Bending the Obesity Cost Curve in Alabama:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $3 BILLION IN 10 YEARS AND $9 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Alabama over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and workplaces, Alabama could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Alabama could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

Body mass index (BMI) is a calculation based on an individual’s weight and height:

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

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Health Condition</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>448,912</td>
<td>72,185</td>
<td>$1,152,000,000</td>
<td>141,297</td>
<td>$3,672,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>79,581</td>
<td>4,947</td>
<td>$95,000,000</td>
<td>9,846</td>
<td>$213,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>311,842</td>
<td>59,122</td>
<td>$1,627,000,000</td>
<td>121,749</td>
<td>$4,235,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1,006,222</td>
<td>60,370</td>
<td>$214,000,000</td>
<td>102,683</td>
<td>$570,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>988,452</td>
<td>31,890</td>
<td>$295,000,000</td>
<td>59,554</td>
<td>$791,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.
^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

### Obesity-Related Health Care Costs in Alabama

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<thead>
<tr>
<th></th>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$3,381,000,000</td>
<td>$9,481,000,000</td>
</tr>
</tbody>
</table>

### Adult Obesity Rates in Alabama

<table>
<thead>
<tr>
<th>Year</th>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>15.7%</td>
<td>32.0%</td>
<td>62.6%</td>
<td>55.1%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet.

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

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

The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 500,000 (+/- 0.1 million) per year, which means it could be as low as 400,000 or as high as 600,000.

The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

 CDC’s Community Preventive Services Task-force conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.

The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs. NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies. Some of the key findings included:

- Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
- For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
- Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
- Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[ \text{BMI} = \frac{\text{Weight in Pounds}}{(\text{Height in inches \times Height in inches})} \times 703 \]

\[ \text{BMI} = \frac{200}{(72 \times 72)} \times 703 \]

\[ \text{BMI} = 27.12 \]

A 5% reduction in BMI for this individual would be:

\[ \text{5\% of Original BMI} = \text{Original BMI} \times 0.05 \]

\[ \text{5\% of Original BMI} = 27.12 \times 0.05 \]

\[ \text{5\% of Original BMI} = 1.36 \]

The individual’s BMI after the 5% reduction would be:

\[ \text{Reduced BMI} = \text{Original BMI} - \text{5\% of Original BMI} \]

\[ \text{Reduced BMI} = 27.12 - 1.36 \]

\[ \text{Reduced BMI} = 25.76 \]

The individual’s weight after reducing his/her BMI to 25.76 would be:

\[ \text{Reduced BMI} = \frac{(\text{Reduced Weight})}{(\text{Height in Inches} \times \text{Height in Inches})} \times 703 \]

\[ 25.76 = \frac{(\text{New Weight})}{(72 \times 72)} \times 703 \]

Reduction Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

\[ \text{Pounds lost} = \text{Original Weight} - \text{Reduced Weight} \]

\[ \text{Pounds lost} = 200 - 189.96 \]

\[ \text{Pounds lost} = 10.04 \text{ pounds} \]


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in Alaska:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $550 MILLION IN 10 YEARS AND $1 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Alaska over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and workplaces, Alaska could significantly reduce obesity-related diseases and health spending.

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Body mass index (BMI) is a calculation based on an individual’s weight and height:

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

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN ALASKA, 2010-2030**

- **Total Predicted Costs**
- **Total Predicted Costs with 5% BMI Reduction**

*In millions of dollars*
Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Type of Disease</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>50,843</td>
<td>7,892</td>
<td>$176,000,000</td>
<td>14,389</td>
<td>$546,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>7,892</td>
<td>434</td>
<td>$26,000,000</td>
<td>809</td>
<td>$51,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>29,747</td>
<td>6,273</td>
<td>$281,000,000</td>
<td>11,889</td>
<td>$692,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>113,936</td>
<td>6,562</td>
<td>$36,000,000</td>
<td>10,826</td>
<td>$94,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>117,391</td>
<td>3,845</td>
<td>$55,000,000</td>
<td>6,895</td>
<td>$151,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
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Adult Obesity Rates in Alaska

<table>
<thead>
<tr>
<th></th>
<th>Obesity Rate in 1995</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.7%</td>
<td>27.4%</td>
<td>45.6%</td>
<td>39.4%</td>
</tr>
</tbody>
</table>

Adult Obesity Rates in Alaska

Obesity-Related Health Care Costs in Alaska

<table>
<thead>
<tr>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$573,000,000.00</td>
<td>$1,530,000,000</td>
</tr>
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</table>

PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

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EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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

- CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.\(^5\)

- The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs.\(^6\) NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.\(^7\) Some of the key findings included:  
  - Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
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ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:  
BMHI = (Weight in Pounds / (Height in inches x Height in inches)) x 703  
BMHI = (200/(72 x 72)) x 703  
BMHI = 27.12

A 5% reduction in BMI for this individual would be:  
5% of Original BMI = Original BMI x 0.05  
5% of Original BMI = 27.12 x 0.05  
5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:  
Reduced BMI = Original BMI – 5% of Original BMI  
Reduced BMI = 27.12 – 1.36  
Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:  
Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703  
25.76 = (New Weight/(72 x 72)) x 703  
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:  
Pounds lost = Original Weight – Reduced Weight  
Pounds lost = 200 – 189.96  
Pounds lost = 10.04 pounds


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Bending the Obesity Cost Curve in Arizona:

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN ARIZONA, 2010-2030

*In millions of dollars"
**PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS**

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- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 500,000 (+/- 0.1 million) per year, which means it could be as low as 400,000 or as high as 600,000.

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■ In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.7 Some of the key findings included:8

▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.

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▲ Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.

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ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:
BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
BMI = (200 / (72 x 72)) x 703
BMI = 27.12

A 5% reduction in BMI for this individual would be:
5% of Original BMI = Original BMI * 5%
5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:
Reduced BMI = Original BMI – 5% of Original BMI
Reduced BMI = 27.12 – 1.36
Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (New Weight / (Height in Inches x Height in Inches)) x 703
25.76 = (New Weight / (72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in Arkansas:

REducing the average body mass index in the state by 5 percent could lead to health care savings of more than $2 billion in 10 years and $6 billion in 20 years.

The number of obese adults has grown dramatically in Arkansas over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Arkansas could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Arkansas could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

\[
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\]

**Obesity** is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

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**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN ARKANSAS, 2010-2030**

- Total Predicted Costs
- Total Predicted Costs with 5% BMI Reduction

*In millions of dollars*
The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
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The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
Effective Ways to Reduce Obesity

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.

The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs. NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies. Some of the key findings included:

- Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
- For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
- Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
- Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

Endnotes

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:
BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
BMI = (200/(72 x 72)) x 703
BMI = 27.12

A 5% reduction in BMI for this individual would be:
5% of Original BMI = Original BMI * 5%
5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:
Reduced BMI = Original BMI – 5% of Original BMI
Reduced BMI = 27.12 – 1.36
Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703
25.76 = (New Weight/(72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in California:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $28 BILLION IN 10 YEARS AND $81 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in California over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and workplaces, California could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if California could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

Body mass index (BMI) is a calculation based on an individual’s weight and height:

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

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Health Condition</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>2,694,595</td>
<td>420,642</td>
<td>$9,747,000,000</td>
<td>796,430</td>
<td>$31,087,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>505,825</td>
<td>29,023</td>
<td>$689,000,000</td>
<td>52,769</td>
<td>$1,766,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>1,876,680</td>
<td>321,512</td>
<td>$13,923,000,000</td>
<td>656,970</td>
<td>$35,571,000,000</td>
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<tr>
<td>Hypertension</td>
<td>6,478,109</td>
<td>364,104</td>
<td>$1,773,000,000</td>
<td>698,431</td>
<td>$5,422,000,000</td>
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<tr>
<td>Arthritis</td>
<td>6,631,138</td>
<td>209,567</td>
<td>$2,758,000,000</td>
<td>387,850</td>
<td>$7,865,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.
^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

### Adult Obesity Rates in California

<table>
<thead>
<tr>
<th>Year</th>
<th>Obesity Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>13.9%</td>
</tr>
<tr>
<td>2011</td>
<td>23.8%</td>
</tr>
<tr>
<td>2030 if BMI Decreased by 5%*</td>
<td>40.5%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in *The Lancet*. The full methodology is available in Appendix C of the 2012 *F as in Fat* report (available at www.healthyamericans.org).

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EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.

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

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  ▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
  ▲ For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
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  - 5% of Original BMI = 27.12 x 0.05
  - 5% of Original BMI = 1.36
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  - Reduced BMI = Original BMI – 5% of Original BMI
  - Reduced BMI = 27.12 – 1.36
  - Reduced BMI = 25.76
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  - Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703
  - 25.76 = (New Weight/(72 x 72)) x 703
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Bending the Obesity Cost Curve in Colorado:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $3 BILLION IN 10 YEARS AND $10 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Colorado over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Colorado could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Colorado could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

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EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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

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\(\text{In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.}^{7}\) Some of the key findings included:\(^8\)

\(\text{Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.}\)

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\]

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\]

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\[
\text{Reduced BMI} = \frac{\text{Original BMI} - 5\% \text{ of Original BMI}}{	ext{Original BMI}}
\]

\[
\text{Reduced BMI} = 27.12 - 1.36
\]

\[
\text{Reduced BMI} = 25.76
\]

\(\text{The individual’s weight after reducing his/her BMI to 25.76 would be:}\)

\[
\text{Reduced BMI} = \frac{\text{Reduced Weight}}{\text{Height in Inches} \times \text{Height in Inches}} \times 703
\]

\[
25.76 = \frac{\text{New Weight}}{(72 \times 72)} \times 703
\]

\[
\text{Reduced Weight} = 189.96
\]

\(\text{The number of pounds the individual lost by reducing his/her BMI by 5% would be:}\)

\[
\text{Pounds lost} = \text{Original Weight} - \text{Reduced Weight}
\]

\[
\text{Pounds lost} = 200 - 189.96
\]

\[
\text{Pounds lost} = 10.04 \text{ pounds}
\]


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Bending the Obesity Cost Curve in Connecticut:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $2 BILLION IN 10 YEARS AND $7 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Connecticut over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Connecticut could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Connecticut could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

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[PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN CONNECTICUT, 2010-2030]
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<table>
<thead>
<tr>
<th>Type 2 Diabetes</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>267,944</td>
<td>42,682</td>
<td>$887,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>58,115</td>
<td>2,900</td>
<td>$37,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>214,986</td>
<td>37,776</td>
<td>$1,296,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>708,945</td>
<td>43,219</td>
<td>$184,000,000</td>
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<tr>
<td>Arthritis</td>
<td>710,198</td>
<td>20,911</td>
<td>$220,000,000</td>
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</table>

