

Per Capita Obesity-Related Healthcare Expenditures, 2013



Source: Wang YC, Pamplin J, Long MW, Ward, ZJ, Gortmaker SL. and Andreyeva T. 2015. Severe obesity in adults cost state Medicaid programs nearly $8 billion in 2013. Health Affairs, 2015;34(11):1923-1931.

MAJOR OBESITY-RELATED HEALTH CONCERNS

- **Type 2 Diabetes:**
  - Diabetes rates have nearly doubled in the past 20 years — from 5.5 percent in 1988 to 1994 to 9.3 percent in 2005 to 2012.[313, 314]
  - More than 30 million American adults have diabetes and another 84 million have prediabetes.[315] CDC projects that one in three adults could have diabetes by 2050.[316]
  - More than one-quarter of seniors (ages 65 and older) have diabetes (25.2 percent or 11 million seniors).[315]
  - Diabetes is the seventh leading cause of death in the United States, and costs the country around $245 billion in medical costs and lost productivity each year.[315] Average medical expenditures are around 2.3 times higher among people with diagnosed diabetes than what expenditures would be absent diabetes.
  - More than 80 percent of people with diabetes are overweight or obese.
  - Approximately 193,000 children (ages 2 to 20) have diabetes and 2 million teens (ages 12 to 19) have prediabetes.[315] For children and youth (ages 0 to 19), type 2 diabetes rates have increased by more than 30 percent since 2001.[317]
  - Diabetes rates are higher among American Indians/Alaska Natives (15.1 percent), Blacks (12.7 percent) and Latinos (12.1 percent) than Asian-Americans (8.0 percent) and Whites (7.4 percent).[315]
    - Among Asian-Americans, rates are 11.2 percent for Asian Indians, 8.9 percent for Filipinos, 4.3 percent for Chinese and 8.5 percent for other Asian-Americans.
    - Among Latinos, rates are 12.0 percent for Puerto Ricans, 13.8 percent for Mexican-Americans, 9.0 percent for Cubans and 8.5 percent for Central and South Americans.
- **Heart Disease and Hypertension:**
  - One in four Americans has some form of cardiovascular disease. Heart disease is the leading cause of death in the United States — responsible for one in three deaths.[318]
  - At least one out of every five teens has abnormal cholesterol, a major risk factor for heart disease; among obese teens, 43 percent have abnormal cholesterol.[319]
  - One in three adults has high blood pressure, a leading cause of stroke.[320] Approximately 30 percent of cases of hypertension may be attributable to obesity, and the figure may be as high as 60 percent in men under age 45.[321]
  - People who are overweight are more likely to have high blood pressure, high levels of blood fats and high LDL (bad cholesterol), which are all risk factors for heart disease and stroke.[322]
  - Deaths from heart disease and stroke are almost twice as high among Blacks than among Whites.[323]
  - Latinos are more likely to suffer a stroke than are other ethnic groups. Specifically, Mexican-Americans are 43 percent more likely to have a stroke — the leading cause of disability and the third-leading cause of death — than Whites.[324]
- **Cancer:** Up to 40 percent of some forms of cancers are attributable to obesity.[325] Approximately 20 percent of cancer deaths in women and 15 percent of cancer deaths in men are attributable to overweight and obesity.[326]
  - A recent review published in the Journal of the American Medical Association found that adults who exercised the most decreased their risk of having 13 types of cancer — 42 percent less risk of esophageal cancer; 20 percent or more less risk of liver, lung, kidney, stomach, endometrial or myeloid leukemia cancer; and 10 to 17 percent less risk of myeloma, colon, head and neck, rectal, bladder or breast cancer.[327]
- **Arthritis:** Almost 70 percent of individuals diagnosed with arthritis are overweight or obese.[328]
- **Nonalcoholic Fatty Liver Disease:** Up to 25 percent of adults have nonalcoholic fatty liver disease (NFLD), which can lead to liver damage (cirrhosis) or the need for transplants.[329]
- **Kidney Disease:** An estimated 24.2 percent of kidney disease cases among men and 33.9 percent of cases among women are related to overweight and obesity.[330]
- **Alzheimer's/Dementia:** Both overweight and obesity at midlife independently increase the risk of dementia, Alzheimer's disease and vascular dementia.[331, 332]
- **Mental Health:** Studies have shown an association between anxiety and obesity, and that this association is true for both men and women.[333,334,335] The direction of the association can seem to be related to both cause and effect. Obese adults are more likely to have depression, anxiety and other mental health conditions.[336,337,338] One study of women ages 40 to 65 found that one-quarter of obese women had moderate to severe depression — with rates four times greater than non-obese and non-overweight women.[339]

2. Healthcare Coverage & Programs

a. Medicare & Medicaid

Obesity imposes high costs on Medicare, the federal healthcare program for Americans aged 65 and older, and Medicaid, the government healthcare program for low-income and disabled Americans. One study found that Medicare and Medicaid costs would be as much as 10.7 percent lower in the absence of obesity.[38] Another study found that severe obesity alone costs state Medicaid programs almost $8 billion a year.[8]

Both Medicare and Medicaid provide a variety of obesity services. Medicare covers BMI screenings and behavioral counseling to help Medicare recipients who are obese lose weight.[340] Medicare also covers bariatric surgery in some situations.[341] States can choose which obesity services to cover for adult Medicaid recipients, with most states covering at least one. For children, states are required to cover all medically necessary services, which can include obesity services. States also get an enhanced federal match for providing obesity screening and counseling, because these services have received a "B" grade from the U.S. Preventive Services Task Force, meaning they are recommended preventive services.[342,343]

Without obesity, Medicare and Medicaid costs would be up to 10% lower.

PROFILE: Engaging Medicaid Families in Fighting Obesity

Join for Me is a weight management program for children, teens and their families offered by UnitedHealth Group, a Medicaid managed care organization. It was first developed in Rhode Island in partnership with the YMCA of the USA and the YMCA of Greater Providence.[344] Pediatricians and other healthcare providers refer patients with high BMIs to the program, which involves a series of weekly group sessions at local community centers, including YMCAs and health centers. At the meetings, children and their parents learn about healthy eating and increasing physical activity, including the importance of reducing processed foods and sugary drinks, eating more fruits and vegetables, getting sufficient sleep, reducing screen time and getting daily physical activity.[345]

Since 2012, more than 200 children and their parents or caregivers have completed the program. At the end of four months, children and teens experienced an average 4.5 percent reduction in their level of being overweight.[345] The participants that attended the most sessions lost the most weight.[346] Their parents often lost weight as well.[344] Join for Me illustrates the power of engaging an entire family in the process of weight management.

CENTER FOR MEDICARE & MEDICAID INNOVATION INITIATIVES

The Affordable Care Act created a new Innovation Center within the Centers for Medicare & Medicaid Services with a mission of finding better and more coordinated ways to deliver healthcare while improving payment systems. Its focus areas include Community Care models, which aim to make communities healthier by addressing grave public health problems such as obesity.[347]

Examples of obesity-related Innovation Center initiatives include:

- **Childhood Obesity Performance Improvement Projects:** The federal government mandates that states implementing a Medicaid managed care program must require health plans to complete performance improvement projects (PIPs). Thirteen states reported a combined total of 26 PIPs that targeted childhood obesity in 2014-2015. While specific interventions of each PIP varied across states and managed care organizations, most of the programs included improving BMI documentation, nutrition counseling and physical activity counseling.[348]
- **Medicare Diabetes Prevention Program:** The National Diabetes Prevention Program (National DPP) supports a successful lifestyle change approach aimed at preventing those with prediabetes or at high risk of type 2 diabetes from developing type 2 diabetes. In November 2016, after finding that the program reduced net Medicare spending, CMS issued a rule expanding the Medicare DPP model test starting January 1, 2018.[349] The Medicare DPP will now be covered as an additional preventive service, marking the first time that an Innovation Center prevention model has been expanded to all eligible beneficiaries.[342]

b. Child Obesity-Related Health Provisions

A number of early childhood provisions of the Affordable Care Act help prevent obesity, including:

- Providing financial incentives to states that cover certain preventive services, including obesity screening and counseling for children;
- Promoting state public education campaigns about the obesity-prevention services available to Medicaid recipients; and
- Providing funding for the Childhood Obesity Demonstration Project.[350]

The ACA also created the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program,[351] discussed in more detail below. In addition, the ACA supports breastfeeding by requiring coverage of breastfeeding supplies and support services and employers with 50 or more employees to provide break time and a private place for employees to express milk during their first year postpartum.[352]

HOME VISITING PROGRAMS

Home visiting programs are an effective, evidence-based strategy for helping children at risk of obesity and other physical, behavioral and mental health concerns. The ACA expanded home visiting programs by creating MIECHV, which supports home visits for at-risk pregnant women and parents of young children.[353] The voluntary visits are made by a social worker, nurse or other trained professional, who evaluates a family's needs and provide services, such as:

- Teaching parenting skills;
- Providing education about nutrition, breastfeeding, safe sleep practices and injury prevention;
- Promoting early learning in the home;
- Conducting screenings and providing referrals for postpartum depression, substance misuse and family violence; and
- Screening children for developmental delays.

States conduct community needs assessments to determine the specific characteristics of their at-risk populations, such as disproportionately high rates of teen parents, first-time mothers, low-income parents and children exhibiting developmental concerns. The most effective home visiting programs are integrated with other programs and supports.

A July 2017 Home Visiting Year Book issued by the National Home Visiting Resource Center found that:[354]

- More than 18 million pregnant women and families (including more than 23 million children) could benefit from home visiting;
- More than a quarter of a million families received evidence-based home visiting services in 2015;
- States have long supported home visiting services by pooling limited resources. They allocate federal dollars and state funds from tobacco settlements and taxes, lotteries, and budget line items. Some foundations provide additional funding. Home visiting is provided at no cost to recipients;
- Through MIECHV, the federal government has bolstered evidence-based home visiting since 2010, investing $1.85 billion for services, research and local infrastructure to develop early childhood systems;
- Evidence-based home visiting is now implemented in all 50 states, Washington, D.C., five territories, and 25 tribal communities. About 40 percent of all counties have at least one local agency offering evidence-based home visiting; and
- The field is moving toward professionalization of the home visiting workforce to standardize and support the knowledge and skills needed to serve families successfully.

IDENTIFYING AT-RISK CHILDREN

Doctors and other medical professionals can play a critical role in obesity prevention by identifying children at risk for obesity and helping connect them with support services when needed. The U.S. Preventive Services Task Force recommends that healthcare providers screen children ages 6 and older for obesity.[355] The American Academy of Pediatrics has also developed screening tools to identify toxic stress and adverse childhood experiences (ACEs) (see box below), which are risk factors for obesity. Once a healthcare provider has identified an at-risk child, he or she can refer them to community programs and services, such as healthy weight programs. Home visiting programs have also proven to be effective at assisting children at risk of obesity and other health problems.

Adverse Childhood Experiences & Toxic Stress

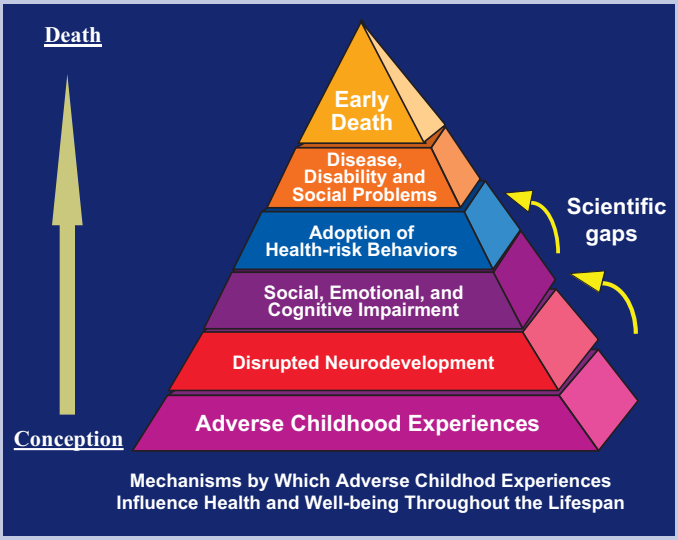
Adverse childhood experiences are events that cause repeated or toxic stress to a child, and raise their risk of developing long-term health and emotional problems, including obesity, alcoholism, drug abuse, depression and suicide attempts.

ACEs include:

- Physical abuse;
- Sexual abuse;
- Emotional abuse;
- Physical neglect;
- Emotional neglect;
- Mother treated violently;
- Substance misuse within household;
- Household mental illness;
- Parental separation or divorce; and
- Incarcerated household member.[356]

Research has also demonstrated a link between ACEs and obesity. A landmark study on the impact of ACEs found that the prevalence and risk of severe obesity (BMI = 35+) grew as the number of ACEs increased.[357] A 2002 study found childhood physical and verbal abuse to be associated with adult obesity.[358] One study found that men who had suffered from childhood sexual abuse were more likely to be obese; however, the same relationship was not found with women in the study.[359]

The long-lasting effects of ACEs on children underscores an important reality: if helping all children to grow up at a healthy weight is a priority, it is important to invest in wrap-around services, including programs that support entire families and abuse and violence prevention strategies.



CHILD OBESITY RESEARCH DEMONSTRATION PROJECT

When the Children's Health Insurance Program (CHIP) was reauthorized in 2009, it provided funding for Childhood Obesity Research Demonstration (CORD) projects. Beginning in 2011, CDC funded four-year projects in rural and urban communities in California, Texas and Massachusetts with a high proportion of children from low-income families (CORD 1.0). The aim of the projects was to reduce obesity by both providing behavioral support for individuals and intervening with local institutions, such as schools, child-care centers and healthcare settings.[360,361] Building on lessons learned from CORD 1.0, a new set of projects (CORD 2.0) focuses on reducing and preventing childhood obesity by strengthening clinical and community relationships. The projects, located in Massachusetts and Arizona, increase obesity screening and counseling services and refer children to local pediatric weight management programs.[360]

SCHOOL HEALTH SERVICES

Because healthy kids are better able to learn, increasing health services in schools is an important way to support student health and learning. In partnership with the Healthy Schools Campaign, the Trust for America's Health (TFAH) formed the National Collaborative on Education and Health in 2014 to bring together stakeholders from the health and education sectors to work together to support health and learning.[362]

Cost and healthcare service and delivery structures have long created barriers to providing health services in school. For years, the federal free care policy prohibited healthcare providers — including schools — from seeking Medicaid reimbursement for services they provided to other patients free-of-charge. However, in 2014, the Centers for Medicare & Medicaid Services issued guidance clarifying that Medicaid can pay for covered services provided to Medicaid beneficiaries, regardless of whether the service was provided at no cost to other non-Medicaid-eligible patients.[363] Schools can now seek Medicaid reimbursement for Medicaid-covered services provided to any Medicaid-enrolled child.[364] In some states, changes to the state Medicaid plan need to be made before schools can take advantage of this change. In 13 states, however, no plan changes are needed: Alaska, Arizona, Arkansas, California, Delaware, Illinois, Iowa, Mississippi, Nebraska, South Carolina, South Dakota, Tennessee and Wyoming.[363] In other cases, there may be other state laws that pose a barrier to seeking reimbursement. For those states that may require an amendment to their state plan, the Healthy Schools Campaign has developed toolkits and resources to assist states in this process or to learn other mechanisms for expanding student health services.[205]

In response to the free care policy change, TFAH, in partnership with the Healthy Schools Campaign, launched the *Healthy Students, Promising Futures* Learning Collaborative (the Learning Collaborative) in July 2016 to support states in expanding Medicaid services in schools, including physical and behavioral health services. The Learning Collaborative was established with support from the U.S. Departments of Education and Health and Human Services out of the growing recognition that healthy students are better learners, and that delivering health services in schools is a key strategy for improving access to quality healthcare for underserved children. The Learning Collaborative is currently comprised of 14 teams from California, Colorado, District of Columbia, Illinois, Massachusetts, Minnesota, Mississippi, New Jersey, New York, Ohio, South Carolina, Tennessee, Virginia and Washington. To participate, state teams must include representatives of state Departments of Education, state Medicaid agencies and two school districts, and may also include state-level advocates. State teams receive technical assistance on the options for delivering health services in schools, Medicaid reimbursement and existing federal and state policy opportunities — including policies beyond free care such as those within the Every Student Succeeds Act.

c. Healthcare & Hospital Programs

Healthcare providers and facilities can play key roles in obesity prevention and reduction by implementing evidence-based initiatives and programs.

