ISSUE REPORT

F as in Fat:

HOW OBESITY POLICIES ARE FAILING IN AMERICA 2009








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REPORT AUTHORS

Jeffrey Levi, PhD.
Executive Director
Trust for America's Health
and Associate Professor in the Department of Health Policy
The George Washington University School of Public Health and Health Services

Serena Vinter, MHS
Senior Research Associate
Trust for America's Health

Liz Richardson
Communications Manager
Trust for America's Health

Rebecca St. Laurent, JD
Health Policy Research Assistant
Trust for America's Health

Laura M. Segal, MA
Director of Public Affairs
Trust for America's Health

PEER REVIEWERS

TFAH thanks the reviewers for their time, expertise, and insights. The opinions expressed in the report do not necessarily represent the views of the individuals or the organization with which they are associated.

David P. Hoffman, M.Ed.
Director of Chronic Disease Prevention and Control for the Office of Long Term Care New York State Department of Health

Marcus Plescia, M.D.
Chief, Chronic Disease and Injury Section
North Carolina Division of Pubic Health

Joe Thompson, M.D.
Director of the RWJF Center to Prevent Childhood Obesity and
Surgeon General
State of Arkansas

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TABLE OF CONTENTS

Introduction

The obesity epidemic is harming the health of millions of Americans and resulting in billions of additional dollars in health care costs. Rising rates of obesity over the past few decades are one of the major factors behind the skyrocketing rates of health care costs in the United States. And, U.S. economic competitiveness is hurting as our workforce has become less healthy and less productive. During the past 30 years, adult obesity rates have doubled and childhood obesity rates have more than tripled,[1] while health spending has increased two percentage points faster than the Gross Domestic Product (GDP),[2] growing from 8.8 percent in 1980[3] to a projected 17.6 percent in 2009.[4]

Experts estimate that more than a quarter of America's health care costs are related to obesity.[5,6] The sharp rise in obesity has accounted for 20 to 30 percent of the rise in health care spending since 1979. Had obesity rates remained stable, health care spending in America would be nearly 10 percent lower on a per person average.[7,8]

The country will never be able to contain rates of chronic diseases and health care costs until we find ways to keep Americans healthier. But right now, Americans are not as healthy as they could be or should be. Two-thirds of adults are overweight or obese.[9] The childhood obesity epidemic is putting today's youth on course to potentially be the first generation to live shorter, less healthy lives than their parents.[10]

This report, the sixth annual edition of *F as in Fat: How Obesity Rates Are Failing in America 2009*, finds that in the past year, adult obesity rates grew in 23 states and did not decrease in a single state. The number of obese adults now exceeds 25 percent in nearly two-thirds of states. In 1991, no state had an obesity rate above 20 percent. In 1980, the national average of obese adults was 15 percent.

And, obesity rates are likely to grow even more in the next year due to the economic downturn, which has a negative impact on the health of Americans. Americans increasingly need to balance concerns about their pocketbooks against managing their health. Food prices are projected to rise five percent to five percent in 2009, according to the U.S. Department of Agriculture (USDA), and nutritious foods are becoming increasingly out of reach for even middle-income families. Depression and anxiety are linked with obesity for many, while stress and the strain of limited resources can make it harder for many to find the time to be physically active. At the same time, safety-net programs and services are becoming increasingly overextended as the numbers of unemployed, uninsured and underinsured continue to grow.

As a nation, if we made combating obesity a national priority, we could have a tremendous payoff in improving health and reducing health care costs. A greater emphasis is needed on developing strategies, policies, and programs to help make it easier for more Americans to improve the quality of what we eat, limit the quantity of what we eat, and engage in more physical activity.

While individuals have choices about what they eat or how active they are, these decisions are affected by factors that are beyond individual control, which is why policies and resources in communities are so important. For instance, in neighborhoods with limited grocery stores or unsafe parks, it is hard for people to eat healthy foods and be physically active. Many of these factors are directly related to economic circumstances.

The rising obesity rates are the result of a number of trends in the United States:

- Americans consume an average of 300 more calories per day than they did 25 years ago and eat less nutritious foods;
- Nutritious foods are significantly more expensive than calorie-dense, less nutritious foods;
- Americans walk less and drive more – even for trips of less than one mile;
- Parks and recreation spaces are not considered safe or well maintained in many communities;
- Many school lunches do not meet nutrition standards and children engage in less physical activity in school;
- Increased screen time (TV, computers, video games) contributes to decreased activity, particularly for children; and
- Adults often work longer hours and commute farther.

The obesity crisis is a national problem. The health and economic consequences impact the entire country – and the future health and wealth of the nation requires that we treat the obesity problem with the urgency it deserves.

F as in Fat 2009

The *F as in Fat* report examines obesity trends in the United States, including state and federal policies aimed at preventing or reducing obesity in children and adults.

The federal government, states, and communities around the country have taken action to address the obesity epidemic, but -- even before the precipitous economic downturn – these actions were constrained due to limited resources. These policies and programs address factors such as the availability or affordability of healthy food; the safety and accessibility of parks; the amount of time students get for physical activity; and the nutritional quality of school lunches. These efforts are aimed at helping make healthy choices easier for Americans.

While the obesity epidemic may seem hard to address on a big-picture level, research shows that small changes can result in major improvements in the health of individuals, and these improvements, in turn, can help to reduce health care costs. For example:

- For individuals, a five percent to 10 percent reduction in total weight can lead to positive health benefits, such as reducing the risk for type 2 diabetes;[11] and
- An increase in physical activity, even without any accompanying weight loss, can contribute to significant health improvements. A physically active lifestyle plays an important role in preventing many chronic diseases, including heart disease, hypertension, and type 2 diabetes.[12, 13, 14, 15]

On a community level, a small investment in programs to improve nutrition and physical activity can result in a big payoff in a short time frame. A recent study by the Trust for America's Health (TFAH) found that an investment of just $10 per person per year in proven community-based disease prevention programs could save the country more than $16 billion annually within five years.[16] This is a return of $5.60 for every $1.

This finding, which is based on an economic model developed by the Urban Institute and an extensive review of evidence-based studies by The New York Academy of Medicine, found that such an investment could reduce rates of type 2 diabetes and high blood pressure by five percent within just two years; rates of heart disease, stroke and kidney disease by five percent within five years; and rates of some types of cancer, arthritis and chronic obstructive pulmonary disease by 2.5 percent within 10 to 20 years.

The *F as in Fat* report examines many promising programs and efforts to reverse the obesity epidemic. It also reviews the negative consequences if this epidemic continues. Obesity- and disease-prevention programs must be funded at an adequate level to have a significant and long-term impact. Only then will we realize the fullest possible return on investments aimed at keeping Americans healthy.

The report includes recommendations for a *National Strategy to Combat Obesity*, which provides a range of policies, programs and initiatives that could have a major impact on improving the health of Americans.

F AS IN FAT 2009: MAJOR FINDINGS

Adult Obesity Rates and Trends

- Adult obesity rates continued to rise in 23 states. Rates did not decrease in any state. Nearly two-thirds of states now have adult obesity rates above 25 percent. Four states have rates above 30 percent -- Mississippi, West Virginia, Alabama, and Tennessee. In 1991, no state had an obesity rate above 20 percent. In 1980, the national average of obese adults was 15 percent.
- Adult obesity rates rose for a second year in a row in 16 states, and rose for a third year in a row in 11 states. Mississippi had the highest rate of obese adults at 32.5 percent. Colorado had the lowest rate at 18.9 percent and is the only state with a rate below 20 percent.
- Obesity and obesity-related diseases such as diabetes and hypertension continue to remain the highest in Southern states. Eight of the 10 most obese states are in the South. In addition, all 10 states with the highest rates of diabetes and hypertension are in the South, while eight of the 10 states with the highest rates of physical inactivity are in the South. Northeastern and Western states continue to have the lowest obesity rates.
- Adult diabetes rates increased in 19 states in the past year. In seven states, more than 10 percent of adults now have type 2 diabetes.
- The number of adults who report that they do not engage in any physical activity rose in nine states in the past year. Four states saw a decline in the adult physical inactivity levels.
- As the Baby Boomer generation ages, Medicare and Medicaid obesity-related costs are likely to grow significantly, not just because of their larger numbers, but also because this cohort has higher rates of obesity than previous generations. As the Baby Boomers become Medicare-eligible, the percentage of obese individuals age 65 and older could increase significantly, by 5.2 percent in New York and by 16.3 percent in Alabama.

Child and Adolescent Obesity Rates and Trends

- The percentage of obese and overweight children (ages 10 to 17) is at or above 30 percent in 30 states. Mississippi had the highest rate of obese and overweight children at 44.4 percent. Minnesota and Utah had the lowest rate at 23.1 percent.
- Eight of the 10 states with the highest rates of obese and overweight children are in the South, as are nine of the 10 states with the highest rates of poverty.
- Nationwide, less than one-third of all children ages 6 to 17 engage in vigorous activity, defined as participating in physical activity for at least 20 minutes that made the child sweat and breathe hard.
- The percent of children engaging in daily, vigorous, physical activity ranged from a low of 17.6 percent in Utah to a high of 38.5 percent in North Carolina.

State Legislation Trends

- Nineteen states set nutritional standards for school lunches, breakfasts, and snacks that are stricter than current USDA requirements. Five years ago, only four states had legislation requiring these stricter standards.
- Twenty-seven states have nutritional standards for competitive foods sold a la carte, in vending machines, in school stores, or in school bake sales. Five years ago, only six states had nutritional standards for competitive foods.
- Every state has some form of physical education requirement for schools, but these requirements are often limited, not enforced, or do not meet adequate quality standards.
- Twenty states have passed requirements for body mass index (BMI) screenings of children and adolescents or have passed legislation requiring other forms of weight-related assessments in schools. Five years ago, only four states had passed screening requirements.
- Nineteen states have laws that establish programs linking local farms to schools. Five years ago, only New York had a farm to school program.
- Thirty states and D.C. have some form of a snack tax.
- Four states -- California, Maine, Massachusetts, and Oregon -- have enacted menu labeling legislation.
- Twenty-four states have passed legislation to limit obesity liability.


180
200
220
240
260

SECTION 1

Obesity Rates, Related Trends, and Health Facts

OBESITY RATES AND RELATED TRENDS

More than two-thirds (67 percent) of American adults are either overweight or obese.[17] Adult obesity rates have grown from 15 percent in 1980 to 34.3 percent in 2006 based on a national survey.[18] Currently, more Americans are obese than are overweight (32.7 percent).

Poor nutrition and physical inactivity are increasing Americans' risk for developing major diseases, including type 2 diabetes, which now afflicts more than 10 percent of the adult population in seven states.

Meanwhile, the rates of obesity among children ages two to 19 have more than tripled since 1980.[19] According to a 2008 analysis of data from the National Health and Nutrition Examination Survey (NHANES), the number of U.S. children who are overweight or obese may have peaked, after years of steady increases. Researchers at CDC report there was no statistically significant change in the number of children and adolescents (aged 2 to 19) with high BMI for age between 2003-2004 and 2005-2006.[20]

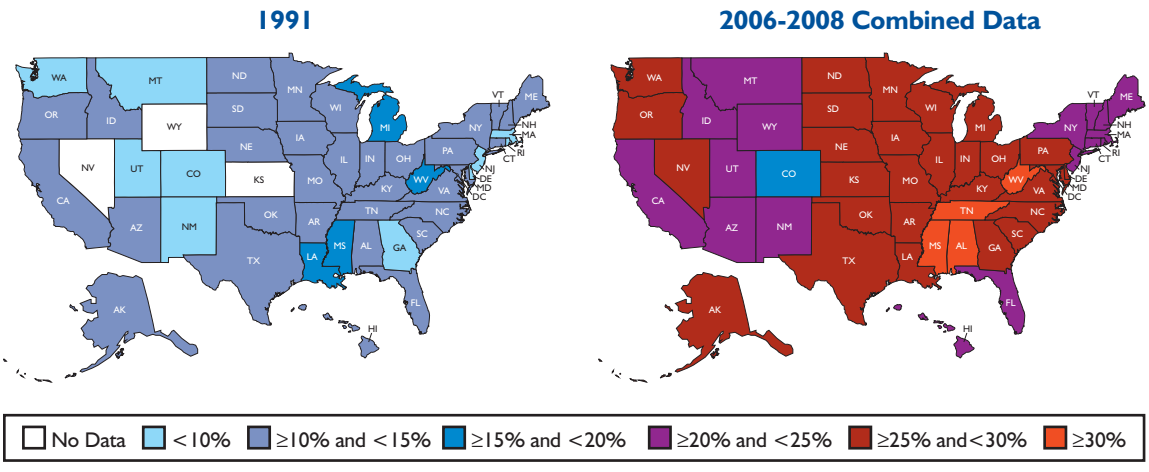
This is the first time the rates have not increased in over 25 years. Scientists and public health officials, however, are unsure if the data reflect the effectiveness of recent public health campaigns to raise awareness about obesity, increased physical activity and healthy eating among children and adolescents, or if this a statistical abnormality.[21]

Even if childhood obesity rates have peaked, the number of children with unhealthy BMIs remain far too high as evidenced by new data from the 2007 National Survey of Children's Health (NSCH), which found that more than one-third of children ages 10 to 17 are obese (16.4 percent) or overweight (18.2 percent). State-specific obesity rates ranged from a low of 9.6 percent in Oregon to a high of 21.9 percent in Mississippi.

OBESITY TRENDS* AMONG U.S. ADULTS

BRFSS, 1991 and 2006-2008 Combined Data

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



Source: Behavioral Risk Factor Surveillance System, CDC.

CHART ON OBESITY AND OVERWEIGHT RATES

ADULTS

States	Obesity: 2006-2008 3 Yr. Ave. Percentage (95% Conf Interval)	Obesity: Ranking	Obesity: Percentage Point Change 2005-2007 to 2006-2008	Overweight & Obesity: 2006-2008 3 Yr. Ave. Percentage (95% Conf Interval)	Diabetes: 2006-2008 3 Yr. Ave. Percentage (95% Conf Interval)	Diabetes: Ranking	Physical Inactivity: 2006-2008 3 Yr. Ave. Percentage (95% Conf Interval)	Physical Inactivity: Ranking
Alabama	31.2% (+/-1.1)*	2	1.1	66.5% (+/-1.2)*	10.5% (+/-0.6)**	4	29.5% (+/-1.0)	6
Alaska	27.2% (+/-1.6)	18	-0.1	65.0% (+/-1.8)	6.2% (+/-0.8)**	48	21.8% (+/-1.5)	36
Arizona	24.8% (+/-1.5)**	33	1.5	61.2% (+/-1.7)**	8.2% (+/-0.8)	22	22.6% (+/-1.4)	32
Arkansas	28.6% (+/-0.9)	10	0.5	65.1% (+/-1.1)	9.0% (+/-0.5)**	12	28.8% (+/-0.9)	7
California	23.6% (+/-0.8)	41	0.5	59.7% (+/-1.0)	8.1% (+/-0.5)*	24	23.1% (+/-0.8)	27
Colorado	18.9% (+/-0.6)	51	0.4	55.3% (+/-0.8)	5.5% (+/-0.3)**	51	17.9% (+/-0.6)*	49
Connecticut	21.3% (+/-0.8)	49	0.5	59.2% (+/-1.0)	6.8% (+/-0.4)	41	20.7% (+/-0.8)	40
Delaware	27.3% (+/-1.2)***	17	1.4	64.2% (+/-1.3)	8.3% (+/-0.6)	20	22.6% (+/-1.1)	32
D.C.	22.3% (+/-1.0)	45	0.2	55.0% (+/-1.2)	8.0% (+/-0.6)	27	21.5% (+/-1.0)	37
Florida	24.1% (+/-0.8)*	39	0.8	60.6% (+/-0.9)	8.9% (+/-0.5)	14	25.5% (+/-0.8)	14
Georgia	27.9% (+/-0.9)	14	0.4	63.9% (+/-1.0)	9.7% (+/-0.5)***	9	24.2% (+/-0.9) ^	20
Hawaii	21.8% (+/-0.9)*	47	1.1	56.8% (+/-1.0)**	8.0% (+/-0.5)	27	19.0% (+/-0.8)	46
Idaho	24.8% (+/-0.9)	33	0.2	61.7% (+/-1.1)	7.2% (+/-0.5)	36	20.5% (+/-0.8)	42
Illinois	25.9% (+/-1.0)	27	0.6	62.7% (+/-1.1)	8.4% (+/-0.5)	18	24.5% (+/-0.9)*	18
Indiana	27.4% (+/-0.9)	16	-0.1	63.2% (+/-1.1)	8.7% (+/-0.5)	15	25.8% (+/-1.0)	12
Iowa	26.7% (+/-0.9)	22	0.4	64.0% (+/-1.0)	7.0% (+/-0.4)	37	23.1% (+/-0.8)	27
Kansas	27.2% (+/-0.7)***	18	1.4	63.9% (+/-0.8)**	7.6% (+/-0.4)***	32	23.7% (+/-0.7)	24
Kentucky	29.0% (+/-1.0)	7	0.6	67.4% (+/-1.1)	9.9% (+/-0.5)	7	30.4% (+/-1.0)	2
Louisiana	28.9% (+/-0.9)	8	-0.6	64.0% (+/-1.0)	10.0% (+/-0.5)**	6	30.3% (+/-0.9) ^	3
Maine	24.7% (+/-0.9)*	35	1.1	61.5% (+/-1.0)	7.7% (+/-0.5)	30	21.3% (+/-0.8)	39
Maryland	26.0% (+/-0.8)***	25	0.7	62.2% (+/-0.9)**	8.3% (+/-0.4)**	20	23.3% (+/-0.8)	25
Massachusetts	21.2% (+/-0.6)	50	0.3	57.5% (+/-0.7)***	7.0% (+/-0.3)**	37	21.4% (+/-0.6)	38
Michigan	28.8% (+/-0.9)***	9	1.1	64.6% (+/-0.9)**	9.0% (+/-0.5)**	12	22.9% (+/-0.8)*	29
Minnesota	25.3% (+/-1.0)	31	0.5	62.5% (+/-1.1)	5.8% (+/-0.4)	50	16.3% (+/-0.9)	51
Mississippi	32.5% (+/-0.9)***	1	0.8	67.4% (+/-1.0)	11.1% (+/-0.5)**	2	31.8% (+/-0.9)	1
Missouri	28.1% (+/-1.1)	13	0.7	63.9% (+/-1.3)	8.2% (+/-0.6)*	22	25.5% (+/-1.0)	14
Montana	22.7% (+/-0.9)**	43	1	60.9% (+/-1.1)**	6.5% (+/-0.4)	46	20.7% (+/-0.8)	40
Nebraska	26.9% (+/-0.9)	20	0.4	64.2% (+/-1.1)	7.4% (+/-0.4)	33	22.6% (+/-0.8)	32
Nevada	25.1% (+/-1.2)*	32	1.4	63.1% (+/-1.4)*	8.1% (+/-0.7)	24	26.4% (+/-1.2)	11
New Hampshire	24.1% (+/-0.8)	39	0.6	61.9% (+/-1.0)**	7.3% (+/-0.4)	34	20.1% (+/-0.7)	44
New Jersey	23.4% (+/-0.8)	42	0.5	61.4% (+/-0.9)***	8.4% (+/-0.4)	18	26.7% (+/-0.8) ^	10
New Mexico	24.6% (+/-0.9)***	36	1.3	60.2% (+/-1.1)	7.7% (+/-0.5)	30	22.7% (+/-0.9)	30
New York	24.5% (+/-0.8)**	37	1	60.2% (+/-1.0)	8.1% (+/-0.5)	24	25.6% (+/-0.9)	13
North Carolina	28.3% (+/-0.6)***	12	1.2	64.4% (+/-0.7)**	9.2% (+/-0.3)*	11	24.2% (+/-0.6)	20
North Dakota	26.7% (+/-1.0)*	22	0.8	65.6% (+/-1.1)*	6.8% (+/-0.5)	41	23.3% (+/-0.9)*	25
Ohio	28.6% (+/-1.0)*	10	1.6	63.6% (+/-1.1)	8.7% (+/-0.4)**	15	25.0% (+/-0.9)	17
Oklahoma	29.5% (+/-0.8)***	6	1.4	65.5% (+/-0.9)**	10.1% (+/-0.4)***	5	30.3% (+/-0.8)	3
Oregon	25.4% (+/-1.0)	28	0.4	61.5% (+/-1.1)	6.8% (+/-0.5)	41	17.6% (+/-0.8)	50
Pennsylvania	26.7% (+/-0.8)**	22	1	62.8% (+/-1.0)*	8.7% (+/-0.5)	15	24.0% (+/-0.8)	23
Rhode Island	21.7% (+/-0.9)	48	0.3	60.6% (+/-1.2)	7.3% (+/-0.5)	34	24.1% (+/-1.0)	22
South Carolina	29.7% (+/-0.8)	5	0.5	65.5% (+/-0.9)	9.8% (+/-0.5)	8	25.5% (+/-0.8)	14
South Dakota	26.9% (+/-0.9)***	20	0.9	64.9% (+/-1.0)	6.6% (+/-0.4)	44	24.5% (+/-0.9)**	18
Tennessee	30.2% (+/-1.3)***	4	1.3	66.9% (+/-1.2)**	11.0% (+/-0.7)	3	29.8% (+/-1.2) ^	5
Texas	27.9% (+/-0.9)	14	0.6	64.8% (+/-1.0)	9.3% (+/-0.5)**	10	28.4% (+/-0.9)	8
Utah	22.5% (+/-0.9)	44	0.6	57.0% (+/-1.2)	5.9% (+/-0.4)	49	19.5% (+/-0.9)	45
Vermont	22.1% (+/-0.7)**	46	1	57.8% (+/-0.9)**	6.4% (+/-0.4)	47	18.5% (+/-0.7)	47
Virginia	25.4% (+/-1.2)	28	0.2	61.7% (+/-1.4)	7.8% (+/-0.6)	29	22.3% (+/-1.1)	35
Washington	25.4% (+/-0.5)***	28	0.9	61.5% (+/-0.6)**	7.0% (+/-0.2)**	37	18.1% (+/-0.4)*	48
West Virginia	31.1% (+/-1.0)	3	0.4	67.9% (+/-1.1)**	11.6% (+/-0.6)*	1	28.3% (+/-1.0)**	9
Wisconsin	26.0% (+/-1.0)	25	0.6	63.1% (+/-1.1)	6.6% (+/-0.5)	44	20.3% (+/-0.9)*	43
Wyoming	24.3% (+/-0.8)	38	0.4	61.9% (+/-0.9)	6.9% (+/-0.4)	40	22.7% (+/-0.8)*	30

Source: Behavior Risk Factor Surveillance System (BRFSS), CDC. To stabilize BRFSS data in order to rank states, TFAH combined three years of data (See Appendix A for more information on the methodology used for the rankings.). * & Red indicates a statistically significant change ($P < 0.05$) from 2005-2007 to 2006-2008 (for Hypertension figures - only collected every two years - from 2001-2005 to 2003-2007). **State increased significantly in the past two years. ***State increased significantly in the past three years. ^ and Blue indicates a statistically significant decrease.

AND OVERWEIGHT RATES AND RELATED HEALTH INDICATORS IN THE STATES

CHILDREN AND ADOLESCENTS

Hypertension		Poverty	2007 YRBS			2007 PedNSS	2007 National Survey of Children's Health		
2003-2007 3 Yr. Ave. Percentage (95% Conf Interval)	Ranking	2005-2007 3 Yr. Ave. Percentage (90% Conf Interval)	Percentage of Obese High School Students (95% Conf Interval)	Percentage of Overweight High School Students (95% Conf Interval)	Percentage of High School Students Not Meeting Recommended Physical Activity Level	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
33.5% (+/- 1.0)	2	15.2% (+/- 1.5)	N/A	N/A	N/A	13.8%	36.1% (+/- 4.6)	6	36.5% (+/- 4.0)
23.9% (+/- 1.4)*	48	8.8% (+/- 1.3)	11.1% (+/-2.2)	16.2% (+/- 2.7)	57.5%	N/A	33.9% (+/- 4.4)	12	30.4% (+/- 3.7)
24.2% (+/- 1.2)	46	14.7% (+/- 1.4)	11.7% (+/- 2.5)	14.2% (+/- 2.3)	68.0%	14.4%	30.6% (+/- 4.9)	26	28.5% (+/- 3.8)
31.5% (+/- 0.9)*	5	15.1% (+/- 1.6)	13.9% (+/- 2.5)	15.8% (+/- 2.3)	58.0%	14.2%	37.5% (+/- 4.2)	2	30.7% (+/- 3.3)
27.2% (+/- 0.9)**	24	12.7% (+/- 0.5)	N/A	N/A	N/A	17.4%	30.5% (+/- 6.4)	28	30.0% (+/- 4.9)
21.7% (+/- 0.7)	50	10.3% (+/- 1.3)	N/A	N/A	N/A	9.7%	27.2% (+/- 5.1)	42	27.6% (+/- 3.9)
25.7% (+/- 0.8)**	35	8.7% (+/- 1.2)	12.3% (+/-1.6)	13.3% (+/- 1.9)	54.9%	16.2%	25.7% (+/- 3.7)	45	22.1% (+/- 2.7)
29.2% (+/- 1.1)*	13	9.3% (+/- 1.3)	13.3% (+/- 1.6)	17.5% (+/- 1.7)	59.6%	N/A	33.2% (+/- 4.1)	16	31.1% (+/- 3.5)
27.9% (+/- 1.2)	20	19.2% (+/- 1.9)	17.7% (+/- 2.0)	17.8% (+/- 2.1)	69.8%	14.6%	35.4% (+/- 4.8)	9	26.3% (+/- 3.4)
29.3% (+/- 0.9)*	12	11.7% (+/- 0.7)	11.2% (+/- 1.4)	15.2% (+/- 1.3)	61.6%	14.3%	33.1% (+/- 6.1)	17	34.1% (+/- 5.0)
29.4% (+/- 0.8)*	11	13.5% (+/- 1.0)	13.8% (+/- 2.0)	18.2% (+/- 2.1)	56.2%	14.6%	37.3% (+/- 5.6)	3	29.4% (+/- 4.1)
26.1% (+/- 0.9)*	30	8.4% (+/- 1.2)	15.6% (+/- 2.9)	14.3% (+/- 2.7)	65.7%	9.2%	28.5% (+/- 4.1)	37	28.0% (+/- 3.3)
25.4% (+/- 0.9)*	39	9.8% (+/- 1.3)	11.1% (+/- 1.7)	11.7% (+/- 2.6)	53.2%	12.2%	27.5% (+/- 3.9)	41	25.0% (+/- 3.3)
26.7% (+/- 0.9)*	28	10.7% (+/- 0.8)	12.9% (+/- 2.1)	15.7% (+/- 2.0)	56.5%	14.5%	34.9% (+/- 4.1)	10	26.1% (+/- 3.1)
28.1% (+/-0.8)*	19	11.7% (+/- 1.2)	13.8% (+/-2.0)	15.3% (+/- 1.8)	56.3%	14.1%	29.9% (+/- 4.3)	31	31.3% (+/- 3.8)
26.3% (+/- 0.8)	29	10.2% (+/- 1.4)	11.3% (+/- 3.1)	13.5% (+/- 2.2)	50.1%	14.9%	26.5% (+/- 4.3)	44	27.8% (+/- 3.6)
25.6% (+/- 0.7)**	36	12.3% (+/- 1.5)	11.1% (+/- 2.0)	14.4% (+/- 2.2_	54.9%	13.6%	31.1% (+/- 4.2)	22	25.2% (+/- 3.1)
30.1% (+/- 0.9)	9	15.7% (+/- 1.6)	15.6% (+/- 1.7)	16.4% (+/- 1.6)	67.1%	15.6%	37.1% (+/- 4.1)	4	25.9% (+/- 3.0)
30.9% (+/- 1.0)**	7	17.1% (+/- 1.7)	N/A	N/A	N/A	13.8%	35.9% (+/- 4.6)	7	34.0% (+/- 3.8)
27.6% (+/- 1.0)*	22	11.2% (+/- 1.5)	12.8% (+/- 2.7)	13.1% (+/- 2.4)	56.9%	N/A	28.2% (+/- 3.8)	39	32.7% (+/- 3.4)
27.7% (+/- 0.8)*	21	9.0% (+/- 1.1)	10.9% (+/- 2.4)	15.2% (+/- 2.8)	69.4%	15.4%	28.8% (+/- 4.2)	36	30.7% (+/- 3.6)
25.8% (+/- 0.6)**	33	11.1% (+/- 1.1)	11.1% (+/- 1.6)	14.6% (+/- 2.0)	59.0%	16.8%	30.0% (+/- 4.6)	30	26.6% (+/- 3.3)
28.7% (+/- 0.8)**	16	12.0% (+/- 0.9)	12.4% (+/- 2.0)	16.5% (+/- 2.0)	56.0%	13.7%	30.6% (+/- 4.3)	26	33.1% (+/- 3.9)
22.6% (+/- 0.9)	49	8.5% (+/- 1.1)	N/A	N/A	N/A	13.3%	23.1% (+/- 4.0)	50	34.8% (+/- 3.8)
34.5% (+/- 0.9)*	1	21.1% (+/- 1.8)	17.9% (+/- 2.5)	17.9% (+/- 1.9)	63.9%	15.0%	44.4% (+/- 4.3)*	1	29.0% (+/- 3.2)
29.1% (+/- 1.1)**	15	11.9% (+/- 1.2)	12.0% (+/- 3.0)	14.3% (+/- 1.5)	56.5%	13.7%	31.0% (+/- 4.1)	23	29.6% (+/- 3.4)
24.5% (+/- 0.9)	45	13.4% (+/- 1.5)	10.1% (+/- 1.1)	13.3% (+/- 1.3)	55.1%	12.1%	25.6% (+/- 3.7)	48	31.5% (+/- 3.2)
25.5% (+/- 0.8)**	37	9.9% (+/- 1.3)	N/A	N/A	N/A	13.5%	31.5% (+/- 4.6)	21	26.2% (+/- 3.5)
26.0% (+/- 1.2)	31	10.0% (+/- 1.3)	11.0% (+/- 2.3)	14.5% (+/- 1.9)	53.8%	12.6%	34.2% (+/- 5.4)*	11	24.4% (+/- 3.7)
24.9% (+/- 0.7)*	43	5.6% (+/- 1.0)	11.7% (+/- 2.0)	14.4% (+/-2.0)	53.1%	15.8%	29.4% (+/- 3.9)	35	29.0% (+/- 3.2)
27.2% (+/- 0.7)*	24	8.1% (+/- 0.9)	N/A	N/A	N/A	18.0%	31.0% (+/- 4.5)	23	29.1% (+/- 3.7)
24.0% (+/- 0.8)**	47	16.3% (+/- 1.8)	10.9% (+/- 2.0)	13.5% (+/- 2.1)	56.4%	12.0%	32.7% (+/- 5.0)	19	27.0% (+/- 3.7)
27.0% (+/- 0.8)	26	14.4% (+/- 0.8)	10.9% (+/- 1.1)	16.3% (+/- 1.3)	62.0%	14.6%	32.9% (+/- 4.4)	18	27.6% (+/- 3.4)
29.8% (+/- 0.7)**	10	14.1% (+/- 1.1)	12.8% (+/- 2.4)	17.1% (+/- 1.9)	55.7%	15.3%	33.5% (+/- 4.5)	14	38.5% (+/- 4.0)
25.1% (+/- 0.9)*	42	10.6% (+/- 1.4)	10.0% (+/- 1.9)	13.7% (+/- 3.3)	52.2%	13.4%	25.7% (+/- 3.3)	45	27.1% (+/- 3.0)
28.2% (+/- 0.9)*	17	12.4% (+/- 0.9)	12.4% (+/- 2.2)	15.0% (+/-3.3)	55.3%	12.1%	33.3% (+/- 4.7)	15	32.1% (+/- 3.8)
30.7% (+/- 0.7)**	8	14.7% (+/- 1.6)	14.7% (+/- 1.9)	15.2% (+/- 1.9)	50.4%	N/A	29.5% (+/- 4.1)	33	29.6% (+/- 3.4)
25.5% (+/- 0.8)*	37	12.2% (+/- 1.5)	N/A	N/A	N/A	14.5%	24.3% (+/- 3.9)	49	27.9% (+/- 3.5)
28.2% (+/- 0.8)	17	11.0% (+/- 0.8)	N/A	N/A	N/A	10.9%	29.7% (+/- 4.8)	32	35.4% (+/- 4.4)
29.2% (+/- 1.0)**	13	10.7% (+/- 1.4)	10.7% (+/- 2.2)	16.2% (+/- 1.8)	58.1%	17.0%	30.1% (+/- 4.2)	29	27.6% (+/- 3.5)
31.3% (+/- 0.7)**	6	13.4% (+/- 1.5)	14.4% (+/- 2.9)	17.1% (+/- 2.3)	62.0%	N/A	33.7% (+/- 4.2)	13	31.2% (+/- 3.4)
25.8% (+/- 0.7)*	33	10.7% (+/- 1.3)	9.1% (+/- 2.6)	14.5% (+/- 2.1)	56.0%	15.2%	28.4% (+/- 3.9)	38	25.3% (+/- 3.2)
32.1% (+/- 1.1)*	4	14.8% (+/- 1.3)	16.9% (+/- 2.0)	18.1% (+/- 2.1)	58.0%	13.5%	36.5% (+/- 4.3)	5	29.8% (+/- 3.5)
26.9% (+/- 0.7)*	27	16.4% (+/- 0.8)	15.9% (+/- 2.1)	15.6% (+/- 2.0)	54.8%	15.9%	32.2% (+/- 5.6)	20	28.9% (+/- 4.4)
20.3% (+/- 0.8)	51	9.4% (+/- 1.2)	8.7% (+/- 3.8)	11.7% (+/- 2.5)	52.5%	N/A	23.1% (+/- 4.2)	50	17.6% (+/- 3.1)
24.6% (+/- 0.8)**	44	8.4% (+/- 1.3)	11.8% (+/-3.3)	14.5% (+/- 2.8)	52.0%	13.5%	26.7% (+/- 4.5)	43	36.6% (+/- 3.9)
27.3% (+/- 1.0)**	23	8.8% (+/- 0.9)	N/A	N/A	N/A	17.4%	31.0% (+/- 4.2)	23	26.2% (+/- 3.3)
25.4% (+/- 0.4)*	39	9.4% (+/- 1.1)	N/A	N/A	N/A	14.3%	29.5% (+/- 5.0)	33	27.6% (+/- 4.0)
33.2% (+/- 1.0)	3	15.2% (+/- 1.5)	14.7% (+/- 2.4)	17.0% (+/- 3.2)	57.2%	13.1%	35.5% (+/- 3.9)	8	33.2% (+/- 3.2)
25.9% (+/- 0.9)*	32	10.4% (+/- 1.2)	11.1% (+/- 1.6)	14.0% (+/- 1.4)	61.7%	13.1%	27.9% (+/- 3.8)	40	28.5% (+/- 3.1)
25.2% (+/- 0.8)*	41	10.5% (+/- 1.4)	9.3% (+/-1.5)	11.4% (+/- 1.4)	51.8%	N/A	25.7% (+/- 4.0)	45	29.8% (+/- 3.5)

Source: U.S. Census Bureau, Percentage of People in Poverty by State Using 2- and 3-Year Averages: 2004-2005 and 2006-2007 . <http://www.census.gov/hhes/www/poverty/poverty07/state.html>

Source: Youth Risk Behavior Survey (YRBS) 2007, 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. Students not meeting recommended levels of physical activity is the difference between 100 percent and the percentage of students who met recommended levels of physical activity.

