

**Physical Activity and  
Nutrition Program**

**2007**

**THE BURDEN OF OVERWEIGHT  
AND OBESITY IN MAINE**



*Maine Center for Disease  
Control and Prevention*

*An Office of the  
Department of Health and Human Services*

*John E. Baldacci, Governor*

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# Acknowledgments



The Maine Center for Disease Control and Prevention (Maine CDC) and the Department of Health and Human Services would like to thank Maine CDC staff and partners of the Physical Activity and Nutrition Program for their assistance in reviewing and editing this document and the guidance and support provided to the principal author, Meredith Anderson. Thanks and appreciation go to the following:

Dr. Dora Anne Mills, Maine Public Health Director and Director of Maine Center for Disease Control and Prevention,

Lori Kaley, Manager Public Health Programs, Muskie School of Public Service,

Janet Leiter, Maine Child Health Nutrition Program Manager,

David W. Crawford, Physical Activity and Nutrition Program Manager,

Rebecca Drewette-Card, Physical Activity and Nutrition Program Physical Activity Coordinator, and

Debra Wigand, Maine Cardiovascular Health Program Manager.

Thanks also go to members of the Physical Activity and Nutrition Coordinating Council and Advisory Group members who reviewed and provided comments on the draft document.

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This report was supported in part by an appointment to the Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists (CSTE) and funded by the Centers for Disease Control and Prevention (CDC) Cooperative Agreement U60/CCU007277; support was also provided through CDC's State Nutrition and Physical Activity Programs to Prevent Obesity and Other Chronic Diseases, CDC Cooperative Agreement U58/CCU122825, Chronic Disease Prevention and Health Promotion Programs.

For more information, contact the Physical Activity and Nutrition Program at 207-287-5388, or on the web, go to [www.healthymainepartnerships.org/panp](http://www.healthymainepartnerships.org/panp).

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# Executive Summary



Obesity is arguably one of the most serious public health threats in the United States today. The percentage of people in Maine and the U.S. who are overweight or obese has been steadily increasing over the past several decades. Overweight and obesity are associated with a wide range of health effects, including diabetes, cardiovascular disease, and osteoarthritis.

This report describes the burden of overweight and obesity among Maine's adults, adolescents, and children. It places emphasis on physical activity and nutrition, two of the most important behavioral factors contributing to overweight and obesity. Data for adults are from the 2002-2004 Behavioral Risk Factor Surveillance System, and data for adolescents are from the 2005 Youth Risk Behavior Survey. Key findings are included below.

## Overweight and Obesity:

- A majority of Maine adults (59%) are either overweight or obese.
- The prevalence of obesity is approximately the same for men (22%) and women (21%), but men are more likely to be overweight than women (47% v. 29%).
- The prevalence of diagnosed diabetes is more than 5 times higher among obese adults than among adults of a healthy weight.
- In Maine, 11 percent of 9th-12th graders and 12 percent of 7th-8th graders are obese. An additional 14 percent of 9th-12th graders and 15 percent of 7th-8th graders are overweight.

## Physical Activity:

- Approximately half of Maine adults (52%) meet the Surgeon General's recommendations for weekly physical activity.
- 62 percent of 9th-12th graders and 75% of 7th-8th graders participate in the amount of vigorous physical activity recommended by the Surgeon General.
- Only 36 percent of high school students report attending physical education class on at least one day per week.

## Nutrition:

- Less than one-third of adults (28%) consume the recommended amount of fruits and vegetables per day.
- Only 19 percent of Maine students in grades 9-12 consume at least 5 servings of fruits and vegetables per day.

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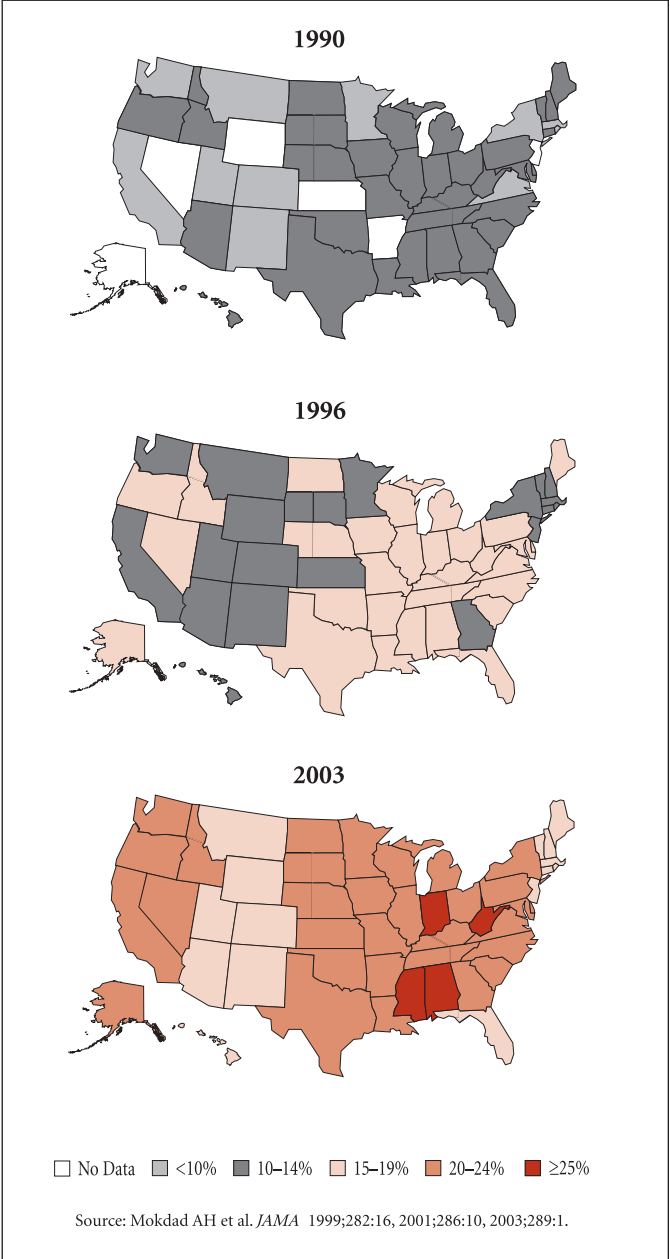


Obesity is one of the most serious health problems facing the United States today. The percentage of adults who are obese has been steadily increasing for the past 2-3 decades (Figure 1). According to the National Health and Nutrition Examination Survey, nearly two-thirds of U.S. adults (65%) were overweight or obese in 1999-2000. The percentage of U.S. adults who are obese has increased dramatically over the past several decades, from 15% between 1976-1980 to 31% in 1999-2000.<sup>1</sup>

Children and adolescents have experienced a similar epidemic. Among 6-11 year olds, the prevalence of obesity has increased from 7% in 1976-1980 to 15% in 1999-2000. For 12-19 year olds during the same period, the prevalence of obesity increased from 6% to 16%.<sup>2</sup> These trends show no sign of changing, despite increased attention and resources aimed to reduce overweight and obesity, increase physical activity, and increase fruit and vegetable intake among both children and adults.<sup>3</sup>

The obesity epidemic in Maine mirrors that in the U.S. At least 59% of Maine adults were overweight or obese during 2002-2004.<sup>4</sup> The prevalence of overweight and obesity combined varied by county, from 51 to 67 percent. In 2005, 25% of Maine high school students were overweight or obese.<sup>5</sup> Because the data are based on self-reported height and weight, they may underestimate the true prevalence of overweight and obesity in the Maine population, especially among adolescents and older adults.<sup>6,7</sup>

**Figure 1. Prevalence of obesity among U.S. adults, Behavioral Risk Factor Surveillance System, 1990, 1996, 2003.**



## Measuring obesity

Body Mass Index, or BMI, is a measure of body weight that is adjusted for height. It is calculated using the following formula:

$$BMI = \frac{\text{Weight (lbs)}}{\text{Height (inches)} \times \text{Height (inches)}} \times 703$$

BMI is associated with body fat, and is widely used to determine weight status. Although BMI is correlated with body fat, the association between BMI and body fat does not hold for all individuals, especially those with a relatively high percentage of lean body mass, or muscle.<sup>8</sup> For adults, a BMI between 18.5-24.9 is considered to be a healthy weight (Table 1). Higher BMIs are classified as overweight (25.0-29.9) or obese (30+). Obesity is further divided into subcategories: Class I (BMI 30-34.9), Class II (35-39.9), and Class III (40+).

**Table 1. Classification of overweight and obesity for adults**

BMI	Category
<18.5	Underweight
18.5-24.9	Healthy weight
25.0-29.9	Overweight
30.0-34.9	Obese Class I
35.0-39.9	Obese Class II
≥40.0	Obese Class III

Source: Adapted from NHLBI Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults.

The classification of weight status is different for children and adolescents than for adults. In children and adolescents, it takes into account normal differences in weight and height between boys and girls, and between children of different ages, and is often called BMI-for-age. A child's BMI is compared to gender-specific growth charts. The charts were first developed in 1977 and revised in 2000 using data from the National Health and Nutrition Examination Survey (NHANES). Children with a BMI at or above the 95th percentile are considered to be obese, and children with a BMI between the 85th and 95th percentile are considered to be overweight (Table 2).

**Table 2. Classification of overweight and obesity in children and adolescents (ages 2-20).**

BMI percentile	Category
<5th	Underweight
<5th-<85th	Healthy weight
85th-<95th	Overweight
≥95th	Obese

## Measured versus self-reported BMI

Ideally, BMI would be calculated using height and weight measurements. However, we are often limited to using self-reported height and weight from surveys to calculate BMI. This report relies heavily on self-reported data from two surveys, the Behavioral Risk Factor Surveillance System (BRFSS) of adults, and the Youth Risk Behavioral Survey (YRBS) of adolescents. For this reason, it is important to note that estimates of overweight and obesity based on self-reported height and weight may underestimate those based on measured BMI for both adults and adolescents.<sup>6,9</sup> Notably, a recent study in the U.S. showed that the BRFSS underestimated the prevalence of obesity among adults by 9.5 percent (13% among women and 6% among men).<sup>9</sup> Similarly, a study of 9th-12th graders showed that BMI based on self-reported height and weight underestimated the prevalence of overweight by 11 percent, because on average students overreported their height and underreported their weight.<sup>6</sup>

## Underweight

A small percentage of adults (2.6%) and adolescents (1.3%) in Maine are considered to be underweight. Underweight is associated with health consequences including osteoporosis, and may be an indication of an eating disorder or other medical condition. Because the number of underweight people is relatively small, underweight is not included as a separate category in this report. However, underweight individuals are included in all analyses except those displaying data by levels of BMI.

## Data sources

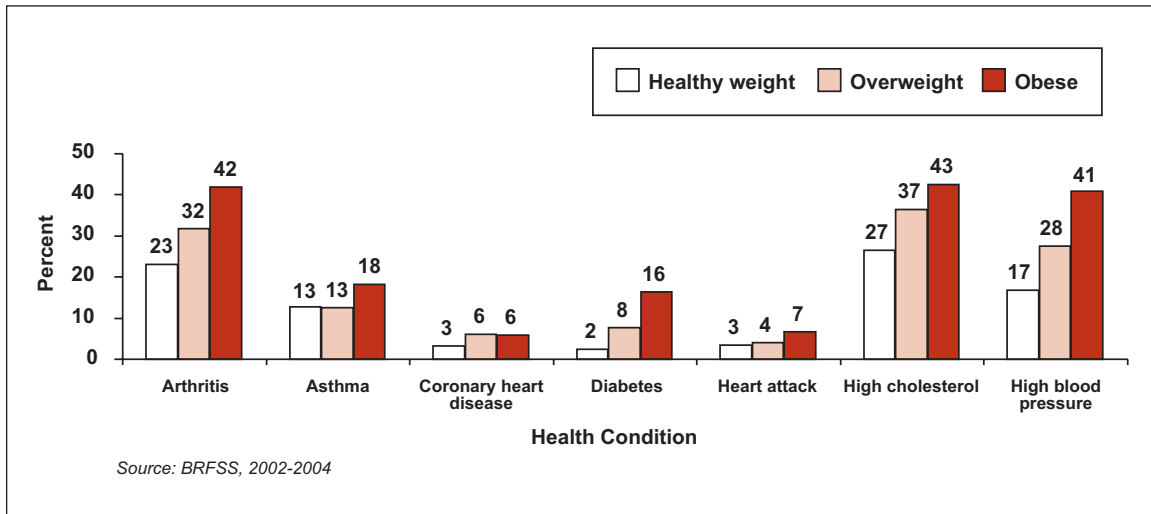
The data sources used in this report are described in detail in Appendix A: Technical Notes. Briefly, data for adults are from the Behavioral Risk Factor Surveillance System, a telephone sample survey of non-institutionalized Maine adults. We averaged three years of data (2002-2004) to allow presentation of data for smaller subgroups (i.e., counties). Data for adolescents are from the Youth Risk Behavior Survey, a paper-and pencil-sample survey of Maine 7th-12th graders who attend publicly funded schools. Data for children are from the Maine Child Health Survey, a survey of kindergarten public school students. Finally, data for infants and toddlers are from the Pediatric Nutrition Surveillance System (PedNSS) and the National Immunization Survey (NIS). PedNSS collects data from the Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the NIS is a random telephone survey of immunization practices.

Data tables for most graphs presented in this report are included in Appendix C: Data Tables. Appendix B is a cross reference of figures included in the report with their corresponding data tables, and tables with corresponding figures.

## Obesity and disease

Overweight and obesity are associated with multiple health conditions, including cardiovascular disease, diabetes, asthma, and arthritis. Figure 2 shows the percent of Maine adults in each BMI category (excluding underweight) who report having each of the following health conditions: arthritis, asthma, coronary heart disease, diabetes, heart attack, high cholesterol, and high blood pressure. For every condition, obese adults were more likely to report having the condition than adults of a healthy weight. For example, obese adults were more than 5 times as likely as adults of a healthy weight to report having diabetes (16% versus 3%).

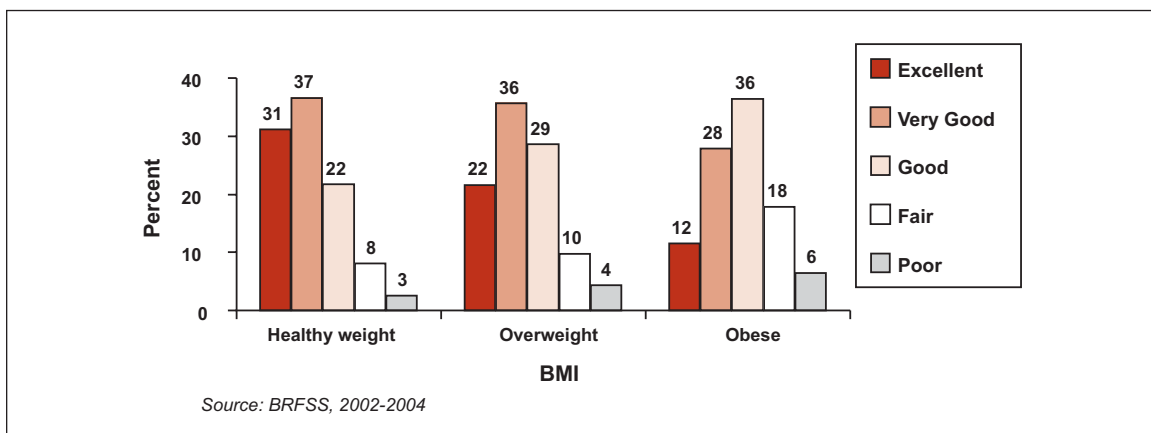
**Figure 2. Percent of Maine adults with selected health conditions, by BMI.**



## Obesity and quality of life

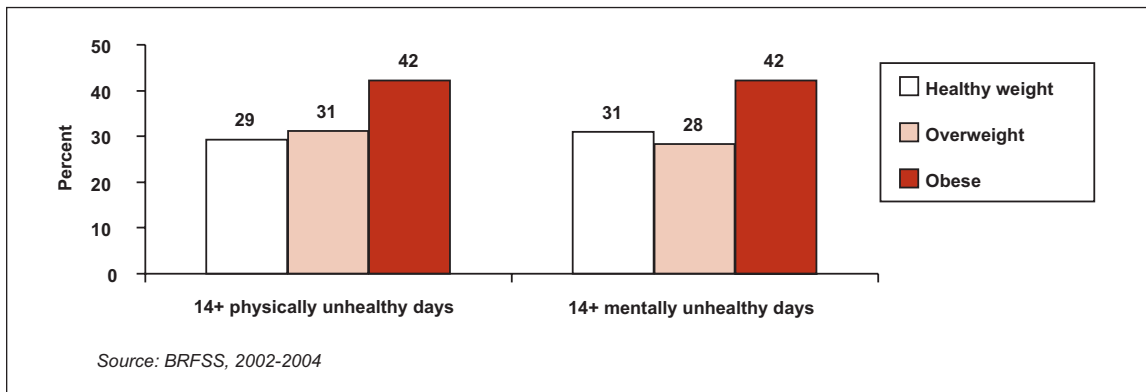
In response to the question, “Would you say that in general your health is: Excellent, Very Good, Good, Fair, or Poor?,” adults who are overweight or obese reported poorer general health than other adults (Figure 3).

**Figure 3. General health among Maine adults, by BMI.**



Adults who are obese were more likely to report having 14 or more unhealthy days per month than adults of a healthy weight (Figure 4). Unhealthy days are the number of days during the past month in which a person’s physical or mental health was “not good.”