1. Screening Services

Healthcare providers can screen their patients for obesity and refer obese patients to counseling. As noted above, both are preventive services recommended by the U.S. Preventive Services Task Force.[343] Healthcare providers can also screen their patients for food insecurity and help connect low-income patients with nutrition assistance programs such as SNAP, WIC and the school meal programs. In fact, the American Academy of Pediatrics recommends that pediatricians screen their patients for food insecurity and know how to refer eligible families for services.[365]

A New York City fruit and vegetable prescription program reduced the BMIs of 42% of participants

2. Fruit, Vegetable and Physical Activity Prescriptions

Wholesome Wave, a nonprofit organization, has partnered with doctors to enable low-income families to buy more produce via its Fruit and Vegetable Prescription (FVRx) program. Doctors write fruit and vegetable prescriptions for patients at risk of obesity, providing them coupons for free produce redeemable at participating stores and farmers' markets. Between 2012 and 2015, Wholesome Wave's FVRx program in New York City helped increase fruit and vegetable consumption for nearly 3,000 people, resulting in reduced BMIs for 42 percent of participants.[366]

Similarly, doctors can prescribe physical activity for their patients by suggesting a recommended amount of exercise and/or by referring patients to certified trainers or exercise programs. In a pilot program at four Kaiser Northern California centers, a physical activity prescription program was associated with weight loss in overweight patients and improved blood sugar control for patients with diabetes.[367] Kaiser Permanente was the first major health plan to ask patients about their physical activity levels and record the information in their electronic medical records. In 2016, Kaiser Permanente and the American College of Sports Medicine issued a call to action to the medical community to make physical activity assessment a standard of care that is obtained and recorded at every medical visit.[368]

3. Healthy Food Procurement

Healthcare facilities — particularly large institutions like hospitals — can require their food service providers to serve food that conforms to nutritional guidelines. The healthcare sector spends $12 billion annually on food and beverages. Changes in food service policies — what foods they purchase and make available to patients, staff and visitors — can provide healthier options and help model healthy choices.

A national program, the Healthy Food in Health Care Pledge, assists the healthcare system in leveraging its purchasing power and expertise to increase access to healthy food and build a healthier food system,

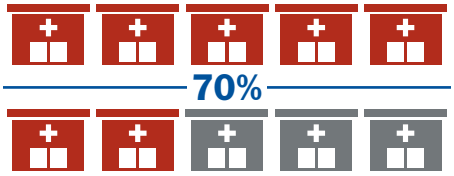
beginning with the food procured and served by hospitals. Changes made by hospitals include purchasing healthier beverages, increasing access to public drinking water, reducing meat options, purchasing meats raised without antibiotics, and purchasing local and sustainably-grown produce. More than 500 hospitals and food service providers in the United States and Canada have signed the pledge demonstrating their commitment to these and other strategies to provide local, nutritious and sustainable food.[369] CDC has also developed a hospital environment assessment tool to help evaluate and support improvements.

4. Community Benefit Programs

The majority of hospitals in the United States are run as nonprofit organizations.[370] In order to demonstrate they are being operated for charitable purposes and thus qualify for tax-exemption, nonprofit hospitals have long been required to demonstrate that their primary purpose is to benefit the community.[371] The ACA imposed additional community benefit mandates upon nonprofit hospitals, including requiring that they assess and implement strategies to address their local community's health needs.[370] Not surprisingly, childhood obesity has emerged as a priority health need in many hospital assessments. For example, more than half of the Catholic Health Association's 203 member hospitals included childhood obesity in their assessments,[372] while 70 percent of American Association of Medical Colleges' 238 member hospitals identified obesity as a priority health need.[373]

Nonprofit hospitals reported spending $62.4 billion on community benefit programs in 2011,[374] which include nutrition programs, physical activity programs, school-based programs and public awareness campaigns.[372]

Percent of American Association of Medical Colleges' Member Hospitals that Identified Obesity as a Priority Health Need.



PROFILE: Montana's Healthy By Design

In 1994, two hospitals and a health clinic in Billings, Montana, decided to work together to promote and improve health in their community. In 2006, RiverStone Health, St. Vincent Healthcare and Billings Clinic conducted their first community health assessment and created a program called Healthy By Design to address community-wide health issues. One of the primary goals of the program is to help community members achieve a healthy weight through increased physical activity and improved nutrition.[375]

Healthy by Design promotes a healthy lifestyle by spreading the 5-2-1-0 message, which recommends that, every day, individuals have:

- 5 servings of fruits or vegetables;
- 2 hours or less of screen time;
- 1 hour of physical activity; and
- 0 sugary drinks.[376]

The program also works with partners across various sectors in the Billings community to increase the availability and affordability of nutritious food, foster community connectedness, promote safety through a functional, interconnected transportation system, improve worksite wellness and address gender barriers to physical activity.

One particularly successful initiative is their Gardener's Market. The market is designed to bring healthy, fresh, local and affordable fruits and vegetables into the community and offers an educational course to help shoppers cook easy meals using fruits and vegetables. Another unique feature of the market is that it does not charge farmers and backyard gardeners a fee to sell their produce, making their fruits and vegetables more affordable for all shoppers. The farmers are also encouraged to accept SNAP and WIC Farm Direct benefits at the market.[377]

d. National Diabetes Prevention Program

Diabetes Prevention Programs can reduce the risk of seniors developing diabetes by as much as 71%.

In addition to the 29 million Americans that suffer from diabetes, an additional 86 million American adults have prediabetes, a condition where a patient has glucose levels that are elevated, but not high enough for a diagnosis of diabetes. Without changes to their lifestyle, such as losing weight and increasing their activity levels, as many as 30 percent of the people with prediabetes will go on to develop type 2 diabetes.[378]

The CDC-led National Diabetes Prevention Program is a public-private initiative that offers evidence-based interventions to help prevent diabetes. There are more than 1,500 DPP programs offered around the country by a wide range of organizations, including private insurers, employers, community organizations, healthcare organizations, faith-based organizations and government agencies.[378] An evaluation of the program found that DPP's lifestyle change intervention cut participants' risk for developing type 2 diabetes by 58 percent. Results were particularly highest among people ages 60 or older — their risk was reduced by 71 percent.[379] The program focuses on supporting people with prediabetes through a combination of doctor's care and counseling/lifestyle coaching to make modest behavior changes. CMS recently expanded the Medicare DPP to all eligible beneficiaries effective January 2018.[349]

Community health workers — frontline public health workers that are typically members of the community being served — can play a key role in DPP programs by serving as a bridge between underserved communities and healthcare systems. In August 2016, the Community Preventive Services Task Force issued a finding that these workers can improve outcomes for people at risk for type 2 diabetes.[380]

Recommendations

The State of Obesity reports have documented how, over the past 15 years, significant progress has been made toward preventing obesity and stabilizing obesity rates, especially among children, by promoting better nutrition and increased physical activity through local, state and federal programs and policy changes, and collaborations between the public and private sectors.[381, 382]

Long-term investments and policy changes in early childhood settings, schools, communities, and the healthcare system have begun to pay off, but the next few years will be pivotal for the obesity epidemic to ensure that progress continues and accomplishments are not eroded. Proposals to cut funding for obesity prevention programs, weaken school nutrition regulations, and delay updates to important education tools like the Nutrition Facts label could contribute to higher obesity rates, reversing hard-fought progress and harming the nation's health.

An analysis in 2012 found that 39 states would have adult obesity rates at or above 50 percent by 2030 if rates continued rising at then-current projections.[383] However, this year, adult obesity rates increased in only four states (2016 data) and declined in one; and in 2015, only two states experienced an increase. In contrast, 16 states had increases in 2011; 37 had increases in 2010; and 49 had increases in 2005. A similar story has emerged with respect to children. A 2008 study estimated that childhood obesity rates would reach 30 percent if they continued increasing at rates from the 1980s and 1990s, but childhood rates stabilized over the past decade, and have even declined in some areas of the country.[381, 384, 385] Between 2010 and 2014, 31 states and three territories reported obesity rate declines among low-income 2- to 4-year-old children receiving WIC benefits.[21]

Top recommendations for maintaining and building on this progress include:

- **Invest Prevention, Evidenced-based Policies and Programs to Improve Nutrition and Increase Physical Activity at the Federal, State and Local Level.**
  - Federal programs need sufficient resources to develop and support innovative, evidence-based approaches to address obesity and improve nutrition and physical activity. Examples include: the National Center for Chronic Disease Prevention and Health Promotion and the Division of Nutrition, Physical Activity and Obesity, the Prevention and Public Health Fund, the Division of Adolescent and School Health (DASH) and the Office of Safe and Healthy Schools at the Department of Education.
  - ▲ State and local governments should expand resources for comprehensive approaches to obesity — including supporting obesity, nutrition and physical activity programs.
  - Other sectors beyond government should invest in efforts to address the obesity crisis, including the hospitals, health insurers, employers and businesses, social services, community organizations and philanthropies.

- **Prioritize Early Childhood Policies and Programs.**
  - HHS, USDA and the Department of Education should issue regular guidance covering programs such as Head Start, the Child and Adult Care Food Program and early childhood programs supported through ESSA that encourage healthier meals, opportunities for physical activity, limits on screen time and other supports that promote health. And policies should support strong preconception and prenatal health support.

  - ▲ States should follow expert guidance by adopting and implementing best practices—including by making investments in Quality Improvement Rating Systems—for nutrition, activity and screen time requirements and regulations covering child-care and day-care settings. States also should support targeted home visiting programs that provide at-risk families with parenting education resources and connections to nutrition programs and other services.

- **Maintain Progress on School-Based Policies and Programs.**
  - USDA should maintain:
    - Current nutrition standards covering school meals and snacks.
    - The Community Eligibility Provision that allows schools in high-poverty areas to reduce bureaucracy, improve efficiency, save costs and decrease childhood hunger; and
    - School wellness research, technical assistance and programs should be maintained at CDC and the Department of Education.
  - Federal program need sufficient resources to support physical education and physical activity throughout the school day and healthier school initiatives (including, but not limited to ESSA Title I and Title IV and programs supported by DASH and DNPAO).

  - ○ Federal, state and local programs should be expanded to eliminate lead from water in schools and to make safe, free water available to all students.

  - ▲ States should continue to meet or exceed current federal nutrition standards for school meals and snacks. School districts should continue to support local wellness plan implementation to ensure students have healthy learning environments conducive to improved school performance. School districts should also continue and expand flexible breakfast programs, such as second-chance breakfasts, breakfast on-the-go and breakfasts in classrooms.
  - ▲ State and local education agencies should maintain and enforce standards for physical education and physical activity throughout the school day.
  - ▲ State and local policymakers should identify opportunities to further integrate education and health through the implementation of ESSA, including incorporating indicators of student health as education accountability measures.

- **Invest in Community-Based Policies and Programs to Improve Nutrition and Increase Physical Activity.**

  - FDA should move forward with guidelines, requirements and implementation of menu labeling rules and the updated Nutrition Facts label to help Americans make more informed choices about what they eat and drink.

  - Federal, state and local governments should provide sufficient resources to support policies and programs that support healthy communities, including obesity and chronic disease prevention programs; transportation, housing and community development policies that support active living; and nutrition assistance programs such as SNAP and healthy food financing initiatives (including public-private partnerships) that reduce food insecurity and help ensure all Americans have access to affordable, healthy food options.

  - ▲ State and local governments should prioritize health in transportation and community design planning, ensuring residents have access to walking, biking, transit and other forms of active transportation, parks and recreation centers and other safe, accessible places to be physically active.

- **Expand Obesity-Prevention Healthcare Coverage and Care.**

  - All public and private health plans should cover the full range of obesity prevention, treatment and management services, including nutritional counseling, medications and behavioral health consultation. Medicaid programs should cover and encourage use of obesity-related preventive services. Medicare should encourage eligible beneficiaries to enroll in obesity counseling, a covered benefit, and evaluate its use and effectiveness.

  - Health plans and health systems should seek innovative solutions for linking clinical treatment and counseling services with public health strategies to help people develop and maintain healthy diets and physically active lifestyles. Programs that are effective in terms of costs and performance, such as the Diabetes Prevention Program and community health worker-clinical coordination models, should be extended. CMS is finalizing a payment structure for DPP coverage under Medicare, expected to go into effect in 2018.

  - ▲ States should promote innovative solutions that help people maintain healthy diets and physical activity by, for example, including coverage of DPP and diabetes self-management education in their state employee health plan and in their Medicaid program.

APPENDIX A: Methodology for Behavioral Risk Factor Surveillance System for Obesity, Physical Activity and Fruit and Vegetable Consumption Rates

Methodology for Obesity and Other Rates Using BRFSS

ANNUAL DATA

Data for this analysis was obtained from the Behavioral Risk Factor Surveillance System dataset (publicly available on the web at www.cdc.gov/brfss). The data were reviewed and analyzed for TFAH and RWJF by Sarah Ketchen Lipson, PhD.

BRFSS is an annual cross-sectional survey designed to measure behavioral risk factors in the adult population (18 years of age or older) living in households. Data are collected from a random sample of adults (one per household) through a telephone survey. The BRFSS currently includes data from 50 states, the District of Columbia, Puerto Rico, Guam and the Virgin Islands.

Variables of interest included BMI, physical inactivity, diabetes, hypertension and consumption of fruits and vegetables five or more times a day. BMI was calculated by dividing self-reported weight in kilograms by the square of self-reported height in meters. The variable 'obesity' is the percentage of all adults in a given state who were classified as obese (where obesity is defined as BMI greater than or equal to 30). Researchers also provide results broken down by race/ethnicity — researchers report results for Whites, Blacks and Latinos — and gender. Another variable, 'overweight' was created to capture the percentage of adults in a given state who were either overweight or obese. An overweight adult was defined as one with a BMI greater than or equal to 25 but less than 30. For the physical inactivity variable a binary indicator equal to one was created for adults who reported not engaging in physical activity or exercise during the previous thirty days other than their regular job. For diabetes, researchers created a binary variable equal to one if the respondent reported ever being told by a doctor that he/she had diabetes. Researchers excluded all cases of gestational and borderline diabetes as well as all cases where the individual was either unsure, or refused to answer.

To calculate prevalence rates for hypertension, researchers created a dummy variable equal to one if the respondent answered "Yes" to the following question: *"Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?"* This definition excludes respondents classified as borderline hypertensive and women who reported being diagnosed with hypertension while pregnant.

Appendix B:

STATE POLICY REVIEW ON OBESITY PREVENTION: EARLY CHILDHOOD EDUCATION

Early Childhood Education (Ages 0 to 5)*

	Physical Activity (PA)					Screen Time (ST)			
	Child and Adult Care Food Program (CACFP): State has licensing laws linked to CACFP that automatically update	**Defined PA:** State defines PA as moderate or vigorous for at least: 60 mins/day for full-day and 30 mins/day for part-day programs	**Mixture of Activities:** State requires mixture of moderate and vigorous activities, including bone- and muscle-strengthening	**Outdoor PA:** State requires active play outdoors whenever possible	**Infant Varied Activity:** State requires indoor and outdoor activities under adult supervision	**Infant Tummy Time:** State requires daily tummy time for infants less than 6 months of age	**Screen Time Defined:** State defines screen-time to include T.V., movies, cell phones, video games, computer, and other digital devices	**Screen Time Limits for Children Under the Age of Two:** State eliminates screen time for children under the age of two	**Screen Time Limits for Children Under the Age of Two:** State limits screen time to 1 hour/day for full-day programs and 30 mins/day for part-day programs
Alabama			√C,F	√C,F	√C,F	√C,F			
Alaska	√A								
Arizona			√C		√C	√C	√C	√C	
Arkansas	√D,F		√C	√C	√C			√C	√C
California					√C				
Colorado	√C	√C	√C	√C,F	√C,F	√C,F	√C,F	√C	√C
Connecticut	√D				√C	√C			
Delaware			√C,F	√C,F	√F		√F		
D.C.	√A	√A		√A	√A			√A	√A
Florida					√C,F	√C	√C	√C	√C
Georgia	√L	√C	√C	√C	√C	√C	√C		
Hawaii	√D,G,F		√C,F						
Idaho		√C							
Illinois				√F	√F	√F			
Indiana			√C,F	√C,F	√C,F				
Iowa	√D,V			√C					
Kansas				√C	√C				
Kentucky				√C,F					
Louisiana	√A		√C	√C					
Maine				√C	√C			√C	
Maryland	√D,G,F		√C	√C	√C		√C	√C	
Massachusetts									
Michigan				√C,F			√C	√C	
Minnesota	√D		√C						
Mississippi			√A	√A	√A		√A	√A	√A
Missouri				√C,F	√C,F				
Montana	√D,F								
Nebraska				√C,F	√C,F				
Nevada				√A	√A				
New Hampshire									
New Jersey	√D,F	√C,F	√C,F	√C,F	√C,F				
New Mexico	√D,F	√C,F			√C,F			√C,F	
New York	√D								
North Carolina	√D,F	√C,F	√C,F	√C,F	√C	√C,F	√C,F	√C,F	√C,F
North Dakota				√C,F					
Ohio				√C	√C				
Oklahoma				√C,F	√C				
Oregon			√C	√C	√C				
Pennsylvania	√D								
Rhode Island	√D,F		√C	√C	√C	√C	√C	√C	√C
South Carolina	√D			√C					
South Dakota									
Tennessee			√C,F	√C,F	√C,F				
Texas			√C,F	√C,F	√C,F			√C	
Utah	√D,F		√C,F	√C					
Vermont	√C,F	√C,F	√C,F	√C,F	√C,F		√C,F	√C,F	√C,F
Virginia		√C	√C	√C	√C	√C			
Washington	√F		√C,F	√C,F		√C,F			
West Virginia	√D	√C	√C	√C,F	√F	√C,F	√C	√C	√C
Wisconsin	√D,F		√F	√F	√F	√F			
Wyoming				√C,F					
Total States	**20 States + D.C.**	**8 States**	**23 States**	**32 States**	**27 States**	**13 States**	**10 States**	**12 States**	**7 States**