Source: Pediatric Nutrition Surveillance 2007 Report, Table 1. Available at <http://www.cdc.gov/pednss/pdfs/PedNSS_2007.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 ($p<0.05$) 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.

A. ADULT OBESITY AND OVERWEIGHT RATES

Rates of obesity continued to rise across the country during the past year. Twenty-three states saw a significant increase in obesity, and 16 of these states experienced an increase for the second year in a row. Eleven states experienced an increase for the third straight year. Obesity rates did not significantly decrease in a single state.

Last year three states -- Mississippi, Alabama, and West Virginia -- had obesity rates over 30 percent, and this year Tennessee became the fourth state above 30 percent. Mississippi, still ranked most obese at 32.5 percent, is followed by Alabama at 31.2 percent, West Virginia at 31.1 percent, and Tennessee at 30.2 percent. Mississippi also continues to have the highest rate of physical inactivity and hypertension, and has the second highest rate of diabetes. Alabama, West Virginia, and Tennessee also rank in the top 10 for highest rates of physical inactivity, hypertension and diabetes.

Now, only 19 states have rates of obesity less than 25 percent, compared with 22 from last year – losing three states, Washington, Nevada and Minnesota, to the 25-percent-or-greater category. In Colorado, the only state under 20 percent, rates of obesity increased from 18.4 percent to 18.9 percent.

The U.S. Department of Health and Human Services (HHS) set a national goal to reduce adult obesity rates to 15 percent in every state by the year 2010. Clearly that goal will not be met as all states and D.C. currently exceed 15 percent.

Southern states continue to fill the top 10 most obese states in the country, with the exception of Michigan and Ohio.

States with the Highest Obesity Rates

Rank	State	Percentage of Adult Obesity (Based on 2006-2008 Combined Data, Including Confidence Intervals)
1	Mississippi	32.5% (+/-0.9)
2	Alabama	31.2% (+/-1.1)
3	West Virginia	31.1% (+/-1.0)
4	Tennessee	30.2% (+/-1.3)
5	South Carolina	29.7% (+/-0.8)
6	Oklahoma	29.5% (+/-0.8)
7	Kentucky	29.0% (+/-1.0)
8	Louisiana	28.9% (+/-0.9)
9	Michigan	28.8% (+/-0.9)
10 (tie)	Arkansas	28.6% (+/-0.9)
10 (tie)	Ohio	28.6% (+/-1.0)

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Obesity.

Northeastern and Western states continue to dominate the states with the lowest rates of obesity.

States with the Lowest Obesity Rates

Rank	State	Percentage of Adult Obesity (Based on 2006-2008 Combined Data, Including Confidence Intervals)
51	Colorado	18.9% (+/-0.6)
50	Massachusetts	21.2% (+/-0.6)
49	Connecticut	21.3% (+/-0.8)
48	Rhode Island	21.7% (+/-0.9)
47	Hawaii	21.8% (+/-0.9)
46	Vermont	22.1% (+/-0.7)
45	District of Columbia	22.3% (+/-1.0)
44	Utah	22.5% (+/-0.9)
43	Montana	22.7% (+/-0.9)
42	New Jersey	23.4% (+/-0.8)

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Obesity.

RATES AND RANKINGS METHODOLOGY

This study compares data from the Behavioral Risk Factor Surveillance System (BRFSS), the largest phone survey in the world. Data from three-year periods 2005-2007 and 2006-2008 are compared to stabilize the data by using large enough sample sizes for comparisons among states and over time, as advised by officials from the U.S. Centers for Disease Control and Prevention (CDC). In order for a state rate to be considered an increase, the change must reach a level of what experts consider to be statistically significant ($p<0.05$) for the particular sample size of that state.

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

The data are based on telephone surveys -- both to landlines, and effective in 2009, to cell phones -- conducted by state health departments with assistance from CDC and involve individuals self-reporting their weight and height. Researchers then use these statistics to calculate BMI to determine whether a person is obese or overweight. Experts feel the rates are likely to be slightly under-reported because individuals tend to under-report their weight and over-report their height.

More information on the methodology of the rankings is available in Appendix A.

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.[22,23] Overweight refers to increased body weight in relation to height, which is then compared to a standard of acceptable weight.[24] BMI is a common measure expressing the relationship (or ratio) of weight-to-height. It is a mathematical formula:

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

Adults with a BMI of 25 to 29.9 are considered overweight, while those with a BMI of 30 or more are considered obese. 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.

Until recently 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 "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 is labeled as "severe obesity".[25]

There are some issues and disputes surrounding the use of BMI as the primary measure for obesity. For instance, it does not distinguish between fat and muscle, and individuals with a significant amount of lean muscle will have higher BMIs, which do not indicate an unhealthy level of fat.

- Other research has shown that those of African and/or Polynesian ancestry may have less body fat and leaner muscle mass, suggesting higher baseline BMIs for overweight and obesity.[26]
- Research also has found that there may be race or ethnicity issues in BMI measurements. A June 2005 study found that current BMI thresholds "significantly underestimate health risks in many non-Europeans."[27] Asian and Aboriginal groups, despite "healthy" BMIs, had high risk of "weight related health problems."[28] Several years ago, it was suggested to the World Health Organization (WHO) that BMI levels be dropped to 23 and 25 for overweight and obesity, respectively, among Asian populations, but no such changes have occurred.
- Recent studies have shown that waist circumference is another, and perhaps better, way to determine more about the health of an individual.[29] A study conducted in 1998 and recently reported on by Harvard Medical School showed that women with a healthy-weight BMI are more likely to suffer from coronary disease if their waist circumference is too high.[30] The problem that doctors have encountered is finding a formula for waist circumference, because the numbers based on averages do not take height into account. The *International Journal of Obesity* recently reported that the **waist-to-height ratio** might be a better indicator of health, which means your waist circumference should be less than half your height.[31]

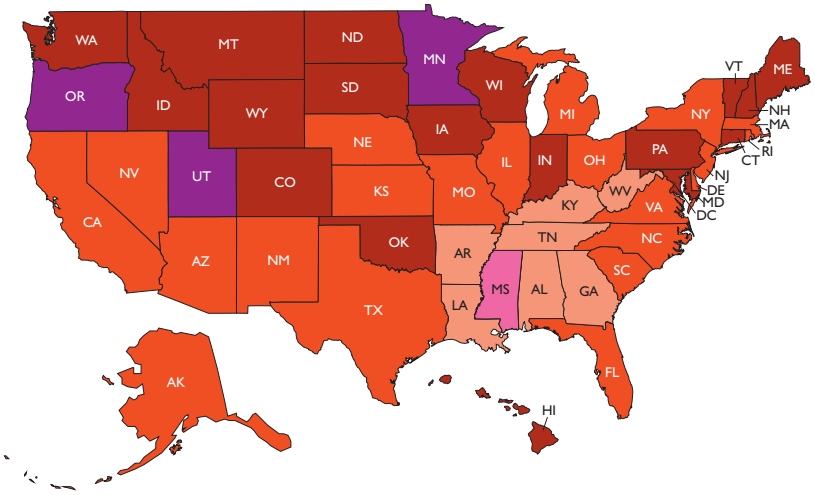
Examining BMI levels, however, still is considered useful by a number of researchers for examining trends and patterns of overweight and obesity. Although many experts recommend assessing an individual's health using other factors beyond BMI, such as waist size, waist-to-hip ratio, blood pressure, cholesterol level, and blood sugar.[32]

Recently, an expert panel, consisting of 15 health organizations, recommended that physicians and allied health care providers perform at a minimum, a yearly assessment of weight status in all children, and this assessment should include calculation of height, weight, and BMI for age and plotting of those measures on a standard growth chart.[33]

B. CHILDHOOD AND YOUTH OBESITY AND OVERWEIGHT RATES

1. Study of 10- to 17-year olds (2007)

PROPORTION OF CHILDREN AGES 10-17 CLASSIFIED AS OVERWEIGHT AND OBESE, BY STATE



According to a 2007 National Survey of Children's Health (NSCH), childhood overweight and obesity rates for children age 10-17, defined as BMI greater than 85th percentile BMI for age group, ranged from a low of 23.1 percent in Utah and Minnesota to 44.4 percent in Mississippi. Eight of the 10 states with the highest rates of overweight and obese children are in the South. The NSCH study is based on a survey of parents in each state.

≥20% and <25% | ≥25% and <30% | ≥30% and <35% | ≥35% and <40% | ≥40%

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

States With Highest Rates of Overweight and Obese 10- to 17-year olds

Ranking	States	Percentage of Overweight and Obese 10- to 17-year olds (95% CIs)
1	Mississippi	44.4% (+/- 4.3)
2	Arkansas	37.5% (+/- 4.2)
3	Georgia	37.3% (+/- 5.6)
4	Kentucky	37.1% (+/- 4.1)
5	Tennessee	36.5% (+/- 4.3)
6	Alabama	36.1% (+/- 4.6)
7	Louisiana	35.9% (+/- 4.6)
8	West Virginia	35.5% (+/- 3.9)
9	District of Columbia	35.4% (+/- 4.8)
10	Illinois	34.9% (+/- 4.1)

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Childhood Obesity.

Six of the states with the lowest rates of overweight and obese 10- to 17-year olds are in the West. None of the 10 states with the lowest rates of overweight and obese children are in the South.

States With Lowest Rates of Overweight and Obese 10- to 17-year olds

Ranking	States	Percentage of Overweight and Obese 10- to 17-year olds (95% CIs)
50 (tie)	Minnesota	23.1% (+/- 4.0)
50 (tie)	Utah	23.1% (+/- 4.2)
49	Oregon	24.3% (+/- 3.9)
48	Montana	25.6% (+/- 3.7)
45 (tie)	North Dakota	25.7% (+/- 3.3)
45 (tie)	Connecticut	25.7% (+/- 3.7)
45 (tie)	Wyoming	25.7% (+/- 4.0)
44	Iowa	26.5% (+/- 4.3)
43	Vermont	26.7% (+/- 4.5)
42	Colorado	27.2% (+/- 5.1)

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Childhood Obesity.

METHODOLOGY OF THE 2007 NATIONAL SURVEY OF CHILDREN'S HEALTH

The National Survey of Children's Health (NSCH) is a national survey conducted by telephone in English and Spanish for a second time during 2007-2008; the first administration of the survey took place in 2003-2004. NSCH provides a broad range of information about children's health and well-being collected in a manner that allows comparisons among states as well as nationally. Telephone numbers are called at random to identify households with one or more children under 18 years old. In each household, one child was randomly selected to be the subject of the interview. A total of 91,642 surveys were completed nationally for children between the ages of 0-17 years. Between 1,725 and 1,932 surveys were collected per state -- all states exceeded the goal of 1,700 completed surveys. Survey results are weighted to represent the population of non-institutionalized children ages 0-17 nationally and in each state.

The sampling and data collection for the 2007 NSCH were conducted using the SLAITS program. SLAITS is an acronym for the "State and Local Area Integrated Telephone Survey," an approach developed by the National Center for Health Statistics to quickly and consistently collect information on a variety of health topics at the state and local levels. Other national surveys collected through the SLAITS program include: the National Survey of Children with Special Health Care Needs, the National Immunization Survey, and the National Survey of Early Childhood Health.

Source: Data Resource Center for Child and Adolescent Health[34]

2. Study of High School Students

According to the 2007 national Youth Risk Behavior Survey (YRBS), a survey of U.S. high school students, 13 percent of students are obese and 15.8 percent of students are overweight.[35] Although these numbers were virtually unchanged since the 2005 national YRBS, the latest biennial survey did reveal an upward trend from 1999 to 2007 in the prevalence of students nationwide who were obese (10.7 percent to 13.0 percent) and who were overweight (14.4 percent to 15.8 percent).

In 2007, YRBS data from 39 states indicated that obesity rates among high school students ranged from a low of 8.7 percent in Utah to a high of 17.9 percent in Mississippi, with a median obesity rate of 12 percent. Overweight rates among high school students ranged from a low of 11.4 percent in Wyoming to a high of 18.2 percent in Georgia, with a median overweight rate of 15 percent. Thirty-nine states and D.C. participated in the survey

Percentage of Obese and Overweight U.S. High School Students by Sex

	Obese	Overweight
Female	9.6%	15.1%
Male	16.3%	16.4%
Total	13.0%	15.8%

Percentage of Obese and Overweight U.S. High School Students by Race/Ethnicity

	Obese	Overweight
White*	10.8%	14.3%
Black*	18.3%	19.0%
Hispanic	16.6%	18.1%
Total	13.0%	15.8%

**Note: Non-Hispanic*

Percentage of Obese and Overweight U.S. High School Students by Sex and Race/Ethnicity

	Obese		Overweight	
	Female	**Male**	**Female**	**Male**
White*	6.8%	14.6%	12.8%	15.7%
Black*	17.8%	18.9%	21.4%	16.6%
Hispanic	12.7%	20.3%	17.9%	18.3%
Total	9.6%	16.3%	15.1%	16.4%

**Note: Non-Hispanic*

METHODOLOGY FOR THE YOUTH RISK BEHAVIOR SURVEILLANCE SYSTEM

The Youth Risk Behavior Surveillance System (YRBSS) monitors six categories of priority health-risk behaviors among youth and young adults. The YRBSS includes national, state, and local Youth Risk Behavior Surveys (YRBS) conducted biennially among representative samples of high school students. This report includes data from the state and local surveys conducted among students in grades 9-12 during 2007.

The YRBS use a two-stage cluster sample design to produce a representative sample of ninth through 12th grade students in each jurisdiction. Results are not available from every state because some do not conduct a YRBS (in 2007: California, Louisiana, Minnesota, Pennsylvania, Virginia, and Washington) and some states that do conduct a YRBS did not achieve a high enough overall response rate to obtain weighted data (in 2007: Alabama, Colorado, Nebraska, New Jersey, and Oregon). TFAH reported the percentage and 95 percent confidence intervals of obese and overweight high school students based on information listed on CDC's website http://www.cdc.gov/HealthyYouth/yrbs/.

3. Study of Low-Income Children Ages 2 to 5 (2007)

A survey of low-income children ages two to five called the Pediatric Nutrition Surveillance Survey (PedNSS) found that 14.9 percent of these children are obese, compared with 12.4 percent for U.S. children of a similar age.[36]

METHODOLOGY FOR THE PEDIATRIC NUTRITION SURVEILLANCE SURVEY

TFAH used data from the Pediatric Nutrition Surveillance Survey (PedNSS) as a snapshot of obesity rates among low-income pre-school aged children. Obesity is based on the 2000 CDC gender-specific growth chart percentiles of equal to or greater than the 95th percentile BMI-for-age for children two years of age or older. These data are collected at public health clinics across the country, aggregated by the state, territorial, and tribal governments, and then reported to and published by the CDC. In addition to height and weight, data is collected on birth weight, breastfeeding, and anemia. In 2007, 44 states and D.C. participated in PedNSS, in addition to Puerto Rico and five tribal governments. Data are collected yearly and are available at http://www.cdc.gov/pednss.

C. PHYSICAL INACTIVITY IN ADULTS

Nine states reported an increase in physical inactivity in the past year, up from only six reporting an increase in last year's report. 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 their regular jobs. Four states showed a significant decrease in physical inactivity: Georgia, Louisiana, New Jersey, and Tennessee.

Mississippi, the state with the highest rate of obesity, also had the highest reported percentage of physical inactivity at 31.8 percent. Southern states dominate the highest rates of physical inactivity with the exception of New Jersey.

States with the Highest Rates of Physical Inactivity

Rank	State	Percentage of Adult Physical Inactivity (Based on 2006-2008 Combined Data, Including Confidence Intervals)	Obesity Ranking
1	Mississippi	31.8% (+/-0.9)	1
2	Kentucky	30.4% (+/-1.0)	7
3 (tie)	Louisiana	30.3% (+/-0.9)	8
3 (tie)	Oklahoma	30.3% (+/-0.8)	6
5	Tennessee	29.8% (+/-1.2)	4
6	Alabama	29.5% (+/-1.0)	2
7	Arkansas	28.8% (+/-0.9)	10
8	Texas	28.4% (+/-0.9)	14
9	West Virginia	28.3% (+/-1.0)	3
10	New Jersey	26.7% (+/-0.8)	42

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Physical Inactivity.

Minnesota had the lowest number of inactive adults, with 16.3 percent of adults reporting they do not engage in physical activity. Nine states with the lowest rates of physical inactivity remain the same as last year's report, with Idaho replacing Connecticut in the 42 spot.

States with the Lowest Rates of Physical Inactivity

Rank	State	Percentage of Adult Physical Inactivity (Based on 2006-2008 Combined Data, Including Confidence Intervals)	Obesity Ranking
51	Minnesota	16.3% (+/-0.9)	31
50	Oregon	17.6% (+/-0.8)	28
48	Colorado	17.9% (+/-0.6)	51
48	Washington	18.1% (+/-0.4)	28
47	Vermont	18.5% (+/-0.7)	46
46	Hawaii	19.0% (+/-0.8)	47
44	Utah	19.5% (+/-0.9)	44
44	New Hampshire	20.1% (+/-0.7)	39
43	Wisconsin	20.3% (+/-0.9)	25
42	Idaho	20.5% (+/-0.8)	33

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Physical Inactivity.

D. DIABETES AND HYPERTENSION

Obesity and physical inactivity have been shown to be related to a range of chronic diseases, including diabetes and hypertension. Eight of the 10 states with the highest rates of diabetes are also in the top 10 states with the highest obesity rates, and nine of the 10 states with the highest rates of hypertension are also in the top 10 states with the highest rates of obesity. Diabetes rates rose in 10 states and seven states experienced an increase in diabetes rates for the second straight year. Because hypertension is only measured every two years, the rates have not changed and reflect the information from last year's report. Last year hypertension rates rose in 38 states and 15 states had an increase in hypertension rates two years in a row.

1. Diabetes

Nineteen states showed a significant increase in the rates of adult diabetes; of these, 15 states showed an increase for the second year in a row. Three states – Georgia, Kansas, and Oklahoma -- had significant increases for the third straight year. West Virginia had the highest rate of adult diabetes at 11.6 percent, while Colorado had the lowest rate at 5.5 percent. All 10 states with the highest rates of adult diabetes are in the South, and Texas replaced North Carolina in the number 10 spot this year.

States with the Highest Rates of Adult Diabetes

Rank	State	Percentage of Adult Diabetes (Based on 2006-2008 Combined Data, Including Confidence Intervals)	Obesity Ranking
1	West Virginia	11.6% (+/-0.6)	3
2	Mississippi	11.1% (+/-0.5)	1
3	Tennessee	11.0% (+/-0.7)	4
4	Alabama	10.5% (+/-0.6)	2
5	Oklahoma	10.1% (+/-0.4)	6
6	Louisiana	10.0% (+/-0.5)	8
7	Kentucky	9.9% (+/-0.5)	7
8	South Carolina	9.8% (+/-0.5)	5
9	Georgia	9.7% (+/-0.5)	14
10	Texas	9.3% (+/-0.5)	14

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Diabetes.

2. Hypertension

Last year, for the third year in a row, Mississippi led the nation with the highest rate of hypertension, at 34.5 percent, while Utah, at 20.3 percent, had the lowest rate for the third year in a row. All 10 states with the highest rates of hypertension are in the South.

States with the Highest Rates of Adult Hypertension

Rank	State	Percentage of Adult Hypertension (Based on 2003-2007 Combined Data, Including Confidence Intervals) from a Survey Conducted Every Other Year	Obesity Ranking
1	Mississippi	34.5% (+/- 0.9)	1
2	Alabama	33.5% (+/- 1.0)	2
3	West Virginia	33.2% (+/- 1.0)	3
4	Tennessee	32.1% (+/- 1.1)	4
5	Arkansas	31.5% (+/- 0.9)	10
6	South Carolina	31.3% (+/- 0.7)	5
7	Louisiana	30.9% (+/- 1.0)	8
8	Oklahoma	30.7% (+/- 0.7)	6
9	Kentucky	30.1% (+/- 0.9)	7
10	North Carolina	29.8% (+/- 0.7)	12

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Hypertension.

E. OBESITY AND POVERTY

Obesity rates also appear to have some relationship with poverty rates in many states, although there are notable exceptions. Seven of the states with the highest poverty rates are also in the top 10 states with the highest obesity rates. Nine out of the 10 states with the highest rates of poverty are in the South, where obesity rates are also higher, while many of the states with the lowest poverty rates are among the states with the lowest rates of obesity.

The U.S. Census Bureau provided the information on the three-year average poverty rates.[37]

States with the Highest Poverty Rates

Poverty Rank	State	Percentage of Poverty (Based on 2005-2007 Combined Data with a 90% Confidence Interval)	Obesity Ranking
1	Mississippi	21.1% (+/- 1.8)	1
2	District of Columbia	19.2% (+/- 1.9)	45
3	Louisiana	17.1% (+/- 1.7)	8
4	Texas	16.4% (+/- 0.8)	14
5	New Mexico	16.3% (+/- 1.8)	36
6	Kentucky	15.7% (+/- 1.6)	7
7 (tie)	Alabama	15.2% (+/- 1.5)	2
7 (tie)	West Virginia	15.2% (+/- 1.5)	3
9	Arkansas	15.1% (+/- 1.6)	10
10	Tennessee	14.8% (+/- 1.3)	4

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Poverty.

States with the Lowest Poverty Rates			
Poverty Rank	**State**	**Percentage of Poverty (Based on 2005-2007 Combined Data with a 90% Confidence Interval)**	**Obesity Ranking**
51	New Hampshire	5.6% (+/- 1.0)	39
50	New Jersey	8.1% (+/- 0.9)	42
48 (tie)	Hawaii	8.4% (+/- 1.2)	47
48 (tie)	Vermont	8.4% (+/- 1.3)	46
47	Minnesota	8.5% (+/- 1.1)	31
46	Connecticut	8.7% (+/- 1.2)	49
44 (tie)	Virginia	8.8% (+/- 0.9)	28
44 (tie)	Alaska	8.8% (+/- 1.3)	18
43	Maryland	9.0% (+/- 1.1)	25
42	Delaware	9.3% (+/- 1.3)	17

*Note: For rankings, 1 = Worst Health Outcome. 1 = Highest Rates of Poverty.

WHY NATIONAL AND STATE DATA ARE DIFFERENT: TWO DIFFERENT SURVEYS

The CDC conducts two separate information surveys about health statistics.

The **National Health and Nutrition Examination Survey (NHANES)** is designed to study national trends and data.

The **Behavioral Risk Factor Surveillance Survey (BRFSS)** studies trends and data in each state.

The two studies collect information in different ways and, therefore, have different results. The number typically cited for the national adult obesity rate is 32 percent using the NHANES data. This number is higher than the estimated percentage for many states, which use BRFSS.

NHANES is a nationally representative survey. NHANES data are collected through in-person interviews and physician examinations and obesity is calculated using these actual height and weight measurements, rather than self-reported data. Because of this, NHANES is often referred to as the "gold standard."

BRFSS is based on state rather than national representation and is a telephone survey where respondents self-report their height, weight, and other health information. According to CDC, BRFSS is the largest phone survey in the world. Because data show that women are more likely to report that they weigh less than they do while men are more likely to say that they are taller than they are, it is commonly believed that BRFSS underreports obesity.[38]

Despite these limitations, BRFSS is the best available source of data on health trends in states and local areas. This taxpayer-supported CDC program is the only source that collects state-by-state health information on a regular basis.

CDC provides BRFSS information to policymakers, including Congress and state officials, and to the public. CDC presents this information routinely through charts, its Web site, and trend maps. These data provide the opportunity to review trends and patterns. Additional information with more detail, including sample sizes, confidence intervals, limitations, and data quality, is available to the public on CDC's Web site at ftp://ftp.cdc.gov/pub/Data/Brfss/2008_Summary_Data_Quality_Report.pdf.

Why Rank States?

TFAH provides state rankings to better inform policymakers and the public about obesity trends in the United States. The information allows people to gain a better understanding of patterns in rising obesity rates. State rankings also help demonstrate the varying levels of concern and action addressing obesity in different areas of the country. Due to annual variations in the data, and based on advice from CDC officials, TFAH stabilizes the data by combining three years. This is similar to how NHANES combines three years of data to stabilize any anomalies.

Fast Facts about Obesity

The information presented in the second half of this section is intended to serve as a quick reference guide to the issue of obesity and overweight in the United States. The section contains a summary of the many factors that influence nutrition and physical activity, including those which can be shaped by changes in federal, state, and local policies. There is also information on the health impact of obesity on adults, children and adolescents; a summary of the 2008 Physical Activity Guidelines and trends in physical activity; a summary of the 2005 Dietary Guidelines for Americans and trends in Americans' eating habits; details on the economic costs of obesity; and, finally, a summary of the bias and discrimination faced by those who are overweight and/or obese. The original citation for each fact is available at the end of the report.

F. WHAT'S BEHIND THE OBESITY EPIDEMIC?

MANY ISSUES INFLUENCE NUTRITION AND PHYSICAL ACTIVITY BEHAVIORS

Food Choices and Changes

- Higher caloric intake -- Adults consumed approximately 300 more calories daily in 2002 than they did in 1985.[39]
- Higher caloric density of foods.
- Limited access to supermarkets and nutritious, fresh foods in many urban and rural neighborhoods.
- "Portion distortion," or the rise of bigger portions.
- "Value sizing" or placing a higher value on the amount of food versus the quality of food.
- Less in-home cooking and more frequent reliance on take-out food and eating in restaurants.
- The proliferation of microwaves and faster, easier to prepare foods.

Schools

- A variety of food and beverage options are available throughout the school day including soda, fruit drinks that are not 100% juice, and foods that are high in calories, fat and sodium, but low in nutritional value. These foods and beverages are available at venues such as a la carte lines, school stores, vending machines, fundraisers, and classroom parties.
- Reduction in the amount of physical education, recess, and recreation time.
- Few safe routes to school that encourage kids to walk and bike.
- Limited health education classes.
- Lack of opportunities to participate in physical activity.

Communities Design

- Communities designed to foster driving rather than walking or biking.
- Lack of public transportation options.
- No sidewalks or poor upkeep of sidewalk infrastructure.
- Walking areas often unsafe or inconvenient.
- Limited parks and recreation space, including indoor facilities.
- Poor upkeep and security in local parks.
- Lack of affordable indoor physical activity options.

Marketing and Advertising

- More advertising and marketing of unhealthy foods, particularly to kids.
- Marketing of "fad" diets.

Workplaces Not Conducive to Health

- Many desk jobs limit or discourage activity, part of the sedentary lifestyle.
- Worksites typically not designed to foster movement.
- Limited opportunities for physical activity or recreation during the work day.
- Unhealthy options in cafeterias or work lunch sites.
- Lack of bike racks and/or shower facilities discourage active transportation.

Economic Constraints

- Health insurance coverage for obesity-prevention services is often limited or not available.
- People without health insurance often do not receive either appropriate preventive services or follow-up care.
- "Value sizing" of less nutritious foods, and the higher costs of many nutritious foods.
- Expense of and taxes on gym memberships, exercise classes, equipment, facility use, and sports league fees.
- Lower-income neighborhoods have fewer and smaller grocery stores and less access to affordable fruits and vegetables.

Family and Home Influences

- Influence of other family members' habits on eating and exercise patterns.
- "Electronic culture" options for entertainment and free time, including TV, video games, and the Internet.
- More people working outside the home or far from home.

Limited Time

- Long work hours mean more meals – many of them high in calories – are eaten outside of the home.
- Car time and commuting cut into free time that could be used for physical activity.

RISK FACTORS AND OTHER ISSUES THAT AFFECT WEIGHT GAIN

Genetics, Physiology, and Life Stages

- Metabolism.
- Childbearing.
- Increased risk factors for obesity and related diseases in children with obese parents, particularly mothers.
- Aging factors, including menstruation, premenopause, and menopause for women.
- Weight-gain as a side effect from some commonly used medications such as insulin, antiretrovirals, antidepressants, oral contraceptives, and injectable contraceptives.

Psychology

- Body image concerns.
- Consumers' frustration with conflicting nutrition information and advice.
- Eating to combat stress.
- Turning to eating as a replacement for smoking or other unhealthy behaviors.

The Environment and Obesity

Recent studies show a potential link between exposure to chemicals used in plastics and childhood obesity.[40] Two separate studies of children in East Harlem and surrounding areas found that the chemical phthalates are an endocrine disruptor. Phthalates are absorbed into the body and then affect glands and hormones that regulate many bodily functions. In order to measure the amount of exposure researchers tested the levels in the children's urine, and they found that the heaviest children had the highest levels of phthalate. The study also revealed levels of phthalates significantly higher than the average levels in children across the United States.

The findings of the study do not prove that the chemicals definitively cause obesity, nor did they find a causal connection, but they do show a link between phthalates and obesity. This link points to the importance of understanding and investigating how environmental factors can affect health.

G. OBESITY'S IMPACT ON HEALTH

HEALTH IMPACT OF OBESITY AND PHYSICAL INACTIVITY

Below are some key findings based on a range of research into the health impact of obesity. Physical activity has been shown to have a role in reversing or preventing many of these health problems.

Type 2 Diabetes

- Over the past 10 years, the number of newly diagnosed diabetes cases in the United States nearly doubled from 4.8 per 1,000 in 1995-1997 to 9.1 per 1,000 in 2005-2007.[41]
- More than 80 percent of people with type 2 diabetes are overweight.[42]
- More than 20 million adult Americans have diabetes.[43]
- Another 57 million Americans are pre-diabetic, which means they have prolonged or uncontrolled elevated blood sugar levels that can contribute to the development of diabetes.[44]
- Diabetes is the seventh leading cause of death in the U.S. and accounts for 11 percent of all U.S. health care costs.[45]
- CDC projects that 48.3 million Americans will have diabetes by 2050.[46]
- Approximately 176,500 individuals under the age of 20 have diabetes.[47]
- Two million adolescents aged 12-19 have pre-diabetes.[48]
- The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) found that a seven 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.[49]

THE EMERGING TREND OF TYPE 2 DIABETES IN CHILDREN

Type 2 diabetes is a chronic disease that accounts "for about 90 to 95 percent of all diagnosed cases of diabetes. It usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its ability to produce it."[50]

The American Diabetes Association describes type 2 diabetes as a "new epidemic" among American children.[51] Traditionally a disease of mature adults, type 2 diabetes now accounts for eight to 45 percent of new pediatric diabetes cases, depending on geographic location.[52] Although there are a number of genetic risk factors, obesity is largely driving the increase in type 2 diabetes among children. The problem is especially severe among children and youth of African, Hispanic, Asian, or American-Indian ancestry.[53]

In 2000, Search for Diabetes in Youth, a five-year, $22 million research project funded by CDC and the NIDDK, was launched to identify the number of children under age 20 with diabetes by type, age, sex, and race or ethnicity. Search's other primary research goals included: assessing how type 1 and type 2 diabetes differ in children; learning about the possible long-term health complications of diabetes in children and adolescents; investigating how children are being treated for diabetes; and determining the quality of life of diabetic children and adolescents.[54]

Initial results from the study show that while type 1 diabetes remains the most common form of diabetes among children and adolescents, type 2 diabetes becomes more common after the age of 10, with minority children more affected than non-Hispanic white children.[55] A phase II study is underway and will wrap up in 2009.