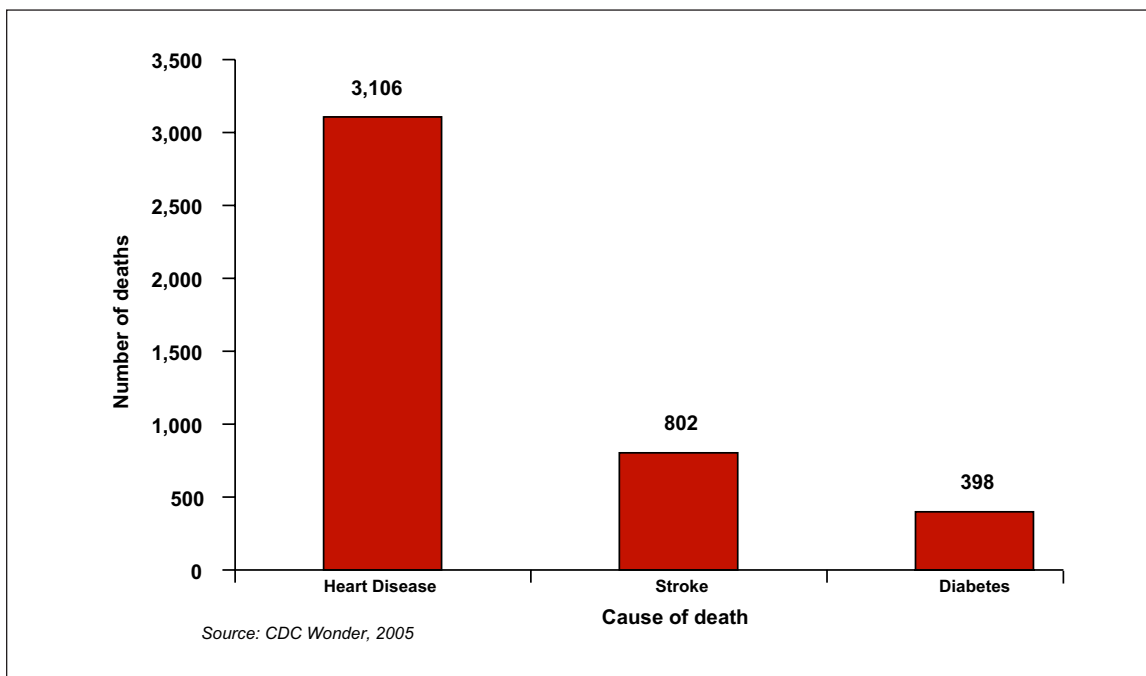
**Figure 4. Percent of Maine adults with 14 or more unhealthy days per month, by BMI.**



### Obesity and mortality

Nationally, obesity is associated with approximately 111,900 excess deaths per year.<sup>10</sup> Obesity is associated with diseases including heart disease, stroke, and diabetes, which are the second, third, and seventh leading causes of death in Maine, respectively. Figure 5 shows the number of deaths due to each of these causes.<sup>11</sup> Cancer is the leading cause of death in Maine, claiming 3,120 lives each year. Obesity has been associated with some types of cancers, including breast, endometrial, prostate, and colorectal cancers.

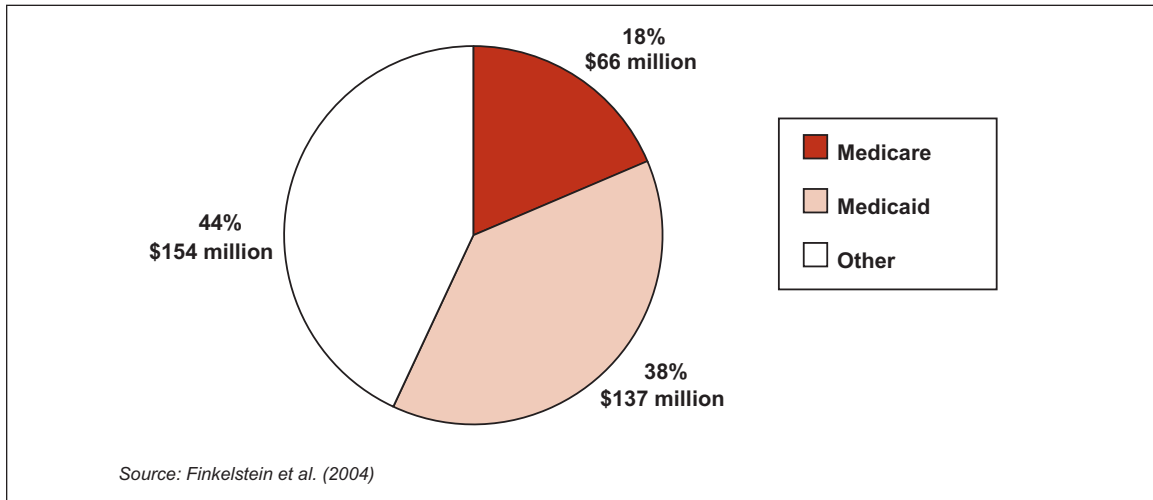
**Figure 5. Number of deaths for selected conditions linked to obesity, all ages, Maine, 2003.**



## Costs of obesity

In Maine, medical expenditures attributable to obesity have been estimated at approximately \$357 million dollars per year, over 5 percent of all medical expenditures in the state.<sup>12</sup> Over half of these expenses (56%) are paid by the state on behalf of Medicare and Medicaid recipients (Figure 6). These estimates provide a sense of the economic impact of obesity in Maine.

**Figure 6. Annual medical expenditures attributable to obesity, Maine (1998-2000).**

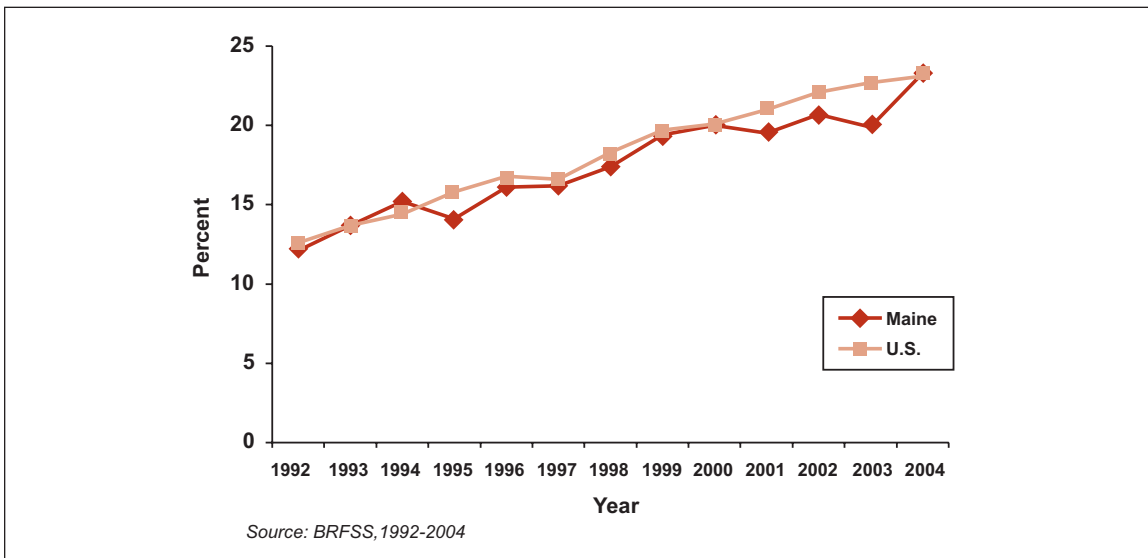




## How many Maine adults are overweight and obese?

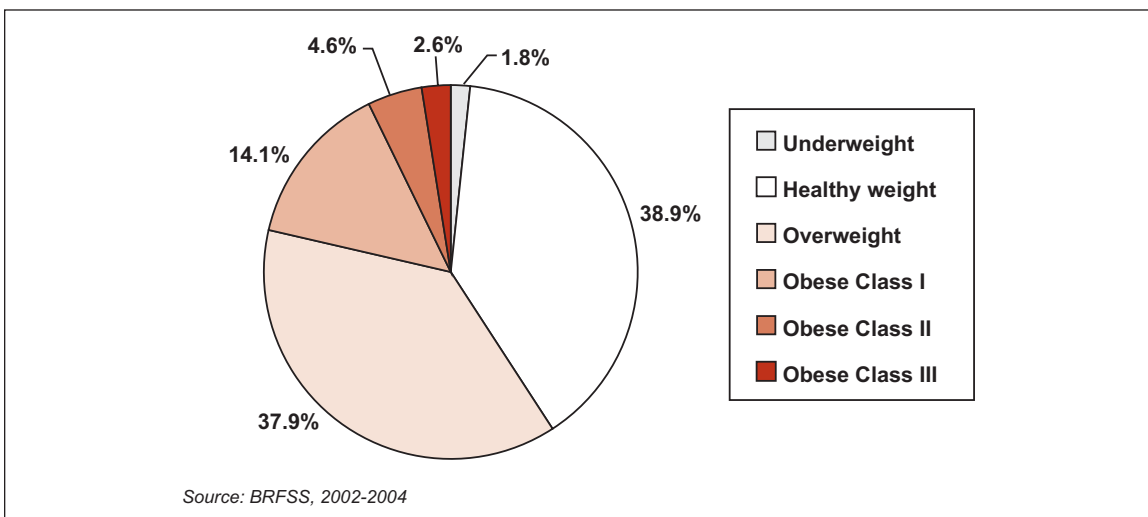
The percentage of adults who are obese is rising steadily in Maine and the U.S. (Figure 7). Between 1992 and 2004, the prevalence of obesity in Maine nearly doubled, from 12 percent to 23 percent.

**Figure 7. Percent of adults who are obese (BMI of 30 or above), Maine and U.S.**



Today, less than half of Maine adults (39%) are considered to be at a healthy weight, while most adults are overweight (38%) or obese (21%; Figure 8). Approximately 25,000 Maine adults, or 2.6% of adults, are considered to be morbidly obese (BMI $\geq$ 40) and therefore at highest risk for health effects including type II diabetes, osteoarthritis, gallbladder disease, and premature death.<sup>13</sup>

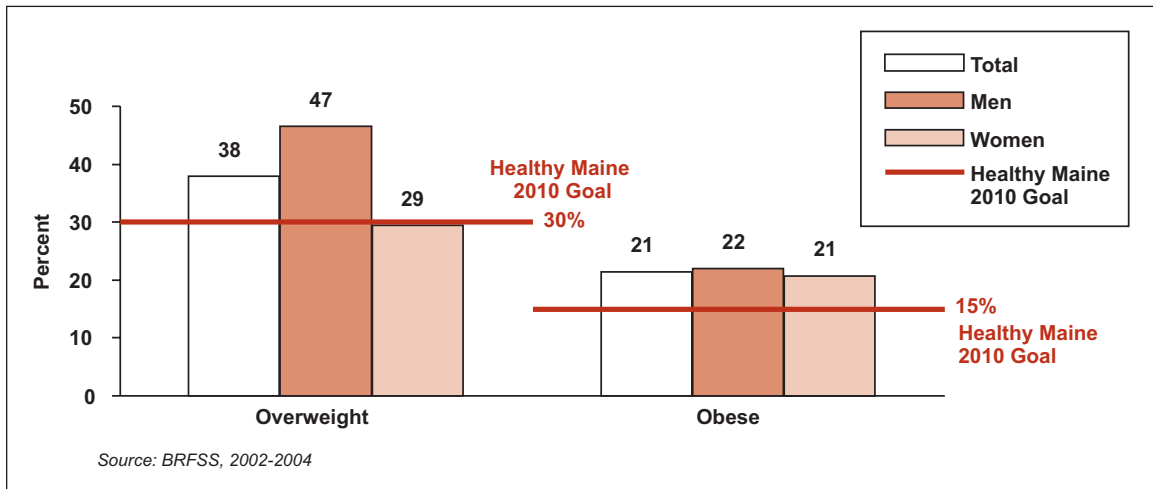
**Figure 8. Classification of weight status among Maine adults.**



## Healthy Maine 2010

The prevalence of overweight and obesity continue to increase, despite Healthy Maine 2010 goals to reduce overweight and obesity among adults. Data from the combined 2002-2004 BRFSS show that the prevalence of overweight (38%) and obesity (21%) are above the Healthy Maine 2010 goals of 30 and 15 percent, respectively (Figure 9). Males are significantly more likely to be overweight than females (47% v. 29%), but the prevalence of obesity is similar for men (22%) and women (21%). A similar pattern exists in the United States, with males more likely than females to be overweight (44% v. 29%), but equally as likely to be obese (24% v. 23%).<sup>14</sup>

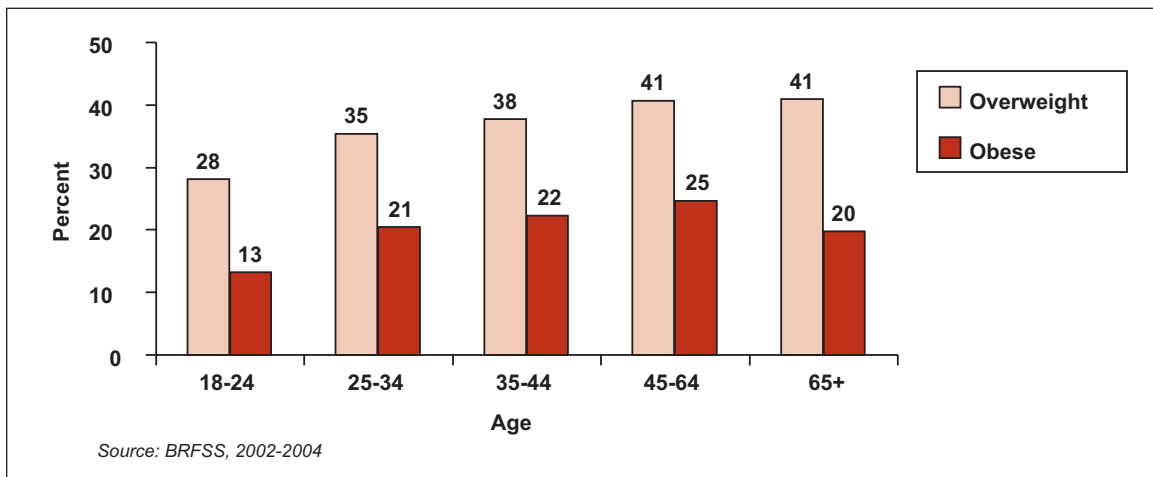
**Figure 9. Percent of Maine adults who are overweight and obese, compared to Healthy Maine 2010 goals.**



## Age

Both overweight and obesity increase with increasing age between ages 18-24 and 45-64 (Figure 10). Overweight remains steady, while obesity decreases among the oldest age group, 65 and older.

**Figure 10. Percent of Maine adults who are overweight and obese, by age.**

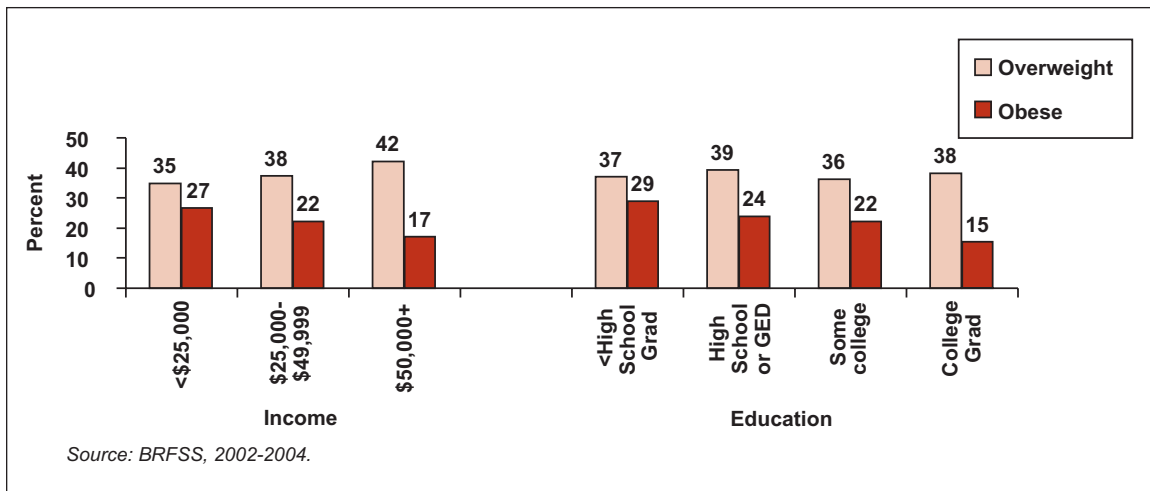


## Socioeconomic Status

The prevalence of overweight and obesity varies by levels of income and education (Figure 11). The percent of adults who are overweight increases significantly as annual household income increases, while the percent of adults who are obese decreases significantly.

The percent of people who are overweight is similar for all levels of education. However, the prevalence of obesity differs by education level. The percent of adults who are obese decreases significantly as level of education increases, from 29 percent among people who have not graduated from high school to 15 percent among people who have graduated from college.

**Figure 11. Percent of Maine adults who are overweight and obese, by annual household income and education.**

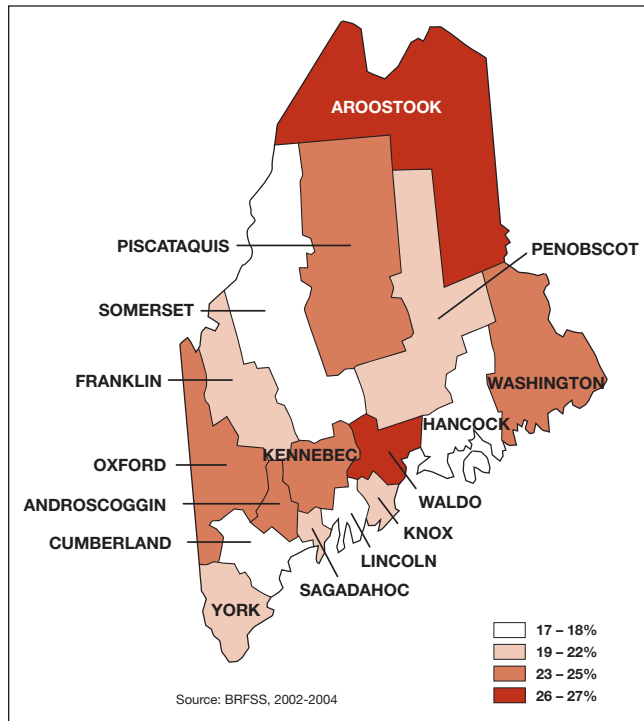


## County

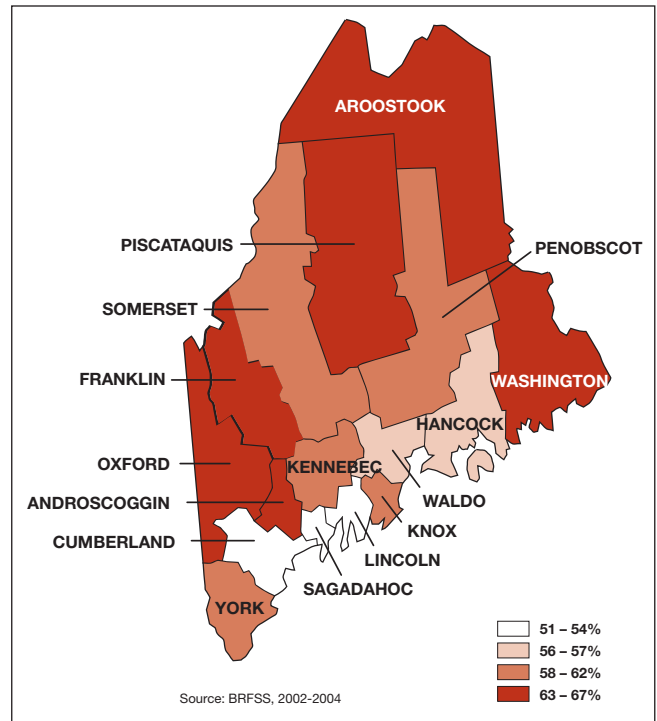
There are noticeable geographic differences in the prevalence of obesity, as shown by county-level data (Figure 12). However, there is no clear regional pattern in the prevalence of obesity.