Note: **Applies to Child Care Centers or Child Care Family Care Homes only. √ = State has a law, statute or both.*

A = All Child Care Facilities; C = Child Care Centers; D = Child Day Care Centers; G = Child Care Group Homes; F = Child Care Family Homes; L = Child Learning Centers; V = Child Development Centers

Appendix B:

NEMOURS STATE POLICY REVIEW ON OBESITY PREVENTION: EARLY CHILDHOOD EDCUATION

State Early Childhood Education (ECE) Licensing Regulations/Quality Rating and Improvement System (QRIS) Standards to Prevent Obesity (Ages 0 to 5)

	Healthy Eating: State has regulations requiring licensed ECE programs to have healthy eating policies	**Breastfeeding:** State has regulations requiring licensed ECE programs to allow/ encourage onsite breastfeeding	**Private Breastfeeding Space:** State has regulations requiring licensed ECE programs to have a private space available for mothers to breastfeed infants	**Physical Activity:** State has regulations requiring licensed ECE programs to have time for daily physical activity	**Screen Time:** State has regulations requiring licensed ECE programs that either prohibit screen time for children under age 2 or sets limits	**Drinking Water:** State has regulations requiring licensed ECE programs to make drinking water available to children	**Nutritional USDA Standards:** State has regulations requiring licensed ECE programs to provide food (meals and snacks) that meet USDA standards	**CACFP:** State has regulations requiring licensed ECE programs to meet CACFP for meals and snacks
Alabama	√L	√L		√L	√L	√L	√L	
Alaska	√L	√L		√L	√L		√L	
Arizona	√L	√L		√L	√L	√L		
Arkansas	√L,Q	√L		√L,Q	√L	√L	√L	
California	√L	√L		√L		√L		
Colorado	√L,Q			√L,Q				
Connecticut	√L			√L		√L		
Delaware	√L,Q		√L	√L,Q	√L	√L		
D.C.	√L	√L	√L	√L			√L	
Florida	√L			√L	√L	√L	√L	
Georgia	√L,Q	√L		√L,Q	√L	√L	√L	
Hawaii	√L			√L		√L	√L	
Idaho	√Q			√Q				
Illinois	√L			√L	√L	√L		
Indiana	√L,Q	√L		√L,Q	√L,Q	√L		
Iowa	√L,Q			√L		√L	√L	
Kansas	√L			√L		√L		
Kentucky	√L			√L	√L	√L		
Louisiana	√L			√L		√L	√L	
Maine	√L			√L,Q	√L	√L		
Maryland	√L,Q			√L,Q	√Q	√L	√L	√Q
Massachusetts	√L,Q			√L,Q		√L	√L	
Michigan	√L,Q	√L		√L,Q	√L	√L	√L	√Q
Minnesota	√L,Q			√L,Q		√L	√L	
Mississippi	√L	√L	√L	√L	√L	√L	√L	
Missouri	√L			√L		√L		
Montana	√L,Q	√L,Q		√L		√L		√Q
Nebraska	√L,Q	√Q		√L,Q	√Q		√L	√Q
Nevada	√L,Q	√L,Q		√L,Q		√L		√Q
New Hampshire	√L			√L		√L		
New Jersey	√L,Q	√Q		√L,Q	√L	√L	√L	
New Mexico	√L,Q			√L,Q	√L,Q	√L	√L	
New York	√L,Q	√L,Q		√L,Q	√L,Q	√L	√L,Q	
North Carolina	√L	√L	√L	√L	√L	√L	√L	
North Dakota	√L,Q	√L		√L,Q		√L	√L	
Ohio	√L	√L		√L		√L	√L	
Oklahoma	√L			√L,Q	√Q	√L		
Oregon	√L,Q			√L,Q		√L,Q	√L	
Pennsylvania	√L,Q			√L,Q		√L		
Rhode Island	√L			√L,Q	√L	√L		
South Carolina	√L,Q			√L,Q	√L,Q	√L	√L,Q	
South Dakota	√L			√L				
Tennessee	√L	√L		√L	√L	√L		
Texas	√L,Q	√L		√L	√L	√L	√L	
Utah	√L,Q	√Q	√Q	√L,Q	√Q	√Q	√L	
Vermont	√L	√L		√L	√L	√L		
Virginia	√L	√L		√L		√L	√L	
Washington	√L,Q			√L,Q				
West Virginia	√L			√L	√L	√L	√L	
Wisconsin	√L,Q			√L,Q	√L	√L		
Wyoming	√L			√L				
Total States	**50 States + D.C.**	**22 States + D.C.**	**4 States + D.C.**	**50 States + D.C.**	**28 States**	**43 States**	**26 States + D.C.**	**5 States**

Note: *√ = State has either licensing regulations, QRIS Stanadards or both.*

L= licensing regulations; Q = QRIS Standards

STATE POLICY UPDATE

SCHOOL NUTRITION

Indicator	Percentage of eligible districts adopting the community eligibility provision take-up (2016)	State fundraising exemption policies (with zero-exemption vs. exemption) (2016)	Percent of School Food Authorities (SFAs) Certified (2016)	Low-Income Student Participation in School Lunch (NSLP) and School Breakfast (SBP) (2015-2016)	School Participation in School Lunch (NSLP) and School Breakfast (SBP) (2015-2016)
Additional details about indicator		Yes = Policy allows >1 exemption No = Policy allows 0 exemptions NS = Not Specified			
Alabama	31.7	Yes	100%	57.9	97.7
Alaska	78.8	NS	93.80%	54.9	87.4
Arizona	32.2	Yes	99.80%	53.9	94.1
Arkansas	25	Yes	98.00%	63.5	100
California	15.1	No	99%	55.6	89.9
Colorado	28.6	Yes	100%	60.1	83.6
Connecticut	45.7	No	99%	51.4	81.8
Delaware	76.5	No	98.10%	61.5	98.5
D.C.	83	No	94%	67.4	99.1
Florida	65.1	NS	100%	50.5	97.9
Georgia	64.1	Yes	97.90%	58.9	97.1
Hawaii	70.6	No	100%	43	99.7
Idaho	46.8	Yes	100%	59.4	95.5
Illinois	54	NS	100%	47.7	82.2
Indiana	30	Yes	100%	50.7	90.7
Iowa	30.8	No	99.60%	44	100.1
Kansas	12.7	Yes	99.80%	49.3	93.9
Kentucky	88.3	No	100%	64.2	100
Louisiana	78	No	99%	57.7	96.5
Maine	27.5	No	96.70%	59.3	95.9
Maryland	45.2	No	100%	64.2	98.5
Massachusetts	36.9	No Policy	99.60%	49.4	82.4
Michigan	48.1	Yes	100%	58.1	90.2
Minnesota	40.4	No	99%	53.1	86.9
Mississippi	36.9	No	100%	58.7	94.3
Missouri	35.6	Yes	100%	59.3	92.7
Montana	72.5	No	100%	53	88.6
Nebraska	27.6	No	100%	43	83.5
Nevada	71.4	No	100%	56.1	95.7
New Hampshire	20	Yes	99%	40.9	91.4
New Jersey	40.8	No	99.20%	58.6	80
New Mexico	75.2	Yes	97.40%	72.9	93.1
New York	55.4	No	100%	49	93.2
North Carolina	62.8	No	100%	57.4	98.7
North Dakota	85.7	Yes	100%	49.1	89.2
Ohio	92.2	No Policy	100%	55.7	87.1
Oklahoma	26.9	Yes	100%	58.7	97.5
Oregon	64.5	No	99%	53.4	94.9
Pennsylvania	46.6	Yes	93.50%	49.5	87.1
Rhode Island	12	No	90.40%	51.3	97.5
South Carolina	51.6	Yes	100%	62.3	99.5
South Dakota	57.7	Yes	100%	46.1	85.7
Tennessee	60.3	NS	100%	64.5	98.3
Texas	31.6	NS	98%	63.1	100.2
Utah	38.9	Yes	97%	38.1	88.6
Vermont	63.6	No	94%	62.7	97.6
Virginia	42.2	Yes	100%	56.2	98.8
Washington	36.1	No	100%	45.1	93
West Virginia	87.3	No Policy	100%	83.9	98.9
Wisconsin	52.7	Yes	100%	51.1	79.9
Wyoming	71.4	Yes	98.50%	42.7	91.1
	Source: USDA	*Source: National Wellness Policy Study*	*Source: USDA*	*Source: USDA*	*Source: USDA*

APPENDIX B:

STATE POLICY UPDATE									
SCHOOL PHYSICAL ACTIVITY									
	State requires physical education for elementary, middle and high schools — requirements (2015-2016)			State requires physical education for elementary, middle and high schools — minimum time requirements (2015-2016)			Recess/General Activity Requirements (2016)		
	Requires Elementary Students Participate in P.E.	Requires Middle School Students Participate in P.E.	Requires High School Students Participate in P.E.	Minimum Time Elementary Students Participate in P.E.	Minimum Time Middle School Students Participate in P.E.	Minimum Time High School Students Participate in P.E.	State has recess requirements	State recommends recess	State has general activity requirements
Alabama	Yes	Yes	Yes	Yes	Yes				
Alaska									
Arizona									
Arkansas	Yes	Yes	Yes	Yes	Yes			√	√
California	Yes	Yes	Yes	Yes	Yes	Yes		√	
Colorado									√
Connecticut	Yes	Yes	Yes				√		
Delaware	Yes	Yes	Yes						
D.C.	Yes	Yes	Yes	Yes	Yes				
Florida	Yes	Yes	Yes	Yes					
Georgia	Yes		Yes	Yes					
Hawaii	Yes		Yes	Yes		Yes			
Idaho	Yes	Yes							
Illinois	Yes	Yes	Yes						
Indiana	Yes	Yes	Yes				√		
Iowa	Yes	Yes	Yes			Yes		√	√
Kansas			Yes					√	
Kentucky									
Louisiana	Yes	Yes	Yes	Yes	Yes				√
Maine	Yes	Yes	Yes						
Maryland	Yes	Yes	Yes						
Massachusetts	Yes	Yes	Yes						
Michigan			Yes					√	
Minnesota	Yes	Yes	Yes						
Mississippi	Yes	Yes	Yes	Yes	Yes				
Missouri	Yes	Yes	Yes	Yes	Yes		√		
Montana	Yes	Yes	Yes		Yes				
Nebraska	Yes	Yes							
Nevada			Yes					√	
New Hampshire	Yes	Yes	Yes					√	
New Jersey	Yes	Yes	Yes	Yes	Yes	Yes			
New Mexico			Yes					√	
New York	Yes	Yes	Yes	Yes	Yes	Yes			
North Carolina			Yes						√
North Dakota	Yes	Yes	Yes	Yes	Yes				
Ohio			Yes						
Oklahoma	Yes			Yes				√	
Oregon	Yes	Yes	Yes	Yes	Yes				
Pennsylvania	Yes	Yes	Yes						
Rhode Island	Yes	Yes	Yes	Yes	Yes	Yes	√		
South Carolina	Yes	Yes	Yes	Yes				√	√
South Dakota			Yes						
Tennessee	Yes	Yes	Yes						√
Texas	Yes	Yes	Yes						√
Utah		Yes	Yes						
Vermont	Yes	Yes	Yes					√	
Virginia	Yes	Yes	Yes				√		
Washington	Yes	Yes	Yes	Yes	Yes				
West Virginia	Yes	Yes	Yes	Yes	Yes				
Wisconsin	Yes	Yes	Yes						
Wyoming	Yes	Yes							

Source: SHAPE America, VHK

STATE POLICY UPDATE

ACTIVE LIVING

	State has Shared-Use Agreements (2016)	Complete Street Policies and Intent for Action by State				State Requires BMI Screening or Weight-Related Assessments in Schools		Healthy Food Financing Initiative, Grants Distributed from 2011 to 2016 by State	Percent Sales Tax on Regular Soda in Food Stores by State (2014)
	State has adopted shared use legislation that either require or recommend cooperation between schools and commmunites to access to school's recreational facilites outside of school hours	State adopted CS Policy and has mandatory requirements with clear action and intent	State adopted CS Policy and has mandatory requirements, but has no clear action and intent	State adopted CS Policy, but does not have any requirement	State has not adopted a CS Policy	State requires BMI screening	State requires weight-related assessments other than BMI	State Awarded Healthy Food Financint Intiative (HFFI) Grants, from 2011 to 2016	
Alabama	Yes				√	√		Yes	4
Alaska	No				√			No	
Arizona	Yes				√			Yes	
Arkansas	Yes				√	√		No	1.5
California	Yes	√				√		Yes	6.5
Colorado	Yes	√						No	2.9
Connecticut	No	√					√	Yes	6.4
Delaware	Yes			√			√	No	
D.C.	Yes	√					√	No	5.8
Florida	No		√			√		Yes	6
Georgia	Yes	√					√	No	
Hawaii	Yes			√				No	4
Idaho	No				√			No	6
Illinois	Yes	√				√		Yes	6.3
Indiana	Yes		√					Yes	7
Iowa	Yes				√		√	Yes	6
Kansas	Yes				√			Yes	6.2
Kentucky	Yes				√	√		Yes	6
Louisiana	Yes	√					√	No	
Maine	No		√			√		Yes	5.5
Maryland	Yes	√						Yes	6
Massachusetts	No	√					√	Yes	
Michigan	Yes		√					Yes	
Minnesota	Yes	√						Yes	6.9
Mississippi	Yes			√		√		No	7
Missouri	Yes			√		√		No	1.2
Montana	Yes				√			Yes	
Nebraska	No				√	√		Yes	
Nevada	Yes	√					√	No	
New Hampshire	No				√			No	
New Jersey	Yes	√					√	No	7
New Mexico	Yes				√	√		Yes	
New York	Yes	√				√		Yes	4
North Carolina	Yes		√			√		Yes	4.8
North Dakota	No				√			No	5
Ohio	Yes				√	√		Yes	5.8
Oklahoma	Yes				√	√		No	4.5
Oregon	Yes			√				Yes	
Pennsylvania	Yes			√		√		Yes	6
Rhode Island	No		√					Yes	7
South Carolina	No		√				√	Yes	
South Dakota	No				√			No	4
Tennessee	Yes	√				√		Yes	5
Texas	Yes			√			√	Yes	6.3
Utah	Yes	√						No	1.8
Vermont	No	√				√		No	
Virginia	No		√					Yes	1.5
Washington	Yes		√					No	6.5
West Virginia	Yes			√		√		Yes	6
Wisconsin	Yes		√					Yes	5
Wyoming	Yes				√			No	
	Source: Safe Routes to School	*Source: Safe Routes to School*				*Source: Shape America, VHK*		*Source: ACF*	*Source: Bridging the Gap*

Endnotes

1 Alberti P, Sutton K, Baer I. Community Health Needs Assessments: Engaging Community Partners to Improve Health. Association of American Medical Colleges. *Analysis in Brief.* 2014;14(11). https://www.aamc.org/download/419276/data/dec2014communityhealth.pdf. Accessed July 18, 2017.

2 National Center for Health Statistics. NCHS Fact Sheet: National Health and Nutrition Examination Survey. https://www.cdc.gov/nchs/data/factsheets/factsheet_nhanes.pdf. January 2016. Accessed July 18, 2017.

3 Behavioral Risk Factor Surveillance System, 2016 Survey Data and Documentation. In *U.S. Centers for Disease Control and Prevention.* https://www.cdc.gov/brfss/data_documentation/index.htm (accessed August 2017).

4 Data query from the Child and Adolescent Health Measurement Initiative's Data Resource Center for Child and Adolescent Health website. Indicator 1.4: Childhood weight status in 4 categories, age 10-17 years; all states. http://www.nschdata.org/browse/survey/allstates?q=2462. Accessed May 26, 2017.