According to Francine Ratner Kaufman, former president of the American Diabetes Association, "there is no doubt that the emergence of this epidemic in children and young adults is a major public health problem."[56] The Association calls on schools and communities to take an active role in the prevention of type 2 diabetes in children by encouraging physical activity and improving eating habits.

Heart Disease and Stroke

- People who are overweight are more likely to suffer from high blood pressure, high levels of blood fats, and LDL, or bad cholesterol, which are all risk factors for heart disease and stroke.[57]
- Physically inactive people are twice as likely to develop coronary heart disease as regularly active people.[58]
- Heart disease is the leading cause of death in the United States, and stroke is the third leading cause.[59]
- One in four Americans has some form of cardiovascular disease.[60]
- Heart disease can lead to a heart attack, congestive heart failure, sudden cardiac death, angina (chest pain), or abnormal heart rhythm.[61]
- A stroke limits blood and oxygen to the brain and can cause paralysis or death.[62]
- One in three adults has high blood pressure. Roughly 30 percent of cases of hypertension may be attributable to obesity, and in men under 45 years of age, the figure may be as high as 60 percent.[63]

Cancer

- People who are overweight "may increase the risk of developing several types of cancer, including cancers of the colon, esophagus, and kidney. Overweight is also linked with uterine and postmenopausal breast cancer in women."[64]
- Approximately 20 percent of cancer in women and 15 percent of cancer in men is attributable to obesity.[65]
- Cancer is the second leading cause of death in the United States.[66]
- It is unknown why being overweight can increase cancer risk. One theory is that fat cells may affect overall cell growth in a person's body.[67]

Neurological and Psychiatric Diseases

- Obesity may increase adults' risk for having 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 later develop Alzheimer's disease than those adults who had a normal weight at enrollment.[68]
- An analysis of data from a health survey of more than 40,000 Americans found a correlation between depression and obesity. According to the results, obese adults were more likely to suffer from depression, anxiety and other mental health conditions than normal-weight adults.[69] The odds of suffering from any mood disorder rose by 56 percent among obese individuals ($30 \leq BMI \leq 39.9$) and doubled among the extremely obese ($BMI \geq 40$).[70]

Kidney Disease

- Obese individuals (BMI ≥ 31) are 83 percent more likely to develop kidney disease than normal weight individuals (18.5<BMI<25), while overweight individuals (25< BMI≤30) are 40 percent more likely to develop kidney disease.[71]
- 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.[72]

Arthritis

- Obesity is a known risk factor for the development and progression of osteoarthritis of the knee and possibly of other joints. For example, obese adults are up to four times more likely to develop osteoarthritis of the knee than normal-weight adults.[73]
- Among individuals who have received a doctor's diagnosis of arthritis, 68.8 percent are overweight or obese.[74]
- For every pound of body weight lost, there is a four percent reduction in knee joint stress among overweight and obese people with osteoarthritis of the knee.[75]

Obesity and Children's Health

- Nearly 32 percent of U.S. children and adolescents are overweight or obese (at or above the 85th percentile of BMI for age).[76]
- Approximately 60 percent of obese children aged five to 10 years had at least one cardiovascular disease (CVD) risk factor -- such as elevated total cholesterol, triglycerides, insulin, or blood pressure -- and 25 percent had two or more CVD risk factors.[77]
- The American Academy of Pediatrics issued new guidelines in July 2008 recommending cholesterol screening of children as young as age two and adolescents with a family history of high cholesterol or heart disease. The new guidelines also recommend screening children whose family history is unknown or those who have other factors for heart disease including obesity, high blood pressure, or diabetes.[78]
- Childhood weight problems can lead to complications such as elevated blood pressure and cholesterol, joint problems, type 2 diabetes, gallbladder disease, asthma, depression, and anxiety.[79]
- Severely overweight and obese children often suffer from depression, anxiety disorders, isolation from their peers, low self-esteem, and eating disorders.[80]
- The number of fat cells a person has is determined by late adolescence; although overweight and obese children can lose weight they do not lose the extra fat cells.[81]
- Young girls who are overweight and/or obese suffer a variety of significant health consequences, including menstrual disturbances, such as early onset menstruation, and are more likely to suffer from polycystic ovary syndrome (PCOS).[82]
- Researchers calculated that a ban on fast-food advertising during children's television programming could reduce by 18 percent the number of overweight children ages three to 11 and could reduce by 14 percent the number of overweight children ages 12 to 18.[83]

Obesity and Pregnancy

- There is a growing body of evidence documenting the links between maternal health conditions, such as obesity and chronic diseases, and increased risks before, during and after birth.[84]
- 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, in 2002 approximately 50 percent of women of child-bearing age (between 18 and 44) were either overweight or obese; three percent experienced high blood pressure and nine percent had diabetes.[85]
- Teenage mothers who are obese before pregnancy are four times more likely than their normal-weight counterparts to develop gestational diabetes -- a form of diabetes that arises during pregnancy and raises a woman's risk of developing type 2 diabetes later on.[86]
- CDC and 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.[87] 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 normal-weight women.[88]

MENTAL HEALTH, STRESS AND OBESITY

Adults

There is growing evidence documenting the association between obesity and poor mental health. Researchers in the Adult and Community Health division of CDC analyzed 2006 BRFSS data and found that depression and anxiety are associated with obesity.[89] Adults currently or previously diagnosed with depression were 60 percent more likely to be obese, and those with anxiety disorders were 30 percent more likely to be obese than their non-depressed counterparts.[90] Adults with depression or anxiety were also less likely to engage in regular physical activity.[91]

A separate study analyzing data from more than 41,000 Americans who participated in the National Epidemiologic Survey on Alcohol and Related Conditions found that adults with high BMI ($BMI \geq 30$) were more likely to suffer from mood, anxiety, and personality disorders than people of normal weight ($18.5 \leq BMI < 25$) .[92] Even individuals in the moderately overweight category ($25 \leq BMI < 30$) were at an elevated risk of anxiety disorders compared with those of normal weight.[93]

The significant associations between obesity and poor mental health have led CDC researchers to "suggest that public health interventions should address mental and physical health as a combined entity and that programs to simultaneously improve people's mental and physical health should be developed and implemented."[94]

Adolescents

The National Alliance to Advance Adolescent Health analyzed the 2007 YRBSS and found that compared with normal-weight students, obese students are 32 percent more likely to have actually attempted suicide, to have seriously considered suicide, or to have made a plan to attempt suicide. Obese students, compared with those of normal weight, are 20 percent more likely to have persistent feelings of hopelessness.[95]

In addition, according to the 2003 National Survey of Children's Health, overweight adolescents, when compared with those who were not overweight, had significantly higher odds of having parent-reported mental health or behavior problems:[96]

- 60 percent higher odds of having diagnosed anxiety or depression;
- 40 percent higher odds of having feelings of worthlessness;
- 40 percent higher odds of parental concerns about their children's self-esteem;
- 70 percent higher odds of being told by a doctor that they have behavior problems;
- 30 percent higher odds of being withdrawn; and
- 40 percent higher odds of bullying others.

The study concludes that mental health problems must be considered in any strategies to address youths who may be obese, and that understanding cultural differences among racial and ethnic groups must be factored in to public health decisions.[97]

Stress and Obesity

A 2007 study found a direct connection between stress and obesity. Scientists performing studies on mice found a chain of molecular events that link chronic stress with obesity. The study found that when stressed and non-stressed mice were fed the same, high-calorie diet, the stressed mice gained twice as much fat.[98] According to the study, the long-term combination of stress and a high-fat/high-sugar diet will lead to obesity and metabolic syndrome symptoms such as hypertension and glucose intolerance.[99] In addition to the traditional methods of weight loss, researchers suggested also including stress-reduction therapy and a neuropeptide Y receptor inhibitor to induce fat "melting."[100]

BINGE EATING DISORDER AND OBESITY

Binge eating disorder is a classified psychiatric disorder that affects more than seven million adults in the United States.[101] Binge eating is a compulsive pattern of regular bingeing of unusually large amounts of food and complete loss of control over one's eating patterns.[102] While only one to three percent of the general population is affected by binge eating disorder, a much higher prevalence, 25 percent or more, has been reported by patients who are obese or seeking help for weight loss.[103] Because long-term weight management is more likely in an individual who is able to control eating patterns, physicians treating obese patients need to address the behavioral and psychological components of binge eating disorders.[104]

H. OBESITY AND PHYSICAL INACTIVITY

U.S. GUIDELINES FOR PHYSICAL ACTIVITY

2008 Physical Activity Guidelines for Americans[105]

Adults

- The 2008 Physical Activity Guidelines for Americans recommend adults engage in a minimum of two-and-a-half hours each week of moderate-intensity exercise or one-hour-and-15 minutes 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 to should get at least two-and-a-half hours of moderate aerobic activity per week, or one-hour-and-15 minutes 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.
- Adults with disabilities who are not able to meet the 2008 Physical Activity Guidelines for Americans, should engage in regular physical activity according to their abilities and should avoid inactivity.

People 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 do 60 minutes (one hour) or more of physical activity daily.
  - Aerobic: Most of the 60 or more minutes a day should be 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: As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least three days of the week. Examples include rope climbing, sit-ups, and tug-of war.
  - Bone-strengthening: As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least three days of the week. Examples include jumping rope, running, and skipping.
- It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety.

TRENDS IN PHYSICAL ACTIVITY

Adults

- The World Health Organization estimates that 1.9 million deaths worldwide are attributable to physical inactivity. Chronic diseases associated with physical inactivity include cancer, diabetes, and coronary heart disease.[106]
- Currently, more than 22 percent of adult Americans say they do not engage in any physical activity.[107]
- More than half of adults report they do not participate in CDC's recommended level of physical activity, which includes either 30 minutes or more of moderate physical activity five or more days per week, or 20 minutes or more of vigorous physical activity for three or more days per week.[108] The minimum level of recommended activity is equivalent to walking two miles at a pace of three to four miles per hour.[109]
- Sixty percent of adults are not sufficiently active to achieve health benefits.[110]
- Physical inactivity accounts for about 16 percent of all deaths in both women and men.[111]
- Health care costs for sedentary patients compared with physically active patients are $1,500 more per year.[112]
- Studies suggest that moderate to high levels of physical activity substantially reduce, or even eliminate, the mortality risk of obesity.[113]
- Studies have shown that individuals who are obese and physically fit have a lower risk of dying than individuals who are normal weight but who are unfit.[114]
- Participating in leisure time physical activity declines as age increases.[115]
- Women are less likely to engage in moderate or vigorous physical activity.[116]
- African American and Hispanic adults are less likely to be physically active than white adults.[117]
- The Surgeon General advises that to be beneficial, physical activity can be continuous or intermittent, should be moderately or vigorously intense, and can be acquired through leisure-time exercise or through everyday activities such as cleaning the house or raking the lawn.[118]

Youth

- Current physical activity guidelines for children and adolescents recommend engaging in 60 minutes or more of moderate to vigorous physical activity per day; however, studies show that most youth do not meet that standard.[119]
- At age nine, children engaged in moderate-to-vigorous physical activity (MVPA) approximately three hours per day on both weekends and weekdays, according to a July 2008 study published in the Journal of the American Medical Association. However, by age 15, adolescents were only engaging in MVPA for 49 minutes per weekday and 35 minutes per weekend day.[120]
- Nationwide, only 35 percent of high school students met the recommended levels of physical activity, according to the 2007 YRBSS. The recommended levels include any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes per day on five or more days during the past seven days before the survey.[121]
  - ▲ Sixty-five percent of high school students did not meet the recommended levels of physical activity during five of the previous seven days, according to the 2007 YRBSS.
- Furthermore, nearly 25 percent of high school students did not participate in 60 or more minutes of any kind of physical activity that increased their heart rate and made them breathe hard some of the time **on any day during the seven days before the survey**.[122]
- Only 54 percent of high school students had physical education class at least once a week; only 30 percent had daily physical education, according to the 2007 YRBSS.[123]
- Nearly 25 percent of high school students played video or computer games or used a computer for something other than school work for three or more hours per day on an average school day, according to the 2007 YRBSS.[124]
- Thirty-five percent of high school students watched television three or more hours on an average school day, according to the 2007 YRBSS.[125]
- A review of 26 published studies on school-based physical activity interventions suggest that these programs are effective in increasing the duration of physical activity, reducing blood cholesterol and time spent watching television, and increasing physical fitness levels.[126]

THE IMPACT OF THE BUILT ENVIRONMENT ON NUTRITION AND PHYSICAL ACTIVITY

Nutrition

- A 2003 study showed a direct relationship between living near at least one supermarket and meeting the U.S. Dietary Guidelines for fruit and vegetable intake. The presence of each additional supermarket was related to a 32 percent increase in fruit and vegetable consumption among African Americans and an 11 percent increase among white Americans.[127]
- Residents of rural, low-income, and minority communities are most affected by poor access to supermarkets, chain grocery stores, and healthful food products.[128]
- A fast-food restaurant within 500 feet of a school may lead to at least a five percent increase in the obesity rate at that school, according to a 2009 study by economists at Columbia University and the University of California, Berkeley.[129]
  - ▲ The study also found that pregnant women who lived within a tenth of a mile of a fast-food restaurant had a 4.4 percent increase in the probability of gaining more than 44 pounds.
- A separate study published in 2009 determined that students are more likely to be overweight or obese if their school is located within one half-mile of a fast-food restaurant.[130]

Physical Activity

- Children and youth living in neighborhoods with more green space, such as parks, playing fields, trails, and school yards, were less likely to be overweight than their counterparts in less-green neighborhoods.[131]
- Children who live near parks and recreation areas are more active, according to a Canadian study of children ages eight to 10. For every additional park located within half a mile of their home, the likelihood of walking to school more than doubled among girls and leisure walking by boys increased by 60 percent.[132]

"EXERCISE IS MEDICINE" INITIATIVE

> ". . . (M)ORE AND MORE AMERICANS WILL HEAR FROM A VOICE THEY TRUST THAT EXERCISE IS IMPORTANT, EXERCISE IS MEDICINE. INDEED, EXERCISE IS NOT AN OPTION, BUT A NECESSARY, ACTIVE, DIRECT WAY THAT PEOPLE CAN MAINTAIN GOOD HEALTH, AVOID ILLNESS, IMPROVE THE QUALITY OF THEIR LIVES, REDUCE THEIR HEALTH CARE COSTS AND EXTEND THEIR LIFE EXPECTANCY."
>
> — RONALD DAVIS, M.D., PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION[133]

In November 2007, the American College of Sports Medicine and the American Medical Association came together in an effort to increase physical activity among Americans. The initiative, known as "Exercise is Medicine", is centered on the theory of including exercise and physical activity as a prescription from physician to patient. Exercise and physical activity are considered integral parts of an overall health plan, and are key components of a health plan designed to prevent chronic diseases and improve quality of life.

A few goals of the initiative include:

- Increase research and studies dedicated to examining the effects of fitness and physical activity on health;
- Create a system whereby physicians are able to refer patients to a "fitness specialist" and get reimbursed for their services; and
- Educate physicians of all specialties about screening patients for fitness and physical activity levels.

I. NUTRITION: THE OTHER SIDE OF THE ENERGY BALANCE

2005 DIETARY NUTRITION GUIDELINES FOR AMERICANS[134]

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.
- Eat more dark green vegetables, orange vegetables, legumes, fruits, whole grains, and low-fat milk and milk products.
- Eat less refined grains, total fats, sodium, added sugars, and calories.

Specific Recommendations for Adults

- Consume two cups of fruit and two-and-a-half cups of vegetables per day for a 2,000-calorie intake.
- 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.

Specific Recommendations for Children and Adolescents

- At least half of grains consumed should be whole-grain. Children ages two to eight should consume two cups per day of fat-free or low-fat milk or milk products and children age nine and older should drink three cups per day.
- Increase dietary intake of calcium, potassium, fiber, magnesium, and vitamin E.

AMERICANS' UNHEALTHY EATING HABITS

Obesity is the result of a chronic energy imbalance: people who suffer from overweight and obesity consume more calories than they burn off in physical activity. Efforts to encourage people to change eating habits, however, are as complex as trying to motivate people to be more physically active.

Healthy nutrition, as with physical activity, has a positive effect on people's health no matter how much they weigh. According to an article published by the National Institute for Health Care Management, "for most Americans, a healthy diet means: smaller portions (fewer calories, minimal saturated and 'trans' fats, few sweets and low fiber carbohydrates (think desserts and sodas), and more fruits and vegetables."[135]

Instead, 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.[136]

Some changes to the eating habits of Americans over the past few decades include:

More calories

- Adults consumed approximately 300 more calories daily in 2002 than they did in 1985.[137]
- Women ages 20-74 consumed nearly 22 percent more calories in 1999-2000 than they did in 1971-74; men consumed nearly seven percent more calories.[138]
- Adolescent females ages 12-15 consumed approximately four percent more calories in 1999-2000 than they did in 1971-74; those ages 6-19 consumed approximately 15 percent more.[139]

Bigger portion sizes

- A study in the *Journal of the American Medical Association* examined the rise in portion sizes. From 1977 to 1998, portion sizes for selected popular food items and overall energy intake increased for foods purchased in restaurants or fast food establishments and for foods prepared in the home. The increase ranged from 49 to 133 calories for all selected popular food, such as salty snacks, hamburgers, soft drinks, French fries, and Mexican food.[140]

Fewer fruits, vegetables, and whole grains

- Consumption of fruits and vegetables in the United States increased by 19 percent from 1970 to 2005; however, Americans still are not meeting the Dietary Guidelines' recommendations of two cups of fruit and 2.5 cups of vegetables per day.[141]
- A 2003 USDA report examining Americans' food consumption patterns described America's per capita fruit consumption as "woefully low" and limited to a small range of fruit options, and stated that vegetable consumption "tells the same story."[142]
- Americans are eating more than double the recommended amount of refined grains per day while eating a third of the recommended amount of whole grains.[143]

More sugar

- "Added sugar" consumption is nearly three times the USDA recommended intake.[144]
- Average consumption of added sugars increased 22 percent from the early 1980s to 2000.[145]
- Children who reduced sugar by the equivalent of one can of soda per day had improved glucose and insulin levels. This means that by eliminating one can of soda per day, parents can reduce the risk of type 2 diabetes in their children, regardless of any other diet or exercise changes.[146]

More dietary fat

- Americans consumed an average of 600 calories worth of added fats per person per day in 2000.[147]

A drop in drinking milk and a large increase in drinking soda and fruit juice

- Milk consumption dropped 39 percent from 1977 to 2001 for children ages six to 11, while consumption of soda rose 137 percent, fruit juice rose 54 percent, and fruit drinks rose 69 percent.[148,149]

A major increase in eating out

- Meals and snacks consumed at restaurants accounted for nearly half of all U.S. food expenditures in 2008 and U.S. restaurant industry sales are expected to reach $566 billion in 2009.[150] In 1975, approximately 25 percent of food spending was in restaurants.[151]
- In 2004, 63 percent of children ages one to 12 ate out at a restaurant one to three times per week.[152]

PORTION DISTORTION

20 YEARS AGO	TODAY
Coffee with whole milk and sugar 8-ounce serving size 45 calories	Mocha with steamed milk and syrup 16-ounce serving size 350 calories
Difference: 305 calories	
Muffin 1.5 ounce serving size 210 calories	Muffin 4 ounce serving size 500 calories
Difference: 290 calories	
Pepperoni Pizza 2 slices 500 calories	Pepperoni Pizza 2 slices 850 calories
Difference: 350 calories	
Chicken Caesar Salad 1 1/2 cup serving size 390 calories	Chicken Caesar Salad 3 1/2 cup serving size 790 calories
Difference: 400 Calories	
Popcorn 5-cup serving size 270 calories	Popcorn 11-cup serving size 630 calories
Difference: 360 Calories	
Chicken stir fry 2-cup serving size 435 calories	Chicken stir fry 4 1/2 cup serving size 865 calories
Difference: 430 Calories	

Source: National Heart, Lung, and Blood Institute Obesity Initiative, Portion Distortion II Interactive Quiz. Accessed at: http://hp2010.nhlbihin.net/portion/index.htm. Also see Young, L.R. and M. Nestle. "The Contribution of Expanding Portion Sizes to the U.S. Obesity Epidemic." American Journal of Public Health *92, no. 2 (2002): 246-249.*

WHY WE OVEREAT

David Kessler, the former commissioner of the U.S. Food and Drug Administration (FDA), recently released a book, *The End of Overeating: Taking Control of the Insatiable American Appetite*, in which he discusses why people are unable to resist certain foods.[153] After much research and investigation, Kessler not only found that foods high in fat, salt, and sugar alter the brain's chemistry, but also that many menu items at a national chain restaurant contain huge amounts of these ingredients, which do not satisfy hunger, but rather stimulate the brain to crave more.

Foods containing fat, sugar, and salt stimulate the brain to release dopamine -- which is associated with the part of the brain that controls pleasure. After enough exposure to foods high in the above-mentioned ingredients, the pathways of the brain are triggered to crave the dopamine release even before consumption of food, but rather at the mere mention or suggestion of the food -- such as seeing an advertisement or driving by a store. After an individual eats the food the brain releases opioids, which bring emotional relief -- and completes the cycle of eating -- regardless of whether or not the individual was hungry in the first place.

Kessler suggests that in order to stop the cycle of overeating people must rewire their brain's response to food, and that can only be done by shifting the way the country looks at foods high in fat, salt, and sugar -- similar to how we've changed our view of cigarettes over time, from appealing to unappealing.

J. ECONOMIC COSTS OF OBESITY

HEALTH CARE COSTS

- Obesity costs the nation $75 billion in direct costs each year, while the total cost of obesity, including indirect costs, is as high as $139 billion per year.[154]
  - ▲ Indirect costs often fall most heavily on employers in the form of increased absenteeism, disability, presenteeism (when employees come to work in spite of illness, which can have similar negative repercussions on business performance), and workers' compensation.[155]
- Obesity-related annual costs for treating children more than tripled between 1979 and 1999.[156]
- Projections for health care costs attributable to obesity and overweight are that they will more than double every decade. By 2030, according to one study, health care costs attributable to obesity and overweight could range from $860 billion to $956 billion, which would account for 15.8 to 17.6 percent of total health care costs, or one in every six dollars spent on health care.[157]
- A 2008 study reported that obese employees cost private employers approximately $45 billion a year as a result of medical expenses and excessive absenteeism.[158]
- Obese people pay 36 percent more for health care and 77 percent more for medication when compared with normal-weight people. These increases are higher than the costs associated with smoking or drinking.[159]

Lower worker productivity and increased absenteeism

- Researchers found that obese workers had 183.63 lost workdays per 100 full-time employees, compared with normal-weight workers, who had 14.19 lost workdays per 100 full-time employees.[160]
- As a person's BMI increases, so do the number of sick days, medical claims and health care costs.[161]
- A 2004 study concluded that excessive weight and physical inactivity negatively impact the quality of work performed, the quantity of work performed and overall job performance among obese, sedentary individuals.[162]
- Higher health care costs for obese and sedentary workers signal poorer overall health among these individuals. And given poorer health, lower worker productivity and increased absenteeism are more likely among obese and physically inactive employees.

Higher workers' compensation claims

- Several studies have shown obese workers have higher workers' compensation claims.[163, 164, 165, 166, 167, 168]
- The cost of workers' compensation claims by obese employees were also significantly higher. Obese employees had $51,091 in medical claims costs per 100 full-time employees, compared with only $7,503 in medical claims costs for normal 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 normal weight employees.[169]

Occupational health and safety costs

- The number of severely obese (BMI ≥ 40) patients quadrupled between 1986 and 2000 from one in 200 to one in 50. The number of super-obese (BMI ≥ 50) patients grew by a factor of five, from one in 2,000 to one in 400.[170] Emergency responders and health care providers face unique challenges in transporting and treating the heaviest patients.
- 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.[171]
- 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.[172]
- Nearly one in two emergency medical technicians sustained a back injury while performing EMS duties. Most blamed lifting extremely obese patients.[173]

K. WEIGHT BIAS AND QUALITY OF LIFE

HEALTH CARE COSTS

A number of studies have reported an association between overweight and obesity and poorer quality of life. According to a Yale University study, weight discrimination was reported by seven percent of adults in 1995-1996, while that percentage rose to 12 percent in 2004-2006.[174] Research has shown weight-based discrimination against people with obesity in several areas, including in the hiring process, in the workplace, among medical professionals, and in educational institutions.

Weight bias in employment

- 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.[175]
- Compared with job applicants with the same qualifications, obese applicants are rated more negatively and are less likely to be hired.[176]
- Overweight people earn one to six percent less than non-overweight people in comparable positions.[177]

Weight bias in health care

- Self-report studies show that doctors view obese patients as lazy, lacking in self-control, non-compliant, unintelligent, weak-willed, and dishonest.[178]
- Sixty-nine percent of overweight people report having been stigmatized by doctors.[179]

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. They also have lower expectations for overweight students.[180,181]
- Obese students are significantly less likely to be accepted to college despite comparable academic records.[182]

Physical and emotional consequences of weight bias

- Research shows that obese youth who are victimized by peers because of their weight are more likely to have suicidal thoughts and engage in suicidal behaviors.[183]
- Overweight young people who are targets of weight-based teasing are more likely to engage in unhealthy weight control and binge eating, and they are less likely to participate in physical activity.[184]
- In a study of more than 2,400 overweight and obese adults, 79 percent reported that they coped with weight bias by eating more.[185]
- Overweight and obese adults are more likely to avoid, cancel, or put off important health appointments.[186,187,188]
- Obese people report significantly greater disability due to body pain than patients with other chronic medical conditions, with the exception of migraine sufferers.[189]
- One study found that obese children were 5.5 times more likely to have a poor quality of life than their healthy counterparts. Severely obese children even had a slightly lower quality of life than children undergoing chemotherapy.[190]

SECTION 2

State Responsibilities and Policies

In this section, TFAH examines trends in state legislative actions and policies aimed at controlling the obesity problem. This overview is intended to help inform and begin an evaluation of whether these efforts are having a positive impact.

Each state identifies goals and strategies for improving the health of its citizens. States are undertaking a wide range of efforts to address the obesity crisis. Since 2003, TFAH has been reviewing these state policies. For this year's report, TFAH produced a supplement to *F as in Fat: How Obesity Policies Are Failing in America* entitled, *Obesity-Related Legislative Action in States*, which provides greater detail about specific legislation. The supplement is available on TFAH's web site, www.healthyamericans.org.

This section provides an overview and update to previous years' analyses and includes:

A. State Obesity-Related Legislation;

B. State Obesity Plans; and

C. State and Community Success Stories.

A. STATE OBESITY-RELATED LEGISLATION

Since 2003, TFAH has tracked state obesity-related legislation in the following categories: nutrition, physical education, physical activity, and height and weight measurements in schools; tax policies; and litigation. This section provides an updated summary of state obesity-related legislation enacted between June 1, 2008 and July 1, 2009. This year, we have also expanded the categories of laws that we track to include farm-to-school programs, menu labeling, and complete streets legislation.

1) OBESITY-RELATED LEGISLATION FOR HEALTHY SCHOOLS

School-based programs have been shown to yield positive results in preventing and reducing obesity.[191] Children spend large amounts of time at school and in before- and after-school programs, often consuming as many as two meals and snacks in these settings.

The more than 14,000 school districts in the United States have primary jurisdiction for setting local school policies. States can establish policies or pass legislation that affect schools, but the school districts typically have discretion in deciding if they will follow them, a principle known as local control. States often try to create incentives for following policies, such as attaching compliance rules to state funding.

School-based efforts have focused on improving the quality of food sold in schools, limiting sales of less nutritious foods, improving physical education and health education, and encouraging increased physical activity either within the school day or through extracurricular activities. A new trend has been the development of farm-to-school programs that bring fresh, local produce into schools, both encouraging healthy eating and sustainable farming.

OBESITY RELATED STANDARDS IN SCHOOLS -- 2009

	Nutritional Standards for School Meals	Nutritional Standards for Competitive Foods	Limited Access to Competitive Foods	Physical Education Requirements	BMI or Health Information Collected	Non-Invasive Screening for Diabetes	Health Education Requirements	Farm-to-School Program
Alabama	✓	✓	✓	✓			✓	
Alaska				✓			✓	
Arizona	✓	✓	✓	✓			✓	
Arkansas	✓	✓	✓	✓	✓		✓	
California	✓	✓	✓	✓	✓	✓	✓	✓
Colorado	✓	✓	✓	✓				✓
Connecticut	✓	✓	✓	✓			✓	✓
Delaware				✓	✓		✓	
D.C.				✓			✓	
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	**19**	**27**	**29**	**50 + D.C.**	**20**	**2**	**48 + D.C.**	**19**

Please Note: Checkmarks in chart above that are in red type represent new laws passed in 2008 or 2009.

SCHOOL MEALS AND SNACKS

Nineteen states set nutritional standards for school lunches, breakfasts, and snacks that are stricter than existing USDA requirements: Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Kentucky, Massachusetts, Mississippi, Nevada, New Jersey, North Carolina, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, and Vermont.

However, a 2008 analysis by TFAH and the George Washington University School of Public Health and Health Services found that only seven states have specific enforceability language: Alabama, Arkansas, Connecticut, Kentucky, Nevada, Oregon, and Texas. Of these seven, only Kentucky and Texas law includes provisions for sanctions or penalties for noncompliance.[192]

States that implemented new regulations between June 1, 2008 and July 1, 2009, include:

- **Massachusetts** declared that $150,000 shall be expended for the Childhood Obesity School Nutrition Project within the Department of Education to initiate or maintain school lunch programs focused on diminishing the epidemic of childhood obesity. Also, food service providers working with public schools wishing to institute or maintain a school nutrition program designed to reduce childhood obesity are encouraged to submit an application to the department indicating the various nutritional and educational steps the school plans to implement with the grant (HB 4900, 2008).

Five years ago only four states had legislation that set nutritional standards for school lunches, breakfasts, and snacks that are stricter than existing USDA requirements: Arkansas, South Dakota, Tennessee, and Texas.

SCHOOL MEAL NUTRITION GUIDELINES

Federal school meal nutrition standards do not reflect current nutrition science and are unlikely to be updated for about two years. Since 1994, the Richard Russell National School Lunch Act has required that school lunches meet the Dietary Guidelines for Americans. In 2004, the Child Nutrition and WIC Reauthorization Act of 2004 (P.L. 108-265) required the U.S. Secretary of Agriculture to issue school nutrition guidelines that would ensure that American schoolchildren consume foods recommended in the most recent Dietary Guidelines. However, **USDA has issued no proposed regulations in the four years since the release of the 2005 Dietary Guidelines.**[193] Instead, after deliberating internally for those years, USDA was unable to come to a consensus and contracted with the Institute of Medicine (IOM) to convene a panel of experts on child nutrition. In late 2009, the IOM Committee on Nutrition Standards for School Lunch and Breakfast Programs is expected to provide USDA with recommendations for updating the school meal programs' nutrition requirements. Once USDA receives the IOM recommendations, agency officials will then seek to incorporate them into formal USDA guidance, which is expected to be issued some time in 2010. A final rule will take longer to be issued. This turn of events effectively postpones the update of school meal nutrition standards by five years beyond when they were due. Given the fact that school meal nutrition standards lack standards for sodium, trans fat, and whole grains, and that the fruit and vegetable content is too low, this delay is of considerable public health concern.

In the meantime, USDA is encouraging states to begin implementing the 2005 Dietary Guidelines within school meal programs by:[194]

- Increasing the amount and variety of whole-grain products;
- Increasing the availability of fruits and vegetables and ensuring that school meals offer both a fruit and a vegetable;
- Offering only skim or one percent low-fat milk in schools;
- Reducing sodium content in all meals;
- Providing fiber at levels that meet the Dietary Guidelines;
- Cutting cholesterol levels in meals so that over a week, students consume less than 100 mg of cholesterol at lunch and less than 75 mg at breakfast; and
- Minimizing the use of trans fats.

Until USDA releases new guidelines incorporating the Dietary Guidelines into school lunch menu planning, states are relying on the School Meals Initiative for Healthy Children (SMI), which requires schools to offer meals that provide no more than 30 percent of total calories from fat and less than 10 percent from saturated fat. The SMI also requires school lunches to provide adequate levels of certain nutrients.

