ISSUE REPORT

F as in Fat: 2012

HOW OBESITY THREATENS AMERICA'S FUTURE

Trust for America's Health

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PROTECTING PEOPLE.

ACKNOWLEDGEMENTS

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Introduction

The following is a letter from Risa Lavizzo-Mourey, MD, MBA, president and CEO of the Robert Wood Johnson Foundation, and Jeff Levi, PhD, executive director of Trust for America's Health.

The future health of the United States is at a crossroads, due in large part to the obesity epidemic. Each year, the Trust for America's Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) issue *F as in Fat: How Obesity Threatens America's Future* to examine strategies for addressing the obesity crisis. In this ninth edition of the report, TFAH and RWJF also commissioned a new study to look at how obesity could impact the future health and wealth of our nation.

This new analysis provides a picture of two possible futures for the health of Americans over the next 20 years:

- If obesity rates continue on their current trajectory, it's estimated that:
  - Obesity rates for adults could reach or exceed 44 percent in every state and exceed 60 percent in 13 states;
  - The number of new cases of type 2 diabetes, coronary heart disease and stroke, hypertension and arthritis could increase 10 times between 2010 and 2020 — and then double again by 2030; and
  - Obesity-related health care costs could increase by more than 10 percent in 43 states and by more than 20 percent in nine states.
- But, if we could lower obesity trends by reducing the average adult BMI (body mass index) by only 5 percent in each state, we could spare millions of Americans from serious health problems and save billions of dollars in health spending — between 6.5 percent and 7.8 percent in costs in almost every state.[1]

As this year's report details, we have seen important inroads made toward preventing and reducing obesity around the country, especially among children. We know that real changes are possible. But we also have found that efforts will need to be intensified if we are going to achieve a major reduction in obesity and related health problems.

The promising results we see in some cities and states pave the way for more intensive efforts. Multiple studies and reports have demonstrated that the cities and states that took an early and comprehensive approach to preventing obesity have demonstrated progress toward reversing the epidemic. For instance, in California, overall rates of overweight and obesity among fifth-, seventh- and ninth-graders decreased by 1.1 percent from 2005 to 2010, and, in New York City, obesity in grades K-8 decreased 5.5 percent from 2006-07 to 2010-11.[2, 3] In Mississippi, combined rates of overweight and obesity among all public elementary school students dropped from 43 percent in 2005 to 37.3 percent in 2011.[4]

While these cases showed that pockets of progress are possible, they also showed that children who face the biggest obstacles to healthy choices and are at greatest risk for obesity, such as children in lower-income families and Black and Hispanic children, did not share equally in progress. That's why a study released just this month tells the best story of all.

New data from Philadelphia show the city reduced obesity rates in ways that also helped to close the disparities gap. In addition to achieving an overall decline in obesity rates among public school students (from 21.5 percent of all public school students in the 2006-2007 school year to 20.5 percent in the 2009-2010 school year), the city made the largest improvements among Black male and Hispanic female students. For Black male students, rates declined from 20.66 percent to 19.08 percent, and rates for Hispanic female students declined from 22.26 percent to 20.61 percent within the same timeframe. We need to learn from the City of Brotherly Love and spread the actions and policies that work so all children can enjoy the benefits of better health.

These pockets of progress around the country are showing the positive impact that many policies and programs are having — but they need to be taken to scale. Fortunately, we know a lot about what it will take to bend the obesity curve in America.

- Stepping up the investment in evidence-based, locally implemented prevention programs could help achieve results. The U.S. Centers for Disease Control and Prevention (CDC), The New York Academy of Medicine (NYAM) and others have identified a range of programs that have proved effective in reducing obesity and obesity-related disease levels by 5 percent or — in some cases — more. For example, a study of the Diabetes Prevention Program found that randomly selected participants reduced their diabetes risk by 16 percent for every kilogram (a little more than 2 pounds, 3 ounces) of weight they lost over a follow-up period of approximately three years. Another study reported the effects of an educational and mass media campaign developed by the Heart Health Program in Pawtucket, R.I. Five years into the intervention, the risks for cardiovascular disease and coronary heart disease also had decreased by 16 percent for randomly selected participants.[5]

- Recalibrating our goals could help us dramatically slow the national growth in obesity rates by preventing adults from gaining additional weight (including individuals who are currently obese, overweight and at a healthy weight), and by preventing kids from becoming overweight or obese in the first place. The research shows that a strategy of primary prevention that focuses on avoiding further gain can help improve health and reduce costs, and is a realistic and achievable goal. For example, in 2010, researchers reviewed 36 studies of corporate wellness programs, including those with successful weight-loss elements, and calculated that employers saved an average of $6 for every $1 spent. Researchers also noted that other benefits of such programs likely would include improved health.[6]

F as in Fat is an annual reminder of how critical it is to provide everyone living in our country, particularly our nation's children, with the opportunity to be as healthy as they can be. The forecasting study in this year's report demonstrates what's at stake.

If we take action, the number of Americans, particularly children, we could spare from type 2 diabetes, heart disease, cancer and other health problems is striking, and the savings in health care costs and increased productivity would have a real and positive impact on the economy. Investing in prevention today means a healthier, more productive and brighter future for our country and our children.

BACKGROUND ON OBESITY AND BODY MASS INDEX (BMI)

Currently, more than 35 percent of adults are obese.[7] Obesity is defined as an excessively high amount of body fat or adipose tissue in relation to lean tissue. An adult is considered obese if his or her body mass index (BMI) is 30 or higher.

The new modeling study in this year's report projects what obesity rates and the consequences for disease rates and health care costs could be if the average state BMI continued to grow based on current trends for each state's population over the next 20 years.

The study also forecasts what would happen if average BMI in the state was reduced by 5 percent, which could translate to a 9 percent to 14 percent reduction in the states' obesity rates by 2030 depending on the state.

For example, on an individual level, reducing the BMI of an average adult by 1 percent would be equivalent to a weight loss of approximately 2.2 pounds.[8] According to the CDC, the average American male over age 20 weighs 194.7 pounds and the average American woman over age 20 weighs 164.7 pounds.[9]

CHILDHOOD OBESITY: WHAT'S AT STAKE

Childhood obesity rates have climbed dramatically in the past 30 years. In 1980, the obesity rate for children ages 6 to 11 was 6.5 percent. By 2008, the rate grew to 19.6 percent. And, in 1980, 5 percent of teens ages 12 to 19 were obese. That rate climbed to 17 percent (approximately 12.5 million children and teens) by 2010.[10]

This change is having a major impact on the health of children and youths. If we don't reverse the epidemic, the current generation of young people could be the first in U.S. history to live sicker and die younger than their parents' generation. Nearly one-third of children and teens are currently obese or overweight, which is putting them at higher risks for developing a range of diseases and developing them earlier in life.[11]

Children who are obese are more than twice as likely to die before the age of 55 as children whose BMI is in the healthy range.[12] Around 70 percent of obese youths have at least one additional risk factor for cardiovascular disease, such as elevated total cholesterol, triglycerides, insulin or blood pressure.[13] Overweight and obese children and teens also are at higher risk for other health conditions, including asthma and sleep-disordered breathing.[14, 15] Children who are obese after the age of 6 are 50 percent more likely to be obese as adults, and among overweight tweens and teens ages 10 to 15, 80 percent were obese at age 25.[16, 17]

Being obese or overweight also can have a major social and emotional impact on children and youths. For instance, studies have found that overweight and obese children and teens face a higher risk for more severe and frequent bullying, are rejected by their peers more often, are chosen less as friends and are generally not as well-liked as healthy-weight children. Studies also have found that weight-based teasing is related to increased susceptibility to depression.[18, 19, 20]

Reducing and preventing childhood obesity is critical to improving the future health of the country, and consequently would help to lower health care costs and improve productivity. What's more, research supports the concept that focusing on children and getting them on a healthy path early in life is one of the areas where the greatest successes can be achieved.

For instance, a recent study from the *American Journal of Preventive Medicine* found that eliminating just 41 calories a day per person could halt rising body weight trends in children and teens ages 2 to 19, and eliminating 161 calories per day per person could reduce childhood obesity to 5 percent by 2020.[21] Researchers have created a tool to help estimate the impact of nutrition or physical activity interventions on specific populations. The tool is available at http://caloriccalculator.org.

Programs around the country are helping to change our culture to encourage healthier nutrition and increased physical activity. Some areas where there have been concerted efforts to prevent and reduce childhood obesity are demonstrating promising results. Initiatives ranging from Let's Move to the Alliance for a Healthier Generation to the Y are all having an impact and leading to positive change.

Reversing the childhood obesity crisis is at the core of the future health and wealth of the country. The evidence shows that the goal is achievable, but only if there is a sufficient investment in effective programs and policies.

Drive Thru

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F AS IN FAT 2012 MAJOR FINDINGS

In August 2012, the Centers for Disease Control and Prevention released the latest rates of adult obesity in the United States. In 2011:

- Twelve states had an adult obesity rate above 30 percent.
- Mississippi had the highest rate of obesity at 34.9 percent, while Colorado had the lowest rate at 20.7 percent.
- Twenty-six of the 30 states with the highest obesity rates are in the Midwest and South.
- All 10 of the states with the highest rates of type 2 diabetes and hypertension are in the South.

TWO FUTURES FOR AMERICA'S HEALTH: PROJECTIONS FOR OBESITY, DISEASES AND COSTS

The new analysis commissioned by TFAH and RWJF, and conducted by the National Heart Forum (NHF) was based on a peer-reviewed model published in *The Lancet*. The analysis includes projections for potential rates of obesity, health problems and health care costs in the year 2030 if current trends continued, and it examined how reducing the average body mass index (BMI) in the state by 5 percent could lower obesity rates and decrease costs. [22]

	2030: Obesity on Current Track	2030: BMI Reduced by 5 Percent
Obesity Rates	■ More than 60 percent of people could be obese in 13 states; ■ More than half of people could be obese in 39 states; ■ In all 50 states, more than 44 percent of people could be obese.	■ No state would have an obesity rate above 60 percent; ■ More than half of people would be obese in 24 states; ■ Two states would have obesity rates under 40 percent.
Obesity-Related Disease Rates	By 2030, for every 100,000 people, the number of new Americans who could develop the five top diseases associated with obesity could range from: ■ Between 8,658 in Utah to 15,208 in West Virginia (average for all states: 12,127) for new cases of type 2 diabetes ■ Between 16,730 in Utah to 35,519 in West Virginia (average for all states: 26,573) for new cases of coronary heart disease and stroke ■ Between 17,790 in Utah to 30,508 in Maine (average for all states: 24,923) for new cases of hypertension ■ Between 12,504 in Utah to 18,725 in Maine (average for all states: 16,152) for new cases of arthritis ■ Between 2,468 in Utah to 4,897 in Maine (average for all states: 3,781) for new cases of obesity-related cancer	Thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension and arthritis could be avoided in all states; More than 100 cases of obesity-related cancer per 100,000 people could be prevented in all states; States could avoid — per 100,000 people: ■ Between 1,810 and 3,213 new cases of type 2 diabetes ■ Between 1,427 and 2,512 new cases of hypertension ■ Between 1,339 and 2,898 new cases of coronary heart disease and stroke ■ Between 849 and 1,382 new cases of arthritis ■ Between 101 and 277 new cases of cancer.
Obesity-Related Health Care Costs	■ Nine states could see increases of more than 20 percent; ■ 16 states and Washington, D.C., could expect increases between 15-20 percent; ■ 18 states could expect increases between 10-15 percent; ■ Only seven states could have increases lower than 10 percent.	■ Every state except Florida would save between 6.5 and 7.8 percent on obesity-related health costs compared with 2030 projected costs if rates continue to increase at their current pace. (Florida would save 2.1 percent).

Obesity Rates and Related Trends

More than two-thirds (68 percent) of American adults are either overweight or obese.[23] Adult obesity rates have more than doubled — from 15 percent in 1980 to 35 percent in 2010, based on a national survey. [24, 25]

Rates of obesity among children ages 2–19 have more than tripled since 1980.[26,27] According to the most recent National Health and Nutrition Examination Survey (NHANES), 16.9 percent of children ages 2–19 are obese, and 31.7 percent are overweight or obese.[28] This translates to more than 12 million children and adolescents who are obese and more than 23 million who are either obese or overweight. Researchers at the U.S. Centers for Disease Control and Prevention (CDC) report that, during the period between 1999 and 2008, there was no statistically significant change in the number of children and adolescents with high BMI-for-age, except among the very heaviest boys ages 6–19.[29]

A. ADULT OBESITY AND OVERWEIGHT RATES

In August 2012, CDC released the latest rates of obesity in the states. Twelve states currently have an adult obesity rate over 30 percent. Mississippi had the highest rate of obesity at 34.9 percent, while Colorado had the lowest rate at 20.7 percent. Twenty-six of the 30 states with the highest rates of obesity are in the South and Midwest. Northeastern and Western states comprise most of the states with the lowest rates of obesity.

The U.S. Department of Health and Human Services (HHS) set a national goal to reduce adult obesity rates to 30 percent in every state by the year 2020. Healthy People 2020 also sets a goal of increasing the percentage of people at a healthy weight (BMI <25) from 30.8 percent to 33.9 percent by 2020.

2011 Obesity Rates

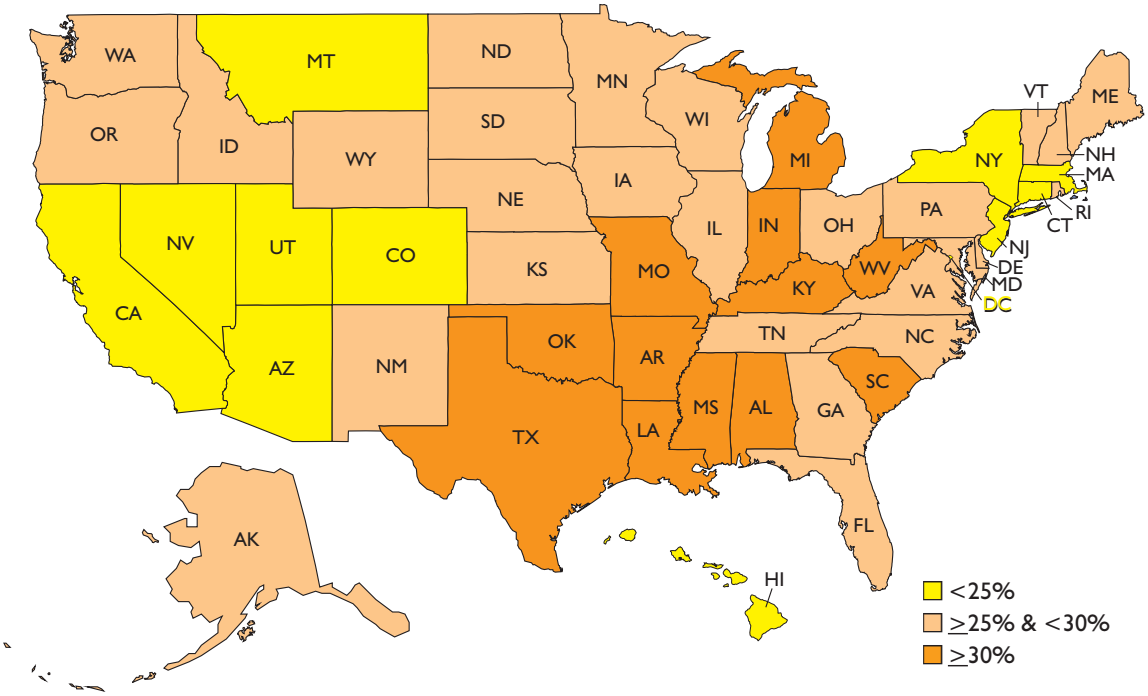


CHART ON OBESITY AND OVERWEIGHT RATES

	ADULTS								
	Obesity		Overweight & Obese	Diabetes		Physical Inactivity		Hypertension	
States	2011 Percentage (95% Conf Interval)	Ranking	2011 Percentage (95% Conf Interval)	2011 Percentage (95% Conf Interval)	Ranking	2011 Percentage (95% Conf Interval)	Ranking	2011 Percentage (95% Conf Interval)	Ranking
Alabama	32.0% (+/- 1.5)	4	66.8% (+/- 1.6)	11.8% (+/- 0.9)	4	32.6% (+/- 1.6)	5	40.0% (+/- 1.6)	1
Alaska	27.4% (+/- 2.2)	28	66.5% (+/- 2.4)	7.9% (+/- 1.4)	46	22.0% (+/- 2.0)	41	29.4% (+/- 2.1)	37
Arizona	24.7% (+/- 2.1)	40	62.5% (+/- 2.4)	9.5% (+/- 1.3)	25	24.2% (+/- 2.2)	34	28.0% (+/- 2.0)	47
Arkansas	30.9% (+/- 2.2)	7	65.0% (+/- 2.3)	11.2% (+/- 1.2)	6	30.9% (+/- 2.1)	7	35.7% (+/- 2.1)	8
California	23.8% (+/- 0.9)	46	60.2% (+/- 1.1)	8.9% (+/- 0.6)	34	19.1% (+/- 0.9)	49	27.8% (+/- 0.9)	48
Colorado	20.7% (+/- 1.1)	51	56.1% (+/- 1.3)	6.7% (+/- 0.6)	50	16.5% (+/- 1.0)	51	24.9% (+/- 1.0)	50
Connecticut	24.5% (+/- 1.5)	42	59.6% (+/- 1.8)	9.3% (+/- 0.9)	31	25.3% (+/- 1.6)	28	29.7% (+/- 1.5)	36
Delaware	28.8% (+/- 1.9)	19	63.9% (+/- 2.2)	9.7% (+/- 1.1)	22	27.0% (+/- 1.9)	13	34.6% (+/- 1.9)	10
D.C.	23.7% (+/- 1.9)	47	52.8% (+/- 2.4)	9.1% (+/- 1.1)	33	19.8% (+/- 1.8)	47	29.9% (+/- 2.0)	33
Florida	26.6% (+/- 1.3)	32	63.4% (+/- 1.4)	10.4% (+/- 0.8)	11	26.9% (+/- 1.3)	16	34.2% (+/- 1.3)	12
Georgia	28.0% (+/- 1.4)	24	62.7% (+/- 1.6)	10.1% (+/- 0.7)	18	26.8% (+/- 1.4)	18	32.3% (+/- 1.3)	18
Hawaii	21.8% (+/- 1.5)	50	55.8% (+/- 1.8)	8.4% (+/- 0.8)	38	21.3% (+/- 1.5)	45	28.7% (+/- 1.5)	43
Idaho	27.0% (+/- 1.8)	30	62.3% (+/- 2.1)	9.4% (+/- 1.0)	29	21.4% (+/- 1.7)	44	29.4% (+/- 1.7)	37
Illinois	27.1% (+/- 1.8)	29	64.1% (+/- 2.0)	9.7% (+/- 1.1)	22	25.2% (+/- 1.7)	31	31.0% (+/- 1.8)	24
Indiana	30.8% (+/- 1.4)	8	65.7% (+/- 1.5)	10.2% (+/- 0.8)	15	29.3% (+/- 1.4)	9	32.7% (+/- 1.3)	15
Iowa	29.0% (+/- 1.4)	18	64.8% (+/- 1.5)	8.2% (+/- 0.7)	43	25.9% (+/- 1.3)	27	29.9% (+/- 1.3)	33
Kansas	29.6% (+/- 0.9)	13	64.4% (+/- 0.9)	9.5% (+/- 0.5)	25	26.8% (+/- 0.8)	18	30.8% (+/- 0.8)	27
Kentucky	30.4% (+/- 1.5)	10	66.6% (+/- 1.6)	10.8% (+/- 0.8)	9	29.4% (+/- 1.5)	8	37.9% (+/- 1.5)	5
Louisiana	33.4% (+/- 1.5)	2	67.6% (+/- 1.5)	11.8% (+/- 0.9)	4	33.8% (+/- 1.5)	4	38.3% (+/- 1.4)	4
Maine	27.8% (+/- 1.1)	25	65.0% (+/- 1.2)	9.6% (+/- 0.6)	24	23.0% (+/- 1.0)	38	32.2% (+/- 1.0)	19
Maryland	28.3% (+/- 1.4)	22	64.4% (+/- 1.6)	9.4% (+/- 0.8)	29	26.1% (+/- 1.4)	26	31.3% (+/- 1.4)	21
Massachusetts	22.7% (+/- 1.0)	49	59.4% (+/- 1.2)	8.0% (+/- 0.5)	45	23.5% (+/- 1.0)	37	29.2% (+/- 1.0)	40
Michigan	31.3% (+/- 1.3)	5	65.5% (+/- 1.4)	10.0% (+/- 0.8)	19	23.6% (+/- 1.2)	36	34.2% (+/- 1.3)	12
Minnesota	25.7% (+/- 1.1)	36	62.5% (+/- 1.2)	7.3% (+/- 0.6)	49	21.8% (+/- 1.0)	43	26.3% (+/- 1.0)	49
Mississippi	34.9% (+/- 1.4)	1	68.9% (+/- 1.5)	12.3% (+/- 0.8)	1	36.0% (+/- 1.5)	1	39.2% (+/- 1.4)	2
Missouri	30.3% (+/- 1.7)	12	64.8% (+/- 1.8)	10.2% (+/- 1.0)	15	28.5% (+/- 1.6)	10	34.3% (+/- 1.6)	11
Montana	24.6% (+/- 1.4)	41	60.3% (+/- 1.5)	7.9% (+/- 0.7)	46	24.4% (+/- 1.3)	33	30.1% (+/- 1.3)	31
Nebraska	28.4% (+/- 0.8)	21	64.9% (+/- 0.9)	8.4% (+/- 0.5)	38	26.3% (+/- 0.8)	22	28.5% (+/- 0.8)	45
Nevada	24.5% (+/- 2.1)	42	60.3% (+/- 2.4)	10.4% (+/- 1.6)	11	24.1% (+/- 2.2)	35	30.9% (+/- 2.2)	25
New Hampshire	26.2% (+/- 1.5)	35	61.6% (+/- 1.8)	8.7% (+/- 0.8)	37	22.5% (+/- 1.5)	40	30.6% (+/- 1.5)	28
New Jersey	23.7% (+/- 1.1)	47	61.5% (+/- 1.3)	8.8% (+/- 0.6)	36	26.4% (+/- 1.1)	21	30.6% (+/- 1.1)	28
New Mexico	26.3% (+/- 1.3)	34	62.3% (+/- 1.4)	10.0% (+/- 0.8)	19	25.3% (+/- 1.3)	28	28.5% (+/- 1.2)	45
New York	24.5% (+/- 1.4)	42	60.5% (+/- 1.6)	10.4% (+/- 0.9)	11	26.2% (+/- 1.4)	24	30.6% (+/- 1.4)	28
North Carolina	29.1% (+/- 1.5)	17	65.2% (+/- 1.5)	10.8% (+/- 0.8)	9	26.7% (+/- 1.4)	20	32.4% (+/- 1.3)	17
North Dakota	27.8% (+/- 1.6)	25	63.8% (+/- 1.9)	8.3% (+/- 0.8)	42	27.0% (+/- 1.6)	13	28.9% (+/- 1.5)	41
Ohio	29.6% (+/- 1.4)	13	65.8% (+/- 1.4)	10.0% (+/- 0.8)	19	27.0% (+/- 1.3)	13	32.7% (+/- 1.3)	15
Oklahoma	31.1% (+/- 1.4)	6	65.4% (+/- 1.5)	11.1% (+/- 0.8)	8	31.2% (+/- 1.4)	6	35.5% (+/- 1.4)	9
Oregon	26.7% (+/- 1.6)	31	61.6% (+/- 1.7)	9.3% (+/- 0.9)	31	19.7% (+/- 1.5)	48	29.8% (+/- 1.5)	35
Pennsylvania	28.6% (+/- 1.3)	20	64.5% (+/- 1.4)	9.5% (+/- 0.7)	25	26.3% (+/- 1.2)	22	31.4% (+/- 1.2)	20
Rhode Island	25.4% (+/- 1.6)	37	62.5% (+/- 1.8)	8.4% (+/- 0.8)	38	26.2% (+/- 1.5)	24	33.0% (+/- 1.5)	14
South Carolina	30.8% (+/- 1.3)	8	65.9% (+/- 1.4)	12.0% (+/- 0.8)	3	27.2% (+/- 1.3)	11	36.4% (+/- 1.3)	7
South Dakota	28.1% (+/- 1.9)	23	64.5% (+/- 2.2)	9.5% (+/- 1.1)	25	26.9% (+/- 2.0)	16	30.9% (+/- 1.9)	25
Tennessee	29.2% (+/- 2.5)	15	66.5% (+/- 2.8)	11.2% (+/- 1.5)	6	35.2% (+/- 2.7)	2	38.6% (+/- 2.6)	3
Texas	30.4% (+/- 1.4)	10	65.9% (+/- 1.5)	10.2% (+/- 0.8)	15	27.2% (+/- 1.3)	11	31.3% (+/- 1.3)	21
Utah	24.4% (+/- 1.1)	45	58.9% (+/- 1.3)	6.7% (+/- 0.5)	50	18.9% (+/- 1.0)	50	22.9% (+/- 0.9)	51
Vermont	25.4% (+/- 1.4)	37	59.8% (+/- 1.6)	7.7% (+/- 0.7)	48	21.0% (+/- 1.3)	46	29.3% (+/- 1.4)	39
Virginia	29.2% (+/- 1.7)	15	63.4% (+/- 1.9)	10.4% (+/- 1.1)	11	25.0% (+/- 1.0)	32	31.2% (+/- 1.6)	23
Washington	26.5% (+/- 1.2)	33	61.0% (+/- 1.4)	8.9% (+/- 0.7)	34	21.9% (+/- 1.2)	42	30.1% (+/- 1.2)	31
West Virginia	32.4% (+/- 1.6)	3	69.0% (+/- 1.7)	12.1% (+/- 1.0)	2	35.1% (+/- 1.6)	3	37.1% (+/- 1.6)	6
Wisconsin	27.7% (+/- 2.0)	27	64.1% (+/- 2.2)	8.4% (+/- 1.0)	38	22.6% (+/- 1.8)	39	28.9% (+/- 1.8)	41
Wyoming	25.0% (+/- 1.6)	39	61.2% (+/- 1.8)	8.2% (+/- 1.0)	43	25.3% (+/- 1.6)	28	28.7% (+/- 1.6)	43

Source: Behavior Risk Factor Surveillance System (BRFSS), CDC.

AND RELATED HEALTH INDICATORS IN THE STATES

CHILDREN AND ADOLESCENTS

	2011 YRBS			2010 PedNSS	2007 National Survey of Children's Health		
States	Percentage of Obese High School Students (95% Conf Interval)	Percentage of Overweight High School Students (95% Conf Interval)	Percentage of High School Students Who Were Physically Active At Least 60 Minutes on All 7 Days	Percentage of Obese Low-Income Children Ages 2-5	Percentage of Overweight and Obese Children Ages 10-17	Ranking	Percentage Participating in Vigorous Physical Activity Every Day Ages 6-17
Alabama	17.0 (+/- 3.9)	15.8 (+/- 3.0)	28.4 (+/- 4.3)	14.1%	36.1% (+/- 4.6)	6	36.5%
Alaska	11.5 (+/- 2.0)	14.4 (+/- 2.1)	21.3 (+/- 2.8)	N/A	33.9% (+/- 4.4)	12	30.4%
Arizona	10.9 (+/- 1.9)	13.9 (+/- 1.8)	25.0 (+/- 2.0)	14.2%	30.6% (+/- 4.9)	26	28.5%
Arkansas	15.2 (+/- 2.1)	15.4 (+/- 2.1)	26.7 (+/- 3.3)	14.1%	37.5% (+/- 4.2)	2	30.7%
California	N/A	N/A	N/A	17.2%	30.5% (+/- 6.4)	28	30.0%
Colorado	7.3 (+/- 2.4)	10.7 (+/- 2.5)	29.2 (+/- 2.8)	9.1%	27.2% (+/- 5.1)	42	27.6%
Connecticut	12.5 (+/- 2.7)	14.1 (+/- 1.9)	26.0 (+/- 3.1)	15.8%	25.7% (+/- 3.7)	45	22.1%
Delaware	12.2 (+/- 1.5)	16.9 (+/- 2.1)	24.9 (+/- 2.1)	N/A	33.2% (+/- 4.1)	16	31.1%
D.C.	N/A	N/A	N/A	13.7%	35.4% (+/- 4.8)	9	26.3%
Florida	11.5 (+/- 2.3)	13.6 (+/- 1.1)	25.8 (+/- 1.4)	13.4%	33.1% (+/- 6.1)	17	34.1%
Georgia	15.0 (+/- 2.3)	15.8 (+/- 2.2)	25.2 (+/- 3.0)	13.5%	37.3% (+/- 5.6)	3	29.4%
Hawaii	13.2 (+/- 2.4)	13.4 (+/- 1.6)	21.0 (+/- 2.3)	9.1%	28.5% (+/- 4.1)	37	28.0%
Idaho	9.2 (+/- 1.6)	13.4 (+/- 1.8)	25.9 (+/- 3.4)	11.4%	27.5% (+/- 3.9)	41	25.0%
Illinois	11.6 (+/- 1.7)	14.5 (+/- 1.7)	23.2 (+/- 2.3)	14.6%	34.9% (+/- 4.1)	10	26.1%
Indiana	14.7 (+/- 1.8)	15.5 (+/- 2.1)	24.2 (+/- 2.7)	14.2%	29.9% (+/- 4.3)	31	31.3%
Iowa	13.2 (+/- 3.2)	14.5 (+/- 2.0)	29.1 (+/- 3.3)	14.7%	26.5% (+/- 4.3)	44	27.8%
Kansas	10.2 (+/- 1.5)	13.9 (+/- 1.8)	30.2 (+/- 2.5)	13.0%	31.1% (+/- 4.2)	22	25.2%
Kentucky	16.5 (+/- 2.5)	15.4 (+/- 1.6)	21.9 (+/- 2.5)	15.6%	37.1% (+/- 4.1)	4	25.9%
Louisiana	16.1 (+/- 2.6)	19.5 (+/- 4.5)	24.2 (+/- 3.5)	12.5%	35.9% (+/- 4.6)	7	34.0%
Maine	11.5 (+/- 1.4)	14.0 (+/- 1.1)	23.7 (+/- 1.7)	14.3%	28.2% (+/- 3.8)	39	32.7%
Maryland	12.0 (+/- 1.7)	15.4 (+/- 2.0)	21.4 (+/- 2.8)	15.7%	28.8% (+/- 4.2)	36	30.7%
Massachusetts	9.9 (+/- 1.8)	14.6 (+/- 1.4)	22.4 (+/- 2.6)	16.1%	30.0% (+/- 4.6)	30	26.6%
Michigan	12.1 (+/- 1.6)	15.3 (+/- 2.4)	27.0 (+/- 2.7)	13.3%	30.6% (+/- 4.3)	26	33.1%
Minnesota	N/A	N/A	N/A	12.7%	23.1% (+/- 4.0)	50	34.8%
Mississippi	15.8 (+/- 2.2)	16.5 (+/- 2.0)	25.9 (+/- 3.0)	13.7%	44.4% (+/- 4.3)	1	29.0%
Missouri	N/A	N/A	N/A	13.6%	31.0% (+/- 4.1)	23	29.6%
Montana	8.5 (+/- 1.1)	12.9 (+/- 1.4)	28.7 (+/- 1.9)	12.2%	25.6% (+/- 3.7)	48	31.5%
Nebraska	11.6 (+/- 1.2)	13.6 (+/- 1.3)	28.0 (+/- 1.8)	13.8%	31.5% (+/- 4.6)	21	26.2%
Nevada	N/A	N/A	N/A	13.6%	34.2% (+/- 5.4)	11	24.4%
New Hampshire	12.1 (+/- 1.7)	14.1 (+/- 2.2)	N/A	14.2%	29.4% (+/- 3.9)	35	29.0%
New Jersey	11.0 (+/- 2.0)	15.2 (+/- 1.9)	28.0 (+/- 2.8)	17.3%	31.0% (+/- 4.5)	23	29.1%
New Mexico	12.8 (+/- 2.1)	14.4 (+/- 1.2)	26.3 (+/- 1.6)	11.7%	32.7% (+/- 5.0)	19	27.0%
New York	11.0 (+/- 1.3)	14.7 (+/- 1.0)	25.1 (+/- 2.4)	14.5%	32.9% (+/- 4.4)	18	27.6%
North Carolina	12.9 (+/- 3.2)	15.9 (+/- 2.0)	26.0 (+/- 2.4)	15.5%	33.5% (+/- 4.5)	14	38.5%
North Dakota	11.0 (+/- 1.7)	14.5 (+/- 2.1)	21.8 (+/- 1.9)	14.1%	25.7% (+/- 3.3)	45	27.1%
Ohio	14.7 (+/- 3.1)	15.3 (+/- 2.3)	25.4 (+/- 3.5)	12.4%	33.3% (+/- 4.7)	15	32.1%
Oklahoma	16.7 (+/- 3.0)	16.3 (+/- 2.8)	33.1 (+/- 4.1)	N/A	29.5% (+/- 4.1)	33	29.6%
Oregon	N/A	N/A	N/A	15.1%	24.3% (+/- 3.9)	49	27.9%
Pennsylvania	N/A	N/A	N/A	12.0%	29.7% (+/- 4.8)	32	35.4%
Rhode Island	10.8 (+/- 2.3)	14.9 (+/- 2.1)	26.7 (+/- 4.0)	15.5%	30.1% (+/- 4.2)	29	27.6%
South Carolina	13.3 (+/- 3.0)	16.3 (+/- 2.6)	25.8 (+/- 2.9)	12.8%	33.7% (+/- 4.2)	13	31.2%
South Dakota	9.8 (+/- 2.0)	14.1 (+/- 1.4)	27.3 (+/- 3.5)	16.1%	28.4% (+/- 3.9)	38	25.3%
Tennessee	15.2 (+/- 1.6)	17.3 (+/- 1.9)	30.2 (+/- 2.8)	14.5%	36.5% (+/- 4.3)	5	29.8%
Texas	15.6 (+/- 2.0)	16.0 (+/- 1.4)	27.1 (+/- 2.7)	15.3%	32.2% (+/- 5.6)	20	28.9%
Utah	8.6 (+/- 1.7)	12.2 (+/- 2.0)	20.8 (+/- 2.6)	8.7%	23.1% (+/- 4.2)	50	17.6%
Vermont	9.9 (+/- 2.0)	13.0 (+/- 1.7)	24.4 (+/- 1.6)	12.2%	26.7% (+/- 4.5)	43	36.6%
Virginia	11.1 (+/- 2.5)	17.2 (+/- 2.7)	24.1 (+/- 4.0)	15.5%	31.0% (+/- 4.2)	23	26.2%
Washington	N/A	N/A	N/A	14.4%	29.5% (+/- 5.0)	33	27.6%
West Virginia	14.6 (+/- 2.4)	15.7 (+/- 2.4)	29.0 (+/- 3.2)	13.7%	35.5% (+/- 3.9)	8	33.2%
Wisconsin	10.4 (+/- 1.6)	15.0 (+/- 1.5)	27.7 (+/- 3.6)	14.1%	27.9% (+/- 3.8)	40	28.5%
Wyoming	11.1 (+/- 1.4)	12.0 (+/- 1.6)	25.8 (+/- 2.1)	N/A	25.7% (+/- 4.0)	45	29.8%

Source: Youth Risk Behavior Survey (YRBS) 2011, 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>. Note that previous YRBS reports used the term "overweight" to describe youth with a BMI at or above the 95th percentile for age and sex and "at risk for overweight" for those with a BMI at or above the 85th percentile, but below the 95th percentile. However, this report uses the terms "obese" and "overweight" based on the 2007 recommendations from the Expert Committee on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity convened by the American Medical Association. "Physically active at least 60 minutes on all 7 days" means that the student did any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of least 60 minutes per day on each of the 7 days before the survey.

Source: Pediatric Nutrition Surveillance 2010 Report, Table 6. Available at http://www.cdc.gov/pednss/pednss_tables/pdf/national_table6.pdf

Source: National Survey of Children's Health, 2007. Overweight and Physical Activity Among Children: A Portrait of States and the Nation 2009, Health Resources and Services Administration, Maternal and Child Health Bureau. * & red indicates a statistically significant increase ($p<0.05$) from 2003 to 2007. Over the same time period, AZ and IL had statistically significant increases in obesity rates, while OR saw a significant decrease. Meanwhile, NM and NV experienced significant increases in rates of overweight children between 2003 and 2007, while AZ had a decrease.

OBESITY RATES BY SEX AND RACE — 2011

	Adult Obesity	Obesity Rates by Sex		Obesity Rates by Race/Ethnicity		
	TOTAL	MEN	WOMEN	WHITE	BLACK	LATINO
Alabama	32.0% (+/- 1.5)	32.3% (+/- 2.5)	31.8% (+/- 1.9)	29.8% (+/- 1.8)	40.1% (+/- 3.3)	28.8% (+/- 13.4)
Alaska	27.4% (+/- 2.2)	28.0% (+/- 3.3)	26.8% (+/- 3.0)	25.9% (+/- 2.3)	NA	32.3% (+/- 13.1)
Arizona	24.7% (+/- 2.1)	24.2% (+/- 3.1)	25.1% (+/- 2.9)	20.6% (+/- 2.1)	27.0% (+/- 13.3)	33.6% (+/- 5.7)
Arkansas	30.9% (+/- 2.2)	30.7% (+/- 3.4)	31.1% (+/- 2.7)	31.0% (+/- 2.4)	38.5% (+/- 7.2)	18.4% (+/- 8.9)
California	23.8% (+/- 0.9)	23.1% (+/- 1.4)	24.5% (+/- 1.2)	22.0% (+/- 1.1)	33.1% (+/- 4.9)	30.3% (+/- 1.9)
Colorado	20.7% (+/- 1.1)	21.1% (+/- 1.6)	20.4% (+/- 1.4)	18.9% (+/- 1.1)	34.9% (+/- 8.0)	26.6% (+/- 3.4)
Connecticut	24.5% (+/- 1.5)	25.6% (+/- 2.4)	23.7% (+/- 2.0)	23.1% (+/- 1.7)	32.8% (+/- 6.5)	32.6% (+/- 6.0)
Delaware	28.8% (+/- 1.9)	29.1% (+/- 2.9)	28.5% (+/- 2.5)	27.3% (+/- 2.1)	38.2% (+/- 5.3)	22.4% (+/- 9.8)
D.C.	23.7% (+/- 1.9)	18.5% (+/- 2.8)	28.4% (+/- 2.8)	10.7% (+/- 2.2)	36.7% (+/- 3.4)	13.3% (+/- 6.2)
Florida	26.6% (+/- 1.3)	27.8% (+/- 2.0)	25.6% (+/- 1.7)	25.0% (+/- 1.4)	35.6% (+/- 4.5)	27.9% (+/- 3.6)
Georgia	28.0% (+/- 1.4)	26.7% (+/- 2.2)	29.3% (+/- 1.8)	25.0% (+/- 1.6)	36.8% (+/- 3.2)	26.4% (+/- 6.6)
Hawaii	21.8% (+/- 1.5)	24.4% (+/- 2.3)	19.3% (+/- 1.9)	19.0% (+/- 2.6)	NA	26.9% (+/- 6.2)
Idaho	27.0% (+/- 1.8)	26.0% (+/- 2.6)	28.0% (+/- 2.4)	25.8% (+/- 1.8)	NA	36.1% (+/- 8.7)
Illinois	27.1% (+/- 1.8)	27.8% (+/- 2.7)	26.6% (+/- 2.2)	26.0% (+/- 1.8)	39.2% (+/- 6.2)	25.2% (+/- 6.6)
Indiana	30.8% (+/- 1.4)	30.9% (+/- 2.2)	30.9% (+/- 1.9)	29.5% (+/- 1.5)	42.3% (+/- 5.9)	35.1% (+/- 9.2)
Iowa	29.0% (+/- 1.4)	30.5% (+/- 2.0)	27.5% (+/- 1.8)	29.2% (+/- 1.4)	27.8% (+/- 10.1)	33.2% (+/- 8.5)
Kansas	29.6% (+/- 0.9)	30.0% (+/- 1.3)	29.1% (+/- 1.1)	29.1% (+/- 0.9)	41.1% (+/- 5.1)	30.5% (+/- 3.9)
Kentucky	30.4% (+/- 1.5)	29.6% (+/- 2.2)	31.1% (+/- 2.0)	29.6% (+/- 1.5)	43.1% (+/- 7.7)	22.2% (+/- 11.3)
Louisiana	33.4% (+/- 1.5)	33.1% (+/- 2.4)	33.9% (+/- 1.8)	31.1% (+/- 1.8)	39.3% (+/- 3.0)	37.5% (+/- 8.8)
Maine	27.8% (+/- 1.1)	28.1% (+/- 1.6)	27.6% (+/- 1.4)	27.9% (+/- 1.1)	15.3% (+/- 10.7)	30.3% (+/- 12.3)
Maryland	28.3% (+/- 1.4)	28.9% (+/- 2.3)	27.9% (+/- 1.8)	26.0% (+/- 1.6)	37.9% (+/- 3.2)	20.9% (+/- 7.0)
Massachusetts	22.7% (+/- 1.0)	24.2% (+/- 1.5)	21.5% (+/- 1.2)	22.2% (+/- 1.1)	32.4% (+/- 4.7)	31.0% (+/- 4.1)
Michigan	31.3% (+/- 1.3)	31.9% (+/- 2.0)	30.7% (+/- 1.8)	29.8% (+/- 1.5)	40.9% (+/- 4.2)	36.7% (+/- 8.6)
Minnesota	25.7% (+/- 1.1)	28.4% (+/- 1.6)	22.9% (+/- 1.4)	25.9% (+/- 1.1)	28.4% (+/- 5.9)	31.6% (+/- 7.8)
Mississippi	34.9% (+/- 1.4)	32.4% (+/- 2.2)	37.4% (+/- 1.9)	30.7% (+/- 1.7)	42.9% (+/- 2.7)	26.8% (+/- 10.3)
Missouri	30.3% (+/- 1.7)	29.8% (+/- 2.6)	30.8% (+/- 2.2)	29.4% (+/- 1.8)	39.3% (+/- 6.2)	27.8% (+/- 13.3)
Montana	24.6% (+/- 1.4)	25.9% (+/- 2.0)	23.4% (+/- 1.8)	24.2% (+/- 1.4)	NA	22.5% (+/- 9.6)
Nebraska	28.4% (+/- 0.8)	29.3% (+/- 1.3)	27.6% (+/- 1.2)	28.3% (+/- 0.9)	32.9% (+/- 5.4)	29.8% (+/- 4.1)
Nevada	24.5% (+/- 2.1)	25.6% (+/- 3.1)	23.5% (+/- 2.8)	22.0% (+/- 2.1)	31.2% (+/- 8.3)	29.2% (+/- 6.1)
New Hampshire	26.2% (+/- 1.5)	28.1% (+/- 2.4)	24.2% (+/- 1.9)	26.5% (+/- 1.6)	NA	22.9% (+/- 14.5)
New Jersey	23.7% (+/- 1.1)	25.5% (+/- 1.7)	21.9% (+/- 1.4)	23.1% (+/- 1.3)	31.6% (+/- 3.4)	27.2% (+/- 3.3)
New Mexico	26.3% (+/- 1.3)	26.4% (+/- 1.9)	26.4% (+/- 1.6)	22.6% (+/- 1.7)	23.9% (+/- 10.0)	30.0% (+/- 2.1)
New York	24.5% (+/- 1.4)	25.3% (+/- 2.1)	23.9% (+/- 1.7)	23.7% (+/- 1.7)	32.6% (+/- 4.2)	26.3% (+/- 3.9)
North Carolina	29.1% (+/- 1.5)	28.3% (+/- 2.2)	30.0% (+/- 1.9)	26.2% (+/- 1.6)	40.8% (+/- 3.8)	29.0% (+/- 6.8)
North Dakota	27.8% (+/- 1.6)	30.1% (+/- 2.4)	25.4% (+/- 2.1)	26.9% (+/- 1.6)	NA	NA
Ohio	29.6% (+/- 1.4)	31.7% (+/- 2.1)	27.6% (+/- 1.7)	29.2% (+/- 1.5)	34.0% (+/- 4.7)	32.2% (+/- 11.6)
Oklahoma	31.1% (+/- 1.4)	30.6% (+/- 2.2)	31.5% (+/- 1.8)	30.3% (+/- 1.6)	34.8% (+/- 6.5)	28.7% (+/- 6.3)
Oregon	26.7% (+/- 1.6)	26.3% (+/- 2.4)	27.3% (+/- 2.1)	26.1% (+/- 1.5)	NA	28.8% (+/- 8.2)
Pennsylvania	28.6% (+/- 1.3)	29.6% (+/- 1.9)	27.7% (+/- 1.6)	28.0% (+/- 1.3)	36.0% (+/- 4.7)	32.9% (+/- 7.6)
Rhode Island	25.4% (+/- 1.6)	27.7% (+/- 2.5)	23.4% (+/- 1.9)	24.9% (+/- 1.7)	35.2% (+/- 9.8)	26.5% (+/- 5.6)
South Carolina	30.8% (+/- 1.3)	28.5% (+/- 2.0)	33.1% (+/- 1.7)	27.0% (+/- 1.5)	42.4% (+/- 2.8)	25.0% (+/- 8.5)
South Dakota	28.1% (+/- 1.9)	29.9% (+/- 2.9)	26.3% (+/- 2.5)	26.7% (+/- 2.0)	NA	40.0% (+/- 15.1)
Tennessee	29.2% (+/- 2.5)	28.0% (+/- 3.8)	30.5% (+/- 3.4)	27.9% (+/- 2.7)	40.5% (+/- 8.2)	NA
Texas	30.4% (+/- 1.4)	31.0% (+/- 2.1)	30.0% (+/- 1.9)	27.1% (+/- 1.7)	39.6% (+/- 5.1)	34.5% (+/- 2.7)
Utah	24.4% (+/- 1.1)	25.8% (+/- 1.6)	22.9% (+/- 1.4)	24.4% (+/- 1.1)	29.0% (+/- 14.3)	24.2% (+/- 4.0)
Vermont	25.4% (+/- 1.4)	27.3% (+/- 2.2)	23.6% (+/- 1.8)	25.4% (+/- 1.4)	NA	23.5% (+/- 14.4)
Virginia	29.2% (+/- 1.7)	29.7% (+/- 2.6)	28.6% (+/- 2.4)	27.6% (+/- 1.9)	37.8% (+/- 4.8)	31.4% (+/- 9.4)
Washington	26.5% (+/- 1.2)	28.0% (+/- 1.9)	25.1% (+/- 1.6)	27.1% (+/- 1.4)	39.5% (+/- 10.3)	27.9% (+/- 5.0)
West Virginia	32.4% (+/- 1.6)	30.7% (+/- 2.4)	34.3% (+/- 2.1)	32.4% (+/- 1.6)	34.2% (+/- 10.8)	29.1% (+/- 14.7)
Wisconsin	27.7% (+/- 2.0)	29.4% (+/- 2.9)	26.1% (+/- 2.7)	26.8% (+/- 2.0)	44.0% (+/- 10.8)	NA
Wyoming	25.0% (+/- 1.6)	26.1% (+/- 2.3)	23.8% (+/- 2.2)	24.9% (+/- 1.7)	NA	25.9% (+/- 6.6)

States with the Highest Obesity Rates		
Rank	**State**	**Percentage of Adult Obesity** (Based on 2011 Data, Including Confidence Intervals)
1	Mississippi	34.9% (+/- 1.4)
2	Louisiana	33.4% (+/- 1.5)
3	West Virginia	32.4% (+/- 1.6)
4	Alabama	32.0% (+/- 1.5)
5	Michigan	31.3% (+/- 1.3)
6	Oklahoma	31.1% (+/- 1.4)
7	Arkansas	30.9% (+/- 2.2)
8 (tie)	Indiana	30.8% (+/- 1.4)
8 (tie)	South Carolina	30.8% (+/- 1.3)
10 (tie)	Kentucky	30.4% (+/- 1.5)
10 (tie)	Texas	30.4% (+/- 1.4)

Note: For rankings, 1 = Highest rate of obesity.

