

# Obesity and Overweight

## Summary

In 2006, 24% ( $\pm 1\%$ ) of Washington adults were obese and another 36% ( $\pm 1\%$ ) were overweight. Washington data also show that rates of obesity increased with age until 65 years. Additionally, obesity rates were highest for those with the lowest incomes and education levels and decreased as income and education improved. Washington's Asian and Pacific Islander populations had the lowest [age-adjusted](#) rate of obesity, while American Indians and Alaska Natives and blacks had the highest. These differences persisted even after accounting for other factors such as income and education. In 2006, 11% ( $\pm 1\%$ ) of Washington's 10<sup>th</sup> graders were overweight, and an additional 14% ( $\pm 2\%$ ) were at risk of overweight. About 25% of women who gave birth in 2003-2005 were obese at the start of their pregnancies, and 45% gained more than the recommended weight during pregnancy.

Obese and overweight individuals are more likely than normal weight individuals to develop a number of serious diseases and to die at younger ages.<sup>1,2,3</sup> Obese women are at higher risk of health complications during pregnancy.<sup>4</sup> Weight gain above the recommended amount during pregnancy is associated with poor birth outcomes and increases the risk of retaining extra weight after the baby is born.<sup>4</sup>

Obesity generally results from a combination of excessive caloric intake and engaging in too little physical activity. Many barriers make it difficult for people to change their eating and physical activity habits. To be successful in reducing obesity, government, communities, and individuals need to work together to create environments that support

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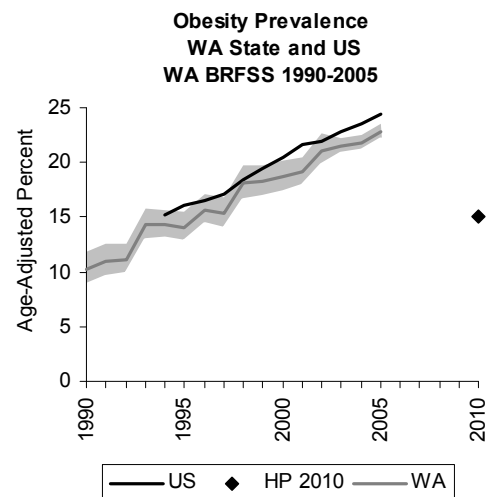
**Definition:** The U.S. Centers for Disease Control and Prevention (CDC) defines overweight in adults as body mass index (BMI) of 25–29.9, obesity as a BMI of 30–39.9, and morbid obesity as a BMI of 40 or more. BMI is calculated by dividing an individual's weight in kilograms by height in meters squared. For example, a woman who is five feet, five inches tall is overweight if she weighs 150–179 pounds and obese if she weighs more than 180 pounds. A five-foot, 11-inch man is overweight if he weighs 180–214 and obese if he weighs more than 215 pounds. The CDC uses different terminology for adolescents, with "overweight" defined as being above the 95th percentile for BMI based on standardized growth charts and "risk for overweight" as between the 85th and 95th percentiles. BMI does not distinguish between fat and lean body mass. From a health perspective, obesity and overweight refer to high amounts of body fat in relation to lean body mass.

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healthy diets and opportunities for physical activity.