In 2007, USDA published findings from its third School Nutrition Dietary Assessment Study (SNDA-III).[195] SNDA-III is based on data collected in the spring semester of the 2004-2005 school year and provides a snapshot of the school lunch and breakfast programs. At the time, states primarily were using the SMI to guide meal planning, although in the years since, many state agencies and schools have established nutrition policies that exceed SMI guidelines as they seek to address concerns about the childhood obesity epidemic. SNDA-III found:

- More than two-thirds of school lunch programs offered and served lunches that met SMI standards for protein, vitamins, and minerals, while only 20 percent of schools offered and served lunches that met SMI standards for fat.
- Ninety-three percent of elementary schools and 86 percent of secondary schools offered students the choice of a low-fat lunch.
- More than half of the schools (58 percent) offered students some type of fresh fruit and/or raw vegetable every day.
- Eighty-three percent of schools offered low-fat, one percent milk.
- Less than one-third of schools (30 percent) used nutrient-based standards for school meals, a system that ensures meals meet age- and grade-appropriate nutrition standards.

THE SCHOOL BREAKFAST PROGRAM

Research shows that breakfast is an integral part of a child's day and kids who eat breakfast at school score better on standardized tests, have fewer health issues, and behave better in class.[196] Eating a healthy breakfast helps kids maintain a healthy weight while providing important nutrients.

The School Breakfast Program serves over 10 million children each day, and more than 1.7 billion meals annually, yet many eligible children do not participate. For instance, approximately one in three school-aged children in Pennsylvania are eligible, but less than 30 percent of those eligible take advantage of the program.[197] Gerald L. Zahorchak, the Education Secretary in Pennsylvania, hopes to increase participation by emphasizing the importance and utility of the program, and says, "Children who start the day with a healthy breakfast are more likely to be alert and ready to learn. Especially during difficult economic times, we encourage all schools to participate in the School Breakfast Program and give their students a healthy start to the school day."[198]

To encourage more children to participate in the School Breakfast Program, some cities and states are introducing "Breakfast in the Classroom" programs.

Breakfast in the Classroom is a universal breakfast program for all children, which is given as part of their first period of instruction, rather than before school starts. In the traditional School Breakfast Program, children receiving the free or reduced-price breakfast often must arrive to school early and eat the breakfast in a separate room -- increasing stigma and reducing participation in the program. Providing breakfast for all students, not just those who qualify based on parental income, increases overall participation.[199]

- **District of Columbia:** Although all schools in the DCPS system now offer universal breakfast, prior to the 2008-2009 school year, no school had implemented Breakfast in the Classroom.[200] Starting in January 2009, all D.C. public elementary schools began the program.[201] Breakfast is delivered to the classroom, and the students have the first 15 minutes to eat while they prepare for the day.[202] At J.C. Nalle, one of the participating elementary schools, Breakfast in the Classroom has almost doubled the number of students eating breakfast at school.[203] Prior to breakfast in the classroom, about 170-180 of the 380 students were reached through the breakfast program, but now more than 300 students are participating daily.[204] Teachers, principals, and students are already providing positive feedback about the new program. A third-grade teacher at J.C. Nalle said, "When students eat breakfast, they're more alert. Their minds don't wander, and they're more 'here.' We get more work done because the kids don't get hungry. I have more of my kids coming on time, too. I've already seen Breakfast in the Classroom cut down on absenteeism and tardiness."[205]
- **New York City:** In late 2008, Mayor Michael Bloomberg announced an initiative to expand the in-classroom breakfast program in the city.[206] Before the initiative, only 50 schools in New York City served breakfast in the first period. The initiative, led by the Department of Education, is expanding to include more than 300 schools.[207] Schools in the city that have already implemented the program report reduced tardiness, improved attendance, and increased attentiveness into the afternoon by the students.[208]
- **Maryland:** The Maryland Meals for Achievement (MMFA) was a pilot program offering breakfast in the classroom to every student, regardless of family income.[209] A comprehensive evaluation of the breakfast pilot program was conducted by the Harvard Medical School and Massachusetts General Hospital, and the findings support serving breakfast to students in the classroom.[210] Findings of the evaluation included:
  - Scores on the Maryland School Performance Assessment Program improved significantly more in the MMFA schools than control schools from the same school systems;
  - Tardiness decreased by eight percent;
  - Suspensions decreased by 36 percent; and
  - Ninety-one percent of the staff said the program should continue at their school.[211]

DISTRICT OF COLUMBIA LOCAL WELLNESS PROGRAM

In response to startling rates of childhood obesity in the country, as part of the 2004 Child Nutrition and WIC Reauthorization Act, all schools that participate in the National School Lunch Program and/or School Breakfast Program were required to adopt and implement local school wellness policies by the beginning of the 2006-2007 school year.[212] School districts were required to establish nutritional guidelines for all foods available on the school campus; assure that federally reimbursable school meals meet minimum USDA standards; and establish goals for nutrition education, physical activity, and other school-based activities. With 20.1 percent of children and youth ages 10-17 in the obese category, D.C. has taken the mandate very seriously.

Progress highlights of the D.C. Local Wellness Policy include:[213]

- Almost all D.C. Public School (DCPS) schools now have a health and physical education teacher and/or physical activity program in place.
- DCPS is implementing health education and physical education standards that specify the concepts and skills that students should know in each grade.
- All DCPS schools offer universal "Free for All" breakfast.
- More than three-quarters of DCPS schools are participating in the afterschool snack program.
- DCPS hired a new food service management company, Chartwells/Thompson, to improve nutrition in school meals. The company has reduced the fat content in milk as well as re-opened kitchens in schools to offer freshly cooked options.
- Products such as sodas and sports drinks have been eliminated from vending machines and replaced with healthier items such as baked chips, pretzels, and 100 Calorie Packs of thin crisp cookies and crackers.
- All DCPS elementary schools are offering breakfast in the classroom to boost breakfast participation.
- DCPS received federal funds to implement the Fresh Fruit and Vegetable Program and in the 2008-2009 school year, approximately six DCPS schools participated in the program.

COMPETITIVE FOODS

USDA defines competitive foods as any foods and beverages -- regardless of their nutritional value -- that are sold at school, but outside of the USDA school meals program.[214] These foods are sold in vending machines, a la carte lines, and school stores.

- **Twenty-seven states have nutritional standards for competitive foods sold a la carte, in vending machines, in school stores, or in school bake sales:** Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Hawaii, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Mississippi, Nevada, New Jersey, New Mexico, North Carolina, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, and West Virginia.

States that implemented new regulations between June 1, 2008 and July 1, 2009, include:

- **Colorado** schools will sell to students on school grounds during the regular and extended school day only beverages that meet a variety of nutritional standards. Elementary, middle, and high schools each have different restrictions on sizes and types of beverages allowed to be purchased during and after school. The law goes into effect July 1, 2009 (SB 129, 2008).
- **Vermont** has directed the Commissioner of Education to collaborate with the Commissioner of Health and the Secretary of Agriculture, Food and Markets to update the current Vermont nutrition policy guidelines applicable to competitive foods and beverages sold outside the federally reimbursable school meal programs (HB 887, 2008).
- **Five years ago only six states had nutritional standards for competitive foods sold a la carte, in vending machines, in school stores, or in school bake sales:** Arkansas, California, Hawaii, Tennessee, Texas, and West Virginia
- **Twenty-nine states limit when and where competitive foods may be sold beyond 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.

States that implemented new regulations between June 1, 2008 and July 1, 2009, include:

- **Vermont** has instructed the Department of Education, Department of Health, and Agency of Agriculture to develop guidelines limiting the sale of competitive foods in schools (Act 203 Section 16, 2008).[215]
- **Five years ago only 17 states had legislation to limit when and where competitive foods may be sold beyond federal requirements:** Arkansas, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Kentucky, Louisiana, Maine, Mississippi, Nebraska, New York, North Carolina, Texas, and West Virginia.

CONCERNS ABOUT COMPETITIVE FOODS IN SCHOOLS

According to USDA's School Nutrition Dietary Assessment Study III (SNDA-III), the prevalence of competitive foods is widespread.

- Nationally, one or more sources of competitive foods were available in 73 percent of elementary schools, 97 percent of middle schools, and 100 percent of high schools.[216]
- Approximately one-third of elementary schools and close to two-thirds of middle and high schools had foods or beverages other than milk for sale through vending machines, a la carte, and/or school stores during the lunch period.[217]
- Vending machines, which are often stocked with chips, candy, and cookies, were available to students in more than 80 percent of middle schools and 97 percent of high schools.[218]

A separate study published in the journal *Pediatrics* found that food items sold a la carte were found in 71 percent of elementary schools, 92 percent of middle schools, and 93 percent of high schools. Of these schools, almost 80 percent provided unhealthy food items in their a la carte options.[219]

While USDA can regulate the quality and kinds of food sold in school cafeterias during lunch hours, it does not have the authority to regulate foods sold either outside of the cafeteria or outside of meal times, such as food sold in school stores, vending machines, or fundraisers. To conform to current nutrition science and address children's health and nutrition at school, Congress would need to direct USDA to update the national nutrition standards for foods sold outside of vending machines, a la carte, school stores, and other foods sold outside of meals, and apply them to the whole campus for the full school day.

To augment local wellness policies, Congress directed CDC to undertake a study with the Institute of Medicine (IOM) to review the science and make recommendations about appropriate nutritional standards for the availability, sale, content, and consumption of foods at school, with attention to competitive foods. The 2007 report, *Nutrition Standards for Foods in Schools: Leading the Way toward Healthier Youth,* concluded that:

- federally-reimbursable school nutrition programs should be the main source of nutrition at school;
- opportunities for competitive foods should be limited; and
- if competitive foods are available, they should consist of nutritious fruits, vegetables, whole grains, and nonfat or low-fat milk and dairy products, as consistent with the 2005 Dietary Guidelines for Americans (DGA).[220]

In addition to the diet-related health risks, USDA has highlighted a number of other issues related to competitive foods:[221]

- **Impact on school meal programs:** The increase in competitive food sales and accompanying decrease in student participation in the National School Lunch Program has implications for the overall viability of the program. Declining participation results in decreased cash and commodity support from USDA for school meals. The reduction in federal funds may also contribute to less interest on the part of schools in maintaining quality school meal programs that meet set nutritional standards, undermining the substantial federal investment in programs to provide healthy meals to children.
- **Stigmatization of school meal programs:** USDA has expressed concern that the National School Lunch Program is often viewed as just for low-income children rather than being available to all children. Often, affluent children spend their lunch money on items from vending machines and a la carte lines; these foods and beverages tend to be more expensive than the school meal.
- **A mixed message:** When children are taught in the classroom about good nutrition but are surrounded by vending machines, snack bars, school stores, and a la carte foods of poor nutritional quality, they receive the message that good nutrition is not important.[222]

Despite the low nutritional value of competitive foods, many schools sell these products to gain revenue. A 2005 report by the U.S. Government Accountability Office (GAO) found that nine out of every 10 public schools in the United States offered competitive foods to their students, and almost 30 percent of public high schools earned more than $125,000 per year from competitive food sales.[223]

Proceeds from competitive food sales are often used to pay for special activities or items not covered by the school's budget. As a result, there have been a number of challenges when local schools or parent-teacher associations have sought to make sure only healthy foods are sold in schools. The biggest challenge results from the fear of decreased revenue from competitive foods sold a la carte, in vending machines, and in school stores creating a financial hardship for the school.[224]

A 2008 review of the literature, however, found that school districts' fears about lost revenues due to changes in competitive food offerings were unfounded. In fact, in some schools, there was increased student participation in the school lunch program -- both from students paying full price for meals and from students receiving free or partially subsidized meals -- which may have compensated for any revenue losses in snack sales.[225]

In 2007, the Center for Science in the Public Interest (CSPI), with support from the Robert Wood Johnson Foundation, released an analysis of 120 school beverage vending machine contracts from 16 states to determine the economic impact of such contracts. CSPI also investigated the problems associated with school fund-raisers involving low-nutrition foods and identified alternative fund-raising methods that do not compromise student health.[226] Among the reports key findings were the following:

- Schools raised modest amounts of money from beverage contracts, with average revenue of $18 per student per year. That represents only one-quarter of one percent of the average cost of a student's education;
- The majority (67 percent) of the revenue collected from drink sales goes to beverage companies, not schools;
- Beverage contracts are less profitable to schools than are other forms of fund-raising;
- Some 85 percent of snacks and 75 percent of beverages in school vending machines are of poor nutritional quality;
- Cash-strapped schools can raise as much money with healthier fund-raising options, such as walk-a-thons and book fairs, as they can with those that rely on unhealthy foods and beverages;
- Bake sales are unhealthy and largely unprofitable, as parents pay twice: once for the ingredients and a second time to purchase the items; and
- Some 80 percent of products eligible for label-redemption fund-raising programs are of poor nutritional quality.

CSPI recommends that schools should negotiate better contracts by becoming more informed of the finances, beverage options, and promotional terms offered by vending contracts. In addition, the report urges schools to avoid unhealthy fund-raising options, such as sales of junk food and fund-raisers at fast-food restaurants.

PHYSICAL EDUCATION AND HEALTH EDUCATION IN SCHOOLS

Physical Education

The 2008 Physical Activity Guidelines provide science-based guidance to help Americans ages six and older improve their health through appropriate physical activity. According to the guidelines, every day children and adolescents should do one hour or more of physical activity. No period of activity is too short to count toward the Guidelines.

The 2005 IOM report *Preventing Childhood Obesity: Health in the Balance* recommended that state and local education authorities and schools should ensure that all children and youth participate in a minimum of 30 minutes of moderate-to-vigorous physical activity during the school day.[227] However, according to CDC's 2006 School Health Policies and Programs Study (SHPPS), a national survey periodically conducted to assess school health policies and programs at the state, district, school, and classroom levels, the number of schools that provide students with the opportunity to engage in 30 minutes of moderate-to-vigorous physical activity during the day is minuscule.

The 2006 SHPPS found that:[228]

- Only 3.8 percent of elementary schools, 7.9 percent of middle schools, and 2.1 percent of high schools provided daily physical education or its equivalent (150 minutes per week in elementary schools; 225 minutes per week in middle schools and high schools) for the entire school year (36 weeks) for students in all grades in the school;
- 67.8 percent of elementary schools provided daily recess for students in all grades in the school; and
- 48.4 percent of schools offered intramural activities or physical activity clubs to students, and 77.0 percent of middle schools and 91.3 percent of high schools offered students opportunities to participate in at least one interscholastic sport.
- **Every state has some form of requirements for physical education for students.** However, these requirements are often limited or not enforced and many of the programs are inadequate with respect to quality. A 2008 analysis by TFAH and the George Washington University School of Public Health and Health Services found only 13 states had policies with enforceability language: Arizona, Arkansas, California, Delaware, Florida, Kentucky, Louisiana, New Mexico, North Carolina, Oklahoma, South Carolina, Virginia, and Washington.[229]

States that implemented new regulations between June 1, 2008 and July 1, 2009, include:

- **Georgia** law mandates that each local school system conduct annual fitness assessments for students in grades one through 12 as part of the current physical education curriculum. The new policy goes into effect in the 2011-2012 school-year (HB 229, 2009).
- **New Mexico** added a requirement for students entering the ninth grade beginning in the 2009-2010 school year of one unit of physical education (SB 460, 2008).

Health Education

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

According to the 2006 SHPPS, health education standards and curricula vary greatly from school to school. The survey found that:[230]

- The percentage of states that required districts or schools to follow national or state health education standards or guidelines increased from 60.8 percent in 2000 to 74.5 percent in 2006, and the percentage of districts that required this of schools increased from 68.8 percent to 79.3 percent;
- 13.7 percent of states and 42.6 percent of districts required each school to have someone oversee or coordinate school health education (e.g., lead health education teacher); and
- 67.5 percent of schools used school assemblies and 28.8 percent used health fairs to provide information about health topics to students.

PHYSICAL ACTIVITY AND ACADEMIC ACHIEVEMENT

Many school systems have eliminated physical education (P.E.) or severely curtailed its offering to focus on core academic subjects that students are tested on as part of the No Child Left Behind Act. Schools are cutting P.E. classes based on the assumption that sacrificing P.E. will give students and teachers more time to prepare for standardized tests and thereby boost the schools' scores on those tests. But in fact, a number of studies show that students who spend time in P.E. or other school-based physical activities increased or maintained their grades and scores on standardized tests even though they received less classroom time.[231] A 2006 study of sixth graders found that students enrolled in P.E. had similar grades and standardized test scores as students who were not enrolled in P.E., despite receiving nearly an hour less of daily classroom instruction on core academic subjects.[232]

In fact, the positive effects of physical activity on brain function are well documented, with a number of studies showing that aerobic activity improves cognition and performance.[233] Moderate and vigorous exercise increases the flow of blood to the brain, which has a stimulating effect.[234] Researchers speculate that this in turn makes schoolchildren more likely to pay attention in class during the school day than children who do not get any physical activity.[235] And, in fact, there is a growing body of evidence that suggests physical activity is related to academic achievement.[236]

Of 14 published studies investigating the link between participation in physical activity and academic performance, 11 found that regular participation in physical activity is associated with improved academic performance.[237]

The following are some highlights from recent research on physical activity, P.E., and academic performance:

- A 2008 literature review examining the linkages between academic achievement and involvement in P.E., school physical activity, and school sports found physical activity positively impacts academic achievement.[238] Based on the review, researchers found that physical activity can be added to a school curriculum by taking time away from academic subjects without hurting academic achievement and that this may actually increase grade point average. On the other hand, adding time to academic subjects by taking away from P.E. does not improve academic performance and may harm health.[239]
- A 2008 study by researchers at CDC found that higher levels of physical education in school were associated with an academic benefit among girls.[240] Higher amounts of physical education were not positively or negatively associated with boys' academic achievement. Similar results were reported in a 1996 study of French-speaking Canadian schoolchildren.[241] Some have suggested that schoolgirls are less physically active than schoolboys and thus are more affected by the increase in physical activity.
- A 2007 study found that children who performed well on two measures of physical fitness tended to score higher on state reading and math exams, regardless of gender or socioeconomic status.[242]
- A 2006 study analyzed data from nearly 12,000 teens across the United States to examine the relationship between physical activity and academic performance. Adolescents who reported either participating in school activities such as P.E. and team sports, or playing sports with their parents, were 20 percent more likely than those teens who did not engage in physical activity to earn an "A" in math or English.[243]

The fact that investigators have concluded that, at the very least, extra time spent in P.E. does not hurt academic achievement is significant. Advocates for children's health are hopeful that this may persuade some school districts that reinstating P.E. classes need not come at the expense of their pupils' academic performance.

CHILD-CARE CENTER LICENSING REGULATIONS

In 2001, approximately 8.6 million preschool-aged children attended some form of child care.[244] With the growing number of overweight preschool-aged children, child care is an important area to both regulate and utilize to combat childhood obesity. Child-care policies that promote physical activity and good nutrition can help shape dietary and physical activity behaviors from a young age.

All child care facilities are regulated, but regulations vary greatly from state to state, and also for the type of facility—small or large.[245] A recent analysis of nutrition, physical activity, and media use at child care facilities in all states and D.C. found that there are significant opportunities for strengthening state licensing regulations to curb the growth of childhood obesity.[246]

The meal patterns for toddlers and preschool age children must be consistent with the 2005 Dietary Guidelines for Americans, while regulations for infants should be consistent with the Special Supplemental Food Program for Women, Infants, and Children. While the majority of states have regulations stating that meals and snacks must follow certain requirements, only Michigan and West Virginia require that meals and snacks should be consistent with the 2005 Dietary Guidelines for Americans. Only eight states require vigorous or moderate physical activity, and only Alaska quantifies the amount of time children should be participating in physical activity daily or weekly. [247]

CHILD CARE CENTER LICENSING REGULATIONS

State	Meals and snacks should follow meal requirements	Meals and snacks should be consistent with Dietary Guidelines for Americans	Have policy prohibiting or limiting foods of low nutritional value	Have a policy on vending machines	Require vigorous or moderate physical activity	Quantifies required number of minutes of physical activity by day or week	Quantify maximum amount of time for media each day or week
Alabama	✓			✓			
Alaska	✓				✓	✓	✓
Arizona	✓						
Arkansas	✓						
California	✓						
Colorado							
Connecticut	✓						
Delaware	✓				✓		
D.C.							
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							
TOTAL	**29**	**2**	**12**	**4**	**8**	**1**	**7**

Source: Kaphingst K., and M. Story. "Child Care as an Untapped Setting for Obesity Prevention: State Child Care Licensing Regulations Related to Nutrition, Physical Activity, and Media Use for Preschool-Aged Children in the United States." Preventing Chronic Disease: Public Health Research, Practice, and Policy 6: 1; 2009.

CASE STUDY: MAKING DELAWARE EARLY CHILD-CARE ENVIRONMENTS HEALTHIER

In Delaware, 29 percent of children between the ages of two and five are already overweight or obese.[248] With 53,000 children enrolled in licensed child-care programs, these programs offer an opportunity to address nutrition and physical activity. In 2007, Nemours Health & Prevention Services, a non-profit organization based in Newark, Delaware, began working to change policies and practices to create a healthy environment in early child-care facilities.

5-2-1- Almost None

- Nemours worked to make regulatory changes through the Office of Child Care Licensing to improve healthy eating and increase physical activity for children in child care. Regulations reflect the *5-2-1-Almost None* healthy lifestyle formula.
  - Eat five or more servings of fruits and vegetables per day;
  - Spend no more than two hours in front of a screen (TV, video games, computer);
  - Get at least one hour of physical activity per day; and
  - Drink almost no sugary beverages like soda and sports drinks.

Improve Food and Beverage Offerings

- Nemours and the Delaware Child and Adult Care Food Program (CACFP) worked together over the course of a year to adopt new best practice standards and policies for the state of Delaware. With support from Nemours, the Delaware CACFP created new policy regulations to improve food and beverage offerings by all licensed child-care providers in the state. As of July 1, 2008, the CACFP implemented these new policies with a six-month grace period before enforcement. The new policies include the following:
  - Only 100 percent fruit juice may be served, and only one serving per day is allowed;
  - Only fat-free or one percent milk may be served to children over two years of age;
  - All pre-fried and fried food items must have less than 35 percent of total calories from fat; and
  - Sweet baked goods (cookies, cakes, donuts, etc.) may be served only once every two weeks as a snack.

Provider Education

- Nemours is also working with Delaware state regulatory agencies to include healthy eating and physical activity in CACFP sponsored trainings, and collaborating with state community colleges to include healthy eating and physical activity in required classes for early childhood education degree programs.

STUDENT HEALTH SCREENINGS

- **Twenty states have passed requirements for body mass index (BMI) screening of children and adolescents OR legislation requiring weight-related assessments other than BMI.**
  - **States with BMI screening requirements:** Arkansas, California*, Florida, Illinois, Maine, Missouri, New York, North Carolina, Oklahoma, Pennsylvania, Tennessee, Vermont, and West Virginia.
  - **States with other weight-related screening requirements:** Delaware, Iowa, Louisiana, Massachusetts, Rhode Island, South Carolina, and Texas.

States that implemented new regulations between June 1, 2008 and July 1, 2009, include:

- **Maine** enacted legislation to have a nurse or trained health professional collect BMI data from students, except those students whose parent or guardian objects on religious or philosophical grounds (LD 319, 2009).
- **North Carolina** enacted a law to study the current status of K-12 physical education in North Carolina. The study must include the minutes in physical education on a weekly basis throughout the school year for every school, the number of physical education classes per week throughout the school year for every school, average physical education class size for every school, student BMI data for a statistically valid random sample of students of various ages from all 100 counties, and nutrition and physical activity knowledge and behaviors of the same random sample of students (HB 2431, 2008).
- **Oklahoma** enacted a law to develop a physical fitness assessment software program customized for the state's public schools. The program has the capability to track the five components of student health-related physical fitness: aerobic capacity, muscular strength, muscular endurance, flexibility, and a weight status assessment that includes measurement of height and weight, calculation of BMI for age, and plotting of these measures on standard growth charts (SB 519, 2008).
- **Vermont** passed legislation to convene a work group comprising the state's three major insurance carriers, the Office of Vermont Health Access, self-insured employers, school health personnel, students, and health care providers to review recommended best practices for promoting healthy weight. As part of its review the group will develop a plan for promoting measurement and tracking of BMI for children and adolescents (HB 887, 2008).
- **Two states have enacted legislation that requires screening students for risk of type 2 diabetes:** California* and Illinois.
- **Five years ago, only four states required BMI screening or other weight-related assessments for children and adolescents:** Arkansas, Kansas, Louisiana, and Massachusetts.

**Commencing July 1, 2010, statewide distribution of diabetes risk information to school children— California Education Code § 49452.7 will replace individual BMI reporting—California Education Code § 49452.6.*

THE DEBATE OVER BMI SCREENING

A 2006 review of BMI screening policies in the United Kingdom and the United States determined that while there are potential benefits to conducting BMI screenings in schools, there is also the potential for emotional or psychological harm to children identified as overweight or obese, who may feel stigmatized or try to take unhealthy measures to lose weight.[249]

The authors of the 2006 review recommend that if states choose to implement BMI screenings in schools they follow these guidelines:

- Hire health professionals who are trained and qualified to organize and manage BMI screening in a sensitive and caring manner, such as school nurses;
- Allocate funds for the recruitment and training of non-professional staff to assist with this task;
- Train staff how to deal with the emotionally laden topic of children being labeled overweight and ensure that parents are notified in a culturally-appropriate manner;
- Ensure that there are treatment programs available to help these children;
- Foster an inclusive and respectful school climate where size discrimination is not tolerated; and
- Efforts to improve the health of students should enhance physical, psychological and social well-being.

The practice of BMI screenings in schools is relatively new. 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 recommends annual school-based screenings.[250,251] In 2007, the CDC found there was insufficient evidence to evaluate the effectiveness of the school-based programs.[252]

SCHOOL-BASED BMI SCREENINGS: THE ARKANSAS EXPERIENCE

In 2003, the Arkansas legislature passed legislation to combat childhood obesity in response to dramatic increases in the number of Arkansas children and adolescents who are overweight or obese. Among other ambitious provisions, the law required all school districts to measure BMI for every public school student annually and report results to parents.

In order to evaluate the effectiveness of the obesity-prevention programs mandated under state law, the Robert Wood Johnson Foundation is funding two monitoring and evaluation activities. One of these projects, the Arkansas 1220 Evaluation, examines the state law's effect on children, families, and schools. From 2004 through 2011 the evaluation surveys parents and youth about children's eating and physical activity. It also surveys principals and superintendents about the school environment.

Over the first four years of the evaluation, researchers have determined:[253]

- Parents did not view BMI assessments as controversial. Over the four-year evaluation period, 85 percent of principals had fewer than five parental contacts on the issue during the school year;
- Parents are frequently unable to characterize their child's weight status accurately, when the child is overweight or obese. Among parents whose children were overweight, 51 percent incorrectly perceived the child to be of normal weight. Most parents (93 percent) of children with BMI percentiles in the normal to underweight categories correctly characterized their children's weight status;
- After the first year of BMI reporting, parents of children who are overweight or at risk for overweight significantly improved their ability to accurately identify their child's weight risk status;
- Screenings increased parents' awareness of health problems associated with childhood obesity. Some 81 percent of parents interviewed mentioned diabetes as a health problem for overweight children in year four, compared with 66 percent in year one;
- Student reports of teasing because of their weight did not increase; and
- Student reports of inappropriate dieting behaviors (such as fasting and taking diet pills) remained stable over the four-year period and were similar to behaviors reported by students across the country.

IS THERE A BETTER WAY TO COLLECT CHILDREN'S BMI?

As of May 31, 2009, 20 states had passed legislation that mandates school-based BMI or other weight-related screenings in schools. Such assessments are intended to help schools and communities assess the childhood obesity problem, educate parents and students, and serve as a means to evaluate obesity prevention and control programs. Currently, however, the effectiveness of school-based BMI screening programs is largely unknown and some states with enacted policies have encountered privacy, cost, and feasibility issues with the implementation of school-based surveillance efforts.

In light of these concerns, there is an emerging movement afoot to use existing public health surveillance systems, such as childhood immunization information systems to record BMI collected in a clinical setting.[254] According to 2007 research from CDC, 71 percent of U.S. children less than six years of age participated in an immunization information system (IIS). Twelve states and three cities reported over 95 percent of their children older than four months and younger than six years with at least two immunizations in the IIS. Fourteen states and the District of Columbia were approaching the national health objective with participation of 81-94 percent.[255]

IIS, also known as immunization registries, are confidential computerized information systems that collect vaccination data about children within a geographic area. Children are typically entered into a registry at birth (often through a linkage with electronic birth records) or at first contact with the health care system. A registry can provide a single source for all community immunization data, if a registry includes all children in a given geographic area and all providers follow through with reporting of immunization information.

By simply adding two new data fields -- height and weight -- these immunization registries can be transformed into a powerful new tool for state and local health departments as they work to prevent and control childhood obesity.

In Michigan, Governor Jennifer Granholm and the Department of Community Health have agreed to adopt new rules to add BMI surveillance capacities to the Michigan Care Improvement Registry, an existing electronic registry that contains more than 3.1 million vaccination records, including virtually every child born in the state.[256,257,258]

By building BMI collection into the existing registry that is compliant with federal patient privacy laws and enjoys high rates of provider participation (95 percent) the Michigan Department of Community Health believes it can create a BMI surveillance system that will benefit providers, patients and their families, health plans, community groups, and state and local health departments.

Researchers at Altarum Institute argue the next step should be a "nationwide effort to encourage other states to follow Michigan's lead," and suggest that a portion of the $20 billion included in the ARRA for health information technology could be used to develop these systems.[259]

FARM TO SCHOOL PROGRAMS

Over the last decade, many states have enacted legislation in support of farm to school programs. Farm to school programs are a way to link local farmers and schools, which not only improves nutrition at schools but also increases sales for farmers. Although several states have taken action on this issue, many farm to school programs are implemented at the local level without state legislation.

Because children continually fall short of reaching the daily recommended servings of fruits and vegetables, increasing the amount of fresh produce available at schools is a logical solution to improve child nutrition. Studies show that farm to school programs increase fruit and vegetable consumption among students at participating schools.[260] A study conducted by the University of California at Davis found that farm to school programs not only increase the consumption of fruits and vegetables among participating students, but actually change eating habits, causing students to choose more healthy options when fresh produce is available at lunch.[261]

Farm to school programs not only promote the use of locally grown foods, but they also use the program as an opportunity to educate children about local food and farming issues. The educational components of the farm to school program include activities such as farm visits, cooking demonstrations, and school gardening and composting programs.

Nineteen states currently have established farm to school programs: California, Colorado, Connecticut, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Montana, New Mexico, New York, Oklahoma, Oregon, Pennsylvania, Tennessee, Vermont, Virginia, and Washington.

States that implemented new regulations between June 1, 2008 and July 1, 2009, include:

- **Maryland** enacted a law that established a program to promote the sale of farm products grown in the state to Maryland schools. They are developing programs in partnership with the State Department of Education to promote the use of state agricultural and farm products in school meals and in the classroom (HB 696, 2008).
- **Michigan** enacted a law that established a farm to school program to encourage using locally grown produce in schools (HB 6368, 2008).
- **Oregon** enacted a law that established a farm to school program to increase the use of local produce and to promote food and garden-based educational activities in school districts (HB 3601, 2008).
- **Tennessee** enacted legislation which requires that each local school board's plan for compliance with nutritional breakfast and lunch programs include specific provisions to encourage the purchase of local agriculture products (SB 3341, 2008).
- **Virginia** plans to establish and maintain a farm to school website. The website will present information such as the availability of Virginia farm products and the names of and contact information for farmers, farm organizations, and businesses marketing such products (HB 1331, 2008).
- **Washington** established a farm to school program to facilitate increased procurement of Washington-grown food by schools (SB 6483, 2008).

Five years ago only New York had a law that established a farm to school program.

FARM TO SCHOOLS: SPOTLIGHT ON BALTIMORE PUBLIC SCHOOLS

In an effort to improve the quality of food available at Baltimore public schools, as well as teach and share gardening with students, the new food service director for Baltimore City Public Schools, Tony Geraci, has opened Great Kids Farm in Catonsville, Maryland.[262]

The farm has a total of 33 acres and includes three greenhouses, a three-acre garden, a small orchard, pigs, chickens, and goats. Geraci wants to involve the students in every phase of the agricultural process from planting, to harvesting, and even to selling the produce. He plans to open three restaurants called Great Kids Café where students will be paid to manage the restaurants.

Geraci's changes to the school food system do not end there. He has also canceled contracts for pre-made lunches in order to bring in more fresh and local food. This change is not only beneficial for the health of students, but also will boost local and Maryland grown produce sales. According to Geraci, he can save significant amounts of money by buying locally. Currently the federal school lunch program offers Washington state apples at $56 a case, but the school can save thousands of dollars by buying locally. Geraci says, "I can buy Maryland apples for $6 a case and feed 50,000 more kids a year with the same amount of money. What do you suppose I'm going to do?"