<table>
<thead>
<tr>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>83,932</td>
<td>$2,824,000,000</td>
</tr>
<tr>
<td>6,374</td>
<td>$118,000,000</td>
</tr>
<tr>
<td>79,528</td>
<td>$3,316,000,000</td>
</tr>
<tr>
<td>75,911</td>
<td>$506,000,000</td>
</tr>
<tr>
<td>38,564</td>
<td>$608,000,000</td>
</tr>
</tbody>
</table>

### Adult Obesity Rates in Connecticut

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.8%</td>
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- The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs. NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

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  - Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
  - For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
  - Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
  - Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[
BMI = \frac{\text{Weight in Pounds}}{(\text{Height in inches} \times \text{Height in inches})} \times 703
\]

\[
BMI = \frac{200}{(72 \times 72)} \times 703
\]

\[
BMI = 27.12
\]

- A 5% reduction in BMI for this individual would be:

\[
5\% \text{ of Original BMI} = \text{Original BMI} \times 0.05
\]

\[
5\% \text{ of Original BMI} = 27.12 \times 0.05
\]

\[
5\% \text{ of Original BMI} = 1.36
\]

- The individual’s BMI after the 5% reduction would be:

\[
\text{Reduced BMI} = \text{Original BMI} - 5\% \text{ of Original BMI}
\]

\[
\text{Reduced BMI} = 27.12 - 1.36
\]

\[
\text{Reduced BMI} = 25.76
\]

- The individual’s weight after reducing his/her BMI to 25.76 would be:

\[
\text{Reduced BMI} = \frac{(\text{Reduced Weight})(\text{Height in Inches})}{\text{Height in Inches}}
\]

\[
25.76 = \frac{(\text{New Weight})(72 \times 72)}{703}
\]

\[
\text{Reduced Weight} = 189.96
\]

- The number of pounds the individual lost by reducing his/her BMI by 5% would be:

\[
\text{Pounds lost} = \text{Original Weight} - \text{Reduced Weight}
\]

\[
\text{Pounds lost} = 200 - 189.96
\]

\[
\text{Pounds lost} = 10.04 \text{ pounds}
\]


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in Delaware:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $700 MILLION IN 10 YEARS AND $1 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Delaware over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Delaware could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Delaware could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

Body mass index (BMI) is a calculation based on an individual’s weight and height:

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

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN DELAWARE, 2010-2030

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$1,450</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$1,550</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>$1,650</td>
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<tr>
<td>2016</td>
<td>$1,750</td>
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<tr>
<td>2018</td>
<td>$1,850</td>
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<tr>
<td>2020</td>
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<tr>
<td>2022</td>
<td>$2,050</td>
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<td></td>
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<tr>
<td>2028</td>
<td>$2,350</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>$2,450</td>
<td></td>
</tr>
</tbody>
</table>

*In millions of dollars
Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>79,275</td>
<td>13,017</td>
<td>$228,000,000</td>
<td>25,427</td>
<td>$721,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>14,714</td>
<td>1,125</td>
<td>$23,000,000</td>
<td>1,923</td>
<td>$47,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>57,340</td>
<td>10,786</td>
<td>$344,000,000</td>
<td>22,261</td>
<td>$871,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>187,986</td>
<td>11,575</td>
<td>$47,000,000</td>
<td>18,887</td>
<td>$119,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>184,829</td>
<td>5,633</td>
<td>$54,000,000</td>
<td>10,341</td>
<td>$143,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.
* Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

Adult Obesity Rates in Delaware

<table>
<thead>
<tr>
<th></th>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.2%</td>
<td>28.8%</td>
<td>64.7%</td>
<td>56.4%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

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

The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 500,000 (+/- 0.1 million) per year, which means it could be as low as 400,000 or as high as 600,000.

The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.


EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

CDC’s Community Preventive Services Task-force conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.

The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs. NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies. Some of the key findings included:

- Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
- For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
- Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
- Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[
\text{BMI} = \frac{\text{Weight in Pounds}}{(\text{Height in inches} \times \text{Height in inches})} \times 703
\]

\[
\text{BMI} = \frac{200}{(72 \times 72)} \times 703
\]

\[
\text{BMI} = 27.12
\]

A 5% reduction in BMI for this individual would be:

- 5% of Original BMI = Original BMI * 5%
- 5% of Original BMI = 27.12 * 0.05
- 5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:

\[
\text{Reduced BMI} = \text{Original BMI} - \text{5% of Original BMI}
\]

\[
\text{Reduced BMI} = 27.12 - 1.36
\]

\[
\text{Reduced BMI} = 25.76
\]

The individual’s weight after reducing his/her BMI to 25.76 would be:

\[
\text{Reduced BMI} = \frac{\text{Reduced Weight}}{(\text{Height in Inches} \times \text{Height in Inches})} \times 703
\]

\[
25.76 = \frac{\text{New Weight}}{(72 \times 72)} \times 703
\]

\[
\text{Reduced Weight} = 189.96
\]

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

- Pounds lost = Original Weight – Reduced Weight
- Pounds lost = 200 – 189.96
- Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in District of Columbia:

REDUCING THE AVERAGE BODY MASS INDEX IN WASHINGTON, D.C. BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $360 MILLION IN 10 YEARS AND $1 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in District of Columbia over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, District of Columbia could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if District of Columbia could reduce the average body mass index (BMI) of its residents by only 5 percent, D.C. could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

Body mass index (BMI) is a calculation based on an individual’s weight and height:

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Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN DISTRICT OF COLUMBIA, 2010-2030**

*In millions of dollars*
The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

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The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
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The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
**EFFECTIVE WAYS TO REDUCE OBESITY**

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

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Reduced BMI = 25.76

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25.76 = \frac{\text{New Weight}}{(72 \times 72)} \times 703

Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

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Pounds lost = 10.04 pounds


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Bending the Obesity Cost Curve in Florida:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $12 BILLION IN 10 YEARS AND $34 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Florida over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Florida could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Florida could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

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## Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Type</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>1,722,611</td>
<td>260,135</td>
<td>$4,459,000,000</td>
<td>501,976</td>
<td>$14,074,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>352,183</td>
<td>24,965</td>
<td>$328,000,000</td>
<td>43,451</td>
<td>$656,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>1,412,354</td>
<td>234,408</td>
<td>$5,913,000,000</td>
<td>465,385</td>
<td>$14,684,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>4,372,562</td>
<td>235,932</td>
<td>$827,000,000</td>
<td>401,924</td>
<td>$2,175,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>4,225,438</td>
<td>117,776</td>
<td>$1,013,000,000</td>
<td>218,399</td>
<td>$2,849,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.

^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

## Adult Obesity Rates in Florida

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.3%</td>
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<td>58.6%</td>
<td>51.1%</td>
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</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

## PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

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EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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

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- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.\(^7\) Some of the key findings included:\(^8\)

  ▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
  ▲ For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
  ▲ Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
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ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:
   BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
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Bending the Obesity Cost Curve in Georgia:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $7 BILLION IN 10 YEARS AND $22 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Georgia over the past 15 years, and is expected to grow significantly in the next 20 years.

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Body mass index (BMI) is a calculation based on an individual’s weight and height:

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

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN GEORGIA, 2010-2030

[Graph showing annual obesity-related health spending projections for Georgia from 2010 to 2030, comparing total predicted costs with 5% BMI reduction.]

*In millions of dollars
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>754,593</td>
<td>123,475</td>
<td>$2,563,000,000</td>
<td>238,019</td>
<td>$8,324,000,000</td>
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<tr>
<td>Obesity-Related Cancers*</td>
<td>126,027</td>
<td>6,380</td>
<td>$382,000,000</td>
<td>12,073</td>
<td>$812,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>465,535</td>
<td>87,846</td>
<td>$3,735,000,000</td>
<td>185,409</td>
<td>$9,928,000,000</td>
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<td>Hypertension</td>
<td>1,649,642</td>
<td>106,004</td>
<td>$535,000,000</td>
<td>184,624</td>
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<tr>
<td>Arthritis</td>
<td>1,707,454</td>
<td>58,793</td>
<td>$752,000,000</td>
<td>108,753</td>
<td>$2,196,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
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<tr>
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<tr>
<td>13.8%</td>
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</tbody>
</table>

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The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet.² The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

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The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
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EffectiVe Ways to Reduce Obesity

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Bending the Obesity Cost Curve in Hawaii:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $950 MILLION IN 10 YEARS AND $2 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Hawaii over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Hawaii could significantly reduce obesity-related diseases and health spending.

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<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>$2250</td>
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</tr>
<tr>
<td>2030</td>
<td>$2750</td>
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</tr>
</tbody>
</table>

*In millions of dollars
### Obesity-Related Health Care Costs in Hawaii

<table>
<thead>
<tr>
<th></th>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
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<tbody>
<tr>
<td></td>
<td>$976,000,000</td>
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<td>21,062</td>
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<td>$27,000,000</td>
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<td>$74,000,000</td>
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<tr>
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<td>78,240</td>
<td>13,363</td>
<td>$482,000,000</td>
<td>26,286</td>
<td>$1,153,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>264,816</td>
<td>14,587</td>
<td>$64,000,000</td>
<td>26,740</td>
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<td>Arthritis</td>
<td>265,338</td>
<td>8,084</td>
<td>$84,000,000</td>
<td>14,834</td>
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BMI = 27.12

A 5% reduction in BMI for this individual would be:
5% of Original BMI = Original BMI * 5%
5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

The individual's BMI after the 5% reduction would be:
Reduced BMI = Original BMI – 5% of Original BMI
Reduced BMI = 27.12 – 1.36
Reduced BMI = 25.76

The individual's weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703
25.76 = (New Weight/(72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
Pounds lost = 10.04 pounds


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</tr>
</thead>
<tbody>
<tr>
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<td></td>
</tr>
<tr>
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  ▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.