## Time Trends

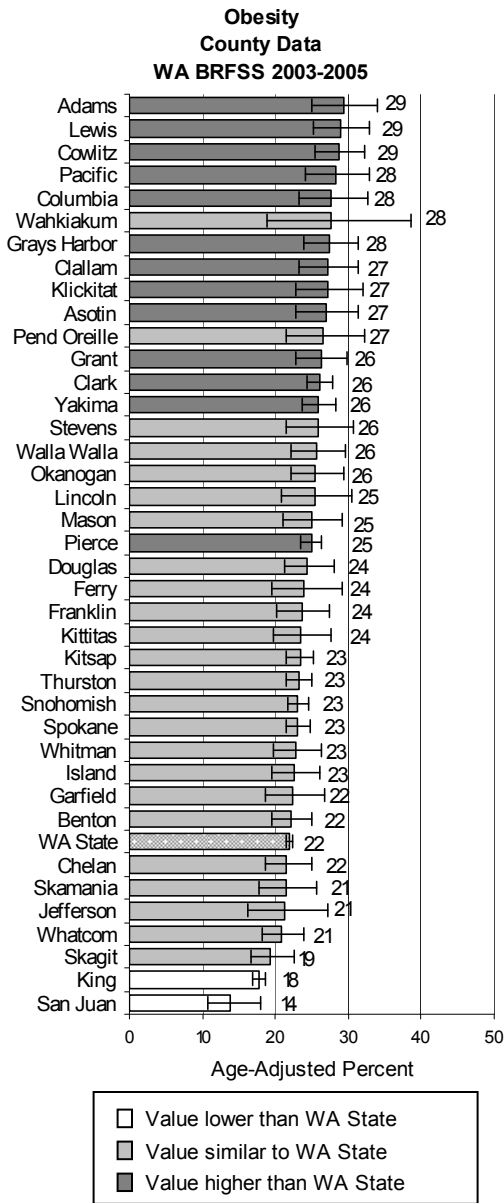
Obesity is becoming more common both in Washington and in the nation. The Behavioral Risk Factor Surveillance System (BRFSS) found that the age-adjusted percent of Washington adults who were obese increased from 10% ( $\pm 2\%$ ) in 1990 to 24% ( $\pm 1\%$ ) in 2006. Nationally, the rate of increase slowed slightly after 2001, but in Washington, rates continued to rise at the same pace from 1993-2006.



## Year 2010 Goals

The national *Healthy People 2010* goal is to decrease the age-adjusted prevalence of obesity to 15% in adults ages 20 and older. Given the current trend of increasing obesity, Washington will not meet this goal.

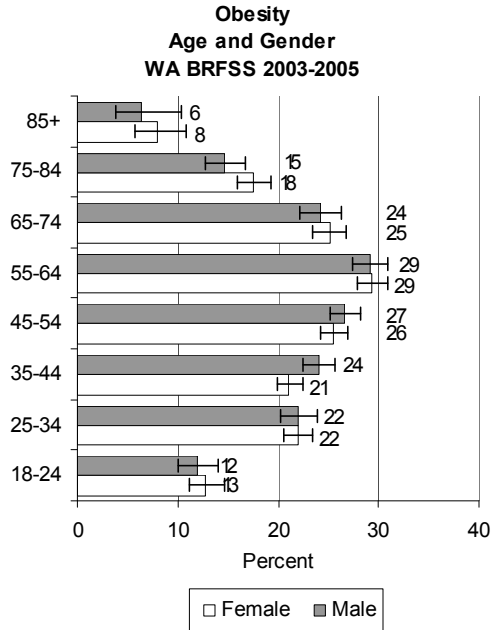
## Geographic Variation



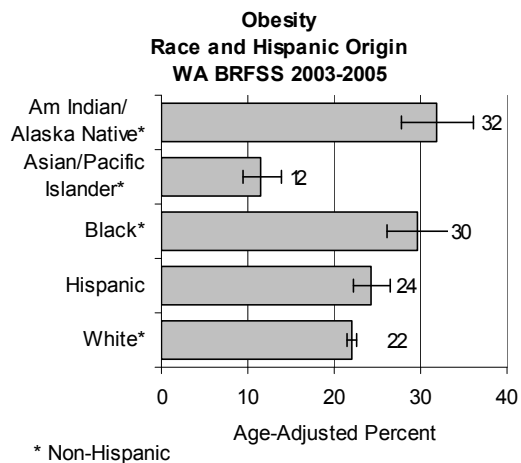
Obesity rates are not distributed evenly throughout Washington. Based on Washington BRFSS data for 2003-2005, age-adjusted rates for obesity ranged from 14% ( $\pm 4\%$ ) in San Juan County to 29% ( $\pm 5\%$ ) in Adams County. Thirteen counties had obesity rates that were higher than the state rate of 22% ( $< 1\%$ ): Adams, Lewis, Cowlitz, Pacific, Columbia, Gray's Harbor, Clallam, Klickitat, Asotin, Grant, Clark, Yakima, and Pierce counties. King and San Juan counties had obesity rates below the state rate.