On the other hand, the combined prevalence of overweight and obesity shows some regional variation (Figure 13). The percent of adults who are overweight or obese is lowest among some southern coastal counties. However, even in these counties, more than half of adults are either overweight or obese.

**Figure 12. Percent of Maine adults who are obese (BMI of 30 or higher), by county.**



**Figure 13. Percent of Maine adults who are obese (BMI of 25 or higher), by county.**



## How many Maine adolescents are obese and overweight?

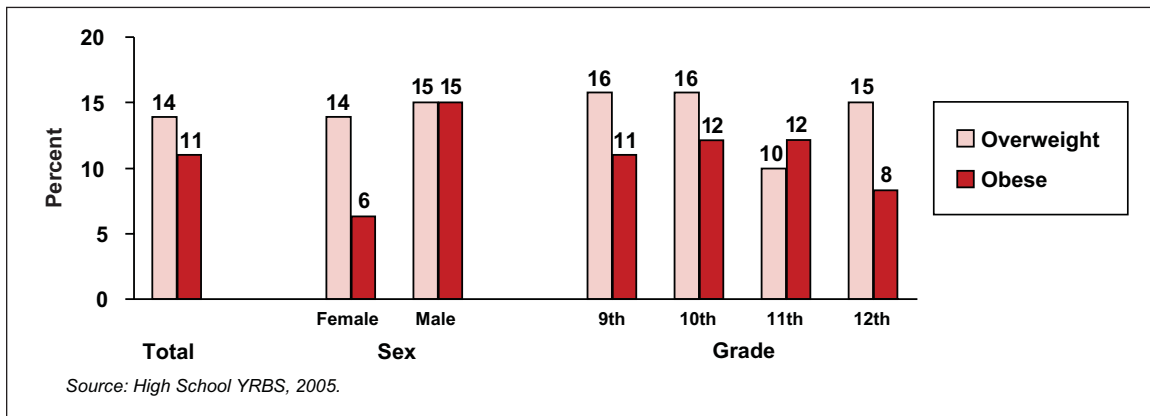
As described in Chapter 1 (p.2), weight status is characterized differently in youth than in adults. Children and adolescents with a BMI at or above the 95th percentile for their age and gender are considered to be obese, and those between the 85th and 95th percentile are said to be overweight. As with adults, the BMI data for adolescents is based on self-reported height and weight, which may underestimate actual BMI.

### High School

Overall, 11 percent of Maine 9th-12th graders are obese, and 14 percent are overweight (Figure 14). Significantly more high school males (15%) than females (6%) are obese. There is no meaningful difference in the percent of males and females who are overweight.

The percent of Maine students who are obese and overweight varies slightly, but not significantly, between grades (Figure 14).

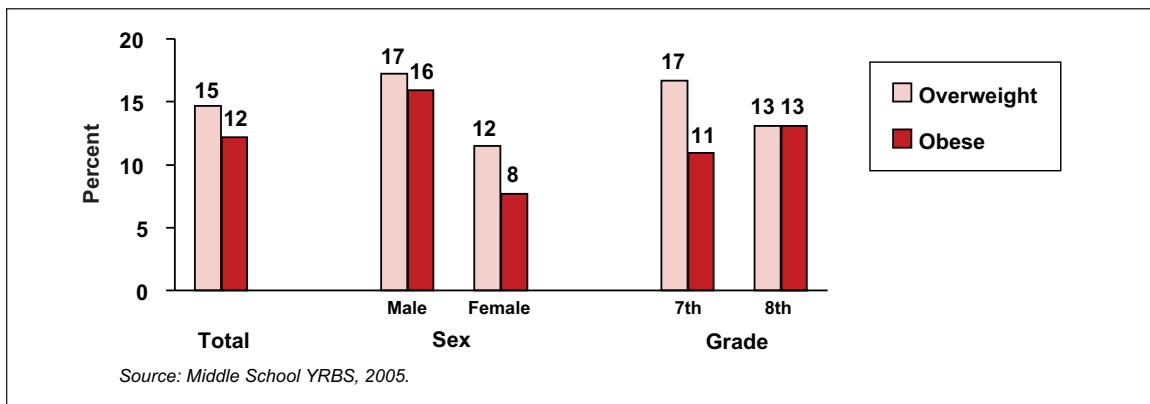
**Figure 14. Percent of Maine high school students who are obese and overweight, by sex and grade.**



### Middle School

Among middle school students, 15 percent are overweight, and 12 percent are obese (Figure 15). As with high school students, males are significantly more likely than females to be obese (16% v. 8%). They are also more likely to be overweight (17% v. 12%). There were no statistically significant differences in obesity or overweight between 7th and 8th grades.

**Figure 15. Percent of Maine middle school students who are obese and overweight, by sex and grade.**

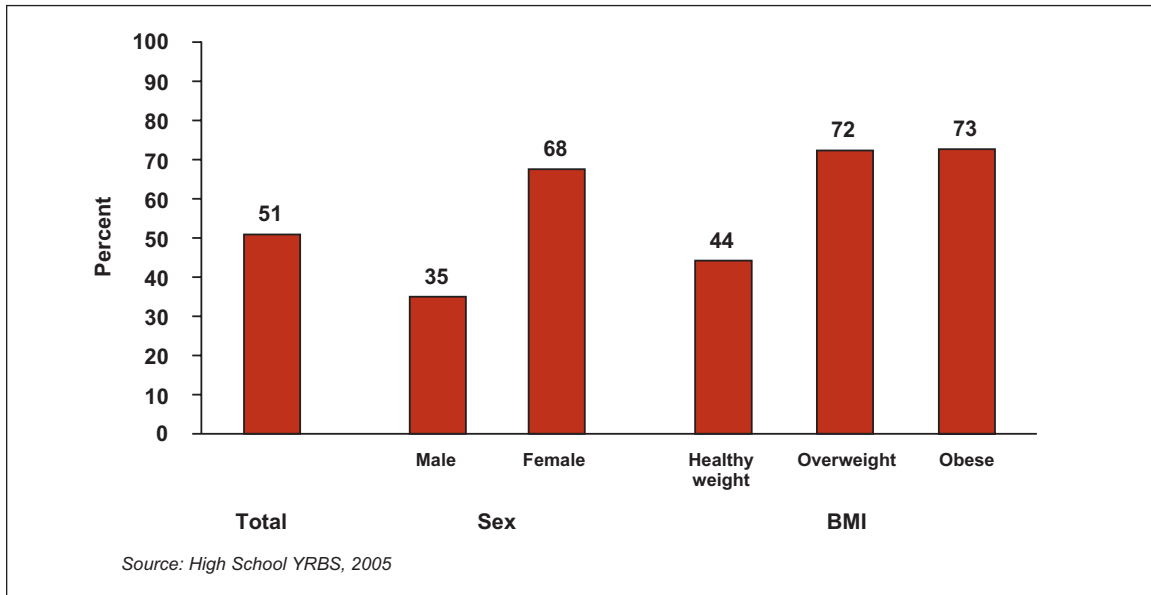


# How do Maine adolescents perceive their weight?

## High School

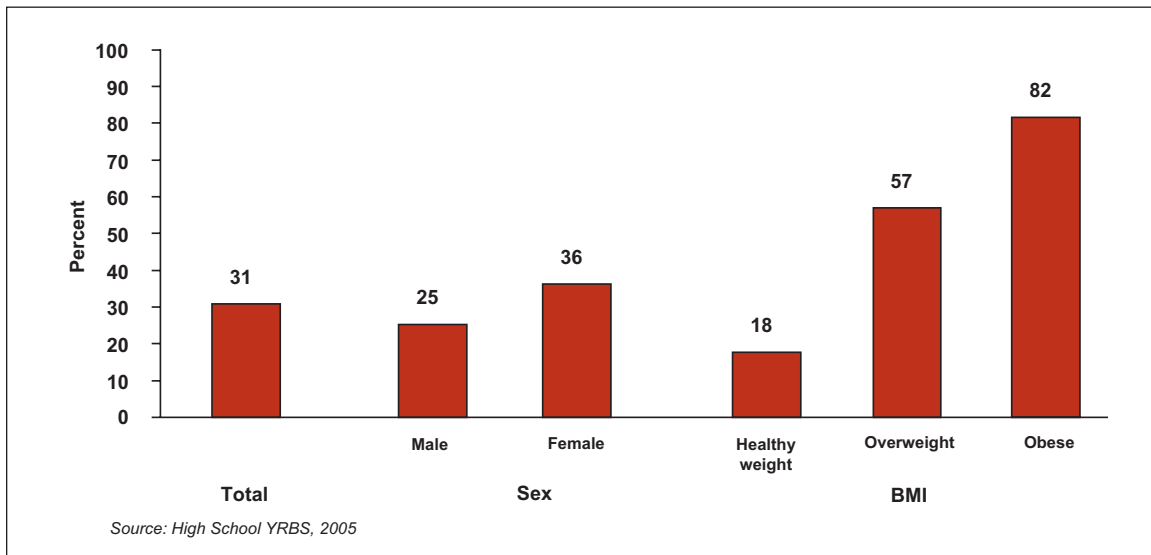
Nearly one-third of Maine high school students perceive themselves as slightly overweight (26%) or very overweight (5%). High school females are more likely to report being slightly or very overweight, compared to high school males (36% v. 25%; Figure 16). The likelihood of perceiving overweight increases as BMI increases among high school students. However, some adolescents of a healthy weight (18%) still consider themselves to be slightly or very overweight.

**Figure 16. Percent of Maine high school students who consider themselves to be slightly or very overweight, by sex and BMI.**



Nearly twice as many female (68%) as male (35%) high school students reported that they are trying to lose weight (Figure 17). Among high school students who are at a healthy weight, 44 percent are trying to lose weight, compared to approximately three-quarters of adolescents who are overweight (72%) and obese (73%).

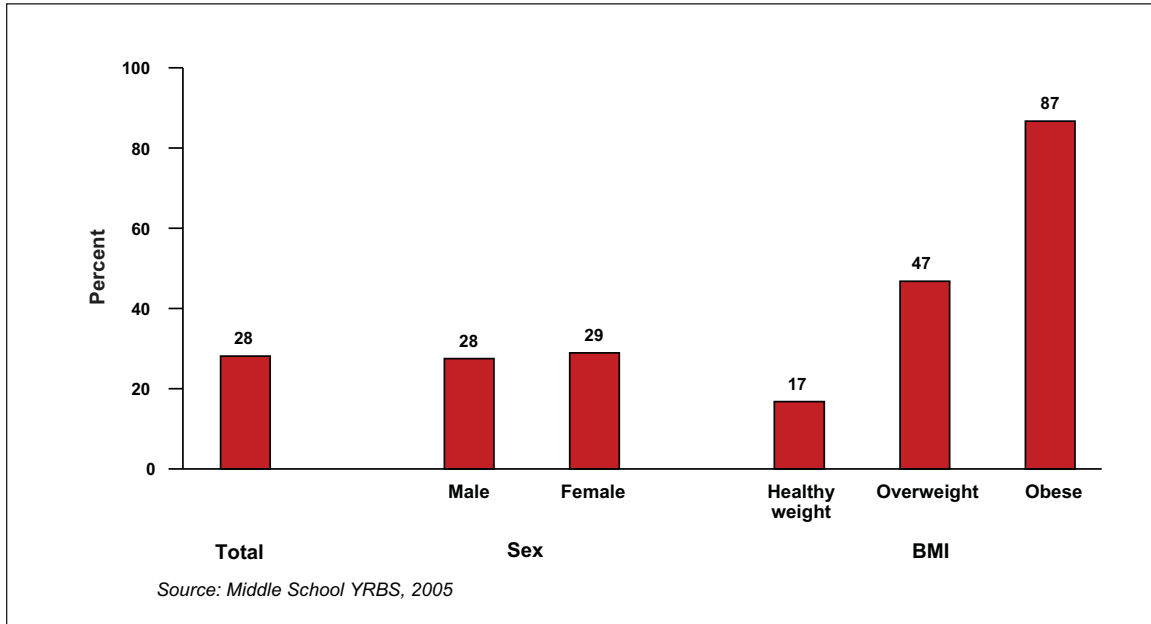
**Figure 17. Percent of Maine high school students who are trying to lose weight, by sex and BMI.**



## Middle School

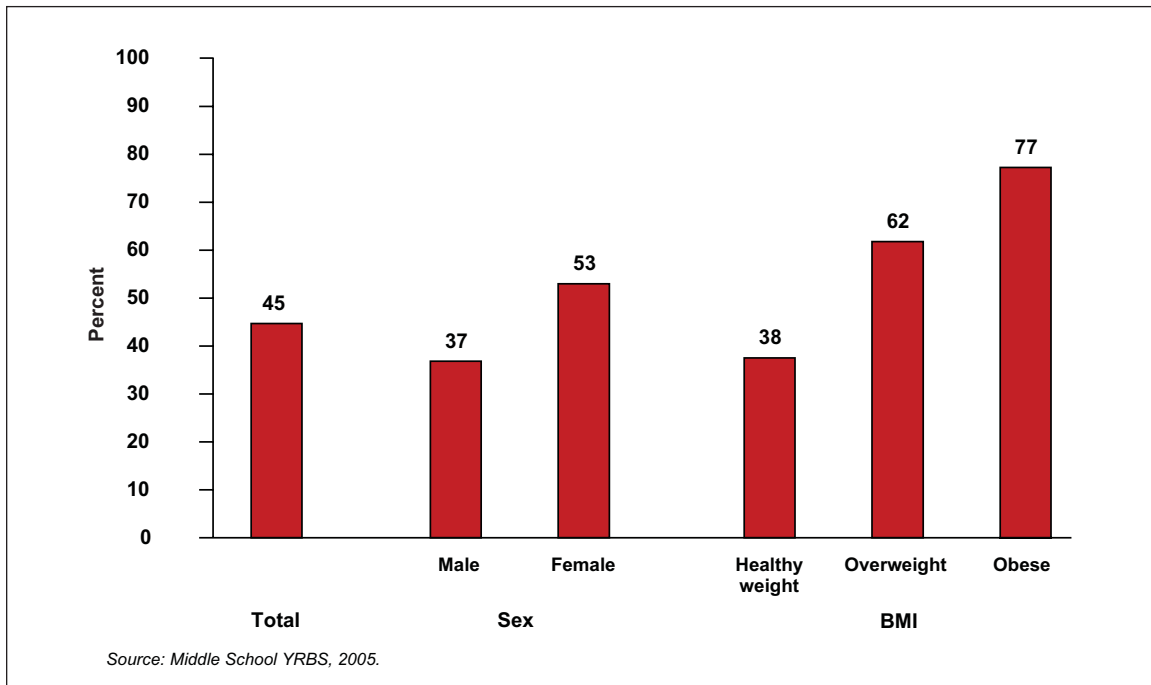
Among middle school students, an equal percentage of males (28%) and females (29%) perceive themselves as slightly or very overweight (Figure 18). Eighty-seven percent of middle school students who are overweight perceive themselves as overweight, compared to 17 percent of students who are at a healthy weight.

**Figure 18. Percent of Maine middle school students who perceive themselves as slightly or very overweight, by sex and BMI.**



Nearly half of Maine middle school students are trying to lose weight, including 38 percent of students who are at a healthy weight (Figure 19).