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1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[
\text{BMI} = \frac{\text{Weight in Pounds}}{\text{Height in inches} \times \text{Height in inches}} \times 703
\]

\[
\text{BMI} = \frac{200}{(72 \times 72)} \times 703
\]

\[
\text{BMI} = 27.12
\]

A 5% reduction in BMI for this individual would be:

\[
\text{5% of Original BMI} = \text{Original BMI} \times 0.05
\]

\[
\text{5% of Original BMI} = 27.12 \times 0.05
\]

\[
\text{5% of Original BMI} = 1.36
\]

The individual’s BMI after the 5% reduction would be:

\[
\text{Reduced BMI} = \text{Original BMI} - 5\% \text{ of Original BMI}
\]

\[
\text{Reduced BMI} = 27.12 - 1.36
\]

\[
\text{Reduced BMI} = 25.76
\]

The individual’s weight after reducing his/her BMI to 25.76 would be:

\[
\text{Reduced BMI} = \frac{\text{Reduced Weight}}{\text{Height in Inches} \times \text{Height in Inches}} \times 703
\]

\[
25.76 = \frac{\text{New Weight}}{72 \times 72} \times 703
\]

\[
\text{Reduced Weight} = 189.96
\]

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

\[
\text{Pounds lost} = \text{Original Weight} - \text{Reduced Weight}
\]

\[
\text{Pounds lost} = 200 - 189.96
\]

\[
\text{Pounds lost} = 10.04 \text{ pounds}
\]


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Bending the Obesity Cost Curve in Illinois:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $9 BILLION IN 10 YEARS AND $28 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Illinois over the past 15 years, and is expected to grow significantly in the next 20 years.

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**Body mass index** (BMI) is a calculation based on an individual’s weight and height:

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---

**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN ILLINOIS, 2010-2030**

![Graph showing projected obesity-related health spending in Illinois from 2010 to 2030. The graph indicates a marked increase in spending with a notable reduction when the BMI is lowered by 5%.]
**Potential Health and Cost Savings by Top Obesity-Related Health Problems**

<table>
<thead>
<tr>
<th>Condition</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>1,014,097</td>
<td>167,300</td>
<td>$3,434,000,000</td>
<td>325,721</td>
<td>$11,141,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>189,693</td>
<td>11,325</td>
<td>$163,000,000</td>
<td>23,036</td>
<td>$353,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>719,649</td>
<td>129,207</td>
<td>$4,649,000,000</td>
<td>268,967</td>
<td>$12,073,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>2,369,745</td>
<td>145,937</td>
<td>$680,000,000</td>
<td>258,801</td>
<td>$1,889,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>2,387,762</td>
<td>78,116</td>
<td>$923,000,000</td>
<td>149,927</td>
<td>$2,730,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.
^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

**Obesity-Related Health Care Costs in Illinois**

<table>
<thead>
<tr>
<th></th>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$9,852,000,000</td>
<td>$28,185,000,000</td>
</tr>
</tbody>
</table>

**Adult Obesity Rates in Illinois**

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.3%</td>
<td>27.1%</td>
<td>53.7%</td>
<td>47.5%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

**PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS**

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:
- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
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ENDNOTES

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BMI = (200 / (72 x 72)) x 703
BMI = 27.12

A 5% reduction in BMI for this individual would be:
- 5% of Original BMI = Original BMI * 5%
- 5% of Original BMI = 27.12 x 0.05
- 5% of Original BMI = 1.36

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- Reduced BMI = Original BMI - 5% of Original BMI
- Reduced BMI = 27.12 - 1.36
- Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
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- 25.76 x (New Weight / (72 x 72)) x 703
- Reduced Weight = 189.96

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- Pounds lost = 200 - 189.96
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<tr>
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</thead>
<tbody>
<tr>
<td></td>
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## Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
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<tr>
<td>Type 2 Diabetes</td>
<td>544,815</td>
<td>89,021</td>
<td>$1,635,000,000</td>
<td>170,743</td>
<td>$5,160,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>99,188</td>
<td>6,387</td>
<td>$122,000,000</td>
<td>10,883</td>
<td>$256,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>386,193</td>
<td>72,338</td>
<td>$2,499,000,000</td>
<td>140,700</td>
<td>$5,922,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1,249,620</td>
<td>77,295</td>
<td>$334,000,000</td>
<td>128,579</td>
<td>$0864,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1,243,233</td>
<td>40,079</td>
<td>$430,000,000</td>
<td>74,684</td>
<td>$1,200,000,000</td>
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<td>18.3%</td>
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### Projections for Annual Obesity-Related Health Spending in Iowa, 2010-2030

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$4900</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$5000</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>$5100</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>$5200</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>$5300</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>$5400</td>
<td></td>
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<tr>
<td>2022</td>
<td>$5500</td>
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<tr>
<td>2024</td>
<td>$5600</td>
<td></td>
</tr>
<tr>
<td>2026</td>
<td>$5700</td>
<td></td>
</tr>
<tr>
<td>2028</td>
<td>$5800</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>$5900</td>
<td></td>
</tr>
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The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[ \text{BMI} = \frac{\text{Weight in Pounds}}{(\text{Height in inches} \times \text{Height in inches})} \times 703 \]

\[ \text{BMI} = \frac{200}{(72 \times 72)} \times 703 \]

\[ \text{BMI} = 27.12 \]

A 5% reduction in BMI for this individual would be:

\[ \text{5% of Original BMI} = \text{Original BMI} \times 0.05 \]

\[ \text{5% of Original BMI} = 27.12 \times 0.05 \]

\[ \text{5% of Original BMI} = 1.36 \]

The individual’s BMI after the 5% reduction would be:

\[ \text{Reduced BMI} = \text{Original BMI} - \text{5% of Original BMI} \]

\[ \text{Reduced BMI} = 27.12 - 1.36 \]

\[ \text{Reduced BMI} = 25.76 \]

The individual’s weight after reducing his/her BMI to 25.76 would be:

\[ \text{Reduced BMI} = \frac{(\text{New Weight} \times 72 \times 72)}{(\text{Height in Inches} \times \text{Height in Inches})} \times 703 \]

\[ 25.76 = \frac{(\text{New Weight} \times 72 \times 72)}{(\text{Height in Inches} \times \text{Height in Inches})} \times 703 \]

\[ \text{New Weight} = 189.96 \]

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

\[ \text{Pounds lost} = \text{Original Weight} - \text{Reduced Weight} \]

\[ \text{Pounds lost} = 200 - 189.96 \]

\[ \text{Pounds lost} = 10.04 \text{ pounds} \]

---

**ENDNOTES**

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

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Bending the Obesity Cost Curve in Kansas:

Reducing the average body mass index in the state by 5 percent could lead to health care savings of more than $2 billion in 10 years and $5 billion in 20 years.

The number of obese adults has grown dramatically in Kansas over the past 15 years, and is expected to grow significantly in the next 20 years.

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Body mass index (BMI) is a calculation based on an individual’s weight and height:

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

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN KANSAS, 2010-2030

Total Predicted Costs

Total Predicted Costs with 5% BMI Reduction

*In millions of dollars
Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>2030 Potential Cases Avoided if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>239,691</td>
<td>39,537</td>
<td>$741,000,000</td>
<td>77,294</td>
<td>$2,390,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>44,590</td>
<td>2,527</td>
<td>$62,000,000</td>
<td>4,939</td>
<td>$132,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>176,438</td>
<td>31,727</td>
<td>$1,051,000,000</td>
<td>63,052</td>
<td>$2,560,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>558,427</td>
<td>34,943</td>
<td>$144,000,000</td>
<td>57,769</td>
<td>$379,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>555,211</td>
<td>17,199</td>
<td>$189,000,000</td>
<td>33,105</td>
<td>$515,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.
* Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

Obesity-Related Health Care Costs in Kansas

<table>
<thead>
<tr>
<th></th>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$2,188,000,000</td>
<td>$5,979,000,000</td>
</tr>
</tbody>
</table>

Adult Obesity Rates in Kansas

<table>
<thead>
<tr>
<th>Obese Rate in 1995</th>
<th>Obese Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
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<tbody>
<tr>
<td>13.5%</td>
<td>29.6%</td>
<td>62.1%</td>
<td>55.1%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

**PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS**

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

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The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
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The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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

\(\text{CDC’s Community Preventive Services Task-force conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.}\(^4\)

\(\text{The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs.}\(^6\) NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

\(\text{In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.}\(^7\) Some of the key findings included:\(^8\)

\(\text{A 5% reduction in BMI for this individual would be:}\)

\(\text{5% of Original BMI = Original BMI} \times 0.05\)

\(\text{Reduced BMI = Original BMI - 5% of Original BMI}\)

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\(\text{Reduced BMI = 27.12 - 1.36}\)

\(\text{Reduced BMI = 25.76}\)

\(\text{The individual’s weight after reducing his/her BMI to 25.76 would be:}\)

\(\text{Reduced BMI = (Reduced Weight}/(\text{Height in Inches x Height in Inches}) \times 703\)

\(\text{Reduced Weight = 189.96}\)

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\(\text{Pounds lost = 10.04 pounds}\)
Bending the Obesity Cost Curve in Kentucky:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $3 BILLION IN 10 YEARS AND $9 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Kentucky over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Kentucky could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Kentucky could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

**Body mass index** (BMI) is a calculation based on an individual’s weight and height:

\[
BMI = \frac{(\text{Weight in pounds})}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703
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**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN KENTUCKY, 2010-2030**

*In millions of dollars*
The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in *The Lancet.* The full methodology is available in Appendix C of the *2012 F as in Fat* report (available at www.healthyamericans.org).

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In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
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The projections in the state-by-state analysis featured in the *2012 F as in Fat* report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

- CDC’s Community Preventive Services Task-force conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.

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- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies. Some of the key findings included:
  - Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
  - For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
  - Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
  - Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows: BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
BMI = (200 / (72 x 72)) x 703
BMI = 27.12


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


25.76 = 0.96
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
Pounds lost = 10.04 pounds
Bending the Obesity Cost Curve in Louisiana:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $3 BILLION IN 10 YEARS AND $9 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Louisiana over the past 15 years, and is expected to grow significantly in the next 20 years.

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Body mass index (BMI) is a calculation based on an individual’s weight and height:

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN LOUISIANA, 2010-2030
## Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>398,422</td>
<td>66,884</td>
<td>$1,212,000,000</td>
<td>127,455</td>
<td>$3,882,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>69,400</td>
<td>3,934</td>
<td>$156,000,000</td>
<td>7,640</td>
<td>$302,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>274,399</td>
<td>50,964</td>
<td>$1,723,000,000</td>
<td>99,640</td>
<td>$4,120,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>882,898</td>
<td>55,539</td>
<td>$241,000,000</td>
<td>91,451</td>
<td>$618,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>877,591</td>
<td>29,645</td>
<td>$327,000,000</td>
<td>55,676</td>
<td>$915,000,000</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>17.0%</td>
<td>33.4%</td>
<td>62.1%</td>
<td>55.4%</td>
</tr>
</tbody>
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*All ages, all genders, adjusted for self-reporting bias.