Teachers also have welcomed the farm, which has been up and running since the winter of the 2008-2009 school year. Visiting the farm is an ideal field trip for students -- many of whom would have no other opportunity to visit a farm. Students can plant seeds in the farm's classroom and Geraci eventually hopes to include gardens at all of Baltimore's public schools.

2) OBESITY-RELATED LEGISLATION FOR HEALTHY COMMUNITIES

States also have enacted 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 -- 2009				
	Has Menu Labeling Laws	Has Snack 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	**4**	**30 + D.C.**	**9**	**24**

Please Note: Checkmarks in chart above that are in red type represent new laws passed in 2008 or 2009.

SNACK TAXES

New evidence suggests that there is a significant link between food prices and obesity. According to the March 2009 issue of *Milbank Quarterly,* increasing the cost of unhealthy foods while simultaneously decreasing the cost of healthy foods, like fruits and vegetables, has a measurable connection with lower body weight.[263] Although the results showed only a small connection, the connection was more prominent in populations with low socioeconomic status.[264]

The combination of taxing energy-dense fast foods and sugary foods, while subsidizing healthy foods has the potential to have a measurable effect on weight -- especially on children and adolescents, low socioeconomic populations, as well as individuals most at risk for becoming overweight or obese.

One way many states have tried to impact the obesity epidemic is by taxing junk foods in an attempt to reduce people's consumption of these products. Proponents of these so-called snack taxes liken the effort to the campaign to raise the tax on tobacco products. Twenty years ago cigarettes, which have been proved to cause lung and other types of cancer, were taxed at a low rate, but since the 1980s, cigarette taxes have tripled.[265] The huge tax increase, which pushed the cost of cigarettes higher by an average of 160 percent, is credited for the recent declines in the prevalence of adult smokers.[266]

Thirty states and D.C. currently have laws that tax foods of low nutritional value such as soda, chips, pretzels, ice cream, gum, and candy:[267] California, Colorado, Connecticut, D.C., Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Minnesota, Mississippi, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

These taxes, also known as "Twinkie Taxes," and "fat taxes," are highly controversial. Proponents of the taxes argue that a tax on junk food could be used to fund a healthy eating and nutrition information campaign, while opponents cite several problems.[268] First, as health economist Eric A. Finkelstein notes, these taxes penalize the poor. "Because people on lower incomes spend a higher proportion of their income on food," Finkelstein says, "this type of tax is largely regressive in nature."[269] In addition, the amount of taxes levied on junk foods is so small that it is unlikely to serve as a deterrent to people. Finally, many states that have passed a version of a snack tax do not always use the revenues to combat obesity. Instead, snack tax revenues are used to fund a wide variety of non-health-related state activities.

Despite these problems, a growing number of Americans support the idea of taxing unhealthy foods as a means to combat obesity and promote healthy nutrition. According to researchers at Yale University's Rudd Center for Food Policy and Obesity, support of a tax on sugared beverages ranges from 37 to 72 percent. Soda taxes tend to garner more support when respondents are told that the revenue generated by such a tax would be used for obesity prevention.[270]

Researchers at Yale University report that national junk food taxes could generate more than $1.8 billion per year from the following items:

- A one-cent per 12-ounce soft drink tax would generate $1.5 billion per year;
- A one-cent per pound of candy tax would generate $70 million per year;
- The proposed potato chip tax would generate $54 million per year; and
- Proposed taxes on other snack foods, fats and oils would generate $190 million per year.[271]

More recently, a December 2008 CBO report detailing budget options to pay for health reform included a proposal to impose a federal excise tax of three cents per 12 ounces of "sugar-sweetened" beverage. If implemented, such a tax would generate an estimated $24 billion in revenues over the 2009-2013 period, and about $50 billion over the 2009-2018 period.[272]

INCREASED SODA AND SNACK CONSUMPTION

From 1977 to 1996 soft drink and salty snack consumption among Americans of all ages skyrocketed.[273] For Americans ages two to eight and 19-39, soft drink consumption increased by 83 percent and 71 percent respectively, and the intake of salty snacks rose by 132 percent and 133 percent respectively.[274] Among individuals ages 40-59, soft drink consumption rose by 111 percent, and salty snack foods increased by 171 percent.[275]

A trend that parallels the growing rates of soft drink and salty food consumption can be found in obesity rates among U.S. adults and children. Many studies show the connection between soft drinks and growing rates of obesity. For example, one study found that, with each additional serving of sugar-sweetened drink for children, obesity risk was 1.6 times higher.[276] Another study shows that children who drank at least 12 ounces per day of sweetened drinks gained significantly more weight than children who drank less.[277]

A recent study done by the Johns Hopkins Bloomberg School of Public Health found that a reduction in liquid calorie consumption is linked more closely to weight than solid calorie intake.[278] Both liquid and solid calories had an impact on weight change, but in the six month follow-up, only a reduction in liquid calorie intake had a significant effect on weight loss.

Among the variety of beverages measured, only sugar-sweetened beverages (regular soft drinks, fruit drinks, fruit punch, or high-calorie beverages sweetened with sugar) had a significant association with weight change at both the six and 18 month follow-up. A reduction in one serving of sugar-sweetened beverages was associated with weight loss of 1.1 pounds (0.5 kg) at six months and 1.5 pounds (0.7 kg) at 18 months.

It's not surprising that the rate of soda and snack consumption has increased as the intake of fresh fruits and vegetables has decreased -- the price of soda, sugar, and sweets has stayed fairly steady, while the price of fresh fruits and vegetables continues to rise.[279]

ELIMINATING TAXES ON HEALTHY FOODS

The state of Mississippi has had the highest rates of adult obesity in the nation for the fifth year in a row. Mississippi is currently one of two states that taxes foods purchased for home consumption; Alabama is the other.[280] In an effort to lower both obesity rates and taxes in the state, the Mississippi Health Advocacy Program is in favor of eliminating the seven percent sales tax on healthy foods.

The group argues that eliminating the seven percent sales tax on healthy foods while maintaining the tax on junk foods would serve two goals. First, it would make healthy foods -- which studies have shown are 10 times as expensive as unhealthy, high-calorie foods -- more affordable.[281] Second, by eliminating the tax only on healthy foods, the state of Mississippi would continue to receive revenues from the purchase of unhealthy foods. The main challenge facing policymakers who may want to consider this approach is how to define "healthy foods." The Mississippi Health Advocacy Program recommends convening a panel of nutritionists and dieticians to define healthy foods.

MENU LABELING

Menu labeling -- the posting of nutrition information on menus and menu boards -- is a policy that more states and localities are considering each year. Supporters of nutrition labeling at fast-food and chain restaurants, including the American Medical Association, want labeling that is easy to understand and that includes the total calories, fat, saturated fat, trans fat and sodium content of menu items.[282] According to the Yale Rudd Center for Food Policy and Obesity, 80 percent of consumers want this information.[283]

Only four states -- California, Massachusetts, Maine, and Oregon - currently have laws that require the posting of nutrition information on menus and menu boards in restaurant chains. At the local level, Seattle, Philadelphia, New York City, Nashville, and San Francisco have menu-labeling provisions in place.

States that passed legislation between June 1, 2008 and July 1, 2009, include:

- **California** became the first state to enact statewide menu labeling legislation in September 2008. The law requires restaurants with 20 or more locations in the state to disclose calorie and nutrition information in a clear and conspicuous manner beginning July 1, 2009. After January 1, 2011, they must post calorie content information for standard menu items directly on menus or menu boards (SB 1420, 2008).
- **Maine** enacted legislation requiring that a chain restaurant must state on a food display tag, menu, or menu board the total amount of calories per serving of each food and beverage item listed for sale (LD 1259, 2009).
- **Massachusetts** law requires restaurant chains with 20 or more in-state locations to post calorie counts next to each item on their menus or menu boards, including menus at drive-thru windows. The May 2009 move by the Massachusetts Public Health Council takes effect November 1, 2010.
- **Oregon** requires chain restaurants using a menu or menu board to include a statement of the total calories for each of the menu items listed. The total calorie statement must be in a conspicuous place near the other menu or menu board information for that menu item (HB 2726, 2009).

Fourteen other states as well as numerous local governments introduced legislation in 2009 to require restaurants to post nutrition information alongside their menu items.[284,285] The states include: Connecticut, Florida, Hawaii, Illinois, Indiana, Maryland, Missouri, New York, Oklahoma, Rhode Island, Tennessee, Texas, Vermont and West Virginia.[286]

Meanwhile, Utah passed anti-menu labeling legislation. On March 24, 2009 Gov. Jon Huntsman Jr. signed into law SB213, forbidding cities and counties in Utah from regulating the dissemination of nutritional information or requiring such information to be posted on a menu or menu board.[287]

The bill is supported by the Utah Restaurant Association, which claims that changing the menus could cost restaurants $18,000 in one-time costs.[288] The bill's sponsor, Senator Howard Stephenson, said menu labeling laws should apply state-wide.

THE LEAN ACT

On March 10, 2009, Sen. Tom Carper (D-DE) and Sen. Lisa Murkowski (R-AK) introduced the Labeling Education and Nutrition (LEAN) Act of 2009 (S.558). Rep. Jim Matheson (D-UT) and Rep. Fred Upton (R-MI) introduced companion legislation in the House (H.R.1398). The LEAN Act would require restaurants and grocery stores that serve prepared foods at 20 or more locations to post calorie information directly on a menu board, or one of the approved alternate ways, such as an insert or sign next to the menu board.

Supporters of the bill and of menu labeling note that most people are poor judges of the caloric content of their meals. In fact, studies have shown that consumers consistently underestimate the number of calories they consume during a meal. In one study, participants underestimated calories by 22 percent to 38 percent. The same study found participants were better at estimating calorie counts when consuming smaller meals, and either underestimated calories by 2.9 percent or overestimated calories by three percent.[289]

Opponents of mandatory menu labeling argue that many restaurants already provide nutrition information -- either online or at the store upon customer request. However, according to a new study, those means of delivering the nutrition information are ineffective. A May 2009 article in the *American Journal of Public Health* reported that less than one percent of people purchasing fast-food review nutrition information currently provided by the restaurants in the form of pamphlets, brochures, and on-site computer generated nutrition information.[290] Researchers from Yale University watched customers at multiple locations of McDonald's, Burger King, Au Bon Pain, and Starbucks in Manhattan, New Haven, and other suburban Connecticut towns. Only six of the 4,311 people surveyed went out of their way to look at the nutrition information provided by the restaurants in the form of pamphlets, brochures or on-site computers.[291]

VOLUNTARY MOVE BY RESTAURANT INDUSTRY

Yum! Brands launched a unique initiative, announcing it would add calorie counts to menu boards.[292] On October 1, 2008, KFC, Pizza Hut, Taco Bell, Long John Silver's and A&W All-American Food became the first national restaurant chains to begin voluntarily placing calorie information on their respective menu boards in company-owned restaurants nationwide.[293] But, the announcement does not apply to franchisees, who will only be "encouraged" to provide calorie information.[294] In 2007 Yum! Brands had 19,905 units in the United States; only 3,896 of those were company-owned restaurants.[295]

LEGISLATION TO LIMIT OBESITY LIABILITY

Many states have responded to the obesity epidemic by passing laws that prevent individuals from suing restaurants, manufacturers, and marketers for contributing to unhealthy weight and related health problems. Laws that limit liability are fairly controversial and have been prompted by fears of obesity lawsuits similar to tobacco lawsuits. However, they are among the most visible obesity-related policies to emerge in recent years.

Twenty-four states have passed obesity liability laws: 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.

Proponents of these bills argue that the central issue is "common sense and personal responsibility."[296] Passage of the bills indicates a level of support for the view that obesity is an individual health issue. Supporters also endorse a 2004 Bush Administration statement that "food manufacturers and sellers should not be held liable for injury because of a person's consumption of legal, unadulterated food and a person's weight gain or obesity."[297]

Opponents of limited liability laws support the position that "it's impossible for consumers to exercise personal responsibility when businesses are concealing important information about their products," such as the number of calories in restaurant food or lack of consistency in food labeling.[298]

COMPLETE STREETS INITIATIVES

Complete streets are roadways that are designed and operated so users of all ages and abilities -- including motorists, bicyclists, pedestrians and public transit riders -- can safely travel along and across them. There is a growing trend at both the state and local levels of government to adopt complete street policies in order to foster physical activity and promote healthy living and more environmentally friendly transportation use.

Physical inactivity, coupled with unhealthy eating habits, is a major driver of the current obesity epidemic. More than half of the U.S. adult population does not meet the recommended daily physical activity guidelines, while a quarter of U.S. adults report being completely inactive.[299]

One major obstacle to physical activity is concern about safety. For example, 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.[300] Parents frequently list traffic safety concerns as a top reason for why their children do not walk or bike to school.[301]

Governments and communities that address traffic safety concerns 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; among those without safe places to walk just 27 percent met the recommendation.[302] An Australian study found that residents are 65 percent more likely to walk in a neighborhood with sidewalks.[303]

A review by the National Conference of State Legislatures identified five state policy options that are most effective at encouraging biking and walking:[304]

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 that is used to slow traffic).
5. Creating incentives for mixed-use development.

The National Complete Streets Coalition is focusing on the first two policy options by working with state, county and city governments to incorporate features that promote regular walking, cycling and transit use into just about every street. According to the Coalition, more than 80 complete streets policies have been passed in states, counties, regional governments and cities across the nation.

Nine states have passed complete streets laws: California, Delaware, Florida, Hawaii, Illinois, Maryland, Massachusetts, Oregon, and Rhode Island.

States that implemented new regulations between June 1, 2008 and July 1, 2009, include:

- **California** enacted legislation that will require, as of January 1, 2011, that the legislative bodies of every city and county within the state must incorporate complete streets planning elements in any new transportation plans. The law also mandates that complete streets planning be used when there is any substantive revision of existing local transportation plans. The California law defines complete streets planning to mean the need to include a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways, defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation, in a manner that is suitable to the rural, suburban, or urban context of the general plan (AB 1358, 2008).

- **Delaware** law states that the Delaware Department of Transportation will enhance its multi-modal initiative by creating a complete streets policy that will promote safe access for all users, including pedestrians, bicyclists, motorists and bus riders of all ages (State of Delaware Office of the Governor, Executive Order number six).

- **Hawaii** enacted legislation that requires the department of transportation and the county transportation departments to reasonably accommodate access and mobility for all users of public highways, including pedestrians, bicyclists, transit users, motorists, and persons of all abilities. It establishes a temporary task force to review highway design standards and guidelines and report to the legislature in 2010 and 2011 (SB 718, 2009).

While the bulk of the three-year-old Coalition's efforts have focused on state and local governments, it also has pushed for federal action on the issue. In March 2009 Senator Tom Harkin (D-IA) and Representative Doris Matsui (D-CA) introduced the **Complete Streets Act** (S.584/H.R.1443). The bills ensure that "all users of the transportation system, including pedestrians, bicyclists, and transit users as well as children, older individuals, and individuals with disabilities, are able to travel safely and conveniently on streets and highways."[305]

THE HARMFUL EFFECTS OF URBAN SPRAWL AND POOR COMMUNITY DESIGN

Increasingly, researchers are finding out that it's not just what we eat and how much we exercise that affects Americans' weight, but how we live our daily lives. Communities that are designed to encourage walking, biking, and other forms of active transport play an important role in people's health.

According to a seminal study published in 2003, residents of sprawling communities were likely to walk less, weigh more, and have higher rates of hypertension than residents of more compact communities.[306] Sprawl describes spread-out areas where homes may be isolated from schools, the workplace, and other frequent destinations. As a result, people "who live in these areas may find that driving is the most convenient way to get everything done, and they are less likely to have easy opportunities to walk, bicycle, or take transit as part of their daily routine."[307]

Other studies have similarly demonstrated that the distance from a person's home to work and other daily destinations, community safety, the safety of roads for pedestrians and bicyclists, the availability of facilities for physical activity, and time spent commuting in cars contribute to how often a person walks, bicycles, or plays.[308]

In May 2009, the American Academy of Pediatrics (AAP) issued a policy statement highlighting how community design affects children's opportunities for physical activity.[309] AAP's policy statement included recommendations for pediatricians and government. For government, AAP recommended that:

- Government at all levels should enact legislation to promote active living and ensure that children have the ability to walk, play, and get to school safely;
- Create and maintain playground, parks, and green spaces, especially in low-income neighborhoods to ensure that children have safe access for play and active lifestyles;
- Promote legislation and fund programs that encourage active commuting to schools;
- Fund research on the impact of community design on the overall health of children and families; and
- Serve as models for communities by situating new government buildings within walking distance of public transportation and walking trails to encourage active living.

Research on community design and active living has grown exponentially over the past decade. Active Living Research, a national program of the Robert Wood Johnson Foundation, conducts and supports research to identify environmental factors and policies that influence physical activity for children and families to inform effective childhood obesity prevention strategies, particularly in low-income and racial/ethnic communities at highest risk. Active Living Research maintains a website with resources for policy makers, elected officials, and advocacy organizations. More information on designing and building healthy communities is available at http://activelivingresearch.org/.

NATIONAL CONFERENCE OF STATE LEGISLATURES LEGISLATIVE TRACKING

In March 2009 the National Conference of State Legislatures (NCSL) released a report detailing the various efforts state legislatures are taking to promote healthier communities and reduce obesity. *Promoting Healthy Communities and Reducing Childhood Obesity: Legislative Options* tracks legislation from the 2007-2008 legislative sessions, but also builds on earlier reports from 2005 and 2006. The following is a summary of items included in the Healthy Community Design and Access to Healthy Foods section of the report.[310]

Healthy Community Design and Access to Healthy Food

- **Bicycling and Walking:** Legislators have used a variety of approaches to increase physical activity and active transportation by funding infrastructure programs, integrating transit with bicycling, developing design and planning standards to accommodate bikes and pedestrians, and providing incentives for bicycling and walking to work. Twelve states -- California, Hawaii, Maryland, Massachusetts, New Hampshire, New Mexico, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, and Vermont -- enacted legislation to improve biking and walking opportunities in 2007 and 2008, and another 12 proposed legislation.
- **Transit-Oriented Development:** Some states have introduced legislation intended to foster transit-oriented development, a mixed-use residential or commercial area designed to maximize access to public transport. A transit-oriented development neighborhood typically has a center with a train station, metro station, trolley stop, or bus stop, surrounded by relatively high-density development with progressively lower-density development spreading outwards from the center. Such neighborhoods are designed to encourage walking to and from transit stops and local retail outlets. Ten states proposed legislation to make development more transit-oriented in their state in 2007 or 2008. Eight states enacted the laws: California, Connecticut, Illinois, Maine, Maryland, Massachusetts, New Jersey, and Virginia.
- **Health Impact Assessments:** A health impact assessment is defined as, "…a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population."[311] Washington is the only state to enact legislation calling for the use of health impact assessments, with another three, California, Maryland, and Massachusetts, proposing but not passing legislation.
- **Food Deserts / Access to Healthy Foods:** Many communities -- usually inner-city or rural ones -- have limited access to affordable, fresh, and nutritious foods. Legislators have introduced innovative ideas such as financial incentives to attract grocery stores and farmers' markets. Eleven states proposed legislation during 2007 and 2008 to improve access to healthy foods, and the following seven states enacted such legislation: California, Louisiana, Michigan, Nevada, New Mexico, Oklahoma, and Pennsylvania.
- **Local Food / Direct Marketing:** State legislators are aware of the dual benefits of creating strong local food systems -- healthier citizens and economic growth. Legislatures have introduced a variety of strategies to improve local foods by encouraging government agencies to purchase locally, relaxing procurement laws, giving financial assistance to local farmers, marketing agro-tourism (i.e., vacations on farms and ranches) and expanding farmers' markets. The majority of states have proposed legislation to strengthen local food systems, and 16 states enacted laws: Arkansas, California, Connecticut, Florida, Hawaii, Illinois, Kentucky, Mississippi, Montana, New Mexico, New York, Oklahoma, Tennessee, Utah, Vermont, and Washington.

TOOLKIT TO PREVENT CHILDHOOD OBESITY

The Leadership for Healthy Communities (LHC) released an action strategies toolkit in May 2009 as a guide to help state and local policy makers reduce childhood obesity.[312] The toolkit contains a collection of best practices supported by childhood obesity experts and policy-makers, as well as detailed directions on how to implement successful programs.

The tool kit contains a two-part breakdown between active living/built environment and healthy eating. The following are the 10 major areas and policy options LHC has identified to improve childhood obesity within the two categories:

- **Active Transportation:** Improve safety for bicyclists and pedestrians and expand trails and connections between trails and sidewalks to schools and community areas.
- **Land Use for Active Living:** Evaluate and redesign comprehensive land-use plans to improve active living and improve community design to include and encourage physical activity.
- **Open Spaces, Parks and Recreation:** Increase access to open spaces such as parks and community gardens.
- **Quality Physical Activity In and Near Schools:** Offer physical activity at schools, require physical education classes at schools and have them taught by certified PE teachers, support walk-to-school and bike-to-school programs, and encourage agreements between schools and community facilities for physical activity.
- **Safety and Crime Prevention:** Keep communities crime free to allow children safe outdoor physical activity.
- **Quality Nutrition in Schools:** Provide healthy as well as appetizing foods in schools, support farm-to-school programs, and include standards based health education programs.
- **Supermarkets and Healthy Food Vendors:** Improve the availability of healthy food options in low income neighborhoods by attracting grocery stores and increasing healthy food options at convenience stores and bodegas.
- **Farm-Fresh Local Foods:** Support farmers' markets, community gardens, and locally grown foods.
- **Restaurants:** Encourage restaurants to offer healthy options and reasonably sized portions as well as to label menus with nutrition information.
- **Food and Beverage Marketing:** Regulate marketing of unhealthy foods in areas where children are often present, such as schools and community centers.

B. STATE OBESITY PLANS

A growing number of states have published plans that focus on physical activity and healthy nutrition. Currently, 43 states and D.C. have plans in place with specific strategies and goals to lower the prevalence of overweight, obesity and obesity-related chronic diseases in each state. Among this group, only D.C. and Virginia have specific childhood obesity plans. The seven states without any obesity plans are: Idaho, Indiana, Kansas, Mississippi, North Dakota, Tennessee and Wyoming. Of these states, all but Wyoming are in the process of developing statewide obesity plans which they expect to make available to the public over the next year or two.

Each state has a unique plan, but many contain similar goals and means to achieve those goals. One objective common to almost every state is the urgency to get people involved on all levels; this is known as the Social-Ecological Model. This model aims to affect behavioral change by engaging all levels of influence – individual, interpersonal, organizational, community, and public policy.[313] Many of the plans draw on guidance from CDC to use policy and environmental changes to target six specific behaviors:

- Physical activity.
- Fruit and vegetable intake.
- Breastfeeding.
- Consumption of sugar-sweetened beverages.
- Intake of foods that are high in calories but low in nutrients.
- Television viewing.

Some states focus exclusively, or to a large extent, on childhood obesity. Generally, states have goals to improve childhood health through decreasing the amount of time children spend in front of the TV and other electronic entertainment devices, increasing physical activities available to all children, using public schools to implement physical activity and healthy nutrition programs, and encouraging communities to help raise healthier children through local involvement.

While some states have general goals of decreasing the percentage of overweight people in their state, others have set very specific goals. Utah, for instance, expects that by 2010 the percentage of children in that state who are overweight by 10 percent or more will decrease from 12.3 percent to 10.8 percent.[314]

Developing a plan to address the problem of overweight and obesity is an important step in

the process of implementing change, but it is certainly not the only step. In order to turn a plan into action, a state must secure appropriate funding. Unfortunately, a majority of the state plans do not address the issue of funding, or only briefly mention the need to secure funding. Many of the plans refer to the need to secure resources for implementation or suggest that local organizations apply for mini-grants, but beyond that there is no mention of how the plan will become a reality. No more than 10 states include details regarding strategies for funding. New Mexico is one of the few that includes a detailed description of how it intends to fund the plan by linking each objective to a funding source.

It is also important to include a system of measurement to determine what the state has accomplished, and to ensure that the state continues to work toward the plan's goals. The majority of states have a surveillance and evaluation section within their plans to ensure that programs are monitored, and the programs correlate with the goals of the plan.

Publishing a nutrition and physical activity plan is just the first step of many that a state must take. Implementation and follow-through are the next, and most important, steps.

C. STATE AND COMMUNITY SUCCESS STORIES

While many of the jurisdictions highlighted in the section below rely on CDC grants, there are other communities that are moving ahead even without CDC funding.

OBESITY-RELATED CDC GRANTS TO STATES — FY 2008

	Nutrition, Physical Activity & Obesity Grant	Healthy Communities*	Coordinated School Health 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	**23**	**47**	**24**

*Reflects FY 2009 Healthy Communities funding. All states were eligible to apply for funding in the range of $25,000 to $40,000. DC, Idaho, Maryland, and Montana did not apply for funding.

THE CDC'S HEALTHY COMMUNITIES PROGRAM (FORMERLY STEPS PROGRAM)

The Healthy Communities Program, formerly Steps Program, is administered by a cooperative agreement through CDC. It funds communities to implement local initiatives to reduce the burden of chronic diseases by improving physical activity, nutrition, and smoking habits. Since 2003, almost 200 communities have been selected to participate in CDC's Healthy Communities Program. During the next five years, at least 260 additional communities will receive funding and support to improve health in their communities, as well as show other communities across the nation how to implement community-level change. Healthy Communities use local schools, work sites, community events, and health care settings to promote healthy and sustainable lifestyles.[315] The following are some examples of the impact of Healthy Communities programs:

- **Broome County, New York** -- In the 2006 BRFSS survey, more than 60 percent of respondents from Broome County reported being overweight or obese. In an effort to combat obesity in rural areas, the Steps Program implemented a walking program called BC Walks. More than 80,000 people have enrolled in the program over the last four years, and results show an almost 10 percent increase in the number of people who walk 30 minutes or more five days a week. The Steps Program also helped to expand the Mission Meltaway Program, which uses a group approach to weight management and incorporates diabetes-prevention strategies. The Broome County YMCA offers free memberships for eight weeks to participants of Mission Meltaway.
- **Cleveland, Ohio** -- According to the 2005 BRFSS, 70 percent of adults in Cleveland consumed fewer than five servings of fruits and vegetables per day, and more than 50 percent did not meet the recommended levels of physical activity. In an effort to increase the availability of fresh produce in Cleveland, the Steps Program has been working with the Community Gardening Program (CGP) at Ohio State University Extension (OSUE). The CGP and OSUE are working to create gardens at schools and recreation centers in the city, as well as working with communities and social service agencies to provide gardening tools and resources. There are now 31 new community gardens in Cleveland, as well as a new farmers' market in Cleveland's Central Neighborhood.
- **Colorado** -- Although Colorado is the state with the lowest rates of obesity, each year the rates continue to rise, and according to 2005 YBRSS more than 80 percent of youth in the state do not participate in daily PE classes. In an effort to increase PE in the state, the Steps Program teamed up with the Colorado Department of Education and the Rocky Mountain Center for Health Promotion and Education. Steps worked with state agencies to form 130 coordinated school health teams, which resulted in community walks; weight-management classes; diabetes and asthma courses for students, staff, and parents; recess before lunch; breakfast in the classroom; and menu changes. One school participating in the program more than doubled the amount of time students spend in PE. Some elementary schools have made recess mandatory, and in one county, school lunch menus now offer twice as many fruits and vegetables.
- **Chelan, Douglas, and Okanogan Counties, Washington** -- In order to combat physical inactivity due to long hours sitting in an office, the Steps Program partnered with the local Chamber of Commerce to establish the Healthiest Business Challenge. Companies and their employees compete against other companies and are awarded points for smoking cessation programs, policies for healthy foods at meetings, using stairs instead of the elevator, and participating in a work-site walking program.

RACIAL AND ETHNIC APPROACHES TO COMMUNITY HEALTH (REACH) SUCCESS STORIES

The REACH program is a community based program aimed at improving health by eliminating health disparities. Through the REACH program, 40 communities across the country are funded to improve health disparities in any of the following racial and ethnic minority groups: African Americans, American Indians, Alaska Natives, Asian Americans, Pacific Islanders, or Hispanics/Latinos. The REACH program addresses health disparities at all life stages through communities, health care settings, schools, work sites and after-school programs. Some of the positive results from REACH include:[316]

- **Charleston and Georgetown Counties, South Carolina** -- Many African Americans in these South Carolina cities are living with diabetes. The REACH program, along with the Georgetown Diabetes Coalition, implemented strategies to reduce the significant health disparities between African Americans and whites diagnosed with diabetes. Many people in the local communities expressed high interest in using the Internet to find information about how to manage their diabetes, but they needed help to learn how to use the Internet. The coalition built a library partnership to promote the use of online health information. Over a three-year time frame, amputations of lower extremities among African-American men living with diabetes decreased by 36 percent in Charleston and 44 percent in Georgetown counties.
- **Los Angeles, California** -- In south Los Angeles poor nutrition and lack of physical activity are serious risk factors for heart disease among minorities in the area, and the percentage of residents with these problems is among the highest in the nation. REACH began documenting the lack of access to healthy foods in the area, as well as causes and proposed solutions to that problem. In response to REACH activities, the Los Angeles City Council, the Los Angeles County Board of Supervisors, and the state of California adopted a series of policies to improve the quality of food in publicly sponsored programs and provide incentives to attract retailers of healthy foods to socioeconomically disadvantaged communities.

GEORGIA ELEMENTARY SCHOOL SUCCESS STORY

The Browns Mill Elementary School in Lithonia, Georgia, sets the bar high when it comes to the health of its students. In 1998, the principal, Dr. Yvonne Sanders-Butler, completely overhauled the school's nutrition program. For more than 10 years now, the school has been sugar-free.

Not only that, but the day starts with an hour of physical activity, ranging from jumping jacks to exercising or dancing. The school also provides the students with a nutritious breakfast.

Since 1998 the school has seen improvements in test scores, truancy rates and counselor referrals. In the first six months after the nutrition overhaul, disciplinary incidents decreased by 23 percent, counseling referrals went down 30 percent, and standardized test scores for reading improved 15 percent.

Originally, the program was met with strong resistance, but in the 10 years since its inception, at least 17 other Georgia schools have replicated the Browns Mill Elementary School program.[317]

SECTION 3

Federal Responsibilities and Policies

Many federal departments and agencies work on issues that impact our ability to eat healthy foods, have safe opportunities to be physically active and maintain a healthy weight. However, there is no coordinated federal plan to prevent and reduce obesity and little collaboration among departments and agencies.

This section includes:

A. An overview of a number of federal departments and programs related to obesity;

B. A review of federal obesity-related legislation that is up for reauthorization in 2009;

C. An update on CDC grants to states; and

D. A summary of the investment in obesity- and disease-prevention initiatives in the American Recovery and Reinvestment Act of 2009.

A. OVERVIEW OF SOME KEY FEDERAL AGENCIES' INVOLVEMENT IN OBESITY POLICY

The summaries below focus on the ways in which key federal departments, agencies and programs have the potential to affect obesity. The summaries are not meant to describe the full range of responsibilities or activities for each department. More details on these programs are available in the 2004, 2005 and 2008 editions of *F as in Fat*, available online at www.healthyamericans.org.

HHS is involved in more than 300 obesity-related programs nationwide. Most of the agencies within HHS are involved in obesity-related programs, including:

CDC oversees the National Center for Chronic Disease Prevention and Health Promotion, including grant programs for states and communities through its Division of Adolescent and School Health (DASH), Division of Nutrition, Physical Activity, and Obesity (DNPAO), and Division of Adult and Community Health (DACH). CDC's National Center for Environmental Health also studies the relationship between the built environment (land use, urban planning, and transportation) and health issues including obesity.

Centers for Medicare and Medicaid Services (CMS) is estimated to pay over half of the nation's obesity-related health care costs.

Food and Drug Administration (FDA) oversees food labeling requirements and a "Calories Count" initiative. FDA also "encourages" restaurants to make nutritional information available to consumers and oversees the approvals of weight-loss drugs.

National Institutes of Health (NIH) conducts research and education programs. In 2003, NIH created a *Strategic Plan for NIH Obesity Research,* focused on research into lifestyle modifications, medical approaches, linkages between obesity and health, and health disparities related to obesity. A number of Institutes at NIH manage obesity and obesity-related disease-management public education campaigns, and the National Institute of Environmental Health Sciences is examining how the built environment impacts obesity.

Health Resources and Services Administration (HRSA) aims to expand health care coverage for all Americans and manages a range of programs, such as the Maternal and Child Health Block Grant and the Bright Futures Initiative, which focus on promoting healthy behaviors.

Other HHS offices, including the **Surgeon General's Office**, the **Office of Women's Health**, the **Indian Health Service**, and the **Administration on Aging** manage obesity-related public education campaigns.

President's Council on Physical Fitness and Sports encourages Americans to be more active and manages the President's Challenge Awards Program through schools.

USDA is responsible for a range of food and nutrition programs that impact obesity, including nutritional advice and guidance; food and obesity education campaigns; distribution of food products to schools; and oversight and protection of the nation's agricultural and dairy markets. USDA's Food and Nutrition Service (FNS) oversees the Supplemental Nutrition Assistance Program (SNAP), (formerly the Food Stamp Program); the Special Supplemental Nutrition Program for Women, Infants, and Children Program; the National School Lunch Program and School Breakfast Program; and the Child and Adult Care Food Program.