5 County Health Rankings & Roadmaps. http://www.countyhealthrankings.org/. Accessed July 18, 2017.

6 Kim DD, Basu A. Estimating the medical care costs of obesity in the United States: systematic review, meta-analysis, and empirical analysis. Value Health. 2016;19(5):602-13. doi:10.1016/j.jval.2016.02.008.

7 Trogdon JG, Finkelstein EA, Hylands T, Dellea PS, Kamal-Bahl. Indirect costs of obesity: a review of the current literature. *Obes Rev.* 2008;9(5):489–500.

8 Wang YC, Pamplin J, Long MW, et al. 2015. Severe obesity in adults cost state Medicaid programs nearly $8 billion in 2013. *Health Affairs.* 2015;34(11):1923-1931.

9 Cawley J, Maclean JC. Unfit for service: the implications of rising obesity for U.S. military recruitment. *Health Econ.* 2012;21(11):1348-1366.

10 Mission: Readiness. Unfit to fight. https://www.strongnation.org/articles/53-unfit-to-fight. Published April 30, 2015. Accessed June 28, 2017.

11 Wilkinson ML, Brown AL, Poston WS, Haddock CK, Jahnke SA, Day RS. Physician weight recommendations for overweight and obese firefighters, United States, 2011–2012. *Prev Chronic Dis.* 2014;11:140091. doi:http://dx.doi.org/10.5888/pcd11.140091

12 Violanti JM, Fekedulegn D, Hartley TA, Andrew ME, Gu JK, Burchfiel CM. Life expectancy in police officers: a comparison with the U.S. general population. *Int J Emerg Ment Health.* 2013;15:217–228.

13 Carey FR, Singh GK, Brown HS, Wilkinson AV. Educational outcomes associated with childhood obesity in the United States: cross-sectional results from the 2011–2012 National Survey of Children's Health. *Int J of Behav Nutr and Phys Activ.* 2015;12(Suppl 1):S3. doi:10.1186/1479-5868-12-S1-S3.

14 Centers for Disease Control and Prevention. Childhood Obesity Facts. https://www.cdc.gov/healthyschools/obesity/facts.htm. Accessed July 18, 2017.

15 Levine JA. Poverty and Obesity in the U.S. *Diabetes.* 2011;60:2667–2668. doi:10.2337/db11-1118.

16 Jackson JE, Doescher MP, Jerant AF, Hart LG. A national study of obesity prevalence and trends by type of rural county. *J Rural Health.* 2005:21(2):140-148. doi:10.1111/j.1748-0361.2005.tb00074.x.

17 Flegal KM, Kruszon-Moran D, Carroll MD, et al. Trends in obesity among adults in the United States, 2005 to 2014. *JAMA.* 2016;315(21):2284-2291. doi:10.1001/jama.2016.6458.

18 U.S. Department of Health and Human Services, Office of Minority Health. Obesity and American Indians/Alaska Natives. https://minorityhealth.hhs.gov/omh/browse.aspx?lvl=4&lvlid=40. Updated December 27, 2016. Accessed June 26, 2017.

19 Trust for America's Health. *Special Issue Brief: National Survey of Registered Voters on Public Health.* http://www.tfah.org/report/133/. Accessed June 14, 2017. (Survey conducted on September 8-9, 2016 of a nationwide sample of 1302 registered voters across the country.)

20 Ogden CL, Carroll MD, Lawman, HG, Fryar CD, Kruszon-Moran D, Kit BK, Flegal KM. Trends in obesity prevalence among children and adolescents in the United States, 1988-1994 through 2013-2014. *JAMA.* 2016;315(21):2292-2299.

21 Pan L, Freedman DS, Sharma AJ, et al. Trends in obesity among participants aged 2–4 years in the Special Supplemental Nutrition Program for Women, Infants, and Children—United States, 2000–2014. MMWR *Morb Mortal Wkly Rep* 2016;65:1256–1260. doi: http://dx.doi.org/10.15585/mmwr.mm6545a2.

22 Robert Wood Johnson Foundation. Signs of Progress: New Mexico. http://www.rwjf.org/en/library/articles-and-news/2013/07/new-mexico–signs-of-progress.html. Published June 2016. Accessed June 14, 2017.

23 Ogden CL, Carroll MD, Fryar CD, Flegal KM. Prevalence of obesity among adults and youth: United States, 2011–2014. NCHS data brief, no 219. Hyattsville, MD: National Center for Health Statistics. 2015.

24 Indian Health Service. Healthy Weight for Life: A Vision for Healthy Weight Across the Lifespan of American Indians and Alaska Natives, Actions for Communities, Individuals, and Families. https://www.ihs.gov/healthyweight/includes/themes/newihstheme/display_objects/documents/HW4L_Communities.pdf. Published 2011. Accessed July 18, 2017.

25 Trust for America's Health and Robert Wood Johnson Foundation. *F as in Fat: How Obesity Threatens America's Future — 2011.* Washington, D.C.: Trust for America's Health. http://www.tfah.org/report/88/. Published 2011. Accessed July 18, 2017. (Based on data using the previous BRFSS methodology in use from 2008-2010.)

26 NHLBI Obesity Education Initiative Expert Panel on the Identification, Evaluation, and Treatment of Obesity in Adults (US). Clinical guidelines on the identification, evaluation, and treatment of overweight and obesity in adults: the evidence report. https://www.ncbi.nlm.nih.gov/books/NBK1994/. Published 1998. Accessed July 18, 2017.

27 Flegal KM, Graubard BI, Williamson DF, et al. Excess deaths associated with underweight, overweight, and obesity. *JAMA.* 2005;293(15):1861-7.

28 Leddy MA, Power, ML, Schulkin J. The impact of maternal obesity on maternal and fetal health. *Rev Obstet Gynecol.* 2008;1(4):170–178.

29 Cedergren MI. Maternal morbid obesity and the risk of adverse pregnancy outcome. Obstet Gynecol. 2004;103(2):219-224.

30 O'Brien TE, Ray JG, Chan WS. Maternal body mass index and the risk of preeclampsia: A systematic overview. *Epidemiology.* 2003;14(3):368-374.

31 Carlson SA, Fulton JE, Schoenborn CA, Loustalot F. Trend and prevalence estimates based on the 2008 Physical Activity Guidelines for Americans. *Am J Prev Med.* 2010 Oct;39(4):305-13. doi:10.1016/j.amepre.2010.06.006.

32 U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015–2020 Dietary Guidelines for Americans. 8th Edition. http://health.gov/dietaryguidelines/2015/guidelines/. Published December 2015. Accessed May 8, 2017.

33 Rosinger A, Herrick K, Gahche J, Park S. Sugar-sweetened beverage consumption among U.S. adults, 2011–2014. NCHS Data Brief. NCHS Data Brief. Jan 2017; no. 270. Hyattsville, MD: National Center for Health Statistics.

34 National Cancer Institute. Usual Dietary Intakes: Food Intakes, U.S. Population, 2007-10. http://epi.grants.cancer.gov/diet/usualintakes/pop/2007-10/. Updated May 20, 2015. Accessed June 26, 2017.

35 Kumanyika, S. Getting to equity in obesity prevention: a new framework. Washington, DC: National Academy of Medicine. https://nam.edu/getting-to-equity-in-obesity-prevention-a-new-framework/. Published January 2017. Accessed May 20, 2017.

36 Genes Are Not Destiny. Harvard School of Public Health Obesity Prevention Source Web site. https://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/genes-and-obesity/. Accessed May 5, 2017.

37 Kim DD, Basu A. Estimating the medical care costs of obesity in the United States: Systematic review, meta-analysis, and empirical analysis. *Value Health*. 2016;19(5):602-13. doi:10.1016/j.jval.2016.02.008.

38 Wolf AM, Colditz GA. The cost of obesity: the US perspective. *Pharmacoeconomics*. 1994;5(Suppl 1):34-7.

39 Centers for Disease Control and Prevention. About adult BMI. https://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/. Accessed April 26, 2017.

40 The National Institute of Diabetes and Digestive and Kidney Diseases. Overweight and obesity statistics. https://www.niddk.nih.gov/health-information/health-statistics/overweight-obesity. Accessed April 27, 2017.

41 Centers for Disease Control and Prevention. About child & teen BMI. https://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html. Accessed April 27, 2017.

42 Dall TM1, Zhang Y, Chen YJ. Cost associated with being overweight and with obesity, high alcohol consumption, and tobacco use within the military health system's TRICARE prime-enrolled population. *Am J Health Promot*. 2007;22(2):120-39.

43 Connor GS, Tremblay M, Moher D, Gorber B. A comparison of direct vs. self-report measures for assessing height, weight and body mass index: a systematic review. *Obes Rev*. 2007 Jul;8(4):307-26.

44 Fryar CD, Carroll MD, Ogden CL. Prevalence of overweight, obesity, and extreme obesity among adults aged 20 and over: United States, 1960–1962 through 2013–2014. National Center for Health Statistics. https://www.cdc.gov/nchs/data/hestat/obesity_adult_13_14/obesity_adult_13_14.pdf. Published July 2016. Accessed July 18, 2017.

45 Yun S, Zhu BP, Black W, Brownson RC. A comparison of national estimates of obesity prevalence from the behavioral risk factor surveillance system and the National Health and Nutrition Examination Survey. *Int J Obes* (Lond). 2006;30(1):164-70.

46 Smalley KB, Warren, JC, Morrissey BD. Discrepancy between actual and perceived weight status in rural patients: variations by race and gender. *J of Health Care for the Poor and Underserved*. 2017;28(1):514-527. doi:10.1353/hpu.2017.0037.

47 Sherry B, Jefferds ME, Grummer-Strawn LM. Accuracy of adolescent self-report of height and weight in assessing overweight status: a literature review. *Arch Pediatr Adolesc Med*. 2007 Dec;161(12):1154-61.

48 Centers for Disease Control and Prevention. Tables of Summary Health Statistics: National Health Survey, 2014. Table A-15. http://www.cdc.gov/nchs/nhis/shs/tables.htm. Accessed July 2016.

49 Kaiser Family Foundation. Overweight and Obesity Rates for Adults by Race/Ethnicity. http://kff.org/other/state-indicator/adult-overweightobesity-rate-by-re/. Accessed June 13, 2017.

50 Notah Begay III Foundation website. http://www.nb3foundation.org/who-we-are/about-us/. Accessed April 20, 2017.

51 NB3 Foundation accomplishments. Notah Begay III Foundation website. http://www.nb3foundation.org/our-work/nb3-foundation-accomplishments/. Accessed April 20, 2017

52 WHO Expert Consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. *Lancet*. 2004;363(9403):157-163.

53 Lauderdale DS, Rathouz PJ. Body mass index in a US national sample of Asian Americans: effects of nativity, years since immigration and socioeconomic status. *Int J Obesity*. 2000; 24: 1188–94.

54 National Center for Health Statistics. Health, United States, 2015, Table 58. Data from the National Health and Nutrition Examination Survey (NHANES). https://www.cdc.gov/nchs/data/hus/2015/058.pdf. Accessed July 18, 2017.

55 Singh GK, Kogan MD. Childhood obesity in the United States, 1976-2008: trends and current racial/ethnic, socioeconomic, and geographic disparities. A 75th Anniversary Publication. Health Resources and Services Administration, Maternal and Child Health Bureau. Rockville, Maryland: U.S. Department of Health and Human Services, 2010.

56 Centers for Disease Control and Prevention. National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and Obesity. Nutrition, Physical Activity, and Obesity: Data, Trends and Maps. https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/index.html. Accessed June 27, 2017.

57 Socioeconomics and Obesity. State of Obesity website. http://stateofobesity.org/socioeconomics-obesity/. Accessed May 15, 2017.

58 Centers for Disease Control and Prevention. Diabetes home: County data, 2013. https://www.cdc.gov/diabetes/data/county.html. Updated May 2, 2017. Accessed May 31, 2017.

59 https://mchb.hrsa.gov/nsch/2011-12/rural-health/child/health-status/overweight-obesity.html. Accessed July 18, 2017.

60 Gamm LD, Hutchinson LL, Dabney BJ, Dorsey AM. Rural Healthy People 2010: A companion document to Healthy People 2010. College Station, TX: The Texas A&M University System Health Science Center, School of Public Rural Health, Southwest Rural Health Research Center.

61 Jackson JE, Doescher MP, Jerant AF, Hart LG. A national study of obesity prevalence and trends by type of rural county. *J Rural Health*. 2005, 21 (2): 140-148. doi: 10.1111/j.1748-0361.2005.tb00074.x.

62 County Health Rankings & Roadmaps. What Works? Strategies to Improve Rural Health. http://www.countyhealthrankings.org/node/35670. Accessed July 18, 2017.

63 Ford PB, Dzewaltowski DA. Limited supermarket availability is not associated with obesity risk among participants in the Kansas WIC program. *Obesity*. 2010;18:1944–1951. doi:10.1038/oby.2009.487.

64 Powell LM, Auld MC, Chaloupka FJ, O'Malley PM, Johnston LD. Associations between access to food stores and adolescent body mass index. *Am J Prev Med*. 2007;33:S301–S307.

65 Zenk SN, Powell LM, Rimkus L, et al. Relative and absolute availability of healthier food and beverage alternatives across communities in the United States. *Am J Pub Health*. 2014;104(11):2170-2178.

66 Moore LV, et al. Availability of recreational resources in minority and low socioeconomic status areas. *Am J Prev Med.* 2008;34(1):16–22.

67 Ludwig J, Sanbonmatsu L, Gennetian L, et al. Neighborhoods, obesity, and diabetes — a randomized social experiment. *NEJM.* 2011;365:1509-1519.

68 Kwate NO, et al. Inequality in obesigenic environments: fast food density in New York City. Health Place. 2009;15(1):364–373.

69 Morland K, et al. Neighborhood characteristics associated with the location of food stores and food service places. *Am J Prev Med.* 2002;22(1):23–29.

70 Fryar CD, Carroll MD, Ogden CL, Prevalence of overweight and obesity among children and adolescents: United States, 1963-1965 through 2011-2012. Atlanta, GA: National Center for Health Statistics, 2014.

71 Robert Wood Johnson Foundation. Signs of Progress. http://www.rwjf.org/en/library/collections/signs-of-progress-in-reducing-childhood-obesity.html. Accessed June 14, 2017.

72 Centers for Disease Control and Prevention. Physical Activity and Health. https://www.cdc.gov/physicalactivity/basics/pa-health/index.htm. Updated June 4, 2015. Accessed July 18, 2017.

73 American Diabetes Association. Statistics About Diabetes. http://www.diabetes.org/diabetes-basics/statistics/. Accessed June 13, 2017.

74 The NS, Suchindran C, North KE, Popkin BM, Gordon-Larsen P. Association of adolescent obesity with risk of severe obesity in adulthood. *JAMA.* 2010;304(18):2042-2047.

75 Rogers R, Eagle TF, Sheetz A. The relationship between childhood obesity, low socioeconomic status, and race/ethnicity: lessons from Massachusetts. *Child Obes.* 2015;11(6):691-5. doi:10.1089/chi.2015.0029.

76 Steinberger J, Daniels SR, Hagberg N. Cardiovascular health promotion in children: challenges and opportunities for 2020 and beyond: a scientific statement from the American Heart Association. *Circulation.* 2016;134(12):e1-e20.

77 Rosinger A, Herrick K, Gahche J, Park S. Sugar-sweetened beverage consumption among U.S. youth, 2011–2014. NCHS data brief, no 271. Hyattsville, MD: National Center for Health Statistics. 2017.

78 Centers for Disease Control and Prevention. Trends in the prevalence of physical activity and sedentary behaviors national YRBS: 1991—2015. https://www.cdc.gov/healthyyouth/data/yrbs/pdf/trends/2015_us_physical_trend_yrbs.pdf. Accessed May 17, 2017.

79 American Academy of Pediatrics. The crucial role of recess in school. *Pediatrics.* 2013;131:183-188.

80 Singh GK, Siahpush M, Kogan MD. Neighborhood socioeconomic conditions, built environments, and childhood obesity. *Health Aff.* 2010;29(3):503-512. doi:10.1377/hlthaff.2009.0730.

81 Fleming-Milici F, Harris JL. Television food advertising viewed by preschoolers, children and adolescents: contributors to differences in exposure for black and white youth in the United States. *Pediatr Obes.* 2016 Dec 15. doi:10.1111/ijpo.12203.

82 Pérez-Escamilla R, Segura-Pérez S, Lott M, on behalf of the RWJF HER Expert Panel on Best Practices for Promoting Healthy Nutrition, Feeding Patterns, and Weight Status for Infants and Toddlers from Birth to 24 Months. *Feeding Guidelines for Infants and Young Toddlers: A Responsive Parenting Approach. Guidelines for Health Professionals.* Durham, NC: Healthy Eating Research, 2017. Available at http://healthyeatingresearch.org. Accessed April 24, 2017.

