How to Use This Resource

The following chapters include data about the prevalence and consequences of childhood obesity, as well as information about the disparities and environmental challenges that contribute to the epidemic. The Robert Wood Johnson Foundation will continue to update these chapters regularly, but it is always possible that an individual statistic may not be up-to-date.

Unless otherwise noted, the Foundation defines “obesity” and “overweight” among children as follows: children and adolescents who have a body mass index (BMI) at or above the 95th percentile for their gender and age are obese, and those with a BMI at or above the 85th percentile but below the 95th are overweight. Sometimes, government agencies, foundations and researchers use different terms to describe obesity in children and adolescents. The Institute of Medicine, for example, also describes children and adolescents at or above the 95th percentile as obese, but describes those with BMI at or above the 85th percentile but below the 95th as “at risk for obesity.”

When reviewing these chapters, please note that the black text and charts are research that we encourage our readers to use, as written, in their own work with the noted citation. The blue text provides an introduction to the data.

We welcome your suggestions regarding additional statistics you would like to see included in future versions of this document. Please e-mail a brief description of the data, as well as the journal article, report or other materials from which the statistic was drawn to Annette Majerowicz at annette@behr-communications.com.
Childhood Obesity Prevalence: Current Rates and Recent Trends

Childhood Obesity Prevalence

More than 23 million children and adolescents in the United States are obese or overweight.

- Researchers estimate that 16.3 percent of children and adolescents ages 2 to 19 are obese, and 31.9 percent are obese or overweight.


- This translates to approximately 12 million children and adolescents who are obese and more than 23 million who are either obese or overweight.


Note: These figures are estimates based on current prevalence rates and census data. The most recent obesity and overweight prevalence data show that 31.9 percent of children and adolescents ages 2 to 19 are obese or overweight. To calculate the estimated number of children and adolescents who are obese or overweight, we referenced a U.S. Census Bureau statistical abstract (Table 12), which showed that the estimated 2005 population projection for youths ages 0 to 17 was 73,639,000. Multiplying this population figure with the prevalence rate of obesity and overweight for children and adolescents in the United States (31.9 percent) provided a result of 23,490,841. A similar methodology was used to determine how many children and adolescents were obese.

- The obesity problem starts at an early age with 24.4 percent of children ages 2 to 5 already obese or overweight.

Childhood Obesity Trends

The obesity epidemic has been on the rise for decades.

• The obesity rate among children ages 2 to 5 has more than doubled (from 5% to 12.4%) during the past three decades.


• The obesity rate for children ages 6 to 11 has more than quadrupled (from 4.2% to 17%) and more than tripled for adolescents ages 12 to 19 (from 4.6% to 17.6%) during the past four decades.


Note: The period 1963–1970 combined data from two national surveys. The prevalence rate for children ages 6 to 11 was from 1963–1965, while the prevalence rate for adolescents ages 12 to 19 was from 1966–1970.
Consequences: The Social and Financial Costs of Obesity

Obese and overweight children may suffer not only during childhood and adolescence, but also throughout their adult lives.

In Childhood
Obese children are more likely to be unhealthy, unhappy and absent from school than their healthy-weight peers.

Health

• Children who weigh more are at increased risk for health problems, such as type 2 diabetes. Until recently, type 2 diabetes was considered an adult illness, but that description is no longer accurate.  
www.cdc.gov/obesity/causes/health.html (accessed June 2009)]

• Researchers estimate that one out of every three males and two out of every five females born in the United States in the year 2000 will be diagnosed with diabetes during their lives.  

• Obese children are more likely to have risk factors for heart disease than other children. Sixty-one percent of obese children ages 5 to 10 and 58 percent of obese children and adolescents ages 11 to 17 have one or more risk factors for cardiovascular disease.  

• Approximately 6.6 percent of all cases of childhood asthma are attributable to excess weight. More than 100,000 children ages 5 to 14 suffer from asthma each year because of overweight and obesity.  

• Obesity and overweight are associated with a 52 percent increased risk of a new diagnosis of asthma among children and adolescents.  