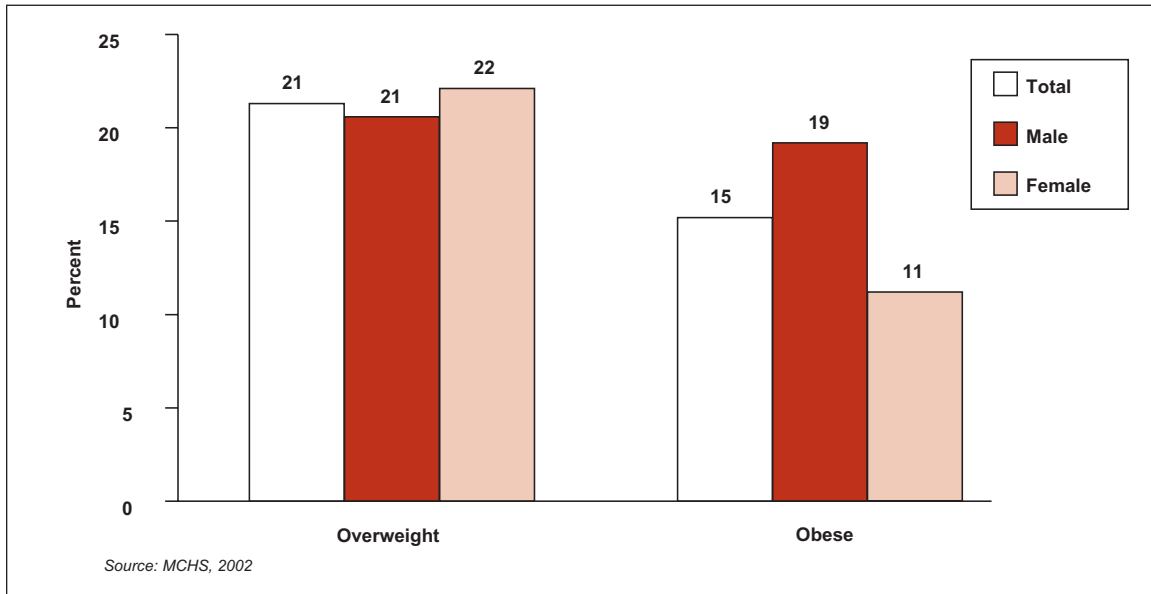
**Figure 19. Percent of Maine middle school students who are trying to lose weight, by sex and BMI.**



## How many Maine children are obese or overweight?

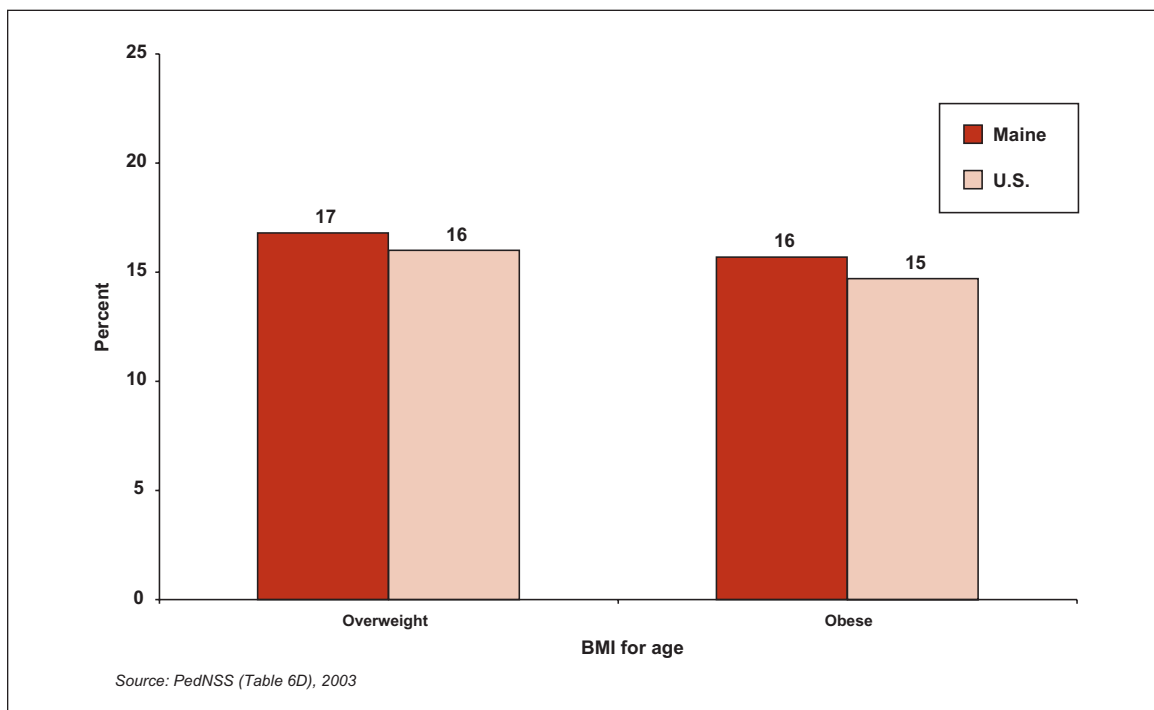
The Maine Child Health Survey (MCHS) is a health survey conducted among public school students in kindergarten, third, and fifth grades. Data for this report are from the 2002 kindergarten survey. In 2002, 15 percent of Maine kindergarteners were obese, and 21 percent were overweight (Figure 20). There were no statistically significant differences in obesity or overweight between males and females, although a higher percent of males (19%) than females (11%) were obese. It is possible that the small sample size of the MCHS limited our ability to detect significant differences between males and females. However, these findings are consistent with findings from the BRFSS and YRBS, which showed a higher prevalence of obesity among males compared to females.

**Figure 20. Percent of Maine kindergarteners who are overweight and obese.**



Although we do not have BMI data that is representative of all 2-4 year olds in Maine, we have data from the Supplemental Nutrition Program for Women, Infants, and Children (WIC). The WIC Program serves primarily low-income women and children, so data presented here are representative only of the WIC population. Among young children enrolled in WIC, approximately 17 percent are overweight, and 16 percent are obese. These estimates are comparable to national data (Figure 21).

**Figure 21. Percent of 2-4-year old children in WIC who are overweight or obese, Maine and U.S.**



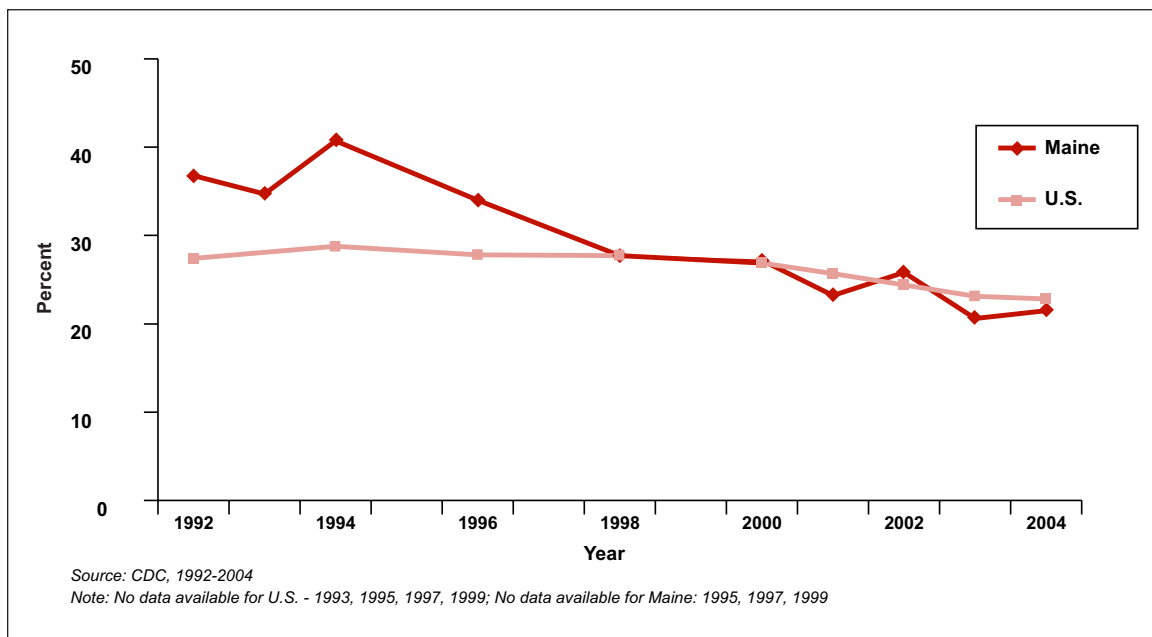


Regular physical activity plays an important role in overall health. It is associated with a decreased risk of diseases including obesity, diabetes, and colon cancer. It is also associated with lower overall mortality rates, and lower risk of death from coronary heart disease. Physical activity is necessary for maintaining normal joint function and muscle strength. Finally, physical activity has been associated with improved quality of life and mental health.<sup>15</sup>

## How many Maine adults are physically active?

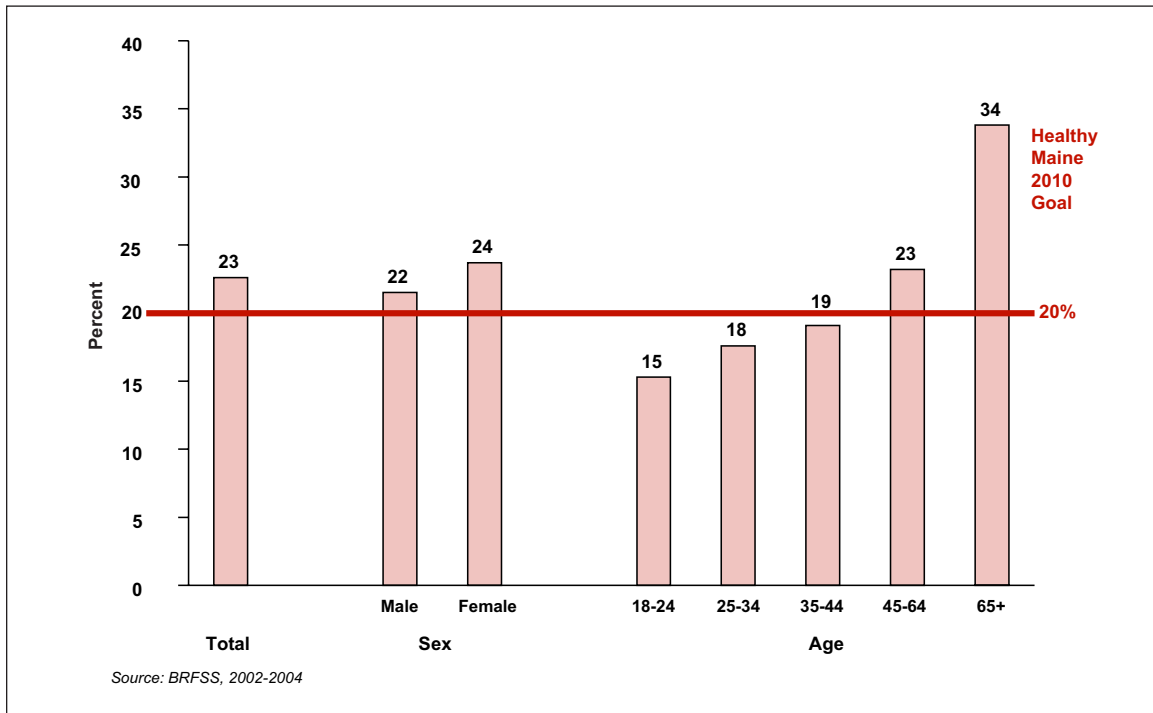
A sedentary lifestyle, or one without regular physical activity, is associated with risk for cardiovascular disease (including coronary heart disease, stroke, and heart attack), diabetes, and obesity. One measure of a sedentary lifestyle is the level of participation in physical activity outside of work, during leisure time. Between 1992 and 2004, the percentage of Maine adults with no leisure time physical activity has decreased (Figure 22).

**Figure 22. Percent of adults with no leisure time or physical activity, Maine and U.S.**



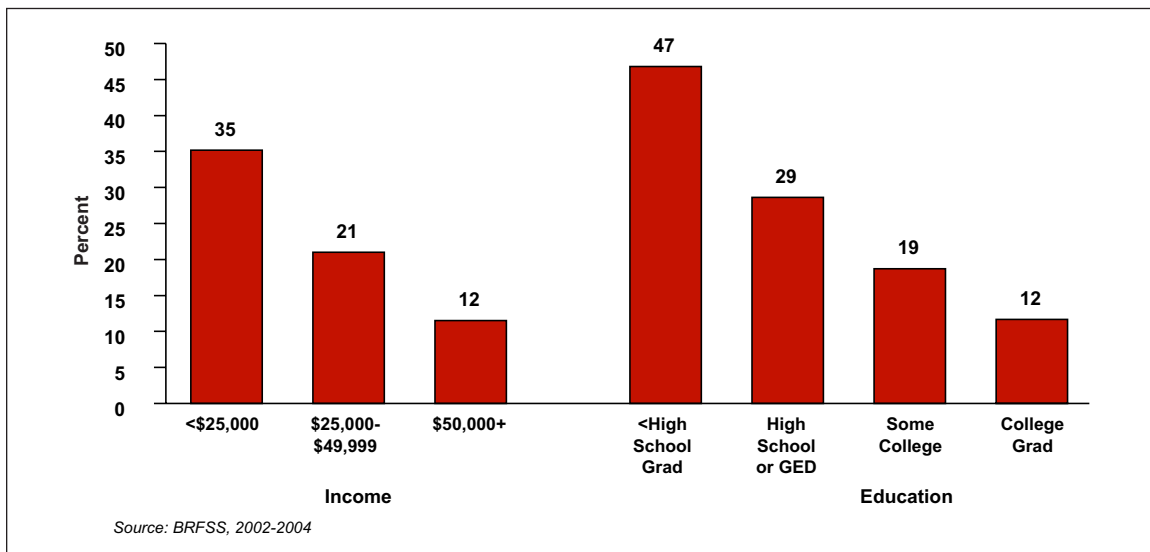
Nearly one-quarter of Maine adults (23%) have no leisure time physical activity. Older adults are most likely to have no leisure time physical activity. The percent of adults with no leisure time physical activity increases significantly with age, from 15 percent among 18-24-year-olds to 34 percent among adults aged 65 and older (Figure 23).

**Figure 23. Percent of Maine adults with no leisure time or physical activity, by sex and age.**



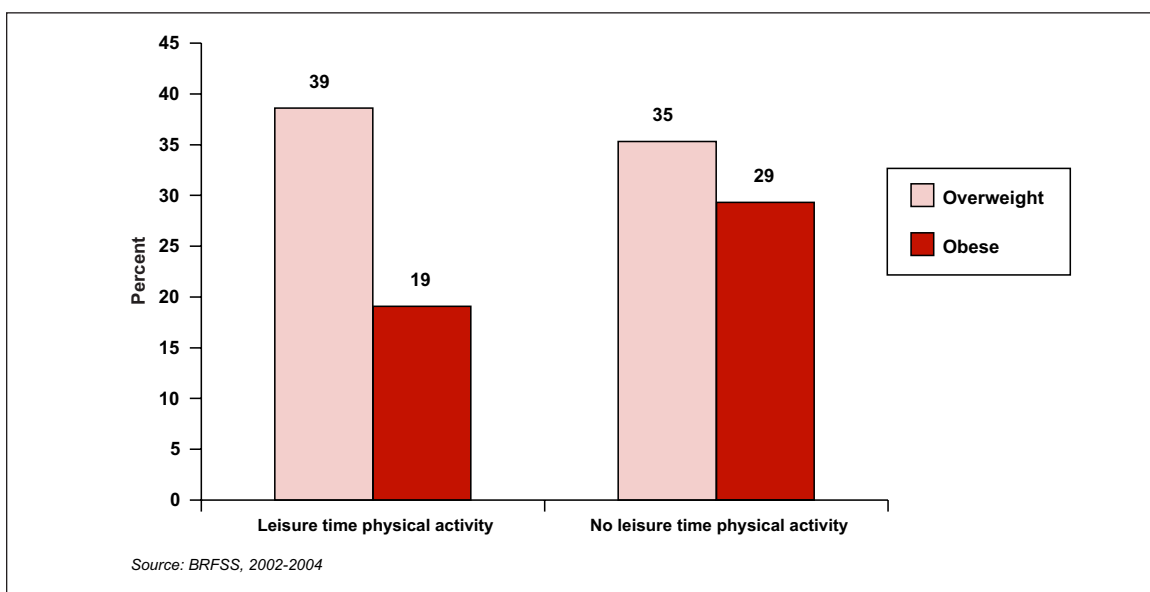
Participation in leisure time physical activity is associated with socioeconomic status, as measured by income or education. Adults with the lowest incomes are more likely than those with higher incomes to report having no leisure time physical activity. Similarly, people with less education report less leisure time physical activity than adults with higher levels of education (Figure 24). It is possible that the striking relationship between socioeconomic status and leisure time physical activity is related, in part, to occupational physical activity, which is not included in this report. In other words, people with less education may be more likely to engage in physical activity as part of a job, and therefore less likely to participate in leisure time physical activity.

**Figure 24. Percent of Maine adults with no leisure time or physical activity, by annual household income and education.**



Adults who participate in physical activity during their leisure time are less likely to be obese, but more likely to be overweight, than adults who do not participate in leisure time physical activity (Figure 25). Among adults who participate in leisure time physical activity, 19 percent are obese. In contrast, 29 percent of adults with no leisure time physical activity are obese.

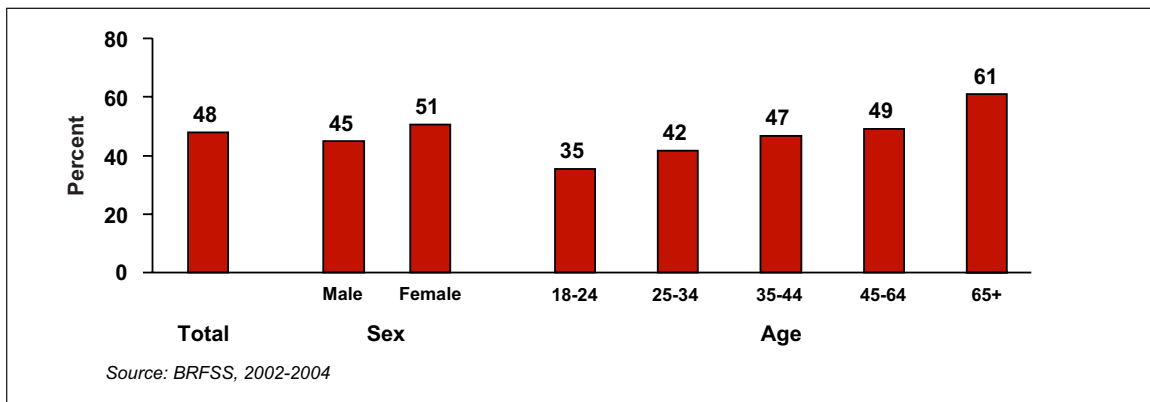
**Figure 25. Percent of Maine adults who are overweight and obese, by level of physical activity.**



Another measure of physical activity is the percent of adults meeting the Surgeon General’s guidelines for physical activity. The Surgeon General recommends that adults engage in at least 20 minutes of vigorous physical activity on 3 or more days per week, or 30 minutes of moderate physical activity on 5 or more days per week.<sup>15</sup> Vigorous activities are those that lead to sweating and hard breathing, such as running, swimming, or playing basketball. Moderate activities include biking, brisk walking, and other activities that do not necessarily lead to sweating and hard breathing. As with leisure time physical activity, this measure includes only those activities that take place outside of work time.