83 Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA.* 2014;311(8):806-814.

84 Child and Adolescent Health Measurement Initiative. 2016 National Survey of Children's Health. Data Resource Center for Child and Adolescent Health website. http://www.childhealthdata.org/browse/survey/results?q=4568&r=1. accessed September 2017.

85 Kann L, McManus T, Harris WA, et al. Youth Risk Behavior Surveillance — United States, 2015. *MMWR Surveill Summ.* 2016;65(No. SS-6):1–174. doi:http://dx.doi.org/10.15585/mmwr.ss6506a1.

86 Food and Nutrition Service. 2018 Explanatory Notes. https://www.obpa.usda.gov/32fnsexnotes2018.pdf. Accessed July 18, 2017.

87 Consolidated Appropriations Act of 2017. Pub.L. 115-31. May 5, 2017. https://www.govtrack.us/congress/bills/115/hr244/text/enr. Accessed July 18, 2017.

88 Food and Nutrition Service. 2017 Explanatory Notes. http://www.obpa.usda.gov/32fns2017notes.pdf. Accessed July 18, 2017.

89 Administration for Children and Families. Fiscal Year 2016 Federal Child Care and Related Appropriations http://www.acf.hhs.gov/occ/resource/fiscal-year-2016-federal-child-care-and-related-appropriations. Published January 4, 2016. Accessed July 18, 2017.

90 Consolidated Appropriations Act of 2016. Pub. L. 114-113. December 18, 2015. https://www.congress.gov/bill/114th-congress/house-bill/2029/text. Accessed July 18, 2017.

91 Cunningham SA, Kramer MR, Venkat Narayan KM. Incidence of childhood obesity in the United States. *NEJM.* 2014;370(5):403-411.

92 Honein, MA. Devine, O. Sharma, AJ, et al. Modeling the potential public health impact of prepregnancy obesity on adverse fetal and infant outcomes. *Obesity.* 2013;21(6):1276-1283.

93 Chu SY, Callaghan WM, Kim SY, et al. Maternal obesity and risk of gestational diabetes mellitus. *Diabetes Care.* 2007;30(8):2070-6.

94 Chu SY, Kim SY, Schmid CH, et al. Maternal obesity and risk of cesarean delivery: a meta-analysis. *Obes Rev.* 2007;8(5):385-94.

95 Branum A, Kirmeyer SE, Gregory ECW. Prepregnancy body mass index by maternal characteristics and state: Data from the birth certificate, 2014. National vital statistics reports; vol 65 no 6. Hyattsville, MD: National Center for Health Statistics. 2016.

96 U.S. Department of Agriculture, Food and Nutrition Service. Child and Adult Care Food Program (CACFP).://www.fns.usda.gov/cacfp/child-and-adult-care-food-program. Updated March 29, 2017. Accessed May 3, 2017.

97 The Pew Charitable Trusts. Fact Sheet: Changes to the USDA's Child and Adult Care Food Program can improve children's health: A review of the literature on meal and snack nutrition standard updates. http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2016/05/changes-to-the-usdas-child-and-adult-care-food-program-can-improve-childrens-health. Published May 2, 2016. Accessed July 18, 2017.

98 U.S. Department of Agriculture, Food and Nutrition Service. Memo regarding transition period for the updated Child and Adult Care Food Program meal patterns and the updated National School Lunch Program and School Breakfast Program Infant and Preschool Meal Patterns. http://frac.org/wp-content/uploads/SP-30-2017-CACFP-13-2017.pdf. Published May 10, 2017. Accessed May 17, 2017.

99 Centers for Disease Control and Prevention. Early care and education state indicator report, 2016. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2016.

100 Child Care Aware of America. State Spotlights & CCDF Plan Summaries. http://usa.childcareaware.org/advocacy-public-policy/health-nutrition/healthychildcare/. Accessed May 3, 2017.

101 SCaledown.org website. http://scaledown.org/. Accessed May 17, 2017.

102 South Carolina obesity action plan — 2016 annual review. SCaledown.org website. http://www.scdhec.gov/library/CR-011633_2016.pdf. Accessed May 17, 2017.

103 O'Neill JR, Dowda M, Neelon SEB, Neelon B, Pate RR. Effects of a new state policy on physical activity practices in child care centers in South Carolina. *Am J Pub Health.* 2017;107(1):144-146.

104 Martin LT, Karoly LA. Addressing overweight and obesity in head start: insights from the Head Start health manager descriptive study, OPRE Report 2016-85, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Published 2016.

105 Office of Head Start. Policy & Regulations. U.S. Department of Health & Human Services website. https://www.acf.hhs.gov/ohs/policy. Updated November 18, 2016. Accessed May 4, 2017.

106 Children and Families Administration. Head Start performance standards. 81 Fed. Reg. 61293. September 6, 2016.

107 García JL, Heckman JJ, Leaf DE, Prados MJ. The life-cycle benefits of an influential early childhood program. Heckman Equation project website. https://heckmanequation.org/resource/research-summary-lifecycle-benefits-influential-early-childhood-program/. December 19, 2016. Accessed April 11, 2017.

108 Analysis: Early learning provisions of the Every Student Succeeds Act. First Five Years Fund website. http://ffyf.org/resources/eceinessa2015/. Accessed May 4, 2017.

109 U.S. Department of Education. Programs: Promise Neighborhoods. https://ed.gov/programs/promiseneighborhoods/index.html. Updated December 19, 2016. Accessed May 4, 2017.

110 The Network for Public Health Law. Health related provisions of the Every Student Succeeds Act. https://www.networkforphl.org/_asset/s6lb0y/ESSA-Issue-Brief.pdf . March 2017. Accessed May 4, 2017.

111 U.S. Department of Agriculture. FY 2017 Budget Summary. http://www.obpa.usda.gov/budsum/fy17budsum.pdf. Accessed May 3, 2017.

112 Sekhobo J. Estimation of WIC effects in multilevel, cross-sector obesity prevention interventions. *Obesity.* 2017;25(7):1157-1158. doi:10.1002/oby.21891.

113 Caan B, Horgen DM, Margen S, King JC, Jewell NP. Benefits associated with WIC supplemental feeding during the interpregnancy interval. *Am J Clin Nutr.* 1987;45(1):29-41.

114 American Academy of Pediatrics. Policy statement: breastfeeding and the use of human milk. *Pediatrics.* 2012;129(23):e827-e841. doi: 10.1542/peds.2011-3552.

115 Yan J, Liu L, Zhu Y, Huang G, Wang PP. The association between breastfeeding and childhood obesity: a meta-analysis. *BMC Public Health.* 2014;14:1267. doi: 10.1186/1471-2458-14-1267

116 Obesity Prevention Source: breastfeeding and obesity risk. Harvard T.H. Chan School of Public Health website. https://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/prenatal-postnatal-obesity/. Accessed May 3, 2017.

117 Jarlenski M, Bennett WL, Bleich SN, Barry CL, Stuart EA. Effects of breastfeeding on postpartum weight loss among U.S. women. *Prev Med.* 2014;69:146-150.

118 Neville CE, McKinley MC, Holmes VA, Spence D, Woodside JV. The relationship between breastfeeding and postpartum weight change–a systematic review and critical evaluation. *Int J Obes (Lond).* 2014;38: 577-590.

119 Ip S, Chung M, Raman G, et al. Breastfeeding and maternal and infant health outcomes in developed countries. *Evid Rep Technol Assess* (Full Rep) 2007;153:1–186.

120 Centers for Disease Control and Prevention. Breastfeeding report card: progressing toward national breastfeeding goals. United States, 2016. Atlanta, GA: Centers for Disease Control and Prevention, U.S. Department of Health and Human Services; 2016. https://www.cdc.gov/breastfeeding/pdf/2016breastfeedingreportcard.pdf. Accessed May 2, 2017.

121 Woo Baidal JA, Taveras EM. Protecting progress against childhood obesity — the national school lunch program. *NEJM.* 2014; 371:1862-1865. doi:10.1056/NEJMp1409353.

122 Veugelers PJ, Fitzgerald AL. Effectiveness of school programs in preventing childhood obesity: a multilevel comparison. *Am J Pub Health.* 2005;95(3):432-35.

123 First Focus. Children's Budget 2016. https://firstfocus.org/resources/report/childrens-budget-2016/. Published July 7, 2016. Accessed July 18, 2017.

124 Committee on Appropriations—Democrats. FY2017 Omnibus Appropriations Act. http://democrats.appropriations.house.gov/sites/democrats.appropriations.house.gov/files/wysiwyg_uploaded/FY17%20Omnibus%20Summary%205-1-17.pdf. Accessed July 18, 2017.

125 U.S. Department of Agriculture. FY 2017 Budget Summary. http://www.obpa.usda.gov/budsum/fy17budsum.pdf. Accessed July 18, 2017.

126 U.S. Department of Transportation, Federal Highway Administration. Distribution of fiscal year 2017 transportation alternatives (ta) set-aside funds. https://www.fhwa.dot.gov/legsregs/directives/notices/n4510812/n4510812_t2.cfm. Accessed July 18, 2017.

127 U.S. Department of Transportation, Federal Highway Administration. Transportation Alternatives (TA) Set-Aside FY 2016 Apportionments. http://www.fhwa.dot.gov/environment/transportation_alternatives/funding/apportionments_obligations/tap_appor_ob_2016.cfm. Updated June 27, 2017. Accessed July 18, 2017.

128 Division H-Departments of Labor, Health and Human Services, and Education, and related agencies appropriations act, 2017. https://rules.house.gov/sites/republicans.rules.house.gov/files/115/OMNI/DIVISION%20H-%20LABORHHS%20SOM%20OCR%20FY17.pdf. Accessed July 18, 2017.

129 Centers for Disease Control and Prevention. FY 2016 Operating Plan. https://www.cdc.gov/budget/documents/fy2016/fy-2016-cdc-operating-plan.pdf. Published April 29, 2016. Accessed July 18, 2017.

130 Ujifusa A. Budget Deal for 2017 Includes Increases for Title I, Special Education. *Education Week.* May 1, 2017. Accessed July 18, 2017.

131 Centers for Disease Control and Prevention. The association between school based physical activity, including physical education, and academic performance. Atlanta, GA: U.S. Department of Health and Human Services; 2010.

132 Centers for Disease Control and Prevention. 2015 National Youth Risk Behavior Survey Data. Available at: www.cdc.gov/yrbs.

133 Jaswal R, Susma J. Obesity and academic performance in adolescents. *Int J Edu Sci.* 2012: 4(3): 275-278.

134 Datar A, Sturm R. Childhood overweight and elementary school outcomes. *Int J of Obes.* 2006;30(9):1449-1460.

135 Halfon N, Larson K, Slusser W: Associations between obesity and comorbid mental health, developmental, and physical health conditions in a nationally representative sample of US children aged 10 to 17. *Acad Pediatr.* 2013, 13 (1): 6-13. doi:10.1016/j.acap.2012.10.007.

136 Shore SM, Sachs ML, Lidicker JR, Brett SN, Wright AR, Libonati JR. Decreased scholastic achievement in overweight middle school students. *Obesity.* 2008;16(7): 1535-1538. doi: 10.1038/oby.2008.254.

137 Ramaswamy R, Mirochna M, Perlmuter LC: The negative association of BMI with classroom effort in elementary school children. *J Child Health Care.* 2010, 14 (2): 161-169. doi: 10.1177/1367493509359222.

138 U.S. Department of Agriculture. National School Lunch Program: national level monthly data. https://www.fns.usda.gov/sites/default/files/pd/36slmonthly.pdf. Updated May 5, 2017. Accessed May 8, 2017.

139 Food Research & Action Center, School breakfast scorecard: school year 2015-16. http://frac.org/wp-content/uploads/school-breakfast-scorecard-sy-2015-2016.pdf. Accessed April 10, 2017.

140 Nutrition Standards in the National School Lunch and School Breakfast Programs. 77 Fed. Reg. 17. January 26, 2012.

141 Terry-McElrath YM, Turner L, Colabianchi N, O'Malley PM, Chaloupka FJ, Johnston LD. Student reactions during the first year of updated school lunch nutrition Standards—a BTG research brief. Ann Arbor, MI: Bridging the Gap Program, Institute for Social Research, University of Michigan; 2014.

142 Hart Research Associates/ Ferguson Research. Nationwide polling regarding parents' views of school meal and Smart Snacks standards. August 29, 2014. http://www.rwjf.org/content/dam/farm/reports/surveys_and_polls/2014/rwjf415456. Accessed May 4, 2017.

143 Schwartz MB, Henderson, KE, Read M, Danna N, Ickovics, JR. New school meal regulations increase fruit consumption and do not increase total plate waste. *Child Obes* 2015;11(3):242-247.

144 U.S. Department of Agriculture. USDA commitment to school meals. https://www.usda.gov/sites/default/files/documents/secretary-perdue-child-nutrition-proclamation.pdf. May 1, 2017. Accessed May 4, 2017.

145 Congressional Research Service. Tracking the next child nutrition reauthorization: an overview. https://www.everycrsreport.com/files/20170124_R44373_b1b36c99ddf56fadbb2e199b0a9f8e632c0cc8c8.pdf. Updated January 24, 2017. Accessed May 4, 2017.

146 Scarmo S. As national nutrition month begins, school breakfast shares the spotlight: 50-year-old program now serves more than 14 million children. The Pew Charitable Trusts website. http://www.pewtrusts.org/en/research-and-analysis/analysis/2017/02/27/as-national-nutrition-month-begins-school-breakfast-shares-the-spotlight. February 27, 2017. Accessed April 24, 2017.

147 Food Research & Action Center, School breakfast scorecard: school year 2015-16. http://frac.org/wp-content/uploads/school-breakfast-scorecard-sy-2015-2016.pdf. Accessed April 10, 2017.

148 Greenwood M. School breakfasts contribute to healthy weight, study finds. *Yale News*. March 17, 2017. http://news.yale.edu/2016/03/17/school-breakfasts-contribute-healthy-weight-study-finds. Accessed April 24, 2017.

149 Murphy JM, Pagano M, Nachmani J, et al. The relationship of school breakfast to psychosocial and academic functioning: cross-sectional and longitudinal observations in an inner-city sample. *Archives of Ped and Adolescent Medicine*. 1998;152:899-907.

150 Corcoran SP, Elbel B, Schwartz AE. The effect of breakfast in the classroom on obesity and academic performance: evidence from New York City. *J Policy Anal Manage*. 2016;35(3):509-32.

151 Anzman-Frasca S, Djang HC, Halmo MM, Dolan PR, Economos CD. Estimating impacts of a breakfast in the classroom program on school outcomes. *JAMA Pediatr*. 2015;169(1):71-7. doi:10.1001/jamapediatrics.2014.2042.

152 Food Research & Action Center, National Association of Secondary School Principals. School breakfast after the bell: equipping students for academic success. http://frac.org/wp-content/uploads/secondary-principals-bic-report.pdf. November 2015. Accessed April 13, 2017.

153 U.S. Department of Agriculture. Tools for schools: focusing on Smart Snacks. https://www.fns.usda.gov/healthierschoolday/tools-schools-focusing-smart-snacks. Updated March 27, 2017. Accessed May 7, 2017.

154 U.S. Department of Agriculture. A guide to Smart Snacks in schools. https://www.fns.usda.gov/sites/default/files/tn/USDASmartSnacks.pdf. Published July 2016. Accessed May 7, 2017.

155 Piekarz E, Lin W, Chriqui JF. Smart Snacks fundraiser exemption state policies. Quarterly Report. http://www.ihrp.uic.edu/files/Fundraiser%20Exemptions_1Mar17.pdf. Updated March 1, 2017. Accessed May 7, 2017.

156 50 state analysis of competitive foods laws conducted by Voices For Healthy Kids, September 2014.

157 U.S. Department of Agriculture. SFSP fact sheet. https://www.fns.usda.gov/sites/default/files/sfsp/SFSP-Fact-Sheet.pdf. Accessed May 8, 2017.

158 U.S. Department of Agriculture. Summer Food Service Program. https://www.fns.usda.gov/sfsp/summer-food-service-program. Published May 3, 2017. Accessed May 8, 2017.

159 Bridging the Gap. Availability of drinking water in U.S. public school cafeterias. http://www.bridgingthegapresearch.org/_asset/4svpjs/BTG_drinking_water_brief_FINAL_April2014.pdf. Published April 2014. Accessed May 7, 2017.

160 Centers for Disease Control and Prevention. Increasing access to drinking water in schools. Atlanta GA: US Dept. of Health and Human Services; 2014.