• Children and adolescents with a body mass index (BMI) greater than 28 are four to five times more likely to suffer from sleep-disordered breathing than their peers with a lower BMI.  

• Weight-based teasing of overweight and obese adolescents is related to increased susceptibility to depression, according to a literature review of the psychological and social effects of being overweight or obese.  
Social

• A review of the effects of obesity and overweight on children and adolescents found that higher BMI is associated with more severe and frequent victimization.

• Youths carrying excess weight are more frequently rejected by their peers, chosen less as friends and are generally not as well-liked as average-weight children, according to a literature review of the psychological and social effects of being overweight or obese.

Academic

• While there are many causes of school absenteeism, a study that analyzed the attendance patterns of fourth-, fifth- and sixth-graders in Philadelphia found that obese children were absent significantly more than normal-weight children. Among the study population, obese children missed an average of 12.2 days of school per year, while normal-weight children missed only about 10.1 days.

Financial Costs

• Childhood obesity alone is estimated to cost $14 billion annually in direct health expenses. Children covered by Medicaid account for $3 billion of those expenses.

• Annually, the average total health expenses for a child treated for obesity under Medicaid is $6,730, while the average health cost for all children covered by Medicaid is $2,446. The average total health expenses for a child treated for obesity under private insurance is $3,743, while the average health cost for all children covered by private insurance is $1,108.

In Adulthood

Obese children are more likely to become obese adults, suffer from poor health and die at an earlier age than their healthy-weight peers.

Adult Obesity

• An obese 4-year-old has a 20 percent chance of becoming an obese adult, and an obese older teenager has up to an 80 percent chance of becoming an obese adult.

Poor Health

• Today’s children may be the first generation in American history to live sicker and die younger than their parents’ generation. Experts warn that excess weight could reduce average life expectancy by five years or more over the next few decades.


• Increased BMI in boys ages 7 to 13 and girls ages 10 to 13 significantly increased risk for coronary heart disease in adulthood, according to a study of nearly 277,000 children in Denmark.


• Researchers predict that, if current adolescent obesity rates continue, there will be more than 100,000 additional cases of coronary heart disease attributable to obesity by 2035.


• Obesity increases the risk for type 2 diabetes, hypertension, osteoarthritis, stroke, certain kinds of cancer and many other debilitating diseases.


Financial Costs

• The annual cost of obesity in the United States is estimated at $117 billion. Approximately $61 billion is spent on direct medical costs, while about $56 billion is attributed to indirect costs, such as lost productivity.

Disparities: Racial, Ethnic and Geographic Risk

The childhood obesity epidemic cuts across all categories of race, ethnicity, family income and locale, but some populations are at higher risk than others. Lower-income individuals, blacks, Latinos, American Indians and Alaska Natives, and those living in the southern part of the United States are among those affected more than their peers.

Race and Ethnicity

- Mexican-American children are more likely to be obese or overweight than non-Hispanic white or non-Hispanic black children. Thirty-eight percent of Mexican-American children and adolescents ages 2 to 19 are obese or overweight, compared with 34.9 percent of non-Hispanic black and 30.7 percent of non-Hispanic white children and adolescents.


<table>
<thead>
<tr>
<th>Rates of Obesity and Overweight by Age, Race and Ethnicity, 2003-06</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>All (Ages 2 to 19)</td>
</tr>
<tr>
<td>--------------------</td>
</tr>
<tr>
<td>All % Obese or Overweight</td>
</tr>
<tr>
<td>All % Obese</td>
</tr>
<tr>
<td>Non-Hispanic White % Obese or Overweight</td>
</tr>
<tr>
<td>Non-Hispanic White % Obese</td>
</tr>
<tr>
<td>Non-Hispanic Black % Obese or Overweight</td>
</tr>
<tr>
<td>Non-Hispanic Black % Obese</td>
</tr>
<tr>
<td>Mexican-American % Obese or Overweight</td>
</tr>
<tr>
<td>Mexican-American % Obese</td>
</tr>
</tbody>
</table>


- Mexican-American boys are more likely to be obese or overweight than non-Hispanic white or non-Hispanic black boys. Among Mexican-American boys ages 2 to 19, 40.8 percent are obese or overweight, while 31.9 percent of non-Hispanic white boys and 30.8 percent of non-Hispanic black boys are obese or overweight.