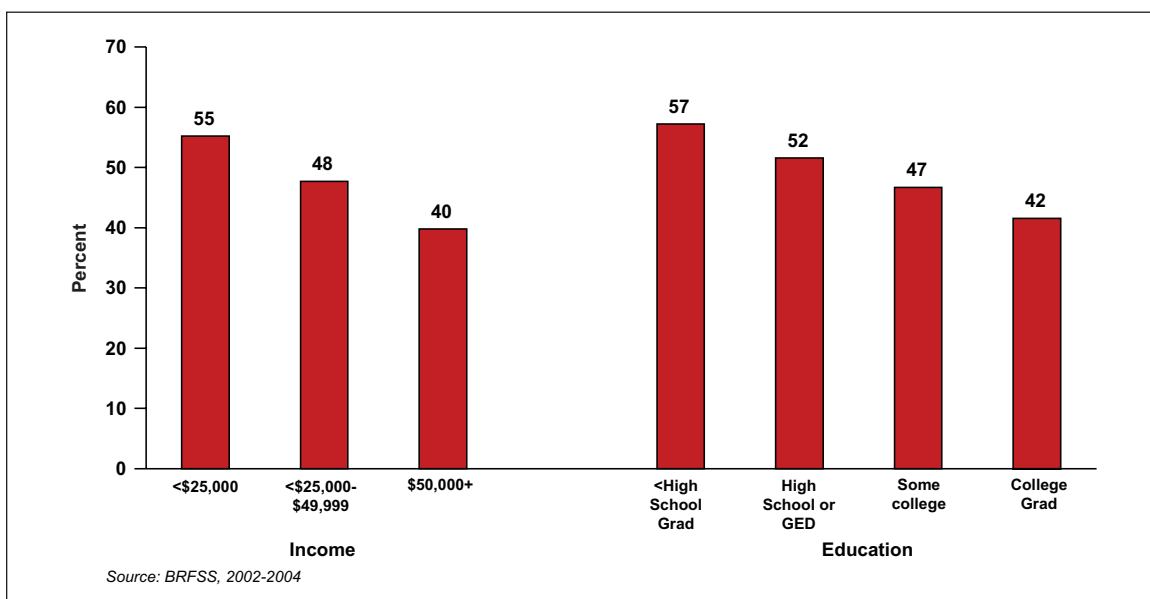
As shown in Figure 26, the percent of adults who do not meet the Surgeon General’s physical activity recommendations increases significantly with age, from a low of 35 percent among 18-24-year-olds to a high of 61 percent among adults aged 65 and older.

**Figure 26. Percent of Maine adults not meeting physical activity recommendations, by sex and age.**



Adults with lower household incomes are less likely to meet the Surgeon General’s recommendations than those with higher incomes. Similarly, adults with less education are less likely to engage in the recommended amount of physical activity than those with higher education (Figure 27).

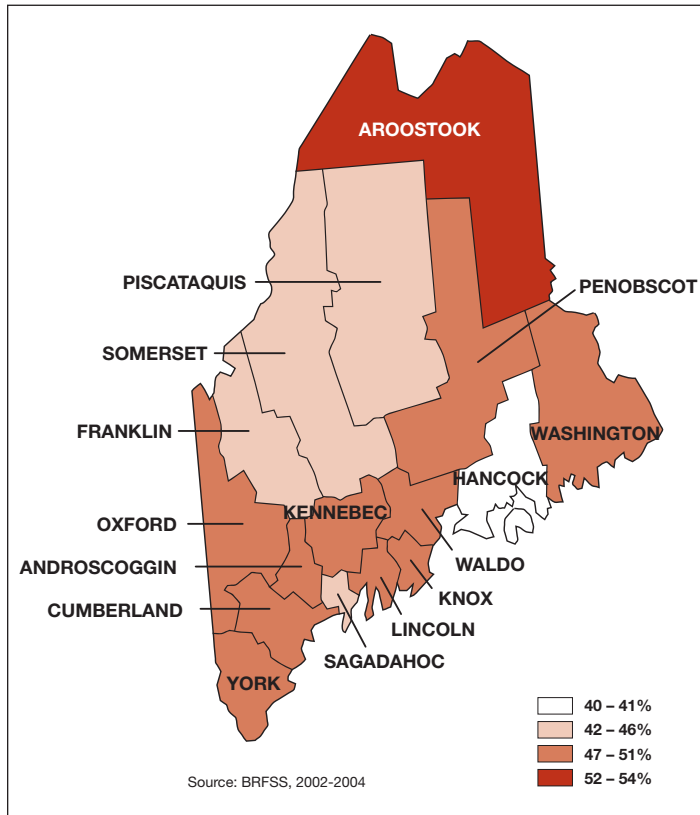
**Figure 27. Percent of Maine adults not meeting physical activity recommendations, by annual household income and education.**



## County

The percent of adults who do not engage in the recommended amount of physical activity varies by county, from 40 percent to 54 percent (Figure 28).

**Figure 28. Percent of Maine adults not meeting the physical activity recommendations, by county.**

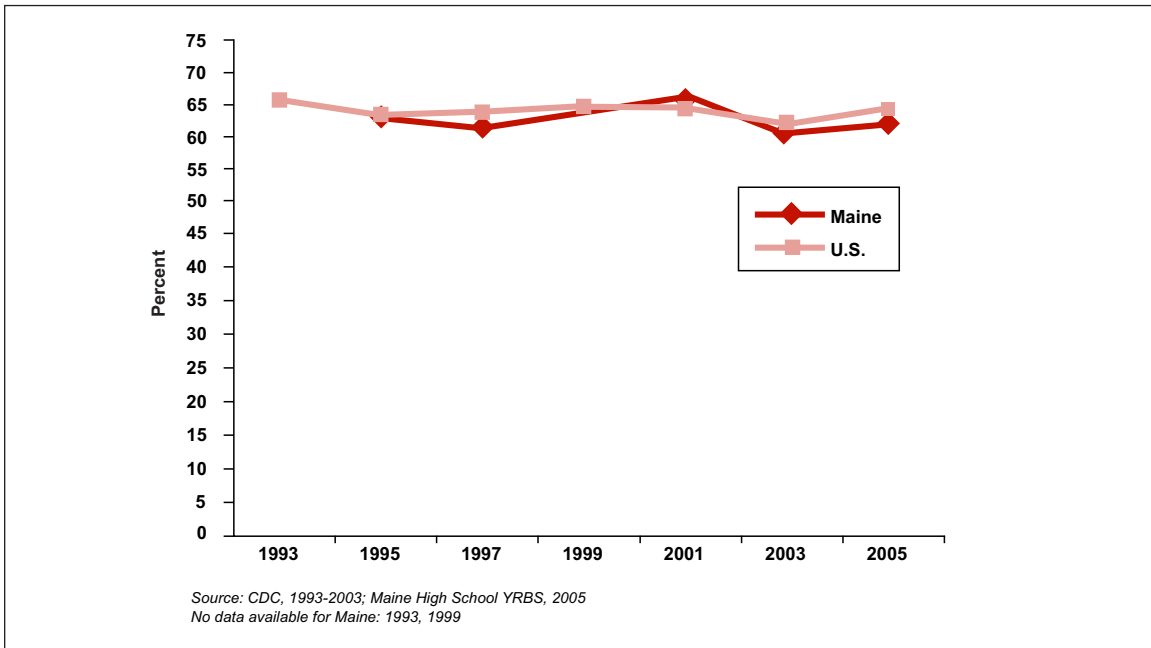


# How many Maine adolescents are physically active?

## High School

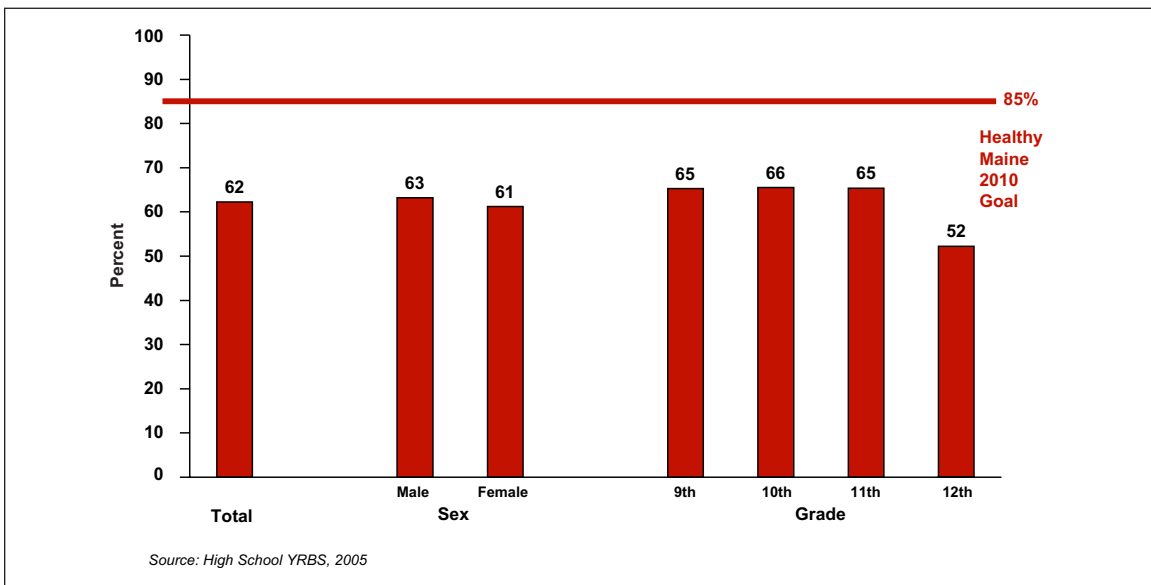
The percent of students participating in vigorous physical activity has remained relatively steady in Maine over the past 10 years (Figure 29).

**Figure 29. Percent of Maine high school students participating in vigorous physical activity on 3 or more days per week, Maine and U.S.**



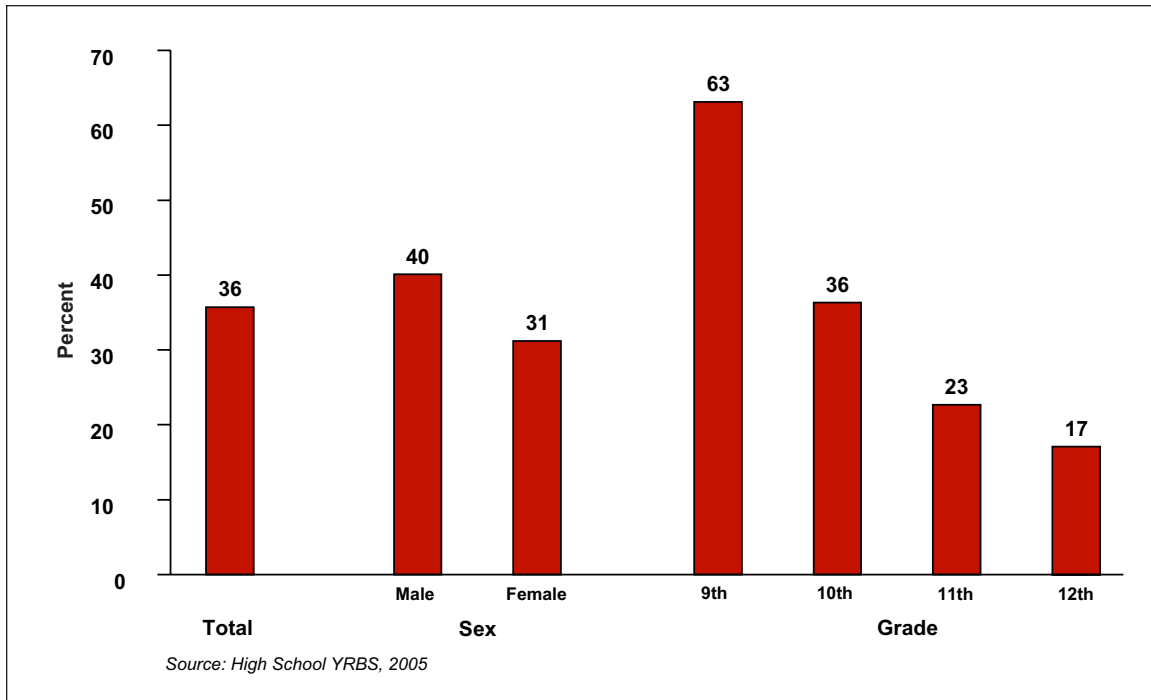
In 2005, 62 percent of high school students participated in vigorous activity for 20 minutes at a time on 3 or more days per week (Figure 30). There were no significant differences in percent of students participating in adequate vigorous activity between sexes, grades, or BMI category.

**Figure 30. Percent of Maine high school students participating in vigorous physical activity on 3 or more days per week, by sex and grade.**



School-based physical education (PE) class is a clear opportunity for adolescents to participate in physical activity. However, a majority of students (64%) do not attend PE class in an average week. Males are significantly more likely than females to attend PE class (40% v. 31%). The percent of students attending PE class decreases significantly as grade level increases, from 63 percent among 9th graders to 17 percent among 12th graders (Figure 31). This may reflect school policies that require only one credit of PE class, which is often completed in the 9th grade. Further, a required PE class may last for only a portion of the school year, so students who had taken PE in the fall but were completing the YRBS in the spring, would respond that they were not currently attending PE class.

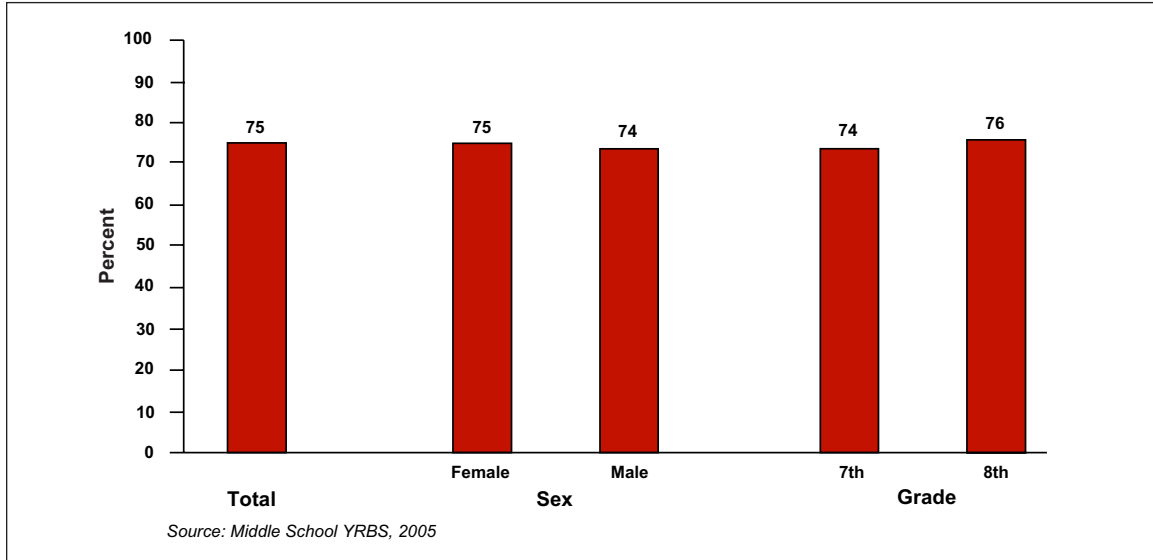
**Figure 31. Percent of Maine high school students attending PE class on one or more days per week, by sex and grade.**



## Middle School

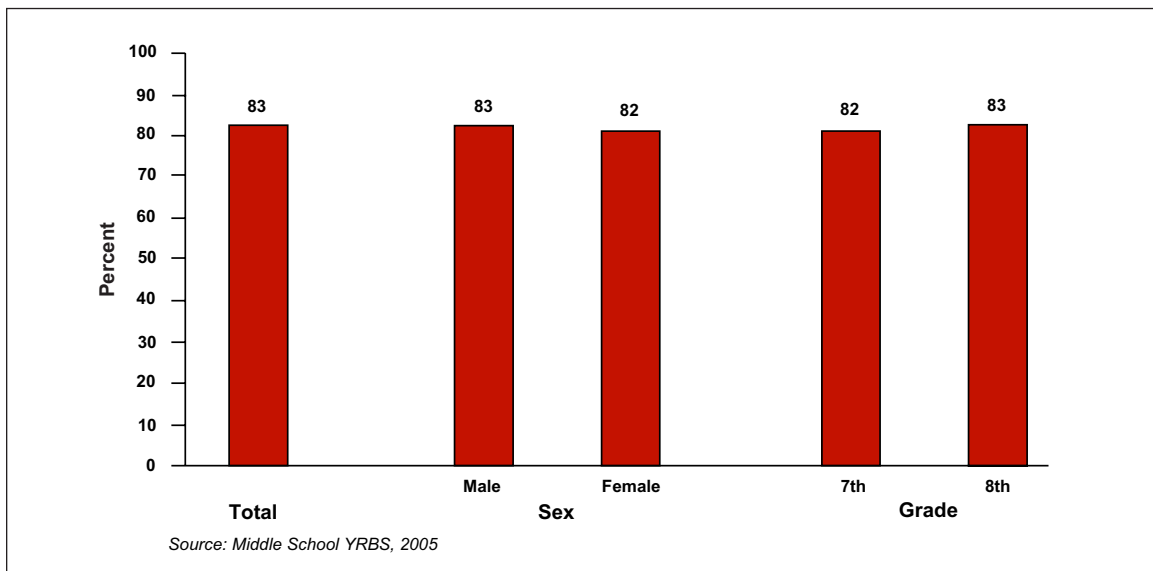
Most middle school students (75%) participate in vigorous physical activity for at least 20 minutes at a time on 3 or more days per week (Figure 32). There were no significant differences in vigorous physical activity between sexes or grades.

**Figure 32. Percent of Maine middle school students participating in vigorous physical activity on three or more days per week, by sex and grade.**



Most 7th and 8th grade students in Maine (83%) attend physical education class on one or more days per week (Figure 33). There are no differences in PE class participation between sexes or grades.