## Age and Gender

Consistent with national data, Washington BRFSS data for 2003-2005 show that obesity rates in adulthood increase with age until 65, after which they begin a steep decline. Adults ages 45-64 were more likely to be obese than those ages 25-34. This difference persisted after accounting for race, Hispanic origin, gender, income, and education. BRFSS data showed no difference in overall obesity rates between men and women.



## Race and Hispanic Origin

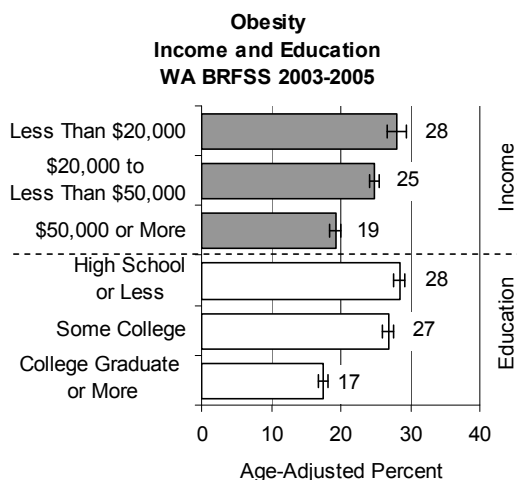


BRFSS data for 2003-2005 combined showed disparities in obesity rates among racial groups in Washington State. Asians and Pacific Islanders had the lowest prevalence of obesity followed by whites

and people of Hispanic origin. Blacks and American Indians and Alaska Natives had the highest prevalence. These differences remained after accounting for gender, income, and education, along with age. Nationally, the highest prevalence of obesity is observed among black and Mexican American females.<sup>5</sup> Mexican Americans comprise the largest Hispanic-origin subgroup in Washington. Because whites make up the majority of the population in both Washington and the nation, an obese person is most likely to be white.

### Income and Education

Higher obesity rates are associated with lower levels of income and education. Washington adults with annual household incomes of less than \$20,000 were nearly 50% more likely to be obese than those in households with annual incomes of \$50,000 or more. College graduates had lower obesity rates than those with less education. The patterns for income and education remained after accounting for each other and for gender, race, and Hispanic origin, along with age.



### Health Effects

Obesity has significant short- and long-term health effects. Adults with a BMI of 30 or greater (obese and morbidly obese) are more likely to die at an earlier age than adults with a BMI of 20 to 25 (normal weight). Most of the increased risk can be attributed to obesity-related heart disease and stroke.<sup>6</sup> People who are obese or overweight are more prone to develop hypertension, elevated blood cholesterol, and diabetes. Obese people are also at an increased risk of colon, uterine, and postmenopausal

breast cancer; gall bladder disease; liver disease; sleep apnea; respiratory problems; and osteoarthritis.<sup>1,2,3</sup> Obesity and overweight also affect mental health and are associated with decreased emotional well-being.<sup>7</sup>

### Barriers

Overweight and obesity are caused by a caloric imbalance in which more calories are consumed than expended. The main barriers to preventing obesity are the many recent changes to the food and active environments in the United States. The current food environment has been characterized by researchers as one in which food — especially high-calorie food — is highly available; the fast food industry is growing (as are standard serving sizes in this industry); snack foods are increasing in number and marketing presence; and more time is spent socializing with food and drink.<sup>8</sup> This environment results in increased calorie intake, perceived need for convenience foods, and consumption of more meals away from home. Convenience foods and meals away from home tend to have more calories than food prepared at home. In support of this assessment, the U.S. Department of Agriculture's Economic Research Service reports that from 1970 to 2003, the amount of food available annually for each person increased by 16%; annual consumption of fat and oil increased by 63%, grain by 43%, and sugar and sweeteners by 19%.<sup>9</sup>