States with the Lowest Obesity Rates		
Rank	**State**	**Percentage of Adult Obesity** (Based on 2011 Data, Including Confidence Intervals)
51	Colorado	20.7% (+/- 1.1)
50	Hawaii	21.8% (+/- 1.5)
49	Massachusetts	22.7% (+/- 1.0)
47 (tie)	D.C.	23.7% (+/- 1.9)
47 (tie)	New Jersey	23.7% (+/- 1.1)
46	California	23.8% (+/- 0.9)
45	Utah	24.4% (+/- 1.1)
42 (tie)	Connecticut	24.5% (+/- 1.5)
42 (tie)	Nevada	24.5% (+/- 2.1)
42 (tie)	New York	24.5% (+/- 1.4)

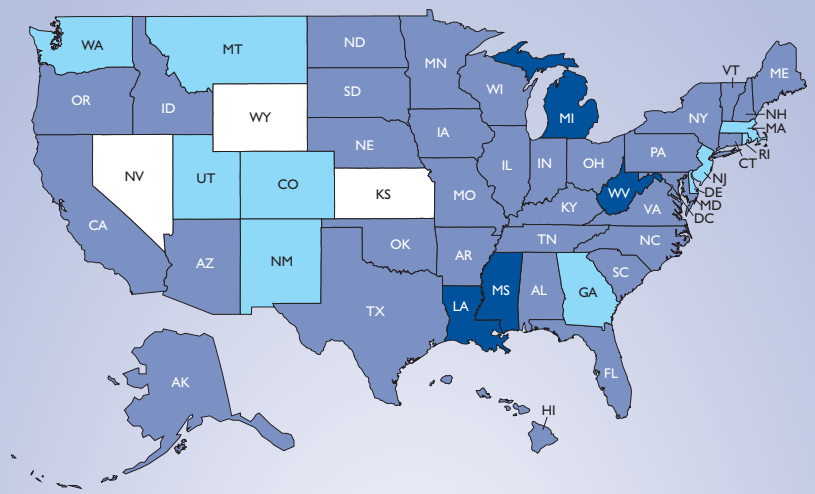
Note: For rankings, 51 = Lowest rate of obesity.

PAST OBESITY TRENDS* AMONG U.S. ADULTS

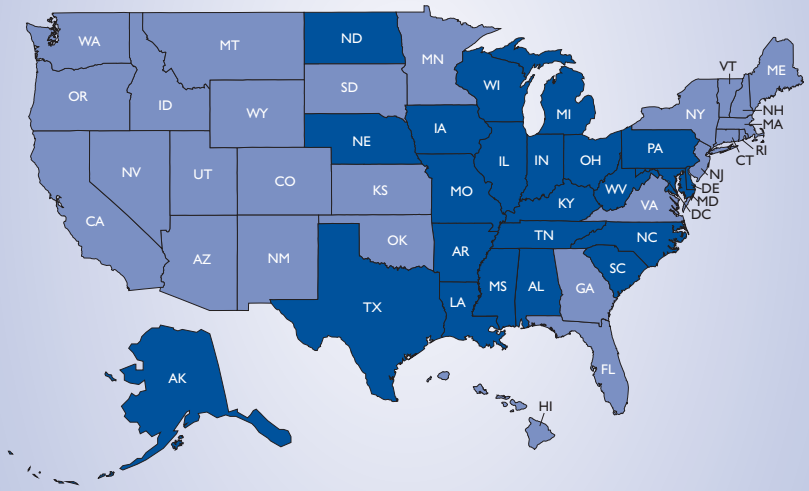
BRFSS, 1991, 1993-1995,1998-2000, and 2008-2010 Combined Data

(*BMI ≥30, or about 30lbs overweight for 5'4" person)

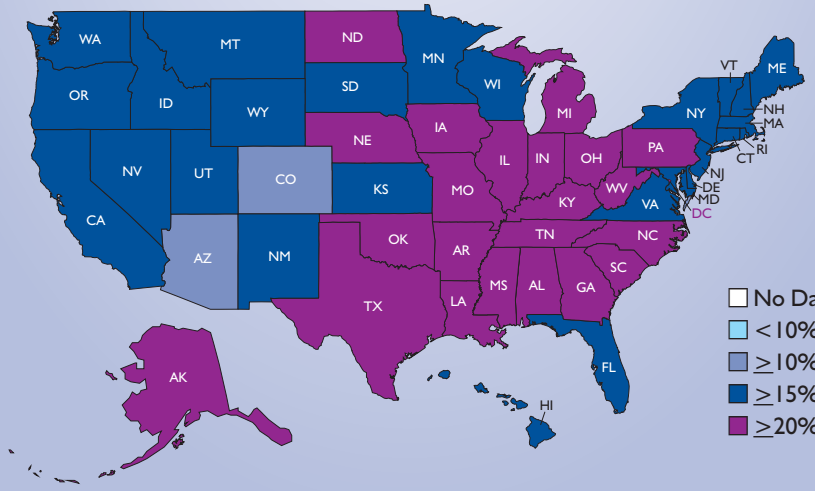
1991



1993–1995 Combined Data



1998–2000 Combined Data



RATES AND RANKINGS METHODOLOGY[30]

The analysis in *F as in Fat* compares data from the Behavioral Risk Factor Surveillance System (BRFSS), the largest phone survey in the world.

BRFSS is the largest ongoing telephone health survey in the world. It is a state-based system of health surveys established by CDC in 1984. BRFSS completes more than 400,000 adult interviews each year. For most states, BRFSS is their only source of population-based health behavior data about chronic disease prevalence and behavioral risk factors.

BRFSS surveys a sample of adults in each state to get information on health risks and behaviors, health practices for preventing disease, and healthcare access mostly linked to chronic disease and injury. The sample is representative of the population of each state.

Washington, D.C., is included in the rankings because CDC provides funds to the city to conduct a survey in an equivalent way to the states.

The data are based on telephone surveys by state health departments, with assistance from CDC. Surveys ask people to report their weight and height, which is used to calculate BMI. Experts say rates of overweight and obesity are probably slightly higher than shown by the data because people tend to underreport their weight and exaggerate their height.[31]

BRFSS made two changes in methodology for its 2011 dataset to make the data more representative of the total population. These are making survey calls to cell-phone numbers and adopting a new weighting method:

- The first change is including and then growing the number of interview calls made to cell phone numbers. Estimates today are that 3 in 10 U.S. households have only cell phones.
- The second is a statistical measurement change, which involves the way the data are weighted to better match the demographics of the population in the state.

The new methodology means the BRFSS data will better represent lower-income and racial and ethnic minorities, as well as populations with lower levels of formal education. The size and direction of the effects will vary by state, the behavior under study, and other factors. Although generalizing is difficult because of these variables, it is likely that the changes in methods will result in somewhat higher estimates for the occurrence of behaviors that are more common among younger adults and to certain racial and ethnic groups.

The change in methodology makes direct comparisons to past data difficult.

In prior years, this report has included racial, ethnic and gender breakdowns by state. However, because there is only one year of data available using the new methodology, the sample sizes for some states are too small to reliably provide these breakdowns in this year's report.

More information on the methodology is available in Appendix B.

DEFINITIONS OF OBESITY AND OVERWEIGHT

Obesity is defined as an excessively high amount of body fat or adipose tissue in relation to lean body mass.[32,33] Overweight refers to increased body weight in relation to height, which is then compared to a standard of acceptable weight.[34] An adult is considered obese if his or her body mass index (BMI), a calculation based on an individual's weight and height, is 30 or higher. The equation is:

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

Adults with a BMI of 25 to 29.9 are considered overweight. The National Institutes of Health (NIH) adopted a lower optimal weight threshold in June 1998. Previously, the federal government defined overweight as a BMI of 28 for men and 27 for women.

On the basis of 2000 CDC growth charts, children and youth at or above the 95th percentile were defined as "overweight," while children at or above the 85th percentile but below the 95th percentile were defined as "at risk of overweight." However, in 2007, an expert committee recommended using the same cut points but changing the terminology by replacing "overweight" with "obese" and "at risk of overweight" with "overweight." The committee also added an additional cut point — BMI at or above the 99th percentile — to define "severe obesity."[35]

BMI is considered an important measure for understanding population trends. For individuals, it may be less accurate and should be used alongside other measures of risk, including waist size, waist-to-hip ratio, blood pressure, cholesterol level, and blood sugar, among others.[36]

OBESITY AROUND THE WORLD

New information from the Organization for Economic Cooperation and Development (OECD) shows that, while more than half of adults are either overweight or obese in the majority of OECD countries, the rate of growth slowed or stopped in many countries over the last decade.[37] In England almost a quarter of the population is obese, up to 18 percent in Hungary are considered obese, and almost 15 percent in Spain and Ireland are obese.[38]

In England, Hungary, Italy, South Korea and Switzerland, obesity rates either stopped growing or slowed significantly, and Spain and France only increased by 2 percent to 3 percent.[39] But in Canada, Ireland and the United States, rates continued to increase, by up to 5 percent. During the last decade childhood obesity rates have leveled out in England, France, South Korea and the United States.[40]

Data also showed consistent disparities in obesity rates across many countries. Women with less education were two to three times more likely to be overweight or obese than women with higher education levels, and the trend stayed consistent throughout the decade with no improvements made to remedy the disparity.[41]

SOCIOECONOMICS AND OBESITY

An analysis of the 2008-2010 BRFSS data looking at income, level of schooling completed and obesity finds strong correlations between obesity and income and between obesity and education:

- 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.
- More than 33 percent of adults who earn less than $15,000 per year were obese, compared with 24.6 percent of those who earned at least $50,000 per year.[42]

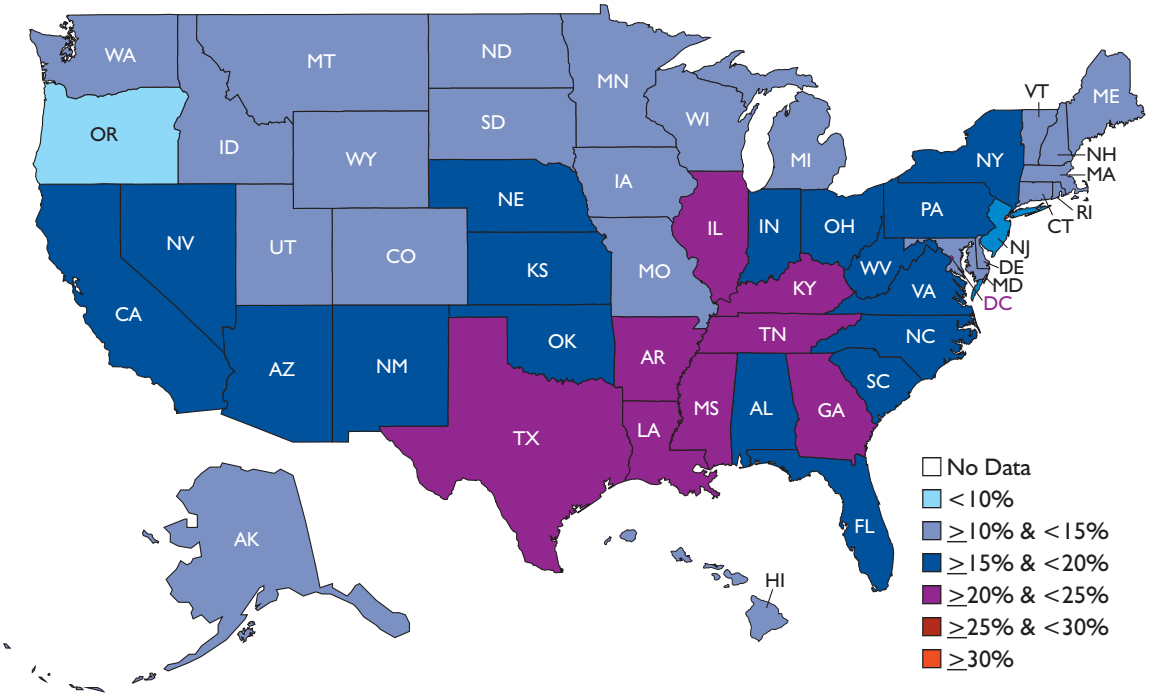
B. CHILDHOOD AND YOUTH OBESITY AND OVERWEIGHT RATES

1. Study of Children Ages 10–17 (2007)

The most recent data for childhood statistics on a state-by-state level are from the 2007 National Survey of Children's Health (NSCH).[43] *The next NSCH release is expected in late 2012.* According to the 2007 study, obesity rates for children ages 10–17, defined as BMI greater than the 95th percentile for age group, ranged from a low of 9.6 percent in Oregon to a high of 21.9 percent in Mississippi. The NSCH study is based on a survey of parents in each state. The data are derived from parental reports, so they are not as reliable as measured data, such as NHANES, but they are the only source of comparative state-by-state data for children.

Nine of the 10 states with the highest rates of obese children are in the South. In 2003, when the last NSCH was conducted, only Washington, D.C., and three states — Kentucky, Tennessee and West Virginia — had childhood obesity rates higher than 20 percent. Four years later, in 2007, six more states had childhood obesity rates over 20 percent: Arkansas, Georgia, Illinois, Louisiana, Mississippi and Texas.

OBESE 10- TO 17-YEAR-OLDS, 2007 NSCH



Source: National Survey on Children's Health, 2007.

States with the Highest Rates of Obese 10- to 17-year-olds		
Rank	**States**	**Percentage of Obese 10- to 17-year-olds** (95 percent Confidence Intervals)
1	Mississippi	21.9% (+/- 3.5)
2	Georgia	21.3% (+/- 5.1)
3	Kentucky	21.0% (+/- 3.5)
4 (tie)	Illinois	20.7% (+/- 3.6)
4 (tie)	Louisiana	20.7% (+/- 4.0)
6	Tennessee	20.6% (+/- 3.7)
7 (tie)	Arkansas	20.4% (+/- 3.6)
7 (tie)	Texas	20.4% (+/- 5.0)
9	D.C.	20.1% (+/- 3.9)
10	West Virginia	18.9% (+/- 3.2)

*Note: For rankings, 1 = Highest rate of childhood obesity.

Eight of the states with the lowest rates of obese 10- to 17-year-olds are in the West.

States with the Lowest Rates of Obese 10- to 17-year-olds		
Rank	**States**	**Percentage of Obese 10- to 17-year-olds** (95 percent Confidence Intervals)
51	Oregon	9.6% (+/- 2.7)
50	Wyoming	10.2% (+/- 2.7)
48 (tie)	Washington	11.1% (+/- 3.4)
48 (tie)	Minnesota	11.1% (+/- 3.0)
46 (tie)	Iowa	11.2% (+/- 2.7)
46 (tie)	Hawaii	11.2% (+/- 2.8)
44 (tie)	Utah	11.4% (+/- 3.5)
44 (tie)	North Dakota	11.4% (+/- 2.5)
42 (tie)	Montana	11.8% (+/- 2.8)
42 (tie)	Idaho	11.8% (+/- 2.7)

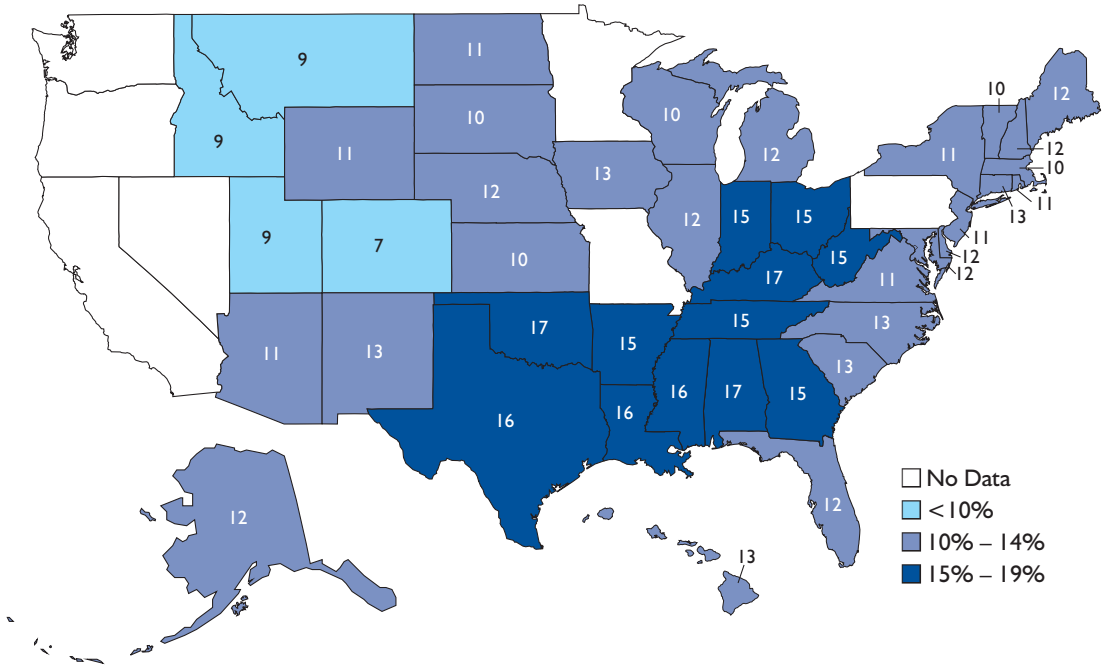
*Note: For rankings, 51 = Lowest rate of childhood obesity.

2. Study of High School Students

The Youth Risk Behavior Surveillance System (YRBSS) includes both national and state surveys that provide data on adolescent obesity and overweight rates, most recently in 2011.[44] The information from the YRBSS is based on self-reported information. According to the national survey, 13 percent of high school students were obese and 15.2 percent were overweight.[45] There has been an upward trend from 1999 to 2011 in the prevalence of students nationwide who were obese (10.6 percent to 13 percent) and who were overweight (14.2 percent to 15.2 percent).[46] Students also reported on whether or not they participated in at least 60 minutes of physical activity every day of the week. The most recent state surveys, conducted in 43 states, found a range in the percentage of high school students who were physically active for at least 60 minutes per day seven days a week, from a high of 33.1 percent in Oklahoma to a low of 20.8 percent in Utah, with a median prevalence of 25.8 percent.

The latest state surveys also found a range of obesity levels: a low of 7.3 percent in Colorado to a high of 17.0 percent in Alabama, with a median prevalence of 12.0 percent. Overweight prevalence among high school students ranged from a low of 10.7 percent in Colorado to a high of 19.5 percent in Louisiana, with a median prevalence of 14.7 percent.

PERCENT OF OBESE HIGH SCHOOL STUDENTS — Selected U.S. States, Youth Risk Behavior Survey, 2011



Source: YBRS. Trend maps from 2003-2011 are available at: http://www.cdc.gov/healthyyouth/obesity/obesity-youth.htm.

Percentage of Obese and Overweight U.S. High School Students by Sex		
	Obese	Overweight
Female	9.8%	15.4%
Male	16.1%	15.1%
Total	13.0%	15.2%

Percentage of Obese and Overweight U.S. High School Students by Race/Ethnicity		
	Obese	Overweight
White*	11.5%	14.2%
Black*	18.2%	16.2%
Hispanic	14.1%	17.4%
Total**	13.0%	15.2%

Notes: *Non-Hispanic. **Other race/ethnicities are included in the total but are not presented separately.

Percentage of Obese and Overweight U.S. High School Students by Sex and Race/Ethnicity				
	Obese		Overweight	
	Female	Male	Female	Male
White*	7.7%	15.0%	13.8%	14.7%
Black*	18.6%	17.7%	19.6%	12.8%
Hispanic	8.6%	19.2%	18.0%	16.9%
Total**	9.8%	16.1%	15.4%	15.1%

Notes: *Non-Hispanic. **Other race/ethnicities are included in the total but are not presented separately.

3. Study of Children from Lower-Income Families (2010)

The Pediatric Nutrition Surveillance Survey (PedNSS), which examines children between the ages of 2 and 5 from lower-income families, found that 14.4 percent of this group is obese, compared with 12.1 percent for all U.S. children of a similar age.[47] The data for PedNSS is based on actual measurements rather than self reports.

The prevalence of obesity among children from lower-income families increased from 12.7 percent in 1999 to 14.4 percent in 2010, although rates have remained stable since 2003. The highest obesity rates were seen among American Indian and Alaska Native children (21.1 percent) and Latino children (17.6 percent).

4. Physical Inactivity in Adults

Physical inactivity in adults reflects the number of survey respondents who reported not engaging in physical activity or exercise during the previous 30 days other than doing their regular jobs.

Mississippi, the state with the highest rate of obesity, also had the highest reported percentage of inactivity at 36 percent.

States with the Highest Physical Inactivity Rates, 2011			
Rank	State	Percentage of Adult Physical Inactivity (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
1	Mississippi	36.0% (+/- 1.5)	1
2	Tennessee	35.2% (+/- 2.7)	15 (tie)
3	West Virginia	35.1% (+/- 1.6)	3
4	Louisiana	33.8% (+/- 1.5)	2
5	Alabama	32.6% (+/- 1.6)	4
6	Oklahoma	31.2% (+/- 1.4)	6
7	Arkansas	30.9% (+/- 2.1)	7
8	Kentucky	29.4% (+/- 1.5)	10 (tie)
9	Indiana	29.3% (+/- 1.4)	8 (tie)
10	Missouri	28.5% (+/- 1.6)	12

*Note: For rankings, 1=Highest rate of physical inactivity

Colorado, the state with the lowest rate of adult obesity, also had the lowest reported rate of physical inactivity at 16.5 percent.

States with the Lowest Physical Inactivity Rates, 2011			
Rank	State	Percentage of Adult Physical Inactivity (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
51	Colorado	16.5% (+/- 1.8)	51
50	Utah	18.9% (+/- 1.0)	45
49	California	19.1% (+/- 0.9)	46
48	Oregon	19.7% (+/- 1.5)	31
47	D.C.	19.8% (+/- 1.8)	47 (tie)
46	Vermont	21.0% (+/- 1.3)	37 (tie)
45	Hawaii	21.3% (+/- 1.5)	50
44	Idaho	21.4% (+/- 1.7)	30
43	Minnesota	21.8% (+/- 1.0)	36
42	Washington	21.9% (+/- 1.2)	33

*Note: For rankings, 51 = Lowest rate of physical inactivity.

D. TYPE 2 DIABETES AND HYPERTENSION IN ADULTS

Obesity and physical inactivity have been linked to a range of chronic diseases, including diabetes and hypertension. Seven of the 10 states with the highest diabetes rates are also in the top 10 for obesity rates; and 7 of the 10 states with the highest hypertension rates are also in the top 10 for obesity.

1. Type 2 Diabetes

All 10 of the states with the highest rates of type 2 diabetes are in the South.

States with the Rates of Adult with Type 2 Diabetes, 2011

Rank	State	Percentage of Adult Diabetes (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
1	Mississippi	12.3% (+/- 0.8)	1
2	West Virginia	12.1% (+/- 1.0)	3
3	South Carolina	12.0% (+/- 0.8)	8 (tie)
4	Alabama	11.8% (+/- 0.9)	4
5	Louisiana	11.8% (+/- 0.9)	2
6 (tie)	Arkansas	11.2% (+/- 1.2)	7
6 (tie)	Tennessee	11.2% (+/- 1.5)	15 (tie)
8	Oklahoma	11.1% (+/- 0.8)	6
9 (tie)	Kentucky	10.8% (+/- 0.8)	10 (tie)
9 (tie)	North Carolina	10.8% (+/- 0.8)	17

*Note: For rankings, 1 = Highest rate of type 2 diabetes.

THE DIABETES BELT

In the 1960s researchers first identified the Southeastern United States as the "stroke belt," since strokes were much more frequent in that region than the rest of the country. Now, scientists are focusing on a "diabetes belt," made up of 644 counties in 15 mostly Southern states. This belt includes parts of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, West Virginia, and all of Mississippi.[48] The demographics of these 644 counties vary greatly from those of the overall country. They have a high percentage of Blacks, and, not surprisingly, a high number of people who are obese and lead sedentary lives.[49] Policymakers hope to use this new information to target resources to those who most need help.

2. Hypertension

All 10 states with the highest rates of hypertension are also in the South.

States with the Highest Rates of Adult Hypertension, 2011

Rank	State	Percentage of Adult Hypertension (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
1	Alabama	40.0% (+/- 1.6)	4
2	Mississippi	39.2% (+/- 1.4)	1
3	Tennessee	38.6% (+/- 2.6)	15 (tie)
4	Louisiana	38.3% (+/- 1.4)	2
5	Kentucky	37.9% (+/- 1.5)	10 (tie)
6	West Virginia	37.1% (+/- 1.6)	3
7	South Carolina	36.4% (+/- 1.3)	8 (tie)
8	Arkansas	35.7% (+/- 2.1)	7
9	Oklahoma	35.5% (+/- 1.4)	6
10	Delaware	34.6% (+/- 1.9)	19

*Note: For rankings, 1 = Highest rate of hypertension.

E. FRUIT AND VEGETABLE CONSUMPTION

Fruit and vegetable consumption, as part of a healthy diet, is important for weight management, optimal child growth, and chronic disease prevention. Seven of the 10 states with the highest rates of obesity were also in the bottom 10 for fruit and vegetable consumption

States with the Lowest Adult Fruit and Vegetable Consumption, 2011

Rank	State	Percentage of Adult Fruit and Vegetable Consumption (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
1	West Virginia	7.9% (+/- 0.9)	3
2	Louisiana	8.2% (+/- 0.9)	2
3	Oklahoma	9.8% (+/- 0.9)	6
4	Mississippi	10.3% (+/- 1.0)	1
5 (tie)	Kentucky	10.6% (+/- 1.0)	10 (tie)
5 (tie)	Tennessee	10.6% (+/- 1.9)	15 (tie)
7	South Dakota	11.0% (+/- 1.2)	23
8 (tie)	Alabama	12.5% (+/- 1.1)	4
8 (tie)	South Carolina	12.5% (+/- 0.9)	8
10	Delaware	12.9% (+/- 1.4)	19

Note: For rankings, 1 = Lowest rate of fruit and vegetable consumption.

States with the Highest Adult Fruit and Vegetable Consumption, 2011

Rank	State	Percentage of Adult Fruit and Vegetable Consumption (Based on 2011 Data, Including Confidence Intervals)	Obesity Ranking
51	D.C.	25.6% (+/- 2.1)	47 (tie)
50	California	24.4% (+/- 0.9)	46
49	Vermont	22.7% (+/- 1.3)	37 (tie)
48	New Hampshire	22.5% (+/- 1.5)	35
47	Oregon	22.3% (+/- 1.4)	31
46	Arizona	21.4% (+/- 2.0)	40
45	Connecticut	20.8% (+/- 1.4)	42 (tie)
44	New York	19.9% (+/- 1.3)	42 (tie)
43	Rhode Island	19.8% (+/- 1.4)	37 (tie)
42	Hawaii	19.7% (+/- 1.4)	50

Note: For rankings, 51 = Highest rate of fruit and vegetable consumption.

Two Futures for America's Health

TFAH and RWJF commissioned the National Heart Forum (NHF) to conduct a modeling study to examine how obesity rates in states could change if trends continued on their current trajectory, including the potential impact on obesity-related diseases and costs by 2030. The analysis also looked at how disease rates and costs could be affected by lowering the average BMI in the state by only 5 percent in each state.

Currently, more than 35 percent of American adults are obese.[50] Individuals with a BMI of 30 or higher are considered obese. The report found if current trends continue, by the year 2030, more than 44 percent of adults could be obese, which could lead to major increases in obesity-related disease rates and health care costs. But, if states could reduce the average adult BMI by 5 percent, millions of Americans could be spared from preventable diseases and each state could save billions in health care costs. For an adult of average weight, reducing BMI by 1 percent is equivalent to a weight loss of around 2.2 pounds.[51]

The analysis concluded, therefore, that there are two potential futures for America's health.

BACKGROUND

The study is based on a peer-reviewed model developed by researchers at the NHF and used for the basis of an analysis, "Health and Economic Burden of the Projected Obesity Trends in the USA and the UK," published in 2011 in *The Lancet*.[52] The full methodology is available in Appendix C.

The NHF is an international center for the prevention of avoidable chronic diseases, including coronary heart disease, stroke, cancer and diabetes. The organization is an alliance of 65 charitable organizations in the United Kingdom, including leading policy research experts on chronic disease prevention and promotes consensus-based healthy public policy.

PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum. Micro Health Simulations used the model in a peer reviewed study, "Health and Economic Burden of the Projected Obesity Trends in the [United States and the United Kingdom]," published in 2011 in *The Lancet*.[53] The full methodology is available in Appendix C.

All models have limitations in forecasting the future, but they help predict the trajectory of trends based on past data. Trends can, of course, change significantly over time for a variety of reasons. However, having a sense of potential scenarios is particularly helpful to understand patterns, such as growth rates for diseases and costs projections, which can inform policy priorities and decisions.

The NHF study published in *The Lancet* in 2011 developed national projections for obesity and the potential growth in related disease rates and costs between 2010 and 2030, using data from the National Health and Nutrition Examination Survey (NHANES).

They found the number of obese Americans could grow from 32 percent, in 2011, to around 50 percent (+/- 5) in 2030, with the potential estimated low rate would be 45 and the high rate is 55.

Based on the predicted rise in obesity, they found the baseline potential growth in obesity costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $20 billion or as high as $110 billion.

In addition, they projected baseline estimates for:[54]

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 0.5 million (+/- 0.1 million) per year, which means it could be as low as 0.4 million or as high as 0.6 million.

The projections in the state-by-state analysis featured in the F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the BRFSS instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven). In other words, more data points enables researchers to estimate projections more precisely.

The modeling study also reflects adjustments of data to correct for self-reporting bias in BRFSS.[55]

These findings are similar to a 2012 study in the American Journal of Preventive Medicine. The study found that by 2030, 42 percent of U.S. adults will be obese.[56] This study also found that the rate of severe obesity will double by 2030, when more than 10 percent of adults will be considered severely obese.[57] The projected increase in obesity is estimated to cost the United States $550 billion in health spending between now and 2030.[58]

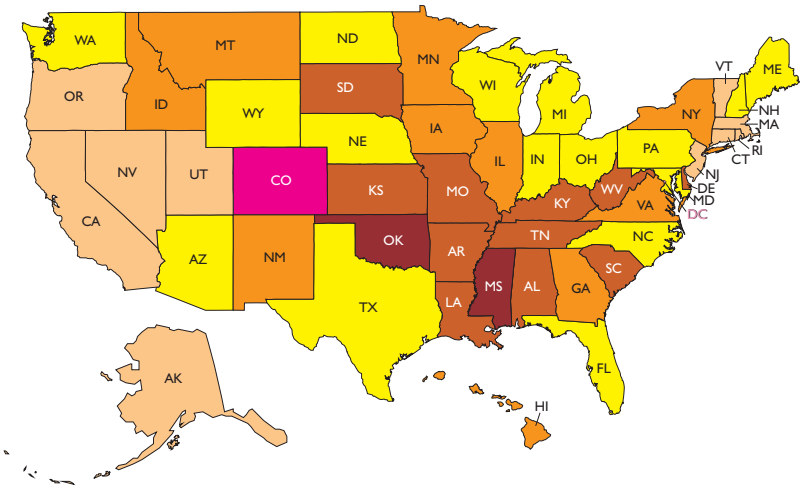
A. KEY FINDINGS

Obesity in 2030

If obesity rates continue on their current track, in 2030, more than 60 percent of adults in America could be obese in 13 states; more than half of adults could be obese in 39 states; and more than 44 percent could be obese in all 50 states.

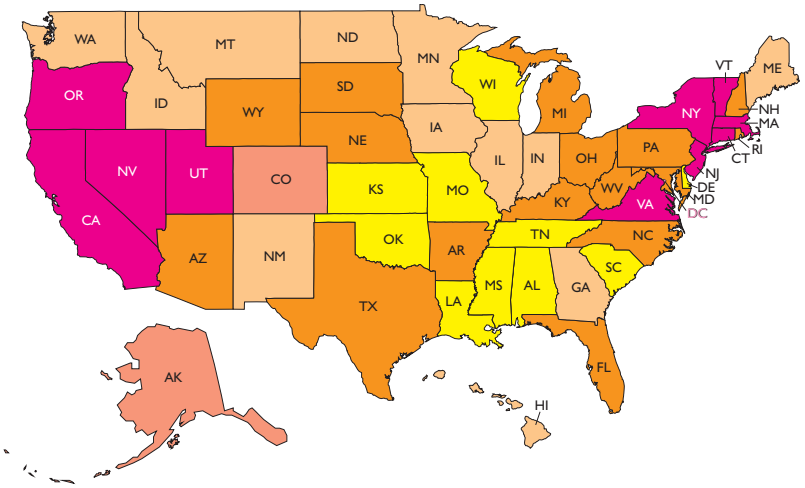
However, if states could reduce average adult BMIs by 5 percent, no state would have an obesity rate above 60 percent. More than half of Americans would be obese in 24 states; two states would have rates under 40 percent (Alaska at 39.4 percent and Colorado at 39 percent); and Washington, D.C. would be below 30 percent (29.1 percent).

2030: Adult Obesity Rates if the Current Trajectory Continues



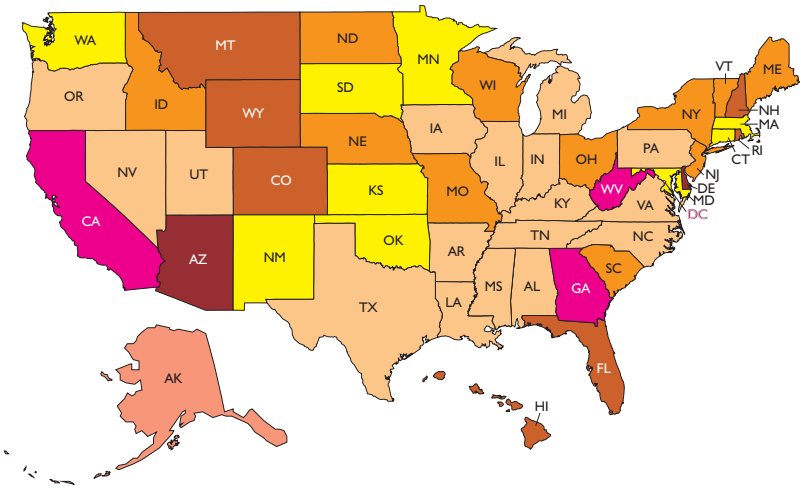
- ≤35%
- <35% & <40%
- ≥40% & <45%
- ≥45% & <50%
- ≥50% & <55%
- ≥55% & <60%
- ≥60% & <65%
- ≥65%

2030: Adult Obesity Rates if Average BMI is Reduced by 5 Percent



- ≤35%
- <35% & <40%
- ≥40% & <45%
- ≥45% & <50%
- ≥50% & <55%
- ≥55% & <60%
- ≥60% & <65%
- ≥65%

Potential Percent Increase in Obesity Rates 2010-2030



- <80%
- ≥80% & <90%
- ≥90% & <100%
- ≥100% & <110%
- ≥110% & <120%
- ≥120% & <130%
- ≥130%

RATES AND RANKINGS 2030				
State	Obesity rates in 2030 on current track	Rank	Obesity rates in 2030 if states reduce average adult BMI by 5%	Rank
Alabama	62.6%	6	55.1%	8
Alaska	45.6%	49	39.4%	49
Arizona	58.8%	16	51.8%	17
Arkansas	60.6%	10	53.4%	11
California	46.6%	46	40.5%	47
Colorado	44.8%	50	39.0%	50
Connecticut	46.5%	47	40.5%	47
Delaware	64.7%	3	56.4%	4
DC	32.6%	51	29.1%	51
Florida	58.6%	18	51.1%	19
Georgia	53.6%	35	47.5%	33
Hawaii	51.8%	38	45.5%	38
Idaho	53.0%	37	46.9%	37
Illinois	53.7%	34	47.5%	33
Indiana	56.0%	27	49.5%	25
Iowa	54.4%	31	47.6%	32
Kansas	62.1%	7	55.1%	8
Kentucky	60.1%	13	53.2%	15
Louisiana	62.1%	7	55.4%	7
Maine	55.2%	29	49.0%	29
Maryland	58.8%	16	52.2%	16
Massachusetts	48.7%	43	42.4%	43
Michigan	59.4%	15	53.4%	11
Minnesota	54.7%	30	47.5%	33
Mississippi	66.7%	1	59.9%	1
Missouri	61.9%	9	55.5%	5
Montana	53.6%	35	47.4%	36
Nebraska	56.9%	23	50.6%	21
Nevada	49.6%	41	43.8%	41
New Hampshire	57.7%	20	50.8%	20
New Jersey	48.6%	44	42.3%	44
New Mexico	54.2%	32	48.8%	30
New York	50.9%	39	44.5%	40
North Carolina	58.0%	19	51.4%	18
North Dakota	57.1%	22	49.4%	26
Ohio	59.8%	14	53.5%	10
Oklahoma	66.4%	2	58.6%	2
Oregon	48.8%	42	43.4%	42
Pennsylvania	56.7%	24	50.4%	23
Rhode Island	53.8%	33	48.4%	31
South Carolina	62.9%	5	55.5%	5
South Dakota	60.4%	11	53.3%	14
Tennessee	63.4%	4	57.4%	3
Texas	57.2%	21	50.4%	23
Utah	46.4%	48	40.6%	46
Vermont	47.7%	45	42.1%	45
Virginia	49.7%	40	44.7%	39
Washington	55.5%	28	49.1%	28
West Virginia	60.2%	12	53.4%	11
Wisconsin	56.3%	26	49.4%	26
Wyoming	56.6%	25	50.5%	22

DISEASE RATES

Nationally, obesity could contribute to more than 6 million cases of type 2 diabetes, 5 million cases of coronary heart disease and stroke, and more than 400,000 cases of cancer in the next two decades, according to *The Lancet* study's conservative estimates.[59]

As the number of obese individuals grows, the segment of the population that is currently at risk for the highest incidence of health problems related to obesity exponentially increases their risk of developing those conditions. This report examined the potential growth of five of the highest-cost and highest-incidence health problems related to obesity — type 2 diabetes, coronary heart disease and stroke, hypertension, arthritis and obesity-related cancer. For instance, approximately 33 percent of Americans (79 million people) are currently pre-diabetic, which means they have prolonged or uncontrolled elevated blood sugar levels that can contribute to the development of diabetes. These 79 million Americans are at a tipping point. As more Americans become obese, more people who are currently maintaining blood sugar levels below the level of full-blown diabetes will cross over that line. Twenty years ago, only 7.8 million Americans had been diagnosed with diabetes. Currently, around 25.8 million Americans have diabetes, and if trends continue on their current track, in 2030, more than 31 million Americans will have diabetes.

The analysis found that if we continue on current trajectories by 2030, for every 100,000 Americans, the number of additional individuals that could develop the top five obesity-related health conditions (new cases) range from:

- **Type 2 Diabetes:** Between 8,658 in Utah to 15,208 in West Virginia (average for all states: 12,127)
- **Coronary Heart Disease and Stroke:** Between 16,730 in Utah to 35,519 in West Virginia (average for all states: 26,573)
- **Hypertension:** Between 17,790 in Utah to 30,508 in Maine (average for all states: 24,923)
- **Arthritis:** Between 12,504 in Utah to 18,725 in Maine (average for all states: 16,152)
- **Obesity-Related Cancer:** Between 2,468 in Utah to 4,897 in Maine (average for all states: 3,781)

However, if states could reduce the average BMI by 5 percent by 2030, thousands of cases of type 2 diabetes, coronary heart disease, stroke, hypertension and arthritis (except Alaska and Utah) could be prevented per 100,000 people in nearly each state, and more than 100 cases of obesity-related cancer per 100,000 people could be prevented per state.

For every 100,000 Americans, the number of **individuals who could avoid these serious health problems** range from:

- **Type 2 Diabetes:** Between 1,810 in Utah to 3,216 in West Virginia
- **Coronary Heart Disease and Stroke:** Between 1,339 in Utah to 2,898 in West Virginia
- **Hypertension:** Between 1,427 in Utah to 2,512 in Maine
- **Arthritis:** Between 849 in Utah to 1,382 in Maine
- **Obesity-Related Cancer:** Between 101 in Utah to 277 in Maine

More information about these five top obesity-related health problems is provided in the following section.

Health Care Costs

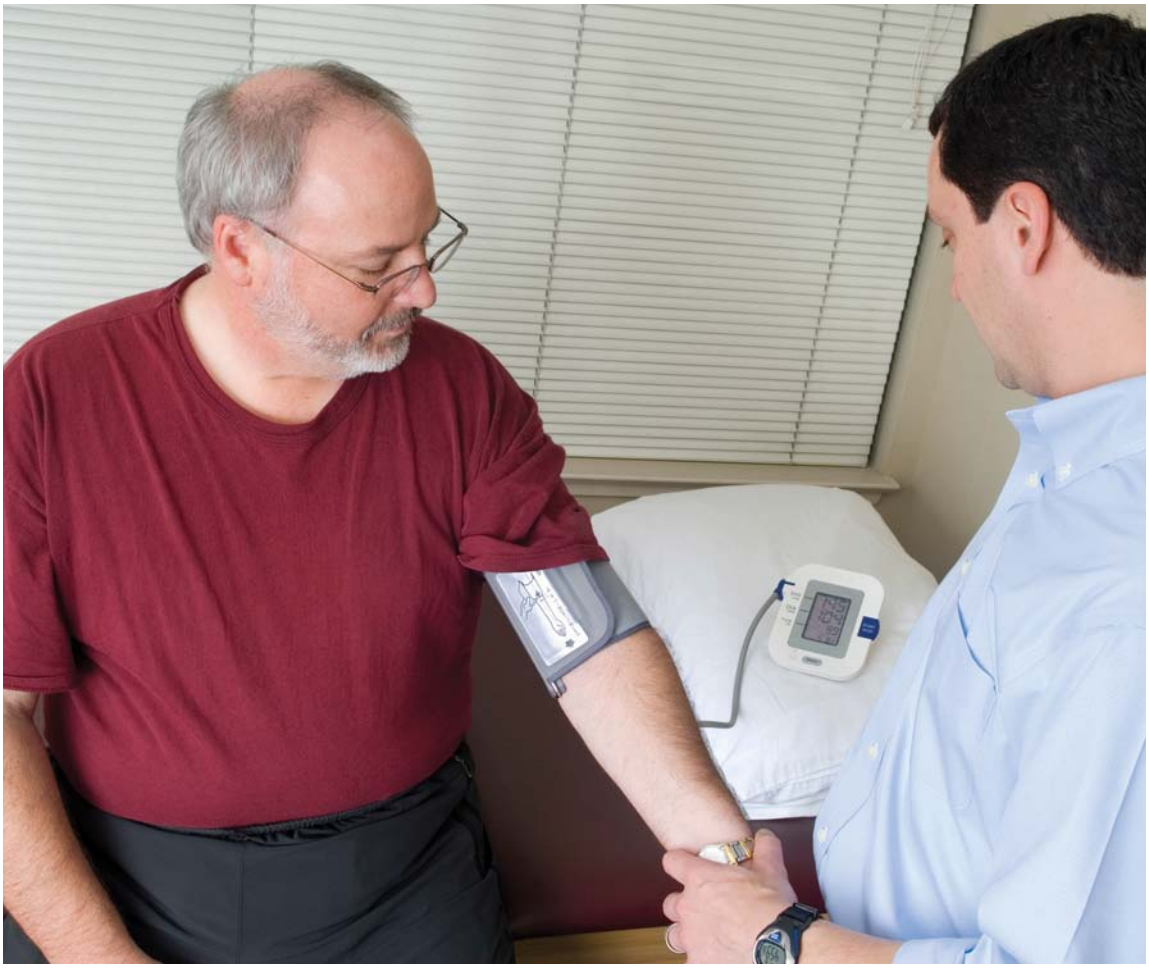
The national analysis found combined medical costs associated with treating preventable obesity-related diseases are estimated to increase by between $48 billion and $66 billion per year in the United States by 2030 — while the loss in economic productivity could be between $390 billion and $580 billion annually by 2030.[60]

In the state-by-state review, the analysis found that if obesity rates continue on their current track, obesity-related health care costs are on a course to increase significantly in most states:

- New Jersey could see an increase of more than a third (34.5 percent);
- Eight states could see increases between 20 percent and 30 percent — New Hampshire (28.7 percent), Colorado (28.5 percent), Alaska (25.7 percent), Georgia (24.3 percent), Virginia (23.8 percent), Washington (21.6 percent), Maryland (21.3 percent) and Vermont (20.3 percent);
- 16 states and Washington, D.C., could expect increases between 15 percent and 20 percent;
- 18 states could expect increases between 10 percent and 15 percent; and
- Only seven states could have increases lower than 10 percent.