161 Environmental Protection Agency. Lead in drinking water in schools and childcare facilities. https://www.epa.gov/dwreginfo/lead-drinking-water-schools-and-child-care-facilities. Accessed May 7, 2017.

162 Fortin J. America's tap water: too much contamination, not enough reporting, study finds. *New York Times*. May 4, 2017.

163 Environmental Protection Agency. 3Ts for reducing lead in drinking water in schools and child care facilities. https://www.epa.gov/dwreginfo/3ts-reducing-lead-drinking-water-schools-and-child-care-facilities. Accessed May 7, 2017.

164 U.S. Department of Agriculture. Fresh Fruit and Vegetable Program. https://www.fns.usda.gov/sites/default/files/FFVPFactSheet.pdf. Published September 2013. Accessed May 17, 2017.

165 Bartlett, S., Olsho, L., Klerman, J., et al. Evaluation of the Fresh Fruit and Vegetable Program (FFVP): final evaluation report. Prepared by ABT Associates under Contract No. AG-3198-D-09-0053. Alexandria, VA: U.S. Department of Agriculture, Food and Nutrition Service. https://www.fns.usda.gov/sites/default/files/FFVP.pdf. Published March 2013. Accessed May 17, 2017.

166 U.S. Department of Agriculture. The Farm to School Program: 2012-15: four years in review. https://www.fns.usda.gov/sites/default/files/f2s/Farm-to-School-at-USDA–4-Years-in-Review.pdf. Accessed May 7, 2017.

167 U.S. Department of Agriculture. Overview: farm to school census 2015. https://farmtoschoolcensus.fns.usda.gov/overview-farm-school-census-2015. Accessed May 7, 2017.

168 Izumi BT, Eckhardt CL, Hallman JA, Herro K, Barberis DA. Harvest for Healthy Kids pilot study: associations between exposure to a farm-to-preschool intervention and willingness to try and liking of target fruits and vegetables among low-income children in Head Start. *J of the Acad of Nutr and Diet*. 2015;115(12):2003–2013. doi: http://dx.doi.org/10.1016/j.jand.2015.07.020.

169 Bontrager Yoder AB, Liebhart JL, Mccarty D, LaRowe T. Farm to elementary school programming increases access to fruits and vegetables and increases their consumption among those with low intake. *J of Nutr Ed and Behav.* 2014:46(5):23-34.

170 Berezowitz CK, Bontrager Yoder AB, Schoeller DA. School gardens enhance academic performance and dietary outcomes in children. *J of School Health.* 2015;85:508–518. doi: 10.1111/josh.12278.

171 Centers for Disease Control and Prevention. School-based programs to increase physical activity. https://www.cdc.gov/policy/hst/hi5/physicalactivity/index.html. Accessed April 18, 2017.

172 Centers for Disease Control and Prevention. HI-5 14 evidence-based community-wide interventions slides. https://www.cdc.gov/policy/hst/hi5/slides/index.html. Updated August 22, 2016. Accessed April 18, 2017.

173 Washington State Institute for Public Policy. School-based programs to increase physical activity. http://www.wsipp.wa.gov/BenefitCost/Program/574. Updated December 2016. Accessed April 18, 2017.

174 Wang Y. et al. What childhood obesity prevention programmes work? A systematic review and meta-analysis. *Obes Rev.* 2015;16(7):547-565.

175 SHAPE America — Society of Health and Physical Educators. Shape of the nation: status of physical education in the USA. http://www.shapeamerica.org/advocacy/son/2016/upload/Shape-of-the-Nation-2016_web.pdf. 2016. Accessed May 5, 2017.

176 Heim J. Almost the entire D.C. school district is ignoring its PE requirements. *Washington Post.* September 5, 2016. https://www.washingtonpost.com/local/education/almost-the-entire-dc-school-district-is-ignoring-its-pe-requirements/2016/08/31/d7b55482-6bc5-11e6-8225-fbb8a6fc65bc_story.html?utm_term=.39ca758ecf4b. Accessed May 22, 2017.

177 Centers for Disease Control and Prevention and SHAPE America—Society of Health and Physical Educators. Strategies for recess in schools. Atlanta, GA: Centers for Disease Control and Prevention, US Dept. of Health and Human Services. 2017. https://www.cdc.gov/ healthyschools/physicalactivity/pdf/2016_12_16_schoolrecessstrategies_508.pdf. Accessed April 24, 2017.

178 Education Commission of the States. Response to information request. http://www.ecs.org/ec-content/uploads/SIRRecess.pdf. April 22, 2016. Accessed May 5, 2017 (stating four states—Connecticut, Indiana, Missouri, and Virginia—require recess)

179 Alaska Department of Health and Social Services. Obesity prevention — current initiatives. http://dhss.alaska.gov/dph/Chronic/Pages/Obesity/initiatives.aspx. Accessed May 16, 2017.

180 Centers for Disease Control and Prevention. Safe Routes to School (SRTS). https://www.cdc.gov/policy/hst/hi5/saferoutes/index.html. Updated August 5, 2016. Accessed April 18, 2017.

181 U.S. Department of Transportation, Federal Highway Administration, Fixing America's Surface Transportation Act or "FAST Act." https://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.cfm. Updated February 8, 2017. Accessed July 19, 2017.

182 National Center for Safe Routes to School, Shifting modes: a comparative analysis of safe routes to school program elements and travel mode outcome, Federal Highway Administration, U.S. Department of Transportation. 2012. http://www.saferoutesinfo.org/sites/default/files/resources/Shifting_Modes_Comparative_Analysis.PDF. Accessed April 18, 2017.

183 Stewart O, Moudon AV, Claybrooke C. Multistate evaluation of safe routes to school programs. *Am J of Health Promot,* 2014; 28(sp3): S89-S96.

184 Lieberman M, Pedroso M, Zimmerman S. Making strides 2016: state report cards on support for walking, bicycling, and active kids and communities. http://www.saferoutespartnership.org/sites/default/files/resource_files/072616_sr2s_statereport_2016_final.pdf. Accessed May 7, 2017.

185 Spengler JO. Promoting physical activity through the shared use of school and community recreational resources. Robert Wood Johnson Foundation website. http://www.rwjf.org/en/library/research/2012/04/promoting-physical-activity-through-the-shared-use-of-school-and.html. Published April 2012. Accessed May 7, 2017.

186 Omura JD, Carlson SA, Paul P, Sliwa S, Onufrak SJ, Fulton JE. Shared use agreements between municipalities and public schools in the United States, 2014, *Preventive Medicine.* 2016, doi:10.1016/j.ypmed.2016.09.026.

187 Centers for Disease Control and Prevention. Body Mass Index (BMI) Measurement in Schools. https://www.cdc.gov/healthyschools/obesity/BMI/BMI_measurement_schools.htm. Updated January 25, 2017. Accessed May 7, 2017.

188 National Association of State Boards of Education. State school health policy database: screening for health conditions. website. http://www.nasbe.org/healthy_schools/hs/bytopics.php?topicid=4100. Accessed May 7, 2017.

189 ESSA Title IV and School Health. Frequently asked questions. ASCD website. http://www.ascd.org/ASCD/pdf/siteASCD/policy/ESSA-Title-IV-FAQ_Mar32016.pdf. Published March 2016. Accessed May 5, 2017.

190 U.S. Department of Education, Office of Safe and Healthy Students. Changes to the title IV, part A, Student Support and Academic Enrichment (SSAE) grants resulting from the FY 2017 Department of Education Appropriations Act. https://safesupportivelearning.ed.gov/sites/default/files/TIVPA%20SSAE%20Webinar%204%20Slides%20v7%205.24.2017.pdf. May 24, 2017. Accessed July 19, 2017.

191 Wentzell DR. Connecticut launches new generation accountability system designed to provide more holistic picture of school performance. Connecticut State Department of Education website. http://www.sde.ct.gov/sde/lib/sde/pdf/pressroom/ct_launches_next_generation_accountability_system_030216.pdf. Accessed May 5, 2017.

192 Centers for Disease Control and Prevention. School Health Guidelines. https://www.cdc.gov/healthyschools/npao/strategies.htm. Updated February 14, 2017. Accessed May 30, 2017.

193 Centers for Disease Control and Prevention. Local School Wellness Policy. https://www.cdc.gov/healthyschools/npao/wellness.htm. Updated January 17, 2017. Accessed May 30, 2017.

194 Centers for Disease Control and Prevention. Putting Local School Wellness Policies into Action. Atlanta, GA: US Dept of Health and Human Services; 2014. http://www.cdc.gov/healthyschools/npao/pdf/ SchoolWellnessInAction.pdf. Accessed May 30, 2017.

195 Centers for Disease Control and Prevention. School Health Index. https://www.cdc.gov/healthyschools/shi/index.htm. Updated October 20, 2016. Accessed May 30, 2017.

196 Centers for Disease Control and Prevention. State public health actions to prevent and control diabetes, heart disease, obesity and associated risk factors and promote school health (DP13-1305). https://www.cdc.gov/chronicdisease/about/state-public-health-actions.htm. Updated January 19, 2016. Accessed April 24, 2017.

197 Centers for Disease Control and Prevention. CDC's state public health actions to prevent and control diabetes, heart disease, obesity and associated risk factors and promote school health. https://www.cdc.gov/dhdsp/programs/spha/. Updated February 28, 2014. Accessed May 16, 2017.

198 Centers for Disease Control and Prevention. Whole school, whole community, whole child. https://www.cdc.gov/healthyyouth/wscc/. Updated October 26, 2015. Accessed May 22, 2017.

199 Centers for Disease Control and Prevention. Overview of the CDC FY 2018 budget request. https://www.cdc.gov/budget/documents/fy2018/fy-2018-cdc-budget-overview.pdf. May 21, 2017. Accessed July 19, 2017.

200 U.S. Department of Treasury. Department of the Treasury Community Development Financial Institutions Fund: Congressional justification for appropriations and annual performance report and plan: FY 2018. https://www.treasury.gov/about/budget-performance/CJ18/13.%20CDFI%20Fund%20-%20FY%202018%20CJ.pdf. Accessed July 19, 2017.

201 Novogradac & Company LLP. CDFI Fund Opens $ 3.5 Billion NMTC Allocation Round for CY 2017. https://www.novoco.com/news/cdfi-fund-opens-35-billion-nmtc-allocation-round-cy-2017. May 2, 2017. Accessed July 19, 2017.

202 Department of the Treasury, Community Development Financial Institutions Fund. Funding opportunity title: amended notice of allocation availability (NOAA) for the combined calendar year (CY) 2015—CY 2016 allocation round of the New Markets Tax Credit (NMTC) program. 81 Fed. Reg. 23356. Published April 20, 2016.

203 U.S. Department of Agriculture. FY 2018 Budget Summary. https://www.usda.gov/sites/default/files/documents/USDA-Budget-Summary-2018.pdf. Accessed July 19, 2017.

204 Healthy Food Financing Initiative. Administration for Children and Families website. https://www.acf.hhs.gov/ocs/programs/community-economic-development/healthy-food-financing. Updated February 14, 2017. Accessed May 4, 2017.

205 Healthy Schools Campaign. A state-by-state look at a key barrier to Medicaid school health services. https://healthyschools-campaign.org/policy/state-state-look-key-barrier-medicaid-school-health-services/. October 26, 2016. Accessed May 8, 2017.

206 Lee H. The role of local food availability in explaining obesity risk among young school-aged children. *Soc Sci Med.* 2012 Apr;74(8):1193-203. doi:10.1016/j.socscimed.2011.12.036.

207 Gonzalez P. Have food deserts turned into food swamps? *BSMG Blog.* http://www.bmsg.org/blog/have-food-deserts-turned-into-food-swamps. Published April 20, 2012. Accessed July 19, 2017.

208 Mezuk B, Li X, Cederin K, Rice K, Sundquist J, Sundquist K. Beyond access: characteristics of the food environment and risk of diabetes. *Am J Epidemiol.* 2016;183(12):1129-37. doi:10.1093/aje/kwv318.

209 Freedman DH. How your suburb can make you thinner. *Politico.* May 10, 2017.

210 Physical activity: built environment approaches combining transportation system interventions with land use and environmental design. The Community Guide website. https://www.thecommunityguide.org/findings/physical-activity-built-environment-approaches. December 2016. Accessed May 4, 2017.

211 Roubal AM, Jovaag A, Park H, Gennuso KP. Development of a nationally representative built environment measure of access to exercise opportunities. *Prev Chronic Dis* 2015;12:140378. doi:http://dx.doi.org/10.5888/pcd12.140378.

212 Arizona Department of Health Services. Arizona state health assessment. http://azdhs.gov/documents/operations/managing-excellence/az-state-health-assessment.pdf. December 2013. Accessed May 17, 2017.

213 Arizona Department of Health Services. Arizona health improvement plan (AzHIP): cross-cutting strategies webinar. http://azdhs.gov/documents/operations/managing-excellence/cross-cutting-webinar-presentation-4-20-16.pdf. Published April 20, 2016. Accessed May 17, 2017.

214 C.S. Mott Children's Hospital. Pay-to-play sports keeping lower-income kids out of the game. http://www.mottnpch.org/reports-surveys/pay-play-sports-keeping-lower-income-kids-out-game. May 14, 2012. Accessed May 4, 2017.

215 Berk M, Moon MM. Effects of a facilitated fee waiver program on participation in youth sports programs. *J of Park and Rec Admin.* 2016;34(3).

216 Centers for Disease Control and Prevention. Chronic disease overview. https://www.cdc.gov/chronicdisease/overview/. Updated June 28, 2017. Accessed July 19, 2017.

217 Trust for America's Health. Investments in disease prevention yield significant savings, stronger communities. http://healthyamericans.org/reports/prevention08/Prevention08.pdf. Published July 2008. Accessed July 19, 2017.

218 Centers for Disease Control and Prevention. State and local public health actions to prevent obesity, diabetes, and heart disease and stroke (DP14-1422PPHF14). https://www.cdc.gov/chronicdisease/about/foa/2014foa/public-health-action.htm. Updated October 1, 2015. Accessed May 17, 2015.

219 Centers for Disease Control and Prevention. A comprehensive approach to good health and wellness in Indian country (DP14-1421PPHF14). https://www.cdc.gov/chronicdisease/about/foa/2014foa/comprehensive-approach-health.htm. Updated April 4, 2016. Accessed May 17, 2015.

220 Centers for Disease Control and Prevention. Partnerships to Improve Community Health (PICH). https://www.cdc.gov/nccdphp/dch/programs/partnershipstoimprovecommunityhealth/. Updated January 31, 2017. Accessed May 17, 2017.

221 Centers for Disease Control and Prevention. Racial and ethnic approaches to community health. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/reach/index.htm. Updated February 1, 2017. Accessed May 17, 2017.

222 U.S. Department of Health and Human Services. Million Hearts®: meaningful progress 2012–2016. May 2017. https://millionhearts.hhs.gov/files/MH-meaningful-progress.pdf. Accessed May 17, 2017.

223 Centers for Disease Control and Prevention. PHHS block grant. https://www.cdc.gov/phhsblockgrant/. Updated December 9, 2016. Accessed May 17, 2017.

224 Centers for Disease Control and Prevention. Funding opportunity announcement: programs to reduce obesity in high obesity areas (CDC-RFA-DP14-1416). https://www.cdc.gov/obesity/highobesitycounties/. Updated July 15, 2014. Accessed May 17, 2017.

225 Centers for Disease Control and Prevention. Division of Nutrition, Physical Activity, and Obesity: funding by state. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/funding.html. Updated April 21, 2017. Accessed May 17, 2017.

226 The State of Obesity in Mississippi. State of Obesity website. http://stateofobesity.org/states/ms/. Accessed May 16, 2017.

227 National Center for Chronic Disease Prevention and Health Promotion. Mississippi: State nutrition, physical activity, and obesity profile. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/pdfs/mississippi-state-profile.pdf. Published 2016. Accessed May 16, 2017.

228 Grant T, Lott L, Courtney C, et al. Mississippi obesity action plan. Mississippi State Department of Health. http://msdh.ms.gov/msdhsite/_static/resources/6164.pdf. January 2016. Accessed May 16, 2017.

229 Alabama Obesity Task Force. Wellness program guide. Alabama Department of Health website. http://www.adph.org/obesity/assets/OTFWellnessGuide2013_Revised2.pdf. Accessed May 17, 2017.

230 State declares 2016 the year to get moving Alabama! leaders and concerned citizens to convene at summit to tackle obesity. Get Moving Alabama website. http://getmovingalabama.org/news-release/. Published February 5, 2016. Accessed May 17, 2017.

231 Alabama Department of Public Health. Vending machines. http://www.adph.org/NUTRITION/index.asp?id=4929. Accessed May 17, 2017.