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\]

\[
\text{BMI} = \frac{200}{(72 \times 72)} \times 703
\]

\[\text{BMI} = 27.12\]

A 5% reduction in BMI for this individual would be:

5% of Original BMI = Original BMI * 5%

5% of Original BMI = 27.12 x 0.05

5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:

Reduced BMI = Original BMI - 5% of Original BMI

Reduced BMI = 27.12 – 1.36

Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:

Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703

25.76 = (New Weight/(72 x 72)) x 703

Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

Pounds lost = Original Weight – Reduced Weight

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Pounds lost = 10.04 pounds


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Bending the Obesity Cost Curve in Maine:

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The number of obese adults has grown dramatically in Maine over the past 15 years, and is expected to grow significantly in the next 20 years.

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN MAINE, 2010-2030

*In millions of dollars

Reduction

Total Predicted Costs

Total Predicted Costs with 5% BMI

*In millions of dollars
### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

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Some of the key findings included:

- Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
- For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
- Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
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1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

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\(\text{BMI} = \frac{200}{(72 \times 72)} \times 703\)

\(\text{BMI} = 27.12\)


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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN MARYLAND, 2010-2030

*In millions of dollars
Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>469,294</td>
<td>79,731</td>
<td>$1,580,000,000</td>
<td>158,413</td>
<td>$5,211,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>86,375</td>
<td>5,537</td>
<td>$156,000,000</td>
<td>10,841</td>
<td>$339,000,000</td>
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<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>320,731</td>
<td>63,295</td>
<td>$2,408,000,000</td>
<td>129,330</td>
<td>$6,099,000,000</td>
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<tr>
<td>Hypertension</td>
<td>1,083,304</td>
<td>71,397</td>
<td>$338,000,000</td>
<td>126,707</td>
<td>$930,000,000</td>
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<tr>
<td>Arthritis</td>
<td>1,098,166</td>
<td>37,884</td>
<td>$458,000,000</td>
<td>70,406</td>
<td>$1,262,000,000</td>
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2010 baseline for potential cases, costs and savings

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Adult Obesity Rates in Maryland

<table>
<thead>
<tr>
<th></th>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.0%</td>
<td>28.3%</td>
<td>58.8%</td>
<td>52.2%</td>
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*All ages, all genders, adjusted for self-reporting bias.

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BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
BMI = (200 / (72 x 72)) x 703
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A 5% reduction in BMI for this individual would be:
5% of Original BMI = Original BMI x 0.05
5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:
Reduced BMI = Original BMI – 5% of Original BMI
Reduced BMI = 27.12 – 1.36
Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (New Weight / (Height in Inches x Height in Inches)) x 703
25.76 = (New Weight / (72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
Pounds lost = 10.04 pounds

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Bending the Obesity Cost Curve in Massachusetts:

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### PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN MASSACHUSETTS, 2010-2030

- **Total Predicted Costs**
- **Total Predicted Costs with 5% BMI Reduction**

*In millions of dollars*
**Potential Health and Cost Savings by Top Obesity-Related Health Problems**

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
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<th>Number of Cases</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>483,855</td>
<td>77,206</td>
<td>$1,656,000,000</td>
<td>155,532</td>
<td>$4,363,000,000</td>
<td></td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>102,436</td>
<td>6,851</td>
<td>$250,000,000</td>
<td>13,109</td>
<td>$489,000,000</td>
<td></td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>375,028</td>
<td>65,085</td>
<td>$2,358,000,000</td>
<td>138,075</td>
<td>$5,918,000,000</td>
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<tr>
<td>Hypertension</td>
<td>1,258,549</td>
<td>75,888</td>
<td>$340,000,000</td>
<td>135,308</td>
<td>$952,000,000</td>
<td></td>
</tr>
<tr>
<td>Arthritis</td>
<td>1,270,472</td>
<td>40,777</td>
<td>$439,000,000</td>
<td>76,086</td>
<td>$1,257,000,000</td>
<td></td>
</tr>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
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<tbody>
<tr>
<td>2010</td>
<td>$1,700</td>
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<tr>
<td>2012</td>
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<tr>
<td>2014</td>
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<tr>
<td>2016</td>
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<tr>
<td>2018</td>
<td>$2,100</td>
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<tr>
<td>2020</td>
<td>$2,200</td>
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<td>2022</td>
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<td>2028</td>
<td>$2,600</td>
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- Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[
\text{BMI} = \frac{\text{Weight in Pounds}}{(\text{Height in inches} \times \text{Height in inches})} \times 703
\]

\[
\text{BMI} = \frac{200}{(72 \times 72)} \times 703
\]

\[
\text{BMI} = 27.12
\]

A 5% reduction in BMI for this individual would be:

5% of Original BMI = Original BMI * 5%

5% of Original BMI = 27.12 * 0.05

5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:

Reduced BMI = Original BMI – 5% of Original BMI

Reduced BMI = 27.12 – 1.36

Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:

Reduced BMI = \(\frac{(\text{Reduced Weight} / (\text{Height in Inches} \times \text{Height in Inches})}) \times 703\)

25.76 = \(\frac{(\text{New Weight} / (72 \times 72))} \times 703\)

Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

Pounds lost = Original Weight – Reduced Weight

Pounds lost = 200 – 189.96

Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in Minnesota:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $4 BILLION IN 10 YEARS AND $11 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Minnesota over the past 15 years, and is expected to grow significantly in the next 20 years. However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Minnesota could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Minnesota could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

Body mass index (BMI) is a calculation based on an individual’s weight and height:

\[
BMI = \frac{(Weight \text{ in pounds})}{(Height \text{ in inches}) \times (Height \text{ in inches})} \times 703
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Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN MINNESOTA, 2010-2030

*In millions of dollars
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Health Problem</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>410,004</td>
<td>65,368</td>
<td>$1,350,000,000</td>
<td>127,368</td>
<td>$4,367,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>77,233</td>
<td>5,024</td>
<td>$118,000,000</td>
<td>8,338</td>
<td>$230,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>298,457</td>
<td>54,304</td>
<td>$2,071,000,000</td>
<td>111,066</td>
<td>$5,242,000,000</td>
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<tr>
<td>Hypertension</td>
<td>990,242</td>
<td>60,985</td>
<td>$286,000,000</td>
<td>105,240</td>
<td>$783,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>998,206</td>
<td>31,481</td>
<td>$365,000,000</td>
<td>56,923</td>
<td>$1,013,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings

* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.

* Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

### Adult Obesity Rates in Minnesota

<table>
<thead>
<tr>
<th></th>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14.6%</td>
<td>25.7%</td>
<td>54.7%</td>
<td>47.5%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

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

The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 500,000 (+/- 0.1 million) per year, which means it could be as low as 400,000 or as high as 600,000.

The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
**EFFECTIVE WAYS TO REDUCE OBESITY**

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.  

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

- CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.  

- The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs. NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.  

- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies. Some of the key findings included:  

  ▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.  
  ▲ For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.  
  ▲ Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.  
  ▲ Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

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**ENDNOTES**

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BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703  
BMI = (200/(72 x 72)) x 703  
BMI = 27.12  

A 5% reduction in BMI for this individual would be:  
5% of Original BMI = Original BMI * 5%  
5% of Original BMI = 27.12 * 0.05  
5% of Original BMI = 1.36  

The individual’s BMI after the 5% reduction would be:  
Reduced BMI = Original BMI – 5% of Original BMI  
Reduced BMI = 27.12 – 1.36  
Reduced BMI = 25.76  

The individual’s weight after reducing his/her BMI to 25.76 would be:  
Reduced BMI = (Reduced Weight / (Height in Inches x Height in Inches)) x 703  
25.76 = (New Weight / (72 x 72)) x 703  
Reduced Weight = 189.96  

The number of pounds the individual lost by reducing his/her BMI by 5% would be:  
Pounds lost = Original Weight – Reduced Weight  
Pounds lost = 200 – 189.96  
Pounds lost = 10.04 pounds

3 Note: Hypertension and arthritis were not included in *The Lancet* study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.  
Bending the Obesity Cost Curve in Mississippi:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $2 BILLION IN 10 YEARS AND $6 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Mississippi over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and workplaces, Mississippi could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America's Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Mississippi could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

\[
\text{BMI} = \frac{\text{(Weight in pounds)}}{\text{(Height in inches) x (Height in inches)}} \times 703
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**Obesity** is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

---

**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN MISSISSIPPI, 2010-2030**

*In millions of dollars*
The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

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

The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:
- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
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The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.

The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs. NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies. Some of the key findings included:

▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.

▲ For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.

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   Reduced BMI = (Reduced Weight / (Height in Inches * Height in Inches)) x 703
   25.76 = (New Weight / (72 x 72)) x 703
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5 The number of pounds the individual lost by reducing his/her BMI by 5% would be:
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   Pounds lost = 200 - 189.96
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Bending the Obesity Cost Curve in Missouri:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $4 BILLION IN 10 YEARS AND $13 BILLION IN 20 YEARS

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<thead>
<tr>
<th></th>
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<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>90,942</td>
<td>$1,575,000,000</td>
<td>179,659</td>
<td>$5,084,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>6,852</td>
<td>$186,000,000</td>
<td>13,704</td>
<td>$438,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>73,330</td>
<td>$2,290,000,000</td>
<td>152,070</td>
<td>$5,935,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>77,117</td>
<td>$295,000,000</td>
<td>133,798</td>
<td>$823,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>40,031</td>
<td>$369,000,000</td>
<td>75,434</td>
<td>$1,082,000,000</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
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</thead>
<tbody>
<tr>
<td>16.9%</td>
<td>30.3%</td>
<td>61.9%</td>
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</tr>
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Bending the Obesity Cost Curve in Montana:

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN MONTANA, 2010-2030

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$1650</td>
<td>$1650</td>
</tr>
<tr>
<td>2012</td>
<td>$1675</td>
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<tr>
<td>2014</td>
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<td>2022</td>
<td>$1800</td>
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<tr>
<td>2024</td>
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<td>2028</td>
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</tr>
<tr>
<td>2030</td>
<td>$1900</td>
<td>$1900</td>
</tr>
</tbody>
</table>

*In millions of dollars
The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
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According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

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  ▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.

  ▲ For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.