Many states that currently have lower obesity rates, such as Colorado and New Hampshire, stand to see the largest increases in obesity-related costs if obesity continues to grow on its current trajectory.

Reducing average BMI by 5 percent by 2030 could significantly reduce health care costs around the country. Every state except Florida would save between 6.5 percent and 7.8 percent in obesity-related health costs. (The impact on Florida, which could see a 2.1 percent reduction, would likely be less significant because of the older demographics in the state.)



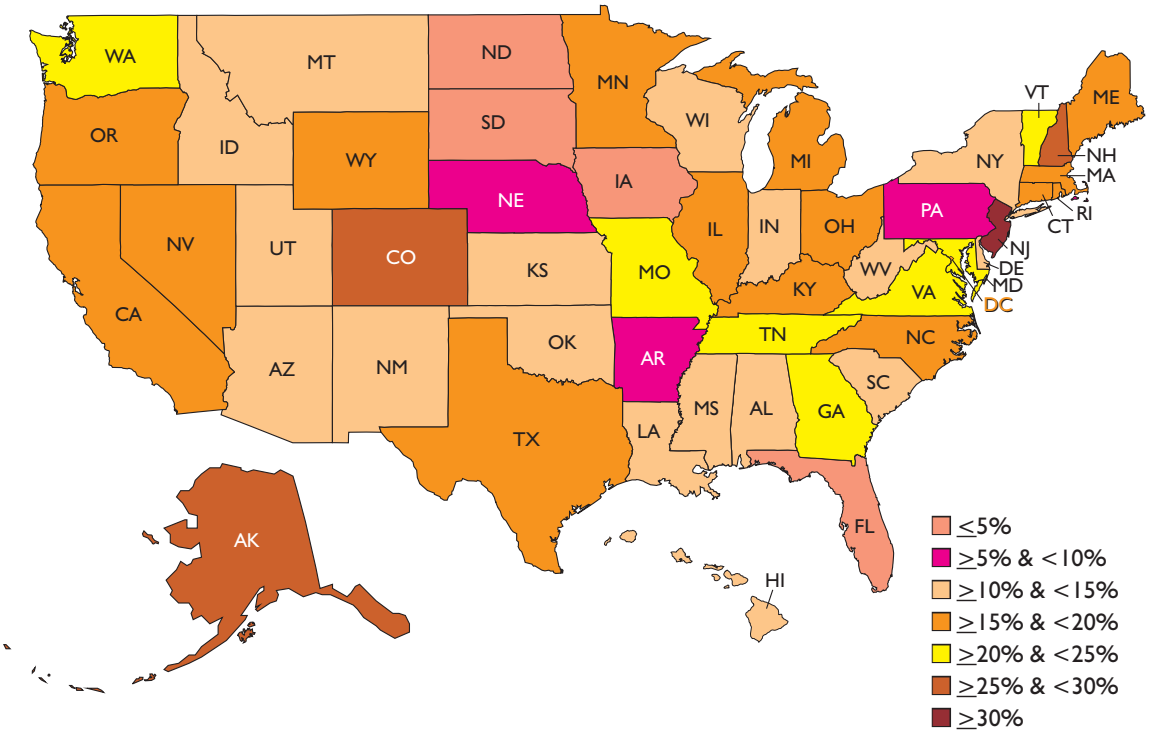
New Cases by 2030

State	New Diabetes Cases by 2030 (per 100,000)	Rank (per 100,000)	New Cancer Cases by 2030 (per 100,000)	Rank (per 100,000)	New CHD & Stroke Cases by 2030 (per 100,000)	Rank (per 100,000)	New Hypertension Cases by 2030 (per 100,000)	Rank (per 100,000)	New Arthritis Cases by 2030 (per 100,000)	Rank (per 100,000)
Alabama	13,777	9	4,169	9	30,376	8	26,782	10	17,039	13
Alaska	9,648	49	3,034	50	20,785	50	21,258	50	14,501	50
Arizona	11,239	42	3,358	45	23,405	44	22,356	47	14,942	45
Arkansas	13,000	18	3,950	20	28,548	18	25,512	26	16,484	25
California	10,078	48	3,320	46	22,365	47	22,360	46	14,783	49
Colorado	10,146	47	3,443	43	22,979	46	23,592	43	15,371	44
Connecticut	11,524	37	4,130	12	28,320	20	26,281	17	16,677	20
Delaware	13,360	13	4,217	8	29,936	9	27,039	8	16,922	14
DC	9,346	50	3,288	48	21,229	49	21,989	49	14,892	47
Florida	12,816	19	4,561	3	32,471	3	27,611	5	17,138	9
Georgia	11,405	40	3,311	47	23,032	45	23,286	44	15,519	42
Hawaii	11,031	45	3,791	31	26,121	38	24,174	42	15,486	43
Idaho	11,156	43	3,400	44	23,845	42	22,605	45	14,894	46
Illinois	11,856	34	3,639	41	25,304	41	24,420	38	15,975	36
Indiana	12,497	25	3,737	33	26,801	32	24,925	31	16,181	31
Iowa	12,007	33	3,933	21	28,018	21	24,996	29	16,150	32
Kansas	12,809	20	3,703	38	26,803	31	24,838	34	16,022	35
Kentucky	13,596	10	4,034	16	29,257	14	26,909	9	17,132	10
Louisiana	13,238	14	3,718	36	26,723	34	24,870	33	16,267	30
Maine	14,507	3	4,897	1	34,833	2	30,508	1	18,725	1
Maryland	12,720	21	3,825	30	26,433	37	25,538	25	16,617	24
Massachusetts	11,313	41	4,045	15	27,214	27	25,858	21	16,639	22
Michigan	13,997	5	4,002	19	28,941	15	26,450	15	17,249	8
Minnesota	11,411	39	3,642	40	25,550	40	24,549	36	15,808	39
Mississippi	13,945	6	3,729	35	27,346	24	25,233	28	16,372	27
Missouri	14,032	4	4,016	18	29,291	13	26,373	16	16,918	15
Montana	12,639	22	4,287	7	30,542	6	27,080	7	17,063	11
Nebraska	12,225	30	3,706	37	26,672	35	24,211	41	15,741	41
Nevada	11,443	38	3,670	39	25,796	39	24,361	39	15,806	40
New Hampshire	13,850	8	4,363	5	30,933	5	28,959	3	18,146	3
New Jersey	11,012	46	3,492	42	23,661	43	24,687	35	16,078	34
New Mexico	12,146	31	3,850	28	26,875	29	24,515	37	15,972	37
New York	11,612	36	3,915	23	26,806	30	25,450	27	16,332	28
North Carolina	12,604	24	3,759	32	26,638	36	24,994	30	16,289	29
North Dakota	11,641	35	3,913	25	27,836	22	24,925	31	16,098	33
Ohio	13,851	7	4,079	13	29,441	12	26,742	13	17,058	12
Oklahoma	13,525	12	3,879	27	28,516	19	25,579	23	16,373	26
Oregon	12,078	32	3,922	22	27,245	26	25,555	24	16,666	21
Pennsylvania	13,586	11	4,340	6	31,110	4	27,338	6	17,376	7
Rhode Island	13,215	15	4,149	10	28,655	17	26,754	12	17,497	5
South Carolina	13,156	16	4,023	17	28,886	16	25,993	18	16,687	19
South Dakota	12,278	29	3,737	33	27,013	28	24,317	40	15,844	38
Tennessee	14,673	2	4,066	14	29,625	10	26,778	11	17,449	6
Texas	11,107	44	3,158	49	22,156	48	22,160	48	14,791	48
Utah	8,658	51	2,468	51	16,730	51	17,790	51	12,504	51
Vermont	12,322	28	4,430	4	30,429	7	27,823	4	17,608	4
Virginia	12,607	23	3,890	26	27,309	25	25,976	19	16,780	18
Washington	12,366	27	3,829	29	26,758	33	25,769	22	16,639	22
West Virginia	15,208	1	4,796	2	35,519	1	30,092	2	18,720	2
Wisconsin	12,408	26	3,914	24	27,658	23	25,880	20	16,785	17
Wyoming	13,005	17	4,149	10	29,564	11	26,632	14	16,892	16

TOTAL HEALTH CARE COSTS 2030

State	Percentage of Potential Increase in Obesity-Related Health Care Costs by 2030 on Current Course	Rank for Potential Increase in Obesity-Related Health Care Costs by 2030	Potential Savings by 2020 if State Reduced Average BMI by 5% (cumulative)	Potential Savings by 2030 if State Reduced Average BMI by 5% (cumulative)	Percentage of Potential Savings by 2030 if State Reduced Average BMI by 5%
Alabama	12%	34th	$3,381,000,000	$9,481,000,000	7.1%
Alaska	25.7%	4th	$573,000,000	$1,530,000,000	6.5%
Arizona	11.1%	41st	$4,775,000,000	$13,642,000,000	7.5%
Arkansas	9.6%	45th	$2,157,000,000	$6,054,000,000	7.6%
California	15.7%	22nd	$28,886,000,000	$81,702,000,000	7.6%
Colorado	28.5%	3rd	$3,792,000,000	$10,794,000,000	7.1%
Connecticut	15.7%	22nd	$2,626,000,000	$7,370,000,000	7.0%
Delaware	14.0%	28th	$701,000,000	$1,912,000,000	7.3%
DC	18.8%	15th	$364,000,000	$1,026,000,000	6.7%
Florida	3.3%	50th	$12,541,000,000	$34,436,000,000	2.1%
Georgia	24.3%	5th	$7,963,000,000	$22,743,000,000	7.7%
Hawaii	12.3%	38th	$976,000,000	$2,704,000,000	7.1%
Idaho	12.0%	36th	$1,195,000,000	$3,280,000,000	7.3%
Illinois	16.1%	21st	$9,852,000,000	$28,185,000,000	7.5%
Indiana	13.0%	32nd	$5,020,000,000	$13,400,000,000	7.1%
Iowa	3.7%	49th	$2,059,000,000	$5,702,000,000	7.1%
Kansas	11.2%	43rd	$2,188,000,000	$5,979,000,000	7.7%
Kentucky	17.6%	17th	$3,376,000,000	$9,437,000,000	7.3%
Louisiana	12.8%	39th	$3,657,000,000	$9,839,000,000	7.3%
Maine	19.0%	12th	$1,019,000,000	$2,870,000,000	7.1%
Maryland	21.3%	7th	$4,935,000,000	$13,836,000,000	7.6%
Massachusetts	19.1%	10th	$5,045,000,000	$14,055,000,000	7.2%
Michigan	19.0%	12th	$8,710,000,000	$24,187,000,000	7.7%
Minnesota	15.7%	26th	$4,189,000,000	$11,630,000,000	7.3%
Mississippi	11.7%	40th	$2,270,000,000	$6,120,000,000	6.9%
Missouri	13.9%	31st	$4,718,000,000	$13,368,000,000	7.9%
Montana	13.0%	32nd	$715,000,000	$1,939,000,000	6.9%
Nebraska	6.7%	47th	$1,334,000,000	$3,686,000,000	7.5%
Nevada	18.2%	14th	$2,095,000,000	$5,921,000,000	7.3%
New Hampshire	28.7%	2nd	$1,158,000,000	$3,257,000,000	7.1%
New Jersey	34.5%	1st	$471,000,000	$1,391,000,000	7.4%
New Mexico	11.8%	42nd	$1,483,000,000	$4,095,000,000	7.3%
New York	14.8%	29th	$14,097,000,000	$40,017,000,000	7.2%
North Carolina	17.6%	17th	$7,633,000,000	$21,101,000,000	7.5%
North Dakota	1.9%	51st	$413,000,000	$1,177,000,000	7.2%
Ohio	15.2%	25th	$9,628,000,000	$26,328,000,000	7.6%
Oklahoma	10.8%	44th	$2,755,000,000	$7,444,000,000	7.2%
Oregon	17.3%	16th	$2,791,000,000	$7,938,000,000	7.3%
Pennsylvania	9.1%	46th	$8,774,000,000	$24,498,000,000	7.1%
Rhode Island	19.9%	11th	$855,000,000	$2,478,000,000	7.6%
South Carolina	12.6%	35th	$3,319,000,000	$9,309,000,000	7.4%
South Dakota	3.6%	48th	$569,000,000	$1,553,000,000	7.6%
Tennessee	17.8%	20th	$4,928,000,000	$13,827,000,000	7.6%
Texas	17.1%	19th	$19,386,000,000	$54,194,000,000	7.7%
Utah	13.7%	30th	$2,122,000,000	$5,843,000,000	7.8%
Vermont	20.3%	9th	$487,000,000	$1,376,000,000	7.3%
Virginia	23.8%	6th	$6,266,000,000	$18,114,000,000	7.4%
Washington	21.6%	8th	$5,201,000,000	$14,729,000,000	7.4%
West Virginia	12.0%	36th	$1,346,000,000	$3,638,000,000	6.8%
Wisconsin	14.7%	27th	$4,148,000,000	$11,962,000,000	7.4%
Wyoming	15.6%	24th	$389,000,000	$1,088,000,000	7.3%

Potential Percent Growth in Obesity-Related Health Care Costs by 2030 if the Current Trajectory Continues (By Percent)

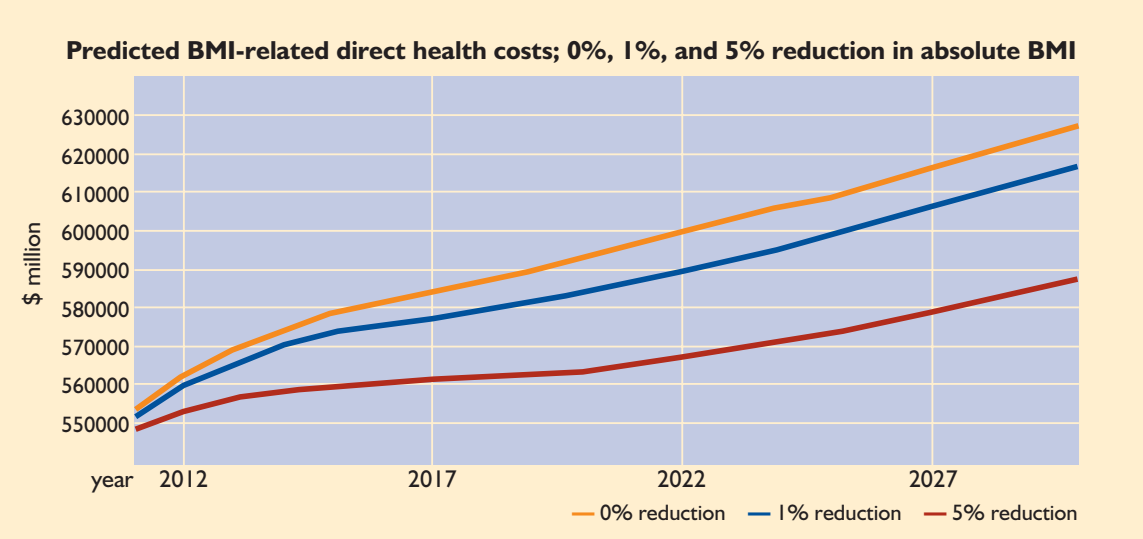


Projected Obesity-Related Health Care Costs 2010 to 2030

Orange: If Obesity Continues to Rise on Its Current Trajectory

Blue: If BMI is Reduced by 1 Percent

Red: If BMI is Reduced by 5 Percent



CURRENT ECONOMIC COSTS OF OBESITY

Health Care Costs

- The medical cost of adult obesity in the United States is difficult to calculate but estimates range from $147 billion to nearly $210 billion per year.[61] The bulk of the spending is generated from treating obesity-related diseases such as diabetes.[62]
  - Of the $147 billion, Medicare and Medicaid are responsible for $61.8 billion. Medicare and Medicaid spending would be 8.5 percent and 11.8 percent lower, respectively, in the absence of obesity.[63]
  - Obese people spend 42 percent more on health care costs than healthy-weight people.[64]
- Childhood obesity alone is responsible for $14.1 billion in direct costs.[65]
- Annually, the average total health expenses for a child treated for obesity under Medicaid is $6,730, while the average health cost for all children covered by Medicaid is $2,446. The average total health expenses for a child treated for obesity under private insurance is $3,743, while the average health cost for all children covered by private insurance is $1,108.[66]
- Hospitalizations of children and youths with a diagnosis of obesity nearly doubled between 1999 and 2005, while total costs for children and youth with obesity-related hospitalizations increased from $125.9 million in 2001 to $237.6 million in 2005, measured in 2005 dollars.[67]
- In California alone, the economic costs of overweight, obesity and physical inactivity are estimated at $41 billion a year.[68]

Decreased Worker Productivity and Increased Absenteeism

- Obesity-related job absenteeism costs $4.3 billion annually.[69]
- Obesity is associated with lower productivity while at work (presenteeism), which costs employers $506 per obese worker per year.[70]
- As a person's BMI increases, so do the number of sick days, medical claims and health care costs associated with that person.[71]

Higher Workers' Compensation Claims

- A number of studies have shown obese workers have higher workers' compensation claims.[72, 73, 74, 75, 76, 77]
- Obese employees had $51,091 in medical claims costs per 100 full-time employees, compared with only $7,503 in medical claims costs for healthy-weight workers. And obese workers had $59,178 in indemnity claims costs per 100 full-time employees, compared with only $5,396 in indemnity claims costs for healthy-weight employees.[78] Indemnity claims are those where an insurer agrees to cover the cost of losses suffered by the insured and can include medical payments and payment for lost time by the injured worker.

Occupational Health and Safety Costs

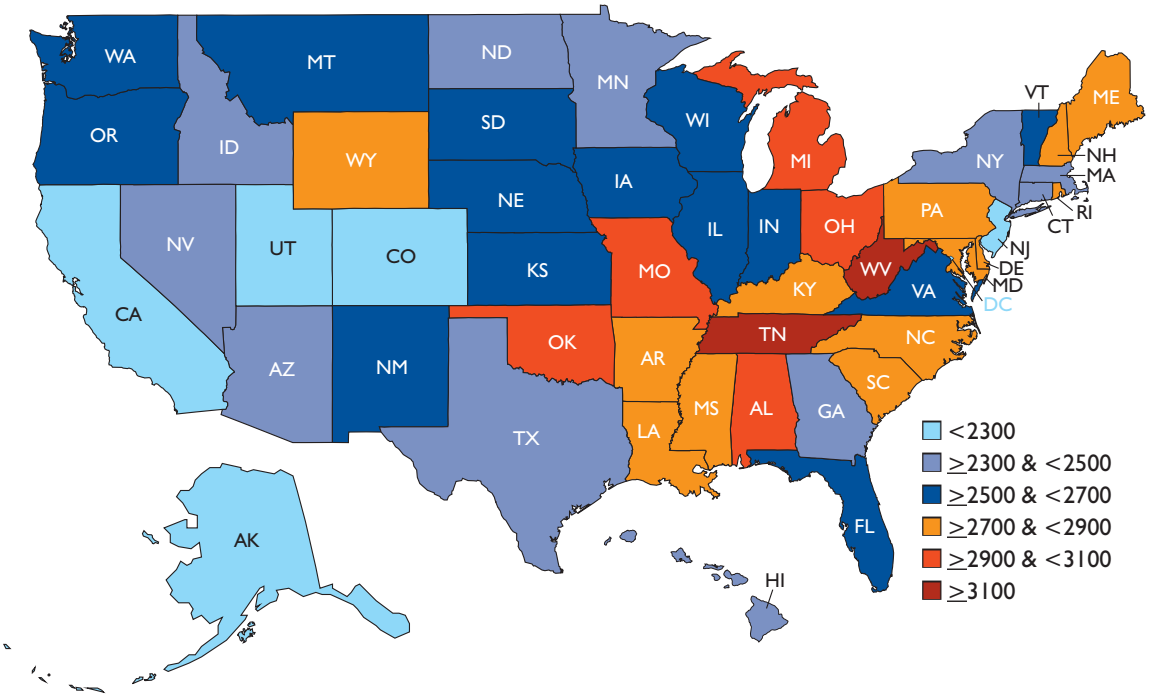
- Emergency responders and health care providers face unique challenges in transporting and treating the heaviest patients. According to one study, the number of severely obese (BMI $\geq$ 40) patients quadrupled between 1986 and 2000 from one in 200 to one in 50. The number of super-obese (BMI $\geq$ 50) patients grew by a factor of five, from one in 2,000 to one in 400.[79]
- A typical ambulance outfitted with equipment and two emergency medical technicians (EMTs) that can transport a 400-pound patient costs $70,000. A specially outfitted bariatric ambulance that can transport patients weighing up to 1,000 pounds costs $110,000.[80]
- A standard hospital bed can hold 500 pounds and costs $1,000. A bariatric hospital bed that can hold up to 1,000 pounds costs $4,000.[81]

B. FIVE TOP OBESITY-RELATED HEALTH ISSUES

The NHF study commissioned by RWJF and TFAH examined the potential future rates — and related costs — of five of the leading health problems related to obesity if trends continue on their current track versus if average adult BMI was reduced by 5 percent in every state.

1. TYPE 2 DIABETES AND OBESITY

Potential Diabetes Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Diabetes is the seventh leading cause of death in the United States and accounts for $174 billion in total U.S. health care costs.[82]

More than 25 million adult Americans have diabetes.[83] Another 79 million Americans are pre-diabetic, which means they have elevated blood sugar levels that can contribute to the development of diabetes.[84] CDC projects that as many as one in three U.S. adults could have diabetes by 2050, and the analysis in this report shows the numbers could top 31 percent by 2030.[85]

Over a 10-year period, the number of adults in the United States ages 18–79 with newly diagnosed diabetes more than tripled from 493,000 in 1980 to more than 1.7 million in 2010.[86] About 1.9 million people aged 20 years or older were newly diagnosed with diabetes in 2010.[87]

Approximately 215,000 individuals under the age of 20 have diabetes.[88] Two million adolescents ages 12–19 have pre-diabetes.[89]

Being overweight or obese significantly increases an individual's risk of type 2 diabetes. More than 80 percent of people with type 2 diabetes are overweight.[90] Excess weight decreases the effectiveness of insulin, a hormone that transports sugar from blood to cells. When insulin doesn't work correctly, too much sugar stays in the bloodstream. To make up for this, the cells that produce insulin must produce more of the hormone. This process may lead the cells to deteriorate more quickly, exacerbating the development of diabetes.[91, 92]

People with type 2 diabetes have higher-than-normal levels of glucose, a source of sugar that humans produce by metabolizing carbohydrates, in their blood. High blood sugar contributes to a range of serious health problems, including heart disease, stroke, kidney disease, circulatory problems, neurological problems and eye damage.

Nutrition, Physical Activity, Weight Loss and Diabetes

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) found that a 7 percent weight loss together with moderate levels of physical activity (walking 30 minutes a day, five days a week) decreased the number of new type 2 diabetes cases by 58 percent among people at risk for diabetes.[93] While the lifestyle changes in nutrition and activity through the Diabetes Prevention Program (DPP) reduced the incidence of type 2 diabetes by 58 percent, drug therapy reduced the incidence by only 31 percent.[94]

Physical activity and weight loss both increase insulin sensitivity, which increases the body's ability to transport sugar from the bloodstream to cells. A healthy diet, with recommended levels of fruits, vegetables and grains and a limited amount of saturated fats and sweets, can also help reduce the severity of the illness.[95, 96, 97]

DIABETES MANAGEMENT AND TEENS: STUDY FINDS DISCOURAGING RESULTS

Because type 2 diabetes previously was considered to be an adult condition, there are few studies evaluating how to treat young people with the disease. New research in the *New England Journal of Medicine* examined various treatments for controlling blood sugar in teens. Results showed that nearly half of participants failed in controlling the disease, and one in five suffered serious complications within a few years of diagnosis.[98] The results highlight the importance of preventing type 2 diabetes in the first place.

The research focused on nearly 700 overweight and obese teens recently diagnosed with type 2 diabetes. Teens were placed in one of three treatment groups and followed for four years. One group took metformin, another took metformin plus diet and exercise counseling, and the final group was given metformin plus a second drug, Avandia. Results showed that half in the metformin group failed to maintain blood sugar control, but the outcomes for the other two groups were not much better.[99]

WHERE YOU LIVE MATTERS: MOVING TO HIGHER-INCOME AREAS REDUCES RISK OF OBESITY AND DIABETES FOR POOR WOMEN

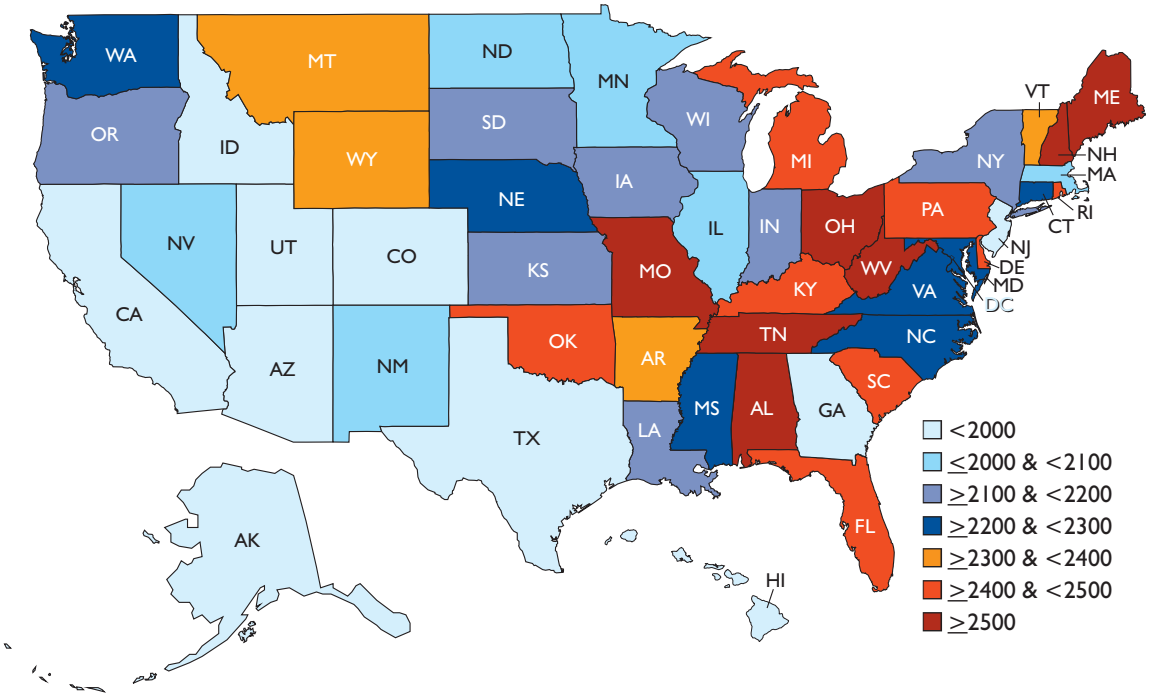
Between 1994 and 1998 the U.S. Department of Housing and Urban Development (HUD) randomly assigned families living in public housing projects in high-poverty neighborhoods into an experimental and control group. The experimental group was given vouchers to move to higher-income neighborhoods, and the control group did not receive vouchers. Findings of the study, which were released in the *New England Journal of Medicine*, revealed that having the option to move to lower-poverty neighborhoods lowered the risk of obesity and diabetes among poor women.[100] Women who were given the vouchers were almost one-fifth less likely to become extremely obese and were one-fifth less likely to develop diabetes compared with women who were not offered the housing voucher.[101]

Diabetes Costs and Cases

State	2010 Number of Cases	New Diabetes Cases by 2030	New Diabetes Cases by 2030 (per 100,000)	Rank New Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	448,912	661,673	13,777	9	72,185	$1,152,000,000	141,297	$3,672,000,000
Alaska	50,843	69,728	9,648	49	7,892	$176,000,000	14,389	$546,000,000
Arizona	496,106	728,569	11,239	42	79,411	$1,739,000,000	154,737	$5,781,000,000
Arkansas	265,417	381,937	13,000	18	41,337	$722,000,000	80,530	$2,324,000,000
California	2,694,595	3,798,591	10,078	48	420,642	$9,747,000,000	796,430	$31,087,000,000
Colorado	333,206	519,150	10,146	47	54,596	$1,247,000,000	108,067	$4,043,000,000
Connecticut	267,944	412,641	11,524	37	42,682	$887,000,000	83,932	$2,824,000,000
Delaware	79,275	121,193	13,360	13	13,017	$228,000,000	25,427	$721,000,000
DC	40,312	57,758	9,346	50	6,155	$133,000,000	11,705	$433,000,000
Florida	1,722,611	2,442,415	12,816	19	260,135	$4,459,000,000	501,976	$14,074,000,000
Georgia	754,593	1,119,425	11,405	40	123,475	$2,563,000,000	238,019	$8,324,000,000
Hawaii	105,063	151,655	11,031	45	15,879	$319,000,000	31,634	$1,051,000,000
Idaho	119,270	176,821	11,156	43	19,384	$404,000,000	36,677	$1,274,000,000
Illinois	1,014,097	1,525,779	11,856	34	167,300	$3,434,000,000	325,721	$11,141,000,000
Indiana	544,815	814,420	12,497	25	89,021	$1,635,000,000	170,743	$5,160,000,000
Iowa	262,746	367,691	12,007	33	40,851	$726,000,000	77,783	$2,287,000,000
Kansas	239,691	367,777	12,809	20	39,537	$741,000,000	77,294	$2,390,000,000
Kentucky	394,029	594,058	13,596	10	63,793	$1,104,000,000	124,701	$3,503,000,000
Louisiana	398,422	605,617	13,238	14	66,884	$1,212,000,000	127,455	$3,882,000,000
Maine	120,878	192,680	14,507	3	19,949	$344,000,000	40,550	$1,114,000,000
Maryland	469,294	741,358	12,720	21	79,731	$1,580,000,000	158,413	$5,211,000,000
Massachusetts	483,855	745,248	11,313	41	77,206	$1,656,000,000	155,532	$5,436,000,000
Michigan	861,006	1,382,370	13,997	5	147,056	$2,777,000,000	294,113	$9,067,000,000
Minnesota	410,004	609,902	11,411	39	65,368	$1,350,000,000	127,368	$4,367,000,000
Mississippi	284,269	415,353	13,945	6	45,988	$774,000,000	86,347	$2,472,000,000
Missouri	535,793	843,420	14,032	4	90,942	$1,575,000,000	179,659	$5,084,000,000
Montana	83,849	126,162	12,639	22	13,156	$234,000,000	26,522	$758,000,000
Nebraska	152,276	225,263	12,225	30	24,784	$458,000,000	47,577	$1,456,000,000
Nevada	214,217	311,630	11,443	38	34,232	$690,000,000	65,087	$2,172,000,000
New Hampshire	108,764	182,570	13,850	8	18,692	$385,000,000	38,425	$1,239,000,000
New Jersey	607,689	971,386	11,012	46	103,119	$158,000,000	202,357	$520,000,000
New Mexico	173,054	252,907	12,146	31	26,569	$486,000,000	52,597	$1,599,000,000
New York	1,516,923	2,260,299	11,612	36	241,952	$4,774,000,000	473,588	$15,726,000,000
North Carolina	820,118	1,217,093	12,604	24	134,610	$2,363,000,000	261,785	$7,746,000,000
North Dakota	58,887	79,617	11,641	35	8,809	$150,000,000	16,873	$491,000,000
Ohio	1,012,377	1,599,091	13,851	7	174,329	$3,075,000,000	342,192	$9,899,000,000
Oklahoma	337,823	512,801	13,525	12	56,835	$912,000,000	110,522	$2,950,000,000
Oregon	313,737	467,643	12,078	32	49,676	$936,000,000	98,578	$3,089,000,000
Pennsylvania	1,135,646	1,731,248	13,586	11	185,919	$3,208,000,000	366,995	$10,318,000,000
Rhode Island	82,811	138,930	13,215	15	14,308	$297,000,000	29,889	$1,018,000,000
South Carolina	429,273	615,599	13,156	16	68,972	$1,099,000,000	133,498	$3,548,000,000
South Dakota	70,269	101,181	12,278	29	11,166	$196,000,000	21,780	$638,000,000
Tennessee	594,871	939,564	14,673	2	102,390	$1,676,000,000	201,257	$5,505,000,000
Texas	1,962,059	2,851,687	11,107	44	321,447	$6,597,000,000	605,152	$21,338,000,000
Utah	164,385	243,915	8,658	51	27,327	$718,000,000	50,992	$2,289,000,000
Vermont	50,472	77,189	12,322	28	8,000	$160,000,000	16,193	$526,000,000
Virginia	644,975	1,020,739	12,607	23	106,956	$2,122,000,000	209,621	$6,837,000,000
Washington	550,296	844,602	12,366	27	90,361	$1,680,000,000	178,401	$5,534,000,000
West Virginia	191,529	282,164	15,208	1	29,964	$430,000,000	59,669	$1,391,000,000
Wisconsin	470,136	708,716	12,408	26	74,310	$1,442,000,000	147,935	$4,733,000,000
Wyoming	48,566	73,889	13,005	17	7,750	$127,000,000	15,596	$421,000,000

2. HEART DISEASE, STROKE AND OBESITY

Potential Chronic Heart Disease & Stroke Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Being overweight or obese raises the risk of having high blood pressure, having high levels of harmful blood fats known as triglycerides and high levels of low-density lipoprotein (LDL), also known as "bad cholesterol." And, it can lead to lower levels of high-density lipoprotein (HDL), also known as "good cholesterol." These conditions can raise the long-term risk of heart disease or stroke. Excess body fat can also produce chemicals in the body that trigger inflammation. Chronic inflammation throughout the body, and especially in blood vessels, may increase the risk of heart disease.[102]

Most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies, particularly those focusing on physical activity and nutrition, according to a review of more than 200 articles by the American Heart Association.[103]

Weight Loss, Physical Activity, Nutrition and Heart Disease and Stroke

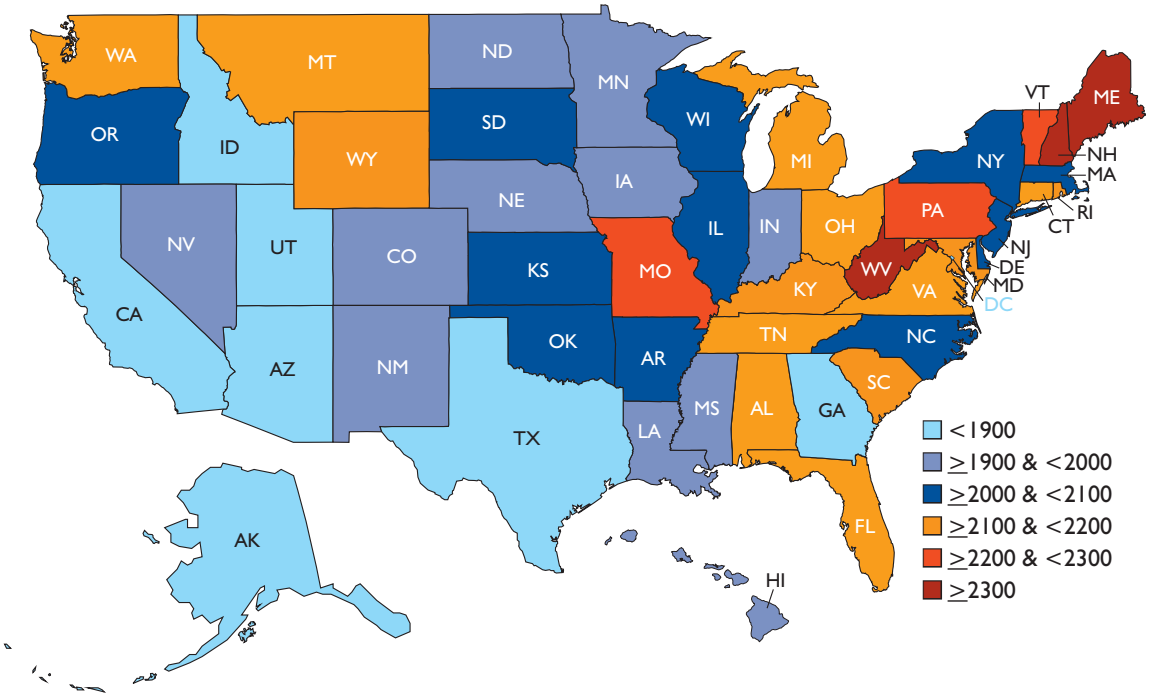
For individuals who are overweight or obese, evidence indicates that losing as little as 5 percent to 10 percent of total weight can reduce the risk of heart disease and stroke. For someone who weighs 220 pounds, 5 percent of total weight is 11 pounds. Weight loss may cut risks of heart disease and stroke by decreasing hypertension, lowering levels of triglycerides and bad cholesterol, and reducing inflammation, which may decrease cardiovascular risk. It also reduces the production of inflammatory chemicals in the body, and, as a result, reduces cardiovascular inflammation. In addition, exercise can help by strengthening the heart and improving blood flow. A healthy diet also can protect against heart disease and stroke.[104, 105]

Coronary Heart Disease & Stroke Costs and Cases

State	2010 Number of Cases	New CHD & Stroke Cases by 2030	New CHD & Stroke Cases by 2030 (per 100,000)	Rank New CHD & Stroke Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	311,842	1,458,880	30,376	8	59,122	$1,627,000,000	121,749	$4,235,000,000
Alaska	29,747	150,217	20,785	50	6,273	$281,000,000	11,889	$692,000,000
Arizona	348,694	1,517,230	23,405	44	58,537	$2,148,000,000	114,546	$5,467,000,000
Arkansas	187,061	838,734	28,548	18	32,935	$1,027,000,000	67,867	$2,642,000,000
California	1,876,680	8,429,796	22,365	47	321,512	$13,923,000,000	656,970	$35,571,000,000
Colorado	231,944	1,175,789	22,979	46	45,232	$1,761,000,000	95,428	$4,735,000,000
Connecticut	214,986	1,014,057	28,320	20	37,776	$1,296,000,000	79,528	$3,316,000,000
Delaware	57,340	271,560	29,936	9	10,786	$344,000,000	22,261	$871,000,000
DC	29,219	131,194	21,229	49	4,721	$165,000,000	9,295	$406,000,000
Florida	1,412,354	6,188,174	32,471	3	234,408	$5,913,000,000	465,385	$14,684,000,000
Georgia	465,535	2,260,639	23,032	45	87,846	$3,735,000,000	185,409	$9,928,000,000
Hawaii	78,240	359,114	26,121	38	13,363	$482,000,000	26,286	$1,153,000,000
Idaho	85,114	377,940	23,845	42	15,232	$585,000,000	30,146	$1,454,000,000
Illinois	719,649	3,256,437	25,304	41	129,207	$4,649,000,000	268,967	$12,073,000,000
Indiana	386,193	1,746,600	26,801	32	72,338	$2,499,000,000	140,700	$5,922,000,000
Iowa	206,491	857,998	28,018	21	33,808	$940,000,000	67,065	$2,373,000,000
Kansas	176,438	769,578	26,803	31	31,727	$1,051,000,000	63,052	$2,560,000,000
Kentucky	264,958	1,278,342	29,257	14	52,389	$1,656,000,000	107,355	$4,298,000,000
Louisiana	274,399	1,222,533	26,723	34	50,964	$1,723,000,000	99,640	$4,120,000,000
Maine	91,512	462,648	34,833	2	17,970	$491,000,000	38,398	$1,265,000,000
Maryland	320,731	1,540,592	26,433	37	63,295	$2,408,000,000	129,330	$6,099,000,000
Massachusetts	375,028	1,792,732	27,214	27	65,085	$2,358,000,000	138,075	$5,918,000,000
Michigan	601,065	2,858,267	28,941	15	117,033	$4,401,000,000	241,967	$10,943,000,000
Minnesota	298,457	1,365,612	25,550	40	54,304	$2,071,000,000	111,066	$5,242,000,000
Mississippi	183,417	814,504	27,346	24	35,444	$1,122,000,000	66,897	$2,681,000,000
Missouri	383,542	1,760,591	29,291	13	73,330	$2,290,000,000	152,070	$5,935,000,000
Montana	64,244	304,870	30,542	6	12,018	$358,000,000	23,617	$847,000,000
Nebraska	116,013	491,469	26,672	35	20,435	$629,000,000	40,796	$1,593,000,000
Nevada	144,554	702,508	25,796	39	26,144	$989,000,000	55,556	$2,653,000,000
New Hampshire	76,996	407,757	30,933	5	16,082	$561,000,000	35,077	$1,467,000,000
New Jersey	398,981	2,087,173	23,661	43	77,009	$220,000,000	168,660	$610,000,000
New Mexico	123,330	559,598	26,875	29	21,384	$730,000,000	43,102	$1,782,000,000
New York	1,140,661	5,217,841	26,806	30	194,652	$6,777,000,000	410,326	$17,296,000,000
North Carolina	543,752	2,572,272	26,638	36	106,510	$3,733,000,000	213,310	$9,360,000,000
North Dakota	46,993	190,379	27,836	22	7,222	$183,000,000	14,116	$467,000,000
Ohio	732,181	3,398,949	29,441	12	145,120	$4,726,000,000	293,011	$11,718,000,000
Oklahoma	239,699	1,081,186	28,516	19	46,484	$1,345,000,000	92,323	$3,281,000,000
Oregon	225,575	1,054,888	27,245	26	40,229	$1,330,000,000	82,200	$3,388,000,000
Pennsylvania	892,129	3,964,312	31,110	4	150,111	$3,956,000,000	312,456	$9,867,000,000
Rhode Island	64,087	301,251	28,655	17	11,722	$394,000,000	25,063	$1,009,000,000
South Carolina	289,176	1,351,642	28,886	16	56,853	$1,682,000,000	114,735	$4,297,000,000
South Dakota	54,373	222,609	27,013	28	9,246	$277,000,000	17,899	$660,000,000
Tennessee	396,752	1,896,993	29,625	10	79,145	$2,380,000,000	162,325	$6,034,000,000
Texas	1,261,654	5,688,482	22,156	48	230,559	$9,169,000,000	465,739	$23,124,000,000
Utah	113,478	471,321	16,730	51	20,030	$1,026,000,000	37,723	$2,530,000,000
Vermont	38,031	190,617	30,429	7	6,978	$243,000,000	14,702	$618,000,000
Virginia	442,803	2,211,102	27,309	25	86,796	$3,041,000,000	183,631	$8,114,000,000
Washington	378,316	1,827,582	26,758	33	74,379	$2,575,000,000	151,285	$6,592,000,000
West Virginia	137,761	659,007	35,519	1	26,420	$685,000,000	53,768	$1,658,000,000
Wisconsin	347,847	1,579,761	27,658	23	59,574	$1,968,000,000	123,717	$5,171,000,000
Wyoming	35,021	167,970	29,564	11	6,619	$189,000,000	13,403	$474,000,000

3. HYPERTENSION AND OBESITY

Potential Hypertension Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Hypertension, often known as high blood pressure, can cause damage to an individual's arteries, heart, brain, kidneys, eyes and other body functions and can increase an individual's risk for heart disease, stroke, kidney damage and other health problems.[106] About 1 in 3 U.S. adults—an estimated 68 million—have high blood pressure.[107]

Being overweight or obese can increase risk for hypertension in a number of ways:

- Increased activity of the sympathetic nervous system, which controls some automatic bodily functions, including blood pressure;
- Increased salt retention and insulin resistance, both of which can increase blood pressure;
- Increased levels of systemic inflammation, which can damage blood vessels and lead to hypertension; and
- Increased risk of sleep apnea, which raises the risk of high blood pressure.[108]

Nutrition, Physical Activity and Hypertension

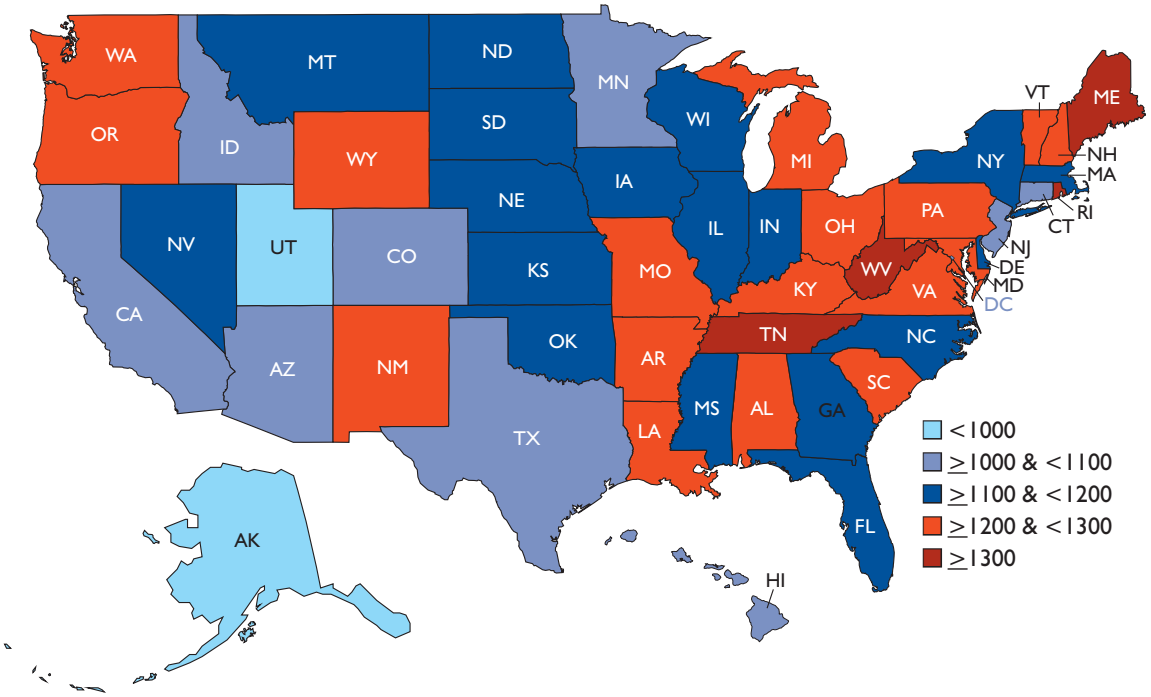
A range of studies have found that reducing obesity can reduce high blood pressure. Losing as little as five pounds can reduce hypertension and may allow people to reduce the amount of blood pressure medicine they take. Reducing sodium intake may also reduce the amount of blood pressure medicine needed. Getting at least 30 minutes of physical activity several times a week and eating a healthy, lower sodium diet also can help to lower high blood pressure. Losing weight lowers blood pressure through a combination of changes: reduced activity in the sympathetic nervous system, reduced sodium intake, reduced systemic inflammation, and a lowered risk of sleep apnea.[109,110]