The current environment often makes it difficult to be physically active. People commonly engage in sedentary activities, such as watching television and using computers for entertainment. In addition, automation in the workplace, labor-saving machinery for household chores, automobile travel, reduction in physical activity in school, and community designs that make it difficult to walk or bicycle contribute to an environment that does not support physical activity.<sup>8,10</sup>

Barriers to the clinical treatment of obesity include the lack of treatment protocols, time for counseling families, reimbursement structures, and commitment of primary care providers to care for affected patients.<sup>11</sup>

### Other Measures of Impact and Burden

**Morbid obesity.** Morbid obesity, defined as a BMI of 40 or higher, has become an issue with major health and economic impacts. Studies have shown that the risks of death and illness are greatly elevated among morbidly obese people, regardless of gender or race.<sup>12,13</sup> In Washington for 2003-2005 combined, 2.8% ( $\pm <1\%$ ) of adults were morbidly obese. Morbid

obesity varied by race, Hispanic origin, income, and education in the same manner as obesity. Unlike obesity, however, women had significantly higher rates of morbid obesity than men in every age group. The difference between women and men is particularly marked in people ages 55-64 (6% ±1% and 3% ±1%, respectively).

**Overweight among children and adolescents.**

The U.S. Centers for Disease Control and Prevention (CDC) generally does not use the term “obesity” for children. CDC defines overweight among adolescents and children as being above the 95<sup>th</sup> percentile for BMI based on the National Center for Health Statistics growth charts from the early 1970s. CDC defines being at risk for overweight as being between the 85<sup>th</sup> and 95<sup>th</sup> percentile of these norms. The use of the same growth charts over time has made it possible to observe the increase in overweight among adolescents since the early 1970s.

Based on self-reported heights and weights, the 2006 Washington Healthy Youth Survey (HYS) found that 11% (±1%) of Washington adolescents in grade 10 were overweight and 14% (±2%) were at risk for being overweight. Washington State data from the National Survey of Children’s Health concurred in finding that 10% (±3%) of youth ages 12-17 were overweight in 2003.<sup>14</sup> The study, based on parent reports of their children’s heights and weights, also found that 22% (±4%) of children ages 6-11 were overweight.

Changes in overweight among children over the past several decades are not readily available in Washington. The HYS shows that percentages of 10<sup>th</sup> graders who were overweight or at risk for overweight did not change from 2002 to 2006. Nationally, the proportion of children who are overweight has been increasing. The size of the increase varies by age, gender, and race or Hispanic origin, but it is seen for all ages and genders and among whites, blacks, and Mexican Americans. Overall, from the early 1970s through 2002, the percent of U.S. children who were overweight (BMIs greater than the 95<sup>th</sup> percentile) tripled; the percent who had BMIs greater than the 99<sup>th</sup> percentile quadrupled.<sup>15</sup>

The U.S. Institute of Medicine’s report for Preventing Childhood Obesity describes factors contributing to the increasing rates of overweight among children. These factors include fewer opportunities for physical activity, fewer meals

eaten at home, media and marketing that target children with food advertisements, increased portion sizes, and increased amount of time in sedentary activities, including watching television and using computers.<sup>16</sup> Other factors, such as fetal weight gain,<sup>17</sup> parental obesity,<sup>18</sup> and the age at which a child’s “adiposity rebound” begins,<sup>19</sup> also contribute to overweight and obesity among children.