Dietary Guidelines for America -- A joint HHS and USDA Initiative -- released in 2005 and aimed at providing people with advice about good dietary habits.

Federal Trade Commission (FTC) regulates advertising of food and diets. It has focused on attempts to limit the marketing of "junk food" to children. FTC also monitors possible false advertising about diets products and the health benefits of foods.

Office of Personnel Management (OPM), in an effort to reduce demands on the health care system and associated costs for federal employees, has launched initiatives to educate the federal civilian workforce and retirees about healthy living and best health care strategies.

HHS, USDA, Department of Defense (DOD), and the Department of the Interior (DOI) created a *Memorandum of Understanding to Promote Public Health and Recreation* to support the use of public lands and water resources for physical activity and recreation. The memorandum particularly cites outdoor recreation as integral to a healthy and physically active lifestyle.[318] The DOI's National Park Service provides funding for the Land and Water Conservation Fund, a matching federal grant program that assists states and localities in acquiring and developing public outdoor recreation areas and facilities.

The Federal Highway Administration (FHA) and **Environmental Protection Agency (EPA)** have undertaken some efforts to work with states to redesign large highway and roadway projects.[319]

EPA has a brownfields initiative devoted to cleaning up and redeveloping former commercial and industrial sites that are abandoned or contaminated with hazardous substances or pollutants. Many of these brownfields are redeveloped into public space which can provide increased venues for recreation.

Department of Education administers the Carol M. White Physical Education Program, which offers competitive grants for the initiation, expansion, and improvement of physical education programs for K-12 students.

Department of Transportation (DOT) offers grants through the Federal Safe Routes to School Program. The grants provide funding for infrastructure improvements and educational programs, such as building safe street crossings and establishing programs to encourage children to walk and bike to school.

DOD oversees the health of the military. DOD has developed a number of programs to combat obesity in the armed services. An estimated 16 percent of active duty military are currently obese, and 18.9 percent of active duty soldiers under the age of 21 are obese.[320] Almost one-third of 18-year-olds who applied for service in all branches of the military in 2005 were overweight, according to a recent report by the Army.[321] DOD also partners with the FNS on the DOD Fresh Fruit and Vegetable Program to supply fresh fruit and vegetables to schools.

Department of Veterans Affairs (VA) serves over six million veterans. Nearly 70 percent of these veterans are overweight and approximately 30 percent are obese.[322]

OVERWEIGHT AND OBESITY IN THE MILITARY

Obesity presents the nation with a wide array of health, economic, and productivity problems, but a lesser-known consequence of the epidemic is its effect on national security. In March of 2009, the DOD reported that one in five military-age Americans is too fat to qualify for the armed services. Since 2005, the military has turned away 48,000 overweight recruits, which is a greater number than all of the American troops currently in Afghanistan. Military recruiters dismiss volunteers based solely on height and weight before entering the service on the presumption that they are not physically fit enough to enlist, train, and serve.

Curtis Gilroy, the Pentagon's accessions chief, acknowledged that the obesity problem has presented setbacks for the military, which is in the midst of two wars and in constant need of additional soldiers. "It's clearly a problem for the United States military. We're faced with a dwindling pool of the youth population in the 17-to-24 year old group about which we are very concerned," he said.[323]

The problem is not limited to new recruits. According to a U.S. military spokeswoman, 16 percent of active duty personnel are obese.[324] Some branches of the military are more affected than others. For instance, the U.S. Navy reports that 62 percent of its members are overweight, and 17 percent are obese, while the U.S. Air Force reports that 55 percent of airmen are overweight, and nearly 12 percent are obese.[325]

Service members who exceed height-weight guidelines for their branch of the military are often discharged. In fact, every year between 3,000 and 5,000 enlisted members are forced to leave the military for being overweight.[326] A 1995 Defense Department study estimated the average cost of recruiting and training a replacement enlisted member to be $40,283, or $56,782 in 2008 inflation-adjusted dollars.[327,328] This costs the Department of Defense between $170 million and $284 million a year and does not include additional obesity-related medical expenses. A separate 2007 study estimated that the U.S. military healthcare system, TRICARE, spends $1.1 billion annually to treat overweight- and obesity-related diseases.[329]

To combat the growing obesity problem among U.S. servicemen and women, each of the armed services has developed programs to promote fitness and health: the Army has **Weigh to Stay**; the Navy and Marine Corps have **ShipShape**; the Air Force has **Fit to Fight**. These programs use nutrition and fitness counseling to move military personnel and their families toward healthier food choices, exercise habits, and lifestyles.

B. FEDERAL OBESITY-RELATED LEGISLATION UP FOR REAUTHORIZATION IN 2009

1) The Child Nutrition and Special Supplemental Nutrition Program for Women, Infants, and Children Act

The Child Nutrition and Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Act is up for reauthorization by Congress in 2009. The legislation covers virtually all federal child nutrition and special supplemental nutrition programs, including:

- School Breakfast Program;
- National School Lunch Program;
- Summer Food Service Program;
- Child and Adult Care Food Program; and
- WIC Program.

These programs are administered by USDA's Food and Nutrition Service in coordination with state education, health, social service, and agriculture agencies. There are three primary goals of these federal child nutrition programs: 1) improve children's nutrition; 2) increase lower-income children's access to nutritious meals and snacks; and 3) help support the agricultural economy.[330]

An estimated 39 million children and some two million lower-income pregnant or postpartum women are served by the child nutrition programs and WIC.[331] Participation in both the school meal programs and WIC has grown over the past several years.

According to a School Nutrition Association survey of 137 school districts, almost 80 percent of the schools reported more students qualifying for free school meals over the prior school year (2007-2008), and 65 percent showed an increase in students qualifying for reduced-price meals. The average increase in free and reduced-price meal participation was reported at 2.5 percent, which represents an additional 425,000 meals served in the 2008-2009 school year.[332]

Meanwhile, WIC participation grew by nearly 10 percent between fiscal year 2004 and fiscal year 2008. Yet, WIC infrastructure funding has failed to keep pace with inflation remaining static at roughly $14 million since 1999.[333] Economists project that the increasing uncertainties in the economy will result in even more Americans becoming eligible for WIC. For instance, in the state of Missouri alone, more than 13,000 families joined WIC in the last year, an increase of nearly 10 percent.[334]

A number of advocacy organizations, including the National Alliance for Nutrition and Activity (NANA) and the National WIC Association, have suggested a series of recommendations to improve the nutritional quality of foods sold in schools, promote breastfeeding, and make infant formula affordable.

Some issues under consideration include:

- Updating the national nutrition standards for school foods sold outside of the reimbursable school meal programs (i.e. competitive foods sold in vending machines, a la carte lines, and school stores);
- Eliminating the current requirement for schools to sell milk at "various fat levels," so they can be allowed to sell only fat-free and one percent milk as recommended by the 2005 Dietary Guidelines for Americans;
- Increasing school meal reimbursement rates so schools can comply with nutritional standards, including the 2005 Dietary Guidelines for Americans;
- Increasing resources to strengthen local school wellness policies and to fund the USDA Team Nutrition Network program; and
- Enhancing programs to support breastfeeding.

In December 2007, USDA made significant changes to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), adding fruits, vegetables, and whole grains to the list of grocery items covered. States have until October 1, 2009, to implement the new WIC regulations, but many have moved to implement them ahead of the deadline.

Under the old regulations, WIC participants were able to purchase iron-fortified infant formulas, milk, cereal (infant and adult), juice, eggs, cheese, dried legumes or peanut butter, tuna, and carrots. The updated WIC list of approved foods contains all of the previously approved items, plus fruits (fresh, frozen, dried or canned), vegetables (fresh, frozen, dried or canned), whole wheat bread or other whole grains, soy-based beverages and tofu, light tuna, salmon, sardines, mackerel, canned legumes, and infant foods.[335]

The changes to WIC also include incentives to promote breastfeeding among low-income women.

2) The Elementary and Secondary Education Act

The Elementary and Secondary Education Act, widely known as the No Child Left Behind Act (NCLB), has not yet been reauthorized as of Spring 2009. Parts of the legislation could influence how physical education and physical activity are included within the school day.

Senator Tom Harkin (D-IA) and John Ensign (R-NV) and Representatives Ron Kind (D-WI), Zach Wamp (R-TN) and Jay Inslee (D-WA) introduced the **Fitness Integrated with Teaching (FIT) Kids Act of 2009 (S.634/H.R.1585)**, and its provisions could be considered in the reauthorization of the Elementary and Secondary Education Act.

Specifically, the FIT Kids Act would: require state and local educational agency report cards to include information on school health and physical education programs; include the promotion of active lifestyles in educational grant programs; support professional development for teachers and principals to promote healthy habits and participation in physical activity; and fund a study by the National Academy of Sciences to assess the impact of health education and physical activity on student achievement and to find ways to make and measure improvements to health education and physical education in schools.

3) Reauthorization of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) will be reauthorized in 2009. The legislation is a vehicle for improving federal programs that support active transportation (travel by bike, foot, or other non-motorized means), safe and complete streets, and public transportation.

Researchers partially attribute a decline in Americans' physical activity levels to a reliance on motor vehicles for commuting to and from work and school. Studies have shown that:

- Non-leisure time physical activity has decreased substantially in the past 20 to 30 years due to increasing mechanization at work and in the home.[336] "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.[337]
- A majority of U.S. adults (20-74 years old) walk less than two to three hours per week and accumulate less than 5,000 steps per day.[338] U.S. physical activity guidelines call for adults to walk 10,000 steps daily.
- The automobile 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.[339]
- 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.[340]

Complete Streets Initiatives and the Safe Routes to Schools Program are two programs that could be included and expanded in the transportation reauthorization bill.

Complete Streets Initiatives

In March 2009, Sen. Tom Harkin (D-IA) and Rep. Doris Matsui (D-CA) introduced the Safe and Complete Streets Act of 2009 (S. 584/ H.R. 1443). The purpose of the bill is to ensure that "all users of the transportation system, including pedestrians, bicyclists, and transit users as well as children, older individuals, and individuals with disabilities, are able to travel safely and conveniently on streets and highways."[341] *(See Section 2: State Responsibilities and Policies for a further discussion of Complete Streets Initiatives.)*

Safe Routes to School Program

The Safe Routes to School National Partnership, which counts more than 400 groups including national non-profit organizations such as Active Living by Design, the American Academy of Pediatrics, the American Heart Association, the Campaign to End Obesity, and National Association of Chronic Disease Directors, has called for an expansion of the Safe Routes to School (SRTS) program as part of transportation reauthorization. The SRTS program uses a variety of education, engineering and enforcement strategies to make school routes safer for children.

The federal SRTS program provides funds that can be used for either infrastructure or public education. SRTS funds are to be used for the planning, design, and construction of infrastructure-related projects that will substantially improve the ability of students to walk and bike to school. These projects can be located on any public road or any bicycle or pedestrian pathway or trail within approximately two miles of a primary or middle school. SRTS also funds "activities to encourage walking and bicycling to school, including public awareness campaigns and outreach to press and community leaders, traffic education and enforcement, student training, and funding for training volunteers and managers of SRTS programs."[342]

In August of 2000, Congress funded two SRTS pilot projects in Marin County, CA, and Boston, MA, through the National Highway Traffic Safety Administration.[343] Within a year of the launch of the pilot projects, many other grassroots SRTS efforts began throughout the United States. In August 2005, SAFETEA-LU devoted $612 million for The National Safe Routes to School Program from 2005 through 2009.[344] States have awarded nearly 90 percent of available funding through FY2008, and more than 4,300 schools in every state in the nation are implementing federally funded Safe Routes to School initiatives.[345]

SPOTLIGHT ON RECENT REAUTHORIZATION OF THE CHILDREN'S HEALTH INSURANCE PROGRAM (CHIP) ACT

In February 2009, President Barack Obama signed the Children's Health Insurance Program (CHIP) into law to help states insure more low-income children who are not eligible for Medicaid. This program will help provide health services, including obesity benefits, to millions of children. The law also authorized $25 million for a Childhood Obesity Demonstration Project that includes community-based activities related to reducing childhood obesity. If a program is successful as a demonstration, it may be further expanded.

The Secretary of HHS and the Administrator of CMS are authorized to conduct the CHIP demonstration project, with the goal of developing a comprehensive and systematic model for reducing childhood obesity by awarding grants to communities. Eligible grantees include cities, counties, Indian reservations, universities, colleges, health centers, care providers, and other community-based organizations.[346]

The interventions will be designed to identify behavioral risk factors for childhood obesity, screen the most at-risk children, and provide ongoing support for this target population.

Examples of these interventions include:

- Establishing programs for after school and weekend activities to promote healthy eating behaviors and physical activity;
- Developing healthy lifestyle curricula designed to promote healthy eating and increase physical activity;
- Implementing healthy lifestyle classes for parents and guardians, with an emphasis on healthy eating behaviors and physical activity for children; and
- Carrying out educational, counseling, promotional, and training activities through local health care delivery systems.

CLINICAL PREVENTION BENEFITS FOR PATIENTS AT-RISK FOR OBESITY

Currently, the Medicaid and CHIP benefits packages offered to clients vary from state to state.

- Within Medicaid, reimbursement codes are available to bill for all recommended childhood obesity prevention services. Yet, state Medicaid provider manuals often do not include specific reference to coverage of obesity-prevention and -treatment services. As a result, some providers remain uncertain about which services they can provide and if they can be reimbursed.[347]
- Ten states did not address nutritional assessment and counseling reimbursement for overweight or obese children as part of Medicaid's Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefits. In these 10 states, the EPSDT provider manual did not specifically mention whether Medicaid would pay for these services, and no Current Procedural Terminology (CPT) codes were listed to bill for these services.[348] In these states, it only can be assumed that these services are not likely to be reimbursed.
- Only 11 states provide strong evidence that they will reimburse for nutritional and behavioral therapy for overweight or obese children as part of Medicaid's EPSDT benefits, meaning the EPSDT provider manual specifies that the state will pay for nutritional assessment and counseling that CCPT codes are listed to bill for these services.
- Only two states' Medicaid manuals provided guideline references for treatment of obesity in adults.
- Twenty-six states explicitly cover nutritional assessment and consultation for obese adults under Medicaid, while 20 explicitly do not.
  - Drug therapy to treat obesity is the least frequently covered and discussed treatment category in Medicaid; only 10 states cover it while 33 make no mention of it within their provider manuals.
  - Bariatric surgery is covered by 45 state Medicaid plans.
- In states that cover their CHIP population through benchmark or benchmark-equivalent coverage, there is no standard benefit for obesity coverage. Instead, any coverage that is available will vary from plan to plan. There is no guarantee that CHIP programs are screening children for obesity risk and providing appropriate lifestyle counseling to drive behavior change.[349]
- In states that run their CHIP program as a Medicaid expansion, health care providers are likely to face many of the same challenges that they encounter in providing obesity-related services through Medicaid; that is, a lack of clarity about coverage levels and reimbursement for obesity-related services, which can serve as a disincentive to delivering these services.[350]

Source: Except where noted, the information regarding Medicaid and CHIP plans is from an analysis by the George Washington University School of Public Health and Health Services that was published in the 2008 F as in Fat: How Obesity Policies are Failing in America. *That report is available online at http://www.healthyamericans.org*

C. CDC GRANTS TO STATES

Each year, the CDC issues a number of grants to states to support efforts aimed at preventing obesity and obesity-related diseases. Many states do not receive these grants due to limited overall funding for these programs.

The proposed CDC budget from the administration for FY 2010:[351]

- Proposes to sustain the investment in many chronic disease prevention programs, such as the Division of Nutrition, Physical Activity, and Obesity and the Healthy Communities program;
- Proposes a $5 million increase in School Health to fund 10 additional state education agencies to help meet the health and safety needs of K-12 students; and
- Proposes a $4 million increase in the REACH program.

Division of Nutrition, Physical Activity, and Obesity (DNPAO): Through its Nutrition and Physical Activity Program to Prevent Obesity and Other Chronic Diseases, the DNPAO funds programs that use various nutrition and physical activity intervention strategies to address obesity and other chronic diseases.[352] States that are awarded DNPAO grants are required to create, implement, and monitor a nutrition, physical activity, and obesity state plan; monitor the prevalence of overweight, obesity, nutrition quality and physical activity levels; and monitor the impact of the program in changing weight-related behaviors, including evaluating progress and effectiveness of their annual work plan. Under the new five-year grant cycle that began in June 2008, 23 states received funding, five fewer than the previous grant cycle. DNPAO received an additional $2 million in the FY2009 omnibus appropriations bill, which will support two additional states for a total of 25 states.

Division of Adolescent and School Health (DASH): As part of its mission to prevent the most serious health risk behaviors among children, adolescents and young adults, DASH currently provides funding for state and territorial education agencies and tribal governments to help school districts and schools implement a Coordinated School Health Program, and, through this approach, increase effectiveness of policies, programs, and practices to promote physical activity, nutrition, and tobacco-use prevention among students.[353] School health programs encompass health and physical education, school meals, health services, and healthy school environments. The Coordinated School Health Program is currently available to only 22 states and one tribal government due to limited funds. Twenty states, the District of Columbia, four tribes and three territories were approved but unfunded in the latest grant cycle, beginning on March 1, 2008. DASH received an additional $3 million in the FY 2009 omnibus, which will support Healthy Passages, a multi-year study that follows a group of fifth-grade students through age 20 to improve our understanding of what factors help keep children healthy.

Division of Adult and Community Health (DACH): DACH is charged with providing cross-cutting chronic disease and health promotion expertise and support to CDC's National Center for Chronic Disease Prevention and Health Promotion. It oversees the **Healthy Communities Program**. The Healthy Communities Program issues grants to initiate community-based interventions that help prevent or halt the spread of obesity. These initiatives focus resources on at-risk populations. CDC works with local and state health departments, as well as non-governmental organizations with roots in local areas to encourage people to be more physically active, eat a healthy diet, and avoid tobacco use. Since 2003, more than 240 communities have been selected to participate in CDC's Healthy Communities Program and over the next five years, an additional 300 communities will receive funding and technical support.

DACH also oversees the **Racial and Ethnic Approaches to Community Health (REACH) Program.** The REACH program is a community-based program aimed at improving health by eliminating health disparities. Through the REACH program communities across the country are funded to improve the health disparity gap in any of the following racial and ethnic minority groups: African Americans, American Indians, Alaska Natives, Asian Americans, Pacific Islanders, or Hispanics/Latinos. The REACH program addresses health disparities at all life stages through communities, health care settings, schools, work sites, and after-school programs. Since 1999, more than 40 communities have been selected to participate in CDC's REACH Program. The president's proposed FY 2010 budget includes a $4 million increased investment in REACH that would fund 12 to 15 additional communities at $200,000-$250,000 for two-year planning grants. Grantees would use the money to conduct community outreach to racial and ethnic minority populations; assemble a community coalition; conduct a community needs assessment; and develop a community action plan.

APPROPRIATIONS FOR CDC PROGRAMS AND DIVISIONS				
Division/Program	**FY 2008**	**FY 2009**	**President's FY 2010 Proposal**	**Difference in Funding**
Division of Nutrition, Physical Activity, and Obesity (DNPAO)	$42,191,000	$44,300,000	$44,402,000	+$102,000
Division of Adolescent and School Health	$54,323,000	$57,636,000	$62,780,000	+$5,144,000
Healthy Communities	$25,158,000	$22,771,000	$22,823,000	+$52,000
REACH	$33,860,000	$35,553,000	$39,644,000	+$4,091,000

D. SUMMARY OF THE OBESITY- AND DISEASE-PREVENTION INITIATIVES IN THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009

Congress passed and the President signed into law the American Recovery and Reinvestment Act (ARRA) (P.L. 111-5) in February 2009. The final bill included $1 billion for a Prevention and Wellness Fund, including $650 million for evidence-based clinical and community-based prevention and wellness strategies. In addition, $500 million was included for bolstering the health care and public health workforce. The bill includes accountability measures to ensure the funding is being used to directly improve the health of Americans and directs HHS to come up with an accountability plan within 90 days for spending the resources in the most effective way possible.

Along with HHS, other departments that work to promote healthy eating and nutrition also received stimulus funds. For example, within the U.S. Department of Agriculture, ARRA included a number of nutrition-related provisions, such as $500 million for the WIC program; a 13.6 percent increase in the value of benefits provided through SNAP (formerly the Food Stamp Program), $150 million for the Emergency Food Assistance Program to purchase food for food banks, and $100 million for an equipment-assistance grant program for the National School Lunch Program.

Additionally, the Department of Transportation received $825 million for Transportation Enhancements, which are 12 eligible activities related to surface transportation, including pedestrian and bicycle infrastructure and safety programs, conversion of abandoned railway corridors to trails, and other priorities.

Obesity and the Economy

SECTION 4

As the United States struggles through the worst economic contraction since the Great Depression, public health officials and policy makers are bracing for an uptick in obesity rates and obesity-related diseases as families and individuals cut back on healthier, but expensive, food choices and limit their physical activity.

According to the U.S. Bureau of Labor Statistics, between December 2007 and May 2009, the U.S. economy shed seven million jobs, and unemployment climbed from 4.9 percent to 9.4 percent. As people lose jobs, they also lose their employer-sponsored health insurance and access to health and wellness services that support healthier lifestyles. Government programs that serve the poor and uninsured cannot fully mitigate the recession's negative impact as increased demand strains available services. Lack of health insurance translates into less access to health care providers and less chance of receiving a diagnosis of obesity and treatment and counseling to address the problem.[354]

The rising unemployment rate also means many more Americans are living in poverty, which could have significant implications for obesity rates. According to the Center on Budget and Policy Priorities (CBPP), if unemployment rises to nine percent by the end of 2009, the number of poor Americans will hit 7.5 to 10.3 million, the number of poor children will equal 3.3 million, and the number of children in deep poverty will reach two million.[355]

Americans living in low-income neighborhoods already face significant problems with access to healthy foods and opportunities for physical activity.

- Fast-food restaurants and convenience stores are much more accessible in low-income neighborhoods than chain supermarkets that offer a healthier array of foods including fresh fruits and vegetables;[356]
- Crime rates and perceptions of danger are higher in low-income neighborhoods.[357] Whether real or perceived, having unsafe neighborhoods means fewer children walking to school and playing outside and more time spent in front of the television;[358] and
- Low-income families may have little money left over after paying for housing, utilities, and transportation to buy healthy food, which is generally more expensive.[359]

The economic recession will only aggravate these existing circumstances. A survey in the United Kingdom finds that efforts to combat obesity may erode during the recession.[360] According to the survey, one in four people claim that they are making healthier eating less of a priority as the recession continues, while more than 50 percent of respondents said that price is a more important factor than nutrition.[361]

One international study found that living in a stressful household may raise a child's risk of becoming obese.[362] This Swedish study found that five- and six-year-old children living with "high stress" families were at almost twice the risk for obesity than those coming in "low stress" families.[363] As families confront economic challenges posed by the recession, levels of stress will increase for many and make their children more vulnerable.

The recession has pushed more Americans to seek help from federal and state programs. The number of Americans participating in the Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, has hit a historic high as more as more people seek government assistance in feeding their families. There has also been an uptick in the number of children participating in the federal School Breakfast and Lunch Programs and states report increasing numbers of people seeking coverage under Medicaid and the Children's Health Insurance Program (CHIP).

Recognizing the health burdens imposed by the worsening economy, the Obama administration and Congress used the 2009 American Recovery and Reinvestment Act (ARRA) to address some of these issues by:

- Expanding SNAP and Medicaid coverage;
- Subsidizing 65 percent of COBRA payments for newly unemployed;
- Expanding unemployment insurance; and
- Directing $650 million towards community-based wellness interventions.

However, it is unclear whether these significant investments will be enough to ease the health burdens imposed by the worsening economy.

The following section outlines challenges the country faces because of the current recession and highlights some opportunities that have arisen as a result of the crisis.

A. THE HIGH PRICE OF FOOD

> "ECONOMIC ADVERSITY INDUCES CONSUMERS TO REPLACE NUTRITIOUS BUT EXPENSIVE PRODUCE WITH LESS COSTLY, HIGH-CALORIE, COMMODITY-BASED PRODUCTS."
>
> DAVID S. LUDWIG AND HAROLD A. POLLACK, WRITING IN THE *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.[364]

USDA predicts that food prices will rise four to five percent during 2009. The current economic climate affects the way consumers think about food as well as their purchasing trends.[365] A survey consisting primarily of families on the West Coast reports that 54 percent of respondents said grocery shopping has become more difficult, with almost a quarter of those responding saying they are having a more difficult time feeding or can no longer afford to feed their families.[366]

According to Carol Tucker Foreman, director of the Consumer Federation of America, middle- and low-income families may be simultaneously pushed towards hunger and obesity. "They will be hard pressed to buy fresh fruits and vegetables as prices rise. Instead, they will look to the cheapest foods, which aren't necessarily the healthiest."[367] These unhealthy, cheaper options are often high in calories and fat.

Rising food prices coupled with the recession have had a serious effect on consumers purchasing trends. According to a professor of epidemiology and population health at the Albert Einstein College of Medicine in New York, to eat the recommended five to nine servings of fruits and vegetables a day would cost an individual three times more than a diet consisting of processed foods.[368] While a 2007 study by researchers at the University of Washington found that unhealthy, high-calorie foods cost an average of $1.76 per 1,000 calories, while low-calorie, nutritious foods cost $18.16 per 1,000 calories.[369] The study also found that unhealthy, high-calorie foods are not only the least expensive, but also most resistant to inflation.[370] As University of Washington epidemiologist Adam Drewnowksi, one of the study's co-authors, told the Philadelphia Inquirer, "Fruits, vegetables, and fish are becoming luxury goods completely out of reach of many people. Consumption of cheap food will only grow."[371]

B. FOOD ASSISTANCE PROGRAMS

The recession is forcing more Americans to seek food assistance. As of February 2009, participation in SNAP reached a record 31.8 million.[372] One in five children – and one in 10 people overall – is now receiving federal food assistance.[373] From November 2007 to November 2008 all states saw an increase in SNAP participation – with 14 states logging increases of 15 percent or more.[374]

Despite the growing demand for federal food assistance, the benefits package has not kept pace with rising food prices. In response to this gap, the ARRA increased SNAP benefits temporarily by 13 percent – an increase of about $80 a month for many families.[375] This should allow participants to purchase a low-cost, but nutritionally adequate diet established by the USDA, known as the "Thrifty Food Plan."[376]

Lawmakers previously had attempted to address the gap between benefits and rising food prices via the 2008 farm bill, which included several provisions that enhanced the federal food safety net, by:

- Increasing the minimum monthly benefit from $10 to $14;
- Increasing the minimum standard deduction;
- Considering dependent care costs (such as child care and care for the elderly and disabled) when determining eligibility and benefit amount; and
- Excluding retirement and education accounts from resources.

Americans also are relying increasingly on local food banks. The 200 food banks served by Feeding America, an organization that works with corporate donors to secure food and grocery products nationally to distribute to local food banks, reported an average increase in demand exceeding 30 percent in 2008.[377] The food banks cited the rising cost of food, increasing unemployment, and increasing underemployment as the most prominent reasons for this heightened demand.[378]

More often than not, food banks do not have the resources to provide healthy choices recommended by dietary guidelines and are only able to provide inexpensive, calorie dense options. Food banks will receive some support from the ARRA, which gives them added funds to purchase commodities such as canned fruits and vegetables, pasta products, and soups through the Emergency Food Assistance Program. However, these products tend to be higher in calories and less nutritious than fresh produce, lean meat and dairy products.

C. SCHOOL MEAL PROGRAMS

The recession is also affecting the National School Lunch Program and School Breakfast Program. The School Nutrition Association released a report in December 2008 that surveyed 137 school districts across the United States about student participation in free and reduced-price meals.[379] Compared with the 2007-2008 school year, almost 80 percent of the schools reported more students qualifying for free school meals and 65 percent showed an increase in students qualifying for reduced-price meals. The average increase in free and reduced-price meal participation was 2.5 percent, which represents an additional 425,000 meals served in the 2008-2009 school year. Some food service directors suspect that parents do not know they can apply for the program at any time during the year, and therefore expect more to apply as information about the free and reduced-price program continues to spread.[380]

As schools struggle to feed more students, they also must grapple with rising food prices. The cost of staples including, milk, grains, produce, and meat have risen over 23 percent.[381] The Miami-Dade County Public School System paid $4.5 million more just for milk in the 2007-2008 school year.[382]

In many cases, schools have seen no alternative to cutting back on more expensive foods such as whole-grain breads and fresh fruits and vegetables.[383] According to Kenneth Hecht, Executive Director of California Food Policy Advocates, a public policy organization dedicated to improving the health of low-income Californians, schools are forced to cut back on the healthier, more costly items because school boards do not want to lose money.

"This insistence that food service stay in the black means that revenues must be high," he told the U.S. House of Representatives Committee on Education and Labor, which held hearings on the subject in March 2008.[384] Without an increase in state or federal funding, he warned that schools may offer less-healthy, less-expensive foods that they can sell for a profit, foods such as sugary drinks and potato chips.

D. FAST FOOD AND THE RECESSION

> "CONSUMERS ARE BEING PRESSURED BY HIGHER FOOD PRICES AND INCREASED ENERGY AND MEDICAL COSTS. FAST FOOD TENDS TO BE SKEWED TOWARD LOWER-INCOME CONSUMERS, AND INCREASES IN NON-DISCRETIONARY COSTS ALTER THEIR SPENDING HABITS…IN TIMES OF ECONOMIC WEAKNESS AND/OR RISING COSTS, CONSUMERS TEND TO TRADE DOWN TO LOWER PRICE POINTS RATHER THAN PREPARE FOOD AT HOME."
>
> — STANDARD & POOR'S[385]

Although higher food prices are bad news for many Americans' wallets, waistlines, and health, the nation's fast-food retailers may not feel much economic pain. In fact, while the majority of restaurants are struggling to survive, McDonald's continues to enjoy growth.[386] Company sales in the United States grew 4.5 percent in the year ending November 2008 – that month was the 55th straight month with a sales increase – and global sales were up 7.7 percent over the same period.[387] In 2008, it was one of only two companies on the Dow Jones industrial average that saw share prices rise. Wal-Mart was the other company.[388]

Yum! Brands – the owner of chain restaurants such as Kentucky Fried Chicken (KFC), Pizza Hut, and Taco Bell – also reported worldwide sales growth of 7 percent in 2008.[389]

Both McDonald's and Yum! Brands are now positioning themselves to take advantage of the downturn. KFC, a chain that has never had a value meal in the United States, introduced a value menu in February 2009 in an effort to attract more consumers during the recession.[390] Both McDonald's and KFC also plan to combat the recession by adding hundreds of additional restaurants worldwide.[391]

In a time of widespread economic troubles, fast-food outlets are able to increase their sales by offering different dollar-menu items and cheap combo meals. And while the cost of a typical meal like a double-cheeseburger, medium French fries, and a medium Coca-Cola can vary throughout the country, the total calories served does not: 1,130 with no dessert.

E. HEALTH COVERAGE AND THE RECESSION

Employer-sponsored insurance is the leading source of health insurance in the United States, covering about 158 million non-elderly people.[392] As unemployment rates grow – one in 12 Americans is currently unemployed – there is a corresponding increase in the number of uninsured Americans. According to the Henry J. Kaiser Family Foundation, each one percent increase in the unemployment rate leads to:[393]

- A three to four percent decrease in state revenues;
- An additional one million new enrollees in Medicaid and CHIP plans; and
- An additional 1.1 million newly uninsured Americans.

Already, the downturn is making it difficult for states to meet obligations to current Medicaid and CHIP beneficiaries, not to mention the millions more beginning to seek coverage due to economic difficulties.

Maintaining health insurance coverage after getting laid off is very important for the health and economic security of individuals and families. A survey during the 2001 recession found that adults are at high health and economic risk when they lose their health insurance, even for a short period.[394] More than half of uninsured adults surveyed went without needed medical care – failing to fill prescriptions, see a doctor when sick, or get recommended tests or treatments – and more than a quarter reported medical bills so high they had to change their way of life, exhaust savings, or go without basic necessities.[395]

The 1986 Consolidated Omnibus Budget Reconciliation Act (COBRA) protects health insurance coverage for workers and their families if they change or lose jobs by allowing them to extend their employer-sponsored coverage by paying the full health insurance premium themselves. But, with the cost of a health insurance plan for a family averaging around $12,000 per year, COBRA-coverage is unaffordable for most people.[396] The ARRA sought to address this problem by providing $25 billion for temporary COBRA subsidies. Even if the federal government pays 65 percent of COBRA premiums, unemployed Americans still will have difficulty paying the remaining 35 percent, about $350 per month.