Hypertension Costs and Cases

State	2010 Number of Cases	New Hypertension Cases by 2030	New Hypertension Cases by 2030 (per 100,000)	Rank New Hypertension Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	1,006,222	1,286,270	26,782	10	60,370	$214,000,000	102,683	$570,000,000
Alaska	113,936	153,635	21,258	50	6,562	$36,000,000	10,826	$94,000,000
Arizona	1,176,899	1,449,229	22,356	47	67,742	$327,000,000	112,018	$876,000,000
Arkansas	606,605	749,537	25,512	26	34,933	$148,000,000	60,434	$391,000,000
California	6,478,109	8,427,912	22,360	46	364,104	$1,773,000,000	698,431	$5,422,000,000
Colorado	847,137	1,207,155	23,592	43	55,978	$274,000,000	97,935	$759,000,000
Connecticut	708,945	941,046	26,281	17	43,219	$184,000,000	75,911	$506,000,000
Delaware	187,986	245,280	27,039	8	11,575	$47,000,000	18,887	$119,000,000
DC	98,237	135,891	21,989	49	5,296	$26,000,000	9,665	$72,000,000
Florida	4,372,562	5,261,978	27,611	5	235,932	$827,000,000	401,924	$2,175,000,000
Georgia	1,649,642	2,285,570	23,286	44	106,004	$535,000,000	184,624	$1,492,000,000
Hawaii	264,816	332,347	24,174	42	14,587	$64,000,000	26,740	$184,000,000
Idaho	283,475	358,286	22,605	45	17,276	$77,000,000	29,084	$213,000,000
Illinois	2,369,745	3,142,673	24,420	38	145,937	$680,000,000	258,801	$1,889,000,000
Indiana	1,249,620	1,624,343	24,925	31	77,095	$334,000,000	128,579	$864,000,000
Iowa	636,409	765,455	24,996	29	34,573	$135,000,000	60,940	$369,000,000
Kansas	558,427	713,158	24,838	34	34,943	$144,000,000	57,769	$379,000,000
Kentucky	881,343	1,175,750	26,909	9	54,617	$219,000,000	93,198	$576,000,000
Louisiana	882,898	1,137,762	24,870	33	55,539	$241,000,000	91,451	$618,000,000
Maine	296,784	405,204	30,508	1	19,113	$73,000,000	33,364	$196,000,000
Maryland	1,083,304	1,488,428	25,538	25	71,397	$338,000,000	126,707	$930,000,000
Massachusetts	1,258,549	1,703,405	25,858	21	75,888	$340,000,000	135,308	$952,000,000
Michigan	1,934,745	2,612,251	26,450	15	122,761	$559,000,000	211,548	$1,480,000,000
Minnesota	990,242	1,312,110	24,549	36	60,985	$286,000,000	105,240	$783,000,000
Mississippi	595,822	751,568	25,233	28	35,861	$145,000,000	56,741	$357,000,000
Missouri	1,221,011	1,585,199	26,373	16	77,117	$295,000,000	133,798	$823,000,000
Montana	212,207	270,312	27,080	7	12,428	$49,000,000	21,391	$126,000,000
Nebraska	364,659	446,122	24,211	41	21,872	$91,000,000	36,005	$238,000,000
Nevada	511,848	663,428	24,361	39	31,999	$149,000,000	53,677	$401,000,000
New Hampshire	263,771	381,736	28,959	3	18,455	$83,000,000	31,320	$217,000,000
New Jersey	1,438,554	2,177,679	24,687	35	100,473	$37,000,000	177,570	$104,000,000
New Mexico	419,506	510,457	24,515	37	23,821	$95,000,000	40,458	$251,000,000
New York	3,749,386	4,953,893	25,450	27	219,567	$992,000,000	395,338	$2,793,000,000
North Carolina	1,831,530	2,413,521	24,994	30	113,366	$486,000,000	195,735	$1,311,000,000
North Dakota	145,630	170,470	24,925	31	7,667	$26,000,000	13,248	$75,000,000
Ohio	2,336,929	3,087,351	26,742	13	150,084	$621,000,000	249,255	$1,602,000,000
Oklahoma	765,126	969,830	25,579	23	46,939	$176,000,000	77,423	$451,000,000
Oregon	749,127	989,454	25,555	24	43,442	$182,000,000	77,631	$503,000,000
Pennsylvania	2,752,209	3,483,650	27,338	6	163,109	$609,000,000	284,931	$1,656,000,000
Rhode Island	207,285	281,265	26,754	12	12,973	$57,000,000	23,602	$155,000,000
South Carolina	961,722	1,216,272	25,993	18	56,291	$202,000,000	101,446	$568,000,000
South Dakota	169,415	200,392	24,317	40	9,724	$38,000,000	16,721	$103,000,000
Tennessee	1,299,689	1,714,690	26,778	11	83,372	$321,000,000	139,977	$842,000,000
Texas	4,300,252	5,689,509	22,160	48	271,638	$1,352,000,000	472,671	$3,777,000,000
Utah	390,890	501,184	17,790	51	24,341	$141,000,000	40,202	$393,000,000
Vermont	128,688	174,292	27,823	4	7,605	$34,000,000	13,976	$95,000,000
Virginia	1,512,608	2,103,174	25,976	19	96,997	$434,000,000	175,777	$1,219,000,000
Washington	1,282,066	1,760,032	25,769	22	83,258	$358,000,000	145,002	$987,000,000
West Virginia	433,914	558,316	30,092	2	25,474	$86,000,000	42,840	$220,000,000
Wisconsin	1,130,359	1,478,205	25,880	20	65,742	$286,000,000	114,692	$777,000,000
Wyoming	118,620	151,312	26,632	14	7,085	$23,000,000	12,119	$68,000,000

4. ARTHRITIS AND OBESITY

Potential Arthritis Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Obesity is a known risk factor for the development and progression of osteoarthritis of the knee and possibly of other joints. Obese adults are up to four times more likely to develop osteoarthritis of the knee than healthy-weight adults.[111]

Among individuals who have received a doctor's diagnosis of arthritis, 68.8 percent are overweight or obese.[112] Obesity prevalence is 54 percent higher among adults with arthritis compared with adults without arthritis.[113]

Being overweight or obese puts more stress on joints and cartilage, and leads to increased deterioration. Increased body fat also triggers the production of inflammatory chemicals, which may accelerate the arthritic process.[114, 115]

Adults with arthritis are significantly less likely to participate in leisure time physical activity compared with those without arthritis.[116]

Arthritis and Weight Loss

For those who are overweight or obese, losing weight can make a significant difference for arthritis symptoms and for the overall progression of the disease. Losing as little as 5 percent of total body weight can reduce the pounding on knees, hips and lower back, and can reduce the production of inflammatory chemicals that can worsen pain and speed deterioration.[117, 118]

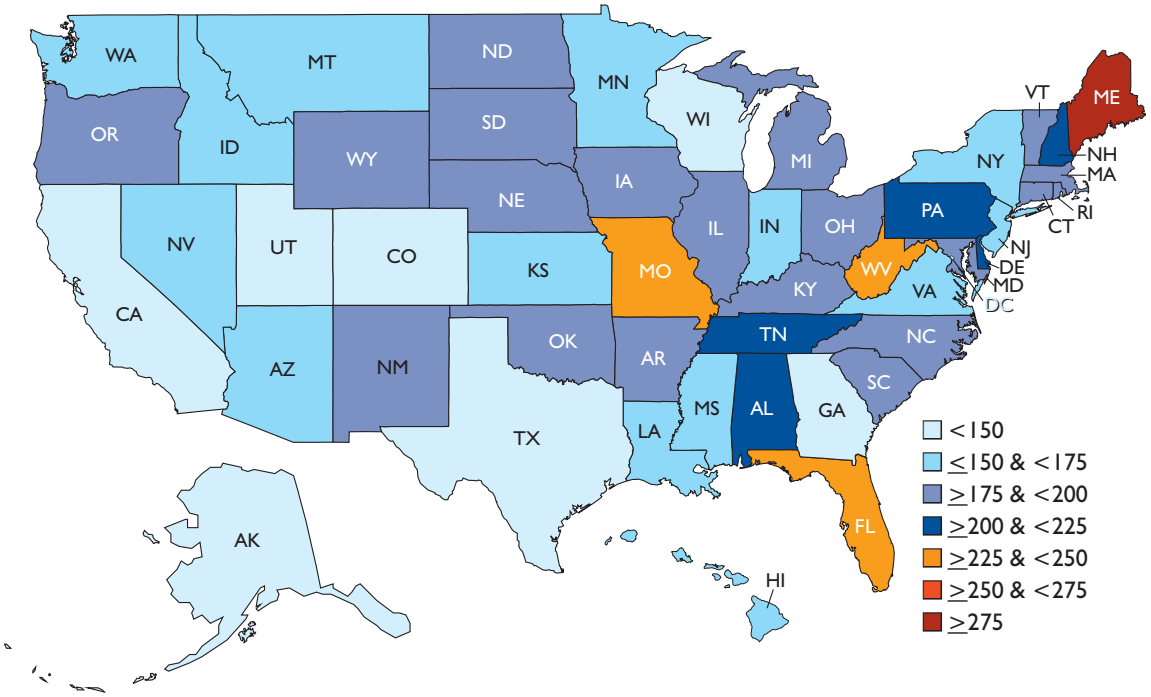
For every pound of body weight lost, there is a 4 percent reduction in knee joint stress among overweight and obese people with osteoarthritis of the knee.[119]

Arthritis Costs and Cases

State	2010 Number of Cases	New Arthritis Cases by 2030	New Arthritis Cases by 2030 (per 100,000)	Rank New Arthritis Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	988,452	818,339	17,039	13	31,890	$295,000,000	59,554	$791,000,000
Alaska	117,391	104,801	14,501	50	3,845	$55,000,000	6,895	$151,000,000
Arizona	1,179,621	968,616	14,942	45	37,145	$436,000,000	68,326	$1,269,000,000
Arkansas	598,760	484,296	16,484	25	19,067	$193,000,000	36,343	$561,000,000
California	6,631,138	5,571,995	14,783	49	209,567	$2,758,000,000	387,850	$7,865,000,000
Colorado	875,842	786,503	15,371	44	29,984	$347,000,000	52,652	$949,000,000
Connecticut	710,198	597,155	16,677	20	20,911	$220,000,000	38,564	$608,000,000
Delaware	184,829	153,505	16,922	14	5,633	$54,000,000	10,341	$143,000,000
DC	103,440	92,032	14,892	47	3,424	$38,000,000	6,582	$118,000,000
Florida	4,225,438	3,266,082	17,138	9	117,776	$1,013,000,000	218,399	$2,849,000,000
Georgia	1,707,454	1,523,222	15,519	42	58,793	$752,000,000	108,753	$2,196,000,000
Hawaii	265,338	212,903	15,486	43	8,084	$84,000,000	14,834	$249,000,000
Idaho	285,313	236,068	14,894	46	8,828	$101,000,000	16,151	$286,000,000
Illinois	2,387,762	2,055,864	15,975	36	78,116	$923,000,000	149,927	$2,730,000,000
Indiana	1,243,233	1,054,503	16,181	31	40,079	$430,000,000	74,684	$1,200,000,000
Iowa	628,692	494,563	16,150	32	18,527	$176,000,000	34,635	$513,000,000
Kansas	555,211	460,030	16,022	35	17,199	$189,000,000	33,105	$515,000,000
Kentucky	876,143	748,558	17,132	10	29,187	$286,000,000	53,350	$790,000,000
Louisiana	877,591	744,189	16,267	30	29,645	$327,000,000	55,676	$915,000,000
Maine	290,329	248,703	18,725	1	9,457	$86,000,000	18,356	$249,000,000
Maryland	1,098,166	968,487	16,617	24	37,884	$458,000,000	70,406	$1,262,000,000
Massachusetts	1,270,472	1,096,100	16,639	22	40,777	$439,000,000	76,086	$1,257,000,000
Michigan	1,929,807	1,703,543	17,249	8	67,553	$771,000,000	126,613	$2,161,000,000
Minnesota	998,206	844,916	15,808	39	31,481	$365,000,000	56,923	$1,013,000,000
Mississippi	589,477	487,642	16,372	27	19,509	$191,000,000	35,176	$521,000,000
Missouri	1,207,427	1,016,888	16,918	15	40,031	$369,000,000	75,434	$1,082,000,000
Montana	207,585	170,323	17,063	11	6,418	$64,000,000	11,948	$175,000,000
Nebraska	361,250	290,050	15,741	41	11,093	$116,000,000	20,601	$321,000,000
Nevada	512,502	430,448	15,806	40	16,667	$191,000,000	30,746	$540,000,000
New Hampshire	262,518	239,199	18,146	3	8,806	$97,000,000	16,807	$265,000,000
New Jersey	1,504,360	1,418,265	16,078	34	48,075	$40,000,000	93,945	$119,000,000
New Mexico	413,967	332,573	15,972	37	13,701	$135,000,000	25,757	$391,000,000
New York	3,752,890	3,179,056	16,332	28	115,429	$1,347,000,000	220,151	$3,718,000,000
North Carolina	1,843,890	1,572,931	16,289	29	62,284	$679,000,000	115,491	$1,942,000,000
North Dakota	141,984	110,099	16,098	33	4,001	$39,000,000	7,585	$110,000,000
Ohio	2,316,148	1,969,338	17,058	12	75,273	$730,000,000	144,774	$2,131,000,000
Oklahoma	752,463	620,784	16,373	26	23,697	$233,000,000	44,816	$629,000,000
Oregon	751,876	645,284	16,666	21	24,122	$251,000,000	47,508	$754,000,000
Pennsylvania	2,691,043	2,214,204	17,376	7	84,103	$788,000,000	163,746	$2,267,000,000
Rhode Island	208,610	183,946	17,497	5	7,170	$79,000,000	13,856	$229,000,000
South Carolina	947,357	780,823	16,687	19	29,432	$278,000,000	58,678	$803,000,000
South Dakota	166,267	130,568	15,844	38	4,928	$52,000,000	9,625	$145,000,000
Tennessee	1,289,571	1,117,321	17,449	6	44,119	$428,000,000	84,332	$1,201,000,000
Texas	4,426,828	3,797,542	14,791	48	149,683	$1,704,000,000	270,868	$4,891,000,000
Utah	410,666	352,265	12,504	51	13,382	$190,000,000	23,918	$541,000,000
Vermont	127,660	110,302	17,608	4	4,228	$44,000,000	8,062	$129,000,000
Virginia	1,519,490	1,358,610	16,780	18	51,899	$579,000,000	104,689	$1,750,000,000
Washington	1,294,975	1,136,450	16,639	22	43,507	$477,000,000	82,370	$1,371,000,000
West Virginia	418,737	347,324	18,720	2	13,099	$111,000,000	25,307	$308,000,000
Wisconsin	1,124,133	958,720	16,785	17	34,499	$377,000,000	66,542	$1,091,000,000
Wyoming	116,541	95,973	16,892	16	3,744	$37,000,000	6,858	$100,000,000

5. CANCER AND OBESITY

Potential Obesity-Related Cancer Cases Avoided by 2030 if BMI is Reduced by 5 Percent (cases per 100,000 population)



Cancer death rates have declined in the United States in recent years, but the rise in obesity could change that trend.

Being overweight, obese or physically inactive can significantly increase a person's risk of cancer. Approximately one-third of cancer deaths are linked to obesity or lack of physical activity, according to the American Cancer Society.[120] A review of 7,000 studies has shown links between obesity and cancer.[121]

- Approximately 20 percent of cancer in women and 15 percent of cancer in men is attributable to obesity.[122]
- Cancer is the second-leading cause of death in the United States.[123]

Research has found that obesity may increase the risk for many types of cancers through increased levels of some types of hormones (including estrogen, insulin and other tumor growth regulators), chronic hypertension and/or damage caused by chronic low-level inflammation.[124]

Obesity Increases Risk for Some Types of Cancer

Type of Cancer	Estimated Percentage Cancer Cases Caused by Obesity
Endometrial (lining of the uterus)	39 percent
Esophageal	37 percent
Kidney	25 percent
Colon	11 percent
Postmenopausal Breast	9 percent

Physical Activity and Cancer

On the other hand, physical activity can reduce a person's risk for a variety of cancers, including:[126]

- ▲ Colon cancer by 30 percent to 40 percent;
- ▲ Breast cancer by at least 20 percent;
- ▲ Endometrial (uterine) cancer by 20 percent to 40 percent; and
- ▲ Lung cancer by approximately 20 percent.

Increased activity could prevent nearly 100,000 cases of breast and colon cancer in the United States each year, according to one analysis of more than 200 current studies.[127]

There is also increasing evidence that limiting the amount of time a person spends sitting during the day, independent of physical activity, can also decrease the likelihood of developing obesity, type 2 diabetes, cardiovascular disease and some forms of cancer.[128]

And, physical activity also has been shown to improve survival rates for individuals with colon and breast cancer and slow the progression of prostate cancer.[129]

Nutrition and Cancer

According to the American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention, individuals who maintain a healthy diet are at lower risk for cancer. According to a review of the research, individuals who eat more processed and red meats, potatoes, refined grains and sugar-sweetened beverages and foods are at a higher risk for developing some forms of cancer, while consuming a diet that contains a variety of vegetables and fruits, whole grains and fish or poultry or is lower in red and processed meats is associated with lower risks of developing certain types of cancers.[130]

Evidence also suggests that weight loss, through calorie reduction with or without exercise, can produce a significant reduction in various breast cancer biomarkers.[131] Results from a recent study showed that weight loss of greater than 5 percent could be associated with a 22 percent decrease in breast cancer risk.

BREAST CANCER AND WEIGHT LOSS

A randomized 12-month intervention published in the Journal of Clinical Oncology reveals that biomarkers associated with postmenopausal breast cancer can be improved through weight loss, with or without exercise.[132] The study compared estrogen and androgen levels, which are both positively associated with risk for breast cancer,[133] between women assigned to one of four study groups: diet, exercise, diet and exercise or control group. Results showed that women in the experimental groups experienced large and statistically significant reductions in sex hormones and an increase in sex-hormone binding globulin (SHBG), which reduces bioactivity of the hormones.[134]

Obesity Related Cancer Costs and Cases

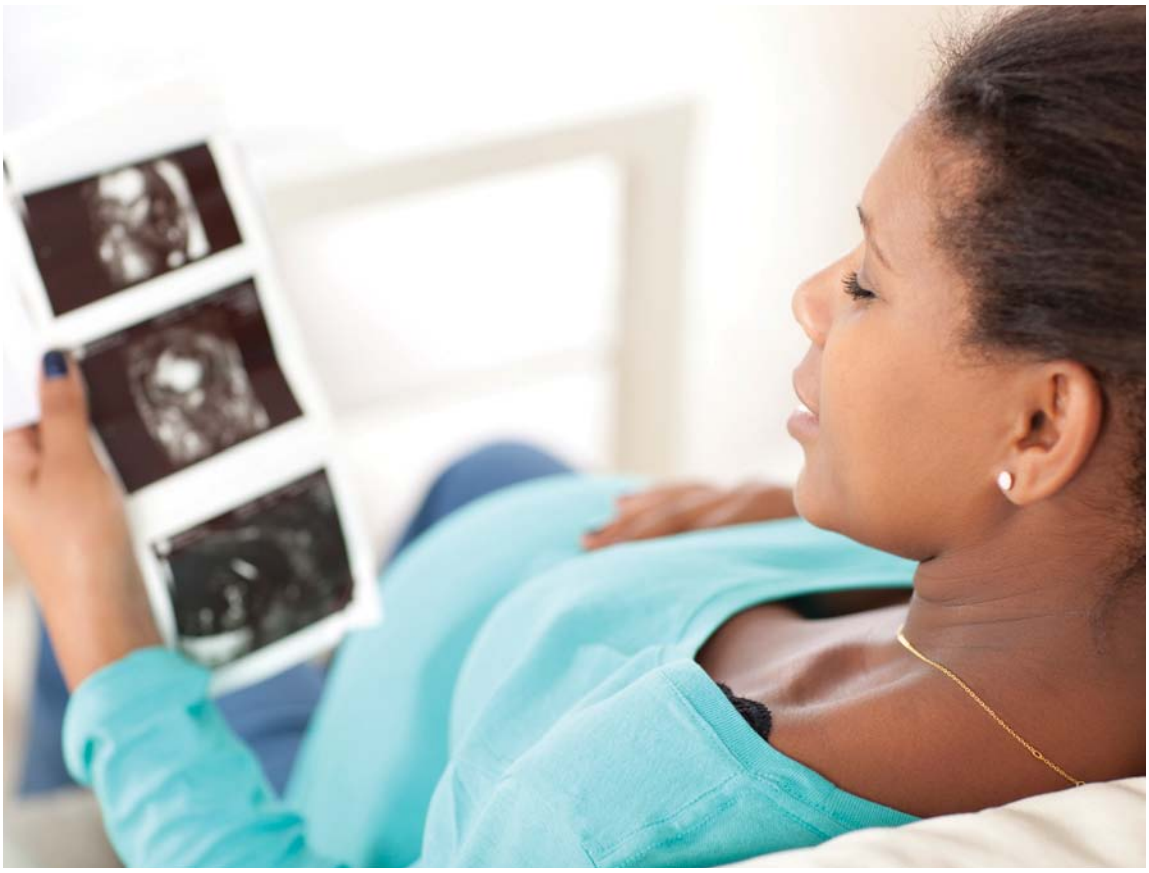
State	2010 Number of Cases	New Cancer Cases by 2030	New Cancer Cases by 2030 (per 100,000)	Rank New Cancer Cases by 2030 (per 100,000)	Potential Cases Avoided by 2020 if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2020, if Average BMI Reduced by 5% (cumulative)	Potential Cases Avoided by 2030, if Average BMI Reduced by 5% (cumulative)	Potential Cost Savings by 2030, if Average BMI Reduced by 5% (cumulative)
Alabama	79,581	200,226	4,169	9	4,947	$95,000,000	9,846	$213,000,000
Alaska	7,892	21,927	3,034	50	434	$26,000,000	809	$51,000,000
Arizona	87,125	217,683	3,358	45	6,223	$123,000,000	9,983	$249,000,000
Arkansas	47,390	116,050	3,950	20	2,732	$76,000,000	5,347	$145,000,000
California	505,825	1,251,371	3,320	46	29,023	$689,000,000	52,769	$1,766,000,000
Colorado	64,932	176,171	3,443	43	3,684	$160,000,000	7,624	$313,000,000
Connecticut	58,115	147,883	4,130	12	2,900	$37,000,000	6,374	$118,000,000
Delaware	14,714	38,254	4,217	8	1,125	$23,000,000	1,923	$47,000,000
DC	8,417	20,320	3,288	48	371	$6,000,000	667	$7,000,000
Florida	352,183	869,214	4,561	3	24,965	$328,000,000	43,451	$656,000,000
Georgia	126,027	324,982	3,311	47	6,380	$382,000,000	12,073	$812,000,000
Hawaii	21,062	52,119	3,791	31	1,210	$27,000,000	2,323	$74,000,000
Idaho	21,778	53,889	3,400	44	1,474	$29,000,000	2,710	$51,000,000
Illinois	189,693	468,312	3,639	41	11,325	$163,000,000	23,036	$353,000,000
Indiana	99,188	243,537	3,737	33	6,387	$122,000,000	10,883	$256,000,000
Iowa	51,477	120,441	3,933	21	3,460	$84,000,000	5,849	$160,000,000
Kansas	44,590	106,322	3,703	38	2,527	$62,000,000	4,939	$132,000,000
Kentucky	68,075	176,260	4,034	16	4,151	$118,000,000	8,651	$277,000,000
Louisiana	69,400	170,092	3,718	36	3,934	$156,000,000	7,640	$302,000,000
Maine	23,721	65,041	4,897	1	1,886	$27,000,000	3,679	$53,000,000
Maryland	86,375	222,932	3,825	30	5,537	$156,000,000	10,841	$339,000,000
Massachusetts	102,436	266,466	4,045	15	6,851	$250,000,000	13,109	$489,000,000
Michigan	150,809	395,245	4,002	19	9,382	$203,000,000	18,370	$540,000,000
Minnesota	77,233	194,660	3,642	40	5,024	$118,000,000	8,338	$230,000,000
Mississippi	46,018	111,069	3,729	35	2,591	$34,000,000	4,795	$79,000,000
Missouri	96,772	241,389	4,016	18	6,852	$186,000,000	13,704	$438,000,000
Montana	16,490	42,793	4,287	7	868	$17,000,000	1,637	$46,000,000
Nebraska	29,132	68,288	3,706	37	1,935	$41,000,000	3,243	$79,000,000
Nevada	37,310	99,946	3,670	39	2,369	$82,000,000	4,521	$164,000,000
New Hampshire	20,353	57,513	4,363	5	1,318	$31,000,000	2,715	$65,000,000
New Jersey	110,882	308,035	3,492	42	6,616	$13,000,000	13,232	$31,000,000
New Mexico	32,920	80,166	3,850	28	1,978	$39,000,000	3,665	$72,000,000
New York	306,188	762,062	3,915	23	14,794	$206,000,000	29,392	$481,000,000
North Carolina	142,818	362,984	3,759	32	9,174	$371,000,000	17,382	$742,000,000
North Dakota	11,572	26,762	3,913	25	739	$19,000,000	1,272	$38,000,000
Ohio	185,989	470,919	4,079	13	12,469	$475,000,000	22,974	$977,000,000
Oklahoma	59,906	147,073	3,879	27	3,981	$83,000,000	7,128	$126,000,000
Oregon	58,349	151,854	3,922	22	3,678	$89,000,000	7,240	$200,000,000
Pennsylvania	227,588	553,041	4,340	6	15,674	$217,000,000	28,162	$393,000,000
Rhode Island	17,094	43,619	4,149	10	1,041	$29,000,000	2,092	$68,000,000
South Carolina	75,148	188,245	4,023	17	5,007	$52,000,000	9,124	$88,000,000
South Dakota	13,490	30,796	3,737	33	832	$8,000,000	1,467	$8,000,000
Tennessee	101,301	260,360	4,066	14	7,236	$124,000,000	14,151	$246,000,000
Texas	328,379	810,806	3,158	49	20,540	$560,000,000	34,918	$1,061,000,000
Utah	29,834	69,529	2,468	51	1,747	$47,000,000	2,845	$92,000,000
Vermont	10,273	27,751	4,430	4	614	$9,000,000	1,222	$12,000,000
Virginia	118,372	314,958	3,890	26	5,506	$89,000,000	13,764	$195,000,000
Washington	99,240	261,522	3,829	29	5,669	$107,000,000	11,748	$239,000,000
West Virginia	33,990	88,983	4,796	2	2,375	$33,000,000	4,379	$57,000,000
Wisconsin	89,046	223,559	3,914	24	4,341	$75,000,000	7,882	$187,000,000
Wyoming	9,068	23,573	4,149	10	574	$11,000,000	1,068	$21,000,000

C. ADDITIONAL HEALTH AND OBESITY ISSUES

In addition to the five health issues examined in the NHF analysis, obesity increases the risk for a number of other health problems. Some key areas reviewed in the following section include: children and maternal health with a special focus on breastfeeding, mental health and neurological conditions with a special focus on dementia, kidney and liver diseases and HIV/AIDS.

1. MATERNAL HEALTH AND OBESITY

- There is a growing body of evidence documenting the links between maternal health conditions, including obesity and chronic diseases, and increased risks before, during and after birth.[135]
- Children born to obese mothers are twice as likely to be obese and to develop type 2 diabetes later in life.[136]
- Many pregnant women are overweight, obese, or have diabetes, all of which can have negative effects on the fetus as well as the mother. According to CDC, approximately 50 percent of women of child-bearing age (between 18 and 44) were either overweight or obese in 2002 and 9 percent had diabetes.[137]
- Teenage mothers who are obese before pregnancy are four times more likely than their healthy-weight counterparts to develop gestational diabetes, a form of diabetes that arises during pregnancy and increases a woman's risk of developing type 2 diabetes later on.[138]
- CDC and the Kaiser Permanente Northwest Center for Health Research found in a recent study that obesity during pregnancy is associated with an increased use of health care services and longer hospital stays.[139] The study of more than 13,000 pregnancies found that obese women required more outpatient medications, were given more obstetrical ultrasounds, and were less likely to see nurse midwives or nurse practitioners in favor of physicians. Cesarean delivery rates were 45.2 percent for extremely obese women, compared with 21.3 percent for healthy-weight women.[140]



Only Two States Meet Breastfeeding Goals

Children who are breastfed have lower rates of obesity; this is especially true for those who are breastfed exclusively, without formula supplementation.[141] Breastfeeding also is associated with a range of other benefits, and the American Academy of Pediatrics (AAP), the American Academy of Family Physicians, the Academy of Breastfeeding Medicine, the World Health Organization, the United Nations Children's Fund and many other health organizations recommend exclusive breastfeeding for the first six months of life.

However, according to CDC's 2012 Breastfeeding Report Card, only 16.3 percent of mothers in the United States are breastfeeding exclusively through six months, which is well below the *Healthy People 2020* goal of 25.5 percent.[142] Only two states, Colorado and Oregon, meet this goal.

States with the Highest Rates of Exclusive Breastfeeding at 6 Months

Rank	State	Percentage Breastfeeding Exclusively at 6 Months (2009)	Obesity Ranking
1	Colorado	26.6%	51
2	Oregon	26.3%	31
3	Utah	24.8%	45
4	New Hampshire	24.7%	35
5	Vermont	23.3%	37
6	Idaho	23.2%	30
7	New Mexico	22.8%	34
8	South Dakota	22.1%	23
9	California	21.7%	46
10	Alaska	21.0%	28

*Note: For rankings, 1 = Highest rate of breastfeeding.

States with the Lowest Rates of Exclusive Breastfeeding at 6 Months

Rank	State	Percentage Breastfeeding Exclusively at 6 Months (2009)	Obesity Ranking
51	Mississippi	7.6%	1
49 (tie)	Alabama	9.1%	4
49 (tie)	West Virginia	9.1%	3
47 (tie)	Kentucky	9.6%	10
47 (tie)	Louisiana	9.6%	2
46	Oklahoma	10.4%	6
45	Arkansas	10.6%	7
44	Ohio	11.0%	13
43	Nevada	11.7%	42
42	Montana	12.5%	41

*Note: For rankings, 51 = Lowest rate of breastfeeding.

Evidence from a comprehensive review of existing breastfeeding research found that breastfeeding has the following effects:[143]

- For the child: reduced risk of ear, skin, stomach and respiratory infections, diarrhea, sudden infant death syndrome, necrotizing enterocolitis, and other bacterial and viral infections; and in the longer term, reduced risk of obesity, type 1 and 2 diabetes, asthma, celiac disease, inflammatory bowel disease and childhood leukemia.[144]
- For the mother: quicker loss of pregnancy weight, prevention of postpartum bleeding and reduced risk of breast cancer, ovarian cancer, type 2 diabetes and postpartum depression.[145]

The AAP recommends that babies are breastfed through the first year of life.[146]

Breast milk provides a baby with food that is nutritious and easy for the baby to digest. It also gives the baby the ability to decide when to eat and when to stop eating, allowing for the baby to develop healthy eating patterns. Keeping a baby at a healthy weight from infancy is important because recent studies have shown that overweight babies are more at risk for being overweight or obese throughout childhood.[147]

A recent study at Children's Hospital in Boston and Harvard Medical School found that feeding an infant solid food before 4 months of age may increase the baby's risk of becoming obese as a toddler.[148] The study included almost 900 infants; about two-thirds were breastfed for at least four months.[149] Follow-up at age 3 revealed that 9 percent of the toddlers were obese.[150] Results showed that among formula-fed babies, those that were introduced to solid foods before 4 months of age were six times more likely to be obese by age 3, but timing of solid food introduction was not associated with obesity among the breastfed babies.[151]

In conjunction with the release of the Let's Move campaign in 2010, the U.S. Breastfeeding Committee (USBC) released a statement highlighting the importance of including breastfeeding as part of the national strategy to reduce childhood obesity.[152]

Data from the National Immunization Survey shows that approximately 75 percent of new mothers begin breastfeeding, but only 43 percent are still breastfeeding at all at six months.[153] According to USBC chair, Dr. Joan Younger Meek, "The duration of breastfeeding has been shown to be inversely related to overweight—meaning that the longer the duration of breastfeeding, the lower the odds of overweight. And although further research is needed, exclusive breastfeeding appears to have a stronger protective effect than breastfeeding combined with formula feeding."[154]

SURGEON GENERAL'S CALL TO ACTION TO SUPPORT BREASTFEEDING

In an effort to make breastfeeding easier for women, the U.S. Surgeon General has identified 20 key actions to improve support for breastfeeding.[155]

Some key barriers to breastfeeding include:[156]

- Lack of Knowledge
- Lactation Problems
- Poor Family and Social Support
- Social Norms
- Embarrassment
- Employment and Child Care
- Health Services

In order to address some of the barriers to breastfeeding the Surgeon General suggests the following actions by various key stakeholders:[157]

Mothers and Families

- Give mothers the support they need to breastfeed.
- Develop programs to educate fathers and grandmothers about breastfeeding.

Communities

- Strengthen programs that provide mother-to-mother support and peer counseling.
- Use community-based organizations to support and promote breastfeeding.
- Create a national campaign to promote breastfeeding.
- Ensure that the marketing of infant formula is conducted in a way that minimizes its negative impacts on exclusive breastfeeding.

Health Care

- Ensure that maternity care practices around the United States are fully supportive of breastfeeding.
- Develop systems to guarantee continuity of skilled support for lactation between hospitals and health care settings in the community.
- Provide education and training in breastfeeding for all health professionals who care for women and children.
- Include basic support for breastfeeding as a standard of care for midwives, obstetricians, family physicians, nurse practitioners and pediatricians.
- Ensure access to services provided by International Board Certified Lactation Consultants.
- Identify and address obstacles to greater availability of safe banked donor milk for fragile infants.

Employment

- Work toward establishing paid maternity leave for all employed mothers.
- Ensure that employers establish and maintain comprehensive, high-quality lactation support programs for their employees.
- Expand the use of programs in the workplace that allow lactating mothers to have direct access to their babies.
- Ensure that all child care providers accommodate the needs of breastfeeding mothers and infants.

Research and Surveillance

- Increase funding of high-quality research on breastfeeding.
- Strengthen existing capacity and develop future capacity for conducting research on breastfeeding.
- Develop a national monitoring system to improve the tracking of breastfeeding rates as well as the policies and environmental factors that affect breastfeeding.

Public Health Infrastructure

- Improve national leadership on the promotion and support of breastfeeding.

3. MENTAL HEALTH, NEUROLOGICAL CONDITIONS AND OBESITY

- Obesity may increase adults' risk for dementia. A review of 10 published studies found that people who were obese at the beginning of the studies were 80 percent more likely to develop Alzheimer's disease than those adults who had a normal weight at enrollment.[158]
- An analysis of data from a health survey of more than 40,000 Americans found a correlation between depression and obesity. Obese adults were more likely to have depression, anxiety and other mental health conditions than healthy-weight adults.[159] The odds of experiencing any mood disorder rose by 56 percent among obese individuals (30 $\leq$ BMI $\leq$ 39.9) and doubled among the extremely obese (BMI $\geq$ 40).[160]

GROWING EVIDENCE SUGGESTS LINK BETWEEN OBESITY AND DEMENTIA

During the past 10 years there has been a growing body of research that suggests overweight and obesity are associated with reduced cognitive function, markers of brain degeneration and increased risk of Alzheimer's disease later in life.

Many of the studies linking obesity with dementia found that individuals with visceral fat, better known as belly fat, during midlife were the most at risk. A few notable studies include the following:

- In a 2008 National Institute of Aging funded study, researchers conducted a longitudinal analysis of more than 6,500 members of Kaiser Permanente of Northern California who had their midsections measured between 1964 and 1973. Diagnoses of dementia were found from medical records an average of 36 years later. Results showed that midsection obesity in midlife increases risk of dementia independent of diabetes and other cardiovascular diseases.[161]
- Researchers in South Korea released findings in 2012 of their study investigating the connection between visceral adiposity, belly fat and risk of brain decline. The study measured BMI and waist sizes and tested cognitive abilities of 250 participants between 60 and 70 years old. Researchers found that those with the highest BMIs and largest waists scored the poorest on the cognitive tests.[162]
- In *Neurology*, researchers found that being overweight or obese during middle age may increase the risk of dementia. The study included more than 8,500 twins from the Swedish Twin Registry age 65 or older. The participants were grouped according to their weight, which had been measured 30 years earlier. Results showed that those who were overweight or obese at middle life had an 80 percent higher risk of developing dementia, Alzheimer's disease, or vascular dementia in late life compared with the twins with normal BMIs.[163]

A wide range of studies have found that physical activity and maintaining a healthy weight help limit a person's risk for Alzheimer's and cognitive decline at any age.[164] According to Ronald Petersen, MD, director of the Alzheimer's Research Center at the Mayo Clinic: "Regular physical exercise is probably the best means we have of preventing Alzheimer's disease today, better than medications, better than intellectual activity, better than supplements and diet."[165]

STUDY: STRESS AND OBESITY

Studies have shown that low socioeconomic status and job stress, both of which are related to chronic stress, are associated with abdominal obesity.[166]

In an effort to more closely examine the relationship between stress and abdominal obesity, a recent randomized control study looked at the effects of stress reduction interventions on abdominal fat among a group of overweight or obese women. The study did not find a significant difference in weight, abdominal fat or cortisol awakening response (CAR), which is a marker revealing stress levels, between the treatment and control groups, but it did find significant differences among obese participants.[167] Obese women in the treatment group significantly reduced CAR and maintained body weight while women in the control group had stable CAR and gained weight.[168]

SLEEP AND OBESITY

A 2012 study released in the journal *Sleep* provides additional evidence supporting the connection between lack of sleep and obesity.[169] In an effort to see the role genes play in our weight, researchers measured BMI of more than 600 pairs of identical twins and examined how it varied based on sleep patterns. They also examined almost 500 fraternal twins for comparison, since identical twins share all genes and fraternal share only some. Results showed that among participants who were getting less than seven hours of sleep per night, genes played more than twice the role in determining body weight than in those who were getting more than nine hours of sleep per night.[170] Researchers were unable to determine why sleep has this effect on obesity genes, but suggest that less sleep may provide a more permissive environment for the expression of obesity genes, or that more sleep may be protective by suppressing obesity genes.[171]

4. KIDNEY DISEASE AND OBESITY

- Obese individuals are 83 percent more likely to develop kidney disease than normal-weight individuals, while overweight individuals are 40 percent more likely to develop kidney disease.[172]
- An estimated 24.2 percent of kidney disease cases among U.S. men and 33.9 percent of cases among women are related to overweight and obesity.[173]

5. LIVER DISEASE AND OBESITY

- Obese individuals are at greater risk of nonalcoholic steatohepatitis (NASH), a liver disease that can lead to cirrhosis, in which the liver is permanently damaged and scarred and no longer able to work properly. NASH ranks as one of the major causes of cirrhosis in America, behind hepatitis C and alcoholic liver disease.[174]
- NASH affects 2 percent to 5 percent of Americans. An additional 10 percent to 20 percent have fat in their liver, but no inflammation or liver damage, a condition called "fatty liver." Both types of liver disease have become more common as obesity rates have risen in the country.[175]

6.HIV/AIDS AND OBESITY

- Antiretroviral treatments are less effective for obese patients. One study found that obese individuals had significantly smaller gains in CD4 cell count after starting HIV treatment than both patients of normal weight and those who were overweight.[176]

WEIGHT BIAS AND QUALITY OF LIFE

As obesity rates have gone up in the United States, so, too, has the prevalence of weight discrimination. Researchers at the Yale University Rudd Center on Food Policy and Obesity report weight discrimination has increased by 66 percent over the past decade in the United States and is now found at rates similar to racial discrimination.[177,178]

Weight bias and discrimination are found in all areas of life, including the workplace, health care facilities, schools and universities, mass media and personal relationships. Stigmatization of obese individuals threatens health, generates health disparities and interferes with obesity-intervention efforts.[179] Researchers at the Rudd Center published a comprehensive review of articles on the stigma of obesity in January 2009.[180] A selection of documented findings on obesity bias and stigma are listed below.

Weight Bias In Employment

- In one survey of overweight and obese women, 25 percent of participants said they experienced on-the-job discrimination because of their weight, 54 percent reported stigma from co-workers, and 43 percent experienced stigma from their supervisors.[181]
- A 2007 study of more than 2,800 adults found that overweight adults were 12 times more likely to report weight-based employment discrimination, obese adults were 37 times more likely, and severely obese adults were 100 times more likely.[182]
- Compared with job applicants with the same qualifications, obese applicants are rated more negatively and are less likely to be hired.[183]
- Overweight people earn between 1 percent and 6 percent less than non-overweight people in comparable positions.[184]

Weight Bias in Health Care

- More than 50 percent of primary care physicians surveyed viewed obese patients as awkward, unattractive, ugly and noncompliant. One-third of the doctors surveyed described obese patients as weak-willed, sloppy and lazy.[185]
  - ▲ Surveys of nurses,[186] medical students,[187] fitness professionals[188] and dieticians[189] revealed similar biases.
- A study investigating parents' perceptions of words and descriptions used by health providers explaining a child's excess weight found that describing a child as "obese," "extremely obese," and "fat" were the most undesirable, stigmatizing, blaming and least motivating, whereas "weight," "unhealthy weight," and "weight problem" were the most desirable and motivating descriptions.[190]

Weight Bias in Education

- Teachers view overweight students as untidy, more emotional, less likely to succeed on homework and more likely to have family problems.[191] They also have lower expectations for overweight students.[192]

Physical and Emotional Health Consequences of Weight Bias

- Weight bias is associated with psychological consequences, including depression,[193] lower levels of self-esteem[194] and body image dissatisfaction.[195]
- Weight bias also is associated with unhealthy eating behaviors,[196] physical activity levels[197] and cardiovascular health outcomes.[198]

SECTION 3

Strategies And Policy Approaches To Improving Nutrition, Increasing Activity And Reducing Obesity

According to CDC, more than half of Americans live with a chronic disease, many of which are related to obesity, poor nutrition and physical inactivity — and a majority of these diseases could be prevented.[199]

A wide range of evidence-based studies have found that effective disease prevention programs in schools, neighborhoods and workplaces can reduce obesity rates, improve nutrition and increase physical activity.

As the evidence about what works continues to build, many states and communities across the country are working to implement promising approaches for improving health and reducing obesity. The following section includes strategies and policy trends in states, an overview of federal approaches toward obesity prevention in the past few years, and examples of prevention in action in communities, workplaces, faith-based organizations and schools.

A. STATE OBESITY-RELATED LEGISLATION

Since 2003, TFAH and RWJF have tracked state obesity-related legislation relating to schools, including nutrition, physical education, physical activity, and height and weight measurements. The report also has tracked legislation related to tax policy, menu labeling, obesity liability and Complete Streets initiatives. This section provides an updated summary of legislation enacted between June 1, 2011, and June 30, 2012.

1. Legislation for Healthy Schools

Studies show that school-based programs can help prevent and reduce obesity.[200] The more than 14,000 school districts in the country have primary jurisdiction for setting local school policies. States can set education policy or pass legislation, but school districts typically can decide what policies they follow or implement, a principle known as local control. States often try to create incentives for districts to follow their policies, such as attaching compliance rules to state funding. For example, if a school district in New Mexico fails to meet the academic content and performance standards for elementary physical education programs, it would result in the cessation of funding for the following school year to the offending district.[201]

Over the past decade, school-based efforts have focused on improving the quality of food served and sold in cafeterias, vending machines and school stores, limiting sales of less nutritious foods and beverages, improving physical and health education, and increasing physical activity. In addition, in the past few years, some districts have set up farm-to-school programs that bring fresh, local produce into schools, encouraging both healthy eating and sustainable farming.

OBESITY-RELATED STANDARDS IN SCHOOLS – 2012

States	Nutritional Standards for School Meals	Nutritional Standards for Competitive Foods	Limited Access to Competitive Foods	Physical Education Requirement	Physical Activity Requirement	BMI or Health Info Collected	Non-Invasive Screening for Diabetes	Health Education Requirement	Farm-to-School Program
Alabama	✓	✓	✓	✓				✓	✓
Alaska				✓				✓	✓
Arizona	✓	✓	✓	✓	✓			✓	
Arkansas	✓	✓	✓	✓		✓		✓	
California	✓	✓	✓	✓		✓	✓	✓	✓
Colorado	✓	✓	✓	✓	✓				✓
Connecticut	✓	✓	✓	✓	✓			✓	✓
Delaware		✓		✓		✓		✓	
DC	✓	✓	✓	✓				✓	✓
Florida			✓	✓		✓		✓	✓
Georgia			✓	✓				✓	
Hawaii		✓	✓	✓				✓	
Idaho				✓				✓	
Illinois		✓	✓	✓	✓	✓	✓	✓	✓
Indiana		✓	✓	✓	✓			✓	
Iowa		✓		✓		✓		✓	✓
Kansas		✓		✓				✓	
Kentucky	✓	✓	✓	✓	✓			✓	✓
Louisiana	✓	✓	✓	✓	✓	✓		✓	✓
Maine		✓	✓	✓	✓	✓		✓	✓
Maryland		✓	✓	✓				✓	✓
Massachusetts	✓	✓		✓		✓		✓	✓
Michigan				✓				✓	✓
Minnesota				✓				✓	
Mississippi	✓	✓	✓	✓				✓	
Missouri				✓		✓		✓	✓
Montana				✓				✓	✓
Nebraska			✓	✓				✓	
Nevada	✓	✓	✓	✓		✓		✓	
New Hampshire				✓				✓	
New Jersey	✓	✓	✓	✓				✓	✓
New Mexico		✓	✓	✓				✓	✓
New York			✓	✓		✓		✓	✓
North Carolina	✓	✓	✓	✓	✓	✓		✓	
North Dakota				✓	✓			✓	
Ohio		✓		✓	✓	✓		✓	
Oklahoma	✓	✓	✓	✓		✓			✓
Oregon		✓	✓	✓				✓	✓
Pennsylvania		✓	✓	✓		✓		✓	✓
Rhode Island	✓	✓		✓				✓	
South Carolina	✓	✓	✓	✓		✓		✓	
South Dakota	✓			✓				✓	
Tennessee	✓	✓		✓	✓	✓		✓	✓
Texas	✓	✓	✓	✓		✓		✓	✓
Utah		✓		✓				✓	
Vermont	✓	✓	✓	✓		✓		✓	✓
Virginia		✓		✓				✓	✓
Washington		✓		✓				✓	✓
West Virginia		✓	✓	✓		✓		✓	
Wisconsin				✓				✓	✓
Wyoming				✓				✓	
# of States	20 + D.C.	35 + D.C.	29 + D.C.	50 + D.C.	12	21	2	48 + D.C.	28 + D.C.