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**ENDNOTES**

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[ \text{BMI} = \left( \frac{\text{Weight in Pounds}}{\text{Height in inches} \times \text{Height in inches}} \right) \times 703 \]

\[ \text{BMI} = \frac{200}{(72 \times 72)} \times 703 \]

\[ \text{BMI} = 27.12 \]

A 5% reduction in BMI for this individual would be:

5% of Original BMI = Original BMI * 5%

5% of Original BMI = 27.12 * 0.05

5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:

Reduced BMI = Original BMI – 5% of Original BMI

Reduced BMI = 27.12 – 1.36

Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:

Reduced BMI = \left( \frac{\text{Reduced Weight}}{\text{Height in Inches} \times \text{Height in Inches}} \right) \times 703

25.76 = \left( \frac{\text{New Weight}}{72 \times 72} \right) \times 703

Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

Pounds lost = Original Weight – Reduced Weight

Pounds lost = 200 – 189.96

Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in the *Lancet* study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


The number of obese adults has grown dramatically in Nebraska over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and workplaces, Nebraska could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Nebraska could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

### BMI

The body mass index (BMI) is a calculation based on an individual’s weight and height:

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

### Obesity

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

### PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN NEBRASKA, 2010-2030

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$2900</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$2950</td>
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</tr>
<tr>
<td>2014</td>
<td>$3000</td>
<td></td>
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<td>2020</td>
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<tr>
<td>2030</td>
<td>$3400</td>
<td></td>
</tr>
</tbody>
</table>

*In millions of dollars
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>152,276</td>
<td>24,784</td>
<td>$458,000,000</td>
<td>47,577</td>
<td>$1,456,000,000</td>
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<tr>
<td>Obesity-Related Cancers*</td>
<td>29,132</td>
<td>1,935</td>
<td>$41,000,000</td>
<td>3,243</td>
<td>$79,000,000</td>
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<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>116,013</td>
<td>20,435</td>
<td>$629,000,000</td>
<td>40,796</td>
<td>$1,593,000,000</td>
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<tr>
<td>Hypertension</td>
<td>364,659</td>
<td>21,872</td>
<td>$91,000,000</td>
<td>36,005</td>
<td>$238,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>361,250</td>
<td>11,093</td>
<td>$116,000,000</td>
<td>20,601</td>
<td>$321,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
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### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

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According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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\[\text{BMI} = 27.12\]


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Bending the Obesity Cost Curve in Nevada:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $2 BILLION IN 10 YEARS AND $5 BILLION IN 20 YEARS

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![Graph showing projections for annual obesity-related health spending in Nevada, 2010-2030.](image-url)
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>214,217</td>
<td>34,232</td>
<td>$690,000,000</td>
<td>65,087</td>
<td>$2,172,000,000</td>
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<tr>
<td>Obesity-Related Cancers*</td>
<td>37,310</td>
<td>2,369</td>
<td>$82,000,000</td>
<td>4,521</td>
<td>$164,000,000</td>
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<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
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<td>$989,000,000</td>
<td>55,556</td>
<td>$2,653,000,000</td>
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<tr>
<td>Hypertension</td>
<td>511,848</td>
<td>31,999</td>
<td>$149,000,000</td>
<td>53,677</td>
<td>$401,000,000</td>
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<tr>
<td>Arthritis</td>
<td>512,502</td>
<td>16,667</td>
<td>$191,000,000</td>
<td>30,746</td>
<td>$540,000,000</td>
</tr>
</tbody>
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### Adult Obesity Rates in Nevada

<table>
<thead>
<tr>
<th></th>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
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<tr>
<td>13.1%</td>
<td>24.5%</td>
<td>49.6%</td>
<td>43.8%</td>
<td></td>
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Bending the Obesity Cost Curve in New Hampshire:

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN NEW HAMPSHIRE, 2010-2030

*In millions of dollars

**Note:** The graph shows the projected annual obesity-related health spending in New Hampshire from 2010 to 2030, with and without a 5% BMI reduction.
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<table>
<thead>
<tr>
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<td>18,692</td>
<td>$385,000,000</td>
<td>38,425</td>
<td>$1,239,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>20,353</td>
<td>1,318</td>
<td>$31,000,000</td>
<td>2,715</td>
<td>$65,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>76,996</td>
<td>16,082</td>
<td>$561,000,000</td>
<td>35,077</td>
<td>$1,467,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>263,771</td>
<td>18,455</td>
<td>$83,000,000</td>
<td>31,320</td>
<td>$217,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>262,518</td>
<td>8,806</td>
<td>$97,000,000</td>
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<td>50.8%</td>
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- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
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EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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

- CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.\(^5\)

- The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs.\(^6\) NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.\(^7\) Some of the key findings included:\(^8\)
  - Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
  - For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
  - Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
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ENDNOTES

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:
   BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
   BMI = (200 / (72 x 72)) x 703
   BMI = 27.12


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The number of pounds the individual lost by reducing his/her BMI by 5% would be:

- Pounds lost = Original Weight – Reduced Weight
- Pounds lost = 200 – 189.96
- Pounds lost = 10.04 pounds
Bending the Obesity Cost Curve in New Jersey:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $450 MILLION IN 10 YEARS AND $1 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in New Jersey over the past 15 years, and is expected to grow significantly in the next 20 years.

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A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if New Jersey could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

Body mass index (BMI) is a calculation based on an individual’s weight and height:

\[
\text{BMI} = \frac{\text{Weight in pounds}}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703
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Obesity-Related Health Care Costs in New Jersey

<table>
<thead>
<tr>
<th></th>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$471,000,000</td>
<td>$1,391,000,000</td>
</tr>
</tbody>
</table>

Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>2010 Number of Cases</th>
<th>2020 Potential Cases Avoided by BMI Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>2030 Potential Cases Avoided by BMI Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>607,689</td>
<td>103,119</td>
<td>$158,000,000</td>
<td>202,357</td>
<td>$520,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>110,882</td>
<td>6,616</td>
<td>$13,000,000</td>
<td>13,232</td>
<td>$31,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>398,981</td>
<td>77,009</td>
<td>$220,000,000</td>
<td>168,660</td>
<td>$610,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1,438,554</td>
<td>100,473</td>
<td>$37,000,000</td>
<td>177,570</td>
<td>$104,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1,504,360</td>
<td>48,075</td>
<td>$40,000,000</td>
<td>93,945</td>
<td>$119,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
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Adult Obesity Rates in New Jersey

<table>
<thead>
<tr>
<th>Year</th>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.3%</td>
<td>23.7%</td>
<td>48.6%</td>
<td>42.3%</td>
</tr>
</tbody>
</table>

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\[
\text{BMI} = \frac{200}{(72 \times 72)} \times 703
\]

\[\text{BMI} = 27.12\]

A 5% reduction in BMI for this individual would be:

\[
\text{5% of Original BMI} = \text{Original BMI} \times 0.05
\]

\[
\text{5% of Original BMI} = 27.12 \times 0.05
\]

\[\text{5% of Original BMI} = 1.36\]

The individual’s BMI after the 5% reduction would be:

\[
\text{Reduced BMI} = \text{Original BMI} - 5\% \text{ of Original BMI}
\]

\[
\text{Reduced BMI} = 27.12 - 1.36
\]

\[\text{Reduced BMI} = 25.76\]

The individual’s weight after reducing his/her BMI to 25.76 would be:

\[
\text{Reduced BMI} = \frac{\text{Reduced Weight}/(\text{Height in Inches} \times \text{Height in Inches})}{703}
\]

\[
25.76 = \frac{\text{New Weight}/(72 \times 72)}{703}
\]

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Bending the Obesity Cost Curve in New Mexico:

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN NEW MEXICO, 2010-2030

*In millions of dollars
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<tr>
<td></td>
<td>173,054</td>
<td>26,569</td>
<td>$486,000,000</td>
<td>52,597</td>
<td>$1,599,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>32,920</td>
<td>1,978</td>
<td>$39,000,000</td>
<td>3,665</td>
<td>$72,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>123,330</td>
<td>21,384</td>
<td>$730,000,000</td>
<td>43,102</td>
<td>$1,782,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>419,506</td>
<td>23,821</td>
<td>$95,000,000</td>
<td>40,458</td>
<td>$251,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>413,967</td>
<td>13,701</td>
<td>$135,000,000</td>
<td>25,757</td>
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5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

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Reduced BMI = Original BMI - 5% of Original BMI
Reduced BMI = 27.12 - 1.36
Reduced BMI = 25.76

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Reduced Weight = 189.96

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Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
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<table>
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<td>$4,774,000,000</td>
<td>473,588</td>
<td>$15,726,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>306,188</td>
<td>14,794</td>
<td>$206,000,000</td>
<td>29,392</td>
<td>$481,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>1,140,661</td>
<td>194,652</td>
<td>$6,777,000,000</td>
<td>410,326</td>
<td>$17,296,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3,749,386</td>
<td>219,567</td>
<td>$992,000,000</td>
<td>395,338</td>
<td>$2,793,000,000</td>
</tr>
<tr>
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<td>3,752,890</td>
<td>115,429</td>
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BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
BMI = (200/(72 x 72)) x 703
BMI = 27.12

A 5% reduction in BMI for this individual would be:
5% of Original BMI = Original BMI * 5%
5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:
Reduced BMI = Original BMI – 5% of Original BMI
Reduced BMI = 27.12 – 1.36
Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703
25.76 = (New Weight/(72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
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Pounds lost = 200 – 189.96
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A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if North Carolina could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

Body mass index (BMI) is a calculation based on an individual’s weight and height: 

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### PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN NORTH CAROLINA, 2010-2030

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$16,000</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$16,500</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>$17,000</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>$17,500</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>$18,000</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>$18,500</td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>$19,000</td>
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<td>2024</td>
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<tr>
<td>2026</td>
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<td></td>
</tr>
<tr>
<td>2028</td>
<td>$20,500</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>$21,000</td>
<td></td>
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</tbody>
</table>

*In millions of dollars
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
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</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>820,118</td>
<td>134,610</td>
<td>$2,363,000,000</td>
<td>261,785</td>
<td>$7,746,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>142,818</td>
<td>9,174</td>
<td>$371,000,000</td>
<td>17,382</td>
<td>$742,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>543,752</td>
<td>106,510</td>
<td>$3,733,000,000</td>
<td>213,310</td>
<td>$9,360,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1,831,530</td>
<td>113,366</td>
<td>$486,000,000</td>
<td>195,735</td>
<td>$1,311,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1,843,890</td>
<td>62,284</td>
<td>$679,000,000</td>
<td>115,491</td>
<td>$1,942,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
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<tr>
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<td>58,887</td>
<td>11,572</td>
<td>46,993</td>
<td>145,630</td>
<td>141,984</td>
</tr>
<tr>
<td>8,809</td>
<td>739</td>
<td>7,222</td>
<td>7,667</td>
<td>4,001</td>
</tr>
<tr>
<td>$150,000,000</td>
<td>$19,000,000</td>
<td>$183,000,000</td>
<td>$26,000,000</td>
<td>$39,000,000</td>
</tr>
<tr>
<td>16,873</td>
<td>1,272</td>
<td>1,116</td>
<td>13,248</td>
<td>7,585</td>
</tr>
<tr>
<td>$491,000,000</td>
<td>$38,000,000</td>
<td>$467,000,000</td>
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<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
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<tr>
<td>15.2%</td>
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1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:
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   BMI = (200/(72 x 72)) x 703
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Bending the Obesity Cost Curve in Oklahoma:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $2 BILLION IN 10 YEARS AND $7 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Oklahoma over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Oklahoma could significantly reduce obesity-related diseases and health spending.