• Non-Hispanic black girls are more likely to be obese or overweight than non-Hispanic white or Mexican-American girls. Among non-Hispanic black girls ages 2 to 19, 39.2 percent are obese or overweight, compared with 35 percent of Mexican-American girls and 29.5 percent of non-Hispanic white girls.


• Hispanic and non-Hispanic black children are more likely to develop diabetes than non-Hispanic white children. Non-Hispanic white males born in 2000 have a 26.7 percent risk of being diagnosed with diabetes during their lifetimes, while Hispanic and non-Hispanic black males have a 45.4 percent and 40.2 percent lifetime risk, respectively. Non-Hispanic white females born in 2000 have a 31.2 percent risk of being diagnosed with diabetes during their lifetimes, while Hispanic and non-Hispanic black females have a 52.5 percent and 49 percent lifetime risk, respectively.


• Among 18-year-olds, Hispanics and non-Hispanic blacks carrying excess weight have a higher lifetime risk for diabetes than non-Hispanic whites with similar BMIs. The average Hispanic 18-year-old female with a BMI equal to or greater than 30 but less than 35 has a 66 percent lifetime risk of developing diabetes, while a similar non-Hispanic white female has a 48.8 percent lifetime risk.

A study of American Indian second-graders in Arizona, New Mexico and South Dakota found that 20.3 percent of the children were overweight and 28.6 percent were obese. Broken down by gender, 21 percent of the girls and 19.6 percent of boys were overweight, and 30.5 percent of the girls and 26.8 percent of the boys were obese.


A study of youths ages 5 to 17 in the Aberdeen Area, which includes tribes in North Dakota, South Dakota, Nebraska and Iowa, found that 48.1 percent of American Indian males and 46.3 percent of American Indian females were obese or overweight.


Socioeconomic

In some communities, parents can’t purchase healthy foods because they don’t have access to a local supermarket. A study of nearly 700 neighborhoods found that low-income areas have access to half as many supermarkets as the wealthiest areas. Predominantly minority and racially mixed communities have access to fewer supermarkets than do predominantly white communities.

(Moore L and Diez Roux A. “Associations of Neighborhood Characteristics with the Location and Type of Food Stores.” American Journal of Public Health, 96(2): 325–331, February 2006.)

Communities with high levels of poverty are significantly less likely to have places where children can be physically active, such as parks, green spaces and bike paths and lanes.

(Powell L, Slater S and Chaloupka F. “The Relationship Between Community Physical Activity Settings and Race, Ethnicity and Socioeconomic Status.” Evidence-Based Preventive Medicine, 1(2): 135–144, 2004.)
Location

- Based on figures from the 2007 National Survey of Children’s Health (NSCH), Mississippi had the highest rate of obesity among children and adolescents ages 10 to 17 at 21.9 percent. Oregon had the lowest rate at 9.6 percent.


![Highest Rates of Obese Youths Ages 10 to 17](chart1.png)


![Lowest Rates of Obese Youths Ages 10 to 17](chart2.png)

Physical Activity: Exercise Levels and Barriers

A major contributor to the childhood obesity epidemic is our sedentary lifestyle. Children don’t have enough opportunities to play at school or at home. Experts recommend that children and adolescents have 60 or more minutes of physical activity daily. Little or no quality PE in schools, a lack of safe places to play and the many sedentary distractions of our modern lifestyle make 60 minutes of daily physical activity a difficult goal.

- According to the 2008 Physical Activity Guidelines for Americans, children and adolescents should have 60 or more minutes of daily physical activity.
  

- An analysis of accelerometer data for children and adults shows that, as children reach adolescence, the amount of time spent in moderate-to-vigorous physical activity plummets.
  