Please Note: Checkmarks in chart above that are in red type represent new laws passed 2011 or 2012.

SCHOOL MEALS

The foods and beverages available in schools have a significant impact on children's diets, contributing more than 35 percent of many students' daily caloric intake.[202] In 2010, Congress passed the Healthy, Hunger-Free Kids Act, which included many provisions to improve student health. Most notable was the charge to USDA to update nutrition standards for school meals and competitive foods. USDA released updated standards for the National School Lunch Program and School Breakfast Program earlier this year, which will impact tens of millions of students who participate in those programs. These improvements, which are the first changes to national school meal standards in more than 15 years, will be phased in over a three-year period beginning with the 2012-2013 school year with schools having the flexibility to focus on changes to the lunch menu. Changes during the first year will include increased servings of fruits and vegetables, increasing the amount of whole grains and phasing to only fat-free and low-fat milk at lunch. The new national standards for school meals will supersede the state laws at that time, but states will still be able to retain stronger standards if they have those in place.

The USDA is required to oversee the transition to healthier school meals, and schools that comply will be eligible for increased federal reimbursements for school meals.

- **Eight years ago, only four states had school meal standards that were stricter than the old USDA requirements:** Arkansas, South Dakota, Tennessee and Texas.
- **Today, 20 states and Washington, D.C. have stricter standards than the old USDA requirements:** Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Kentucky, Louisiana, Massachusetts, Mississippi, Nevada, New Jersey, North Carolina, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, and Vermont.

No state updated regulations regarding school meals between June 1, 2011, and June 30, 2012.

2012 NATIONAL SCHOOL MEAL STANDARDS

Below is a comparison of current and new requirements to the National School Lunch Program (the final rule also includes requirements for school breakfast and nutrient standards not shown below).

The current requirements will be replaced with new national requirements, which are being phased in over three years starting during the 2012-2013 school year. States with standards that are stronger than the new national standards will be able to retain those standards.

Food Group	Current Requirements	New Requirements
Fruits and Vegetables	½ - ¾ cup of fruit and vegetables combined per day	¾ - 1 cup of vegetables plus ½ - 1 cup of fruit per day
Vegetables	No specifications as to type of vegetable subgroup	Weekly requirements for: dark green, red/orange, beans/peas, starchy, others (as defined in 2010 Dietary Guidelines)
Meat/Meat Alternate	1.5 – 2 ounce equivalent (daily minimum) (oz eq. min.)	Daily minimum and weekly ranges: Grades K-5: 1 oz eq. min. daily (8-10 oz weekly) Grades 6-8: 1 oz eq. min. daily (9-10 oz weekly) Grades 9-12: 2 oz eq. min. daily (10-12 oz weekly)
Grains	8 servings per week (minimum of 1 serving per day)	Daily minimum and weekly ranges: Grades K-5: 1 oz eq. min. daily (8-9 oz weekly) Grades 6-8: 1 oz eq. min. daily (8-10 oz weekly) Grades 9-12: 2 oz eq. min. daily (10-12 oz weekly)
Whole Grains	Encouraged	At least half of the grains must be whole grain-rich beginning July 1, 2012. Beginning July 1, 2014, all grains must be whole grain-rich.
Milk	1 cup; Variety of fat contents allowed; flavor not restricted	1 cup; Must be fat-free (unflavored/flavored) or 1% low fat (unflavored)

Source: Food and Nutrition Service, USDA. Ounce equivalent (oz eq.) means the having the same nutritional value as in a standard ounce of that food group. http://www.fns.usda.gov/cnd/Governance/Legislation/comparison.pdf (accessed March 6, 2012).

INCREASING FRUIT AND VEGETABLE CONSUMPTION AT SCHOOL THROUGH SALAD BARS

In an effort to increase the amount of fruits and vegetables consumed by children, the Food Family Farming Foundation, National Fruit and Vegetable Alliance, United Fresh Produce Association Foundation, and Whole Foods Market put forth the initiative Let's Move Salad Bars to Schools to support First Lady Michelle Obama's Let's Move! initiative.

Evidence shows that children consume more fruits and vegetables, and try new foods, when they have a variety of choices like those provided on salad bars.[203] But few schools take advantage of salad bars, whether for lack of knowledge or due to financial constraints. In order to increase children's access to salad bars at schools, any school that participates in the National School Lunch Program can apply for a grant that helps to pay for salad bar equipment. The *Let's Move Salad Bars to Schools* program hopes to fund and award 6,000 salad bars by the end of 2013.[204]

GOT WATER?

Research shows that children are not drinking enough water during the school day.[205] Although water fountains have been available in most schools for decades, there are issues that discourage students from drinking water at school. For example, many schools do not have enough water fountains to supply all of the students, and most schools do not make cups available to encourage students to take more water from the fountains. The cost of providing cups may be a barrier in some schools.[206]

In addition, encouraging students to drink free water decreases revenue from bottled water sales, which often fund extracurricular activities.[207] Issues with water quality, such as complaints about taste or excessive lead content, also prevent students in some districts from drinking water at school.

But evidence shows that making water more available to students can increase water consumption and improve health. The Healthy, Hunger-Free Kids Act of 2010 requires schools to provide easily accessible, clean water to students at no cost. However, some advocates worry that the law is too vague about how schools should actually accomplish this. In an effort to help schools improve quality of and access to water in schools Change Lab Solutions has a range of resources and policy ideas to improve drinking water at schools. More information can be found at: http://changelabsolutions.org/publications/water-access-schools-model-wellness-policy-language.

- **Today two states have water regulations that make clean water accessible to students during the school day: California and Massachusetts.**

No state implemented new regulations on water in schools between June 1, 2011, and June 30, 2012.

GIVE THEM WATER AND THEY WILL DRINK IT

A recent study published in Preventing Chronic Disease found that students will drink more water if it is made available to them.[211] A middle school in Los Angeles conducted a five-week program that included providing cold, filtered drinking water in cafeterias; distributing reusable water bottles to students and staff; conducting school promotional activities; and providing education.[212] Researchers measured consumption of water before the program and at one week and two months after the completion of the program at both the intervention school and a comparison school.[213] Students at the intervention school had higher adjusted odds of drinking water from fountains and reusable water bottles than the comparison school.[214]

COMPETITIVE FOODS

The USDA defines competitive foods as any food or beverage served or sold at school that is not part of the USDA school meals program.[215] These foods are sold in à la carte lines, in school vending machines, in school stores, or through bake sales. In 2012, USDA is expected to publish a proposed rule updating nutrition standards for "competitive foods."

The current standards for competitive foods are more than 30 years old, and the federal government does not regulate products beyond those classified as foods of minimal nutritional value (FMNV).[216] FMNV are identified by the school meals program as carbonated beverages, water ices, chewing gum, hard candy, jellies and gums, marshmallow candies, fondant, licorice, spun candy, and candy-coated popcorn.[217] As such, many competitive foods are high in calories, fat, sugar and sodium. Schools commonly sell sugary drinks, salty snacks, pizza, ice cream and french fries, often from multiple venues. Forty percent of students purchase these snacks on a daily basis, and, as of the 2009-2010 school year, almost half of elementary school students could purchase unhealthy competitive foods at school.[218]

- **Eight years ago only six states had nutritional standards for competitive foods:** Arkansas, California, Hawaii, Tennessee, Texas and West Virginia.
- **Today, 35 states and Washington, D.C. have nutritional standards for competitive foods:** Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Nevada, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington and West Virginia.

States that implemented new regulations regarding competitive foods between June 1, 2011, and June 30, 2012:

- **Colorado** prohibited the availability of any food or beverage that contains any amount of industrially produced trans fat or the use of food that contains any industrially produced trans fat in the preparation of food or beverages for students (SB 12-068, 2012).
- **Delaware** banned the sale of any food or beverage containing industrially produced trans fat to students in grades K-12 during the normal or extended school day on school grounds (HB 3, 2011).

Start time and place standards for competitive foods include:

- **Eight years ago, 17 states had laws about when and where competitive foods can be sold that were stricter than federal requirements:** Arkansas, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Kentucky, Louisiana, Maine, Mississippi, Nebraska, New York, North Carolina, Texas and West Virginia.
- **Today, 29 states and Washington, D.C., have laws that limit when and where competitive foods may be sold that exceed federal requirements:** Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Mississippi, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Vermont and West Virginia.

No state implemented new regulations regarding competitive foods between June 1, 2011, and June 30, 2012.

STRONG SUPPORT FOR USDA COMPETITIVE FOOD STANDARDS

Recent polling commissioned by the Kids' Safe & Healthful Foods Project, a joint project between The Pew Charitable Trusts and RWJF, found strong public support for national standards to limit calories, fat and sodium in snack and à la carte foods sold to students at schools.[219]

Results from the poll show that 80 percent of American voters favor national standards for unhealthy snacks at school, more than 80 percent are concerned about childhood obesity, 83 percent believe foods sold through vending machines are not really healthy or nutritious, and 68 percent said food purchased from à la carte lines and school stores is not really healthy or nutritious.[220]

STUDENT HEALTH AND SCHOOL BUDGETS COULD BENEFIT FROM UPDATING NUTRITION STANDARDS FOR COMPETITIVE FOODS

The Kids' Safe & Healthful Foods Project and the Health Impact Project, funded by The Pew Charitable Trusts and RWJF, worked with Upstream Public Health to conduct a health impact assessment (HIA) of the possible effects of updating competitive food policies. The HIA assumes that new guidelines would be required to meet the 2010 Dietary Guidelines for Americans (DGA). Results of the HIA find that if school competitive food policies adhered to the 2010 DGA:[221]

- Student access to, purchase of, and consumption of unhealthy foods and beverages, and subsequently their risk for disease, would decrease;
- Districts would likely not see a decline in revenue because children will purchase school meals if there are fewer items competing for their lunch money; and
- Vulnerable populations would benefit because students from lower-income families who participate in free and reduced-price meal programs would be more likely to buy healthier foods.

Based on findings of the HIA, the Kids' Safe & Healthful Foods and Health Impact projects recommend that the USDA:[222]

- Establish nutrition standards for all foods that are regularly sold onsite during the school day but that are outside of the USDA meals program;
- Set nutrition guidelines for all beverages sold on school grounds; and
- Adopt policies and practices that ensure effective implementation of the standards.

THE FARM-TO-SCHOOL MOVEMENT GROWS

Over the last decade, many cities and towns have developed farm-to-school programs, which bring local, fresh fruits and vegetables to school cafeterias. Often, the programs include farm visits, cooking demonstrations, and the creation of school gardens and composting sites. Some states have laws supporting the practice.

Studies show that these programs improve students' diets.[223] For example, a study by researchers at the University of California at Davis found that farm-to-school programs not only increase consumption of fruits and vegetables, but actually change eating habits, causing students to choose healthier options at lunch.[224] A recent health impact assessment conducted before the Oregon Farm to School reimbursement law passed found that the law would create and maintain jobs for Oregonians, increase student participation in school meal programs, improve household food security and strengthen connections within Oregon's food economy.[225]

These programs also increase the use of locally grown foods, and teach kids about local food and farming issues.

- **Twenty-eight states and Washington, D.C. currently have established farm-to-school programs:** Alabama, Alaska, California, Colorado, Connecticut, Florida, Illinois, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, New Jersey, New Mexico, New York, Oklahoma, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Virginia, Washington and Wisconsin. Many of these programs cover portions of the students or schools in these states rather than all of the students or schools in the state. **Six years ago only New York had a law that established a farm-to-school program.**

States that implemented new farm-to-school legislation between June 1, 2011, and June 30, 2012:

- **Alabama** established the Farm to School Procurement Act, which mandates a coordination effort between the Department of Education, the Department of Agriculture and Industries to provide local grown food to schools (HB 670, 2012).
- **Maine** passed a law requiring that the Department of Agriculture, Food and Rural Resources, the Department of Education and the Department of Marine Resources support a pilot program to examine the benefits of promoting the purchasing of food grown or raised and fish raised or caught by Maine food producers for use in primary and secondary school meal programs (LD 1446, 2011).
- **Missouri** created the "Farm-to-Table Advisory Board" to put forth recommendations to help schools incorporate locally grown agricultural products into their cafeteria offerings, salad bars and vending machines, and increase public awareness of local agricultural practices and the role that local agriculture plays in sustaining healthy communities and supporting healthy lifestyles (HB 344, 2011).
- **New York** passed legislation that finances the transportation and distribution of New York state farm grown products to schools, especially in underserved urban communities (SB 614, 2011).

FARM-TO-SCHOOL STORIES

Below are a few examples of what some schools and school districts are doing to increase access to fresh fruits and vegetables:

Minnesota—In Minnesota, a new documentary, "Farm-to-School: Growing Our Future," is being aired on public television as well as at several events around the state. The purpose of the documentary is to help give momentum to the farm-to-school movement. Among many vignettes, the video shows students helping harvest, weigh and eventually eat beets from their school garden. The creators of the documentary hope the video will be used as a resource for the future as each DVD comes with detailed instructions on holding a community screening, talking about the documentary and moving forward with ideas for farm-to-school programs.[226]

Indiana—At Batesville Primary School and High School, students have the opportunity to plant, grow and consume local vegetables thanks to the farm-to-school program, which is in its third year. In an effort to generate more interest in gardening, the farm-to-school project coordinator is hosting two workshops; the first is Green Teen Garden Workshop, which is free to students, and the second is an annual workshop called Teaching in the Garden, which is free to local educators. The Teaching workshop aims to help educators establish farm-to-school curriculum for the classroom.[227]

California—In San Diego, school buses now have more than one purpose: a "farms on wheels" program will use some buses as hands-on labs for students to learn more about agriculture and nutrition to complement the District's current farm-to-school program.[228]

PHYSICAL EDUCATION, PHYSICAL ACTIVITY, AND HEALTH EDUCATION IN SCHOOLS

The 2008 HHS Physical Activity Guidelines for Americans recommend that children engage in one hour or more of moderate or vigorous aerobic physical activity a day, including vigorous physical activity at least three days a week. Examples of moderate intensity aerobic activities include hiking, skateboarding, bicycle riding and brisk walking. Vigorous-intensity aerobic activities include bicycle riding, jumping rope, running, soccer, basketball, and ice or field hockey. According to the Guidelines, children and adolescents also should incorporate muscle-strengthening activities, such as rope climbing, sit-ups and tug-of war, three days a week. Finally, bone-strengthening activities, such as jumping rope, running and skipping, are recommended three days a week.

A recent Bridging the Gap report found that many districts have made minor improvements to their wellness policies, but that physical education has been almost entirely taken out of the standard curriculum for high schools and physical activity is very low throughout all schools.[229] Some key findings included:

- In 2010, 83 percent of middle school students and 34 percent of high school students were required to take physical education during the school year, but it is likely that half of the high school students only took physical education for one semester or trimester.
- Only 23 percent of middle school students and 13 percent of high school students walked or bicycled to school in 2010.
- Only 12 percent to 13 percent of high school students and 19 percent to 23 percent of middle school students participated in intramural sports and physical activity clubs in 2010. The rates were lower for girls than boys.

According to data from the 2011 Youth Risk Behavior Surveillance System, the percentage of high school students who were physically active at least an hour on all seven days in the previous week ranged from 33.1 percent in Oklahoma to 20.8 percent in Utah.[230]

In recent years, many school systems have eliminated or cut PE. Generally, schools sacrifice PE to give students more time to prepare for standardized tests, which are often required by districts and states.

Physical Education

- **Every state has some physical education requirements for students. However, these requirements are often limited or not enforced, and many programs are inadequate.**

States that implemented new laws between June 1, 2011, and June 30, 2012:

- **Virginia** required that the Board of Education develop physical education program guidelines for public elementary and middle schools prior to January 1, 2014 (HB 1092, 2012).

Physical Activity

- Many states have started enacting laws requiring schools to provide a certain number of minutes and/or a specified difficulty level of physical activity. Twelve states require schools to provide physical activity or recess during the school day.

States that implemented new laws between June 1, 2011, and June 30, 2012:

- **Connecticut** required each school under its jurisdiction to include in the regular school day students enrolled in grades kindergarten through five, time devoted to physical activity of at least twenty minutes daily (SB 458, 2012).

PHYSICAL ACTIVITY BREAKS

Physical activity breaks are a proven way to increase physical activity among students as well as enhance academic achievement.[231] Researchers found that third and fourth graders who participated in a physical activity break program took almost 1,000 more steps during the school day than those not enrolled in the program.[232] Studies have also shown that these short active breaks during the day improve elementary school students' ability to stay on task during academic work by 20 percent compared to no effect for inactive classroom breaks.[233]

Implementing state policies requiring physical activity breaks is one way to increase the amount of daily physical activity for school students. Many states have started doing this, and following enactment of a law in Texas requiring students to engage in 30 minutes of daily physical activity studies show that students across the state participated in around 30 percent more physical activity than the minimum requirement.[234]

Schools are using a variety of tactics to reach the recommended 30 minutes of physical activity per day for students. Physical activity breaks often happen in the classroom and consist of activities such as stretching, yoga or jumping jacks.[235] And, many schools use specific physical activity break programs such as Brain Gym®, Take 10!® and the JAMmin' Minute®.[236]

HEALTH EDUCATION

Health education curricula often include community health, consumer health, environmental health, family life, mental and emotional health, injury prevention and safety, nutrition, personal health, prevention and control of disease and substance use and abuse. The goal of school health education is to prevent premature deaths and disabilities by improving the health literacy of students.[237]

- **Only two states — Colorado and Oklahoma — do not require schools to provide health education.**

States that implemented new health education rules between June 1, 2011, and June 30, 2012:

- **Maryland** integrated new requirements into the health curriculum, including the importance of physical activity and information regarding diabetes, and new requirements for reporting to the Department of Education (HB 9, 2012).

According to the 2006 CDC study, health education standards and curricula vary greatly from school to school.[238]

- The percentage of states that require districts or schools to follow national or state health education standards increased from 60.8 percent in 2000 to almost 75 percent in 2006; the percentage of districts that required this of their schools increased from 68.8 percent to 79.3 percent.
- Almost 14 percent of states and 42.6 percent of districts required each school to have a school health education coordinator.

PHYSICAL ACTIVITY AND ACADEMIC ACHIEVEMENT

Experts agree that physical activity improves children's health. However, most children still do not get enough physical activity. HHS Physical Activity Guidelines for Americans recommend children and adolescents engage in 60 minutes or more of physical activity each day.

In 2010, CDC issued Association Between School-based Physical Activity, Including Physical Education, and Academic Performance, a literature review which examined 23 years of research and 50 studies about the relationship between school-based physical activity, including physical education, and academic performance.[239] The majority of the studies found that physical activity was positively related to academic performance and that adding time during the school day for physical activity does not appear to take away from academic performance.

Other major findings include:

- Studies show that physical activity can actually improve children's brain function. For example, researchers at the University of Illinois found that nine- and ten-year-olds who were more physically fit scored better on a series of cognitive tests than those who were less fit.[240] Brain scans showed that in the fitter kids, a key cognitive area of the brain had greater volume. The researchers concluded that being fit enhanced the "executive control" portion of the children's brains.[241]
- Children who perform better on physical capacity tests are more likely to receive higher reading and math scores, even when the added time for physical activity takes away from time in the classroom.[242]
- Intensive physical education programs in school can improve cognitive skills and attitudes, including concentration, attention and classroom behavior.[243]
- Researchers analyzed FITNESSGRAM® test results from more than 2.4 million Texas students in grades 3 to 12 during the 2007-2008 school year, and found significant school-level correlations between physical fitness achievement and better performance on state standardized tests.[244]

BMI SCREENING AND SURVEILLANCE

As of June 30, 2012, 22 states had legislation that mandates school-based BMI or other weight-related screenings in schools. Such assessments are intended to help schools and communities assess rates of childhood obesity, educate parents and students, and serve as a means to evaluate obesity prevention and control programs in that school and community. The American Academy of Pediatrics (AAP) recommends that BMI should be calculated and plotted annually for all youth as part of normal health supervision within the child's medical home, and the Institute of Medicine (IOM) recommends annual school-based BMI screenings.[245, 246]

■ **Eight years ago, only four states required BMI screening or other weight-related assessments for children and adolescents:** Arkansas, Kansas, Louisiana and Massachusetts.

■ **Today, 21 states have legislation that requires BMI screening or weight-related assessments other than BMI.**

▲ **States with BMI screening requirements:** Arkansas, California*, Florida, Illinois, Maine, Missouri, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Vermont and West Virginia.

▲ **States with other weight-related screening requirements:** Delaware, Iowa, Louisiana, Massachusetts, Nevada, South Carolina and Texas.

*Starting July 2010, statewide distribution of diabetes risk information to schoolchildren, California Education Code § 49452.7, replaced individual BMI reporting, California Education Code § 49452.6.

CHILDHOOD OBESITY RATES IN NEW YORK CITY DECREASE

In 2005, the New York City Department of Education started annually measuring BMI of public school students in grades K-12 during physical education classes. Results from this data collection show that obesity decreased among 5-14 year olds by 5.5 percent—from 21.9 percent in 2006-2007 to 20.7 percent in 2010-2011.[247]

Obesity rates decreased significantly among all age groups, racial/ethnic groups and neighborhood poverty levels, but some groups saw more significant improvements than others. The obesity rate among 5 to 6-year-olds declined by almost 10 percent, which was the largest drop for any age group. The smallest drop, of 3.2 percent, was observed among 11 to 14-year-olds.[248] Obesity rates among White and Asian/Pacific Islander children decreased by 12.5 percent and 7.6 percent respectively.[249] Although obesity rates also dropped significantly among Black and Hispanic children, by 1.9 percent and 3.4 percent respectively, these declines were smaller than those observed among other races/ethnicities.[250] Children coming from low poverty neighborhoods had the greatest decrease in obesity rates of 7.8 percent compared with those coming from very high poverty neighborhoods that experienced a decrease by 2.9 percent.[251]

USING CHILD CARE QUALITY RATING AND IMPROVEMENT SYSTEMS (QRISS) TO PREVENT CHILDHOOD OBESITY

Child care facilities can have a major impact on childhood obesity prevention. Second only to the home, child care settings are where young children spend their time. More than three-fifths of children under age 5 are in some type of regular child care arrangement.[252]

Recently, states have been incorporating nutrition, physical activity and screen time standards into child care Quality Rating and Improvement Systems (QRISs).[253] QRISs are a voluntary approach to improving the quality of early care and education programs, and are designed to incentivize improvement through voluntary, market-driven actions.[254] Most states currently use QRISs to improve the quality and education of child care facilities, but their use has been emerging as a new strategy to improve the quality of health as well.[255]

Altarum Institute recently put together a report, State Efforts to Address Obesity Prevention In Child Care Quality Rating and Improvement Systems, evaluating the current state of obesity prevention as part of QRISs. The report found many states are making progress in including nutrition, physical activity and screen time standards into QRISs, yet there are many challenges states face in incorporating new standards, including:[256]

- **Lack of staff training and capacity**—staff that currently provide support to child care facilities lack training and expertise in the topics of nutrition, physical activity and screen time. The same is true for the raters who assess the quality of child care facilities. Training would be necessary to bring them up to speed with the new standards.
- **Increased implementation and monitoring costs**—both child care providers and QRIS programs see including health standards as an increased cost and that they do not have adequate funding to meet the standards.
- **Absence of tools and methods to monitor providers' achievements of standards**—existing tools used to rate child care facilities are not set up to assess the new standards of nutrition, physical activity and screen time.
- **Stakeholder resistance**—states have experienced pushback from several stakeholders, including parents and faith-based entities providing care.

REVIEW: OBESITY PREVENTION INTERVENTIONS CAN HELP CHILDREN BE HEALTHIER

A review evaluating the effectiveness of obesity prevention interventions among children found strong evidence showing that the programs helped children make progress toward achieving a healthier body weight. The study included a review of 55 controlled studies targeting children age 6 to 12 through policies or programs in place for at least 12 weeks. According to the review, the following were cited as the most promising policies and strategies:[257]

- School curriculum that includes focus on healthy eating, physical activity and healthy body image;
- Increased sessions for physical activity and the development of fundamental movement skills throughout the school week;
- Improvements to nutritional quality of the food supply in schools;
- Providing an environment and culture that support the ability of children to make healthier choices and be more physically active throughout the entire day;
- Support for teachers and other staff to implement health promotion strategies and activities, such as professional development and capacity building activities; and
- Encourage parents and other care providers to support children to be more active, eat more nutritious foods and spend less time in screen-based activities at home.

The review also found that obesity prevention interventions aimed at promoting a healthy weight among children were not associated with increased body image issues, unhealthy eating or dieting practices, or harmful attitudes about weight.[258] But, the authors note that while they found strong evidence supporting the programs, the findings must be interpreted cautiously due to heterogeneity and the potential for small study bias in the interventions.[259] The study highlights the importance of continued investment into more obesity prevention studies focused on children, as well as detailed follow up of interventions to see what works, for whom and at what cost.

CHILDHOOD OBESITY: REACHING HEALTHY PEOPLE GOALS THROUGH ENERGY REDUCTION

Healthy People 2010 and Healthy People 2020 both have goals for reducing childhood obesity. A recent study from the *American Journal of Preventive Medicine* reveals exactly how many fewer calories youths have to consume daily in order to achieve the respective goals.[260]

Based on NHANES data and previous trends in obesity prevalence, weight and BMI among youth ages 2-19, the researchers found that in order to halt the rising trend in mean body weight it would be necessary to eliminate 41 calories per day per capita.[261] In order to reach the *Healthy People 2020* goal (to lower childhood obesity by 10% from 2005-2008 levels) it would take a reduction of 64 calories/day per capita.[262]

The research also revealed that much larger reductions would be needed among low-income and racial/ethnic minority youths and adolescents. In order to reach the *Healthy People 2020* goals by 2020, non-Hispanic black 2-19 year olds would need to reduce daily intake by 138 calories, Mexican-Americans by 91 calories and lower-income youths by 110 calories.[263]

Some policy changes to achieve the reduction suggested by the authors include:[264]

- Reducing consumption of sugar-sweetened beverages (SSB) by replacing all SSBs with water could reduce the per capita caloric intake by 12 calories per day;
- Participating in a comprehensive physical education program among fourth- to sixth-graders could result in an additional 19 calories expended per day; and
- Engaging in an after-school activity program for children in grades K-5 could result in an additional 25 calories expended per day.

2. Obesity-Related Legislation for Healthy Communities

States also have obesity-related legislation aimed at the general population. These actions include tax policies, menu labeling, restrictions on litigation and planning and transportation policies.

OBESITY-RELATED STATE INITIATIVES -- 2012				
State	Has Menu Labeling Laws	Has Soda (Sugar-Sweetened Beverage) Taxes	Has Complete the Streets Policy	Has Limited Liability Laws
Alabama		✓		✓
Alaska				
Arizona				✓
Arkansas		✓		
California	✓	✓	✓	
Colorado		✓	✓	✓
Connecticut		✓	✓	
Delaware			✓	
DC		✓		
Florida		✓	✓	✓
Georgia				✓
Hawaii		✓	✓	
Idaho		✓		✓
Illinois		✓	✓	✓
Indiana		✓		✓
Iowa		✓		
Kansas		✓		✓
Kentucky		✓		✓
Louisiana				✓
Maine	✓	✓		✓
Maryland		✓	✓	
Massachusetts	✓		✓	
Michigan			✓	✓
Minnesota		✓	✓	
Mississippi		✓		
Missouri		✓		✓
Montana				
Nebraska				
Nevada				
New Hampshire				✓
New Jersey	✓	✓		
New Mexico				
New York		✓	✓	
North Carolina		✓		
North Dakota		✓		✓
Ohio		✓		✓
Oklahoma		✓		
Oregon	✓		✓	✓
Pennsylvania		✓		
Rhode Island		✓	✓	
South Carolina				
South Dakota		✓		✓
Tennessee		✓		✓
Texas		✓		✓
Utah		✓		✓
Vermont			✓	
Virginia		✓		
Washington		✓	✓	✓
West Virginia		✓		
Wisconsin		✓	✓	✓
Wyoming				✓
# of States	5	34 + D.C.	17	25

Please Note: Checkmarks in chart above that are in red type represent new laws passed 2011 or 2012.

SUGAR-SWEETENED BEVERAGE (SSB) TAXES

A number of states have a tax on soda or sugar-sweetened beverages. While many states instituted the taxes for revenue purposes, some proponents of these taxes believe they can have a health benefit, comparing them to taxes on tobacco products. Twenty years ago, cigarettes were taxed at a relatively low rate. Since then cigarette taxes have tripled, pushing the cost of cigarettes higher by an average of 160 percent. Many experts say the increases played a major role in reducing rates of smoking and tobacco-related disease.[265, 266]

- According to **Bridging the Gap, a nationally recognized research program funded by RWJF, 34 states and Washington, D.C. now impose sales taxes on soda:** Alabama, Arkansas, California, Colorado, Connecticut, Florida, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Minnesota, Mississippi, Missouri, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia and Wisconsin.[267]

A number of advocates and policy-makers have examined the impact of potential federal action on the issue. Researchers at Yale University say a national soda tax of a penny per 12 ounces would generate $1.5 billion a year.[268] A 2008 Congressional Budget Office (CBO) report on options to pay for health reform included a proposal for a federal excise tax of three cents per 12 ounces of sugar-sweetened beverage. According to their estimates, this tax have generated an estimated $24 billion between 2009 and 2013.[269]

However, the proposed SSB tax did not gain widespread support during the 2009-2010 health care debate. Supporters blame a $24 million lobbying and advertising campaign by the beverage industry, funneled partly through an industry-funded group called Americans Against Food Taxes.[270]

Voters in Richmond, California and El Monte, California will consider ballot measures for a one-cent-per-ounce tax on sugar-sweetened beverages this November.[271, 272] The proposed taxes would require owners of bodegas, theaters, and other stores to total ounces sold and then most likely pass the cost on to customers. If approved, money from the taxes would go toward fighting childhood obesity through more bike lanes, nutritional education and after-school sports programs.[273]

SSBs AND HEALTH

Many studies link increased consumption of SSBs to negative health outcomes, including obesity, type 2 diabetes and coronary heart disease.[274,275, 276] In the Nurses' Health Study II, the risk of diabetes was nearly double for women who consumed one or more servings of SSBs per day compared to those who consumed less than one serving of SSBs per month.[277] And, women were 23 percent more at risk of coronary heart disease when they consumed one serving of SSBs per day, and 35 percent more at risk when they consumed two servings or more per day compared to women who consumed less than one serving per month.[278]

There is also evidence to suggest that beverages sweetened with noncaloric sweeteners increase caloric intake through consumption of other calorie sources or by increasing a taste for sweets.[279]

MENU LABELING

Menu labeling — including nutrition information on menus and menu boards — is based on the idea that informed consumers make informed choices. Leading health organizations, including the American Medical Association, want labeling that is easy to understand and includes information about the total calories, fat, saturated fat, trans fat and sodium content of food items.[280] According to the Yale Rudd Center for Food Policy and Obesity, 80 percent of consumers also want this information.[281]

The Affordable Care Act requires chain restaurants or food establishments (those with 20 or more locations) to display calorie counts and other nutritional information for standard menu items. Companies that own or operate 20 or more food or beverage vending machines have similar requirements.

The federal rules, in most cases, will pre-empt state regulations related to menu labeling.

In recent years, several states and localities have implemented menu labeling laws:

- **Five states — California, Massachusetts, Maine, New Jersey and Oregon — currently have laws that require the posting of nutrition information on menus and menu boards in restaurant chains with 20 or more in-state locations.** Seattle, Philadelphia, New York City, Nashville, San Francisco and Montgomery County, Maryland also have menu-labeling provisions.

One state updated menu-labeling legislation between June 1, 2011, and June 30, 2012:

- **California** passed legislation to align the current California state menu labeling law with the new Federal standards (SB 20, 2011).

FRONT-OF-PACK LABELING AT WALMART

In an effort to make it easier for consumers to identify healthier food items, Walmart recently unveiled their "Great For You" icon. Walmart, which is the nation's largest food retailer, will include the icon on select Walmart Great Value and Marketside items. Items that bear the "Great For You" icon have undergone an extensive evaluation process and must meet nutrition criteria that, according to Walmart, have been informed by the 2010 Dietary Guidelines for Americans, FDA, USDA and IOM. The criteria are available to the public to view online at www.walmartgreatforyou.com.[282]

LEGISLATION TO LIMIT OBESITY LIABILITY

Many states have responded to the obesity epidemic through laws that prevent people from suing restaurants, manufacturers and marketers for contributing to unhealthy weight and related health problems. These laws have been prompted by corporations that were concerned about potential obesity-related lawsuits similar to the lawsuits tobacco companies have faced.

- **Twenty-five states have obesity liability laws:** Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Louisiana, Kansas, Kentucky, Maine, Michigan, Missouri, New Hampshire, North Dakota, Ohio, Oregon, South Dakota, Texas, Tennessee, Utah, Washington, Wisconsin and Wyoming.

One state implemented obesity liability legislation between June 1, 2011 and June 30, 2012:

- **Alabama** established that a packer, distributor, manufacturer, carrier, holder, seller, marketer, or advertiser of food shall not be subject to any civil action for any claim arising out of weight gain, obesity, a health condition associated with weight gain or obesity, or other generally known condition allegedly caused by or allegedly likely to result from long-term consumption of food (HB 242, 2012).

Proponents of these laws argue that obesity is an individual choice, a matter of "common sense, and personal responsibility."[283]

Opponents of the laws argue that, in some cases, restaurants, food manufacturers and marketers withhold crucial information about the dangers of their products, and that lawsuits are an appropriate way to respond to this unethical or illegal behavior.

DESIGNING STREETS FOR ALL USERS

To encourage physical activity and green transportation, activities that include walking and cycling, and building or protecting urban transport systems that are fuel-efficient, space-saving, and promote healthy lifestyles, many state and local governments are adopting Complete Streets policies. Complete Streets are roads designed to allow all users — bicyclists, pedestrians, drivers and public transit users — to access them safely.

Many parents and children say that concerns about traffic safety keep them from walking to school.[284] According to the 2009 National Household Travel Survey, only 13 percent of children ages 5–14 usually walked or biked to school, compared with almost half of students in 1969.[285] Conversely, 12 percent of children arrived at school by car in 1969, compared with 44 percent in 2009.[286]

Better traffic safety can promote healthier living. For instance, a 2003 study found that 43 percent of people with safe places to walk within 10 minutes of home met recommended activity levels; just 27 percent of those without safe places to walk met the recommendation.[287] An Australian study found that residents are 65 percent more likely to walk in a neighborhood with sidewalks.[288]

A review by the National Conference of State Legislatures (NCSL) identified the five policies that most encourage biking and walking: [289]

1. Incorporating sidewalks and bike lanes into community design.
2. Providing funding for biking and walking in highway projects.
3. Establishing safe routes to school.
4. Fostering traffic-calming measures (e.g., any transportation design to slow traffic).
5. Creating incentives for mixed-use development.

According to the National Complete Streets Coalition, states, counties, regional governments and cities have passed more than 350 Complete Streets policies.

- **Seventeen states have passed Complete Streets laws:** California, Colorado, Connecticut, Delaware, Florida, Hawaii, Illinois, Maryland, Massachusetts, Michigan, Minnesota, New York, Oregon, Rhode Island, Vermont, Washington and Wisconsin.

One state implemented legislation between June 1, 2011, and June 30, 2012:

- **New York** established that the state shall consider the access and mobility on the road network by all users of all ages, including motorists, pedestrians, bicyclists and public transportation users through the use of complete street design features in the planning, design, construction, reconstruction and rehabilitation of such projects (SB 5411, 2011).

NATIONAL POLICY AND LEGAL ANALYSIS NETWORK (NPLAN) AND FOOD MARKETING TO YOUTH

NPLAN, a project of Change Lab Solutions, continues to work to provide information and technical assistance for communities interested in improving healthy eating and active living. They focus on four major categories: healthy community food systems, healthy schools, healthy land use planning and food marketing. NPLAN develops model policies for a variety of topics ranging from model healthy beverage vending policies to model physical activity standards for child-care providers to a model ordinance for produce carts.

NPLAN also recently released a report on digital food marketing to children and adolescents, *Problematic Practices and Policy Interventions*. Research has found most foods that are marketed toward young people are high in sugars, fat and salt, and food marketing does have an impact on what youths consume.[290,291] The report notes that digital marketing is different from previous forms of marketing in that it is multidimensional and proliferates a range of social media and online applications through not only exposing youths to their product, but also by encouraging adolescents to interact with the product and integrate the brand into their identity.[292]

The report takes an in depth look at five categories of digital marketing techniques used by food marketers to target youths: [293]

1. Augmented reality, online gaming, virtual environments, and other immersive techniques that can induce "flow," reduce conscious attention to marketing techniques and foster impulsive behaviors;
2. Social media techniques that include surveillance of users' online behaviors without notification, as well as viral brand promotion;
3. Data collection and behavioral profiling designed to deliver personalized marketing to individuals without sufficient user knowledge or control;
4. Location targeting and mobile marketing, which follow young peoples' movements and are able to link point of influence to point of purchase; and
5. Neuromarketing, which employs neuroscience methods to develop digital marketing techniques designed to trigger subconscious, emotional arousal.

FOOD MARKETING IN MAINE HIGH SCHOOLS

In 2007, Maine became the first state to implement a statewide law prohibiting marketing of foods of minimal nutritional value on public school grounds. Yet, a recent study released by the University of New England found that marketing of junk food is still widespread in Maine public schools.[294]

Researchers surveyed a sample of Maine high schools, and, while support for the ban was overwhelming among key administrators, 85 percent of Maine high schools still marketed unhealthy foods on campus.[295] The compliance problem appeared to stem from a lack of knowledge about the law. In only 15 percent of the schools, both administrators interviewed had knowledge of the ban on marketing of unhealthy foods and drinks, and fewer than 50 percent of the schools reported any changes to food marketing practices since the ban went into effect in 2007.[296] More than three-quarters of schools reported wanting more help and technical assistance in order to meet the requirements of the ban.[297]

Researchers conducting the assessment also found the following at the sample high schools in Maine:[298]

- Nearly 200 different food and beverage products were marketed in schools and each school displayed 49 food or beverage posters and signs on average;
- There were 28 different noncompliant food or beverage products marketed in schools, and a significant portion of those were promoted in athletic areas and teachers' lounges;
- The majority of food and beverage posters and signs were in cafeterias (52 percent), athletic areas (16 percent), entrances and hallways (12 percent) and teachers' lounges (12percent); and
- On average, each school had 5.6 vending machines.

B. CDC COOPERATIVE AGREEMENTS TO STATES FOR OBESITY PREVENTION AND CONTROL

CDC funds many state and local efforts to prevent and control obesity and related diseases. Two years ago, through its Communities Putting Prevention to Work (CPPW) program, the agency awarded $373 million to cities, towns and rural areas for evidence-based prevention and wellness programs. More than half of the funds will go toward obesity prevention efforts.

The table below provides a summary of these grants.

Obesity-Related CDC Cooperative Agreements to States - FY 2011

State	ARRA Community Obesity Grants[1]	Nutrition, Physical Activity & Obesity Grants	Coordinated School Health Grants[2]	Healthy Communities[3]	REACH US[4]	Community Transformation Grants
Alabama	✓			✓		
Alaska				✓		✓
Arizona	✓		✓	✓		
Arkansas	✓	✓	✓	✓		
California	✓	✓	✓	✓	✓	✓
Colorado	✓	✓	✓	✓	✓	✓
Connecticut			✓	✓	✓	✓
Delaware				✓		
DC						
Florida	✓			✓		✓
Georgia	✓	✓		✓		✓
Hawaii	✓	✓		✓	✓	
Idaho			✓	✓		
Illinois	✓			✓	✓	✓
Indiana	✓	✓		✓		
Iowa		✓		✓		✓
Kansas				✓		
Kentucky	✓		✓	✓		✓
Louisiana				✓		✓
Maine	✓		✓	✓		✓
Maryland				✓		✓
Massachusetts	✓	✓	✓	✓	✓	✓
Michigan		✓	✓	✓	✓	✓
Minnesota	✓	✓	✓	✓		✓
Mississippi			✓	✓		✓
Missouri				✓		✓
Montana		✓		✓		✓
Nebraska	✓	✓		✓		✓
Nevada	✓			✓		
New Hampshire		✓		✓		
New Jersey		✓	✓	✓		✓
New Mexico	✓	✓		✓	✓	✓
New York	✓	✓	✓	✓	✓	✓
North Carolina	✓	✓	✓	✓	✓	✓
North Dakota			✓	✓		✓
Ohio	✓		✓	✓	✓	✓
Oklahoma	✓			✓	✓	✓
Oregon	✓			✓		
Pennsylvania	✓			✓	✓	✓
Rhode Island		✓		✓		
South Carolina		✓	✓	✓	✓	✓
South Dakota			✓	✓		✓
Tennessee	✓	✓		✓		
Texas	✓	✓		✓		✓
Utah		✓		✓		✓
Vermont				✓		✓
Virginia				✓	✓	✓
Washington	✓	✓	✓	✓	✓	✓
West Virginia	✓	✓	✓	✓	✓	✓
Wisconsin	✓	✓	✓	✓		✓
Wyoming				✓		
# of States	28	25	22	50	17	36

1 While all 50 states receive some funding through the CPPW State and Territorial Initiative, 39 communities in 28 states receive CPPW Community funding for obesity.

2 Nez Perce Tribe also receives Coordinated School Health funding.

3 Most Healthy Communities grants are not directed to States, but are instead directed to tribes, local public health departments, and community-based organizations. The states listed here have at least one grantee funded by these programs. Healthy Communities funds all States through the Collaborative Funding Opportunity Announcement, but at a minimal level.

4 REACH U.S. grants are not directed to States, but are instead directed to tribes, local public health departments, and community-based organizations. The states listed here are those have at least one grantee funded by these programs. Five other states *AL, AZ, GA, IN, WY) have REACH U.S. grantees whose work does not directly relate to prevention and control of obesity-related diseases.

C. FEDERAL POLICIES AND PROGRAMS

The following section examines key federal laws and programs affecting obesity.

1. Let's Move

February 2012 marked the two-year anniversary of the Let's Move initiative, launched by First Lady Michelle Obama to raise awareness about the dangers of the childhood obesity epidemic and promote comprehensive, multi-sector solutions.

The initiative emphasizes healthy eating and increased physical activity at school, at home and in the community. It has brought together public officials, the food industry, faith- and community-based organizations, advocacy groups and others to find solutions. Two of the most recent targeted efforts in the past year include:

- *Let's Move! Child Care,* launched in June 2011 in partnership with Nemours Foundation, Partnership for a Healthier America, Bright Horizons and the National Association of Child Care Resource and Referral Agencies (NACCRRA). The effort helps child care providers implement standards to promote healthy behaviors and habits for young children — a checklist helps providers to improve physical activity and healthy eating and limit screen time for children in child care settings. The practices are based on evidence-based standards developed by CDC and largely supported by the public. A 2008 survey by NACCRRA reported that 98 percent of parents thought child care health and safety standards needed to be improved. Providers and parents can go to www.HealthyKidsHealthyFuture.org for these free tools and resources and to share success stories. *Let's Move! Child Care* has recognized the efforts of 20 child care programs and networks, including the states of Rhode Island and Idaho.
- *Let's Move! Indian Country*, launched in May 2011, is a partnership to address childhood obesity on our nation's Indian reservations within a generation. The initiative focuses in a culturally sensitive way on issues specifically related to nutrition and activity for Native Americans. A tool kit was produce by a Let's Move! in Indian Country interagency workgroup led by the White House, Domestic Policy Council, the U.S. Department of Agriculture, the U.S. Department of the Interior, the U.S. Department of Health and Human Services, the U.S. Department of Education, and in collaboration with the Office of the First Lady, Centers for Disease Control and Prevention, the U.S. Department of Transportation and the Corporation for National and Community Service.

2. Implementation of the Affordable Care Act (Public Law 111-248)

The Affordable Care Act (ACA) includes a number of components that could significantly enhance obesity-prevention efforts, if strategically implemented and fully funded. Some of these key aspects include:

- The Prevention and Public Health Fund. Between fiscal years 2010 and 2012, $2.25 billion has been appropriated from the Prevention and Public Health Fund to states and community-based organizations to support programs related to public health improvement and chronic disease prevention. Despite cuts made to the Fund by the Middle Class Tax Relief and Job Creation Act of 2012 (Public Law 112-96), the Fund will provide for an additional $12.5 billion over the next ten years (FY2013-FY2022).
- Community Transformation Grants (CTGs). In May 2011, CDC awarded more than $100 million to 61 states and communities and seven national organizations to implement and disseminate evidence-based strategies to address chronic disease to achieve key health outcomes. Per the direction of Congress, at least 20 percent of CTG funding is targeted to rural and frontier populations. In May 2012, CDC announced the availability of an additional $70 million for a new Small Communities CTG grant program, a two-year grant opportunity aimed at improving health in communities with less than 500,000 people.
- The National Prevention Council, the National Prevention Strategy and the National Prevention Council's Action Plan. In June 2011, the National Prevention, Health Promotion, and Public Health Council (National Prevention Council)—comprised of representatives from 17 different departments and agencies—released the National Prevention Strategy, the nation's first comprehensive action plan for improving the health of all Americans. The Strategy contains a number of recommendations for addressing the obesity epidemic. The U.S. Surgeon General and other federal officials visited various parts of the country to encourage communities to replicate the strategy at the state and local level by leveraging public and

private resources to prevent disease and promote better health. The National Prevention Council's Action Plan, released in June 2012, identifies more than 200 current commitments the federal government is taking to implement the Strategy. Included in that list are efforts led by the USDA to ensure that foods purchased, distributed or served in federal programs and settings meet standards consistent with the Dietary Guidelines for Americans.