232 Killman MB. Alabama's healthy vending machine program: improving lives one worksite at a time. Centers for Disease Control and Prevention website. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/pdf/program-highlights/hr-al.pdf. Accessed May 21, 2017.

233 Centers for Disease Control and Prevention. Programs to reduce obesity in high obesity areas, Alabama. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/15_262070a_reduceobesity_al_fs_final2_508tagged.pdf. Published January 2016. Accessed May 21, 2017.

234 Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Programs to reduce obesity in high obesity areas: Arkansas. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/reduceobesity_ar-fs.pdf. Published January 2017. Accessed July 19, 2017

235 Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Programs to reduce obesity in high obesity areas: Kentucky. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/15_262079b_reduceobesity_ky_fs_final2_508tagged.pdf. Published January 2016. Accessed July 19, 2017.

236 Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Programs to reduce obesity in high obesity areas: Louisiana. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/reduceobesity_la_fs.pdf. Published January 2017. Accessed July 19, 2017.

237 Chatterjee A, Kubendran S. Drink different: feasible strategies to reduce obesity. Milken Institute. 2015. http://assets1b.milkeninstitute.org/assets/Publication/ResearchReport/ PDF/Milken-Institute-Drink-Different.pdf. Accessed April 24, 2017.

238 Ramakrishnan S. U.S. soda sales drops for 12th straight year: trade publication. *Reuters Business News.* April 17, 2017. http://www.reuters.com/article/us-soda-sales-study-idUSKBN17L2HN. Accessed April 24, 2017.

239 Afshin A, Peñalvo JL, Gobbo LD, et al. The prospective impact of food pricing on improving dietary consumption: A systematic review and meta-analysis. Plos One. 2017;12(3). doi:10.1371/journal.pone.0172277.

240 Colchero MA, Rivera-Dommarco J, Popkin BM, Ng SW. In Mexico, evidence of sustained consumer response two years after implementing a sugar-sweetened beverage tax. *Health Affairs.* 2017;36(3):564-571. doi:10.1377/hlthaff.2016.1231.

241 Falbe J, Thompson HR, Becker CM, et al. Impact of the Berkeley excise tax on sugar-sweetened beverage consumption. *Am J Pub Health.* 2016;106(10):1865-1871.

242 Silver LD, Ng SW, Ryan-Ibarra S, Taillie LS, Induni M, Miles DR, et al. (2017) Changes in prices, sales, consumer spending, and beverage consumption one year after a tax on sugar-sweetened beverages in Berkeley, California, US: A before-and-after study. PLoS Med 14(4): e1002283. https://doi.org/10.1371/journal.pmed.1002283.

243 Sugar sweetened beverage taxes. County Health Rankings & Roadmaps website. http://www.countyhealthrankings.org/policies/sugar-sweetened-beverage-taxes. Accessed May 19, 2017.

244 U.S. Department of Agriculture, National Institute of Food and Agriculture. Food insecurity nutrition incentive (FINI) grant program. https://nifa.usda.gov/program/food-insecurity-nutrition-incentive-fini-grant-program. Accessed July 19, 2017.

245 Wholesome Wave. How we work: doubling SNAP. http://www.wholesomewave.org/how-we-work/doubling-snap. Accessed May 11, 2017.

246 Alameda Health Care Services Agency. Overview of Measure A essential health care services initiative. http://www.acgov.org/board/bos_calendar/documents/DocsAgendaReg%2008%201%2013/GENERAL%20ADMINISTRATION/Regular%20Calendar/Measure_A_Overview_General.pdf. Published July 29, 2013. Accessed July 19, 2017.

247 The California Endowment. Building healthy communities: overview. http://www.calendow.org/building-healthy-communities. Accessed July 19, 2017.

248 Office of Community Services. Healthy Food Financing Initiative. U.S. Health and Human Services website. https://www.acf.hhs.gov/ocs/programs/community-economic-development/healthy-food-financing. Updated February 14, 2017. Accessed May 8, 2017.

249 O'Neal J. Jim's Local Market opens to large crowds, optimistic shoppers. *Daily Press.* May 10, 2016. http://www.dailypress.com/business/dp-nws-jims-market-0511-20160510-story.html. Accessed May 19, 2017.

250 Impact stories: Jim's Local Market. Virginia Community Capital website. http://www.vacommunitycapital.org/news/2017/03/06/jims-local-market/. Published March 6, 2017. Accessed May 19, 2017.

251 The new markets tax credit: opportunities for investment in healthy foods and physical activity. Campaign to End Obesity website. http://campaigntoendobesity.org/documents/EYCEONMTC-OpportunitiesforInvestmentinHealthFinal.pdf December 2013. Accessed May 4, 2017.

252 New Markets Tax Credit Coalition. New Markets Tax Credit Fact Sheet. http://nmtccoalition.org/fact-sheet/. Accessed July 19, 2017.

253 ReThink Health. Sustainable Investments in health: prevention and wellness funds. https://www.rethinkhealth.org/wp-content/uploads/2016/01/Sustainable-Investments-in-Health_Prevention-and-Wellness-Funds.pdf. Published January 2015. Accessed July 19, 2017.

254 Health Policy Institute of Ohio. Beyond medical care fact sheet: wellness trusts. http://www.healthpolicyohio.org/wp-content/uploads/2015/09/Beyond_WellnessTrustsFactSheet_Final.pdf. Published September 2015. Accessed July 19, 2017.

255 Prevention Institute at the Center of Community Well-Being. Sustainable investments in health: prevention and wellness funds, http://www.preventioninstitute.org/component/jlibrary/article/id-360/127.html. Published January 2015. Accessed July 19, 2017.

256 Institute on Urban Health Research and Practice, Bouve College of Health Sciences, Northeastern University. The Massachusetts prevention and wellness trust: an innovative approach to prevention as a component of health care reform. http://www.northeastern.edu/iuhrp/wp-content/uploads/2013/12/PreventionTrustFinalReport.pdf. Accessed July 19, 2017.

257 Plaza C, Arons A, Rosenthal J, Heider F. Financing prevention: how states are balancing delivery system and public health roles. Prepared by the National Academy for State Health Policy for ChangeLab Solutions. http://www.changelabsolutions.org/sites/default/files/Financing_Prevention-NASHP_FINAL_20140410.pdf. Published April 2014. Accessed July 19, 2017.

258 Nonprofit Finance Fund. Frequently asked questions: pay for success/social impact bonds. http://www.nonprofitfinancefund.org/sites/default/files/pfs_faq.pdf. Accessed July 19, 2017.

259 Roman J, Eldridge M, Hawkins R. Foundational concepts and terms of pay for success. Urban Institute: Washington, DC. http://www.urban.org/sites/default/files/alfresco/publication-pdfs/2000562-Foundational-Concepts-and-Terms-of-Pay-for-Success.pdf. Published December 2015. Accessed July 19, 2017.

260 Goldman Sachs. Macroeconomic insights: social impact bonds. http://www.goldmansachs.com/our-thinking/pages/social-impact-bonds.html. Published October 2014. Accessed July 19, 2017.

261 Liebman J. Social impact bonds. Center for American Progress. https://www.americanprogress.org/wp-content/uploads/issues/2011/02/pdf/social_impact_bonds.pdf. February 2011. Accessed July 19, 2017.

262 South Carolina Department of Health and Human Services. South Carolina nurse-family partnership pay for success project. https://www.scdhhs.gov/sites/default/files/2-16-16-SC-NFP-PFS-Partners_0.pdf. Accessed July 19, 2017.

263 Xu L. Pay for success in the U.S.: summaries of financed projects. Institute for Child Success. http://pfs.instituteforchildsuccess.org/wp-content/uploads/2016/06/summary_of_pay_for_success_social_impact_bonds_South_Carolina.pdf. Published April 2016. Accessed July 19, 2017.

264 The California Endowment. A new power grid: building healthy communities at year 5. http://www.calendow.org/bhcreport/. Accessed July 19, 2017.

265 Robert Wood Johnson Foundation. Reinvestment Fund and Robert Wood Johnson Foundation Award $3 Million Across 50 Mid-Size U.S. Cities to Improve Health in Low-Income Neighborhoods. *RWJF Blog*. http://www.rwjf.org/en/library/articles-and-news/2016/05/reinvestment-fund-and-robert-wood-johnson-foundation-award–3-mi.html. Published May 17, 2016. Accessed July 19, 2017.

266 Reinvestment Fund. About. https://www.reinvestment.com/about/. Accessed July 19, 2017.

267 Reinvestment Fund. Impact: in numbers. https://www.reinvestment.com/impact/in-numbers/. Accessed July 19, 2017.

268 YMCA of the USA. Pioneering Healthier Communities: Lessons and Leading Practices (2009).

269 Blue Zones Project by Healthways. The Secrets of Living Longer, Better are All Around Us. https://communities.bluezonesproject.com/. Accessed July 19, 2017.

270 Voices for Healthy Kids. Building a Culture of Health for all Children: 2016 Progress Report. http://voicesforhealthykids.org/2016progress-report/. Accessed July 19, 2017.

271 Alliance for a Healthier Generation. Schools. https://www.healthiergeneration.org/take_action/schools/. Accessed June 15, 2017.

272 Madsen KA, Cotterman C, Crawford P, Stevelos J, Archibald A. Effect of the Healthy Schools Program on Prevalence of Overweight and Obesity in California Schools, 2006–2012. Prev Chronic Dis 2015;12:150020. doi:http://dx.doi.org/10.5888/pcd12.150020 .

273 The Kids' Safe and Healthful Foods Project. Overview. http://www.pewtrusts.org/en/projects/kids-safe-and-healthful-foods-project. Accessed June 15, 2017.

274 National Academy of Sciences. Review of the process to update the dietary guidelines for Americans. http://www.nationalacademies.org/hmd/Activities/Nutrition/DietaryGuidelinesforAmericans.aspx. Accessed July 19, 2017.

275 Food and Drug Administration. Food labeling; nutrition labeling of standard menu items in restaurants and similar retail food establishments. 79 Fed. Reg. 71155. Published December 1, 2014.

276 Food and Drug Administration. Food labeling; nutrition labeling of standard menu items in restaurants and similar retail food establishments; extension of compliance date; request for comments. 82 Fed. Reg. 20825. Published May 4, 2017.

277 Healthy Eating Research. Impact of menu labeling on consumer behavior: a 2008-2012 update. Published June 2013. Accessed July 19, 2017.

278 Food and Drug Administration. Changes to the nutrition facts label. https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm#dates. Updated April 25, 2017. Accessed May 8, 2017.

279 FDA delays rule requiring new nutrition facts panel on food. *Associated Press*. June 13, 2017.

280 National Prevention, Health Promotion, and Public Health Council. Annual status report. https://www.surgeongeneral.gov/priorities/prevention/2014-npc-status-report.pdf. Published July 1, 2014. Accessed July 19, 2017.

281 Bipartisan Policy Center. The Healthy Base Initiative Report, 2016. https://bipartisanpolicy.org/wp-content/uploads/2016/07/Healthy-Base-Initiative-Report.pdf. Accessed June 15, 2017.

282 Unfit to serve: Obesity is impacting national security. Centers for Disease Control and Prevention website. https://www.cdc.gov/physicalactivity/downloads/unfit-to-serve.pdf. Published May 2017. Accessed May 17, 2017.

283 Mission: Readiness. Too fat to fight: retired military leaders want junk food out of America's schools. http://cdn.missionreadiness.org/MR_Too_Fat_to_Fight-1.pdf. Published 2010. Accessed July 19, 2017.

284 Eveleigh M. Complete Streets: How is the FAST Act being implemented? Complete Streets are among its successes. Smart Growth America website. https://smartgrowthamerica.org/category/complete-streets/. Published April 6, 2017. Accessed May 10, 2017.

285 Vitalyst Health Foundation. Initiatives: Healthy community design. http://vitalysthealth.org/healthy-community-design/. Accessed April 20, 2017.

286 Vitalyst Health Foundation. Advocating for complete streets. http://vitalysthealth.org/advocating-for-complete-streets/. Accessed April 20, 2017.

287 Centers for Disease Control and Prevention. Public transportation system: introduction or expansion. https://www.cdc.gov/policy/hst/hi5/publictransportation/index.html. Updated August 5, 2016. Accessed April 19, 2017.

288 Rissel C, Curac N, Greenaway M, Bauman A. Physical activity associated with public transport use—a review and modelling of potential benefits. Int J of Enviro Research and Pub Health. 2012;9(12):2454-2478. doi:10.3390/ijerph9072454.

289 U.S. Department of Agriculture. Supplemental Nutrition Assistance Program (SNAP) quick facts. https://www.fns.usda.gov/sites/default/files/SNAP_Quick_Facts_0.pdf. Accessed May 10, 2017.

290 Center on Budget and Policy Priorities. Policy basics: introduction to SNAP. http://www.cbpp.org/sites/default/files/atoms/files/policybasics-foodstamps.pdf. Updated March 24, 2016. Accessed May 10, 2017.

291 Center on Budget and Policy Priorities. Chart Book: SNAP Helps Struggling Families Put Food on the Table. Center on Budget and Policy Priorities. http://www.cbpp.org/research/food-assistance/chart-book-snap-helps-struggling-families-put-food-on-the-table. Published March 2017. Accessed June 6, 2017.

292 Bailey JM. Supplemental Nutrition Assistance Program and rural households. Center for Rural Affairs website. https://www.ruralhealthweb.org/NRHA/media/Emerge_NRHA/PDFs/snap-and-rural-households.pdf. Published July 2014. Accessed July 19, 2017.

293 Goldman N, Ettinger de Cuba S, Sheward R, Cutts D, Coleman S. Children's HealthWatch policy action brief: food security protects Minnesota children's health. http://childrenshealthwatch.org/food-security-protects-minnesota-childrens-health/. Published February 24, 2014. Accessed July 19, 2017.

294 Bovell A, Ettinger de Cuba S, Scully K, Chilton M, Coleman S. Children's HealthWatch policy action brief: making SNAP work for families leaving poverty. http://www.childrenshealthwatch.org/wp-content/uploads/FINALPhilly-Food-to-web3.pdf. Published November 2014. Accessed July 19, 2017.

295 Hoynes HW, Whitmore Schanzenbach D, Almond D. Long run impacts of childhood access to the safety net. National Bureau of Economic Research Working Paper No. 18535. http://www.nber.org/papers/w18535. Published November 2012. Accessed July 19, 2017.

296 Sherman A, Parrott S, Trisi D. Chart Book: The War on Poverty at 50, Section 3. Center on Budget and Policy Priorities website. http://www.cbpp.org/research/chart-book-the-war-on-poverty-at-50-section-3?fa=view&id=4073#Part5. Published January 7, 2014. Accessed July 19, 2017.

297 U.S. Department of Agriculture. SNAP and farmers markets. https://www.fns.usda.gov/ebt/snap-and-farmers-markets. Updated February 28, 2017. Accessed May 10, 2017.

298 U.S. Department of Agriculture, National Institute of Food and Agriculture. Food Insecurity Nutrition Incentive (FINI) grant program. https://nifa.usda.gov/program/food-insecurity-nutrition-incentive-fini-grant-program. Accessed July 19, 2017.

299 Coleman-Jensen A, Rabbitt M, Gregory C, Singh A. Household food security in the United States in 2015. Economic Research Report No. 215. U.S. Department of Agriculture, Economic Research Service. https://www.ers.usda.gov/publications/pub-details/?pubid=79760. Published September 2016. Accessed July 19, 2017.

300 Odoms-Young, A. Understanding the food insecurity and obesity paradox. Feeding America website. http://www.feedingamerica.org/hunger-in-america/news-and-updates/hunger-blog/understanding-the-food-insecurity-and-obesity-paradox-by-dr-angela-odoms-young.html. Mar. 30, 2012. Accessed April 13, 2017.

301 Laraia BA, Siega-Riz, Gundersen C. Household food insecurity is associated with self-reported pregravid weight status, gestational weight gain, and pregnancy complications. *J Am Diet Assoc.* 2010;110(5):692-701.

302 The Food Trust. The Food Trust launches the Center for Healthy Food Access. http://thefoodtrust.org/uploads/media_items/center-launch-press-release-final.original.pdf. Published January 17, 2017. Accessed May 20, 2017.

303 Jensen JD. Can worksite nutritional interventions improve productivity and firm profitability? A literature review. *Perspectives in Pub Health.* 2011;131(4):184-192.

304 Centers for Disease Control and Prevention. Prevention status reports national summary: nutrition, physical activity, and obesity. https://wwwn.cdc.gov/psr/NationalSummary/NSNPAO.aspx. Updated March 31, 2016. Accessed May 10, 2017.

305 Lubischer, K. Corner Stores in Missouri Make Healthy Food Options Easier to Buy. Centers for Disease Control and Prevention website. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/pdf/program-highlights/hr-mo.pdf. Accessed June 13, 2017.