- Only 42 percent of children ages 6 to 11 have 60 minutes or more of moderate-to-vigorous physical activity on five or more days per week, according to an analysis of accelerometer data. That figure drops to 8 percent for adolescents ages 12 to 15 and to 7.6 percent for adolescents ages 16 to 19.
  

**Note:** This study reports that fewer young people engage in moderate-to-vigorous physical activity than others investigating the same issue. There are many reasons for the discrepancy, but the most important is that this study relies on accelerometer data that measures how much children and adolescents actually exercise, while other studies rely on self-reported survey data. For example, the 2007 Youth Risk Behavior Survey by the Centers for Disease Control and Prevention found that, nationally, 34.7 percent of high school students reported participating in physical activity that made them breathe hard and increased their heart rate on at least five of the past seven days for 60 minutes or more. However, this was based entirely on self-reported information.

Both self-reported and accelerometer data have flaws. Survey responses are susceptible to multiple reporting difficulties, including respondents unintentionally overestimating how long they participated in physical activity. Accelerometer data accurately measures how long research participants engage in most activities, but the accelerometers can’t be worn at all times, such as when subjects are swimming.

## At School

With tougher academic standards and budget shortfalls, physical education is low on many educators’ priority lists. At many schools, children can’t attend a daily physical education class or enjoy a recess period.

- In 2006, only 2.1 percent of high schools, 7.9 percent of middle schools and 3.8 percent of elementary schools provided daily physical education or its equivalent (225 minutes per week for middle and high schools and 150 minutes per week for elementary schools) to all students for the full school year.


**Note:** These results differ from other studies that report physical education frequency among students. The differences can be attributed to a variety of factors, including how “daily physical education” is defined. The researchers here considered how many minutes students participated in physical education on a weekly basis. Other studies, such as the 2007 Youth Risk Behavior Survey (YRBS) by the Centers for Disease Control and Prevention, defined daily physical education based on how many days of the week students actually attended physical education class. For this measure, the YRBS did not consider the length of each class. Using its definition, the YRBS found that, nationally, 30.3 percent of high school students reported participating in physical education on a daily basis.


- Adolescents reduce their risk of becoming overweight adults by 5 percent for each day in a school week they participate in physical education, according to an analysis of more than 3,300 adolescents in the National Longitudinal Study of Adolescent Health (commonly referred to as “Add Health”). Students who participate in daily physical education are 28 percent less likely to become overweight than their peers who do not participate in daily physical education.


## On the Way to School

Few children walk or ride a bike to school.

- In 2001, only 16 percent of school-age children walked or biked to school. In 1969, 42 percent did.


- More children walk to school when there are sidewalks along main roads.

In the Community

Children also are not getting enough physical activity in their free time. Many communities do not have enough safe and accessible parks, sports facilities and other places for children to play.

- A study of children ages 9 to 13 found that 61.5 percent did not participate in organized physical activity outside of school and 22.6 percent did not engage in any kind of physical activity outside of school.
  

- An increase in commercial physical activity-related facilities, such as YMCAs, sports clubs and pools, is associated with an increase in the number of high school seniors who frequently engage in vigorous exercise, according to an analysis of communities with students participating in the Monitoring the Future Survey. Increasing the number of facilities from one to eight within a given community is associated with a 9 percent increase in frequent vigorous physical activity among 12th-grade girls, as well as a 6.4 percent increase in frequent vigorous activity among 12th-grade boys.
  

- Communities with high levels of poverty are significantly less likely to have places where children can be physically active, such as parks, green spaces and bike paths and lanes.
  
  (Powell L, Slater S and Chaloupka F. “The Relationship Between Community Physical Activity Settings and Race, Ethnicity and Socioeconomic Status.” Evidence-Based Preventive Medicine, 1(2): 135–144, 2004.)

- A community with a median household income of $75,000 is 17 percent more likely to have physical fitness facilities, 38 percent more likely to have membership sports clubs, 30 percent more likely to have dance facilities and 54 percent more likely to have public golf courses than a community with a median household income of $25,000.
  