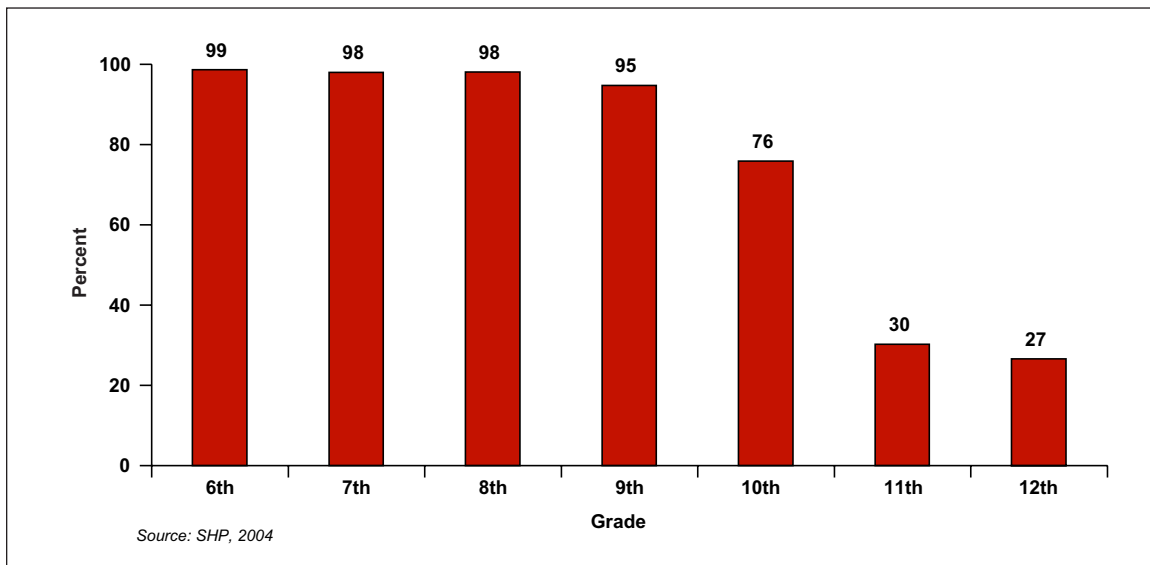
**Figure 33. Percent of Maine middle school students attending PE class on one or more days per week, by sex and grade.**



## How many schools in Maine require physical education?

Almost all secondary schools in Maine (99.5%) require some physical education between grades 6-12. The percent of schools teaching a required PE class in each grade is shown below (Figure 34). Most schools require PE class in 6-10th grades, while less than one-third of schools require PE class in 11th and 12th grades.

**Figure 34. Percent of Maine schools teaching a required physical education course in each grade.**



Some schools allow students to be exempted from PE requirements if they enrolled in another course such as math or science (2.7% of schools), or if they participated in school sports (4.2%), other school activities (1.6%), or community sports activities (2.1%).<sup>16</sup>

## How many schools in Maine offer opportunities for students to participate in physical activity other than physical education and organized sports?

In 2004, 81 percent of secondary schools offered intramural activities or physical activity clubs for students. Of those schools, 54 percent provided transportation home after intramural activities.<sup>16</sup>

## How do state-level policies for schools support physical activity?

The School Health Policies and Programs Study (SHPPS) is a national study conducted to monitor how state-level policies address factors influencing children's health.<sup>17</sup> The most recent SHPPS study was conducted in 2000. Results from this study show that some Maine policies are supportive of physical activity in schools. For example, Maine:

- Has a statewide Physical Education (PE) Coordinator;
- Requires districts or schools to follow PE standards or guidelines;
- Has adopted PE goals, objectives, or expected outcomes for elementary schools and middle and high schools;
- Requires newly hired PE teachers to have undergraduate or graduate training in PE or a related field; and

- Offers and requires certification for newly hired PE teachers.

However, Maine has not adopted other policies that could provide further support for physical activity in schools. For example, Maine:

- Does not require, recommend, or encourage that elementary schools provide regularly scheduled recess;
- Does not prohibit or discourage using physical activity (or exclusion from PE) as punishment for bad behavior; and
- Does not require specific student-to-teacher ratios for PE classes.

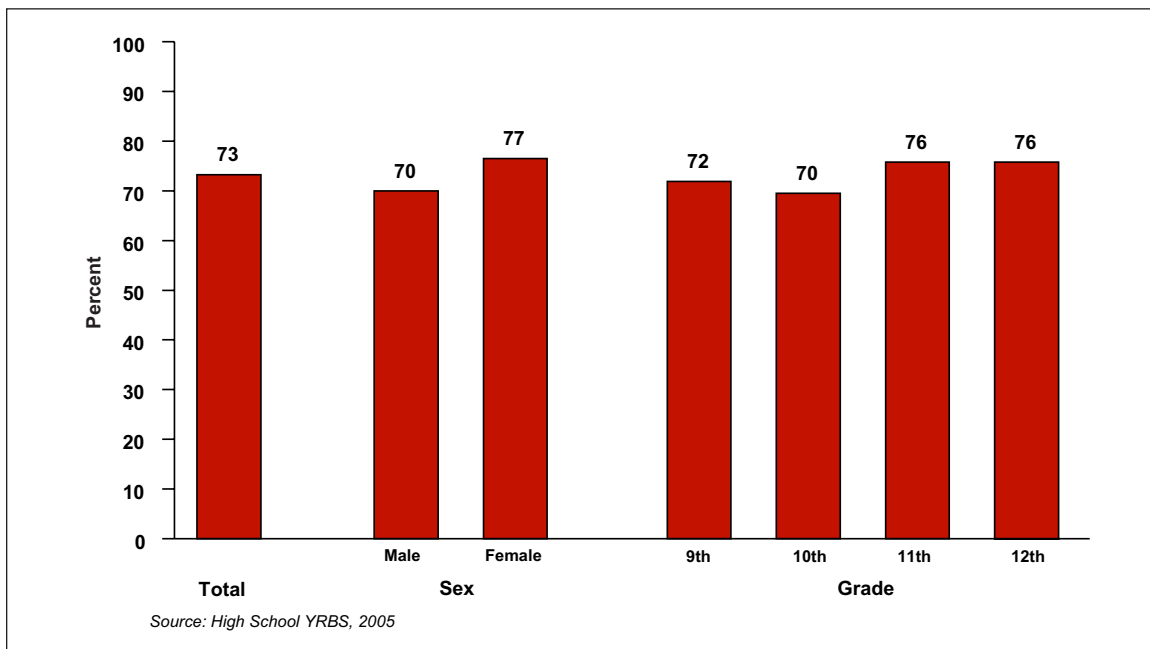
## How much television do Maine adolescents and children watch?

It is becoming increasingly clear that television viewing is associated with BMI and increased body fatness. For this reason, the American Academy of Pediatrics (AAP) recommends that children and adolescents watch 2 or fewer hours of television per day.<sup>18</sup>

### High School

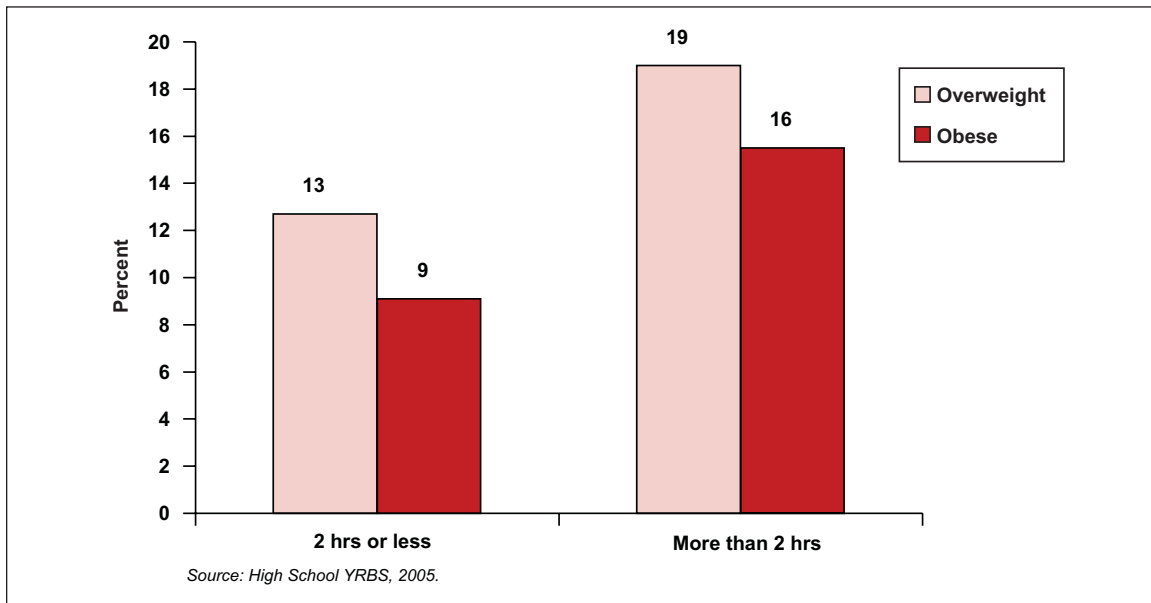
Nearly three-quarters of high school students (73%) meet the AAP recommendation for television viewing (Figure 35). Females were more likely than males to watch 2 or fewer hours of television per day (77% v. 70%), but there were no clear differences in television viewing between grades.

**Figure 35. Percent of Maine high school students who watch 2 or fewer hours of television per day, by sex and grade.**



In Maine, the prevalence of obesity is significantly higher among high school students who watch more than 2 hours of television per day compared to those who watch 2 or fewer hours per day (16% v. 9%; Figure 36).

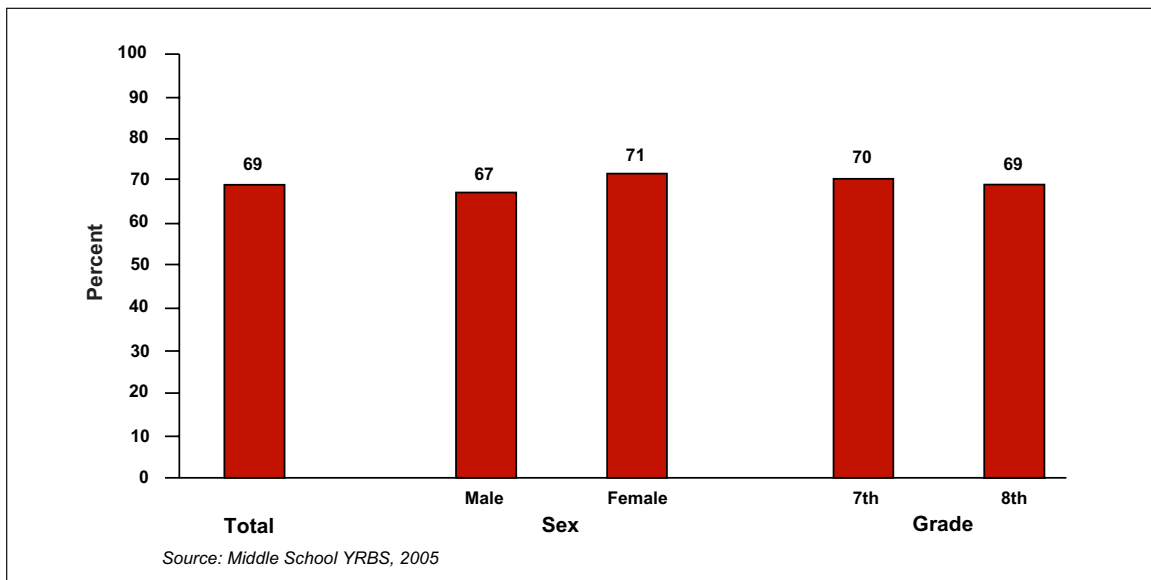
**Figure 36. Percent of Maine high school students who are overweight and obese, by level of TV viewing.**



## Middle School

Most 7th and 8th grade students in Maine (69%) meet the AAP recommendation of 2 or fewer hours of television viewing per day (Figure 37). There are no significant differences in television viewing between sexes or grades.

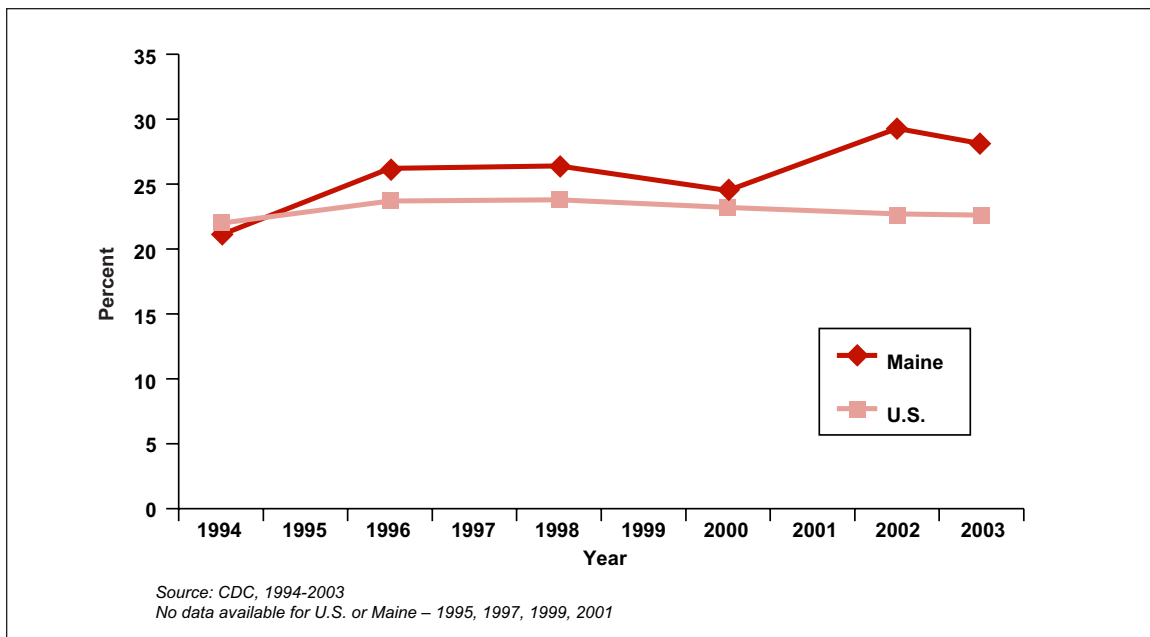
**Figure 37. Percent of Maine middle school students who watch 2 or fewer hours of television per day, by sex and grade.**





Like physical activity, proper nutrition, including fruit and vegetable consumption, is associated with a lower risk of cardiovascular disease, including heart disease and stroke. It is recommended that adults consume at least 5 servings of fruits and vegetables per day. In Maine, the percent of adults consuming the recommended amount of fruits and vegetables has increased significantly, from 21 percent in 1994 to 28 percent in 2003 (Figure 38). However, most Maine adults still do not consume enough fruits and vegetables.

**Figure 38. Percent of adults consuming five or more servings of fruits and vegetables per day, Maine and U.S.**



## What proportion of adults consume the recommended 5 servings of fruits and vegetables each day?

More women (34%) than men (21%) consume at least five servings of fruits and vegetables per day (Figure 39). Adults aged 65 years and older are more likely to consume five servings of fruits and vegetables per day than adults aged 25-34, 35-44, and 45-64 years.

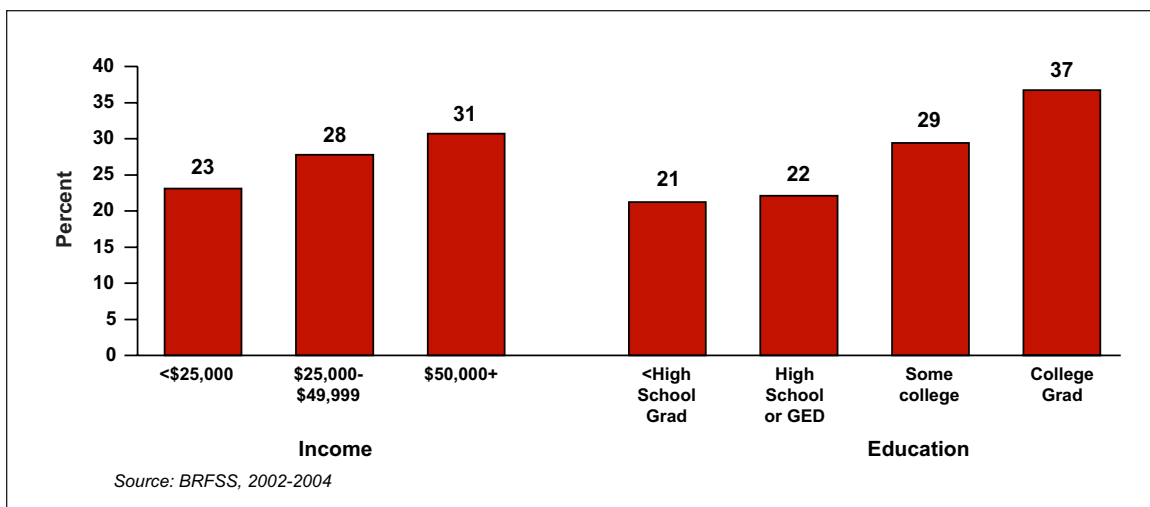
**Figure 39. Percent of Maine adults consuming at least 5 servings of fruits and vegetables per day.**



## Socioeconomic Status

The percent of adults consuming the recommended amount of fruits and vegetables increases as annual household income increases, from 23 percent among people with an income of \$25,000 or less, to 31 percent among people with an income of \$50,000 or more (Figure 40). A similar increase occurs as education level increases, from 21 to 37 percent.

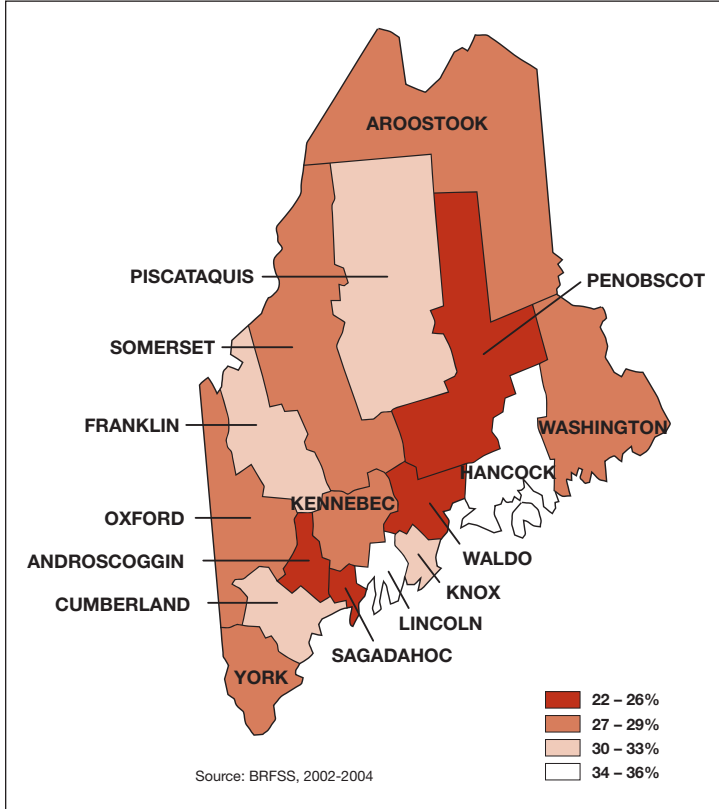
**Figure 40. Percent of Maine adults consuming 5 or more servings of fruits and vegetables per day, by annual household income and education.**



## County

The percent of adults consuming at least 5 servings of fruits and vegetables per day varies by county, from 22 percent to 35 percent (Figure 41).