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Body mass index (BMI) is a calculation based on an individual’s weight and height:

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\text{BMI} = \frac{(\text{Weight in pounds})}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703
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Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

[Graph showing projections for annual obesity-related health spending in Oklahoma, 2010-2030]
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type 2 Diabetes</strong></td>
<td>337,823</td>
<td>56,835</td>
<td>$912,000,000</td>
</tr>
<tr>
<td><strong>Obesity-Related Cancers</strong></td>
<td>59,906</td>
<td>3,981</td>
<td>$83,000,000</td>
</tr>
<tr>
<td><strong>Coronary Heart Disease &amp; Stroke</strong></td>
<td>239,699</td>
<td>46,484</td>
<td>$1,345,000,000</td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td>765,126</td>
<td>46,393</td>
<td>$176,000,000</td>
</tr>
<tr>
<td><strong>Arthritis</strong></td>
<td>752,463</td>
<td>23,697</td>
<td>$233,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings

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^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

### Adult Obesity Rates in Oklahoma

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.9%</td>
<td>31.1%</td>
<td>66.4%</td>
<td>58.6%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in *The Lancet*. The full methodology is available in Appendix C of the 2012 *F as in Fat* report (available at www.healthyamericans.org).

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

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The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
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- The number of new cases of cancer could be 500,000 (+/- 0.1 million) per year, which means it could be as low as 400,000 or as high as 600,000.

The projections in the state-by-state analysis featured in the 2012 *F as in Fat* report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

■ CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.

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▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.

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ENDNOTES

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BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
BMI = (200 / (72 x 72)) x 703
BMI = 27.12

A 5% reduction in BMI for this individual would be:
5% of Original BMI = Original BMI * 5%
5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:
Reduced BMI = Original BMI – 5% of Original BMI
Reduced BMI = 27.12 – 1.36
Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (Reduced Weight / (Height in Inches x Height in Inches)) x 703
25.76 = (New Weight / (72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
Pounds lost = 10.04 pounds


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Bending the Obesity Cost Curve in Oregon:

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### Body mass index (BMI)

BMI is a calculation based on an individual’s weight and height:

\[
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### Projections for Annual Obesity-Related Health Spending in Oregon, 2010-2030

Total Predicted Costs

Total Predicted Costs with 5% BMI Reduction

*In millions of dollars

---

1 SEPTEMBER 2012
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Obese Health Problem</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>313,737</td>
<td>49,676</td>
<td>$936,000,000</td>
<td>98,578</td>
<td>$3,089,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>58,349</td>
<td>3,678</td>
<td>$89,000,000</td>
<td>7,240</td>
<td>$200,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>225,575</td>
<td>40,229</td>
<td>$1,330,000,000</td>
<td>82,200</td>
<td>$3,388,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>749,127</td>
<td>43,442</td>
<td>$182,000,000</td>
<td>77,631</td>
<td>$503,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>751,876</td>
<td>24,122</td>
<td>$251,000,000</td>
<td>47,508</td>
<td>$754,000,000</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Year</th>
<th>Obesity Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>13.6%</td>
</tr>
<tr>
<td>2011</td>
<td>26.7%</td>
</tr>
<tr>
<td>2030</td>
<td>48.8%</td>
</tr>
<tr>
<td>2030 Decreased by 5%</td>
<td>43.4%</td>
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   Reduced BMI = 25.76

   The individual’s weight after reducing his/her BMI to 25.76 would be:
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   25.76 = (New Weight / (72 x 72)) x 703
   New Weight = 189.96

   The number of pounds the individual lost by reducing his/her BMI by 5% would be:
   Pounds lost = Original Weight – Reduced Weight
   Pounds lost = 200 – 189.96
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Bending the Obesity Cost Curve in Pennsylvania:

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN PENNSYLVANIA, 2010-2030

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$21,000</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>$22,000</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>$23,000</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>$24,000</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>$25,000</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>$26,000</td>
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<tr>
<td>2022</td>
<td>$27,000</td>
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</tr>
<tr>
<td>2024</td>
<td>$28,000</td>
<td></td>
</tr>
<tr>
<td>2026</td>
<td>$29,000</td>
<td></td>
</tr>
<tr>
<td>2028</td>
<td>$30,000</td>
<td></td>
</tr>
<tr>
<td>2030</td>
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<td></td>
</tr>
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\]

\[
\text{BMI} = \frac{200}{(72 	imes 72)} \times 703 = 27.12
\]

A 5% reduction in BMI for this individual would be:

\[
\text{5\% of Original BMI} = \text{Original BMI} \times 0.05
\]

\[
\text{5\% of Original BMI} = 27.12 \times 0.05 = 1.36
\]

The individual’s BMI after the 5% reduction would be:

\[
\text{Reduced BMI} = \text{Original BMI} - \text{5\% of Original BMI}
\]

\[
\text{Reduced BMI} = 27.12 - 1.36 = 25.76
\]

The individual’s weight after reducing his/her BMI to 25.76 would be:

\[
\text{Reduced BMI} = \frac{(\text{New Weight} \times \text{Height in Inches})}{\text{Height in Inches}} \times 703
\]

\[
25.76 = \frac{(\text{New Weight} \times 72)}{72} \times 703
\]

\[
\text{Reduced Weight} = 189.96
\]

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

\[
\text{Pounds lost} = \text{Original Weight} - \text{Reduced Weight}
\]

\[
\text{Pounds lost} = 200 - 189.96 = 10.04 \text{ pounds}
\]


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Bending the Obesity Cost Curve in Rhode Island:

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<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$1900</td>
<td>$1900</td>
</tr>
<tr>
<td>2018</td>
<td>$2300</td>
<td>$2100</td>
</tr>
<tr>
<td>2028</td>
<td>$2500</td>
<td>$2300</td>
</tr>
</tbody>
</table>

Body mass index (BMI) is a calculation based on an individual’s weight and height:

\[
BMi = \frac{(\text{Weight in pounds})}{(\text{Height in inches}) \times (\text{Height in inches})} \times 703
\]

Obesity is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.
## Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Problem</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>82,811</td>
<td>14,308</td>
<td>$297,000,000</td>
<td>29,889</td>
<td>$1,018,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>17,094</td>
<td>1,041</td>
<td>$29,000,000</td>
<td>2,092</td>
<td>$68,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>64,087</td>
<td>11,722</td>
<td>$394,000,000</td>
<td>25,063</td>
<td>$1,009,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>207,285</td>
<td>12,973</td>
<td>$57,000,000</td>
<td>23,602</td>
<td>$155,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>208,610</td>
<td>7,170</td>
<td>$79,000,000</td>
<td>13,856</td>
<td>$229,000,000</td>
</tr>
</tbody>
</table>

*2010 baseline for potential cases, costs and savings

* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.

^Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

## Adult Obesity Rates in Rhode Island

<table>
<thead>
<tr>
<th></th>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.8%</td>
<td>25.4%</td>
<td>53.8%</td>
<td>48.4%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

---

### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet. The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 500,000 (+/- 0.1 million) per year, which means it could be as low as 400,000 or as high as 600,000.

The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
**EFFECTIVE WAYS TO REDUCE OBESITY**

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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

\(\text{\textbullet\textbullet\textbullet}\) CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.\(^5\)

\(\text{\textbullet\textbullet\textbullet}\) The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs.\(^6\) NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

\(\text{\textbullet\textbullet\textbullet}\) In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.\(^7\) Some of the key findings included:\(^8\)

\(\text{\textbullet\textbullet\textbullet}\) Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.

\(\text{\textbullet\textbullet\textbullet}\) For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.

\(\text{\textbullet\textbullet\textbullet}\) Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.

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**ENDNOTES**

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[
\text{BMI} = \frac{\text{Weight in Pounds}}{(\text{Height in inches} \times \text{Height in inches})} \times 703
\]

- BMI = 27.12
- A 5% reduction in BMI for this individual would be:
  - 5% of Original BMI = Original BMI \times 5%
  - 5% of Original BMI = 27.12 \times 0.05
  - 5% of Original BMI = 1.36
- The individual’s BMI after the 5% reduction would be:
  - Reduced BMI = Original BMI – 5% of Original BMI
  - Reduced BMI = 27.12 – 1.36
  - Reduced BMI = 25.76
- The individual’s weight after reducing his/her BMI to 25.76 would be:
  - Reduced BMI = \frac{\text{Reduced Weight}}{(\text{Height in Inches} \times \text{Height in Inches})} \times 703
  - 25.76 = \frac{\text{New Weight}}{(72 \times 72)} \times 703
  - Reduced Weight = 189.96
- The number of pounds the individual lost by reducing his/her BMI by 5% would be:
  - Pounds lost = Original Weight – Reduced Weight
  - Pounds lost = 200 – 189.96
  - Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


The number of obese adults has grown dramatically in South Carolina over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and workplaces, South Carolina could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if South Carolina could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

---

**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

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<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>429,273</td>
<td>68,972</td>
<td>$1,099,000,000</td>
<td>133,498</td>
<td>$3,548,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>75,148</td>
<td>5,007</td>
<td>$52,000,000</td>
<td>9,124</td>
<td>$88,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>289,176</td>
<td>56,853</td>
<td>$1,682,000,000</td>
<td>114,735</td>
<td>$4,297,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>961,722</td>
<td>56,291</td>
<td>$202,000,000</td>
<td>101,446</td>
<td>$568,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>947,357</td>
<td>29,432</td>
<td>$278,000,000</td>
<td>58,678</td>
<td>$803,000,000</td>
</tr>
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2010 baseline for potential cases, costs and savings
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Potential Savings by 2020 if BMI is Reduced by 5% (cumulative) = $3,319,000,000
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Adult Obesity Rates in South Carolina

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
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</thead>
<tbody>
<tr>
<td>16.6%</td>
<td>30.8%</td>
<td>62.9%</td>
<td>55.5%</td>
</tr>
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1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:
   BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
   BMI = (200/(72 x 72)) x 703
   BMI = 27.12


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in South Dakota:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $550 MILLION IN 10 YEARS AND $1 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in South Dakota over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, South Dakota could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if South Dakota could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

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PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN SOUTH DAKOTA, 2010-2030