Many Americans are turning to one of the safety-net programs, such as Medicaid or CHIP. But with revenues declining, many states are struggling to maintain benefits and services to current beneficiaries and are unable to take on additional ones.[397] Diane Rowland, executive vice president of the Kaiser Family Foundation, explained the dilemma in a recent article. Because states must balance their budgets annually, declines in state revenue require them to raise taxes or to cut spending. Given the political difficulties of raising taxes in a recession, states typically choose to cut spending on social programs, including Medicaid. "Since Medicaid is jointly financed by the federal and state governments," Dr. Rowland notes, "when states try to save money by trimming back their Medicaid programs, the cuts are doubly deep: to save a state dollar, the state loses at least a dollar of federal matching funds."[398]

To help address this paradox the ARRA included $87 billion for a temporary increase in the federal share of Medicaid costs. States can qualify for the enhanced federal financing, if they do not make changes to restrict eligibility levels or make it more difficult for people to apply for or renew coverage.[399]

However, even if people are able to access Medicaid there is no guarantee they will receive the kind of care needed to prevent or treat obesity. According to a 2008 analysis by Trust for America's Health and the George Washington University School of Public Health and Health Services, insurance benefits for obesity-related treatments vary greatly across the states:[400]

- Ten states did not address nutritional assessment and counseling reimbursement for overweight or obese children as part of Medicaid's Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefits. In these 10 states, the EPSDT provider manual did not specifically mention whether Medicaid would pay for these services, and no Current Procedural Terminology (CPT) codes were listed to bill for these services.[401] In these states, it only can be assumed that these services are not likely to be reimbursed;
- Only 11 states provide strong evidence that they will reimburse for nutritional and behavioral therapy for overweight or obese children as part of Medicaid's EPSDT benefits, meaning the EPSDT provider manual specifies that the state will pay for nutritional assessment and counseling that CPT codes are listed to bill for these services;
- Only two states' Medicaid manuals provided guideline references for treatment of obesity in adults; and
- Twenty-six states explicitly cover nutritional assessment and consultation for obese adults under Medicaid, while 20 explicitly do not.
  - Drug therapy to treat obesity is the least frequently covered and discussed treatment category in Medicaid; only 10 states cover it, while 33 make no mention of it within their provider manuals; and
  - Bariatric surgery is covered by 45 state Medicaid plans.

F. OPPORTUNITIES IN THE MIDST OF THE ECONOMIC CRISIS

Although a bad economy generally has deleterious effects on health, there still can be opportunities for positive change.

Investment in Health and Physical Activity

Congress passed the ARRA on February 14, 2009. The final bill included $1 billion to support evidence-based clinical and community-based prevention and wellness strategies, including $300 million for immunizations, $650 million to support prevention and wellness activities targeting obesity, smoking, and other risk factors for chronic diseases, and $50 million for reducing health care associated infections. Another $500 million was directed toward bolstering the medical and public health workforce.

The legislation has measures to ensure the funding is being used to directly improve the health of Americans. Congress directed the HHS to come up with an accountability plan within 90 days for spending the resources in the most effective way possible.

The ARRA presents a variety of opportunities for states and communities to use the funding to create safe places for physical activity and increase active transportation. Billions of dollars have been earmarked for sectors such as mass transit, schools, and communities. More than $45 billion is available for transportation investments, some of which could create streets and neighborhoods that function in a way that is safe for all users – pedestrians, bicyclists, motorists, and public transit riders. Another $10 billion has been provided for public transportation investments, which offers the perfect opportunity for communities to enhance their mass transit. More than $30 billion can help repair and renovate schools, particularly with improvements to gymnasiums, playgrounds, and recreational centers. These are just a few of the many ways that states and local governments can put AARA funding to health-conscious use.

Healthy Lifestyle Changes

The Gardening Boom

With the economy showing no signs of real improvement, the gardening industry is booming in 2009.[402] Demand is so great that many companies are running out of seeds. "We're selling out," said George Bell, CEO of Burpee Seeds, the largest mail-order seed company in the U.S.[403]

The savings that individuals and families can reap from vegetable gardens are huge. A study conducted by Burpee Seeds showed that $50 spent on gardening supplies and seeds can produce an annual return of $1,250.[404] Community gardens are also drawing much more interest, with wait lists doubling, tripling, and even quadrupling.[405] Many gardening advocates petitioned President Obama to plant a garden at the White House, and in March 2009, First Lady Michelle Obama planted the first White House vegetable garden since Eleanor Roosevelt's World War II victory garden.

This fall, White House chefs will use the local harvest to feed the First Family and world leaders. But the First Lady said the main motivation for the garden was to educate children about the health benefits of eating fruit and vegetables and then "begin to educate their families and that will, in turn, begin to educate our communities."

More Americans Using Public Transportation

Despite falling gas prices, more Americans took trips on public transportation in 2008.[406] Their 10.7 billion rides represented a four percent increase from 2007 – and the highest ridership numbers in 52 years. According to the U.S. Department of Transportation (DOT), vehicle miles traveled on the nation's roads decreased by almost four percent in 2008.

In a report released by the American Public Transportation Association (APTA), its president, William W. Millar, said, "Given our current economic condition, people are looking for ways to save money and taking public transportation offers a substantial savings of more than $8,000 a year."[407]

Public transportation is not only good for the environment and economy, but for Americans' health. Those who take public transportation are likely to lead a more active lifestyle because they often walk, bike, or jog to transit stops. According to a study sponsored by DOT, Americans who use transit spend a median of 19 minutes daily walking to and from that transit.[408] A separate study of commuters in metropolitan Atlanta found that public transit users are three times more likely than others to be fit and meet the daily recommended levels of physical activity by taking short walks to and from public transportation stops and final destinations.[409] "The idea of needing to go to the gym to get your daily dose of exercise is a misperception," noted co-author Lawrence Frank of the University of British Columbia. "These short walks throughout our day are historically how we have gotten our activity. Unfortunately, we've engineered this activity out of our daily lives."[410]

SECTION 5

Summer Vacation and Childhood Obesity

> "The data don't provide much detail on kids' home lives, but if you have some Tom Sawyer idea that kids are climbing trees all summer and only eat when called to dinner, that doesn't square with the fact that they're gaining weight so quickly. The other stereotype -- that kids are watching TV, playing video games, and eating chips out of a bag -- may be closer to the truth, at least for kids who are overweight."
>
> -- Paul von Hippel, Ohio State University statistician[411]

Childhood obesity continues to be a serious problem in the United States. Over the past 30 years, the prevalence of overweight children has tripled.[412] While a 2008 government report suggested that that the problem may have hit a plateau, that plateau is far too high. One in three American children remains overweight or obese.[413] Pediatricians are diagnosing related diseases in overweight children that were once thought of primarily as "adult" diseases, such as type 2 diabetes.[414] Studies show that childhood obesity is strongly linked to adult weight problems and is significantly associated with heart disease later in life.

Schools have often been blamed for missing opportunities to combat America's childhood obesity problem, or even exacerbating it. School meals routinely do not meet nutrition standards when scrutinized, and many school districts do not enforce physical education requirements.[415] Due to these shortcomings, a widely held assumption has developed, where many assume that schools are largely responsible for the childhood obesity epidemic. Conversely, many also believe that time away from school is healthier and more physically rigorous for young children. By extension, many adults idealize children's activities during the summer months, assuming that while children are freed from their desks, they run, jump and play for hours, engaging in intense physical activity in the fresh air. New data, however, suggests that many children are more likely to return to school in September far heavier than when they left in June.

A. THE SUMMER SLIDE

School teachers and administrators have long referred to the drop in students' reading and math scores over the summer months as the "Summer Slide." New research on children's health has given the term another dimension, as evidence has repeatedly revealed a steep decline in physical fitness and nutrition during the summer. Experts now point to the summer months as the time that children gain weight the fastest, due to a lack of supervision.[416,417]

New evidence suggests that children actually gain weight two to three times faster during the summer months, when compared to their weight gain during the school year.[418] Enhanced summer weight gain is even more pronounced among black, Hispanic, and overweight children.[419] Although some weight gain is expected and healthy for growing children, the fact that children add weight at such a rapid pace over the summer is difficult to justify as part of their natural growth.[420] Researchers involved in a 2007 study found that children were not only experiencing accelerated weight gain during the summer, but that their weight gain decreased once the students reentered school.[421]

B. NUTRITION HURDLES OUTSIDE OF SCHOOL

A new study shows that the problem of accessing nutritious food probably has little to do with any specific seasonal changes. Rather, the weight gain is related to the quality of food available in different settings.[422] A 2009 study of school-age children shows that the largest proportion of low-nutrient, energy-dense foods is consumed at home, not school.[423] The study also showed that children who participate in the National School Lunch Program (NSLP) often consumed fewer high-calorie beverages than those who do not participate. Participants did not compensate for the reduced beverage consumption by drinking more after school.

Children ate or drank the most calories at locations away from home and school, including such sources as restaurants, corner stores, after-school clubs, and ice-cream trucks.[424]

C. SUMMER FITNESS LOSS

Nutrition lapses are not the only problem during the summer. Flying in the face of the assumption that children spend the summer months in constant motion, research shows children participate in less physical activity during the summer than they do during the school year. In fact, a small study of overweight, rural middle school children reported that improvements in cardiovascular fitness seen during the nine-month school year were lost during the summer break.[425]

A separate year-long study of Greek pre-adolescent school children compared physical fitness over the academic school year and the summer holidays. The authors found that children accomplished significant physical fitness improvements over the school year, with little to no changes during summer vacation.[426] The researchers found that childhood physical fitness activity is a major contributing factor for obesity over time and into adulthood. They credited physical fitness classes at school for the increase in fitness during the school year and the absence of these classes for the stagnation in the summer.

D. IMPLICATIONS FOR PREVENTION EFFORTS

Child obesity experts have long focused most of their attention on schools, urging policy makers to structure reforms around the institutions where children can spend nearly seven hours of their day.[427] The data on children's summer weight gain trend indicate that obesity-prevention efforts concentrating solely on the school setting may miss an important aspect of the problem: children's behavior patterns during summer vacation.

REAL COMMUNITIES PREVENTING THE SUMMER SLIDE

Unequal access to summer learning opportunities and a lack of structured activity may exacerbate disparities between children's rates of weight gain. Some state and local programs are preventing learning loss and weight gain by keeping kids active during the summer months.

Montgomery County, MD -- Summer Adventures in Learning offers free breakfast and lunch and three hours of academics every weekday for four weeks, supplemented by afternoon arts and physical education. In Southern Maryland, St. Mary's County offers a similar opportunity through its Eleven Month School Program.[428]

Florida -- Nationally, only one in five young people who qualify for free and reduced-price school lunches participates in federal nutrition programs during the summer months.[429] To make that benefit available to low-income children year-round, some schools are keeping cafeteria doors open through the summer. The state of Florida passed a law in 2005 mandating that schools serving a high concentration of low-income children develop plans to sponsor summer nutrition programs. Officials say the program is also helpful for school budgets, because it enables school kitchens to increase revenue and avoid being idle through the summer season.[430]

SECTION 6

Obesity and the Baby Boom Generation

The confluence of the obesity epidemic and the aging Baby Boomer population is expected to result in significant increases to health care costs in the United States. Approximately 35 million Americans are over the age of 65. By 2020, that number is expected to reach 54.6 million, more than a 50 percent increase.[431] And currently two-thirds of adult Americans are obese or overweight.

Obesity-related health care costs become more significant as people age, because many of the diseases associated with obesity, such as cardiovascular disease, hypertension, and certain cancers do not manifest until individuals reach their 50s or older.

Obese elderly are more likely than non-obese elderly to have hypertension, osteoarthritis, cardiovascular disease, diabetes, and lung disease, and approximately 93 percent of obese elderly Medicare beneficiaries had at least one of these five common obesity-related health conditions.[432]

Health care for obese seniors (ages 65 and older) costs at least an additional $1,486 or some analyses have found it could be as high as an additional $6,192 per year than for non-obese individuals (36.8 to 88 percent higher).[433,434,435]

Medicare and Medicaid pay for approximately half of U.S. obesity- and overweight-related health care costs – an estimated $46.3 billion annually (2002 dollars).[436]

- **Medicare spending:** According to the Congressional Budget Office (CBO), Medicare spending is projected to more than triple from three percent of U.S. gross domestic product (GDP) in 2007 to 10 percent by 2057.[437] Much of the growth in Medicare is associated with patients under management for obesity-related conditions. According to one study, three obesity-related conditions alone (diabetes, hypertension, and high cholesterol) collectively accounted for 16.1 percent of the increase in Medicare spending between 1987 and 2002;[438] and
- **Medicaid spending:** Approximately nine million Americans are eligible for both Medicare and Medicaid.[439] Low-income individuals ages 65 and older make up nearly two-thirds of the "dual eligible" population and account for a disproportionately high percentage of Medicaid spending.[440] Nearly half of all Medicaid expenditures are for dual eligibles (46 percent or $131.9 billion annually) and nearly two-thirds of this spending is for enrollees ages 65 and older (approximately $85 billion).[441] Many seniors who are enrolled in both Medicare and Medicaid often have high-cost medical conditions, many of which are associated with obesity, like late-stage diabetes or kidney disease, and require long-term nursing home or other institutionalized care.

A new analysis commissioned by TFAH and conducted by researchers in the Department of Health Management and Policy at the University of Michigan School of Public Health found that Medicare and Medicaid obesity-related costs are likely to grow dramatically as the Baby Boom generation ages, not just because of the larger population size in this cohort, but also because this cohort has higher rates of obesity than previous generations.

The analysis demonstrates how obesity rates among adults ages 55 to 64 have significantly increased in the past 10 to 20 years in nearly all 50 states and the District of Columbia. Currently, Alabama has the highest rate of obese 55- to 64-year-olds at 38.7 percent, and Colorado has the lowest rate at 21.8 percent.

TFAH also examined the difference between the number of obese 55- to 64-year-olds and the number of obese people age 65 and older in each state to determine the potential increase to the number of obese Medicare-eligible individuals in coming years. The analysis found that projected increases could range from 5.2 percent (in New York) to 16.3 percent (in Alabama).

While numerous studies have shown that obese individuals have significantly higher health care costs, emerging research has shown that many obesity-prevention programs can be effective in reducing disease rates and curbing health care costs. For instance, a 2008 study by TFAH found that investing $10 per person per year in proven programs aimed at improving physical activity

and nutrition in communities could result in savings of more than $5 billion for Medicare and $1.9 billion for Medicaid within five years.[442] This analysis only examined out-patient care, and does not include the significant potential savings for Medicaid if the number of dual eligible elderly individuals in institutional care settings was reduced.

This section includes the potential growth in the number of obese individuals entering Medicare by state, a state-by-state breakdown of rising obesity rates for Baby Boomers and seniors, and examples of effective community-based obesity- and disease-prevention programs.

More information on the methodology is available in Appendix B.

A. POTENTIAL CHANGE IN THE NUMBER OF OBESE ADULTS -- 65 AND OLDER

Prevalence of Obesity among Adults Age 65+ and Adults Ages 55-64, and the Difference between the Two Age Groups, 2005-2007

State	Adults Age 65+	Adults Ages 55-64	Difference
Alabama	22.4%	38.7%	16.3%
Alaska	29.4%	35.3%	5.9%
Arizona	17.6%	29.4%	11.8%
Arkansas	20.0%	31.9%	11.9%
California	20.0%	28.3%	8.3%
Colorado	16.4%	21.8%	5.4%
Connecticut	18.4%	23.9%	5.5%
Delaware	22.5%	30.8%	8.4%
D.C.	22.7%	28.0%	5.3%
Florida	19.6%	29.5%	9.9%
Georgia	23.1%	31.6%	8.6%
Hawaii	13.6%	24.1%	10.5%
Idaho	20.8%	31.7%	10.9%
Illinois	23.8%	32.1%	8.2%
Indiana	25.4%	33.7%	8.3%
Iowa	24.2%	33.1%	8.9%
Kansas	21.0%	32.9%	11.9%
Kentucky	21.5%	33.6%	12.1%
Louisiana	27.3%	35.5%	8.2%
Maine	19.0%	28.3%	9.4%
Maryland	24.3%	31.3%	7.0%
Massachusetts	18.3%	25.5%	7.2%
Michigan	25.8%	36.0%	10.2%
Minnesota	23.6%	32.3%	8.7%
Mississippi	23.4%	35.3%	11.9%
Missouri	23.7%	33.3%	9.7%
Montana	20.4%	27.4%	7.0%
Nebraska	23.7%	34.1%	10.4%
Nevada	18.9%	29.3%	10.5%
New Hampshire	21.5%	28.7%	7.2%
New Jersey	22.7%	29.3%	6.6%
New Mexico	17.2%	25.1%	7.9%
New York	23.6%	28.7%	5.2%
North Carolina	22.2%	32.5%	10.3%
North Dakota	22.3%	32.4%	10.1%
Ohio	22.7%	33.9%	11.2%
Oklahoma	22.5%	33.9%	11.5%
Oregon	21.0%	29.7%	8.7%
Pennsylvania	23.2%	33.3%	10.1%
Rhode Island	21.3%	26.8%	5.5%
South Carolina	23.4%	31.9%	8.4%
South Dakota	22.1%	32.3%	10.2%
Tennessee	22.5%	33.7%	11.2%
Texas	21.7%	32.6%	10.9%
Utah	21.9%	30.7%	8.7%
Vermont	20.1%	25.4%	5.3%
Virginia	21.2%	30.2%	9.0%
Washington	21.6%	29.8%	8.2%
West Virginia	24.4%	35.5%	11.1%
Wisconsin	24.3%	32.8%	8.5%
Wyoming	21.1%	28.6%	7.6%

B. A STATE-BY-STATE REVIEW OF RISING OBESITY RATES FOR ADULTS AGES 55-64 AND FOR SENIORS AGE 65 AND OLDER

This review of data from the Behavioral Risk Factor Surveillance System (BRFSS) at three distinct time periods, 1985-1987, 1995-1997, and 2005-2007, shows that:

- Between 1995-1997 and 2005-2007, 49 states experienced significant increases in obesity among their 55- to 64-year-olds. Only Alaska and D.C. did not experience statistically significant increases. The rate of increase ranged from a low of 3.9 percent in Vermont to a high of 15.3 percent in Oklahoma.
- In 1985-87, only 34 states participated in BRFSS. All 34 of these states with data available experienced a significant increase in obesity rates between 1985-1987 and 2005-2007. Increases in obesity were between 9.9 percent in D.C. and 23.2 percent in Alabama.

Prevalence of Obesity among Adults Ages 55-64, 1985-1987, 1995-1997, and 2005-2007

	1985-1987	1995-1997	2005-2007
Alabama	15.5%†	24.6%‡	38.7%¶
Alaska	NA	27.7%	35.3%
Arizona	9.6%†	15.3%‡	29.4%¶
Arkansas	NA	21.1%‡	31.9%
California	11.2%†	18.8%‡	28.3%¶
Colorado	NA	15.4%‡	21.8%
Connecticut	7.7%†	17.7%‡	23.9%¶
Delaware	NA	25.2%‡	30.8%
D.C.	18.1%†	26.4%	28.0%¶
Florida	14.5%†	21.4%‡	29.5%¶
Georgia	12.7%	17.6%‡	31.6%¶
Hawaii	11.2%	15.1%‡	24.1%¶
Idaho	12.2%†	20.0%‡	31.7%¶
Illinois	14.5%†	21.9%‡	32.1%¶
Indiana	13.5%†	25.3%‡	33.7%¶
Iowa	NA	25.4%‡	33.1%
Kansas	NA	18.9%‡	32.9%
Kentucky	12.3%†	22.6%‡	33.6%¶
Louisiana	NA	23.9%‡	35.5%
Maine	7.1%†	22.4%‡	28.3%¶
Maryland	15.8%	22.7%‡	31.3%¶
Massachusetts	12.4%†	19.6%‡	25.5%¶
Michigan	NA	26.7%‡	36.0%
Minnesota	12.8%†	20.0%‡	32.3%¶
Mississippi	NA	27.6%‡	35.3%
Missouri	14.2%†	23.4%‡	33.3%¶
Montana	9.6%†	17.7%‡	27.4%¶
Nebraska	14.6%	20.5%‡	34.1%¶
Nevada	NA	18.4%‡	29.3%
New Hampshire	15.1%	20.4%‡	28.7%¶
New Jersey	NA	24.1%‡	29.3%
New Mexico	7.4%†	18.2%‡	25.1%¶
New York	10.2%†	22.7%‡	28.7%¶
North Carolina	14.9%†	23.1%‡	32.5%¶
North Dakota	15.2%†	21.0%‡	32.4%¶
Ohio	13.9%†	22.7%‡	33.9%¶
Oklahoma	NA	18.7%‡	33.9%
Oregon	NA	22.8%‡	29.7%
Pennsylvania	NA	25.1%‡	33.3%
Rhode Island	13.5%	17.7%‡	26.8%¶
South Carolina	13.3%†	23.1%‡	31.9%¶
South Dakota	12.3%	17.7%‡	32.3%¶
Tennessee	14.9%†	22.4%‡	33.7%¶
Texas	16.1%	22.1%‡	32.6%¶
Utah	10.9%†	19.3%‡	30.7%¶
Vermont	NA	21.5%‡	25.4%
Virginia	NA	19.4%‡	30.2%
Washington	10.6%†	19.3%‡	29.8%¶
West Virginia	17.2%	20.6%‡	35.5%¶
Wisconsin	18.4%	22.7%‡	32.8%¶
Wyoming	NA	18.4%‡	28.6%

Notes:

† Change between 1985-1987 and 1995-1997 was statistically significant at the p≤.0.05 level.

‡ Change between 1995-1997 and 2005-2007 was statistically significant at the p≤.0.05 level.

¶ Change between 1985-1987 and 2005-2007 was statistically significant at the p≤.0.05 level.

TFAH also examined the obesity rates for adults who are 65 and older, and found they also increased significantly in nearly all 50 states and D.C. over the past two decades.

- Between 1995-1997 and 2005-2007, 49 states experienced a significant increase in the number of obese adults age 65 and older. The rate of growth was lowest in Alabama at 3.4 percent and highest in Oklahoma at 12.1 percent. Alaska and D.C. did not have statistically significant increases.
- In 1985-87, only 34 states participated in BRFSS. Thirty-three of the 34 states saw a significant increase in obesity rates between 1985-1987 and 2005-2007. The largest increase was in the state of New Hampshire, which experienced a 15.6 percent increase in obesity rates among adults age 65 and older. The smallest increase was in Hawaii, which saw a seven percent rise in obesity rates over that 20-year period. South Dakota was the only state with data for all 20 years that did not experience a significant increase.

Prevalence of Obesity among Adults Age 65 and older, 1985-1987, 1995-1997, and 2005-2007

	1985-1987	1995-1997	2005-2007
Alabama	8.1%†	19.0%‡	22.4%¶
Alaska	NA	27.7%	29.4%
Arizona	8.2%	9.5%‡	17.6%¶
Arkansas	NA	16.3%‡	20.0%
California	7.3%†	12.2%‡	20.0%¶
Colorado	NA	11.8%‡	16.4%
Connecticut	8.0%	11.9%‡	18.4%¶
Delaware	NA	15.4%‡	22.5%
D.C.	12.8%†	19.8%	22.7%¶
Florida	6.8%†	14.2%‡	19.6%¶
Georgia	13.1%	11.9%‡	23.1%¶
Hawaii	6.6%	7.9%‡	13.6%¶
Idaho	8.8%†	16.0%‡	20.8%¶
Illinois	9.3%†	15.7%‡	23.8%¶
Indiana	12.3%†	18.2%‡	25.4%¶
Iowa	NA	17.8%‡	24.2%
Kansas	NA	14.2%‡	21.0%
Kentucky	11.8%†	15.2%‡	21.5%¶
Louisiana	NA	20.0%‡	27.3%
Maine	9.7%	12.7%‡	19.0%¶
Maryland	12.7%	17.4%‡	24.3%¶
Massachusetts	9.0%†	13.1%‡	18.3%¶
Michigan	NA	17.0%‡	25.8%
Minnesota	10.5%†	16.9%‡	23.6%¶
Mississippi	NA	18.2%‡	23.4%
Missouri	11.8%	15.3%‡	23.7%¶
Montana	7.5%†	13.5%‡	20.4%¶
Nebraska	9.3%†	15.1%‡	23.7%¶
Nevada	NA	13.4%‡	18.9%
New Hampshire	5.9%†	15.7%‡	21.5%¶
New Jersey	NA	15.8%‡	22.7%
New Mexico	3.9%†	10.9%‡	17.2%¶
New York	10.0%†	14.1%‡	23.6%¶
North Carolina	11.5%†	16.9%‡	22.2%¶
North Dakota	12.2%†	16.3%‡	22.3%¶
Ohio	11.9%†	17.5%‡	22.7%¶
Oklahoma	NA	10.3%‡	22.5%
Oregon	NA	14.1%‡	21.0%
Pennsylvania	NA	16.9%‡	23.2%
Rhode Island	10.2%	12.6%‡	21.3%¶
South Carolina	13.0%	14.0%‡	23.4%¶
South Dakota	17.5%	16.2%‡	22.1%
Tennessee	7.7%†	16.0%‡	22.5%¶
Texas	9.6%	14.8%‡	21.7%¶
Utah	7.7%†	12.7%‡	21.9%¶
Vermont	NA	15.1%‡	20.1%
Virginia	NA	16.8%‡	21.2%
Washington	14.3%	13.9%‡	21.6%¶
West Virginia	10.6%†	15.4%‡	24.4%¶
Wisconsin	15.2%	15.9%‡	24.3%¶
Wyoming	NA	14.1%‡	21.1%

Notes:

†Change between 1985-1987 and 1995-1997 was statistically significant at the p≤.0.05 level.

‡Change between 1995-1997 and 2005-2007 was statistically significant at the p≤.0.05 level.

¶ Change between 1985-1987 and 2005-2007 was statistically significant at the p≤.0.05 level.

C. THE POTENTIAL FINANCIAL IMPACT OF MORE OBESE SENIORS

Millions of Americans enter Medicare with health conditions that could have been lessened or prevented. In the end, Medicare, Medicaid, and taxpayers bear the cost of providing for people who could be significantly healthier or have their existing conditions better managed.

> "When the 'baby boomers' start to turn 65, it is expected that growth in the size of the eligible Medicare population, the development of new medical technology, and the increases in average longevity will result in increases in Medicare and Medicaid spending. Our research indicates that the increasing prevalence of obesity will contribute toward additional financial burdens being placed on public health insurance."[443]
>
> -- Zhou Yang and Allyson G. Hall writing in *Health Services Research*, June 2008

Adults age 65 and older with BMIs in the obese range are expected to live nearly as long as their normal-weight and overweight peers, but will have significantly higher health care costs. A number of studies have found that preventing disease does not just lead to deferring costs to the end of life, but that keeping people healthy throughout their lives leads to a less costly life overall. Individuals who are healthier throughout their lifetimes often avoid developing complications or compounding conditions that may develop if they are less healthy (e.g. gain too much weight, are physically inactive, or practice poor nutrition).

A recent study by Lakdawalla, Goldman, and Shang in *Health Affairs* concluded that obese and non-obese individuals have similar life expectancies, but the health care costs of an obese person will be significantly higher than a non-obese person over the course of a lifetime. Therefore, higher costs are not offset by reduced longevity. The study found obese individuals have "fewer disability-free life years and experience higher rates of diabetes, hypertension, and heart disease" and that "obesity might cost Medicare more than other diseases, because higher costs are not offset by reduced longevity."[444]

In addition, a 2007 meta-analysis by Janssen and Mark found that being overweight is not associated with a significant increase risk of mortality in the elderly, and that being moderately obese is associated with only a modest increase in mortality risk. This review concluded that the effect of obesity on mortality was greatest among younger adults, while obese adults who live to age 65 are likely to live as long as non-obese 65 year olds.[445]

Scientists refer to this effect as "compression of morbidity," which means extending healthy life expectancy more than total life expectancy. Chronic disease and disability are compressed into smaller portions of a person's life, lifelong health care management costs are lower and quality of life is improved.[446] For instance, a person who is obese has a higher risk for needing a knee replacement. If obesity is prevented, the need and cost for a knee replacement may be delayed or avoided altogether.

Some other studies have found being obese may increase a person's risk of dying compared with normal-weight adults, particularly for people who are morbidly obese.[447] For instance, a 2009 study published in *Lancet* by CDC researchers found that for every five point increase in BMI, the risk of dying increased by 30 percent with life expectancy for morbidly obese individuals (BMI of 40 or higher) reduced by about eight to 10 years, which is approximately the same reduction caused by a lifetime of cigarette smoking. They researchers did not, however, examine the comparative lifetime health costs.

The studies that have examined lifetime health costs have found that individuals who are obese have significantly higher lifetime health costs.

- The Lakdawalla, Goldman, and Shang study found that obese 70-year-olds will spend approximately $39,000 more on health care than normal weight individuals, and that "Medicare will spend about 34 percent more on an obese person than on someone of normal weight."[448]
- Other studies found that obese men ages 65 and older are estimated to have lifetime medical costs that were between $18,000 and $21,000 higher than normal-weight men (12.5 to 18 percent higher). Obese women age 65 and older had lifetime medical costs between $32,000 and $48,000 higher than average-weight women (16.8 percent and 63 percent).[449,450]

- A 2004 study of medical costs of the severely obese found that medical costs for severely obese men age 65 and older were $76,516 more (76 percent higher) than for non-overweight men. Meanwhile, lifetime health care costs for severely obese women age 65 and older were $97,886 more (127 percent higher) than for non-overweight women.[451]
- Obese Medicare beneficiaries (30.0 ≤ BMI ≤ 34.9) spent $2,374 on prescription drugs in 2003 compared with normal-weight beneficiaries (18.5 ≤ BMI ≤ 24.9), who spent $1,764. Morbidly obese beneficiaries (BMI ≥ 40) spent nearly $3,000.[452]

Medicaid bears a significant portion of the cost of treating seniors who are obese, since this includes many elderly who have expensive health conditions and are often in institutionalized care settings, like nursing homes. A 2003 study found that Medicaid enrolled the highest number of obese individuals compared to other insurance categories -- nearly 10 percent more than Medicare and private insurers. The study found annual medical spending associated with obesity is nearly 40 percent (averaging $843) higher for individuals enrolled in Medicaid than other insurers.[453]

Diabetes alone is one of the most costly conditions to Medicaid. For adults ages 45-74, diabetes accounted for 8.6 percent of hospitalizations, 12.3 percent of nursing home admissions, and 10.3 percent of deaths in 1988-1994.[454] One in four nursing home residents age 65 and older had diabetes in the United States in 2004, representing 324,000 individuals. At admission, diabetic residents were less likely than non-diabetic residents to pay with private insurance and out-of-pocket resources, and more likely to use Medicare and Medicaid. Approximately 44 percent of diabetes nursing home patients paid with Medicare, and 35.7 percent paid with Medicaid.[455]

According to the Kaiser Commission on Medicaid and the Uninsured, "Medicaid enrollees with diabetes are a high cost population with significant health complications and high levels of health care use."[456] Approximately 1.9 million Medicaid enrollees had diabetes in 2003, which represented about six percent of the Medicaid population (and about 15 percent of the total U.S. population with diabetes). However, Medicaid enrollees with diabetes accounted for 16 percent of total Medicaid spending. Twenty-two percent of the six percent of the Medicaid population with diabetes were elderly (869,073 individuals), and they accounted for more than $14 billion in Medicaid health care costs in 2003. The average health care cost for Medicaid enrollees with diabetes was $16,967 per person.

- Elderly diabetics spent almost three times more than elderly non-diabetics on in-patient services ($1,620 compared with $566) through Medicaid. "These differences are quite striking considering most elderly Medicaid enrollees are dual eligibles, and will therefore have much of their acute care services covered by Medicare as well."[457]
- Elderly diabetics spent $3,136 on prescription drugs through Medicaid, compared with non-diabetic elderly, who spent $1,969.

D. STATE-BY-STATE MEDICARE AND MEDICAID OBESITY HEALTH CARE COSTS

A 2004 study by Finkelstein, Fiebelkorn, and Wang examined state-level estimates of annual medical expenditures attributable to obesity based on BRFSS and Medical Expenditure Panel Survey (MEPS) data from 1998 to 2000.[458] An updated and revised version of this study is expected to be released in summer 2009.