- Adolescents who live in communities with a higher per capita income are more likely to engage in frequent physical activity and to exercise vigorously.
  

- A study of two low-income communities in New Orleans, with similar percentages of African-Americans (99% and 90%) and households headed by women (both 37%), found that opening a school playground during non-school hours and offering adult supervision resulted in an 84 percent increase in the number of children engaged in outdoor physical activity.
  

- Children in rural areas and towns have less access to places to play than children in urban areas and suburbs.
  
  (Powell L, Slater S and Chaloupka F. “The Relationship Between Community Physical Activity Settings and Race, Ethnicity and Socioeconomic Status.” Evidence-Based Preventive Medicine, 1(2): 135–144, 2004.)
• Children from lower-income families are far less likely to participate in organized physical activity outside of school than their higher-income peers. Only 23.5 percent of children ages 9 to 13 from families earning less than $25,000 participate in organized physical activities outside of school, while 49.1 percent of children from families earning $50,000 or more participate in these activities.


• Non-Hispanic black and Hispanic children are significantly less likely than non-Hispanic white children to get involved in organized physical activity outside of school. Among children ages 9 to 13, 24.1 percent of non-Hispanic blacks and 25.9 percent of Hispanics are involved in organized physical activity outside of school, compared with 46.6 percent of non-Hispanic whites.

• Non-Hispanic black and Hispanic parents of children ages 9 to 13 report more barriers to physical activity than non-Hispanic white parents. These barriers include transportation, expense and the availability of local opportunities. Hispanic parents are especially concerned about safety and report it as a barrier to physical activity 41.2 percent of the time, while non-Hispanic black and non-Hispanic white parents report it as a barrier 13.3 percent and 8.5 percent of the time, respectively.


• Parents with lower annual incomes report more barriers to their children’s physical activity than parents with higher incomes.

**Screen Time**

Children today are technologically savvy and know all about the latest gadgets. But as they spend more and more time surfing the Internet, playing video games and watching DVDs, what are the consequences for their health?

- Children and adolescents ages 8 to 18 spend an average of six hours and 21 minutes per day watching television, playing video games and using other types of media.


- On a typical day, youths ages 8 to 18 spend the following amount of time on each type of media (see table below). Some of the media use overlaps because children and adolescents use several types of media at the same time.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time Spent (h:m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Watching TV (including DVDs)</td>
<td>3:51</td>
</tr>
<tr>
<td>Total Listening to Music</td>
<td>1:44</td>
</tr>
<tr>
<td>Total Using a Computer (Outside of Schoolwork)</td>
<td>1:02</td>
</tr>
<tr>
<td>Total Playing Video Games</td>
<td>0:49</td>
</tr>
<tr>
<td>Total Watching Movies in a Theater</td>
<td>0:25</td>
</tr>
<tr>
<td>Total Reading Print Media</td>
<td>0:43</td>
</tr>
</tbody>
</table>


- On a typical school day, 35.4 percent of adolescents in grades nine through 12 spend three or more hours watching television.

• Black and Hispanic youths ages 8 to 18 spend more time watching TV than white children. Blacks spend an average of four hours and five minutes, Hispanics spend an average of three hours and 23 minutes, and whites spend an average of two hours and 45 minutes watching TV daily.


• Increased screen time is associated with increased calorie consumption. An increase of one hour of daily television viewing is associated with the consumption of an additional 167 calories per day, according to a study of sixth-, seventh- and eighth-graders in the Boston area.


• A study of eighth- and 10th-graders found obesity and overweight to be positively associated with the number of hours spent watching television.


• If children have televisions, computers or video games in their bedrooms, the average amount of time they spend using each item increases. For example, children who don’t have televisions in their bedrooms watch an average of two hours and four minutes of television daily, while children who do have televisions in their bedrooms watch an average of three hours and 31 minutes daily.


• All video games are not the same, and some even have a positive effect on physical activity. A study of 25 children compared video games requiring children to be physically active while playing, such as Dance Dance Revolution Ultramix 2, with traditional video games. The study found that children’s energy expenditures more than doubled while they played the activity-promoting games.