- Essential Benefits and Coverage of Preventive Services. All new group benefit plans will be required to cover any preventive service that has received an "A" or "B" rating from the U.S. Preventive Services Task Force (USPSTF), which includes screening for obesity and many obesity-related diseases such as type 2 diabetes and hypertension as well as intensive obesity counseling for both adults and children. Additionally, there are new requirements for coverage of preventive services in the Medicare program, including an annual wellness visit and new covered preventive services for all Medicare beneficiaries.
- Menu Labeling. In April 2011, FDA issued proposed rules implementing new requirements for chain restaurants, similar retail food establishments and vending machines to include calorie counts on menu boards and have additional nutrition information available to customers upon request. A public comment period was held later that year, with the regulations expected to be finalized by the end of 2012. According to FDA, about one-third of all calories consumed by Americans are from foods prepared outside the home.

3. Implementation of the Healthy, Hunger-Free Kids Act (Public Law 111-296)

- In January 2012, the USDA published a final rule containing the first update to nutritional standards for the National School Lunch Program and School Breakfast Program in 15 years. Among other changes, the standards will help to ensure that students are able to eat:
  - Both fruits and vegetables every day of the school week;
  - A greater selection of whole grain-rich foods;
  - Only fat-free or low-fat milk;
  - Meals with age-appropriate calorie totals to ensure proper portion size; and
  - Foods with less saturated fats, trans fats and sodium.
- In 2012, USDA is expected to publish a proposed rule updating nutrition standards for "competitive foods," which include snacks and drinks sold in school vending machines, stores, or à la carte lines that are outside the school meals program. A recent Health Impact Assessment by the Kids' Safe & Healthful Foods Project and the Health Impact Project concluded that updating national standards for the snacks and drinks sold in school vending machines, stores and à la carte lines would reduce students' consumption of unhealthy items during the school day.[299] The study also found that consistent national guidelines likely would encourage more students to buy breakfast and lunch at school, providing schools with extra revenue. Students in lower-income communities and Black and Hispanic students would benefit from stronger standards, which is of particular importance because obesity rates tend to be higher among such students.
- USDA also is due to issue a proposed rule to update the meal patterns for the Child and Adult Care Food Program (CACFP), a federal program that provides subsidized meals to more than 3 million infants from low-income families, children and impaired or older adults. The update will be based on a consensus report issued by the Institute of Medicine in November 2010 entitled *Child and Adult Care Food Program: Aligning Dietary Guidance for All.* The report noted that current meal pattern nutrition standards are more than 20 years old and recommended that new standards should be based on updated dietary guidelines and promote eating more fruits and vegetables, whole grains, and other foods that are low in fat, sugar and salt.
- Finally, USDA is due to issue a proposed rule in 2012 to help implement expanded requirements regarding school district wellness policies. While all school districts participating in federal child nutrition programs were required to have a wellness policy in place by the 2006-2007 school year, the law expanded these policies to help school districts and interested stakeholders promote student wellness, prevent and reduce obesity and address other drivers of disease and illness. In July 2011, USDA issued an implementation guidance memorandum to school districts describing upcoming requirements and is working with both the Department of Education Office of Safe and Drug-Free Schools and the CDC to provide technical assistance to local stakeholders.

4. Strategic Realignment of Chronic Disease Programs at CDC

For fiscal year 2013, President Obama used his budget proposal to urge Congress to condense or consolidate several dozen budget lines for the CDC Center for Chronic Disease Prevention and Health Promotion into five lines. The proposal is similar to one made in his fiscal year 2012 budget proposal and is aimed at transitioning current categorical funding for various chronic diseases into a more comprehensive approach to addressing chronic disease. Such an approach could offer improved efficiencies to achieving progress in addressing obesity and other co-morbidities but would need to be thoughtfully designed to ensure that scarce resources are appropriately spent and current investments are improved, not lost.

Separate from the budget proposal, the Chronic Disease Center is already undergoing a series of changes aimed at addressing chronic diseases via more integrated strategies. Aside from the Division for Nutrition, Physical Activity, and Obesity, two new divisions, the Division for Community Health and Division of Population Health, now house programs aimed at empowering communities to address chronic diseases, including reduction of obesity.

In 2011, the Center initiated a new Coordinated Chronic Disease Prevention and Health Promotion Program with funding from the Prevention and Public Health Fund. The program awarded grants to all 50 state health departments to help build capacity to address chronic disease, including obesity, by focusing on comprehensive strategies and common risk factors.

5. Healthy Food Financing Initiative

Nearly 23.5 million Americans live in neighborhoods where they cannot buy healthy food to feed their families. Without access to foods that can help people stay healthy, obesity rates and health care costs will continue to rise. Improving the availability of healthy food in underserved communities is an important and proven component of a comprehensive strategy to combat America's obesity crisis and strengthen the health of our communities.

In 2010, President Obama proposed creating a Healthy Food Financing Initiative (HFFI) at the USDA to help bring affordable healthy foods to undeserved communities. At the federal level, the initiative would be run as a partnership between HHS, USDA, and the Department of Treasury. For fiscal year 2013, the budget proposal included $285 million (including $10 million for HHS, $25 million for the Community Development Financial Institutions program at Treasury, and a $250 million set-aside from the New Markets Tax Credit Program). Opponents of the proposal contend that it is an inappropriate use of federal resources.

The program employs a triple aim — creating jobs, economic development, and improving health in low-income neighborhoods by improving access to healthy food options to help address obesity. It is based on the Pennsylvania Fresh Food Financing Initiative, a public-private collaboration that employed a similar model beginning in 2004. The Pennsylvania FFI has made it easier for an estimated 400,000 residents to find healthier food in the neighborhood. It led to the financing of 88 healthy food stores or farm markets in underserved rural or urban locations that created or retained some 5,000 jobs in struggling neighborhoods.

The Senate's version of the 2012 Farm Bill includes $125 million for HFFI.

6. National Physical Activity Plan

Now entering its third year of implementation, the National Physical Activity Plan was developed by a public-private partnership of organizations and individuals representing eight different sectors: business and industry; education; health care; mass media; parks, recreation, fitness and sports; public health; transportation, land use and community design; and volunteer and non-profit. Each of the sectors is charged with developing strategies and tactics to promote physical activity across all sectors of American life — where they work, live, play and learn.

7. FDA Front-of-Package Review

Congress directed CDC to work with IOM, FDA, and the USDA on a study over concerns that the growing number of types and systems of "front-of-package" (FOP) labeling on food products is leading to consumer confusion and varying levels of scientific rigor. As expected, IOM released the second part of the study in October 2011, which examines consumer understanding of FOP systems and recommends steps for FDA to take to develop a standard FOP system. The report concludes that the standard FOP system should:

- Not simply provide nutrition information but give guidance on the healthfulness of a product and encourage healthier choices through simplicity, visual clarity and symbolic meaning;
- Show calories in household servings on all products;
- Use a point system for saturated and trans fats, sodium and added sugars where more points conveys that a product is healthier.

FDA is reviewing the report and has indicated they plan to propose a new system in the future.

8. Childhood Obesity Demonstration Program

CDC announced four-year funding for the new Childhood Obesity Demonstration Program in September 2011. The program aims to identity strategies for integrating pediatric clinical care with community prevention and other support programs to help prevent childhood obesity. Community health workers are being used to help link families with community programs, health insurance enrollment and other resources for disease prevention and management. The project is focused on children ages 2-12 who are covered under the Children's Health Insurance Program (CHIP), a lower-income population for which the obesity epidemic is disproportionately problematic. Funding was awarded to research facilities in Houston, Texas; San Diego, California; and Massachusetts. All funded activities will be evaluated and studied for scalability. The program was authorized by the Children's Health Insurance Program Reauthorization Act of 2009 (Public Law 111-3) and funded by the ACA to the tune of $25 million for 2010-2014.

9. USDA Fruit and Vegetable Program Expansion

In early 2012, USDA issued a proposed rule to expand and improve the Fresh Fruit and Vegetable Program (FFVP), an initiative that provides fresh fruits and vegetables to more than 3 million children in 4,600 elementary schools in low-income neighborhoods. The program seeks to not only improve access to fruits and vegetables but also educate school-age children on the importance of lifelong healthy eating habits. An independent evaluation of the program found that the FFVP increases the consumption of fruits and vegetables by 15 percent in participating schools on days when the program is implemented with no increase in total caloric intake. Further, many school districts have reported that popular fruits and vegetables served in the FFVP are now served in participating school meals.

10. Surface Transportation Law

Federal transportation policy impacts how all Americans move around in their day-to-day lives, and provides a significant opportunity to encourage more Americans to walk, bike and employ other forms of physical activity routinely.

In July 2012, President Obama signed a two-year extension of the federal surface transportation authorization that included a number of changes to current law.

The law eliminates dedicated funding for Safe Routes to School, Recreational Trails and Transportation Enhancement programs. Instead, these and other active transportation programs are combined into a new entity called Transportation Alternatives. Funding for this new entity has been authorized at $800 million annually, a 33 percent cut from the $1.2 billion appropriated in FY2011 to the three individual programs. A new provision also allows states to opt-out of half the funds dedicated to small-scale walking and biking projects It also includes new restrictions that could limit opportunities for public health and other stakeholders to participate in the transportation planning process.

The law does include a provision that provides grants to local communities for street-scale improvements dedicated to safer walking and biking. However, a number of health-related measures supported by public health advocates—including a Health Impact Assessment or Complete Streets provision—were not included in the final legislation.

11. National Initiative for Children's Healthcare Quality

In September 2010, the Health Resources and Services Agency (HRSA) awarded $5 million from the Prevention and Public Health Fund to the National Initiative for Children's Healthcare Quality (NICHQ) to support the creation of a new Prevention Center for Healthy Weight. In addition to identifying health care systems strategies for preventing and reducing childhood obesity, the initiative also launched the Healthy Weight Collaborative and expanded to include health care and public health partners in ten new communities in 2011, including:

- Boston Children's Hospital (Massachusetts), Greater Rochester Obesity Collaborative (New York), St. Charles Health Council (Virginia), Community Health Improvement Partnership (Florida), Nationwide Children's Hospital/ Ohio State University (Ohio), ArCare (Arkansas), Children's Mercy Hospitals and Clinics (Missouri), Yellowstone City County Health Department (Montana), Scripps Family Medical Residency Program (California), and Lincoln County Health Department (Washington).

The communities are working to promote collaborations between primary care, public health, and individuals and families towards addressing the obesity epidemic. Phase two of the collaborative is expected to launch sometime in 2012 with the addition of 40 additional teams across the country. Evaluation of phase one has already started and is expected to assess the quality and effectiveness of the Healthy Weight. Learning purpose of this evaluation is to assess the quality and effectiveness of these activities.

12. Upcoming Legislative Opportunities

a. Agriculture Appropriations Act and Fiscal Year 2013

A number of important programs that are appropriated through the annual agriculture appropriations bill provide opportunity to promote and support healthy eating, particularly among low-income populations that are disproportionately impacted by the obesity epidemic. SNAP helps put food on the table for more than 46 million Americans and cuts to this program threaten beneficiaries' ability to access healthy foods. Similarly, the Special Supplemental Nutrition Program for Women, Infants and Children (WIC) provides nutritional food, education and health care services to more than 9 million women and children younger than age 5 to help support and promote healthy weight and development. Other funds in agriculture appropriations legislation help support:

- Breastfeeding peer counselors to help women initiate and sustain proper breastfeeding, a proven strategy to reducing pediatric obesity prevalence.
- Grants to school meal programs to upgrade kitchen equipment to serve healthier, safer meals and initiate breakfast programs.
- Farmers' market vouchers for low-income women, infants, children, and seniors.

Annual appropriations bills, which are responsible for setting levels of federal discretionary spending, are often a flashpoint in congressional debates over the size and scope of the federal government. Supporters of federal nutrition programs contend that they are a vital element of the social safety net for low-income families and children. Opponents contend that funding for such programs is unsustainable and have prioritized reductions in spending to achieve deficit reduction targets.

b. Farm Bill Reauthorization

The Farm Bill helps to guide our nation's overall agricultural policy and has a major impact in providing all Americans with access to healthy, affordable food choices. In fact, nutrition assistance programs have historically accounted for more than two-thirds of total Farm Bill funding. A number of provisions in the nutrition title are aimed at protecting against hunger while promoting nutritious diets, such as SNAP and The Emergency Food Assistance Program (TEFAP), while others, like the SNAP Nutrition Education and Fresh Fruit and Vegetable Program, help to improve consumption of healthy foods, nutrition and health outcomes among vulnerable populations. Funding for the National Institute of Food and Agriculture helps to ensure that vital and basic research on nutrition, hunger and obesity prevention is carried out. The Farm Bill also supports community-based nutrition approaches, like supporting farmers' markets and Community Food Projects, that have an impact on the crops and food products that are available in various communities.

Additional opportunities exist to further incentivize healthier eating and make healthy food choices accessible and affordable. For example, steps to improve the purchase and consumption of fruits and vegetables at farmers' markets and similar healthy food retailers, such as a SNAP incentive grant program or enabling EBT benefits, could be taken.

The House Agriculture Committee's version of the bill proposes a cut of around $16 billion to SNAP. The Senate version of the bill proposes a $4.5 billion cut to SNAP.

Debate over reauthorization of the Farm Bill is deeply influenced by larger debates over the size and role of the federal budget. As the SNAP program encompasses such a large portion of total Farm Bill spending, differences in opinion over the value and effectiveness of the program have resulted in considerable variation in the proposed level of total Farm Bill funding. The arguments are similar to the agriculture appropriations bills discussed in the prior section. Supporters of maintaining or expanding SNAP funding say that the program is a vital element of the social safety net that also helps stimulate the economy. Opponents, meanwhile, believe that the program has grown too large with respect to both funding and number of people served, particularly in light of the current budget deficit.

c. Elementary and Secondary Education Act Reauthorization

School districts and community organizations that implement comprehensive physical fitness and nutrition programs for students are eligible for competitive Carol M. White Physical Education Program (PEP) grants, authorized by the Elementary and Secondary Education Act (ESEA). The program was funded at $78.7 million in FY 2012, which permitted the U.S. Department of Education to award 56 additional grants in 2012 in addition to meeting additional obligations for grantees that were already in the middle of a three-year grant cycle.

However, despite this limited grant opportunity, there is no federal requirement regarding content or scope of the nutrition education curriculum for schools that receive federal funding. ESEA reauthorization therefore provides a number of opportunities to address the obesity epidemic by both promoting healthy eating and increasing physical activity among school-age children.

Studies also have demonstrated that increased physical activity is linked to improved academic performance, better behavior and reduced truancy. Moving physical and health education to "core" subjects would ensure that schools have the option to use Title I and Title II funds for similar programs, such as those included in Senator Tom Udall's (D-NM) Promoting Health for Youth Skills in Classrooms and Life (PHYSICAL) Act (S.392). The Act would also create an Office of Safe and Healthy Students in the Department of Education and reauthorize the Carol M. White Physical Education Program.

In March 2011, Senator Tom Harkin (D-IA), and Representatives Ron Kind (D-WI) and Jim Gerlach (R-PA) reintroduced the Fitness Integrated with Teaching (FIT) Kids Act (S. 576, H.R. 1057). The bill would require local education agencies and school boards to publish how much progress they have made in meeting national standards for physical education and activity. The legislation would also expand efforts to hire more physical education teachers, fund research on how health affects academic achievement, and explore new ways to promote physical education in schools. Among the many provisions of the Fit for Life Act (H.R. 2795) introduced by Representative Marcia Fudge (D-OH) is a new Department of Education grant program to secondary schools to establish health and fitness programs in low-income communities.

Respective pieces of legislation introduced and considered by respective House and Senate committees of jurisdiction for ESEA differ in their approach to promoting physical activity and nutrition. The Senate HELP Committee bill would eliminate the PEP program, but a broader 'Successful, Safe and Healthy Students' grant program would provide funding to states and localities for physical activity, fitness, and nutrition programs. The Senate HELP Committee bill also would permit states to use federal core education funding to support physical and health education curriculum. The House Education & Workforce Committee passed legislation that would eliminate 41 federal education programs, including the PEP program.

ESEA reauthorization legislation that has been approved by the Senate HELP Committee and the House Education & Workforce Committee represent two competing visions for the role of federal government in supporting physical education funding. The Senate approach would continue federal funding for physical education programs and would expand core curriculum funding opportunities to include physical education; supporters contend that federal funding is particularly important in light of state and local budgets cuts that have eliminated physical education programs across the country. The House approach would discontinue federal funding for such programs amidst a larger elimination of federal education programs generally; supporters of this approach contend that overly prescriptive federal requirements for schools infringes on state autonomy to tailor and implement education programs that meet students needs and achieve results.

D. EXAMPLES OF PREVENTION IN ACTION

Where a person lives, learns, works, plays and prays has a significant impact on his or her health. The following section focuses on examples of how some communities, small businesses, faith-based organizations and schools are taking action to make healthy choices easier for their neighbors, employees, congregants and students.

EVIDENCE-BASED PROGRAMS CAN IMPROVE NUTRITION, INCREASE PHYSICAL ACTIVITY AND REDUCE OBESITY

- The New York Academy of Medicine (NYAM) identified 84 peer-reviewed studies of effective, community-based disease-prevention programs.[300] For example:
  - In Pawtucket, Rhode Island, the Pawtucket Heart Health Program conducted an intervention to educate 71,000 people about heart disease through a mass media campaign and community programs. Five years into the intervention, the risks for cardiovascular disease and coronary heart disease had decreased by 16 percent among members of the randomly selected intervention population.
  - Researchers at Ohio State University recruited 60 women in their forties for a 12-week walking program that took place on the college's campus. At 3 months, the intervention group saw a 1 percent decrease in body mass index, a 3.4 percent decrease in hypertension, a 3 percent decrease in cholesterol, and a 5.5 percent decrease in glucose.
  - The Rockford Coronary Health Improvement Project in Rockford, Illinois was a community-based lifestyle intervention program aimed at reducing coronary risk, especially in a high risk group. The intervention consisted of a 40-hour educational curriculum delivered over a 30-day period with clinical and nutritional assessments before and after the educational component, in which participants were instructed to optimize their diet, quit smoking, and exercise daily (walking 30 minutes per day). At the end of the 30-day intervention period, stratified analyses of total cholesterol, LDL, triglycerides, blood glucose, blood pressure and weight showed significant reductions with the greatest improvements among those participants at highest risk.
- CDC's Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. Its Community Guide has identified a series of evidence-based, community approaches that have resulted in increased physical activity, good nutrition promotion, lowering diabetes rates, reducing obesity and other prevention goals.[301]

SPOTLIGHT ON EVIDENCE-BASED PREVENTION: DIABETES PREVENTION PROGRAM (DPP)[302]

One of the most promising evidence-based programs in the country is the National Diabetes Prevention Program (National DPP). It is based on the Diabetes Prevention Program Research Study that was led by NIH and supported by CDC. The study demonstrated that modest weight loss of 5 percent to 7 percent and increased physical activity to 150 minutes a week through a lifestyle change program reduced the risk of developing type 2 diabetes by approximately 58 percent. The National DPP was developed to move this research into practice. It is a great example of public-private partnership; National DPP includes community organizations, private insurers, employers, healthcare organizations, and government agencies working together to reduce the number of new cases of type 2 diabetes.

The lifestyle change program component is delivered by a trained lifestyle coach in a group setting over 12 months that includes 16 weekly core sessions and 6 monthly maintenance sessions. Part of the National DPP, the Diabetes Prevention Recognition Program, assures quality and fidelity to the science and aids in facilitating reimbursement. Another key part of the program is working closely with employers to offer the lifestyle change program as a covered health benefit and engaging insurers to reimburse organizations delivering the lifestyle change program using a pay for performance model of reimbursement, both are critical to long-term sustainability of preventing type 2 diabetes in this country.

The YMCA of the USA and UnitedHealth Group (UHG) are inaugural partners in the National DPP. In the past two years, the YMCA's DPP (partially funded by CDC and UHG) has trained more than 800 lifestyle coaches, started more than 300 classes in 30 states around the country, and served nearly 6,000 participants, one-third of whom have finished the program. Participants in the Y's program lost an average of 4.8 percent of their body weight, while hundreds of individuals lost an average of 7 percent of body weight.

1. Examples of Some New Evidence-Based Prevention Programs in Communities

The following are examples of how local communities have launched prevention initiatives to focus on obesity, nutrition and/or physical activity, and in some cases have leveraged resources from CDC grants and other support.

Increasing Access to Healthy Foods in the Community

- In late 2011, two pilot public farmers' markets selling fruits and vegetables opened in **Birmingham, Alabama**. Additional communities have been identified for market development in the coming year, with estimates that they could potentially reach 96,000 Birmingham residents.
- Over 60,000 **North Little Rock, Arkansas** residents may benefit from increased access to and support for community gardens and limited agricultural activity.
- Community gardens in **San Diego, California** can now be established on any piece of vacant commercial or residential land, with the exception of land in coastal communities, and growers will be able to sell their produce in commercial and industrial zones.
- **Chicago, Illinois** now allows produce sales at community gardens, adds flexibility in the fencing and parking requirements for urban farms, and permits innovative food production techniques such as aquaponics, which is a system of cultivating both fish and produce.
- Residents of **Evansville, Illinois** celebrated the opening of Riverside Foods, a newly renovated corner store that accepts SNAP benefits. Fresh fruits and vegetables are now available to residents in nearby underserved neighborhoods, including more than 11,000 low-income African-American children and adults.
- A grand opening was held for the revitalization of one of the oldest gardens in **Boston, Massachusetts**. Nightingale Community Garden is now a hub for building a strong social community through activities such as neighborhood cookouts, gardening classes and Senior Fit4Life group classes. It is estimated that at peak, each plot will produce approximately $430 worth of fresh produce, totaling $54,000 in 2012 alone.
- In **Hamilton County, Ohio**, over 9,000 residents now benefit from increased access to farmers markets and community gardens, new playground equipment in public spaces, and a partnership with community churches to purchase basketball hoops and benches for installation in church parking lots.
- Six counties that make up the **Mid-Ohio Valley region in West Virginia** finalized agreements between individual convenience stores and the Mid-Ohio Valley Health Department that requires stores to sell fresh fruits and vegetables for two years and display "Change the Future WV" signage. Over 140,000 residents live within the region and will have greatly improved access to fruits and vegetables at their local convenience stores.

Increasing Access to Healthy Foods in School and Child Care

- School districts in **Tri-County, Colorado** substantially enhanced school district wellness policies to align with IOM standards for school nutrition, benefiting over 200,000 students. Tri-County schools now promote non-food or healthy food-related parties or rewards in the classroom, opportunities for increased weekly physical activity, a district wellness council, enhanced communications with parents, standards for school-based food marketing and staff wellness.
- Child care providers in **Bartholomew County, Indiana** now ensure children in these programs receive at least 60 minutes to 120 minutes of physical activity every day, healthy food options, nutritionally appropriate beverages, and less than 30 minutes of screen time per week for children over two years old.
- Every public school student in **Portland, Maine** now has access to a fruit and vegetable bar or a more traditional salad bar as part of the lunch program. This initiative not only aims to increase fruit and vegetable consumption for about 7,000 students, but incorporates locally grown food through Farm-to-School Programs.
- In **Philadelphia, Pennsylvania**, Get Healthy Philly introduced 91 breakfast carts in 60 schools to improve participation in the district's free meal program. These carts make healthy breakfasts available to more than 37,000 children as they enter school grounds.

Improving the Built Environment to Increase Physical Activity

- During the fall of 2011, **Portland, Maine** unveiled its first StoryWalks in two parks in the Portland Housing Authority neighborhood. A StoryWalk is a path along which signs are posted showing pages of a book, as well as suggested exercises children can do to mimic the characters and actions in the book.
- The New Balance Hubway Bike-Sharing Network began to support active transportation while providing residents with more opportunities to be physically active in **Boston, Massachusetts**. The new bike-sharing network is made up of 61 stations and more than 600 bikes. At least seven stations are located in low-income neighborhoods and subsidized memberships are available for any low- income Boston resident wishing to become a member.
- A new establishment in **Minneapolis, Minnesota** Venture North Bike Walk & Coffee, offers new and pre-owned bikes, safety riding equipment and all types of walking gear at affordable prices for local residents. In addition, they repair bikes, and provide jobs and training for local youth.
- **Henderson City, Nevada** is working to ensure a well-distributed system of local trails and implement street, pedestrian, and bicycle connections between neighborhoods and services, parks, and transit. The current population of Henderson is 277,502, of which 86 percent now live within a half-mile of a trail.
- The **Nashville, Tennessee** GreenBikes initiative officially launched with an expansion from two to six locations and over 50 bikes. Participation has been robust with more than 500 people who have used the program. It is estimated that at the final expansion of the program over 635,000 Nashville residents will have access to the free GreenBikes to improve their levels of physical activity.
- The 51,000 residents of **La Crosse, Wisconsin** became the first Wisconsinites to benefit from "Green Complete Streets," which blends multimodal transportation planning and design with best practices in storm water management.

YMCA HEALTHY CHANGES IMPACT UP TO 46 MILLION PEOPLE[303]

Communities around the country engaged in the YMCA's Healthier Communities Initiatives (Pioneering Healthier Communities, Statewide Pioneering Healthier Communities, and ACHIEVE) are making healthy choices easier for families.[304]

A sample of 153 of the Y's sites found that local leadership has helped make more than 26,000 improvements to communities.[305] This work has been carried out with funding from CDC and RWJF.

Some of the changes local leaders have made have helped communities by:[306]

1. Increasing the amount of fresh fruit and vegetables available in neighborhoods.

- ▲ 86 new or improved grocery options
- ▲ 459 new community gardens
- ▲ 40 new healthy corner stores or bodegas
- ▲ 77 pricing strategies –either incentive or disincentives—to promote the purchase of healthier foods

2. Encouraging changes in the built environment.

- ▲ 194 sidewalks designed or improved
- ▲ 61 zoning guidelines to encourage increased physical activity or availability of health eating options
- ▲ 123 "Complete Streets" projects to improve access to streets for all users including bicyclists, pedestrians and people with disabilities

3. Working with schools to increase physical education and physical activity.

- ▲ 75 new schools that are located to encourage walking and biking to school
- ▲ 1,132 schools added or improved physical education criteria
- ▲ 715 schools have instituted classroom physical activity breaks
- ▲ 285 schools have added or expanded recess

4. Working with schools to improve access to healthier food and drinks.

- ▲ 1,009 schools changed the food available in their vending machines or sold outside of the lunch line
- ▲ 1,334 schools changed their lunch menus to offer healthier choices
- ▲ 345 schools expanded their participation in the USDA free/reduced breakfast or in the afterschool snack program

5. Advancing changes in early childhood or afterschool programs to incorporate more physical activity and offer healthier foods and beverages.

- ▲ 2,091 early childhood or afterschool sites have made their snacks or meals more healthy
- ▲ 1,107 early childhood or afterschool sites have made water the primary beverage of choice for snacks and meals
- ▲ 1,427 early childhood or afterschool programs limit the amount of screen time
- ▲ 2,280 early childhood or afterschool programs have added or increased the amount of physical activity to their curricula

6. Helping worksites incorporate healthier food/beverage options and improving opportunities for physical activity.

- ▲ 519 worksites increased the number of healthy vending machine options
- ▲ 625 worksites improved food choices available in meetings
- ▲ 1,127 worksites created incentives for employees to be active or learn about nutrition
- ▲ 268 worksites encouraged employees to commute in more active ways
- ▲ 212 worksites promote and support breastfeeding

2. Examples of Small Business Approaches to Supporting Wellness in the Workplace and Beyond

Businesses around the country are feeling the strain of high health care costs. Many companies provide wellness programs because they can simultaneously save money while helping employees improve their health.

Chronic diseases such as diabetes, heart disease and cancer are a key driver of health costs. Wellness programs help not only by lowering costs but also by improving employee morale and productivity.

Wellness programs can be especially important to small businesses: these companies employ about half of the country's private sector workers and face growing health care costs and lost productivity related to obesity.[307] However, they can also present unique challenges. Currently, 65 percent of small businesses offer at least some kind of wellness program, compared with 90 percent of large businesses.[308] The definition of small business can vary depending on the sector; for instance for wholesale, small businesses have a maximum of 100 to 500 employees and in manufacturing, the maximum can range from 500 to 1,500 depending on the type of product manufactured.[309]

In December 2011, TFAH and the Small Business Majority convened more than 20 experts from government, business, public health, unions, insurers, insurance brokers and small business owners to discuss opportunities and challenges for increasing the update of and participation in workplace wellness programs by small businesses, particularly through opportunities available through the implementation of the Affordable Care Act.[310] The meeting focused on concerns that small businesses with 100 or fewer employees may have.

The group of experts identified a number of challenges small businesses face when considering wellness programs, including:

- There is a lack of data on how wellness programs help small businesses, in terms of health and the bottom line;
- There is often little information easily available to small businesses about how to set up a program and what it should include;
- Many small business owners and employees remain unaware of the potential benefits of wellness programs;
- Many small businesses lack the resources to set up their own program;
- There are few models designed to work for the various sizes of small business;
- Small business owners often feel that they don't have the resources or the money to set up and run wellness programs; and
- In some cases, given the relatively small number of employees, some owners have concerns that wellness programs will impinge on privacy.

The expert panel also suggested several solutions, including:

- Federal, state and local governments can offer increased tax credits and other incentives and assistance to help small business wellness programs get off the ground;
- Insurance plans can offer incentives to small businesses who offer wellness programs;
- Community-based organizations such as YMCAs can collaborate with small businesses to increase opportunities to exercise;
- Local hospitals can offer free health screenings and classes on nutrition;
- Federal, state and local governments and health and community organizations can educate small businesses about the benefits of wellness programs; and
- Wellness programs can become a key part of the Health Insurance Exchanges that are due to arrive in 2014 as part of the Affordable Care Act.

Other key issues raised at the meeting include::

- Small businesses can have advantages over larger companies in setting up wellness programs. Because smaller companies don't have as many management layers, setting up a wellness program is often simpler, and having fewer employees makes it easier to communicate the program's importance and benefits;
- At many small companies, employees form a close-knit group, so it is easier to change workplace culture. One employee's success — reducing weight or stopping tobacco use — can reverberate throughout the entire company in a way that is less likely to occur at a larger operation; and
- Small businesses may have more incentive than large companies to develop effective wellness programs. Because small companies have fewer employees, when one person is absent or less productive due to a health problem, this has a larger effect on the bottom line.

In 2011, CDC announced a $9 million, two-year program to help 100 small, mid-sized, and large businesses around the country set up and run evidence-based wellness programs. Known as the National Health Worksite Program (NHWP), the effort will provide expertise, support and funding to select companies.[311]

The following are three examples of small businesses that have independently started workplace wellness programs to help their employees improve health.

CREATIVE CRAFTSMEN

Creative Craftsmen, a custom metal fabrication company in Evansville, Indiana, makes parts for a range of products, including reclining chairs, lawn mowers and automobile assembly lines. It has operated as a small business since Eisenhower was president.

One key to the company's longevity has been its skilled workforce. Keeping this workforce healthy is crucial to its continued success.

Most of the company's 18 employees are middle-aged males — the average age is a little over 50. According to Melody Waggoner, the company's human resources manager, about two-thirds of these workers are either obese or overweight.

Like many smaller companies, Creative Craftsmen does not have a large staff or budget for human resources or health care. It is a family-owned business, and Waggoner, who is the daughter of one of the owners, wears several hats, including human resources manager and accountant.

In response, Creative Craftsmen started a wellness program in 2007 to help employees exercise more, eat healthier foods and stop smoking. The company hired a local health care provider, Deaconess Hospital, to set up and run the program. By taking this step, Creative Craftsmen is rather unique: according to a 2011 survey by the Kaiser Family Foundation, just 12 percent of small businesses set up their own wellness programs. The rest have programs that are provided by their health plan.[312]

Waggoner said the company started the program because its owners believe that healthier, happier employees are more productive. Again, this puts the company in the minority: the Kaiser survey also found that one-quarter of small employers offered a wellness program to improve employees' health, while 9 percent offered it to improve morale and productivity. Nearly half said they offered a wellness program because it was part of their health plan.[313]

Currently, the company, whose annual sales range between $2.5 million and $3.5 million, spends about $4,000 a year on its wellness program. Through 2011, Creative Craftsmen was reimbursed for half the cost of its program thanks to an Indiana tax credit that helped defray companies' wellness program costs. However, that credit was suspended for 2012.[314]

The program is managed by Emily Boyd, a health coach at Deaconess. With her help, the company now has a solid program.

One key piece of the effort is an annual screening program that checks employees' BMI and body fat levels, and tests for diabetes, high blood pressure and high cholesterol. Waggoner said that 90 percent of employees participate in the screenings. Through the screenings and conversations with employees, Boyd found that a significant number of Creative Craftsmen's employees needed to manage their weight, exercise more and improve their diet.

She helped them develop plans to improve on areas that fell into the risky category, and regularly checks in on the participants' progress. Spouses are also eligible for the screenings, as well as a free flu shot.

In some cases, the screenings have had a significant impact. For instance, two years ago, tests revealed that the company's owner and founder, Tom Pfender, had diabetes. At the time, Pfender (who is Waggoner's father) had no idea that he had the disease. Since then, he has begun exercising and is eating healthier. As a result of these changes, and the medication he now takes, his diabetes is under control.

Boyd said that employees at Creative Craftsmen are sometimes set in their ways, and can be reluctant to alter their behavior. In 2012, she is trying a new, incentive-based approach to make it easier for them to make healthier choices.

She said that some of the company's employees have quit smoking or lost a significant amount of weight. In some cases, however, they have started smoking again or regained the lost weight. But Boyd remains optimistic about their long-term success. "[The backsliding] usually has to do with stress," she said. "I want to help them figure out how to make more lasting changes." This year, she has focused especially on working with employees who continue to use tobacco.

Every year, the company holds wellness contests, with varying rules and goals. Some have focused on losing weight and decreasing body fat, while others have focused on increasing time spent exercising. One competition awarded contestants points for every 15 minutes they spent exercising; for every serving of fruits or vegetables they ate; for every 8 ounces of water they consumed; and for every driving trip they took while wearing a seat belt. Points were also awarded for not eating red meat. Some contests involve teams, while others are individual. Prizes have included gift cards and up to $100 in cash.

This year, the company is holding a contest that runs from April to September. Every month, workers are eligible to earn entries into two separate drawings. One awards relatively small prizes such as gift cards. The other will give out a single, larger prize: an extra personal day. Boyd structured the contest so that every employee can participate.

In April, as part of the contest, Boyd tested entrants on a range of strength and flexibility measures, including grip and biceps strength. Because metalwork involves a fair amount of upper body manual labor, workers at Creative Craftsmen generally scored high on strength measures. But the tests showed that many workers lacked flexibility. Afterwards, Boyd showed workers how to stretch. In September she will retest them to see whether they improved.

In addition to these contests, the company has a standing offer: a $100 bonus to any overweight or obese worker who loses weight and keeps it off for three months — or to any employee who quits smoking for six months.

This year, Boyd also set up "lunch and learn" sessions, in which a speaker talks to employees about a wellness topic. Recently she brought in a physical therapist to explain the importance of stretching to prevent injuries — both on the job and during leisure time.

Boyd firmly believes in the value of company wellness programs. "At a lot of companies I've worked with, insurance claims go down," she said. "Employees' health can really improve through these programs. And the companies save money."

EXPLORER PIPELINE

As human resources manager for Explorer Pipeline in Tulsa, Oklahoma, Michelle Griffith oversees the company's wellness program, which includes an incentive program for employees who exercise, seminars, a health fair and an email newsletter. Griffith, a fitness buff, is an enthusiastic participant in the program herself. Among other activities, she runs several times a week during lunch with a group of Explorer employees.

Griffith takes pride in her company's program. "We've had people quit smoking," she said. "We've had people lose weight, and we've had people start exercising more."

The company owns and runs a pipeline that transports crude oil, jet fuel, diesel fuel and other petroleum products from Port Arthur, Texas to Indiana. Nearly 1,900 miles long, the pipeline handles about 200 million barrels a year. Half of the company's 200 employees work in Tulsa, while the other half work at seven locations spread along the length of the pipeline. These workers run the gamut, from accountants to secretaries to pipeline repair experts.

Although it has a dispersed workforce, the company feels a strong loyalty to its employees. "Since we're a small company, we're close-knit," said Griffith. "We're like a family. And we want to take care of our family."

Explorer's wellness program was started in 2007 by former CEO Tim Felt. A former U.S. Army captain who graduated from West Point, Felt believes strongly in the value of wellness and the importance of healthy living.

Felt said that the wellness program not only helps employees' health, but can also improve the bottom line. "The company is paying a significant amount of employee health care costs," he said. "That means I've got a vested interest in keeping workers healthy. So there's a financial interest — and it's just the right thing to do."

There is evidence to support him: in a 2010 review of studies on wellness, researchers at the Harvard School of Public Health found that for every dollar a company spends on wellness programs, it saves about $3.27 in medical costs and about $2.73 on absentee costs.[315]

Felt, who is now the CEO at Colonial Pipeline outside Atlanta, said that the idea for the program first occurred to him at a company meeting at which donuts were the featured snack. Afterwards, one overweight employee came up to Felt and said it was hard to lose weight in an environment in which high-calorie foods were the only choice. "From that point on," Felt said, "I decided that if the company was paying for the food, there was going to be a healthy alternative." At future meetings, fruit and water were always part of the offerings.

Felt said the new policy made a difference. "It's amazing how many people will eat the fruit or drink the water, if you make it available," he said.

Felt, who regularly bikes, lifts weights and works on an elliptical trainer, then expanded Explorer's program beyond serving healthier food at meetings. A committee of eight employees began developing ideas, and in 2008, Explorer rolled out its program. The effort includes an incentive program that pays employees $30 per quarter if they reach certain health-related targets, such as taking an annual physical, participating in a wellness seminar, running in road races, and taking certain vitamins, as well as prescribed medicines. Every week, Griffith sends employees a weekly email that includes articles on wellness and health recipes.

In the past two years, Griffith has added new features to Explorer's effort. Every month, the company holds seminars on a range of health- and wellness-related topics. Recent seminars have focused on strategies to improve diet and nutrition, and stress management. The meetings take place at the Tulsa headquarters; to ensure that workers in other locations don't miss out, the seminars are videotaped and webcast.

Explorer also puts on an annual health fair. It offers flu shots, and screenings for high blood pressure, high cholesterol, diabetes, and other ailments. In 2011, Griffith helped start a lunchtime walking and running program. A few times a week, groups of employees in the Tulsa office walk or run together for between 30 minutes and an hour. "It's a great way to break up the day," said Griffith. The program also reimburses employees up to $50 a month for their health club membership. To get the discount, workers must go to the club at least eight times a month.

So far, she said, about one-quarter of the company's workers are participating in at least some part of the voluntary wellness program.

To entice employees to participate, the program includes regular health challenges. Every three months, Explorer encourages workers to improve on a specific aspect of wellness: eating five servings of fruits and vegetables a day, or exercising for at least 30 minutes at least five times a week.

A significant percentage of the company's employees work outside; these workers have somewhat different health concerns than do more sedentary office workers. In the summer of 2011, for instance, the company focused on encouraging employees to drink enough water every day — something that is especially important for those working outside in the heat.

Griffith said that it is difficult to gauge how much money the wellness program has saved the company. But she notes that the company's health insurance costs have not risen over the past few years. The overall number of health insurance claims filed by employees has also dropped.

Felt, the company's former CEO, agrees that calculating savings from wellness programs is tricky. But he is confident that the programs can have a positive influence on employees — so confident that he has started a wellness program at his new company too.

"This is about helping employees to go in the right direction in terms of their health," he said.

CORPORATE NETWORK SERVICES

Three years ago, Karen Kalantzis decided that she wanted to do something to encourage her employees to improve their health.

The majority owner and CEO of Corporate Network Services (CNS), an information technology services firm with offices in suburban Washington, D.C. and Florida, Kalantzis saw that many of her employees were not as healthy as they could be. They weren't getting enough exercise, and weren't eating as well as they could either.

Many of the company's 47 employees are in their 20s and 30s, but Kalantzis worried that they were on the road to a range of health problems, such as diabetes, cancer and heart disease. IT work tends to be sedentary, with employees spending hours at their desks staring at computer screens.

The company began by holding an employee health fair. Each year, the fair features a variety of stations, including a table for checking vision; one for gauging blood pressure; another that allowed workers to try on "beer goggles" that simulated how alcohol effects perception and coordination; and a space where a Zumba instructor demonstrated the popular exercise technique.

Kalantzis, who formerly worked for Hewlett-Packard and other large IT companies, hopes the program, which costs about $4,500 a year, will make the company more efficient, ultimately saving money. She said that while it may not lower health insurance premiums, there are other ways in which it can save money. "Increasing presenteeism is our goal," she said. "We think that this will increase our employees' efficiency, and their energy for their jobs."

Kalantzis also said that the program, which is called "Your Wellness Counts," makes her company more attractive to potential employees. The IT industry is growing, and as a result, companies are competing vigorously for top workers. "We're all trying to recruit the same employees," she said. "I'm a big believer in branding, and wellness is a great way to differentiate our company from others. It's just another good reason to work here." She said that some employees have told her that the wellness program was a major reason they chose CNS when they had more than one job offer.

In 2010, CNS began having regular "lunch and learn" wellness sessions; employees gather in a conference room at the company's headquarters in Poolesville, Maryland to hear speakers on a range of topics, including yoga, women's health and stretching at work. Last year, Kalantzis brought in an expert from an organic market to talk about how certain foods have especially healthy characteristics. The sessions are videotaped and webcast, so that workers in Florida and Ft. Detrick, Maryland (where many CNS employees are now based) can also take part.

Although the wellness program is voluntary, Kalantzis encourages CNS workers to take part. Last year, she began tracking participation. By collecting and using these metrics, she hopes to learn to reach those who so far aren't interested. "If we see we're not reaching our goals," she said, "we follow up with people."

For the past two years, the company has held a holiday weight-loss competition that begins before Thanksgiving and lasts until after New Year's Day. Employees put in $20 each, and the company matches half of that. Any employee who loses weight is eligible to win some of the money. Kalantzis estimates that during the 2011 contest, about 15 people lost weight, winning between $20 and $40 each. "People were into it," she said.

As part of the contest, the company holds a healthy holiday potluck party, in which people bring in low-calorie versions of their favorite recipes. For instance, someone might bring in a dip that uses reduced-fat cream cheese rather than the full-calorie version. After the party, the company posts the recipes on its internal website.

Her efforts are garnering notice. In 2011, the Washington Business Journal named CNS one of its 40 healthiest employers in the Washington area.[316]

CNS encourages health in other ways too. It added medical monitoring equipment to its offices, including blood pressure cuffs, a BMI monitor and a scale. The company reimburses employees for the cost of running in local races, and provides support to local charitable athletic events, such as a 5K race in Poolesville and an all-night relay race to raise money to help those who have cancer. Last year, the company held two events involving physical activity: employees dug trenches to help install rain barrels at a farm a few miles from company headquarters, and played laser tag and other games at an amusement park.

CNS also encourages employees to take advantage of the preventive features of their health insurance. For instance, the company's provider offers an online assessment to help members analyze their health status.

CNS computer engineer Damien Ancruem said CNS' wellness program has made a difference in his life. He said he realized that he needed to watch his cholesterol and exercise more. Since taking the survey, he has begun to take long walks with his wife, and plays more on weekends with his highly energetic 6-year-old son. "They're definitely more concerned about your wellbeing than other companies I've worked for," he said. "That makes a big difference. They honestly care about your health."

3. Examples of Faith-Based Organizations Supporting Health

One area of focus for Let's Move! is neighborhood and faith-based organizations.

Let's Move Faith and Communities includes supporting "Wellness Leadership," which asks leaders to:

- Establish wellness as a priority for their organization and provide leadership through consistent messaging;
- Identify a Wellness Ambassador and direct that person to create and lead a Wellness Council or Ministry; and
- Organize a Wellness Council.

Let's Move! suggests several "Ideas for Action," such as hosting nutrition education classes, using church or other neighborhood grounds to grow healthy food and incorporating exercise into weekly activities. The following are five examples of health-focused, faith-based prevention and wellness initiatives.

FIRST AFRICAN METHODIST EPISCOPAL CHURCH: REDUCING HEALTH DISPARITIES THROUGH EDUCATION AND EMPOWERMENT

First African Methodist Episcopal (FAME) Church, the oldest church founded by African Americans in Los Angeles, California, with a congregation of more than 19,000 members, is working to improve health outcomes and reduce health disparities for the communities it serves. Through FAME Assistance Corporation, its community and economic development arm, FAME is inspiring Californians to make healthier choices every day.

FAME has created several programs and initiatives to increase awareness of the crisis of preventable diseases that disproportionately affects low-income and ethnic minority communities, as well as educate and empower individuals to make healthy choices where they live, work, learn, play and worship.

To connect widely and impact the greatest number of people throughout Los Angeles and California, FAME's outreach extends beyond its immediate congregation and neighborhood. Through a broad coalition of community partners, including a multi-denominational network of churches, energized leaders and complimentary agencies, FAME reaches the underserved and is committed to creating healthy individuals, families and neighborhoods. FAME's approach is to work both with individuals and within existing institutions to create new environments that will lead to a lifetime of better health.

Where We Live

Partnering with the Housing Authority of the City of Los Angeles, FAME offers a series of training programs and community events at local public housing projects to create appreciation for and commitment to the benefits of healthy eating and physical activity.

Offered free-of-charge, residents complete a 6-week Champion Empowerment Program in order to serve as healthy lifestyle ambassadors and change agents in their community. Ambassadors help plan and execute complimentary community health fairs and healthy living classes. The curriculum encompasses nutrition, healthy cooking, physical activity/exercise, presentation skills, entrepreneurship, community advocacy, and the link between diet and disease. With funding provided by the Network for a Healthy California, Kaiser Permanente and the UCLA Center for Health Equity, FAME impacts thousands of individuals.

Where We Shop

Every Saturday and Sunday, FAME transforms its parking lot into a produce market where congregants and community members can purchase fresh and affordable produce. The market helps people gain access to healthy foods, promotes fruit and vegetable consumption, and showcases FAME's health programs.

In March 2012, in association with Mayor Antonio Villaraigosa's Good Food Day LA, FAME delivered "Healthy Heritage," a cooking demonstration and food sampling featuring chefs preparing ethnic foods in a healthier way. Chefs demonstrated how to make healthy tweaks to traditional African American, Latino and Korean favorites to show families how to improve nutrition without compromising flavor. Food samples were provided for all to enjoy.

Where We Learn

When First Lady Michelle Obama started *Let's Move!* to reverse the epidemic of childhood obesity in one generation, FAME responded to the call to action by launching *Let's Move L.A.!*. Over the last two years, FAME has facilitated the dissemination of nutrition education materials and led physical activities at schools and community events focused on creating healthier environments for children and instilling healthy habits that last a lifetime.