Estimated Obesity Medical Expenditures by State

State	Total Population (Millions $)	Medicare Population (Millions $)	Medicaid Population (Millions $)
Alabama	$1320	$341	$269
Alaska	$195	$17	$29
Arizona	$752	$154	$242*
Arkansas	$663	$171	$180
California	$7675	$1738	$1713
Colorado	$874	$139	$158
Connecticut	$856	$246	$419
Delaware	$207	$57	$66
DC	$372	$64	$114
Florida	$3987	$1290	$900
Georgia	$2133	$405	$385
Hawaii	$290	$30	$90
Idaho	$227	$40	$69
Illinois	$3439	$805	$1045
Indiana	$1637	$379	$522
Iowa	$783	$165	$198
Kansas	$657	$138	$143*
Kentucky	$1163	$270	$340
Louisiana	$1373	$402	$525
Maine	$357	$66	$137
Maryland	$1533	$368	$391
Massachusetts	$1822	$446	$618
Michigan	$2931	$748	$882
Minnesota	$1307	$227	$325
Mississippi	$757	$223	$221
Missouri	$1636	$413	$454
Montana	$175	$41	$48
Nebraska	$454	$94	$114
Nevada	$337	$74	$56*
New Hampshire	$302	$46	$79*
New Jersey	$2342	$591	$630
New Mexico	$324	$51	$84
New York	$6080	$1391	$3539
North Carolina	$2138	$448	$662
North Dakota	$209	$45	$55
Ohio	$3304	$839	$914
Oklahoma	$854	$227	$163
Oregon	$781	$145	$180
Pennsylvania	$4138	$1187	$1219
Rhode Island	$305	$83	$89
South Carolina	$1060	$242	$285
South Dakota	$195	$36	$45
Tennessee	$1840	$433	$488
Texas	$5340	$1209	$1177
Utah	$393	$62	$71
Vermont	$141	$29	$40
Virginia	$1641	$320	$374
Washington	$1330	$236	$365
West Virginia	$588	$140	$187
Wisconsin	$1486	$306	$320
Wyoming	$87	$15	$23
TOTAL	**$75,051**	**$17,701**	**$21,329**

Notes:

**Estimates based on fewer than 20 observations.*

Table adapted from Finkelstein, E.A., I.C. Fiebelkorn, and G. Wang. "State-Level Estimates of Annual Medical Expenditures Attributable to Obesity." Obesity Research 12, no. 1 (January 2004): 18-24.

E. DISEASE-PREVENTION PROGRAMS TO CONTROL OBESITY-RELATED CONDITIONS AND COSTS

> "WITH CURRENT TRENDS OF INCREASING OVERWEIGHT AND OBESITY AFFLICTING ALL AGE GROUPS, URGENT PREVENTIVE MEASURES ARE REQUIRED NOT ONLY TO LESSEN THE BURDEN OF DISEASE AND DISABILITY ASSOCIATED WITH EXCESS WEIGHT BUT ALSO TO CONTAIN FUTURE HEALTH CARE COSTS INCURRED BY THE AGING POPULATION."[459]
>
> -- MARTHA L. DAVIGLUS, KIANG LIU, LIJING L. YAN, ET AL. WRITING IN THE *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,* DECEMBER 2004.

One way for policymakers to address the fiscal health of Medicare and Medicaid is to invest in community-based disease-prevention programs targeted to the pre-Medicare population, so they will be healthier and incur fewer costs when they do enter Medicare. A number of community-based programs have shown significant results. A Medicare demonstration project would be one way to test and evaluate the effectiveness of these programs in communities on a wide scale.

The following are examples of evidence-based programs that have been shown to prevent or slow the progression of obesity-related conditions.

EXAMPLES OF COMMUNITY-BASED INTERVENTIONS TARGETING ADULTS

> "...STRONG EVIDENCE EXISTS THAT COMMUNITY-WIDE CAMPAIGNS ARE EFFECTIVE IN INCREASING LEVELS OF PHYSICAL ACTIVITY, AS MEASURED BY AN INCREASE IN THE PERCENTAGE OF PEOPLE ENGAGING IN PHYSICAL ACTIVITY, ENERGY EXPENDITURE, OR OTHER MEASURE OF PHYSICAL ACTIVITY."
>
> — TASK FORCE ON COMMUNITY PREVENTIVE SERVICES[460]

- In **Wheeling, West Virginia**, officials implemented a campaign to promote physical activity among sedentary adults ages 50-65 called Wheeling Walks. The community-wide campaign used paid advertising, public relations, and public health education activities to promote at least 30 minutes of walking almost every day. The eight-week campaign led to a 23 percent increase in the number of people observed walking.[461]
- In **Rockford, Illinois**, public health officials developed the Coronary Health Improvement Project (CHIP), a four-week community-based intensive educational lifestyle intervention program, designed to help participants improve their diet, quit smoking, and exercise daily. Participants were evaluated for coronary risk factors including high blood pressure, cholesterol, blood sugar levels, excess body weight, smoking, and a sedentary lifestyle. Over the course of the four-week program, participants experienced a significant drop in the number of risk factors from 3.4 to 2.3.[462]
- In **Fulton County, Georgia**, officials implemented the REACH OUT campaign to educate people about cardiovascular disease. Within two years, the percentage of adult participants who regularly engaged in moderate-to-vigorous physical activity increased from 25 percent to 29 percent. During this period, the percentage of adults who reported checking total blood cholesterol levels increased from 69 percent to 80 percent, and the percentage of adults who smoked decreased from 26 percent to 21 percent.[463]

- In **Broome County, New York**, more than three of every five adults are either overweight or obese. The county used a CDC grant from the Steps to a Healthier US program (now called Healthy Communities) to help families in rural areas become more active. Within one year, the program led to an increase in the percentage of people who walk for 30 minutes or more per day five days a week -- from 51 percent to 61 percent.[464]
- In **Oslo, Norway**, public health officials implemented a low-cost three-year community-based physical activity intervention program, Romsås in Motion. The program, which included information dissemination, physical activity groups, and individual group counseling, targeted a multiethnic, low-income neighborhood with a large immigrant population. The intervention led to an increase in physical activity. In addition, only half as many people gained weight in the intervention group as compared with the control group.[465]
- In the Maastricht region of the **Netherlands**, public health officials implemented a community-based intervention project called Hartslag Limburg, or Heartbeat Limburg, which encouraged adult residents to become more active, reduce their fat intake, and stop smoking. The program featured such activities as nutrition education tours in supermarkets, food labeling, smoke-free areas, walking and cycling campaigns, and advertising in local media. A follow-up survey five years after the intervention found that residents who were exposed to the Hartslag Limburg project had significantly better outcomes over time for BMI, waist circumference, blood pressure, and, in women, blood sugar levels.[466]
- A 10-year project in **North Karelia, Finland**, to address the high rates of cardiovascular disease among the population used a community-based preventive approach. The program was aimed at the total population in the town, but with a special focus on middle-aged men, whose CVD rates were especially high. The intervention had five components, including the use of media and general education activities to disseminate healthy messages; training of local health personnel and public health groups; and the reorganization of health services. An evaluation of the 10-year intervention showed significant reductions in risk factors for men, including smoking (36 percent); cholesterol levels (11 percent) and blood pressure (five percent). Similar changes were observed in women, except for smoking, where the number of female smokers was initially much lower.[467]

STOPPING THE PROGRESSION OF DISEASE: EXAMPLE OF DIABETES PREVENTION AND CONTROL

Stopping pre-diabetes from becoming diabetes: NIH and CDC funded a clinical trial called the **Diabetes Prevention Program (DPP)**, which consisted of more than 3,000 pre-diabetic individuals (people who were overweight and had high blood sugar levels but not high enough to be classified as diabetes) in 27 communities in the United States. The study found that participants who lost a modest amount of weight through dietary changes and increased physical activity sharply reduced their chances of developing diabetes.[468]

- The DPP participants who were part of the "lifestyle intervention group" received intensive training in diet, physical activity, and behavior modification. By eating less fat and fewer calories and exercising for a total of 150 minutes a week, they aimed to lose seven percent of their body weight and maintain that loss. Participants in this group reduced their risk of developing diabetes by 58 percent. Lifestyle changes worked particularly well for participants ages 60 and older, reducing their risk by 71 percent. Not only did half of the participants enrolled in the lifestyle intervention program achieve a weight loss of seven percent or more by the end of the six-month curriculum, but 38 percent of these participants kept the weight off more than three years later. The study found that taking medication (metformin) also reduced risk (by 31 percent), but this result was less dramatic than for the group that focused on nutrition and activity changes. Metformin was effective for both men and women, but it was least effective in people ages 45 and older.
- In 2008, a study published by the Indiana University School of Medicine found that the DPP program could be successfully adopted by community-based organizations such as the YMCA.[469] According to Dr. Ronald Ackerman, the lead author, "In our study we were able to train lay people in the community to deliver the program at the YMCA, an environment accessible to many people with pre-diabetes, to help them sustain lifestyle changes."[470] With more than 2,500 facilities serving more than 10,000 inner city, suburban and rural communities nationwide and a long history of implementing successful health promotion programs, the YMCA is in a unique position to reach persons with pre-diabetes. In this study, 92 individuals were enrolled in two groups. The intervention group received a core curriculum involving 16 classroom-style meetings focused on building knowledge and skills for goal setting, self-monitoring and problem-solving. The control group was offered standard diabetes-prevention advice. At the four- to six-month follow-up visit, body weight had significantly decreased by six percent in the intervention participants and by two percent in the control participants. These differences persisted at the 12-14 month follow-up visits. The total cost for the group lifestyle intervention? $250 per year. The study concludes, "By lowering the cost of and expanding the accessibility to diabetes-prevention services, the YMCA may serve not only to increase the number of individuals with pre-diabetes who have access to and can pay for evidence-based diabetes prevention; it may also provide a compelling model for health-plan reimbursement. This provides yet another compelling reason to develop and test novel strategies that link community-based program delivery with existing clinical services that could help to identify and activate more adults with pre-diabetes."[471]

Stopping a person with diabetes from developing diabetes-related complications: If a person who becomes diabetic receives proper treatment and controls the disease by avoiding additional weight gain, maintaining a healthy diet and engaging in regular physical activity, that person could avoid or delay a range of potential conditions that often develop over time. According to the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) at NIH:[472]

- A person with diabetes is at least twice as likely as someone who does not have diabetes to have heart disease or a stroke.
- Diabetes is the most common cause of kidney failure.
- About 60 to 70 percent of people with diabetes have some form of neurological condition. This can lead to different symptoms, including pain, tingling, or numbness; loss of feeling in the hands, arms, feet, and legs; the inability to focus the eye, double vision, aching behind one eye, or paralysis on one side of the face, called Bell's palsy. In some cases, people lose the ability to walk or the use of other limbs, and they may even need amputations.
- Having high blood glucose and high blood pressure for a long time can cause retina damage, which can result in the partial loss of vision or blindness.

PRIVATE INSURERS WOULD SAVE, TOO

Private insurers who cover retiree benefits also would realize savings for reducing lifetime health care costs for individuals.

A number of corporate and private wellness and prevention programs also have been shown to help significantly control retiree obesity-related health costs.

For instance, results from a 2005 study of General Motors Corporation retirees age 65 and older and their spouses found that physical activity helped control health care costs and utilization, more so than controlling BMI. The authors note that physical activity, "…may compensate, to some extent, for the adverse effects of overweight and obesity and prevent some of the health service utilization associated with overweight and obesity among this Medicare retiree population."[473] The findings suggest that wellness programs that promote physical activity could be effective in improving Medicare beneficiaries' health status and thus reduce costs.

SECTION 7

Recommendations

The health of Americans has suffered over the past three decades as obesity has reached epidemic proportions. The combination of poor nutrition and not enough physical activity have contributed to two-thirds of adults becoming either obese or overweight and nearly 23 million children obese or overweight.

Many of the forces that have contributed to our national weight gain are deeply ingrained in our culture, such as an increased reliance on prepared foods and eating out, and the greater distances people have to travel between home, work, schools, and shopping areas that have led to an increased reliance on cars and motorized transport, which make them particularly challenging to address.

The current economic crisis is likely to intensify the obesity epidemic as more Americans become uninsured or underinsured and have fewer options for care available and as healthier, high-cost foods become increasing unaffordable. As more Americans face trying to manage health issues with fewer resources, it is time to redouble national efforts to address the obesity epidemic.

To improve the health of Americans and control health care costs, obesity prevention and control must become a national priority. The country's health and well-being require that we take action. Obesity is one of the nation's most overwhelming health problems, but up to now, policies to address it have been limited and under-resourced.

As one of the nation's most overwhelming health problems, combating obesity must be a central objective of health reform, and the country needs to develop a strategic approach to address obesity.

The President should make dealing with obesity a high priority, and the federal government should take the lead to create a *National Strategy to Combat Obesity* to serve as a comprehensive, realistic plan to outline roles and responsibilities and demand accountability. The strategy must involve every agency of the federal government, state and local governments, businesses, communities, schools, families, and individuals.

A strong national commitment by the nation's leaders to combat obesity could yield significant returns – sparing millions of people from serious diseases and saving billions of dollars.

The good news is that there is increasing evidence that small changes can add up to make a big difference. A little can go a long way toward improving the nation's health.

If we develop effective strategies to help Americans eat better, move more and manage existing obesity-related conditions, we could make huge strides toward improving health and quality of life and reducing disease rates and health care costs.

Some changes will be harder to make than others, but change is necessary. It is the role of government – at the federal, state, and local levels – to provide the leadership needed to ignite and incentivize change and to take away obstacles. The government should work with communities to help make healthy choices easy choices for more Americans.

A. MAKING OBESITY PREVENTION AND CONTROL A HIGH PRIORITY OF HEALTH REFORM

High health care costs threaten to bankrupt American businesses, and poor health is putting the nation's economic security in jeopardy.

Keeping people healthier is one of the most effective ways to lower health care costs and ensure that our workforce is strong and productive enough to compete in the challenging global economy.

Universal, quality coverage for all Americans is an important goal. However, coverage alone is not enough. Finding ways to prevent disease and keep people healthier in the first place must be a high priority for health reform.

In order to incorporate prevention of obesity and related diseases into health reform, TFAH recommends that:

1. A **Dedicated Funding Stream** for prevention and public health must be established;
2. **Universal Obesity-Related Health Care Benefits** should be made available; and
3. **Obesity Interventions Should Be Targeted to the Pre-Medicare Population** to help keep people healthier before they reach old age.

1. A Dedicated Funding Stream: Establishing a Public Health and Wellness Trust Fund

TFAH believes that a *reformed health care financing system must include stable and dedicated funding for core public health functions – including prevention of obesity and related diseases.*

Federal, state, local, and community efforts aimed at preventing obesity and related diseases need to have reliable resources to support a reformed health system.

TFAH recommends that a **Public Health and Wellness Trust Fund** be established through a mandatory appropriation or set-aside of a portion of new revenues generated through the financing of health reform.

- Resources from the Trust Fund would be allocated to specific public health programs, including programs to improve nutrition and physical activity in communities. Funding provided from the Trust Fund would augment, not supplant, current annual baseline funding for public health programs (Function 550 in the current Federal budget).

Specifically, the Trust Fund would support expansion of obesity- and other disease-prevention programs and other public health functions to surround, support, and strengthen the health care delivery system. The Trust Fund would finance:

- The core governmental public health functions of assessment, assurance, and policy development at the federal, state, and local levels.
- Community-based obesity-prevention programs, including programs to improve access to nutritious foods and promote increased physical activity, which can be delivered through governmental agencies and non-governmental agencies.
- Workforce training and development as well as public health research.

The Trust Fund would not support clinical preventive services, such as screening and immunizations, because it is assumed that these would be covered benefits under a reformed health insurance system. During the transition to universal coverage, however, it may be necessary to use the Trust Fund to cover clinical preventive services for the uninsured under existing public health service agency programs.

2. Universal Obesity-Related Health Care Benefits

Health reform should ensure every American has access to coverage for preventive medical services, including nutrition and obesity counseling and screening for obesity-related diseases, such as type 2 diabetes, heart disease, and some forms of cancer.

Every American should have access to the most effective practices for preventing, controlling, and treating obesity and obesity-related conditions. Policies also should be put in place to encourage the development and incorporation of emerging and innovative new practices as they become available.

In particular, Medicare, Medicaid, and CHIP should include comprehensive obesity-prevention and -treatment coverage, including screenings, counseling, and managed care that takes an integrated approach to coordinating all obesity-related conditions a patient may have. In order to assess the coverage and its impact, the Centers for Medicare and Medicaid Services (CMS) should be required to provide an annual report to Congress about the numbers of enrollees receiving obesity-related benefits in their programs, and efforts that have been made to try to reduce and prevent obesity in these populations. A bonus program also should be set up to provide incentives for states that provide clinical obesity prevention benefits within CHIP and/or Medicaid programs.

3. Obesity Interventions Should be Targeted to the Pre-Medicare Population

Millions of Americans enter Medicare with health conditions that could have been lessened or avoided. The graying of the American population coupled with rising obesity rates among older adults is severely straining the federal safety net.

The current health care system is set up in opposition to the goal of ensuring people reach the age of Medicare as healthy as they can be. Currently, Medicare is forbidden by law from addressing services to the pre-Medicare population to try to improve their health. Yet, Medicare and taxpayers bear the burden of providing for people who could be significantly healthier or have their existing conditions better managed.

According to the Congressional Budget Office (CBO), Medicare spending is projected to more than triple from three percent of U.S. gross domestic product (GDP) in 2007 to 10 percent by 2057.[474] Much of the growth in Medicare is associated with patients under management for obesity-related conditions, such as diabetes, hypertension, and high cholesterol, which collectively accounted for 16.1 percent of the increase in Medicare spending between 1987 and 2002.[475]

Policymakers should take action to address one of the major drivers of Medicare expenditures – modifiable chronic disease risk factors – before individuals become Medicare eligible. Community-based and clinical interventions targeted to the pre-Medicare population (adults ages 55–64) should focus on modifying nutrition and physical activity behaviors that are shown to help reduce or control a variety of chronic diseases, including diabetes, cardiovascular disease, stroke, kidney disease, arthritis and certain types of cancers.

Congress should authorize the establishment of a **Medicare Demonstration Project**. This should allow the HHS secretary to work with the Administrator of CMS and the Director of CDC to implement a five-year demonstration project to test whether community-level public health interventions targeting individuals ages 55–64 result in lower rates of chronic disease for individuals entering the Medicare program, thereby reducing costs.

B. LAUNCHING A NATIONAL STRATEGY TO COMBAT OBESITY.

For significant change to happen, combating obesity must become a national priority. This report provides an overview of many promising policies and programs that have been enacted, but they are not at a level that is sufficient for dealing with the severity of the problem. The country is failing to address the obesity epidemic in proportion to the threat it poses.

In recent years, the IOM, HHS, and the Surgeon General's Office have all issued reports detailing the pervasiveness and impact of the epidemic and have called for national action to address the crisis.[476,477,478,479]

TFAH calls on the nation's leaders to create a National Strategy to Combat Obesity. This strategy needs to be a comprehensive, realistic plan that involves every agency of the federal government, state and local governments, businesses, communities, schools, families, and individuals. It must outline clear roles and responsibilities and demand accountability. Our leaders should challenge the entire country to do their part to help improve our nation's health.

In the 2008 edition of *F as in Fat*, TFAH provided a framework for a *National Strategy to Combat Obesity*. The full framework can be found on TFAH's Web site at http://healthyamericans.org/obesity/. Some highlights and summary recommendations include:

Federal Government – Overarching	■ The Administration and Congress should acknowledge that addressing the obesity crisis is a national priority. ■ A detailed review of federal policies should be conducted to determine how they impact physical activity, nutrition, and obesity. ■ A sub-cabinet working group should be convened to take a government-wide approach to combating key public health problems, including obesity, and an official should be designated in each department who will focus on obesity-related policies. ■ Health reviews should be conducted to examine the impact of new domestic policies, programs, and budgets on physical activity, nutrition, and obesity. ■ The government should develop clear and consistent recommendations for the public about nutrition and physical activity, and make this information widely available. ■ Sufficient resources must be given to implement and evaluate obesity policies.
Federal Government and Schools	■ The process to revise school nutrition guidelines to meet the 2005 Dietary Guidelines for Americans should be accelerated. ■ Congress should consider expanding the authority of the USDA to set nutrition standards for competitive foods in schools. ■ The U.S. Department of Education, HHS, and the President's Council on Physical Fitness should set national standards for physical education and physical activity in schools. ■ The Carol M. White Physical Education Program and the CDC's Division of Adolescent and School Health grants should be fully funded and expanded. ■ The Department of Education should consider ways to incorporate physical activity and nutrition standards into the 21st Century Community Learning Centers program to provide support for before- and after-school programs.
Federal Government and Business	■ The government should set an example for private organizations by encouraging workplace wellness and providing comprehensive health benefits for obesity within the Federal Employee Health Benefits Plan. ■ The government should find ways to incentivize employers to provide workplace wellness programs and preventive care coverage. ■ Medicare, Medicaid, and CHIP should update and increase obesity-related coverage. (A longer discussion of this topic can be found in the Making Obesity Prevention and Control a High Priority of Health Reform section of the recommendations.)

Federal Government and the Food and Beverage Industry	The government should: ■ Work with industry to eliminate junk food advertising to children. ■ Work with industry to develop clear and useful nutrition labeling and ensure packaged foods and meals reflect recommended portion sizes. ■ Require retail food outlets to provide menu labeling.
Federal Government and Agriculture	The government should: ■ Examine subsidies for growing fruits and vegetables. ■ Support small farmers and local food systems. ■ Incentivize healthy food consumption. ■ Revise school and government procurement policies.
Federal Government and Research	The government should: ■ Strengthen primary data collection systems. ■ Fund community-level research and evaluation.
State Government	States should: ■ Develop state-specific obesity plans. ■ Review programs and policies across state agencies to evaluate their impact on nutrition, physical activity, and obesity. ■ Dedicate revenue to implementing obesity-prevention and-control programs. ■ Provide workplace wellness programs and strong preventive service benefits to state employees. ■ Update and increase obesity-related coverage in state Medicaid and CHIP programs. ■ Leverage purchasing power by requiring a greater emphasis on nutritional value as a priority in food-purchasing bidding processes. ■ Evaluate current snack taxes. ■ Require menu labeling. The California menu labeling law provides a model for requirements.
Local Government	Local governments should: ■ Provide improved access to healthy foods in low-income communities. ■ Use zoning laws to encourage healthy food providers to locate in under-served neighborhoods and maintain a ratio requirement for fast food restaurants to grocers and farmers' markets. ■ Require menu labeling. ■ Encourage mixed-use commercial and residential areas and walkable neighborhoods. ■ Examine the health impact of new construction. ■ Encourage building design that prompts the use of stairs and offers other spaces in commercial and public buildings that facilitate activity. ■ Encourage green space development and build more sidewalks. ■ Encourage the use of transportation funds for mass transit and highway alternatives. ■ Modernize school-site construction requirements so that schools can be within walking or biking distance for children.
Community and Faith-Based Organizations	Community and faith-based organizations should: ■ Offer healthy foods and incorporate obesity-prevention messages into events. ■ Provide opportunities for safe and supervised activity for children. ■ Provide no- or low-cost physical activity opportunities and nutrition counseling.

Schools	■ The nutritional value of foods in schools should be improved. ▲ Nutrition standards at schools should be higher than those required by USDA, such as those recommended by the IOM Food in Schools report, and include a ban on sugar-sweetened drinks. ▲ Free drinking water should be provided in schools. ▲ School districts should revise food contract policies and priorities to focus on maximum nutritional value of food served in schools. ▲ Schools should evaluate alternative fundraising options that do not involve providing foods that do not meet specified nutrition standards such as those recommended by the IOM Food in Schools report to students. ▲ Professional development should be provided to school food-service staff. ■ School districts should ensure physical activity is part of students' daily lives. ▲ Students should have time for activity during the school day, and physical education should be improved and requirements should be increased. ▲ School districts should work with communities to make it easier for students to walk and bike to school. ▲ Agreements should be developed so recreation spaces at schools and community centers can be made available for children to use before and after school when possible. ■ School districts should evaluate and refine body mass index (BMI) and other health-screening initiatives. ■ Nutrition and health education programs should be improved. ■ School districts should assess their schools' health policies and programs, including their wellness policies, and develop a plan for improvements.
Families and Individuals	■ Individuals must learn to factor health considerations into their choices about eating and exercise. ■ Family members should be encouraged to think about the impact of their choices on others in their family. For instance, parents should be aware of the impact of buying foods with limited nutritional value for their children. ■ Mothers should be encouraged to breastfeed infants. ■ Parents and guardians should limit their children's amount of screen time so that kids see fewer advertisements for unhealthy food and beverages, eat less junk food, and have more time to be active. ■ Additional recommendations for individuals and families can be found on the Robert Wood Johnson Foundation Center to Prevention Childhood Obesity Web site: http://www.reversechildhoodobesity.org/content/what-individuals-and-families-can-do-0.
Employers and Insurers	■ Employers should provide workplace wellness programs and strong preventive care benefits. ■ Employers should provide employees with opportunities to be physically active during the day, including fitness breaks. ■ Employers and insurance providers should make coverage available for nutrition counseling, weight-loss and weight-management programs, and other services to prevent and reduce obesity and related chronic diseases. ■ Insurers should make preventive services available and affordable to companies of all sizes, not just large companies. ■ Insurance companies should not discriminate based on a person's weight or use obesity as a risk factor for determining eligibility for insurance coverage or treatment.
Food and Beverage Industry and Agribusiness and Farmers	■ Food, beverage, and marketing companies should develop and promote products that encourage healthy eating, and inform consumers about healthy options. ■ The Grocery Manufacturers Association should encourage members to open supermarkets in underserved communities, and grocery chains should work with such communities to develop mutually beneficial strategies for locating there. ■ Farmers' markets should be equipped to redeem SNAP and WIC coupons. ■ Farmers should work with schools to develop farm to school initiatives.
Research Community	■ Researchers should focus on ways to evaluate the effectiveness of community-based disease-prevention programs. ■ Researchers should increase their focus on translating research about health findings into practical advice for policymakers and the public.

APPENDIX A

Methodology for Obesity and Other Rates Using BRFSS

Data for this analysis was obtained from the Behavioral Risk Factor Surveillance System (BRFSS) dataset (publicly available on the web at www.cdc.gov/brfss). This analysis was conducted by Daniel Eisenberg, PhD and Edward N. Okeke, MBBS, MPH, of the Department of Health Management and Policy of 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, Puerto Rico, Guam, and the Virgin Islands. The most recent data available was 2008.

To account for the complex nature of the survey design and obtain estimates accurately representative at the state level, researchers used sample weights provided by the CDC in the dataset. The main purpose of weighting is to reduce bias in population estimates by up-weighting population sub-groups that are under represented and down-weighting those that are over represented in the sample. Also estimation of variance, which indicates precision and is used in calculating confidence intervals, needs to take into account the fact that the elements in the sample will generally not be statistically independent as a result of the multistage sampling design.

Researchers specified the sampling plan to STATA using the svyset command and the following set of weights: sample weight variable (FINALWT), first-stage stratification variable (STSTR), and primary sampling unit variable (PSU).[480] Omission of the stratification variable in STATA implies no stratification of PSUs prior to first-stage sampling. Omission of the primary sampling unit variable implies one-stage sampling of elements and no clustering of sampled elements. Omission of the sample weight implies equally weighted sample elements. Mean proportions for each variable were estimated using the svy: proportion command.

Variables of interest included BMI, physical inactivity and diabetes. BMI was calculated by dividing self-reported weight in kilograms by the square of self-reported height in metres. The variable 'obesity' is the percentage of all adults in a given state who are classified as obese (where obesity is defined as BMI greater than or equal to 30). Another variable 'overweight' was created to capture the percentage of adults in a given state who were either overweight or obese. An overweight adult is one with a BMI greater than or equal to 25 but less than 30. For the physical inactivity variable a binary indicator equal to one was created for adults who reported not engaging in physical activity or exercise during the previous thirty days other than their regular job. For diabetes, researchers created a binary variable equal to one if the respondent reported ever being told by a doctor that he/she had diabetes. Researchers excluded all cases of gestational and borderline diabetes as well as all cases where the individual was unsure.

Researchers calculated rolling three year averages, first by averaging data from 2005-2007 and then by averaging data from 2006-2008 (after merging data from the relevant time periods). Researchers report mean proportions for each three-year period as well as standard errors and 95 percent confidence intervals for all variables of interest. In addition researchers carried out a Pearson statistical test of proportions and report which states experienced a significant increase or decrease (significant at the 5 percent level).

The 2005-2007 sample consisted of 1,088,321 observations while the 2006-2008 sample consisted of 1,143,720 observations. Researchers excluded all observations with missing values from the analysis.[481]

APPENDIX B

Methodology for Obesity Rates for Adults Ages 55-64 and for Seniors Age 65 and Older Using BRFSS

Data for this analysis was obtained from the Behavioral Risk Factor Surveillance System (BRFSS) dataset (publicly available on the web at www.cdc.gov/brfss). This analysis was conducted by Daniel Eisenberg, PhD and Edward N. Okeke, MBBS, MPH, of the Department of Health Management and Policy of 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, Puerto Rico, Guam, and the Virgin Islands. The researchers downloaded data for three separate time periods; 19985-1987, 1995-1997 and 2005-2007.

To account for the complex nature of the survey design and obtain estimates accurately representative at the state level, researchers used sample weights provided by the CDC in the dataset. The main purpose of weighting is to reduce bias in population estimates by up-weighting population sub-groups that are under represented and down-weighting those that are over represented in the sample. Also, estimation of variance (which indicates precision and is used in calculating confidence intervals), needs to take into account the fact that the elements in the sample will generally not be statistically independent as a result of the multistage sampling design.

Researchers specified the sampling plan to STATA[482] using the svyset command and the following set of weights: sample weight variable (FINALWT), first-stage stratification variable (STSTR), and primary sampling unit variable (PSU). Omission of the stratification variable in STATA implies no stratification of PSUs prior to first-stage sampling. Omission of the primary sampling unit variable implies one-stage sampling of elements and no clustering of sampled elements. Omission of the sample weight implies equally weighted sample elements. Mean proportions for each variable were estimated using the svy: proportion command.

For this analysis researchers constructed two variables: obesity (equal to one if body mass index was greater than or equal to 30) and both (equal to one if body mass index was greater than or equal to 25). Note that the latter variable captures both overweight as well as obese individuals. Researchers constructed this variable separately for two sub-groups of individuals: Medicare-eligible individuals (age greater than or equal to 65) and pre-Medicare individuals (age between 55 and 64), and for three different time periods: 1985-1987, 1995-1997 and 2005-2007. To ensure consistency across all three time periods, researchers constructed the BMI variable by hand, converting weight from pounds to kg, and height from inches to metres and then employing the following formula: BMI = kg/m^2.

Researchers excluded all observations where either weight or height was coded as DK or RF.[483] Researchers also excluded all observations with missing values.[484] For both variables researchers calculated three-year averages for each sub-sample for each of the three time periods. The research team reports mean proportions of obesity and both for each three-year period (for each sub-sample) as well as standard errors and 95% confidence intervals. In addition they report which states experienced a significant increase or decrease (significant at the 5% level based on a Pearson statistical test of proportions). Because they have three time periods they do a pairwise comparison and report three sets of results: a comparison between 1985-1987 and 1995-1997; between 1995-1997 and 2005-2007 and between 1985-1987 and 2005-2007. Researchers were unable to make comparisons between 1985-1987 and 1995-1997 for 19 states because data was unavailable for those states, and for one state (Virgin Islands) between 1995-1997 and 2005-2007 for the same reason.

APPENDIX C

Methodology for Overweight and Obesity Rates Using NSCH

This analysis was conducted by Edward N. Okeke, MBBS, MPH, of the Department of Health Management and Policy of the University of Michigan, School of Public Health.

Data for this analysis was obtained from the National Survey of Children's Health (NSCH), a module of the State and Local Area Integrated Telephone Survey (SLAITS), conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention.

This survey was designed to produce national and state-specific prevalence estimates for a variety of physical, emotional, and behavioral health indicators and measures of children's experiences with the health care system. The NSCH survey sample is a random-digit-dialed sample of households with children less than 18 years of age. One child is randomly selected in each identified household to be the subject of the survey and the respondent is a parent or guardian who knows about the child's health and health care.[485] This survey begun in 2003, is administered in all 50 states and the District of Columbia. The most recent year available was 2007.

To account for the complex nature of the survey design and to obtain estimates that were representative at the state level, researchers used sample weights provided in the dataset. The main purpose of weighting is to reduce bias in population estimates by up-weighting population subgroups that are under represented and down-weighting those that are over represented in the sample. Also, estimation of variance (which indicates precision and is used in calculating confidence intervals), needs to take into account the fact that the elements in the sample will generally not be statistically independent as a result of the multistage sampling design. Estimates based on the sampling weights generalize to the non-institutionalized population of children in each state.

Researchers specified the sampling plan to STATA[486] using the svyset command and the following set of weights: sample weight variable (NSCHWT), first-stage stratification variable (STATE), and primary sampling unit variable (IDNUMR). Mean proportions for each variable of interest were estimated using the svy: proportion command.

The objective of this analysis was to generate estimates of the proportion of children classified as obese and at risk for obesity in each state. An obese child was defined as one with a BMI-for-age greater than or equal to the 95th percentile, while a child at risk for obesity was one with a BMI-for-age greater than or equal to the 85th percentile but lower than the 95th percentile. Percentiles were based on the 2000 CDC growth charts and are gender and age-specific.[487] Height and weight were based on parent reports and were not independently measured. To ensure consistent estimates, researchers restricted the sample to include only children aged 10-17 years.[488]

Researchers report obesity and at risk estimates for 2003 and 2007, including standard errors and 95 percent confidence intervals. The 2007 sample consisted of 44,101 observations while the 2003 sample consisted of 46,707 observations.

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1730 M Street, NW, Suite 900
Washington, DC 20036
(t) 202-223-9870
(f) 202-223-9871