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$1280</td>
<td>*In millions of dollars</td>
</tr>
<tr>
<td>2012</td>
<td>$1300</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>$1420</td>
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<td>2016</td>
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<td></td>
</tr>
<tr>
<td>2030</td>
<td>$1700</td>
<td></td>
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The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[ \text{BMI} = \frac{\text{Weight in Pounds}}{\left(\frac{\text{Height in inches}}{703}\right)^2} \]

\[ \text{BMI} = \frac{200}{(72 	imes 72)} \times 703 = 27.12 \]

A 5% reduction in BMI for this individual would be:

\[ \text{5% of Original BMI} = \text{Original BMI} \times 0.05 \]

\[ \text{5% of Original BMI} = 27.12 \times 0.05 = 1.36 \]

The individual’s BMI after the 5% reduction would be:

\[ \text{Reduced BMI} = \text{Original BMI} - \text{5% of Original BMI} \]

\[ \text{Reduced BMI} = 27.12 - 1.36 = 25.76 \]

The individual’s weight after reducing his/her BMI to 25.76 would be:

\[ \text{Reduced BMI} = \frac{\text{Reduced Weight}}{\left(\frac{\text{Height in Inches}}{703}\right)^2} \times 703 \]

\[ 25.76 = \frac{\text{New Weight}}{(72 	imes 72)} \times 703 \]

\[ \text{Reduced Weight} = 189.96 \]

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

\[ \text{Pounds lost} = \text{Original Weight} - \text{Reduced Weight} \]

\[ \text{Pounds lost} = 200 - 189.96 = 10.04 \text{ pounds} \]

ENDNOTES

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3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in Tennessee:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $4 BILLION IN 10 YEARS AND $13 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Tennessee over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Tennessee could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Tennessee could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

**Projections for Annual Obesity-Related Health Spending in Tennessee, 2010-2030**

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<thead>
<tr>
<th>Year</th>
<th>Total Predicted Costs</th>
<th>Total Predicted Costs with 5% BMI Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>$10500</td>
<td>$10500</td>
</tr>
<tr>
<td>2012</td>
<td>$11000</td>
<td>$11000</td>
</tr>
<tr>
<td>2014</td>
<td>$11500</td>
<td>$11500</td>
</tr>
<tr>
<td>2016</td>
<td>$12000</td>
<td>$12000</td>
</tr>
<tr>
<td>2018</td>
<td>$12500</td>
<td>$12500</td>
</tr>
<tr>
<td>2020</td>
<td>$13000</td>
<td>$13000</td>
</tr>
<tr>
<td>2022</td>
<td>$13500</td>
<td>$13500</td>
</tr>
</tbody>
</table>

**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

\[
\text{BMI} = \frac{\text{Weight in pounds}}{\text{Height in inches} \times \text{Height in inches}} \times 703
\]

**Obesity** is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Health Problem</th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>594,871</td>
<td>102,390</td>
<td>$1,676,000,000</td>
<td>201,257</td>
<td>$5,505,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>101,301</td>
<td>7,236</td>
<td>$124,000,000</td>
<td>14,151</td>
<td>$246,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>396,752</td>
<td>79,145</td>
<td>$2,380,000,000</td>
<td>162,325</td>
<td>$6,034,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1,299,689</td>
<td>83,372</td>
<td>$321,000,000</td>
<td>139,977</td>
<td>$842,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1,289,571</td>
<td>44,119</td>
<td>$428,000,000</td>
<td>84,332</td>
<td>$1,201,000,000</td>
</tr>
</tbody>
</table>

2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.
^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

### Obesity-Related Health Care Costs in Tennessee

<table>
<thead>
<tr>
<th></th>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$4,928,000,000</td>
<td>$13,827,000,000</td>
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</tbody>
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### Adult Obesity Rates in Tennessee

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
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<tbody>
<tr>
<td>16.4%</td>
<td>29.2%</td>
<td>63.4%</td>
<td>57.4%</td>
</tr>
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*All ages, all genders, adjusted for self-reporting bias.

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**PEER-REVIEWS PROJECTIONS OF FUTURE TRENDS**

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

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

The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
- The number of new cases of chronic heart disease and stroke could be 6.8 million (+/- 1.5 million) per year, which means it could be as low as 5.3 million or as high as 8.3 million; and
- The number of new cases of cancer could be 500,000 (+/- 0.1 million) per year, which means it could be as low as 400,000 or as high as 600,000.

The projections in the state-by-state analysis featured in the 2012 F as in Fat report are considered to be marginally more accurate than those reported in the national study, because the state-by-state study is based on data from the Behavioral Risk Factor Surveillance System (BRFSS) instead of NHANES. BRFSS provides more data points than NHANES (10 versus seven), which enables researchers to estimate projections more precisely.
**EFFECTIVE WAYS TO REDUCE OBESITY**

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.

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

- CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.

- The Compendium of Proven Community-Based Prevention Programs by The New York Academy of Medicine (NYAM) includes a summary and examples from an extensive literature review that NYAM conducted of peer-reviewed studies evaluating the effectiveness of community-based disease-prevention programs. NYAM identified 84 articles, including programs that can directly reduce obesity and obesity-related diseases.

- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies. Some of the key findings included:
  - Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
  - For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
  - Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
  - Participants in community-based programs who focused on improving nutrition and increasing physical activity had a 58 percent reduction in incidence of type 2 diabetes compared with drug therapy, which had a 31 percent reduction.

**ENDNOTES**

1 The BMI of a 6-foot (72-inch) tall, 200-pound person is calculated as follows:

\[
\text{BMI} = \left(\frac{\text{Weight in Pounds}}{\text{Height in inches} \times \text{Height in inches}}\right) \times 703
\]

BMI = (200/(72 x 72)) x 703

BMI = 27.12

A 5% reduction in BMI for this individual would be:

5% of Original BMI = Original BMI * 5%

5% of Original BMI = 27.12 x 0.05

5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:

Reduced BMI = Original BMI – 5% of Original BMI

Reduced BMI = 27.12 – 1.36

Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:

Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703

25.76 = (New Weight/(72 x 72)) x 703

Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

Pounds lost = Original Weight – Reduced Weight

Pounds lost = 200 – 189.96

Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


The number of obese adults has grown dramatically in Texas over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and workplaces, Texas could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Texas could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.¹

---

**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

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

**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN TEXAS, 2010-2030**

- **Total Predicted Costs**
- **Total Predicted Costs with 5% BMI Reduction**

*In millions of dollars
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5%</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5%</th>
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<tr>
<td></td>
<td>(cumulative)*</td>
<td>(cumulative)</td>
</tr>
<tr>
<td>Type 2 Diabetes</td>
<td>321,447</td>
<td>$6,597,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>20,540</td>
<td>$560,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>230,559</td>
<td>$9,169,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>271,638</td>
<td>$1,352,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>149,683</td>
<td>$1,704,000,000</td>
</tr>
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### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

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- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
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A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

- CDC’s Community Preventive Services Taskforce conducts a systematic review and evaluation process to determine effective programs and policies for improving health and preventing disease. The results, published in the Community Guide for Preventive Services, feature a series of evidence-based, community approaches to increasing physical activity, promoting good nutrition, lowering diabetes rates and reducing obesity. The approaches include improving the built environment by building sidewalks and increasing access to parks; starting workplace wellness programs; and increasing physical activity in schools.\(^5\)

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- In 2011, the American Heart Association (AHA) published a review of more than 200 studies and concluded that most cardiovascular disease can be prevented or at least delayed until old age through a combination of direct medical care and community-based prevention programs and policies.\(^7\) Some of the key findings included:\(^8\)

  ▲ Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
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5% of Original BMI = Original BMI * 5%

5% of Original BMI = 27.12 x 0.05

5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:

Reduced BMI = Original BMI - 5% of Original BMI

Reduced BMI = 27.12 – 1.36

Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:

Reduced BMI = (Reduced Weight / (Height in Inches x Height in Inches)) x 703

25.76 = (New Weight / (72 x 72)) x 703

Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:

Pounds lost = Original Weight – Reduced Weight

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Pounds lost = 10.04 pounds


3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.


Bending the Obesity Cost Curve in Utah:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $2 BILLION IN 10 YEARS AND $5 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Utah over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Utah could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Utah could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

\[
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**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN UTAH, 2010-2030**

*In millions of dollars*
**Potential Health and Cost Savings by Top Obesity-Related Health Problems**

<table>
<thead>
<tr>
<th></th>
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<td>27,327</td>
<td>50,992</td>
<td>$2,289,000,000</td>
</tr>
<tr>
<td><strong>Obesity-Related Cancers</strong></td>
<td>29,834</td>
<td>1,747</td>
<td>2,845</td>
<td>$92,000,000</td>
</tr>
<tr>
<td><strong>Coronary Heart Disease &amp; Stroke</strong></td>
<td>113,478</td>
<td>20,030</td>
<td>37,723</td>
<td>$2,530,000,000</td>
</tr>
<tr>
<td><strong>Hypertension</strong></td>
<td>390,890</td>
<td>24,341</td>
<td>40,202</td>
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<td><strong>Arthritis</strong></td>
<td>410,666</td>
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5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:
Reduced BMI = Original BMI - 5% of Original BMI
Reduced BMI = 27.12 - 1.36
Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (Reduced Weight / (Height in Inches x Height in Inches)) x 703
25.76 = (New Weight / (72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
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Pounds lost = 200 - 189.96
Pounds lost = 10.04 pounds


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Bending the Obesity Cost Curve in Vermont:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $450 MILLION IN 10 YEARS AND $1 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Vermont over the past 15 years, and is expected to grow significantly in the next 20 years.

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<td>16,193</td>
<td>$526,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>10,273</td>
<td>614</td>
<td>$9,000,000</td>
<td>1,222</td>
<td>$12,000,000</td>
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<td>Coronary Heart Disease &amp; Stroke</td>
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<td>6,978</td>
<td>$243,000,000</td>
<td>14,702</td>
<td>$618,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>128,688</td>
<td>7,605</td>
<td>$34,000,000</td>
<td>13,976</td>
<td>$95,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>127,660</td>
<td>4,228</td>
<td>$44,000,000</td>
<td>8,062</td>
<td>$129,000,000</td>
</tr>
</tbody>
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^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

### Potential Health Care Costs in Vermont

<table>
<thead>
<tr>
<th></th>
<th>Potential Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
<th>Potential Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$487,000,000</td>
<td>$1,376,000,000</td>
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### Adult Obesity Rates in Vermont

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
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<th>Projected Obesity Rate in 2030 if BMI Decreased by 5%*</th>
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</thead>
<tbody>
<tr>
<td>13.4%</td>
<td>25.4%</td>
<td>47.7%</td>
<td>42.1%</td>
</tr>
</tbody>
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*All ages, all genders, adjusted for self-reporting bias.