**Pre-pregnancy obesity and excessive weight gain during pregnancy.**

Mothers who are obese when they become pregnant are at increased risk of diabetes during pregnancy, pre-eclampsia, cesarean section, failure to initiate or sustain breastfeeding, and complications during and after delivery. Their infants are at increased risk of macrosomia or having a neural tube defect.<sup>4,20</sup> From 2003-2005, 25% of Washington women who gave birth were obese prior to pregnancy. But 19% of birth certificates did not contain information on weight or height before pregnancy and, therefore, actual values may be higher. Although caution is needed due to missing data, patterns of pre-pregnancy obesity by race and Hispanic origin are similar to patterns of adult obesity. Asian and Pacific Islander mothers had the lowest prevalence of obesity before pregnancy, and Native American and Alaska Native mothers had the highest rates. Obesity before pregnancy increased as mother’s age and the number of previous births increased.

Recommended weight gain during pregnancy depends on the mother’s BMI before becoming pregnant. The following table shows the Institute of Medicine’s 1990 weight categories and recommendations.<sup>4</sup>

Weight category	BMI	Recommended total gain (pounds)
Underweight	Less than 19.8	28–40
Normal	19.8–26.0	25–35
Overweight	>26.0–29.0	15–25
Obese	More than 29.0	At least 15

Washington birth certificate data for 2003-2005 show that while 45% of all women in Washington gained more weight during pregnancy than recommended, women who were overweight before pregnancy were more likely than normal weight or obese women to gain more than the recommended amount. This pattern held regardless of maternal age, parity, or race or Hispanic origin.

Like pre-pregnancy obesity, weight gain above the recommended range during pregnancy can increase

risks for mother and child. Risks include pre-eclampsia, cesarean delivery, failure to initiate or sustain breastfeeding, postpartum weight retention at one year, and macrosomia in infants,<sup>4</sup>

### **Intervention Strategies**

Strategies to reduce obesity focus on environmental and behavioral change to increase physical activity and healthy eating. Many of these strategies are covered in the Physical Activity and Nutrition chapters of this document. While maintaining a proper weight is important for health, eating a healthy diet and having adequate levels of physical activity help maintain health regardless of a person's weight.

**Prevention.** Given the difficulty of losing weight and maintaining weight loss, obesity prevention offers the greatest hope for halting and reversing current increases in obesity. Effective strategies will consider the effects of interpersonal relationships, institutional or organizational influences, community, and societal policies or systems on behavior.<sup>22</sup> Public health professionals, researchers, and medical providers are working to identify factors associated with where we live, learn, work and play that contribute to behaviors leading to obesity.<sup>21</sup> Using this approach, the Washington State Department of Health is collaborating with communities and other governmental agencies to create environments and policies that support individuals in overcoming barriers to physical activity and healthy diets. In particular, a number of practices and policies have focused on programs in schools and worksites. Although evaluations have identified some of the more effective strategies, additional work remains to be done to conduct rigorous assessment of obesity prevention initiatives.<sup>21</sup>

To increase awareness and assessment of obesity in the pediatric clinical setting, the American Academy of Pediatrics (AAP) recommends that health care providers assess patients' BMIs, recommend healthy eating and physical activity, and advocate for societal changes to encourage healthy behaviors.<sup>22</sup> The AAP also recommends that health care providers strongly encourage mothers to breastfeed their infants for at least a year after birth to facilitate weight loss for new mothers and development of a healthy weight for the infant.<sup>23</sup>

**Weight loss.** Effective weight loss strategies include caloric restriction and an increase in physical activity.<sup>6,24</sup> In addition, self-monitoring strategies, such as weighing oneself, planning meals, tracking fat and calories, and adding 30 minutes of physical activity to one's daily routine might be important in maintaining weight loss.<sup>25</sup> The Guide to Community Preventive Services recommends multi-component workplace interventions focusing on diet, physical activity, and cognitive change as effective in helping employees lose weight and maintain weight loss.<sup>21</sup>

For individuals who are extremely obese and have not been able to lose significant amounts of weight and maintain weight loss, medications and surgical approaches for weight loss are becoming more common.<sup>26</sup> The U.S. Agency for Healthcare Research and Quality concludes that medications can promote modest weight loss in adults and that surgery can result in larger weight loss in extremely obese individuals.<sup>27</sup> Surgery has been shown to be effective in reducing illness and death associated with extreme obesity.<sup>28</sup> But both medication and surgery can have serious side effects or complications.<sup>27,28, 29,30</sup>