In May 2012, FAME further engaged young people with the Let's Move Youth Summit. The Youth Summit encouraged young people to take charge of their health, set and achieve fitness goals, and become leaders in their community that advocate for better health.

Where We Play

An outgrowth of *Let's Move L.A.!*, FAME launched *Let's Move California!* in June 2012 with a series of events aimed at uniting and invigorating Californians to eat healthier and be more active. *Let's Move California!* will create a statewide framework to educate citizens, streamline access to healthy lifestyle resources, and provide training to incorporate *Let's Move California!* programming into existing infrastructure.

Central to the *Let's Move California!* launch is Fitness Feria, a one-day intensive program to introduce children and parents to the "movement ABCs," a fundamental step in early childhood development that enables participation and success in athletics. Families participated in more than 40 sports and fitness-related activities, and learned how to engage more fully in the U.S. athletic system. During the program, parents and children receive instruction on many Olympic Sports and information on where to obtain non-profit resources and support. In addition, thousands of parents learn how to enroll their children in community athletic programs and how to help their families practice a healthy lifestyle.

Where We Worship

A core audience for FAME's programs and message is its broad-based network of churches. Begun at home and now expanded throughout Southern California, FAME is dedicated to making church a place of physical as well as spiritual well-being.

The Body&Soul collaborative brings a series of initiatives and programs to local churches that include health messaging from the pulpit; monthly newsletters; food policies; healthy cooking and exercise classes; community health fairs; and an exercise break during worship services.

In partnership with the University of California, Los Angeles, with support from the Centers for Disease Control and Prevention, FAME created an Instant Recess® video — designed to get people to take 10-minute physical activity breaks. Instant Recess has been adopted by congregations all over the city with plans for national distribution through Let's Move! Faith and Communities. The video, which has a spiritual and gospel flair, provides churches with fun and active ways to spend 10 minutes exercising while worshiping, specifically during children's Sunday School, Sunday worship service, choir rehearsal, special events and celebrations, and Bible study meetings.

H.O.P.E. INITIATIVE AND THE NATIONAL BAPTIST CONVENTION

The National Baptist Convention USA (NBCUSA), incorporated through its Congress of Christian Education, is committed to ensuring all National Baptist churches have health and wellness ministries. A major component is the NBC **Health Outreach and Prevention Education** (H.O.P.E.) Initiative, which is a partnership among churches, medical professionals and public health organizations. H.O.P.E. adopted the "Mississippi Model" for faith-based health and wellness mobilization championed by an association of NBCUSA church Usher Federation (UF) ministries in Northwest Mississippi.

Through H.O.P.E., the NBCUSA reaches out across their denomination to educate and inspire Baptists to commit to healthier lifestyles through health and wellness education; referral sources and collateral material; and facilitators and resource persons.

The framework of the H.O.P.E. Initiative began in Northwest Mississippi in the late 1990s. As NBCUSA churches worked to include health and wellness in worship, they found that, while people liked the idea of improving health, they didn't know what to do. So, in 2002, the UF created a health and wellness observers calendar. Pulling information from Healthy People 2000 and other public health research organizations, the calendar was fashioned to include monthly observances.

It worked fairly well the first year, but usage took off in the second year. In the second iteration of the calendar, they added more options and ways for people to make healthy choices. Next, the UF created a companion guide to go along with the calendar. Both pieces provide easy-to-understand tips on how to incorporate health into worship and daily lives. For example, September includes Sickle Cell Sabbath and November includes Diabetes ID (I Decide) Day.

The signature event of the calendar and guide is Taste Test Sunday, focused on diabetic safe desserts. The event includes a blind taste test of desserts made with and without sugar. Organizers found that men in the congregation couldn't tell the difference and even preferred the diabetic safe desserts. In the past year, other diabetic safe foods have been to the taste test and have proved popular. Along with the calendar and guide, the NBC created the What's Cooking? Initiative with the American Diabetes Association aimed at promoting healthy ingredients in meals.

No Fry Zones

In addition, some Baptist churches have created "no fry" zones in their congregations. One church in Mississippi resisted the change initially but eventually made the switch thanks to the leadership of their pastor.

Dr. Michael Minor, a special health assistant to the president of the National Baptist Congress, said the idea of the no fry zone was a way to get his foot in the door, talk about health and wellness and demonstrate how the church could take a stand. He viewed the fry ban as similar to when churches stopped using wine for communion to help congregants with alcohol issues. "We are trying to work with people who have health challenges and keep others from having those challenges," Dr. Minor said.

Using Church and Community Grounds to Benefit Health and Wellness

The Church and Community Garden Project promotes the development of gardens to increase access to and consumption of fruits and vegetables. It has the added bonus of helping congregants become physically active through gardening and allowing for shared use of the land for exercise and play.

In addition, some congregants wanted to walk around church grounds, so ministers have been encouraged to measure off distances so congregants can track how far they are walking. Some ministers have gone so far as to create paths linking churches, grounds and cemeteries to ensure congregants have safe places to walk and exercise.

"The bottom line is we need to spend more time focused on reaching a common ground and making lives better," said Dr. Minor. "We can all rally around health to make our community better. Who wouldn't want a healthier nation?"

Health Ambassadors

After the NBC published the calendar and the guide, congregants began exploring ways to benefit their communities as a whole. That sparked the creation of health ambassadors, representatives of each church that are trained as health promoters.

In addition, the NBC created the "First Ladies for the First Lady," a group of local church first ladies advocating on behalf of *Let's Move!*. To mark the two-year anniversary of *Let's Move!*, First Lady Michelle Obama spoke at Northland Church in Longwood, Florida and asked the National Baptist Convention to train and deploy 10,000 health ambassadors in 10,000 churches by September 2012. By the end of April, 2012, NBCUSA state and district affiliates representing more than 3,000 churches have committed to this training.

THE JEWISH COMMUNITY CENTER ASSOCIATION'S DISCOVER: CATCH EARLY CHILDHOOD PROGRAM

To tackle obesity, the Jewish Community Center (JCC) Association focused on one simple premise: ***it's much easier to create good health habits than it is to change bad ones.***

JCCs consider health and wellness inherent to their tradition and cultural values; staying healthy and taking care of their bodies is an aspect of respecting their faith, making healthy living part of their heritage.

Three years ago, the JCC Association partnered with the University of Texas School of Public Health and its Coordinated Approach to Child Health (CATCH) Program. Together, they created Discover: CATCH Early Childhood, a child wellness program aimed at encouraging healthy habits in the youngest members of the community and their families.

JCC Association's version of Discover: CATCH is based on a foundation of Jewish values. The evidence-based model that CATCH has pioneered attempts to instill an appreciation for physical activity in children ages 3 to 5 and encourages them to develop life-long healthy eating habits. As part of the program, children learn to have fun while exercising. They are also taught to differentiate between "go" foods, which are good for them and "whoa" foods that are less healthy.

The program is focused on young children, but it seeks to engage the adults in their lives, including parents and educators. The JCC Association has created a series of parent tip sheets to bring lessons home and help the entire family think more carefully about food, nutrition and exercise. The model positions JCCs as a wellness provider to the community. JCCs have been able to reach families with older children as well by incorporating Discover: CATCH into teen after-school programs.

While the Discover: CATCH program is just finishing the final stages of the pilot phase, the responses across the board have been positive. Based on surveys sent to members before and after the program began, there has been a cultural shift in the way early childhood classes are being taught. For instance, young children no longer play "elimination games" (such as Duck, Duck, Goose) where a large portion of children are not participating at any given time. Children are also growing their own fruits and vegetables for snacks.

The pilot communities are also seeing a change in how early childhood educators and staff work with parents. Parents are sending healthier foods with their children and asking schools to serve healthier foods. Encouraged by these results, JCC Association added an education piece on farming and farm-to-table initiatives.

In November 2010, JCC Association started "JCC Grows" to encourage JCCs to establish gardens and encourage members to support fresh food projects and be physically active. A significant portion of the harvests from the gardens are donated to local food pantries.

The JCC Movement also has one of the largest networks of day and resident camps in North America. Since starting their partnership with Discover: CATCH, camps have gotten rid of the old "bug juice and greasy grilled cheese" in favor of healthier food, some of which comes from their own gardens.

Health and Wellness at Local JCCs

The **Shaw Jewish Community Center** in Akron, Ohio held a Discover: CATCH Wellness Fair on January 22, 2012. More than 1,000 people took part and learned about all different aspects of health and wellness.

Discover: CATCH was a natural complement to the Shaw JCC's Ethical Start Early Childhood Program. According to Lisa Pesantez, who teaches a group of two-year olds and a class of third-, fourth- and fifth-graders, "For my [two-year olds] I think the biggest thing has been showing them that exercising can be fun! I believe that the purpose is to give wholeness and completeness to physical activity, spirituality, and nutrition for both the students and the teachers."

The **Asheville Jewish Community** Center in North Carolina took the JCC Grows initiative and created an entire Jewish Children's Garden Curriculum. They started by forming a volunteer committee of parents and interested teaching staff with garden design, art therapy and Judaic experience.

The Asheville JCC is in a busy downtown area with just two narrow grassy areas (one 20' x 70' and the other 20' x 25') which became their children's garden. The community helped fund the garden through a Children's Garden Legacy Campaign, which offered naming opportunities for each section. The JCC also solicited volunteers to help build the garden, including a teen youth group, preschool teachers, parents, landscapers, gardeners, and many others. The garden provides healthy foods for the entire community and educational opportunities for children.

ADVENTISTS INSTEP FOR LIFE – THE SEVENTH-DAY ADVENTIST CHURCH

To help families address the obesity epidemic, the North American Division of the Seventh-day Adventist (SDA) Church created Adventists InStep for Life, which forms partnerships between churches, schools and the public health community to reduce childhood obesity and inspire healthy eating along with physical activity.

They have set four goals centered on increasing physical activity and the consumption of fruit and vegetables:

1. Accumulating 2 million physical activity miles through walking, biking, swimming, running and other physical activities;
2. Having 60 percent of Adventist students achieve Individual Active Lifestyle awards by either qualifying for the the Presidential Active Lifestyle Award, which requires participants to commit to physical activity five days a week for six weeks, or the NAD Active Lifestyle Award, which rewards people for reaching mile milestones ranging from 100 miles of exercise to 2,000;
3. Launching 100 summer feeding sites, which provide nutritious summer meals to children who rely on the National School Breakfast and Lunch Programs; and
4. Starting 100 vegetable gardens or farmers' markets.

Local Ministries

The **Allegheny East Conference Churches** started their "Let's Move Day" at 4:00 a.m. with a 20 minute exercise routine followed by worship and a 32-block walk to 15th and Christian Streets in South Philadelphia. Pastor Colin Brathwaite and his wife, Jeannie, joined the West Philadelphia members on the entire walk. While members were given bus tokens to ride back to the West Philadelphia Church, they were so excited about completing the initial walk to south Philadelphia that they decided to walk back. In total, they hiked more than seven miles. In Texas, **Killeen SDA Church**, which is close to Fort Hood, the largest military base in the United States, planned their event in just three weeks but got nearly 80 people to complete their 5K run/walk.

Orlando Junior Academy (OJA), in Orlando, Florida, has begun to focus on getting students "in step for life." All pre-K through eighth-grade students participate in a school garden that won first place in the 2011 Florida School Garden Competition. In addition, OJA has created healthy eating experiences for students through partnerships with a local chef, dietitian and nutritionist. Together, the educators provide healthy vegetarian food, a cooking class elective and a hands-on nutrition health curriculum. The 22 students at **Cleburne Adventist Christian School**, located in Cleburne, Texas run one mile every day, and then play sports or participate in other activities for at least an hour a day. Students accumulate credits and can earn rewards for their participation.

The **Filipino Capital SDA** Church in Beltsville, Maryland, has focused on helping children understand what a healthy lifestyle means. Once a month, they host a healthy eating potluck featuring mainly vegetarian dishes. In addition, the SDA hosts quarterly cooking demos that make the preparation of healthy foods fun. Going beyond food, the SDA promotes an "In Step for Life" program; on the last Sunday of every month, congregants wear pedometers to count their total steps when walking.

In the Washington, D.C. Metro Area, the **Emmanuel Brinklow Church** recently organized a presentation from an Ironman competitor during the "Health Minute" segment of their worship. In addition, Brinklow created a fitness class under the direction of a personal trainer. The class was so successful that they now hold another class twice weekly for the entire community. The church also utilizes nearby Brinklow Walking Trail, which wraps around 30 acres that will eventually house the Emmanuel Brinklow health and fitness campus. The church has also used their land to sponsor more than 20 community gardens and has incorporated a healthy lifestyles unit in the science curriculum.

The Kettering Adventist Church in Ohio has created a Health Ministry team under the guidance of their Faith Community Nurse, Mel Miller. The team is planning a Community Garden project, during which church members will be encouraged to bring garden produce that will be delivered to the McKinley United Methodist Church (UMC) in downtown Dayton, Ohio. In addition, they will set up a farmers' market to sell fresh produce for a small fee, with all proceeds from the market being donated to the McKinley UMC.

Palm Harbor SDA Church in Florida recently challenged its members to participate in a half marathon or five-kilometer race. Participants could run or walk with proceeds going to the Childhood Obesity Foundation. "My first 5k was a great experience," said one participant. "When our Pastor first announced the 5k event and explained that it was a three mile walk, I said there is no way I could walk three miles. But the next week when it was mentioned again, I decided I would try it. So at age 80, I started practice for the three mile walk…I was able to complete the event. Now I am looking forward to another marathon."

AMPLEHARVEST.ORG

Many Americans lack access to fresh and affordable fruits and vegetables. At the same time, there are more than 40 million Americans who grow food and often can't use everything they grow. AmpleHarvest.org was created to connect those growers with those who need the food the most. Since 2009, AmpleHarvet.org has connected thousands of home gardens with more than 5,000 registered local food pantries—70 percent of which are run by faith-based organizations—across all 50 states.

AmpleHarvet.org didn't create anything new, per se, but connected the dots between those who wanted to and could donate and those who need fresh foods. The donations help food pantries save money and invest in other necessities. AmpleHarvet.org enables anyone to be a philanthropist: with a $2 pack of seed, someone can grow $50 worth of food and donate what they don't need.

At no cost to donors, pantries or taxpayers, AmpleHarvest.org has:

- Registered nearly 5,100 food pantries;
- In 2011, helped growers donate more than 21 million pounds of freshly harvested produce; and
- Helped millions of pantry clients feed their families fresh food.

Gary Oppenheimer, AmpleHarvest.org founder and executive director, "urges communities to engage their policy-makers in getting local sourced foods to those in need."

AmpleHarvest.org connects growers with pantries to ensure those without fresh food gain access. "We are trying to change the system of how people are getting healthy food. Once a grower starts, he will donate food for the rest of his gardening life. Working with growers and food pantries has created a permanent sustainable solution," said Oppenheimer. "Please visit www.AmpleHarvest.org/waystohelp to learn how you can help AmpleHarvest.org help your community."

4. Examples of Improving Nutrition and Physical Activity in Schools

Nearly 23 million children and teens in the United States are considered overweight or obese—a problem that is exacerbated when junk food and sugary drinks are sold in schools.

The Alliance for a Healthier Generation, which provided the following examples of how some schools have focused on improving the quality of food and drinks they serve, is a non-profit organization founded by the American Heart Association and William J. Clinton Foundation. For the past seven years, the Alliance has worked with families, schools, doctors, and communities to achieve its goal of reducing the prevalence of childhood obesity by 2015.

While the USDA works to create a common set of improved nutrition standards for "competitive foods" (all foods and beverages available outside of school meals, such as those sold in vending machines, cafeteria à la carte lines and school stores), many schools have already started replacing unhealthy items with more nutritious choices on their own. As the examples below show, students are responding positively by purchasing and eating healthier foods.

HEALTHY SCHOOLS PROGRAM INTERIM EVALUATION SHOWS PROGRESS

The Healthy Schools Program, created by the Alliance for a Healthier Generation and receives major funding from RWJF. It is the largest program in the nation focusing on school-based obesity prevention. The program targets schools with predominantly low-income and minority students. In an effort to evaluate the effectiveness of the program, researchers conducted an interim study to measure the progress of schools that enrolled in the program in 2007-2008 and 2008-2009 school years.

The Healthy Schools Program provides training and technical assistance at no-cost to schools for four years in eight content areas: policies and systems, school meals, competitive foods and beverages, health education, physical education, physical activity outside of physical education, before- and after-school programs and school employee wellness. Results of the interim study show that schools made significant changes in all content areas.[317] The most significant improvements were made to school employee wellness and school meals, with the least amount of progress in physical education, policies and systems, and before- and after-school programs.[318]

The more training and technical assistance a school received, the more progress it made in improving health policies, practices and environments.[319]

DELONG MIDDLE SCHOOL, EAU CLAIRE, WISCONSIN

Student Population: 895

Student Demographics: 41% eligible for free or reduced-price lunch; 81% white; 11% Asian, 4% Black

School Snapshot

Five years ago, a curious student at DeLong Middle School asked his science teacher why the apple he ate for lunch was grown in Washington, not Wisconsin. In addition to raising the school's awareness about the source of foods, this question sparked a movement to improve the health and nutrition policies for all DeLong students. That science teacher, Mikki Brettingen, was inspired to create and advise the Wellness Warriors, a group of students committed to healthy eating and active living. While the group got their start getting the cafeteria to serve locally grown apples, their focus has evolved and expanded.

Thanks to the Wellness Warriors' latest efforts, DeLong no longer sells junk food in vending machines, at concessions stands, or at the school store. The school now offers healthier options, such as pretzels, granola bars, water and small bottles of 100% juice. Students also have started a vegetable garden, held health and wellness fairs, and encouraged their teachers and parents to follow their example. "Delong Middle School students are very proud to go to a school where healthy habits are encouraged and healthy choices are available," said Brettingen.

Wisconsin Snapshot

In Wisconsin, 31 schools participate in the Healthy Schools Program. In 2011, two schools from the state received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

RIO HONDO ELEMENTARY SCHOOL, ARCADIA, CALIFORNIA

Student Population: 850

Student Demographics: 81% eligible for free or reduced-price lunch; 67% Hispanic; 21% Asian

School Snapshot

Since joining the Healthy Schools Program, Rio Hondo Elementary School has made a lot of changes in the à la carte foods offered during breakfast and lunch. Gone is the chocolate milk, junk foods and sugary beverages. Instead, students have only bottled water in the vending machines and healthy options in the cafeteria, including a large, fresh salad bar that includes lots of fruits and vegetables, and even pre-portioned salad dressing. Brian Bettger, Rio Hondo's principal, said the district's Food and Nutrition Department is very responsive and works closely with the school to ensure everything meets the nutritional guidelines. In fact, after receiving a note from a student asking for more seeds, raisins, and other healthy toppings to spruce up the salad, Bettger put a call in to the nutrition director and the very next day, they found dried fruits, nuts and even more choices of salad dressing. Other school efforts include a weekly delivery of fresh fruits and vegetables, and a new initiative designed to increase physical activity called "P.E. Buddies". The program, started with the help of one of Rio Hondo's P.E. teachers, partners the younger primary school students with older, middle school student mentors who give them help and inspiration as they do all the activities during their P.E classes.

California Snapshot

In California, more than 500 schools participate in the Healthy Schools Program. In 2011, 14 schools from the state, including two in the El Monte School District, received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

LEWIS FRASIER MIDDLE SCHOOL, HINESVILLE, GEORGIA

Student Population: 815

Student Demographics: 66% eligible for free or reduced-price lunch; 62% Black; 27% white; 8% Hispanic

School Snapshot

Lewis Frasier Middle School's Healthy Schools Program initiative has an enthusiastic leader in Peggy Rayman, the school nurse, who has enjoyed support from both the prior and current school principal. Lewis Fraiser has increased the selection of fresh fruits and vegetables that students receive in the cafeteria. The school has also worked with vendors to make sure that beverages sold in vending machines are compliant with the Alliance's School Beverage Guidelines. According to Rayman, the school is encouraged that the healthier options, such as water and 100 percent juice, have sold just as well and have not impacted the profitability of the vending machines or store.

Other school efforts include a 50-day Health Challenge, which uses the USDA's Choose My Plate website to motivate staff to earn points for exercising and staying within their recommended daily calorie range. Because teachers and staff to serve as role models for the students, the program encourages the entire school to get involved to create a healthy environment.

Georgia Snapshot

In Georgia, nearly 300 schools participate in the Healthy Schools Program. In 2011, 17 schools from the state received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

LORING COMMUNITY SCHOOL, MINNEAPOLIS, MINNESOTA

Student Population: 435

Student Demographics: 69% eligible for free or reduced-price lunch; 44% Black; 25% White; 17% Hispanic

School Snapshot

Loring Community School has cultivated a garden and offers organic cooking classes to students. The school also has an active health wellness council that includes students. Some of the council's efforts include encouraging students to carry water bottles and mentoring younger students in the school garden. In addition, the school has made an effort to ensure their students have opportunities to be more active during the school day. In order to increase opportunities for physical activity, the school moved recess up in the schedule—before lunch, which encourages students to eat more of their lunch and return to the classroom calmer and ready to learn. The school also encourages teachers to offer academic movement games during which students move while they learn and have a chance to release some energy.

Minnesota Snapshot

In Minnesota, more than 65 schools participate in the Healthy Schools Program. In 2011, four schools from the state, including Loring Community School, received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

LOTTS CREEK COMMUNITY SCHOOL, HAZARD, KENTUCKY

Student Population: 240

Student Demographics: 71% eligible for free or reduced-price lunch

School Snapshot

Lotts Creek Community School's commitment to healthy eating and physical activity is evident everywhere on campus. In the cafeteria à la carte line, students can now purchase fruits and yogurt, and the school vending machines are stocked with foods, such as cereal and granola bars, that adhere to the Alliance's Competitive Foods Guidelines. According to the school director, Alice Whitaker, Lotts Creek families are proud that the school eliminated food-based fundraisers. Instead of doughnuts, kitchen knives are now one of the fundraising options. "Many parents have told me how much they appreciated the switch," said Whitaker.

In addition to school events like wellness fairs and field days, and a staff weight- loss competition, which netted 676 pounds lost among participants in 2011, the school recently hired a second physical education teacher to provide more exercise opportunities for students. The school even makes its state-of-the-art fitness center available to the public free of charge.

Kentucky Snapshot

In Kentucky, 100 schools participate in the Healthy Schools Program. In 2011, five schools from the state received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

SEAMAN HIGH SCHOOL, TOPEKA KANSAS

Student Population: 1,158

Student Demographics: 27% eligible for free or reduced-price lunch; 93% White; 2% Black; 2% Hispanic

School Snapshot

Seaman High School created a healthier environment for students by offering fresh fruit during breakfast and lunch, as well as à la carte items and meals that are prepared with lower-calorie, lower-fat ingredients. In addition, the school is working to ensure that drinks sold in vending machines on campus adhere to the Alliance's School Beverage Guidelines. According to Claudia Welch, a P.E. teacher at Seaman High School, adjusting the selection available in vending machines has been challenging because it involves changing the vending contract. "We're determined to follow through because we want to create an environment that reinforces healthy lifestyle choices at school and at home," said Welch.

Seaman High School also has established Wellness Wednesdays and Fitness Fridays, activities that are designed to incorporate nutrition and fitness information into the school day. Students and educators at Seaman High School are committed to promoting healthy behaviors and lifestyle choices through ongoing education.

Kansas Snapshot

In Kansas, more than 60 schools participate in the Healthy Schools Program. In 2011, three schools from the state received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

JOHN M. SEXTON ELEMENTARY SCHOOL, ST. PETERSBURG, FLORIDA

Student Population: 718

Student Demographics: 71% eligible for free or reduced-price lunch; 57% White; 23% Black; 11% Asian; 7% Hispanic

School Snapshot

The à la carte options at John M. Sexton Elementary School used to include sugary beverages and ice cream. This year, the options include low-fat yogurt, 100 percent frozen fruit popsicles, granola bars and trail mix instead. According to Beth Bates, the cafeteria's food service director, the switch was well received by students, and the new products sold so well that the cafeteria made a profit. Moreover, Bates now feels so enthusiastic about increasing the availability of healthier à la carte options in the cafeteria line that each time the school introduces a new fruit or vegetable, she dresses up to help promote the produce. So far, she has dressed up as a green bean queen, purple sweet potato punk rocker, and a pomegranate princess.

Other school efforts have included successfully replacing food-based fundraisers with healthy, earth friendly alternatives like "Grow Your Own Garden" kits. John M. Sexton Elementary also helped encourage students to be more active by implementing a Walking School Bus program before and after school.

Florida Snapshot

In Florida, more than 200 schools serving 180,000 students participate in the Healthy Schools Program. In 2011, 46 schools from the state, including John M. Sexton Elementary, received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier. Notably, 40 of 46 celebrated schools from Florida were from Miami-Dade County.

SOUTHEAST POLK HIGH SCHOOL, PLEASANT HILL, IOWA

Student Population: 1,731

Student Demographics: 27% eligible for free or reduced-price lunch; 93% White; 3% Hispanic

School Snapshot

Last year, Glenn Dietzenbach, as former principal of Southeast Polk Junior High School, worked closely with the previous food services director to make sure that all foods served in the cafeteria à la carte line and vending machines complied with the Alliance's guidelines for competitive foods in K-12 schools. Students are now able to purchase healthier snacks, such as popcorn and granola bars, instead of chips and cookies. In addition, the school eliminated soda machines and concessions featuring junk foods. According to Dietzenbach, replacing unhealthy options with healthier ones still yielded profits for the school.

Other major accomplishments included expanding the school's breakfast program, which now offers every student the option of a healthy breakfast, enhancing school fitness facilities, and eliminating food-based parties as a classroom reward.

Iowa Snapshot

In Iowa, nearly 60 schools participate in the Healthy Schools Program. In 2011, four schools from the state, including Southeast Polk Junior High School, received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

SOUTHSIDE MIDDLE SCHOOL, FLORENCE, SOUTH CAROLINA

Student Population: 821

Student Demographics: 59% eligible for free or reduced-price lunch; 49% Black; 48% White

School Snapshot

The vending machines at Southside Middle School used to offer only sugary beverages. This year, there are healthier, lower-calorie options, such as water and 100 percent fruit juice. And, in the cafeteria, the food service director now offers an additional fruit or vegetable option during lunch and only uses unsaturated fat cooking oil to prepare meals. Other school efforts have included the creation of a school garden, a walking program before school and during lunch, and various fitness programs - such as a dance club and participation in Fuel Up to Play 60. Southside also promotes physical activity by broadcasting a "Jamming Minute" produced by students every Friday.

South Carolina Snapshot

In South Carolina, more than 100 schools serving nearly 60,000 students participate in the Healthy Schools Program. In 2011, only three schools from the state including Southside Middle School received a national-level award from the Alliance for a Healthier Generation for their efforts to make their campuses healthier.

WEST BOLIVAR MIDDLE SCHOOL, ROSEDALE, MISSISSIPPI

Student Population: 298

Student demographics: 96% eligible for free or reduced-price lunch; 96% Black; 4% White

School Snapshot

With the high obesity rates in Mississippi, students and staff at West Bolivar Middle School knew they needed to make improvements. Glenda Atkins, the school counselor, helped coordinate a variety of efforts including: removing soda from the vending machines and adding water; changing cooking techniques in the cafeteria—more baking instead of frying; and asking parents to comply with school wellness guidelines when they send in foods for celebrations. In addition, every classroom now receives a healthy afternoon snack—typically a basket of fruits or vegetables, such as kiwis, melons, carrots or cucumbers. "Students enjoy the healthy snacks and the baskets are usually empty by the end of period." said Atkins.

West Bolivar has been able to focus on physical activity as well. The students have physical education every day and a new track at the school has inspired kids to walk a mile a day. The recent improvements also have motivated many teachers to exercise regularly and eat healthier foods. The school district now holds monthly breakfasts to inform the community of the healthy changes taking place on campus and to ask for input on other issues to tackle.

Mississippi Snapshot

According to the National Survey of Children's Health, Mississippi has the highest childhood obesity rate in the nation—44.4 percent. Currently, more than 100 schools in the state participate in the Healthy Schools Program, and in 2011 one school from the state (Lyon Elementary School) received a national level award from the Alliance for a Healthier Generation for its efforts to make its campus healthier.

ADDITIONAL ALLIANCE FOR A HEALTHIER GENERATION STORIES: STAFF WELLNESS SUCCESSES

- **At CTA Goodman Elementary School in Chandler, Arizona**[320] the staff started an Employee Wellness Boot Camp program. Administrators hoped that the staff would be able to lead by example through adopting healthy behaviors. The PE teacher leads the staff Boot Camp twice a week for all employees. At first there was limited participation, but interest in the class expanded beyond the athletic department to include many cafeteria workers as well. Staff wellness programs have expanded to include "Gator Wellness," which is a bulletin board in the cafeteria that has healthy recipes and ideas on how to be healthy. The school also has plans to plant a garden with the hopes of supplementing their lunch program, as well as providing fresh produce to community families in need.
- **In Charlotte, North Carolina the teacher-parent basketball game at Idlewild Elementary School has become a popular tradition.**[321] In an effort to increase opportunities for staff wellness as well as have a healthy fundraiser, the elementary school decided to host a teacher-parent basketball game. The game was such a success the school plans to hold another game, which will also include a student tournament. Not only did they have fun while being physically active, the school also raised $800 from healthy snacks and beverages they sold at the game. The school plans to use the money they raised to purchase additional PE and recess equipment.
- **Eau Claire Area School District in Wisconsin**[322] recently launched a district-wide employee wellness program. The district hired two wellness coordinators to focus on physical activity, healthy eating, stress management and reduction of tobacco use among employees. More than 500 employees and their family members have already enrolled in the "Step into Wellness Pedometer Program." The district is also conducting a health risk assessment and employees who participate receive a $50 gift certificate and reduced health insurance premium.
- **Administrators at Carson High School in Carson City, Nevada**[323] meet as a school wellness council to come up with attainable health goals for the school. One year after setting up the wellness council, employees participate in a variety of activities, including weekend hikes, yoga, spin and other fitness classes, and the school encourages employees to join their bike-to-work contest. In the fall, the school plans to begin offering a low-fat cooking class for employees to take advantage of before the holidays, and they will add another fitness course called "Drums Alive," which combines aerobics, drumming and dance.
- **Healthy competition is supported at Woodstock School District in Woodstock, Illinois.**[324] The school district has hosted a health fair for district employees, conducted employee wellness surveys and created the "Maintain Don't Gain Holiday Challenge." They started the school year with a physical activity challenge for staff; putting together teams and having participants log all their physical activity online. During the 12-week program, the most active team was awarded a golden foot trophy every two weeks.

SPOTLIGHT ON SCHOOL NURSES AND STRATEGIES TO REDUCE CHILDHOOD OBESITY

The National Association of School Nurses (NASN) recognizes that school nurses are in important positions to impact the childhood obesity epidemic, reach ethnically diverse children and provide for better care and outcomes for students.[325] School nurses are uniquely able to care for children and teens who are overweight and obese, especially by accessing community resources and collaborating with the health care community.[326]

The NASN recently partnered with the United Health Foundation (UHF) to undertake an innovative school health model to address the childhood obesity epidemic, which was first piloted in 2011 in six sites in Texas, Georgia and Florida.

Key components of this model included an educational session for school nurses about evidence-based practices, advocacy and leadership skills; wellness coordinators in each site; strategies to engage families, stakeholders, and the community at large; and awarding micro-grants to school nurses for school-based programs addressing childhood overweight and obesity issues.

> *"Great support and participation from the local community and the parents. School staff and school nurses have also recognized the relationship among health, physical activity and academic achievement."*
>
> –School Nurse Participant

School nurse administrators and wellness coordinators were charged with facilitating and coordinating the childhood obesity program in each school district to promote program engagement, engage school nurses, provide wellness classes to the local community and link program services to participating families. The school nurses acted as wellness resources to the superintendent, district leadership, school staff, educators and local community leadership, all of which help sustain programming at the school.

To receive the micro-grants, school nurses submitted proposals and budgets to NASN, which received, evaluated and disseminated the awards to each site. A total of $60,000 was available to fund proposals, with the average micro-grant totaling $2,500.

The project emphasizes an innovative approach, stressing the importance of creating collaborations beyond the school from the outset as well as having wellness coordinators to help manage the programs. Collaborations have included a wide range of partners, including home improvement stores, churches, other school clubs, college extension services, parks and recreation, school food services, Parent Teacher Associations, a dairy council, county health departments, the chamber of commerce, grocery stores, local restaurants, and even a photographer who helped create a photo journal of the project.

Some of the projects included:

- Improvements to a 2.1 mile designated trail connecting three schools, including better marking on the existing path and new fitness stations;
- A walking club for all grades during recess times chaperoned by a teacher and a jump rope club for upper grades;
- Every day physical activities using Chinese jump ropes, hula-hoops, recess videos, kick balls, and resistance bands;
- Playground equipment and fitness field with portable drinking fountains;
- Vegetable and fruit gardens, portions of which were then served in the cafeteria;
- Jogging and walking during "Wellness Wednesdays";
- Choosing Healthy Habits Student Planners; and
- Health Fairs.

> *"I'm just so excited about this. The high school and elementary teachers met with high school and elementary school students, parents, a nutrition professor and master gardeners to discuss the garden."*
>
> –School Nurse Participant

NASN and UHF are planning to continue the project and underscore that the most sustained programs included strong relationships with partners, consistency and persistence.

Conclusions and Recommendations

SECTION 4

Obesity rates have grown dramatically over the past 15 to 20 years and are on track to grow significantly more in the next 20 years.

The modeling study in this report shows what's at stake. The potential rise in obesity-related diseases and health care costs is stunning. The study also demonstrates the return we could see –in terms of saving both lives and money — if we dramatically increased the nation's investment in obesity prevention. We're at a new tipping point in the effort to prevent obesity and reverse the epidemic. Seventy-nine million Americans are pre-diabetic, and millions more are on the verge of heart disease, stroke, cancer, hypertension, arthritis and other obesity-related conditions. Billions of health care dollars hang in the balance.

Unfortunately, funding for obesity prevention is heading in the wrong direction. Federal, state and local public health departments have faced significant cuts in recent years that are undermining the progress being made to fight the epidemic. Even when factoring in the Affordable Care Act's Prevention and Public Health Fund, federal funding for public health initiatives overall, which includes those directed at obesity prevention, has remained at a relatively flat and insufficient level for years. The budget for CDC has decreased from a high of $6.62 billion in 2005 to $6.12 billion in 2011.[327] Forty states decreased their public health budgets from FY 2009-10 to FY 2010-11, 30 states decreased budgets for a second year in a row, and 15 decreased for a third year in a row.[328] Combined state and local public health job losses total 49,310 between 2008 and 2011.[329] In addition, most federal programs face automatic, across-the-board cuts of 8 percent to 10 percent in January 2013 unless Congress restores the cuts. This could mean a cut approaching $500 million to CDC; according to CDC director Thomas Friedan, such an outcome "will risk costly and deadly spread of disease and failures to prevent tragic and expensive health problems." [330]

TFAH and RWJF call on policymakers at all levels to invest in obesity prevention in a way that is commensurate with the severity of the health and financial toll the epidemic takes on the nation. In addition, TFAH and RWJF support the following policy recommendations for addressing the obesity crisis in America:

A. Fully Implement the Healthy, Hunger-Free Kids Act, including implementation of school meal standards on schedule and updated Nutrition Standards for Competitive Foods

In December 2010, President Obama signed the Healthy, Hunger-Free Kids Act (HHFKA) into law, which reauthorizes child nutrition programs—including the national school lunch and breakfast programs—for the next five years. The law authorized an additional $4.5 billion to provide funding for schools that meet updated nutrition standards for school meals. In January 2012, USDA finalized updated nutrition standards for the school meals programs with many of the changes being phased in during the 2012-2013 school year. USDA, states and districts must ensure that full implementation continues as scheduled and adequate training and technical assistance are provided to food service operators. Additional provisions in the HHFKA increased the number of eligible children for school meals, strengthened school wellness policies, and provided training for food service workers. It also provided USDA with the authority to update nutrition standards for all food and beverages sold in schools.

However, USDA had not yet issued required rules for updated nutrition standards for:

- Competitive foods sold outside school meal programs, such as those served in à la carte lines, in vending machines and school stores;
- Meals and snacks provided as part of the Child and Adult Care Food Program (CACFP) that serves more than 3 million lower-income infants, children and impaired or older adults.

TFAH and RWJF recommend USDA issue a draft rule for competitive foods that would align standards with the most current Dietary Guidelines for Americans and be based on recommendations from the Institute of Medicine. The proposed rule should be released as soon as possible so the public can weigh in, standards can be finalized and implementation can begin in schools across the country.

B. Protect the Prevention and Public Health Fund

The Prevention and Public Health Fund (PPHF), a provision of the Affordable Care Act, is the nation's largest single investment in prevention. The PPHF provides more than $12.5 billion in mandatory appropriations over the next 10 years to improve public health and prevent chronic illnesses, including obesity and related diseases, through increased screenings, counseling and care and community-based prevention programs. PPHF dollars also provide investments to expand and offer additional training for the public health workforce. More than $2 billion has been distributed from the PPHF since 2010.

In 2012, Congress enacted legislation that cut more than $5 billion from the PPHF to partially offset the cost of extending certain tax cuts and unemployment insurance, as well as the Medicare "doc fix," which maintains a high reimbursement rate to doctors who accept Medicare patients. Several additional attempts have been made to eliminate the PPHF entirely or repurpose its priorities to cover funding shortfalls in other programs.

Given the importance of the PPHF and its potential to transform the public health landscape, TFAH and RWJF recommend that the PPHF be preserved in full, and that it not be used to offset or justify cuts to other programs.

C. Increase Investments in Effective, Evidence-Based Obesity-Prevention Programs, Including Community Transformation Grants

As the state policy tracking and stories sections of this report demonstrate, efforts in neighborhoods around the country are helping to make healthy choices easier for millions of Americans. Policy changes and initiatives led by *Let's Move*, the Alliance for a Healthier Generation, the Y of the USA and ChildObesity180 are providing people with significant opportunities to improve nutrition and increase physical activity. These efforts show that everyone can make a difference — from employers to places of worship to schools and out-of-school programs.

However, our modeling shows that existing efforts are not bending the obesity health and cost curves sufficiently. We need to do more – and do it fast — if we're going to put our children and our country on a path to a healthier future. Our health and wealth are inextricably tied. A thriving workforce and controlling health costs are two of the most significant factors in the nation's economic recovery. However, we cannot and will not see improvements in health care costs or disease rates until we make a more serious investment in addressing the obesity epidemic.

Effective, evidence-based policies must be significantly expanded and engage a wide spectrum of partners to reach their full potential.

For instance, Community Transformation Grants (CTGs), launched in 2011 through the Affordable Care Act's Prevention and Public Health Fund, include a performance measure for all funded nutrition and physical activity programs to **reduce the rate of obesity among their target populations by 5 percent**. The grants require communities to use evidence-based approaches and include an evaluation to ensure they meet measurable, achievable outcomes. In the first year of the program, more than 2,000 communities applied for CTGs, but there was only enough funding for 61. As the modeling study in the report shows, evidence-based programs like CTGs can reduce the incidence of obesity and its related diseases while lowering health care costs.

TFAH and RWJF recommend increased funding for CTGs and similar evidenced-based programs, provided that the increase is not the result of a cut to another PPHF funding stream.

D. Fully Implement the National Prevention Strategy and Action Plan

The National Prevention, Health Promotion and Public Health Council, chaired by the Surgeon general and composed of representatives from 17 federal agencies, released the groundbreaking *National Prevention Strategy in 2011*, which for the first time laid out a comprehensive action plan for improving the health of all Americans. The Strategy also serves as a policy guide; for instance, all programs supported by the Prevention and Public Health Fund must be aligned with the Strategy's goals. The Council released a follow-up *Action Plan* in 2012 that identified more than 200 specific ways in which the federal government is working to implement the Strategy's goals, which include promoting healthy eating and active living. Key federal actions under way include:[331]

Healthy Eating

- The Department of Defense is improving nutrition standards across the military by updating menu standards at all base dining facilities and providing nutrition education and obesity counseling to all military retirees.
- HHS is implementing a program to encourage federal agencies to purchase and serve foods that meet standards consistent with the Dietary Guidelines for Americans. In addition, USDA is working to better align agriculture policies with the nutrition goals of the DGA.
- The Federal Trade Commission (FTC) is monitoring and analyzing food and beverage marketing practices aimed at children to provide the latest trends data and inform future policy discussions.
- The Department of Labor is enforcing Section 7 of the Fair Labor Standards Act to ensure that covered female employees have reasonable time and space for expressing breast milk.
- The Food and Drug Administration is finalizing menu labeling provisions of the Affordable Care Act to help provide consistent facts about food choices in chain restaurants.

Active Living

- The Department of Transportation is providing funding for states and communities to increase active transportation options such as walking paths and bike lanes.
- HHS is incorporating physical activity recommendations into Head Start and other early childhood education programs and disseminating resources to promote the National Physical Activity Guidelines for Americans.
- The Department of Veterans Affairs is implementing weight management programs such as screenings and support groups for veterans who are overweight or obese.

TFAH and RWJF recommend continued implementation of the National Prevention Strategy across all of the 17 participating federal agencies.

E. Finalize the Interagency Working Group on Food Marketed to Children Guidelines

The Interagency Working Group on Food Marketed to Children (IWG), comprised of representatives from the FTC, CDC, FDA and USDA, was directed by Congress to develop recommendations for standards for food marketed to children. Last year, the IWG issued a set of proposed voluntary principles to help guide industry efforts to improve the nutritional profile of foods marketed to children. During the public comment period, members of the food and beverage industry proposed a separate set of standards that were not as rigorous as those suggested by IWG.

Finalized recommended guidelines from the IWG were expected in late 2011. However, in an omnibus FY 12 appropriations bill, Congress required the IWG to complete a cost-benefit analysis on its recommendations prior to releasing its final recommendations, which has delayed their release indefinitely.

TFAH and RWJF recommend that the IWG finalize and release strong, voluntary guidelines for food marketed to children. In the interim, food and beverage companies should work together with scientific, public health and consumer groups to strengthen industry standards on their own.

F. Expand Opportunities to Promote Physical Education and Physical Activity in Schools

The Elementary and Secondary Education Act (ESEA), first enacted in 1965 and last reauthorized in 2002 as the No Child Left Behind Act, authorizes all federal education programs. States and localities are largely responsible for determining core education standards in the United States—and provide the bulk of funding toward that end—but there is a role for the federal government to set educational benchmarks that states and schools must meet. Should Congress take up reauthorization legislation in 2013, there are a number of important ways in which ESEA could be strengthened to provide additional funding to states and support to schools to promote physical education and physical activity without usurping state control.

For instance, the next ESEA authorization should include provisions of the FIT Kids Act that require local education agencies and school boards to publish how much progress they have made in meeting national standards for physical education and physical activity. The bill also would provide federal funding for schools to hire more trained physical education teachers, as well as for researchers to further study how physical education and physical activity affect academic achievement.

Additionally the Carol M. White Physical Education Program, currently the centerpiece ESEA program that supports physical activity in schools, should be expanded. Additional proposals worth considering include the authorizing of a new Office of Safe and Healthy Students at the U.S. Department of Education, giving schools the option of using Title I and Title II funds to support physical education, and ensuring that School Improvement Grant funding can be used to encourage school environments that foster physical health.

TFAH and RWJF urge Congress to make physical education and physical activity a priority as it reauthorizes the Elementary and Secondary Education Act.

G. Fully Support Healthy Nutrition in Federal Food Programs

A range of programs included in the Agriculture Appropriations Act and the Farm Bill, such as the Supplemental Nutrition Assistance Program and SNAP Nutrition Education, the Emergency Food Assistance Program, the Fresh Fruit and Vegetable Program, and the Healthy Food Financing Initiative, can have a major impact on improving nutrition for millions of Americans, particularly lower-income families. SNAP funding, for example, has swelled during recent years because the economic downturn has caused millions of additional Americans to rely on its services. Opponents are concerned about the potential waste of federal resources. Particularly in times such as these, federal assistance must be carefully scrutinized to prevent fraud, maximize accountability, and ensure that funding is directed towards eligible beneficiaries. The bottom line, however, is that providing full support for these programs is essential to promoting healthier food options for all Americans. **At a minimum, current SNAP eligibility, benefit levels, and program integrity should be maintained to ensure that low-income Americans have the resources necessary to afford a nutritious diet and prevent hunger.**

Additionally, TFAH and RWJF support the inclusion of HFFI in the final Farm Bill. HFFI provides one-time financing through grants and loans to a variety of healthy food retailers, from full-service supermarkets, corner stores and farmers markets that want to set up shop or need to renovate or expand their stores in low income urban or rural communities. This initiative helps boost employment and maintain the vitality of rural communities and urban neighborhoods. HFFI was included in the Senate version of the Farm Bill and we endorse this approach.

H. Encourage Full Use of Preventive Services and Connect Clinical Care with Obesity-Prevention Outside of the Doctor's Office

Under the ACA, starting in 2014, public and private insurers will be required to cover preventive services recommended by the U.S. Preventive Services Task Force—such as obesity counseling for children and adults—at no charge to policyholders.

Making sure Americans access and use these services will require a significant public education and outreach effort. A number of studies have shown that even when free preventive services are available, a lack of knowledge about their availability precludes many individuals from taking advantage of these services.[332] Education campaigns are particularly important to reach lower-income and minority communities that have been traditionally underserved by the health care system.

In June 2012, the USPTF recommended coverage for community-based obesity counseling. Primary care physicians need to know that these programs are now recommended and covered for their patients. At the same time, the public health community should be communicating with health care providers about the specific programs to which their patients can be referred.

In addition, Medicare, Medicaid and private insurers are all exploring new ways of providing a better continuum of care to patients. Preventing obesity and managing obesity-related diseases requires a balance between receiving clinical health care and making healthy lifestyle choices. Providing direct support for effective, evidence-based programs—as well as payments for beneficiaries to participate in them—is critical to achieving this goal.