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**PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS**

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in *The Lancet*. The full methodology is available in Appendix C of the 2012 *F as in Fat* report (available at www.healthyamericans.org).

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Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
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EFFECTIVE WAYS TO REDUCE OBESITY

According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity. A wide range of studies have found that effective disease-prevention programs in communities can improve nutrition, increase physical activity and reduce obesity rates.

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- Every $1 spent on building biking trails and walking paths could save approximately $3 in medical expenses.
- For every $1 spent in wellness programs, companies could save $3.27 in medical costs and $2.73 in absenteeism costs.
- Some interventions have been shown to help improve nutrition and activity habits in just one year and had a return of $1.17 for every $1 spent.
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   BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703
   BMI = (200/(72 x 72)) x 703
   BMI = 27.12

A 5% reduction in BMI for this individual would be:
   5% of Original BMI = Original BMI * 5%
   5% of Original BMI = 27.12 x 0.05
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The individual’s BMI after the 5% reduction would be:
   Reduced BMI = Original BMI – 5% of Original BMI
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   Reduced BMI = 25.76

The individual’s weight after reducing his/her BMI to 25.76 would be:
   Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703
   25.76 = (New Weight/(72 x 72)) x 703
   Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
   Pounds lost = Original Weight – Reduced Weight
   Pounds lost = 200 – 189.96
   Pounds lost = 10.04 pounds

3 Note: Hypertension and arthritis were not included in The Lancet study, but were included in the state-by-state analysis. Potential new cases of hypertension and arthritis were calculated using the same process as used for diabetes, chronic heart disease and stroke and cancer.
Bending the Obesity Cost Curve in Virginia:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $6 BILLION IN 10 YEARS AND $18 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Virginia over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Virginia could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Virginia could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

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**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

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

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**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN VIRGINIA, 2010-2030**

- Total Predicted Costs
- Total Predicted Costs with 5% BMI Reduction

*In millions of dollars*
Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th>Type 2 Diabetes</th>
<th>Obesity-Related Cancers*</th>
<th>Coronary Heart Disease &amp; Stroke</th>
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</tr>
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<tbody>
<tr>
<td>Number of Cases</td>
<td>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</td>
<td>Potential Cost Savings by 2020, if BMI is Reduced by 5% (cumulative)</td>
<td>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</td>
<td>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</td>
</tr>
<tr>
<td>644,975</td>
<td>106,956</td>
<td>$2,122,000,000</td>
<td>209,621</td>
<td>$6,837,000,000</td>
</tr>
<tr>
<td>118,372</td>
<td>5,506</td>
<td>$89,000,000</td>
<td>13,764</td>
<td>$195,000,000</td>
</tr>
<tr>
<td>442,803</td>
<td>86,796</td>
<td>$3,041,000,000</td>
<td>183,631</td>
<td>$8,114,000,000</td>
</tr>
<tr>
<td>1,512,608</td>
<td>96,997</td>
<td>$434,000,000</td>
<td>175,777</td>
<td>$1,219,000,000</td>
</tr>
<tr>
<td>1,519,490</td>
<td>51,899</td>
<td>$579,000,000</td>
<td>104,689</td>
<td>$1,750,000,000</td>
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5% of Original BMI = 27.12 x 0.05

5% of Original BMI = 1.36

The individual’s BMI after the 5% reduction would be:

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Bending the Obesity Cost Curve in Washington:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $5 BILLION IN 10 YEARS AND $14 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Washington over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Washington could significantly reduce obesity-related diseases and health spending.

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![Projections for Annual Obesity-Related Health Spending in Washington, 2010-2030](chart)

- Total Predicted Costs
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<td>74,379</td>
<td>83,258</td>
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<td>$1,680,000,000</td>
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<td>Potential Cases Avoided by 2030 if BMI is Reduced by 5% (cumulative)</td>
<td>178,401</td>
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<td>151,285</td>
<td>145,002</td>
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<td>Potential Cost Savings by 2030, if BMI is Reduced by 5% (cumulative)</td>
<td>$5,534,000,000</td>
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Bending the Obesity Cost Curve in West Virginia:

REducing the average body mass index in the state by 5 percent could lead to health care savings of more than $1 billion in 10 years and $3 billion in 20 years.

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**Projections for Annual Obesity-Related Health Spending in West Virginia, 2010-2030**

- **Total Predicted Costs**
- **Total Predicted Costs with 5% BMI Reduction**

*In millions of dollars*
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5% of Original BMI = 27.12 x 0.05
5% of Original BMI = 1.36

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Reduced BMI = Original BMI – 5% of Original BMI
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The individual’s weight after reducing his/her BMI to 25.76 would be:
Reduced BMI = (Reduced Weight/(Height in Inches x Height in Inches)) x 703
25.76 = (New Weight/(72 x 72)) x 703
Reduced Weight = 189.96

The number of pounds the individual lost by reducing his/her BMI by 5% would be:
Pounds lost = Original Weight – Reduced Weight
Pounds lost = 200 – 189.96
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Bending the Obesity Cost Curve in Wisconsin:

REDUCING THE AVERAGE BODY MASS INDEX IN THE STATE BY 5 PERCENT COULD LEAD TO HEALTH CARE SAVINGS OF MORE THAN $4 BILLION IN 10 YEARS AND $11 BILLION IN 20 YEARS

The number of obese adults has grown dramatically in Wisconsin over the past 15 years, and is expected to grow significantly in the next 20 years.

However, by using evidence-based strategies to improve nutrition and increase physical activity in our schools, neighborhoods and work places, Wisconsin could significantly reduce obesity-related diseases and health spending.

A new analysis commissioned by the Trust for America’s Health (TFAH) and the Robert Wood Johnson Foundation (RWJF) and conducted by the National Heart Forum (NHF) found that if Wisconsin could reduce the average body mass index (BMI) of its residents by only 5 percent, the state could help prevent thousands of cases of type 2 diabetes, coronary heart disease and stroke, hypertension, cancer and arthritis, while saving millions of dollars. For a six-foot-tall person weighing 200 pounds, a 5 percent reduction in BMI would be the equivalent of losing roughly 10 pounds.1

**Body mass index (BMI)** is a calculation based on an individual’s weight and height:

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

**Obesity** is defined as an excessively high amount of fatty tissue in relation to lean tissue. An adult is considered to be obese if his or her BMI is 30 or above.

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**PROJECTIONS FOR ANNUAL OBESITY-RELATED HEALTH SPENDING IN WISCONSIN, 2010-2030**

- Total Predicted Costs
- Total Predicted Costs with 5% BMI Reduction

*In millions of dollars*
### Potential Health and Cost Savings by Top Obesity-Related Health Problems

<table>
<thead>
<tr>
<th></th>
<th>2010 Number of Cases</th>
<th>Potential Cases Avoided by 2020 if BMI is Reduced by 5% (cumulative)*</th>
<th>Potential Cost Savings by 2020 if BMI is Reduced by 5% (cumulative)</th>
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<th>Potential Cost Savings by 2030 if BMI is Reduced by 5% (cumulative)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes</td>
<td>470,136</td>
<td>74,310</td>
<td>$1,442,000,000</td>
<td>147,935</td>
<td>$4,733,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>89,046</td>
<td>4,341</td>
<td>$75,000,000</td>
<td>7,882</td>
<td>$187,000,000</td>
</tr>
<tr>
<td>Coronary Heart Disease &amp; Stroke</td>
<td>347,847</td>
<td>59,574</td>
<td>$1,968,000,000</td>
<td>123,717</td>
<td>$5,171,000,000</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1,130,359</td>
<td>65,742</td>
<td>$286,000,000</td>
<td>114,692</td>
<td>$777,000,000</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1,124,133</td>
<td>34,499</td>
<td>$377,000,000</td>
<td>66,542</td>
<td>$1,091,000,000</td>
</tr>
</tbody>
</table>

* 2010 baseline for potential cases, costs and savings
* National Heart Forum provided the total cases and cases avoided per 100,000 people, and TFAH used the state’s 2011 census data to translate to the full population-based estimates.

^ Top obesity-related cancers include endometrial (uterine), esophageal, kidney, colon and post-menopausal breast cancer.

### Adult Obesity Rates in Wisconsin

<table>
<thead>
<tr>
<th>Obesity Rate in 1995</th>
<th>Obesity Rate in 2011</th>
<th>Projected Obesity Rate in 2030 based on current trajectory*</th>
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</thead>
<tbody>
<tr>
<td>16.4%</td>
<td>27.7%</td>
<td>56.3%</td>
<td>49.4%</td>
</tr>
</tbody>
</table>

*All ages, all genders, adjusted for self-reporting bias.

### PEER-REVIEWED PROJECTIONS OF FUTURE TRENDS

The analysis is based on a model developed by researchers at the National Heart Forum (NHF). Micro Health Simulations used the model in a peer-reviewed study, “Health and Economic Burden of the Projected Obesity Trends in the USA and UK,” published in 2011 in The Lancet.¹ The full methodology is available in Appendix C of the 2012 F as in Fat report (available at www.healthyamericans.org).

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

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

The NHF study found the number of obese Americans could grow from 32 percent now to around 50 percent (+/- 5 percent) in 2030.

Based on the predicted rise in obesity, researchers found the baseline potential growth in related costs could be $66 billion (+/- 45 billion). Within the potential range, it could be as low as $21 billion or as high as $111 billion.

In addition, due to expected increases in obesity, the projected baseline estimates for:

- The number of new cases of diabetes could be 7.9 million (+/- 1.6 million) per year, which means it could be as low as 6.3 million or as high as 9.5 million;
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According to the U.S. Centers for Disease Control and Prevention (CDC), more than half of all Americans live with a preventable chronic disease, and many such diseases are related to obesity, poor nutrition and physical inactivity.\(^4\)

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<td>7,750</td>
<td>$127,000,000</td>
<td>15,596</td>
<td>$421,000,000</td>
</tr>
<tr>
<td>Obesity-Related Cancers*</td>
<td>9,068</td>
<td>574</td>
<td>$11,000,000</td>
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<td>$21,000,000</td>
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<td>35,021</td>
<td>6,619</td>
<td>$189,000,000</td>
<td>13,403</td>
<td>$474,000,000</td>
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<td>Hypertension</td>
<td>118,620</td>
<td>7,085</td>
<td>$23,000,000</td>
<td>12,119</td>
<td>$68,000,000</td>
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<td>116,541</td>
<td>3,744</td>
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