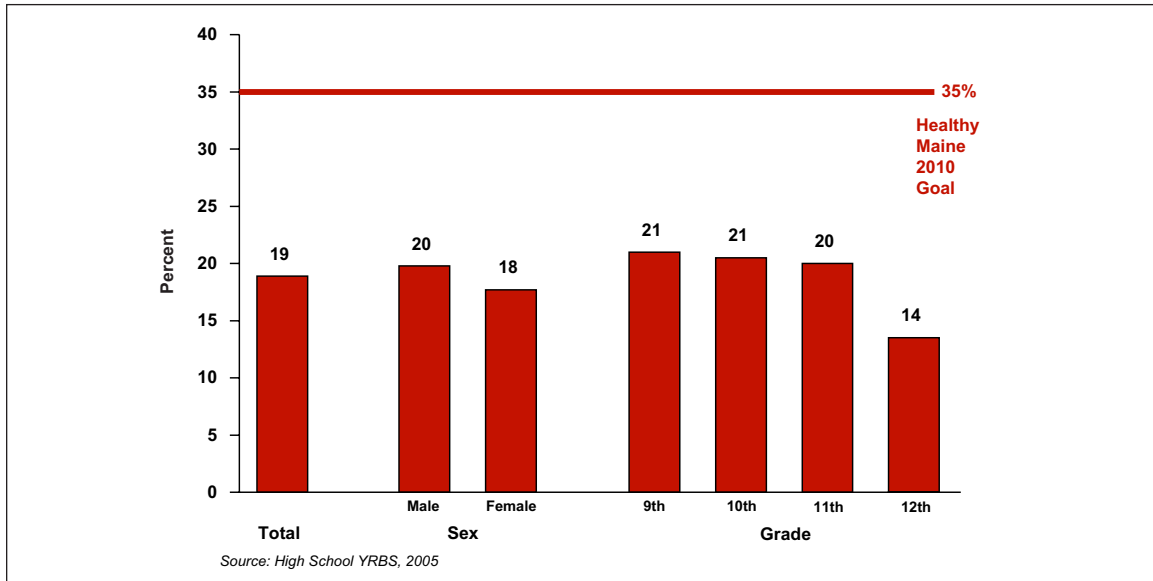
**Figure 41. Percent of Maine adults who consume at least 5 servings of fruits and vegetables per day, by county.**



## What proportion of adolescents consume the recommended 5 servings of fruits and vegetables each day?

Only 19 percent of Maine students (20% of males and 18% of females) in grades 9-12 consume at least 5 servings of fruits and vegetables per day, compared to the Healthy Maine 2010 goal of 35 percent (Figure 42). The percent of high school students consuming 5 or more servings of fruits and vegetables per day does not vary significantly by sex or grade.

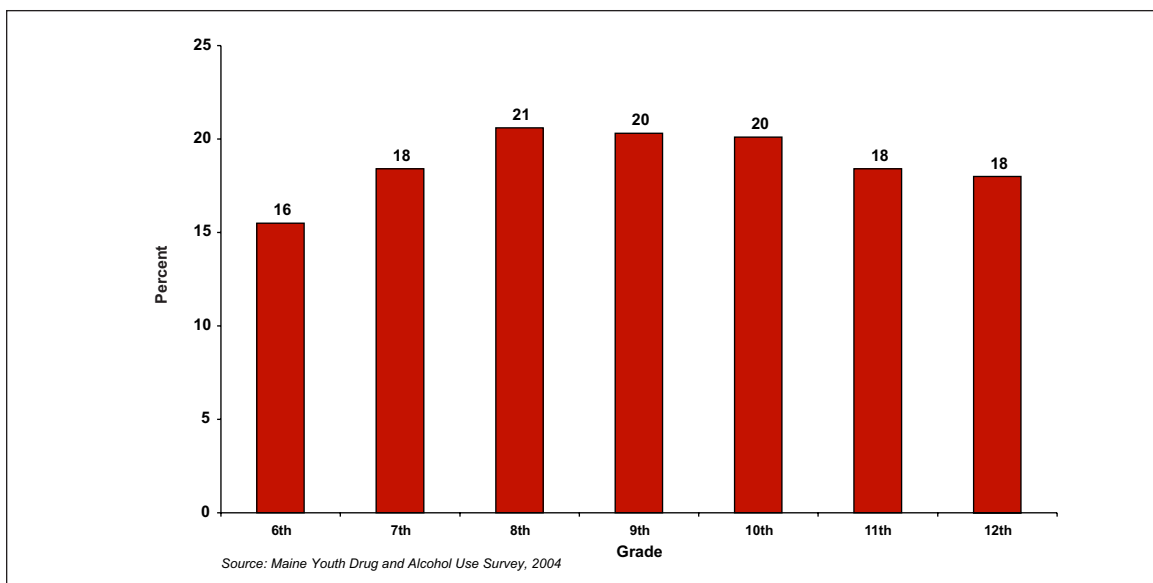
**Figure 42. Percent of Maine high school students consuming at least 5 servings of fruits and vegetables per day.**



## How much soda do Maine youth and adolescents consume?

Soda and other sugar-sweetened beverages are the primary source of added sugar in children’s diets. Each additional 12-ounce serving of soda consumed per day has been associated with a 60% increased risk of obesity in children.<sup>19</sup> Soda consumption is also associated with decreased milk consumption, which may lead to inadequate calcium intake in children and adolescents. Nearly one-fifth of students in grades 6-12 (19%) drink 2 or more cans of soda per day.<sup>20</sup> Figure 43 shows soda consumption by grade. Twenty-three percent of males consume 2 or more cans of soda per day, compared to 14 percent of females.

**Figure 43. Percent of Maine students drinking 2 or more cans of soda per day, by grade.**

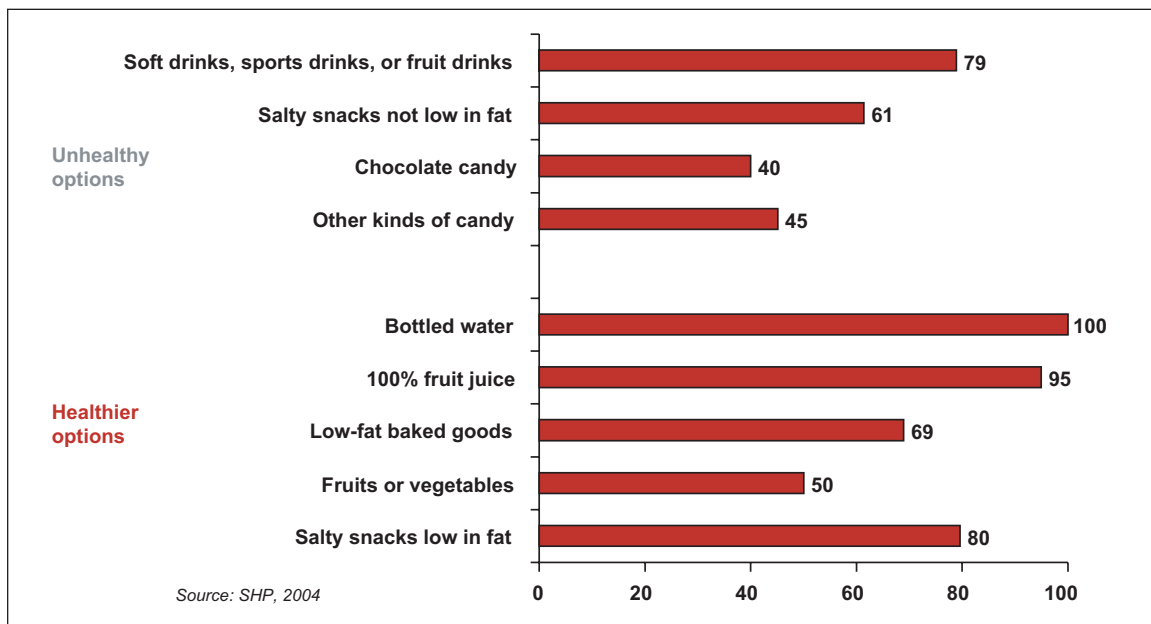


## What foods are available to Maine adolescents in schools?

### How do state-level policies for schools support nutrition?

According to the most recent School Health Policies and Programs Study (SHPPS), which was conducted in 2000, schools in Maine were required to offer lunch, but not breakfast.<sup>17</sup> Figure 44 shows the percentage of Maine schools offering various food items for student purchase in 2004.<sup>16</sup> As shown, 79 percent of schools offered soda, sports drinks, and/or fruit drinks (less than 100% juice) in 2004. However, in July 2005, the Maine Department of Education adopted new rules prohibiting the sale of soda and other “foods of minimal nutritional value” in school stores and vending machines.<sup>21</sup> The percentage of schools offering unhealthy options may be expected to decrease following this rule change.

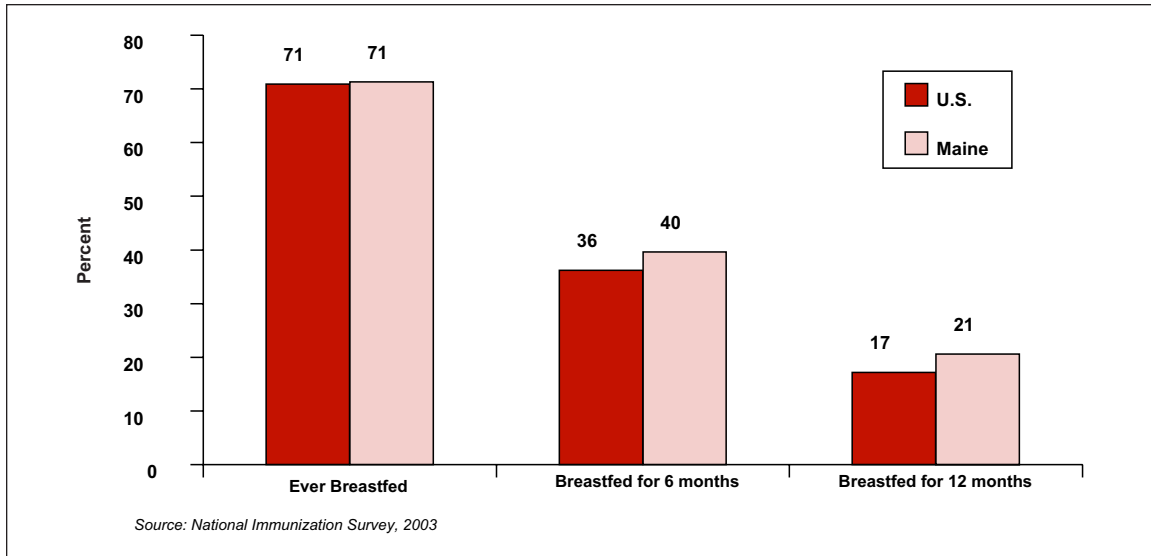
**Figure 44. Percent of Maine schools offering selected food and beverages at school vending machines or stores.**



## How many Maine infants are breastfed?

There is evidence indicating that breastfeeding is associated with multiple health benefits, including decreased incidence of diabetes, obesity, and infectious diseases such as diarrhea and respiratory tract infections. The American Academy of Pediatrics recommends that infants be exclusively breastfed until 6 months of age.<sup>22</sup> According to the National Immunization Survey, 71 percent of infants in Maine are breastfed for at least some time, while only 40 percent are breastfed for at least six months, and 21 percent for at least one year. Maine's breastfeeding rates are comparable to U.S. rates for each measure (Figure 45).<sup>23</sup>

**Figure 45. Percent of infants ever breastfed, and breastfed at least at 6 and 12 months, Maine and U.S.**



## How many low-income children experience growth retardation?

Data from the Pediatric Nutrition Surveillance System (PedNSS) show that 7.6 percent of children under 5 years of age experienced growth retardation in 2003.<sup>24</sup> Growth retardation is defined as being below the 5th percentile of CDC growth charts in length-for-age (for children under 2 years of age) or height-for-age (for children 2 years of age and older). Childhood growth retardation is associated with a higher risk for adulthood disease and death. The PedNSS in Maine uses data from the WIC Program, which serves low-income families.

## How many Maine adolescents have symptoms of eating disorders?

Fifteen percent of Maine 9th-12th graders (Figure 46) and 21 percent of 7th and 8th graders (Figure 47) report using one or more unsafe weight loss strategies within 30 days prior to the survey. These strategies include fasting for more than 24 hours at a time, using diet pills that were not prescribed by a health care provider, and purging by vomiting or using laxatives. In both middle and high schools, females were significantly more likely than males to use unsafe weight loss strategies. In middle school, 8th graders were significantly more likely than 7th graders to use such strategies, but there were no significant differences between grades in high school. It is important to note that these data do not capture the prevalence of diagnosed eating disorders among adolescents. Hospitalization records are one data source that could be used in future reports to explore the prevalence of eating disorders among Maine adolescents.

**Figure 46. Percent of Maine high school students using unsafe weight loss practices.\***

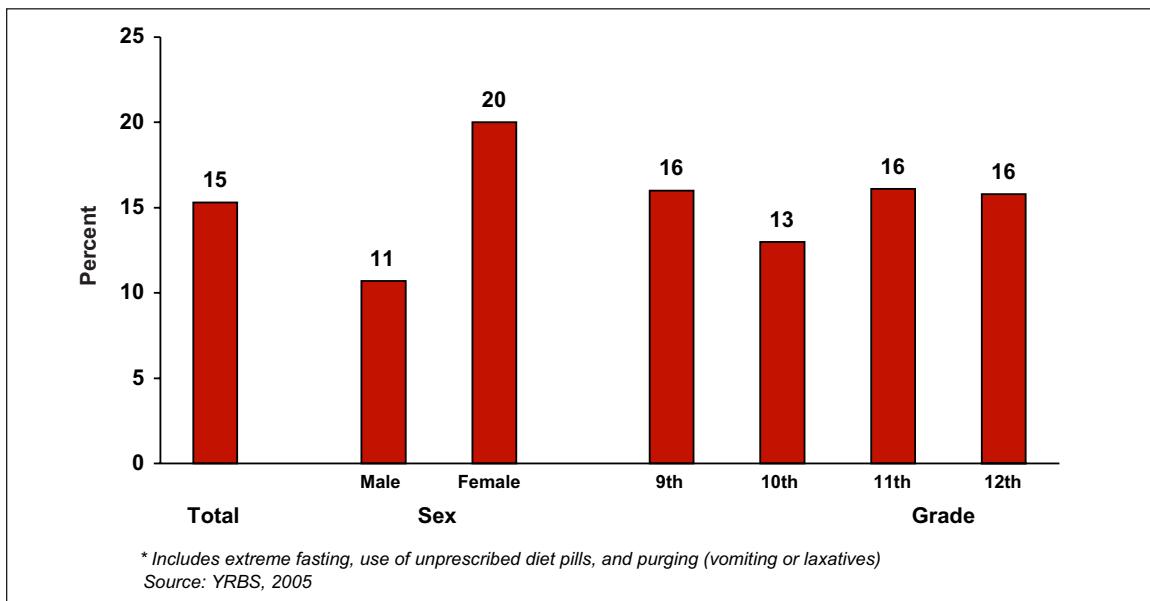
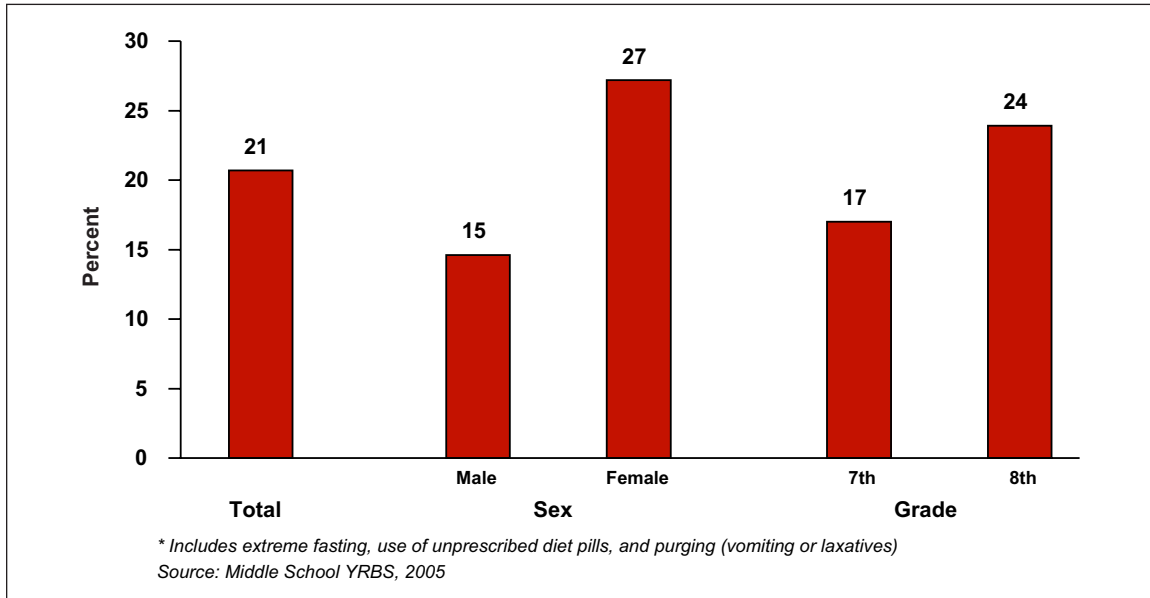


Figure 47. Percent of Maine middle school students using unsafe weight loss practices.\*



## Conclusion

The *Burden of Overweight and Obesity in Maine* serves as a complementary document to the *Maine Physical Activity and Nutrition (PAN) Plan 2005-2010*. The purpose of this report is to summarize data related to the burden of overweight and obesity in Maine. The evidence clearly shows Maine has an obesity epidemic, and the problem is pervasive from youth to adulthood. The majority of Maine adults are overweight or obese, approximately a quarter of middle and high school students are obese or overweight, and more than a third of kindergarteners are obese or overweight. Review of behavioral risk factor data suggests youth and adults are not sufficiently physically active and have diets that likely contribute to overweight and obesity. Maine must continue to increase efforts to improve nutrition, increase physical activity and, in particular, reverse the trend toward overweight and obesity.