Current nutrition and fitness programs aimed at weight loss for youth have had more long-term success than interventions for adults. A review of these programs notes that components contributing to their effectiveness are behavior modification, reduced intake of high-calorie foods, increased physical activity, and most importantly, parental involvement.<sup>31,32</sup>

**See Related Chapters:** [Nutrition](#), [Physical Activity](#)

**Data Sources** (For additional detail, see [Appendix B](#).)

Washington State Behavioral Risk Factor Surveillance System (BRFSS) Data: 1987-2006, 2003-2006 data weighted to reflect county over-samples. November 2006 & June 2007.

Washington State Birth Certificate Data: Washington State Department of Health, Vital Registration System Annual Statistical Files, Births 1980-2005, released December 2006.

Washington Healthy Youth Survey: Office of Superintendent of Public Instruction, Washington State Departments of Health, Social and Health Services, and Community, Trade, and Economic Development, and the Family Policy Council, 2002, 2004, 2006.

### **For More Information**

Washington State Nutrition and Physical Activity  
<http://www.doh.wa.gov/cfh/nutritionpa>

Center for Public Health Nutrition, University of Washington <http://depts.washington.edu/uwcpnh/>  
The Access to Healthy Foods Coalition  
<http://www.accesstohealthyfoods.org/>

Partners in Action: Nutrition and Physical Activity in Washington  
<http://depts.washington.edu/waaction/index.html>

Washington Coalition for Promoting Physical Activity  
<http://www.beactive.org/local.html>

## Endnotes

<sup>1</sup> National Task Force on the Prevention and Treatment of Obesity. (2000). Overweight, Obesity, and Health Risk. *Archive of Internal Medicine*, 160(7), 898-904.

<sup>2</sup> Paeratakul, S., Lovejoy, J. C., Ryan, D. H., Bray, G. A. (2002, September). The relation of gender, race, and socioeconomic status to obesity and obesity comorbidities in a sample of US adults. *International Journal of Obesity*, 26(9), 1205-1210.

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<sup>4</sup> U.S. Institute of Medicine. (2007). *Influence of Pregnancy Weight on Maternal and Child Health*. Washington DC: The National Academies Press.

<sup>5</sup> Ogden, C. L., Carroll, M. D., Curtin, L. R., McDowell, M. A., Tabak, C. J., & Flegal, K. M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association*; 295(13), 1549-1555.

<sup>6</sup> National Institutes of Health; National Heart, Lung, Blood Institute; North American Association for the Study of Obesity (2000). *The Practical Guide; Identification, Evaluation, and Treatment of Overweight and Obesity in Adults*.

<sup>7</sup> Onyike, C. U., Crum, R. M., Hochang, L. B., Lyketsos, C. G., & Eaton, W. W. (2003). Is Obesity Associated with major Depression? Results from the Third National Health Examination Survey. *American Journal of Epidemiology*, 158, 1139-1147.

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<sup>9</sup> Farah, H., & Buzby, J. (2005, November). U.S. Food Consumption Up 16 Percent Since 1970. *Amber Waves*, 3(5), 4-5.

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<sup>11</sup> National Heart Lung and Blood Institute. (2005). Working Group Report on Competencies for Overweight and Obesity Identification, Prevention, and Treatment. Retrieved November 3, 2006 from <http://www.nhlbi.nih.gov/meetings/workshops/overweight/report.htm>

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<sup>14</sup> CDC National Center for Health Statistics, State and Local Area Integrated Telephone Survey, 2003 National Survey of Children's Health. Data retrieved August 30, 2006 from <http://www.cdc.gov/nchs/about/major/slatis/nsch.htm>. Prepared by Washington State Department of Health Chronic Disease Prevention Unit, September 2006.

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