306 Centers for Disease Control and Prevention. Multi-component worksite obesity prevention. https://www.cdc.gov/policy/hst/hi5/worksite/index.html. Updated August 5, 2016. Accessed April 19, 2017.

307 INShape Indiana website. http://www.inshapeindiana.org/index.htm. Accessed May 16, 2017.

308 Texas Department of State Health Services. Obesity prevention program. https://www.dshs.texas.gov/obesity/. Updated October 14, 2016. Accessed May 16, 2017.

309 Texas Department of State Health Services. Work Well Texas website. http://www.wellness.state.tx.us/Default.htm. Accessed May 16, 2017.

310 Centers for Disease Control and Prevention. Texas state nutrition, physical activity, and obesity profile. https://www.cdc.gov/nccdphp/dnpao/state-local-programs/profiles/texas.html. Updated September 7, 2016. Accessed May 16, 2017.

311 Live Well Colorado. 2015 annual report. https://livewellcolorado.org/wp-content/uploads/2016/07/LiveWell-Annual-Report-2015-web-single-pages-lo-res.pdf. Accessed May 16, 2017.

312 Live Well Colorado. Live Well's school food initiative. https://livewellcolorado.org/healthy-schools/. Accessed May 16, 2017.

313 Selvin E, Parrinello CM, Sacks DB, et al. Trends in prevalence and control of diabetes in the United States, 1988-1994 and 1999-2010. *Annals of Int Med.* 2014;160(8):517-525.

314 National Center for Chronic Disease Prevention and Health Promotion, Division of Diabetes. National Diabetes Statistics Report, 2014.

315 American Diabetes Association. Statistics about diabetes. http://www.diabetes.org/diabetes-basics/statistics/. Updated July 19, 2017. Accessed July 19, 2017.

316 Centers for Disease Control and Prevention. Number of Americans with diabetes projected to double or triple by 2050. http://www.cdc.gov/media/pressrel/2010/r101022.html. Published October 22, 2010. Accessed July 19, 2017.

317 Dabelea D, Mayer-Davis EJ, Saydan S, et al. Prevalence of Type 1 and type 2 diabetes among children and adolescents From 2001 to 2009. *JAMA,* 2014;311(17): 1778-1786.

318 Roger VL, Go AS, Lloyd-Jones DM, et al. Heart disease and stroke statistics — 2011 update: a report from the American Heart Association. Circulation, 123:e18, 2011.

319 Centers for Disease Control and Prevention. Prevalence of Abnormal Lipid Levels among Youths — United States, 1999-2006. *MMWR.* 2010;59(2):29-33.

320 Centers for Disease Control and Prevention. Blood Pressure. https://www.cdc.gov/bloodpressure/index.htm. Updated March 3, 2017. Accessed July 19, 2017.

321 The Obesity Society. Obesity Statistics — U.S. Trends. http://www.obesity.org/statistics/obesity_trends.asp. Accessed April 2008.

322 National Heart, Lung, and Blood Institute. What are the health risks of overweight and obesity? http://www.nhlbi.nih.gov/health/dci/Diseases/obe/obe_risks.html. Updated February 23, 2017. Accessed July 19, 2017.

323 National Stroke Association. Minorities and Stroke: African-Americans and Stroke. http://www.stroke.org/understand-stroke/impact-stroke/minorities-and-stroke. Accessed July 19, 2017.

324 Rodriguez CY. Beautiful but deadly: Latinos' curves put them at risk. *CNN.com.* October 17, 2013. http://www.cnn.com/2013/10/15/health/latino-cardiovascular-disparities/. Accessed May 2014.

325 National Cancer Institute. Obesity and Cancer Risk. http://www.cancer.gov/cancertopics/factsheet/Risk/obesity. Updated January 17, 2017. Accessed July 19, 2017.

326 Calle EE, Rodriguez C, Walker K, et al. Overweight, obesity, and mortality from cancer in a prospective studied cohort of U.S. adults. *NEJM*. 2003;348:1625-1638.

327 Moore SC, Lee IM, Weiderpass E, et al. Association of leisure-time physical activity with risk of 26 types of cancer in 1.44 million adults. JAMA Intern Med. 2016;176(6):816-825).

328 Centers for Disease Control and Prevention. NHIS Arthritis Surveillance. http://www.cdc.gov/arthritis/data_statistics/national_data_nhis.htm#excess. Accessed June 2008.

329 American Liver Foundation. Non-alcoholic fatty liver disease. http://www.liverfoundation.org/abouttheliver/info/nafld/. Updated December 28, 2016. Accessed July 19, 2017.

330 Wang Y, Chen X, Song Y, et al. Association between obesity and kidney disease. *Kidney Int*. 2008;73(1):19-33.

331 Beydoun MA, Beydoun HA, Wang Y. Obesity and central obesity as risk factors for incident dementia and its subtypes: a systematic review and meta-analysis. *Obes Rev*. 2008;9(3):204-218.

332 Xu WL, Atti AR, Gatz M, et al. Midlife overweight and obesity increases late-life dementia risk: a population-based twin study. *Neurology*. 2011;76(18):1568-1574.

333 Strine TW, Mokdad AH, Dube SR, et al. The association of depression and anxiety with obesity and unhealthy behaviors among community-dwelling US adults. *Gen Hosp Psych*. 2007;30(2):127-137.

334 Gariepy G, Nitka D, Schmitz N. The association between obesity and anxiety disorders in the population: a systematic review and meta-analysis. *Int J of Obesity* 2010;34(3): 407-419.

335 Zhao G, Ford WE, Dhingra S, et al. Depression and anxiety among US adults: associations with body mass index. *Int J of Obesity* 2009;33(2):257-266.

336 Petry NM, Barry D, Pietrzak RH, et al. Overweight and obesity are associated with psychiatric disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychosom Med*. 2008;70(3):288–297.

337 Labad J, Price JF, Stracha MWJ, et al. Symptoms of depression but not anxiety are associated with central obesity and cardiovascular disease in people with type 2 diabetes: the Edinburgh Type 2 Diabetes Study. *Diabetologia* 2010;53(3): 467-471.

338 Pratt LA, Brody DJ. Depression and obesity in the U.S. adult household population, 2005-2010. NCHS Data Brief, No.167. http://www.cdc.gov/nchs/data/databriefs/db167.pdf. Published October 2014. Accessed April 2015.

339 Simon GE, Ludman EJ, Linde JA, et al. Association between obesity and depression in middle-aged women. *General Hosp Psych*. 2008;30(1):32-39.

340 Your Medicare coverage: obesity screening and counseling. The official U.S. government site for Medicare. https://www.medicare.gov/coverage/obesity-screening-and-counseling.html. Accessed May 11, 2017.

341 Your Medicare coverage: bariatric surgery. The official U.S. government site for Medicare. https://www.medicare.gov/coverage/bariatric-surgery.html. May 11, 2017.

342 Centers for Medicare & Medicaid Services. Reducing obesity. https://www.medicaid.gov/medicaid/quality-of-care/improvement-initiatives/reducing-obesity/index.html. Accessed May 7, 2017.

343 U.S. Preventive Services Task Force. Published recommendations. https://www.uspreventiveservicestaskforce.org/BrowseRec/Index. Updated May 2017. Accessed May 11, 2017.

344 JOIN for ME: a weight management program for kids and teens. United Health Group website. http://www.unitedhealthgroup.com/About/Programs/JoinForMe.aspx. Accessed May 19, 2017.

345 Moore JE, Hernandez Gray AA, Lanier E. Building a culture of health in childhood obesity: overview & action plan for Medicaid health plans. http://www.medicaidinnovation.org/_images/content/final_chopt_toolkit.pdf. Published 2016. Accessed May 19, 2017.

346 Foster GD, Sundal D, McDermott C, et al. Feasibility and preliminary outcomes of a scalable, community-based treatment of childhood obesity. *Pediatrics*. 2012;130:652–659. doi:10.1542/peds.2012-0344.

347 Lewis N. CMS launches Medicare, Medicaid innovation center. InformationWeek. http://www.informationweek.com/administration-systems/cms-launches-medicare-medicaid-innovation-center/d/d-id/1094266?page_number=1 Published November 17, 2010. Accessed May 12, 2017.

348 Department of Health and Human Services. 2015 annual report on the quality of care for children in Medicaid and CHIP. Medicaid.gov website. https://www.medicaid.gov/medicaid/quality-of-care/downloads/2015-child-sec-rept.pdf. Published February 2016. Accessed May 12, 2017.

349 Centers for Medicare and Medicaid Services. Medicare program; revisions to payment policies under the physician fee schedule and other revisions to part B for FY 2017; Medicare advantage bid pricing data release; Medicare Advantage and part D medical loss ratio data release; Medicare Advantage provider network requirements; expansion of Medicare diabetes prevention program model; Medicare shared savings program requirements. 81 Fed. Reg. 80170. Nov. 15, 2016.

350 Centers for Medicare & Medicaid Services. Reducing obesity. https://www.medicaid.gov/medicaid/quality-of-care/improvement-initiatives/reducing-obesity/index.html. Accessed May 7, 2017.

351 United States Breastfeeding Committee. Existing Laws: Patient Protection and Affordable Care Act (ACA). http://www.usbreastfeeding.org/p/cm/ld/fid=25. Accessed May 7, 2017.

352 U.S. Department of Labor. Fact Sheet #73: break time for nursing mothers under FLSA. Washington, D.C.: U.S. Department of Labor, 2013. http://www.dol.gov/whd/regs/compliance/whdfs73.pdf. Accessed May 7, 2017.

353 Maternal, Infant, and Early Childhood Home Visiting Program national program brief. Maternal and Child Health Bureau website. https://mchb.hrsa.gov/sites/default/files/mchb/MaternalChildHealthInitiatives/HomeVisiting/pdf/programbrief.pdf. Accessed May 3, 2017.

354 National Home Visiting Resource Center. The 2017 Home Visiting Yearbook. https://www.nhvrc.org/wp-content/uploads/NHVRC_Yearbook_2017_Final.pdf#page=6. Accessed July 19, 2017.

355 U.S. Preventive Services Task Force. Screening for obesity in children and adolescents: U.S. Preventive Services Task Force Recommendation Statement. *Pediatrics*. 2010;125:361-367.

356 Substance Abuse and Mental Health Services Administration. Adverse childhood experiences. https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences. Updated May 1, 2017. Accessed May 3, 2017.

357 Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The adverse childhood experiences (ACE) study. *Am J Prev Med*. 1998;14(4):245–258.

358 Williamson DF, Thompson, TJ, Anda, RF, Dietz WH, Felitti VJ. Body weight and obesity in adults and self-reported abuse in childhood. *Int J Obes Relat Metab Disord.* 2002;26(8):1075-82.

359 Fuemmeler BF, Dedert E, McClernon FJ, Beckham JC. Adverse childhood events are associated with obesity and disordered eating: results from a U.S. population-based survey of young adults. *J Trauma Stress.* 2009;22(4):329–333.

360 Centers for Disease Control and Prevention. Childhood Obesity Research Demonstration Projects (CORD). https://www.cdc.gov/obesity/strategies/healthcare/index.html. Updated March 22, 2017. Accessed May 7, 2017.

361 National Collaborative on Childhood Obesity Research. Childhood Obesity Research Demonstration. http://www.nccor.org/projects/childhood-obesity/. Accessed May 7, 2017.

362 Launching the National Collaborative on Education and Health. Healthy Schools Campaign website. https://healthyschoolscampaign.org/policy/education/launching-the-national-collaborative-on-education-and-health-5736/. March 6, 2014. Accessed May 8, 2017.

363 Somers S. Medicaid's "free care policy:" results from review of state Medicaid plans. National Health Law Program website. http://www.healthlaw.org/publications/browse-all-publications/Medicaid-Free-Care-Policy#.WRCDsBIrKRt. October 20, 2016. Accessed May 8, 2017.

364 Healthy Schools Campaign. Free care rule 101: what is it and what can advocates do? https://healthyschoolscampaign.org/policy/free-care-rule-101-can-advocates/. December 7, 2016. Accessed May 8, 2017.

365 American Academy of Pediatrics. Promoting Food Security for All Children. *Pediatrics.* 2015;135(5):e1431-e1438. doi: 10.1542/peds.2015-3301.

366 Wholesome Wave. Helping families eat their veggies, one prescription at a time. http://www.wholesomewave.org/news/helping-families-eat-their-veggies-one-prescription-time. September 8, 2016. Accessed May 11, 2017.

367 Landro L. Doctors dole out prescriptions for exercise. *The Wall Street Journal.* December 8, 2014. http://www.wsj.com/articles/doctors-dole-out-prescriptions-for-exercise-1418080961. Accessed August 2016.

368 Sallis RE, Matuszak JM, Baggish AL, et al. Call to action on making physical activity assessment and prescription a medical standard of care. *Curr Sports Med Rep.* 2016;15(3):207-214. doi:10.1249/JSR.0000000000000249.

369 Health Care Without Harm. Healthy food in health care pledge. https://noharm-uscanada.org/issues/us-canada/healthy-food-health-care-pledge. Accessed May 11, 2017.

370 *Health Affairs.* Nonprofit hospitals' community benefit requirements: under the Affordable Care Act, many nonprofit hospitals must meet new requirements to retain their tax-exempt status. http://healthaffairs.org/healthpolicybriefs/brief_pdfs/healthpolicybrief_153.pdf. Published Feb. 25, 2016. Accessed May 12, 2017.

371 Joint Committee on Taxation. Present law and background relating to the tax-exempt status of charitable hospitals. September 12, 2006. JCX-40-06.

372 The STOP Obesity Alliance. Community Benefit and Obesity Programming: Guidance and Opportunities for Nonprofit Hospitals. http://stopobesityalliance.org/wp-content/themes/stopobesityalliance/pdfs/STOPObesityAlliance-Community-Benefit-and-Obesity-Programming.pdf. Accessed May 17, 2017.

373 Alberti P, Sutton K, Baer I. Community health needs assessments: engaging community partners to improve health. *Analysis in Brief.* 2014;14(11). https://www.aamc.org/download/419276/data/dec2014communityhealth.pdf. Accessed May 17, 2017.

374 Rosenbaum S, Kindig DA, Bao J, Byrnes MK, O'Laughlin C. The value of the nonprofit hospital tax exemption was $24.6 billion in 2011. *Health Affairs.* 2015;34(7):1225-1233. doi: 10.1377/hlthaff.2014.1424.

375 About. Healthy by Design website. http://www.healthybydesignyellowstone.org/about/. Accessed May 17, 2017.

376 A community priority: promote a healthy lifestyle with physical activity and nutrition content. Healthy By Design website. http://www.healthybydesignyellowstone.org/community-goals/healthy-weight/. Accessed May 17, 2017.

377 Gardeners' Market. Healthy By Design website. http://www.healthybydesignyellowstone.org/gardenersmarket/. Accessed May 17, 2017.

378 Centers for Disease Control and Prevention. National Diabetes Prevention Program infographic. https://www.cdc.gov/diabetes/prevention/pdf/ndpp_infographic.pdf. Accessed May 12, 2017.

379 National Diabetes Information Clearinghouse. Diabetes Prevention Program (DPP). National Institute of Diabetes and Digestive and Kidney Diseases website. https://www.niddk.nih.gov/about-niddk/research-areas/diabetes/diabetes-prevention-program-dpp/Documents/DPP_508.pdf. Published October 2008. Accessed May 12, 2017.

380 Community Preventive Services Task Force. Task force finding and rationale statement. https://www.thecommunityguide.org/sites/default/files/assets/Diabetes-Prevention-Community-Health-Workers.pdf. Accessed April 10, 2017.

381 Wabitsch M, Moss A, Kromeyer-Hauschild K. Unexpected plateauing of childhood obesity rates in developed countries. *BMC Med.* 2014;12:17. doi:10.1186/1741-7015-12-17.

382 Farley TA, Dowell D. Preventing childhood obesity: what are we doing right? *Am J Pub Health.* 2014;104(9):1579-83. doi:10.2105/AJPH.2014.302015

383 Trust for America's Health and Robert Wood Johnson Foundation. *F as in Fat: How Obesity Threatens America's Future 2012.* Washington, D.C.: Trust for America's Health. http://www.tfah.org/report/100/. Published September 2012. Accessed July 19, 2017.

384 Wang, Y, et al. Will all America become overweight or obese? Estimating the progression and cost of the US obesity epidemic. *Obesity.* 2008;16: 2323-2330. doi:10.1038/oby.2008.351.

385 Wang, Y, et al. Will All America Become Overweight or Obese? Estimating the progression and cost of the US Obesity Epidemic. *Obesity.* Silver Spring. 2008, 16: 2323-2330. 10.1038/oby.2008.351.

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