TFAH and RWJF recommend the Centers for Medicare and Medicaid Services (CMS) promote increase use of cost effective, community-based prevention, health education and counseling for Medicare and Medicaid beneficiaries, including by expanding the scope of practitioners who are eligible to be reimbursed for services for intensive behavioral therapy for obesity (IBTO), to include care beyond the doctor's office or other clinical care settings. This would be consistent with the new June 2012 U.S. Preventive Services Task Force recommendation that doctors either provide direct counseling on nutrition and activity to their patients who are obese — or "offer healthful diet and physical activity interventions by referring these patients to community-based organizations." CMS would also be setting a strong precedent for how private insurers can provide better support for their beneficiaries through community prevention as well.

RECOMMENDATIONS FROM THE INSTITUTE OF MEDICINE AND BIPARTISAN POLICY CENTER (BPC)

Earlier this year, two organizations — the IOM and the Bipartisan Policy Center (BPC) — issued notable sets of recommendations for tackling the obesity epidemic among scientists, public health experts and across the political spectrum.

In May 2012, a group of leading policy, research and public health experts developed the IOM's groundbreaking Accelerating Progress on Obesity Prevention: Solving the Weight of the Nation, which identified faster ways to prevent obesity and related health concerns.

In June 2012, the BPC issued Lots to Lose: How America's Health and Obesity Crisis Threatens our Economic Future, which includes ideas to reduce rates of obesity and chronic diseases. The BPC issued the report as part of its Nutrition and Physical Activity Initiative, led by former Agriculture Secretaries Dan Glickman and Ann M. Veneman, former Health and Human Services Secretaries Mike Leavitt and Donna E. Shalala, and various other experts, policymakers and stakeholders.

TFAH and RWJF commend the important recommendations from the IOM and BPC.

IOM COMMITTEE ON ACCELERATING PROGRESS IN OBESITY PREVENTION RECOMMENDATIONS

The IOM was charged with developing goals, recommendations, strategies and action steps that can be implemented in the short term to accelerate progress in obesity prevention over the next 10 years.[333]

The committee put together five goals:

- Make physical activity an integral and routine part of life;
- Create food and beverage environments to ensure that healthy food and beverage options are the routine, easy choice;
- Transform messages about physical activity and nutrition;
- Expand the role of health care providers, insurers and employers in obesity prevention; and,
- Make schools a national focal point for obesity prevention.[334]

Recommendations and strategies to help the nation achieve the five goals include:[335]

Recommendation 1: Communities, transportation officials, community planners, health professionals and governments should make the promotion of physical activity a priority by substantially increasing access to places and opportunities for such activity.

- Enhance the physical and built environment
- Provide and support community programs to increase physical activity
- Adopt physical activity requirements for licensed child care providers
- Provide support for the science and practice of physical activity

Recommendation 2: Governments and decision makers in the business community/private sector should make a concerted effort to reduce unhealthy food and beverage options and substantially increase healthier food and beverage options at affordable, competitive prices.

- Adopt policies and implement practices to reduce overconsumption of sugar-sweetened beverages
- Increase the availability of lower-calorie and healthier food and beverage options for children in restaurants
- Utilize strong nutritional standards for all foods and beverages sold or provided through the government, and ensure that these healthy options are available in all places frequented by the public
- Introduce, modify and utilize health-promoting food and beverage retailing and distribution policies
- Broaden the examination and development of U.S. agriculture policy and research to include implications for the American diet

Recommendation 3: Industry, educators, and governments should act quickly, aggressively and in a sustained manner on many levels to transform the environment that surrounds Americans with messages about physical activity, food and nutrition.

- Develop and support a sustained, targeted physical activity and nutrition social marketing program
- Implement common standards for marketing foods and beverages to children and adolescents
- Ensure consistent nutrition labeling for the front of packages, retail store shelves, menus and menu boards that encourages healthier food choices
- Adopt consistent nutrition education policies for federal programs with nutrition education components

Recommendation 4: Health care and health service providers, employers and insurers should increase the support structure for achieving better population health and obesity prevention.

- Provide standardized care and advocate for healthy community environments
- Ensure coverage of, access to, and incentives for routine obesity prevention, screening, diagnosis and treatment
- Encourage active living and healthy eating at work
- Encourage healthy weight gain during pregnancy and breastfeeding, and promote breastfeeding-friendly environments

Recommendation 5: Federal, state and local government and education authorities, with support from parents, teachers and the business community and the private sector, should make schools a focal point for obesity prevention.

- Require quality physical education and opportunities for physical activity in schools
- Ensure strong nutritional standards for all foods and beverages sold or provided through schools
- Ensure food literacy, including skill development, in schools

OBESITY RECOMMENDATIONS FROM THE BIPARTISAN POLICY CENTER[336]

Healthy Families

- HHS and USDA should extend federal guidelines for diet and physical activity to all children under six and enhance public awareness and understanding of these guidelines.
- USDA should ensure that all its nutrition assistance programs reflect and support federal dietary guidelines.
- All key institutions—including hospitals, workplaces, communities, government and insurance providers—should support and promote breastfeeding with the goal of substantially increasing U.S. breastfeeding rates for the first six months of an infant's life.

Healthy Schools

- Childcare providers should improve nutrition and physical activity opportunities for preschool-aged children.
- Schools should improve food and nutrition education by aggressively implementing the Healthy Hunger-Free Kids Act.
- Schools should improve nutrition and physical activity offerings, in partnership with the private sector.
- Federal, state and local governments, along with private partners should explore all available avenues to increase quality physical activity in schools.

Healthy Workplaces

- CDC, in partnership with private companies, should develop a database of exemplary workplace wellness programs with a rigorous cost/benefit analysis to help scale up exiting best practices in both the private sector and within government. The Small Business Administration should provide support here.
- The federal government should both scale up successful workplace wellness programs and continue exploring innovative approaches.

Healthy Communities

- Nutrition and physical activity training should be incorporated in all phases of medical education—medical schools, residency programs, credentialing processes and continuing education requirements.
- Nonclinical, community-based care is a critical tool in preventing obesity and chronic disease. We need to train and deploy a prevention workforce to deliver this kind of preventive care.
- Public and private insurers should structure incentives to reward effective, community-based, prevention-oriented services that have demonstrated capacity to reduce costs significantly over time.
- Large, private-sector institutions should procure and serve healthier foods, using their significant market power to shift food supply chains and make healthier options more available and cost-competitive.
- Public-sector institutions should continue to lead by example, promoting healthy foods and physical fitness as a means to enhance employee performance, both in the military and within the civilian workforce.
- Families and local governments should make creative use of technology to increase physical activity.
- Local governments should use the planning process to change the built environment in ways that promote active living.

Public Awareness and Marketing

- The food industry should adopt uniform standards for what constitutes "better for you" foods using the Institute of Medicine Phase 2 report as a starting point and making sure industry standards are aligned with the U.S. Dietary Guidelines.
- The Ad Council or similar organizations should coordinate a multi-media campaign to promote healthy diet and physical activity, funded by leading private sector companies in collaboration with federal agencies.
- Food retailers should adopt in-store marketing and product placement strategies to promote the purchase of healthier, lower calorie products.
- States and localities should continue to innovate and experiment with ways to promote healthier foods in the marketplace.

Food and Farm Policy

- USDA, in collaboration with other stakeholders, should identify and address barriers to increasing the affordability and accessibility of fruits, vegetables and legumes.
- USDA should identify and pursue further opportunities to promote health and nutrition through nutrition assistance programs.
- Congress should continue sustained support for relevant research by offices of USDA.

Information Sharing and Analysis

- CDC and HHS should continue robust efforts to collect and disseminate information on food, physical activity and health—including information on the social determinants of health and future costs—and Congress should continue to support these monitoring and information-gathering functions.
- Public- and private-sector organizations active in this field should partner to establish a national clearinghouse on health-related nutrition and physical activity initiatives. The clearinghouse should provide links to further resources, technical assistance, coordination and partnership opportunities, and up-to-date research findings.

APPENDIX A: PHYSICAL ACTIVITY AND NUTRITION TRENDS

Weight is determined by an energy balance between what an individual eats and how active he or she is. The trend in America over the past 20 years to 30 years has been a decrease in physical activity combined with an increase in food intake, particularly of less nutritious food. The following section outlines how patterns have changed and current recommendations for improving health.

A. Physical Activity

Sixty percent of Americans are not active enough to achieve health benefits, and more than a quarter of adults do not engage in any leisure-time physical activity.[337, 338]

In 2010, fewer than 50 percent of adults met the 2008 federal physical activity guidelines for aerobic activity (based on leisure-time activity).[339]

In 2011, only 29 percent of high school students had participated in at least 60 minutes per day of physical activity on each of the seven days before the survey, while 14 percent had not participated in 60 or more minutes of any kind of physical activity on any day during the week before the survey.[340]

SOME KEY TRENDS IN INSUFFIENT PHYSICAL ACTIVITY IN AMERICA

Adults

- More than a quarter of U.S. adults do not engage in any leisure-time physical activity (i.e., any physical activities or exercises such as running, calisthenics, golf, gardening or walking).[341]
  - ▲ The percentage of adults who do not engage in any leisure-time physical activity is higher among Blacks (31.9 percent) and Latinos (34.6 percent) than Whites (22.2 percent).[342]
- A study of more than 30,000 healthy adult U.S. women found that middle-aged women need at least an hour of moderate activity a day to maintain a healthy weight without restricting calories.[343]
  - ▲ For more than 66 percent of middle-aged women who are already overweight or obese, even more exercise is recommended to avoid gaining weight without eating less.[344, 345]
- Physical activity is significantly associated with better survival and function among the very old (age $\geq$ 85 years).[346]
- Sedentary adults pay $1,500 more per year in health care costs than physically active adults.[347]
- Studies suggest that moderate-to-high levels of physical activity substantially reduce, or even eliminate, the mortality risk of obesity.[348]
- Non-leisure time physical activity has decreased substantially in the past 20 years to 30 years due to increasing mechanization at work and at home.[349]
  - ▲ "Non-leisure-time physical activity" is defined as energy spent in a normal day outside of sports, exercise and recreation. This includes manual labor on the job, walking and biking to work and household chores.[350]
- A majority of U.S. adults ages 20 to 74 walk less than two to three hours per week and accumulate less than 5,000 steps per day.[351] U.S. physical activity guidelines call for adults to walk 10,000 steps daily.
- Car usage has significantly reduced physical activity by its frequent use for short trips for shopping, going to the cleaners and other errands, and taking children to school.[352]

Youth

- Current studies show that most youth do not meet physical activity guidelines that recommend engaging in 60 minutes or more of moderate-to-vigorous physical activity per day.[353,354]
- An analysis of accelerometer data for children and adults shows that the amount of time spent in moderate-to-vigorous physical activity plummets as children reach adolescence.[355]
- The number of children walking to and from school has declined dramatically over the past 40 years, from 48 percent of students in 1969 to 16 percent of students in 2001.[356]
- There is substantial evidence that physical activity has a positive effect on students' academic performance, including grades and standardized test scores, according to a review of 50 studies conducted by CDC.[357]

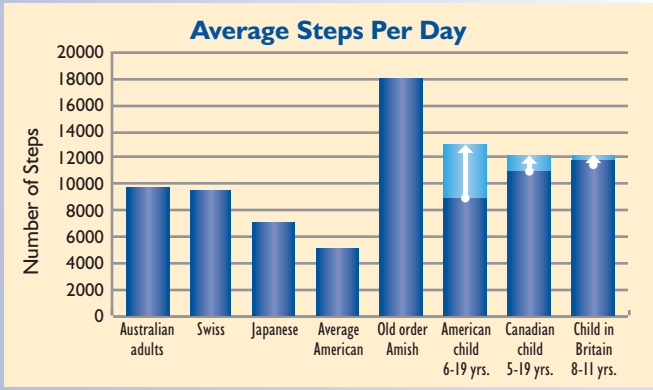
THE IMPACT OF THE BUILT ENVIRONMENT ON PHYSICAL ACTIVITY

Physical Activity

- Less safe neighborhoods were associated with decreased levels of physical activity according to a study of more than 12,000 students in grades 8-10 who live in urban, suburban and rural neighborhoods.[358]
  - The same study found students' perception of safety as they traveled to and from school also was associated with physical activity levels.[359]
- Children and teens living in neighborhoods with more green space, such as parks, playing fields, trails and schoolyards, were less likely to be overweight than their counterparts in less-green neighborhoods.[360]
- Neighborhoods with high levels of poverty are significantly less likely to have places where children can be physically active, such as parks, green spaces and bike paths and lanes.[361]
- In general, states with the highest levels of bicycling and walking have the lowest levels of obesity, high blood pressure and diabetes, and have the greatest percentage of adults who meet the recommended 30-plus minutes a day of physical activity.[362]

WALKING IN AMERICA: ONLY A PASTIME?

Walking is free and just a few of the proven benefits include a lower risk of Alzheimer's, improved academic performance, reduced depression, lower blood pressure and increased self-esteem, yet, for many Americans, walking has become just a means of getting to the car.[363]



* Old Order Amish do not drive cars.
Note: Rates for children's number of steps show a reported low-to-high range.

Americans take the fewest steps of any industrialized nation. Recent pedometer studies show adults in Australia and Switzerland average almost 10,000 steps a day, with adults in Japan averaging more than 7,000, but in the United States adults manage little more than 5,000 steps per day.[364] Children take significantly more steps than adults; steps per day range between 9,000 and 13,000 for American children and youth, which is similar to children in Britain and Canada, who average between 11,000 and 13,000.[365] In an effort to compare how much Americans walk today as opposed to the past, a study in *Medicine & Science in Sports and Exercise* reports that researchers provided pedometers to a group of Old Order Amish in Canada who do not drive cars and found that they averaged 18,000 steps per day.[366]

The previous studies include most of the limited statistics currently available about the state of walking in America. Trying to figure out exactly how much Americans walk, and why walking has decreased so dramatically, is difficult with limited data, but, while walking statistics are hard to come by, there is more robust information on changes in driving. The National Household Travel Survey reveals that in 1969 a person averaged 2.32 trips and 20.64 miles in a car per day, which increased to 3.35 trips and 32.73 miles in 2001.[367]

While there are various organizations dedicated to advocating for bicyclists, there are few advocacy groups working solely for the rights of walkers.[368] Scott Bricker, director of the nonprofit organization America Walks says that, "Walking is not something that people rally around — it's very pedestrian."[369] The lack of excitement also may be the cause of the limited statistics surrounding walking in America. According to Bricker, "[the] collection of information around walking is quite poor and inconsistent."[370] The U.S. Census reports the most accurate measures of walking, but they only measure walks that are a part of a work commute. Unfortunately, those questions miss out on a lot of walks, as commuting accounts for less than 15 percent of all trips.[371] Twenty-eight percent of all trips taken in America are under a mile, yet most of these trips are taken in the car.[372]

2008 PHYSICAL ACTIVITY GUIDELINES FOR AMERICANS

In 2008, the U.S. Department of Health and Human Services issued the first-ever *Physical Activity Guidelines for Americans*.[373] The Guidelines provide information on the types and amounts of physical activity that provide substantial health benefits for Americans age 6 and older. The main idea behind the Guidelines is that regular physical activity over months and years can produce long-term health benefits.

Adults

- The guidelines recommend that adults engage in a minimum of two-and-a-half hours each week of moderate-intensity exercise, or one-and-a-quarter hour of vigorous physical activity.
  - ▲ Brisk walking, water aerobics, ballroom dancing and general gardening are examples of moderate-intensity aerobic activities. Vigorous-intensity aerobic activities include race walking, jogging or running, swimming laps, jumping rope and hiking uphill or with a heavy backpack.
- Aerobic activity should be performed in episodes of at least 10 minutes.
- For more extensive health benefits, adults should increase their aerobic physical activity to five hours per week of moderate-intensity or two-and-a-half hours per week of vigorous-intensity aerobic physical activity.
- Adults should incorporate muscle strengthening activities such as weight training, push-ups, sit-ups, carrying heavy loads or heavy gardening at least two days per week.

Older Adults

- Older adults should follow the guidelines for other adults when it is within their physical capacity. If a chronic condition prohibits their ability to follow those guidelines, they should be as physically active as their abilities and conditions allow. If they are at risk of falling, they should also do exercises that maintain or improve balance.

Pregnant Women

- During pregnancy and the time after delivery, healthy women should get at least two-and-a-half hours of moderate-intensity aerobic activity per week, preferably spread throughout the week.
- Pregnant women who habitually engage in vigorous aerobic activity or who are highly active can continue during pregnancy and the time after delivery, provided they remain healthy and discuss with their health care provider how and when activity should be adjusted over time.

Adults with Disabilities

- Adults with disabilities who are able should get at least two-and-a-half hours of moderate aerobic activity per week, or one-and-a-quarter hour of vigorous aerobic activity per week.
- Adults with disabilities should incorporate muscle-strengthening activities involving all major muscle groups two or more days per week.
- Those who are not able to meet the guidelines should engage in regular physical activity according to their abilities and should avoid inactivity.

Adults with Chronic Medical Conditions

- Adults with chronic conditions get important health benefits from regular physical activity. They should do so with the guidance of a health care provider.

Children and Adolescents

- Children and adolescents should engage in 60 minutes or more of physical activity daily.
  - ▲ Aerobics: Most of the 60 or more minutes should include either moderate- or vigorous-intensity aerobic physical activity, and should include vigorous-intensity physical activity at least three days a week. Examples of moderate-intensity aerobic activities include hiking, skateboarding, rollerblading, bicycle riding and brisk walking. Vigorous-intensity aerobic activities include bicycle riding, jumping rope, running and sports such as soccer, basketball and ice or field hockey.
  - ▲ Muscle-strengthening: The 60 or more minutes of daily physical activity should include muscle-strengthening activities at least three days a week. Examples of muscle-strengthening activities for younger children include: gymnastics, playing on a jungle gym and climbing a tree. Examples of muscle-strengthening activities for adolescents include; push-ups, pull-ups and weightlifting exercises.
  - ▲ Bone-strengthening: The 60 or more minutes of daily physical activity should include bone-strengthening activities at least three days a week. Examples include jumping rope, running and skipping.
- Encouraging young people to participate in physical activities that offer variety, are enjoyable, and are age-appropriate can increase the amount of time children and youths spend being active.

ARE PHYSICIANS ENCOURAGING PHYSICAL ACTIVITY?

Data collected through the National Health Interview Survey (NHIS) show improved trends in sharing information about physical activity from physician to patient over the past 10 years.[374] In 2010, almost one-third of adults who had seen a physician or health professional in the previous 12 months were advised to start or continue an exercise program.[375] These figures improved significantly and showed an increase of approximately 10 percent from 2000 to 2010.[376] Physicians or other health providers improved the rates among all age groups and ethnicities, as well as for both males and females. Physicians were more likely to discuss physical activity programs with patients who were either overweight or obese, but continued to advise all patients about the benefits of physical activity.[377]

The trends show that the health community is making efforts to improve communication between patients and physicians about the importance of physical activity, yet physicians are still only discussing physical activity with less than half of their patients.

GET ACTIVE TO FEEL GOOD

A recent study in the Journal of Sports and Exercise Psychology found that undergraduates who were more active felt better than their less-active peers.[378] Almost 200 college-aged students kept journals for eight days, tracking their physical activity, the amount of sleep they got each night and their overall mental state and then turned the journals over to researchers.[379] The researchers found that physical activity was also associated with more positive moods.[380]

TRENDS IN AMERICAN'S UNHEALTHY EATING PATTERNS

The American diet has skewed towards large portion sizes that are high in fat and calories. The USDA reports that Americans are not meeting the 2005 Dietary Guidelines for Americans. In order to meet them, Americans would need to substantially lower their intake of added fats, refined grains, sodium and added sugars and sweeteners, and increase their consumption of fruits, vegetables, whole grains and low-fat milk and milk products.[381]

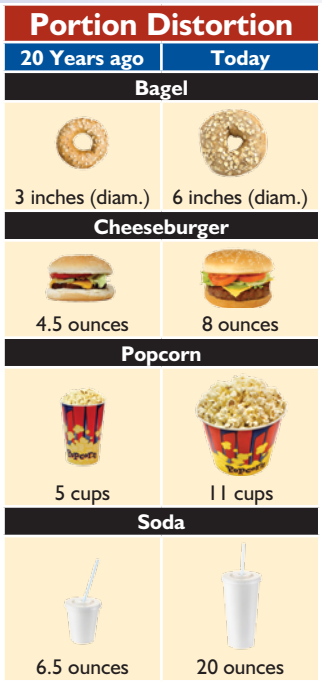
Some unhealthy eating habits that have developed over the past few decades include:

More Calories and Fat

- Americans' average daily caloric intake is 300 calories higher than it was in 1985 and 600 calories higher than in 1970, according to 2008 USDA data.[382]
- Americans consumed an average of 640 calories worth of added fats per person per day in 2008.[383]
- Children ages 2–18 consume almost three snacks a day, and snacking accounted for up to 27 percent of children's daily caloric intake.[384]

Bigger Portion Sizes

- According to National Heart Lung and Blood Institute (NHLBI), an individual who consumes the following meal today compared to 20 years ago would consume almost 1,600 more calories in one day.[385]
  - ▲ Breakfast: a bagel (6 inches in diameter) and a 16-ounce coffee with sugar and milk.
  - ▲ Lunch: two pieces of pepperoni pizza and a 20-ounce soda.
  - ▲ Dinner: a chicken Caesar salad and a 20-ounce soda.



Fewer Fruits, Vegetables and Whole Grains

- From 2005-2008 adults consumed 1.1 to 1.8 servings of fruit per day and 1.3 to 2.2 servings of vegetables per day.[386] Teenagers eat only 0.9 cups. Overall, adolescents consume 0.9 to 1.1 cups of vegetables, with only 4 percent of those 15-19 eating 2 or more cups of fruits per day and less than 2 percent of all children eating 2.5 or more cups of vegetables per day.[387] The recommended values are two cups of vegetables and two cups of fruits per day for an individual who consumes 2,000 calories a day, and someone who consumes about 1,400 daily calories should have 1 1/2 cups of vegetables and 1 1/2 cups of fruits per day.
- A July 2012 survey found that Americans are trying to eat more fruits and vegetables, but they are still consuming less than half of national recommendations.[388]

More Sugar

- Consumption of "added sugars," which are sugars and syrups that are added to foods or beverages when they are processed or prepared and does not include naturally occurring sugars such as those in milk and fruits, is nearly three times the USDA recommended intake.[389]
- Average consumption of added sugars increased 14 percent from 1970 to 2008.[390]

A Large Increase in Soda, Fruit Juice and Other Sugar-Sweetened Beverage Consumption

- Sugar-sweetened beverages make up nearly 11 percent of children's total caloric consumption.[391]
- Adults who drink a soda or more per day are 27 percent more likely to be overweight than those who do not drink sodas, regardless of income or ethnicity.[392]
- From 1988-1994, adults ages 20 and older increased their consumption of sugar-sweetened beverages by 58 percent, and from 1999-2004 consumption of sugar-sweetened beverages increased by 63 percent among the same population.[393]
- By 1999–2004, adults ages 20-24 consumed 12 percent of their total daily intake from sweetened beverages.[394]
- Children who reduced their consumption of added sugar by the equivalent of one can of soda per day had improved glucose and insulin levels. This means that parents can reduce the risk of type 2 diabetes in their children by eliminating one can of soda per day, regardless of any other diet or exercise changes.[395]

A Major Increase in Eating Out

- Since the 1960s, the money Americans spend on foods eaten outside the home has nearly doubled; the average American household spent $2,505 on food away from home in 2010.[396,397]
- More than 40 percent of adults report that restaurants are an essential part of their lifestyle.[398]
- As of 2004, 63 percent of children ages 1–12 ate out at a restaurant one to three times per week.[399]
- For 2012, restaurants project food and drink sales of $631.8 billion, compared with just $379 billion in 2000.[400]

NUTRITION: BIOCHEMICAL INDICATORS

In 2012, CDC released the second report in a series on biochemical indicators. The goal of The National Report on Biochemical Indicators of Diet and Nutrition in the U.S. Population is to inform physicians, scientists, public health officials and policymakers about varying levels of biochemicals in a person or group of people, and how those levels affect health outcomes.[401] The results help inform experts on the need for diet and nutrition recommendations to address disease, obesity and improve health. The information in the report, which was collected through the NHANES, contains information for 58 biochemical indicators.

Some of the key findings include the following:[402]

- Vitamin B6, iron and vitamin D are the three nutrients for which the greatest number of people were deficient.
- Vitamin A, vitamin E and folate are the three nutrients with the lowest prevalence of deficiency.
- Vitamin C and vitamin B12 had intermediate prevalence of deficiency.

Folate is naturally occurring in leafy green vegetables, fruits, peas and dried beans and is especially important during pregnancy and infancy. To reduce the risk of neural-tube defects in newborns, FDA began fortifying foods with folic acid in 1998.

Key findings from the report about folate include the following:[403]

- Of all age groups, older people had the highest blood folate levels.
- Females generally had higher levels than males.
- Non-Hispanic Blacks had the lowest, non-Hispanic Whites had the highest, and Mexican Americans had intermediate folate status.

Vitamin D is naturally occurring in fish-liver oils, fatty fishes, mushrooms, egg yolks and liver, and is commonly added to milk and other foods in the United States. Ultraviolet rays from the sun help vitamin D transport from the skin to the liver. Vitamin D is essential for bone health, and may be important for muscle strength and protecting against cancer and type 2 diabetes.

Key findings from the report about vitamin D include the following:[404]

- Levels generally decreased as age increased.
- Males and females had similar levels.
- Among three racial and ethnic groups studied in the report, non-Hispanic Blacks had the lowest vitamin D levels, Mexican Americans were in the middle and non-Hispanic Whites had the highest levels.

Iron is an important nutrient that is needed to carry oxygen to tissue, and iron deficiency is linked to reduced physical capacity, poor pregnancy outcomes and poor cognitive development among infants and adolescents.

Key findings from the report about iron include the following:[405]

- Children ages 6 to 11 had the lowest iron levels compared with other age groups.
- Regardless of the indicator selected for iron measurement, the likelihood of being iron deficient varied by race/ethnic group.
- While children and women of childbearing age were at risk for iron deficiency, men were at risk for iron excess.

Iodine is an essential element that takes part in regulating the body's metabolic processes related to growth and development. Globally, iodine is added to salt and seafood, but in the United States it is not mandatory, so most people rely on dairy products and bread for their iodine intake. Iodine deficiency is the most preventable cause of mental retardation, and also is related to hypothyroidism, goiter, cretinism and other growth and developmental abnormalities.

Key findings from the report about iodine include the following:[406]

- The lowest levels of iodine were observed in young women, while the highest levels were observed in children.
- No consistent pattern was observed with regard to race or ethnicity.
- Urine iodine levels have been relatively stable since the late 1980s.

THE IMPACT OF THE BUILT ENVIRONMENT ON NUTRITION

- A systematic review of nearly 50 studies examining the built environment found that increasing supermarket access for disadvantaged individuals or areas, identified by low socioeconomic status, black race or Hispanic ethnicity, had potential to reduce obesity-related health disparities.[407]
- A large-scale study of New York City adults found that increasing the density of healthy food outlets, such as supermarkets, fruit and vegetable markets, and natural food stores is associated with lower BMIs and lower prevalence of obesity.[408]
- A 2003 study showed a direct relationship between living near at least one supermarket and meeting the U.S. Dietary Guidelines for Americans for fruit and vegetable intake. The presence of each additional supermarket was related to a 32 percent increase in fruit and vegetable consumption among Blacks and an 11 percent increase among Whites.[409]
- A study of nearly 700 neighborhoods found that lower-income areas have access to half as many supermarkets as the wealthiest areas. Predominantly minority and racially mixed communities have access to fewer supermarkets compared with predominantly White communities.[410]

2010 DIETARY NUTRITION GUIDELINES FOR AMERICANS

The Dietary Guidelines for Americans are a joint initiative of the Department of Health and Human Services and the Department of Agriculture.[411] The Dietary Guidelines, which have been published every five years since 1980, provide people with advice about how good dietary habits can promote health and reduce risk for major chronic diseases. They serve as the basis for federal food and nutrition education programs.

Key Recommendations

- Consume a variety of nutrient-dense foods and beverages within and among the basic food groups, while picking foods that limit the intake of saturated and trans fats, cholesterol, added sugars, salt and alcohol.
- Consume more dark green vegetables, orange vegetables, legumes, fruits, whole grains, and low-fat milk and milk products.
- Eat fewer calories, refined grains, added sugars, and total fats. Eat foods lower in sodium.
- Build healthy eating patterns during each stage of life—childhood, adolescence, adulthood, pregnancy and breastfeeding and older age—to meet nutrient needs and appropriate calorie amounts.
- Increase physical activity and reduce time spent in sedentary behaviors.

Specific Recommendations for Adults

- An adult consuming 2,000 calories per day should have two cups of fruit and two-and-a-half cups of vegetables.
- Consume three or more ounce-equivalents of whole-grain products per day. At least half of grain intake should come from whole grains.
- Consume three cups per day of fat-free or low-fat milk or milk products.
- Increase dietary intake of calcium, potassium, fiber, magnesium, and vitamins A, C, and E.
- Avoid inactivity and sedentary behaviors; some physical activity is better than none, but it's recommended that adults should engage in at least 150 minutes a week of moderate-intensity or 75 minutes a week of vigorous-intensity aerobic activity.

Specific Recommendations for Children and Adolescents

- At least half of grains consumed should be whole grain. Children ages 2–3 should consume two cups per day of fat-free or low-fat milk or milk products, children ages 4-8 should drink 2.5 cups, and children age 9 and older should drink three cups per day.
- Reduce intake of sugar-sweetened beverages and monitor the intake of 100 percent fruit juice.
- Increase dietary intake of calcium, potassium, fiber, magnesium and vitamin E.
- Participate in one hour or more a day of moderate- to- vigorous physical activity.

APPENDIX B: 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 were obtained from the Behavioral Risk Factor Surveillance System (BRFSS) dataset (publicly available on the web at www.cdc.gov/brfss). The data were reviewed and analyzed for TFAH and RWJF by Daniel Eisenberg, Ph.D., Associate Professor, Health Management and Policy at the University of Michigan School of Public Health.

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, and Puerto Rico.

Variables of interest included BMI, physical inactivity, diabetes, hypertension, and consumption of fruits and vegetables 5 or more times a day. BMI was calculated by dividing self-reported weight in pounds by the square of self-reported height in inches, then multiplied by 703. Obesity is defined as BMI greater than or equal to 30. An overweight adult was defined as one with a BMI between 25 and 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. Cases of gestational and borderline diabetes were not counted as diabetes, and cases where the individual was unsure or refused to answer were excluded from the analysis.Similarly, to calculate prevalence rates for hypertension, researchers created a binary 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?"* People reporting to have been borderline hypertensive and women who reported being diagnosed with hypertension only while pregnant were not counted as having hypertension.

All estimates were adjusted to account for the sample design and survey nonresponse using the sample probability weight, _LLCPWT.

The following is a Question and Answer Document Provided by CDC for the methodology used for 2011 BRFSS data

Frequently Asked Questions AboutChanges to the Behavioral Risk Factor Surveillance System

Q: What is the BRFSS?

A: The Behavioral Risk Factor Surveillance System is the largest ongoing telephone health survey in the world. It is a state-based system of health surveys established by the Centers for Disease Control and Prevention in 1984. BRFSS completes more than 400,000 adult interviews each year.

For most states, BRFSS is their only source of population-based health behavior data about chronic disease prevalence and behavioral risk factors.

BRFSS surveys a sample of adults in each state to get information on health risks and behaviors, health practices for preventing disease, and healthcare access mostly linked to chronic disease and injury. The sample is representative of the population of each state.

Q: What are the changes that have been made to BRFSS?

A: The two BRFSS changes have been made to keep the data accurate and representative of the total population. These are making survey calls to cell-phone numbers and adopting an advanced weighting method.

- The first change is including and then growing the number of interview calls made to cell phone numbers. Estimates today are that 3 in 10 U.S. households have only cell phones.
- The second change is to replace the "post-stratification" weighting method with a more advanced method called "iterative proportional fitting," also sometimes called "raking."

Q: Why is it necessary to increase the number of survey calls to cell-phone numbers?

A: During 2003—2009, the proportion of U.S. adults who lived in cell phone-only households increased by more than 700%, and this trend is continuing. Estimates are that currently 3 in 10 U.S. households have only cell phones.

These households increasingly were left out of the population that BRFSS seeks to characterize—adults 18 years of age or older who do not live in institutional settings. Using cell phones only is especially strong in younger age groups and among persons in certain racial and ethnic minority groups.

Because of differences in the characteristics of people living in households with or without landline telephones, all telephone surveys in the United States have had to adapt their methods in response to the significant increase in households that use cell phones only.

Q: Why is it necessary to adopt a different method of data weighting?

A: For the past several decades, BRFSS used a statistical weighting method called "post-stratification." However, the advent of easily accessible ultra-fast computer processors and networks has allowed the BRFSS to adopt an advanced weighting method called iterative proportional fitting, also known by its nickname, "raking."

Raking differs from post-stratification because it incorporates adjustor variables one at a time in an iterative process, rather than imposing weights for demographic subgroups in a single process. A key advantage of raking is that many more variables are used than post stratification. In addition to the standard demographic variables of age, gender, and race and ethnicity, raking uses variables such as education level, marital status, renter or owner status, and phone source.

Q: What steps were taken to implement these BRFSS changes?

A: In 2004 a panel of national survey experts recommended that CDC make the two changes to ensure BRFSS data remained valid and useful. Beginning in 2006, how to best design and implement the changes went through an extensive development process with experts, collaboration with the state BRFSS coordinators to pilot test the new methods, and training to ensure that state BRFSS coordinators understood the changes and the rationale for them.

The changes were discussed at the annual BRFSS Conferences in 2007, 2008, 2009, 2010 and 2011; with CDC and state members of the BRFSS Working Group; at training sessions; and at meetings of NACCHO, APHA, CSTE, and the American Association of Polling and Opinion Research (AAPOR) in 2009, 2010, and 2011.

In September 2011, BRFSS provided states and CDC programs with preliminary datasets that incorporated the new methods so that early assessment could be made of the effects of the new methods. The 2011 BRFSS dataset will be released by CDC in June 2012. It will incorporate both changes: cell phone responses and the new weighting method.

Q: How will these two changes affect each state's dataset?

A: Including cell phone interviews and using the new weighting method will keep BRFSS data accurate and meaningful. Specifically, BRFSS data will better represent lower-income and minority populations, as well as populations with lower levels of formal education. The size and direction of the effects will vary by state, the behavior under study, and other factors. Although generalizing is difficult because of these variables, it is likely that the changes in methods will result in somewhat higher estimates for the occurrence of behaviors that are more common among younger adults and to certain racial and ethnic groups.

Q: When will we first see BRFSS data that reflects the two changes?

A: The first data reflecting the changes is the BRFSS 2011 dataset that CDC releases in June 2012.

Q: Can the 2010 BRFSS dataset be compared with 2011 dataset?

A: It is always difficult to discern long-term trends by comparing one year to the next. Such comparisons will be especially difficult to make for 2010 and 2011, given the change in BRFSS methods.

Changes in the 2011 data are likely to show indications of somewhat higher occurrences of risk behaviors common to younger adults and to certain racial or ethnic minority groups. Such effects will vary for each state survey. CDC anticipates small increases for health-risk indicators such as tobacco use, obesity, binge drinking, HIV, asthma, and health status.

Shifts in observed prevalence from 2010 to 2011 for BRFSS measures will likely reflect the new methods of measuring risk factors, rather than true trends in risk-factor prevalence.

Q: Where can I learn more about the BRFSS changes?

A: The BRFSS changes are discussed in detail in the June 7, 2012, MMWR Policy Note "Methodologic Changes in the Behavioral Risk Factor Surveillance System in 2011 and Potential Effects on Prevalence Estimates."

APPENDIX C: METHODOLOGY FOR OBESITY AND RELATED DISEASE AND COST FORECASTING FOR 2020 AND 2030

As prepared by the research team from the National Heart Forum:

The alarming growth of obesity around the globe has caused some to describe it as an obesity epidemic. One recent study examined trends in BMI from 1980 to 2008 for 199 countries and found an increase in overweight and obesity in almost all countries, and estimated that 500 million adults worldwide were obese in 2008.[412] Of the high income countries in the study, the USA had the highest BMI. The most recently published data from the National Health and Nutrition Examination Survey (NHANES) has indicated that US adults had a mean body mass index (BMI; kg/m2) in the overweight range (28.7) and that nearly 36% were obese.[413] Furthermore, the NHANES data suggests that the rise in obesity may still be continuing in the USA, with men and women from some ethnic groups continuing to show a positive linear trend in BMI and obesity rates even in the last decade.[414]

Obesity is a significant risk factor for many diseases, contributing to a global health burden. Epidemiological studies have identified obesity as a specific risk factor for cardiovascular diseases (e.g. hypertension, coronary heart disease and stroke), diabetes mellitus, osteoarthritis, several types of cancer and other diseases too numerous to be listed here.[415,416,417,418,419,420,421] Given the current trend of global increases in obesity, the burden of these diseases is expected to continue to overwhelming levels. The full extent of this burden is, as yet, unclear, but the economic impact will include decreased quality of life and fewer working years as well as rapidly rising healthcare costs.

Predicting future rates of obesity, disease and healthcare costs are helpful in order to guide policy towards ameliorating the epidemic, and planning the most fair and effective division of resources. In a previous report, we used a simulation model to project the likely health and economic consequences over the next two decades, if obesity were to continue to rise according to current trends.[422] This model predicted that there would be 65 million more obese adults in the United States by the year 2030 and that the medical costs associated with obesity-related diseases would increase by 48 to 66 billion US dollars every year. The simulation model also detailed what could be expected if interventions were able to reduce BMI by either 1 percent or 5 percent across the U.S. population, indicating that 2.4 million cases of diabetes and 1.7 million cardiovascular diseases could be prevented.

Given evidence that obesity trends may differ between men and women, and between different ethnic groups, it is now important to make future predictions at a micro-level. This paper reports the result of micro-simulations projecting obesity rates, disease prevalence and associated healthcare costs up to 2030, for 51 American states and territories.

METHOD: BRFSS AND MODELING OVER TIME

An individual's body mass index (BMI) is defined as:

$BMI''=w/h^2 \times 703$,

where w and h correspond to individual's weight and height, respectively. BMI provides a simple measure of a person's "fatness" or "thinness". Although BMI is measured on a continuous scale, it is commonly grouped in three categories, namely, "underweight," "normal-weight," "overweight" and "obese." In adults, BMI increases slowly with age and age-independent cut-offs can be used to grade obesity.[423] These cut-off points are related to health risk but also are convenient round numbers.[424] For the purpose of estimating the trends for obesity in adults using data from the BRFSS, BMI was grouped in the following three categories:

1) BMI < 25 : (normal weight)

2) BMI $\geq$ 25 < 30 : (overweight)

3) BMI $\geq$30 : (obese)

All models were fitted on bias-corrected BMI measurements, which were obtained by calculating BMI after correcting BRFSS data of height and weight for potential bias due to self-reporting. Bias for height and weight was assessed by gender and age group (18-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80+), and was estimated as the difference between means in population

height and weight obtained from BRFSS and the National Health and Nutrition Examination Survey data collected over the time period 1999-2010. This method of estimating bias has been discussed by Ezzati.[425] Figure 1 illustrates the extent of bias for height in men and women due to self-reporting. Height was over-reported in BRFSS both in men and women, particularly in the older age groups. Figure 2 shows the extent of bias for weight in men and women. BRFSS measurements for weight were under-reported by women by an average of 5 kilograms. This discrepancy between actual and reported weight was persistent up to age 65, after which self-reporting was decreased with age. Bias by gender and age group was not found to change over time during the period from 1999 to 2010. Pregnant women were not excluded from the analyses, and the estimation of obesity trends was stratified by gender and age group (20-39, 40-59, 60+).

Let g=1,2,3, denote BMI group for normal weight, overweight and obese, respectively. Let ,p-g.(t) be the percentage of individuals with BMI values which correspond to group g at calendar year t. Multinomial regression was used to model the percentage of individuals in each BMI group over time, using the following equations:

$$\log\left(\frac{p_2(t)}{p_1(t)}\right) = \beta_0^{(2)} + \beta_1^{(2)} t \qquad (1)$$

$$\log\left(\frac{p_3(t)}{p_1(t)}\right) = \beta_0^{(3)} + \beta_1^{(3)} t \qquad (2)$$

Equations (1) – (2) imply that

$$p_g(t) = \begin{cases} \dfrac{1}{1 + \sum_{r=2}^{3} \exp\{\beta_0^{(r)} + \beta_0^{(r)} t\}} & \text{if } g = 1 \\ \dfrac{\exp\{\beta_0^{(r)} + \beta_0^{(r)} t\}}{1 + \sum_{r=2}^{3} \exp\{\beta_0^{(r)} + \beta_0^{(r)} t\}} & \text{if } g = 2 \text{ or } 3 \end{cases}.$$

Thus, all percentages ,p-1.,t., ,p-2.,t., ,p-3.,t., are bound within [0,1], and add up to unity. The group of obese individuals (BMI≥30) was further divided into two subgroups, namely those with 30≤BMI<40, and those with BMI≥40 (morbidly obese). Let s=1,2, denote BMI subgroup 30≤BMI<40 and BMI≥40, respectively. Amongst those with BMI≥30, let ,q-g.(t) be the percentage of individuals with BMI values corresponding to subgroup s at time t. The percentage of morbidly obese individuals amongst those classified as obese was modelled using logistic regression by

$$\log\left(\frac{q_2(t)}{q_1(t)}\right) = \log\left(\frac{q_2(t)}{1 - q_2(t)}\right) = \alpha_0 + \alpha_1 t\,. \qquad (3)$$

Equation (3) implies that q_2 (t)=exp[(a_0+a_1 t})]/{1+exp{a_0+a_1 t}} . Using Bayes' rule of conditional probabilities, the prevalence of morbidly obese individuals amongst all adults is P("BMI" ≥40)=P("BMI" ≥40-lI"BMI"≥30) P("BMI" ≥30)=p_2 (t) q_2 (t).

To cover the complete range of ages and because data for children were not available in BRFSS, trends for obesity in children aged 0-17 were modelled using national data from NHANES. A model for the prediction of obesity levels covering an individual's life span was required for the micro-simulation process.

The underlying assumption which allows the forecasting of obesity levels in the future is that the fitted model can provide valid estimates using extrapolation. This involves the assumption that the effect of any factor that may affect obesity levels will remain constant over time. Examples of such factors include the demographic characteristics by gender and age group of the studied population, governmental policies, and secular lifestyle changes. Any attempt of extrapolation from a fitted model may involve assumptions which may be hard to verify and which may influence the validity of the attempted projections. Therefore, the forecasted levels of obesity should be treated with caution. Nevertheless, having faith in that our methodology is valid, and observing that the current levels of obesity show a clear increasing trend, we believe that our reported forecasts may prove very useful in future healthcare policy decisions.

For the micro-simulation study, a virtual population was generated with demographic characteristics matching those of the observed data. Health trajectories were simulated over time allowing virtual individuals to contract, survive or die from a set of obesity related diseases and types of cancer (coronary heart disease, stroke, breast cancer, kidney cancer, colorectal cancer, oesophageal cancer, endometrial cancer, gall bladder cancer, diabetes, arthritis, hypertension, liver cancer, and pancreatic cancer). In this stochastic process, the risk of dying or contracting a medical condition was adjusted for obesity levels as forecasted by models (1), (2), and (3). Simulating BMI growth at an individual's level, involved the assumption that people's BMI changes throughout their lives in such a way that they always stay on the same BMI percentile. This rule may not be too far from the truth and it means that fat people stay fat and thin people stay thin. Moreover, the micro-simulation process was carried out so that when virtual individuals progressed through different age groups, the simulation utilised the forecasted obesity levels of the new age group. The micro-simulation was performed under three distinct scenarios:

Scenario 0: Individuals' trajectories were simulated over the period between 2010 and 2030, using BMI growth as predicted by models (1), (2), and (3).

Scenario 1: Individuals' trajectories were simulated over the period between 2010 and 2030, assuming a 1% population BMI reduction relative to Scenario 0.

Scenario 2: Individuals' trajectories were simulated over the period between 2010 and 2030, assuming a 5% population BMI reduction relative to Scenario 0.

The disease prevalence and health care costs have been modelled for 13 diseases across all 51 states. The costs have been predicted up to 2030 and have been simulated for three scenarios. Throughout this report, all figures for cost are presented as millions of US Dollars.

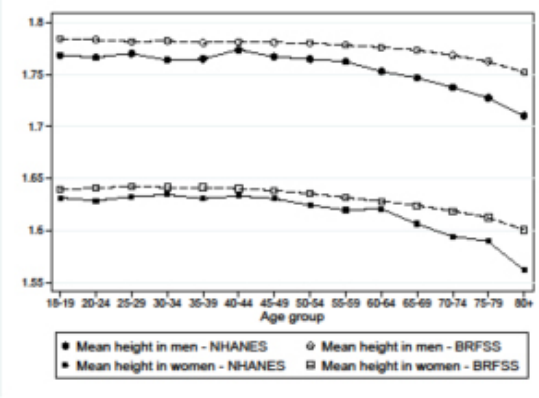


Figure 1: Self-reporting bias for height (m). Solid lines correspond to mean height levels reported in NHANES. Dashed lines connect mean levels reported in BRFSS. Height is over-reported in BRFSS by both men and women.

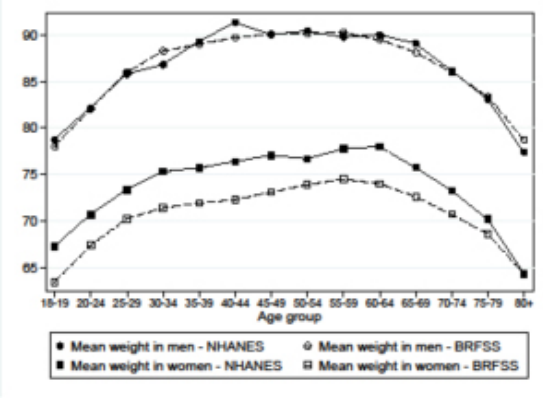


Figure 2: Self-reporting bias in weight (Kg). Solid lines correspond to mean weight levels reported in NHANES. Dashed lines connect mean levels reported in BRFSS. Weight is under-reported in BRFSS by women.

Endnotes

1 For individuals, obesity is defined as a body mass index rate above 30. On an individual level, an adult reducing BMI by one percent is the equivalent to a weight loss of 2.2 pounds (for an adult of average weight). According to CDC, the average weight of men is 194.7 and women is 164.7. http://www.cdc.gov/nchs/fastats/bodymeas.htm

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