This document provides a foundation for monitoring trends as well as measuring performance indicators relating to physical activity, nutrition, and obesity. The ongoing collection and analysis of these data is essential for public health action, program planning and evaluation, and formulating research. The Physical Activity and Nutrition Program at the Maine Center for Disease Control and Prevention will periodically update this report and share it with stakeholders to enhance the State's efforts in striving for a healthier Maine.

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## Primary Data Sources

### Behavioral Risk Factor Surveillance System

Data for adults are from the Behavioral Risk Factor Surveillance System (BRFSS), an annual telephone survey assessing health behaviors and conditions in a random sample of civilian, noninstitutionalized, resident Maine adults aged 18 and over. Data were weighted to allow findings to be generalized to the entire Maine adult population. We combined three years of data (2002-2004) to ensure stable subgroup estimates. During 2002-2004, a total of 8,360 people participated in the survey. Response rates were 59 percent, 53 percent, and 53 percent in 2002, 2003, 2004, respectively. There are several limitations to the BRFSS, including the potential for systematic bias arising from non-coverage, non-response, and measurement errors. Non-coverage refers to the fact that the survey does not include people without landline telephones or people in institutions, such as nursing homes, colleges, or prisons. Non-response means that some people who are randomly selected for the survey could not be reached or declined to participate. Bias could result if the people selected for the survey who did not respond differ systematically from those who did participate. BMI was calculated from self-reported height and weight, which may underestimate actual BMI.

### Youth Risk Behavior Surveillance System

Data for adolescents are from the 2005 Youth Risk Behavior Survey (YRBS). The YRBS is a paper-and-pencil survey of students enrolled in publicly funded middle schools and high schools. Schools were selected with probability proportional to their enrollment size (i.e., larger schools had a better chance of being selected than smaller schools), and equal probability sampling was used to select classes within schools (i.e., each class within a school had the same chance of being selected). All students in selected classes were invited to participate in the surveys. In 2005, 1,375 students in 27 schools participated in the high school survey and 1,480 students in 24 schools participated in the middle school survey, corresponding to overall response rates of 68 percent for the high school survey and 69 percent for the middle school survey. Data were weighted to allow findings to be generalized to Maine's adolescent population. As with the BRFSS, limitations of the YRBS include the potential for systematic errors due to non-coverage, non-response, and measurement. Specifically, the YRBS does not include students who are homeschooled or who attend private schools (non-coverage), or students who were absent when the survey was administered (non-response). BMI was calculated based on self-reported height and weight, which may underestimate actual BMI.

## Secondary Data Sources

### Maine Child Health Survey

Data for children are from the 2002 Maine Child Health Survey (MCHS), a survey of kindergarten public school students. A parent or primary caregiver completed the survey on behalf of the child; height and weight were measured by trained survey staff. In 2002, 913 kindergarteners from 29 schools participated in the survey, corresponding to an overall response rate of 40 percent. Data were weighted to allow findings to be generalized to Maine's kindergarten population, but readers should use caution when interpreting results due to the relatively low response rate. The MCHS was conducted

among kindergarteners and third graders in 2003-2004, but data were not weighted due to a very low overall response rate (17.6%), and are therefore not presented in this report.

## **Pediatric Nutrition Surveillance System and National Immunization Survey**

Data for infants and toddlers are from the Pediatric Nutrition Surveillance System (PedNSS) and the National Immunization Survey (NIS). The PedNSS uses data from the Supplemental Nutrition Program for Women, Infants, and Children (WIC) to describe the prevalence of nutrition and other health indicators among women and children. Women are eligible to participate in WIC if they are pregnant or have children under 5, and receive public assistance, such as MaineCare, Temporary Assistance for Needy Families (TANF), or food stamps. The NIS is a random telephone survey of immunization practices conducted by the National Center for Health Statistics.

## **Statistical Notes**

In Appendix C of this report, most prevalence estimates are presented with 95 percent confidence intervals to show the variability around the estimate. Confidence intervals are a measure of the precision of an estimate – the more narrow the confidence interval, the more precise the estimate.

Statistical significance was determined using the Pearson and Cochran-Mantel-Haentzel chi-square tests, with a p-value of 0.05. In some cases the chi-square test indicates a significant difference between two groups, even when the 95% confidence intervals around the separate prevalence estimates overlap, because the chi-square test corrects for covariance between the two groups.

This report presents crude, rather than age-adjusted, rates. A crude rate is obtained simply by dividing the number of people with a particular condition (e.g., obesity) by the number of people at risk for having that condition (e.g., Maine adults). The primary purpose of presenting crude rates is to demonstrate the burden of disease in a population, or subgroups of a population. Therefore, it is possible that differences in crude rates between subgroups (e.g., counties) could be due to different age distributions between the subgroups. It is not recommended that subgroup estimates be compared if there is reason to believe that the age distribution of the subgroups may differ notably.

There are four county-level maps presented in this report (Figures 12, 13, 28 & 41). We used the natural breaks method to group counties into categories. This method identifies groupings that naturally exist in the data, and can result in unequal numbers of counties in each group. For example, there may be 5 counties with a prevalence of some condition between 20-22 percent, and 3 counties with a prevalence between 25-26 percent. These groupings would be preserved, even though there are fewer counties in the second group than the first.

As mentioned at the beginning of the report (p. 3), a small percentage of adults (2.6%) and adolescents (1.3%) are considered to be underweight. Because the small numbers lead to unstable estimates, underweight is not presented as a separate category in this report. However, underweight individuals are included in all analyses except those displaying data by level of BMI.

## Definitions/Survey Questions

### Behavioral Risk Factor Surveillance System (BRFSS)

Variable	Survey Question(s)
BMI	About how much do you weigh without shoes? About how tall are you without shoes? BMI = weight (kilograms) / height <sup>2</sup> (meters)
Age	What is your age?
Income	Reported annual household income from all sources
Education	Reported highest grade or year of school completed
County	What county do you live in?
Arthritis	Have you ever been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?
Asthma	Have you ever been told by a doctor, nurse, or other health professional that you had asthma?
Coronary Heart Disease	Has a doctor, nurse, or other health professional ever told you that you had any of the following: angina or coronary heart disease?
Diabetes	Have you ever been told by a doctor that you have diabetes?
Heart Attack	Has a doctor, nurse, or other health professional ever told you that you had any of the following: a heart attack, also called a myocardial infarction?
High Blood Pressure	Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?
High Cholesterol	Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high?
Overall Health	Would you say that in general your health is excellent, very good, good, fair, or poor?
Unhealthy Days	Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?  Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?
Leisure Time Physical Activity	During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?
Recommended Physical Activity	Reported moderate-intensity activities (i.e., brisk walking, gardening, anything causing small increases in breathing and heart rates) for at least 30 minutes per day on 5 or more days per week  OR  Reported vigorous-intensity activities (i.e., running, aerobics, anything causing large increases in breathing or heart rate) for at 20 minutes per day on 3 or more days per week
5 Servings of Fruits and Vegetables	Calculated from the following 6 questions: How often do you drink fruit juices such as orange, grapefruit, or tomato? Not counting juice, how often do you eat fruit? How often do you eat green salad? How often do you eat potatoes not including French fries, fried potatoes, or potato chips? How often do you eat carrots?  Not counting carrots, potatoes, or salad, how many servings of vegetables do you usually eat (for example: a serving of vegetables at both lunch and dinner would be two servings)?

## Youth Risk Behavior Survey (YRBS)

Variable	Survey Question(s)
BMI	How old are you? What is your sex? How tall are you without your shoes on? How much do you weigh without your shoes on?  BMI percentile calculated by the Centers for Disease Control and Prevention (CDC) using growth charts (for more information, see <a href="http://www.cdc.gov/nccdphp/dnpa/growthcharts/bmi_tools.htm">http://www.cdc.gov/nccdphp/dnpa/growthcharts/bmi_tools.htm</a> )
Grade	In what grade are you?
Perceived Weight	Reported "slightly overweight" or "very overweight" in response to the question: How do <b>you</b> describe your weight?
Trying to Lose Weight	Reported "lose weight" in response to the question: Which of the following are you trying to do about your weight?
Vigorous Physical Activity	On how many of the past 7 days did you exercise or participate in physical activity for at least 20 minutes that made you sweat and breathe hard, such as basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities? (Recommended = 3 or more days per week)
Physical Education Class Attendance	In an average week when you are in school, on how many days do you go to physical education (PE) classes? (Reported 1 or more days per week)
Television Viewing	On an average school day, how many hours do you watch TV? (Reported 2 or less v. 3 or more hours per day)
5 Servings of Fruits and Vegetables (High School YRBS only)	Calculated from the following 6 questions: During the past 7 days... How many times did you drink 100% fruit juices? How many times did you eat fruit? How many times did you eat a green salad? How many times did you eat potatoes (do not count French fries, fried potatoes, or potato chips)? How many times did you eat carrots? How many times did you eat other vegetables?
Unsafe Weight Loss Practices	Answered "yes" to any one of the following questions: During the past 30 days... Did you go without eating for 24 hours or more to lose weight or keep from gaining weight? Did you take any diet pills, powders, or liquids without a doctor's advice to lose weight or keep from gaining weight (do not include meal replacement products such as Slim Fast)? Did you vomit or take laxatives to lose weight or keep from gaining weight?

## Maine Youth Drug and Alcohol Use Survey (MYDAUS)

Variable	Survey Questions
Soda Consumption	Reported 2 or more cans per day in response to the question:  How often do you drink soda (1 can or glass)?

## Maine Child Health Survey (MCHS)

Variable	Survey Question(s)
BMI	Calculated from child's age, sex, and measured height and weight.

# B Cross-reference of Figures and Data Tables

appendix



	<b>Data Table (in Appendix C)</b>	<b>Corresponding Figures (in report)</b>
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3.	General health among Maine adults, by BMI.	1
4.	Percent of Maine adults with 14 or more unhealthy days per month, by BMI.	1
5.	Number of deaths for selected conditions linked to obesity, all ages, Maine, 2003.	None
6.	Annual medical expenditures attributable to obesity, Maine (98-00).	None
7.	Percent of adults who are obese (BMI of 30 or above), Maine and U.S.	2
8.	Classification of weight status among Maine adults.	None
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**Behavioral Risk Factor Surveillance System (BRFSS)**

**Table 1. Health outcomes among Maine adults, by BMI, 2002-2004 BRFSS.**

	Healthy Weight (BMI = 18.5-24.9)	Overweight (BMI = 25.0-29.9)	Obese (BMI = 30+)
Arthritis**	23.1 (21.1-25.3)	31.8 (29.4-34.3)	42.0 (38.5-45.5)
Asthma**	12.7 (11.3-14.1)	12.5 (11.2-14.0)	18.3 (16.3-20.5)
Coronary heart disease* (2003 only)	3.2 (2.2-4.6)	6.0 (4.5-8.0)	5.9 (4.0-8.6)
Diabetes**	2.5 (1.9-3.1)	7.6 (6.6-8.7)	16.3 (14.4-18.3)
General health**			
Excellent	31.2 (29.3-33.1)	21.6 (19.9-23.5)	11.5 (9.7-13.5)
Very Good	36.6 (34.6-38.6)	35.7 (33.8-37.7)	27.9 (25.5-30.4)
Good	21.7 (20.0-23.4)	28.6 (26.8-30.5)	36.4 (33.8-39.1)
Fair	8.1 (7.1-9.3)	9.7 (8.5-11.0)	17.8 (15.8-20.0)
Poor	2.5 (2.0-3.1)	4.4 (3.6-5.3)	6.4 (5.3-7.7)
Heart attack (2003 only)	3.4 (2.4-4.9)	4.1 (2.9-5.8)	6.7 (4.7-9.6)
High blood pressure**	16.9 (14.3-19.9)	27.6 (24.5-31.0)	40.9 (36.1-46.0)
High cholesterol**	26.5 (23.1-30.1)	36.5 (32.8-40.3)	42.6 (37.5-48.0)
14+ physically unhealthy days per month**	29.2 (25.4-33.3)	31.1 (27.2-35.2)	42.2 (37.4-47.1)
14+ mentally unhealthy days per month**	31.0 (27.1-35.2)	28.4 (24.6-32.5)	42.2 (36.9-47.8)

\*p<0.05    \*\*p<0.001

**Table 2. Percent of Maine and U.S. adults who are obese, 1992-2004.<sup>4</sup>**

Obese (%)		
Year	Maine	U.S.
1992	12.1	12.6
1993	13.7	13.7
1994	15.2	14.4
1995	14.1	15.8
1996	16.1	16.8
1997	16.2	16.6
1998	17.4	18.3
1999	19.4	19.7
2000	20.0	20.1
2001	19.5	21.0
2002	20.7	22.1
2003	19.9	22.8
2004	23.3	23.1

**Table 3. Percent of Maine adults who are at a healthy weight, overweight, and obese, by selected demographic factors, 2002-2004 BRFSS.**

		Healthy Weight (BMI = 18.5-24.9) % (95% CI)	Overweight (BMI = 25.0-29.9) % (95% CI)	Obese (BMI = 30.0+) % (95% CI)
<b>Total</b>		38.9 (37.7-40.2)	37.9 (36.7-39.2)	21.4 (20.3-22.4)
<b>Sex</b>				
	Male	30.8 (29.0-32.6)	46.6 (44.7-48.6)	22.0 (20.4-23.7)
	Female	46.8 (45.2-48.6)	29.4 (27.9-30.9)	20.8 (19.5-22.1)
<b>Age</b>				
	18-24	55.3 (50.0-60.5)	28.1 (23.6-33.1)	13.2 (10.0-17.2)
	25-34	42.0 (38.7-45.4)	35.4 (32.2-38.7)	20.5 (17.9-23.4)
	35-44	37.8 (35.2-40.4)	37.8 (35.2-40.5)	22.3 (20.1-24.7)
	45-64	33.7 (31.9-35.6)	40.7 (38.8-42.7)	24.7 (23.0-26.5)
	65+	37.1 (34.5-39.7)	41.0 (38.4-43.7)	19.8 (17.8-22.1)
<b>Education</b>				
	<High School	32.0 (28.0-36.4)	37.0 (32.8-41.4)	28.9 (25.1-33.0)
	High School or GED	35.1 (33.1-37.3)	39.3 (37.1-41.4)	24.0 (22.2-25.9)
	Some college	39.9 (37.4-42.6)	36.1 (33.7-38.7)	22.1 (20.0-24.3)
	College grad	44.5 (42.3-46.7)	38.1 (35.9-40.2)	15.4 (13.8-17.0)
<b>Income</b>				
	<\$25,000	36.2 (33.9-38.5)	34.9 (32.6-37.1)	26.7 (24.7-28.8)
	\$25,000-49,999	38.2 (35.9-40.5)	37.5 (35.2-39.8)	22.3 (20.4-24.3)
	\$50,000+	39.8 (37.6-42.1)	42.1 (39.9-44.4)	17.0 (15.3-18.9)
<b>Physical Activity</b>				
	Leisure time PA	40.7 (39.3-42.1)	38.6 (37.2-40.1)	19.1 (17.9-20.2)
	No leisure time PA	32.8 (30.3-35.3)	35.3 (32.9-37.9)	29.3 (27.0-31.8)

Note: Table does not include the percent of adults who are underweight (BMI<18.5).

**Table 4. Percent of Maine adults who are at a healthy weight (BMI 18.5-24.9), overweight (BMI 25.0-29.9), obese (BMI ≥30), and overweight and obese combined, by county, 2002-2004 BRFSS.**

County	Healthy Weight		Overweight		Obese		Overweight and Obese	
	%	95% CI	%	95% CI	%	95% CI	%	95% CI
Androscoggin	36.1	31.4-41.1	37.8	36.7-39.2	25.1	20.8-30.0	62.9	57.9-67.6
Aroostook	33.8	28.9-39.2	38.5	33.4-43.8	26.0	21.7-30.8	64.5	59.1-69.5
Cumberland	44.9	42.0-47.9	35.9	33.1-38.8	17.2	15.0-19.6	53.1	50.1-56.0
Franklin	32.7	26.1-39.9	45.5	38.0-53.3	21.1	15.6-27.8	66.6	59.3-73.2
Hancock	43.9	38.0-50.0	39.1	33.2-45.3	16.7	12.7-21.6	55.8	49.7-61.7
Kennebec	37.0	33.0-41.1	37.1	33.2-41.2	23.6	20.3-27.4	60.8	56.6-64.8
Knox	38.2	31.9-44.9	37.9	31.6-44.6	22.2	17.3-28.0	60.0	53.3-66.4
Lincoln	47.8	41.0-54.7	33.8	27.5-40.6	17.1	12.3-23.2	50.8	44.0-57.7
Oxford	33.1	27.7-38.9	40.0	34.3-46.1	25.4	20.7-30.7	65.4	59.6-70.8
Penobscot	36.2	32.6-39.9	40.4	36.6-44.3	21.4	18.5-24.7	61.8	58.0-65.4
Piscataquis	33.3	24.5-43.3	40.4	31.8-49.7	24.6	17.4-33.5	65.0	55.0-73.8
Sagadahoc	42.7	36.0-49.6	33.7	27.6-40.3	20.6	15.7-26.5	54.2	47.3-61.0
Somerset	39.9	34.1-46.0	40.4	34.7-46.4	18.2	14.1-23.4	58.7	52.6-64.5
Waldo	39.1	32.5-46.2	31.0	24.9-37.8	26.5	20.7-33.3	57.5	50.3-64.4
Washington	35.1	27.8-43.0	39.7	32.7-47.1	24.7	19.3-31.0	64.3	56.4-71.6
York	37.8	34.4-41.3	38.5	35.1-42.0	21.8	19.1-24.9	60.3	56.7-63.7

Note: Table does not include the percent of adults who are underweight (BMI <18.5).

**Table 5. Percent of Maine and U.S. adults who have no leisure time physical activity, 1992-2004.<sup>4</sup>**

No leisure time physical activity (%)		
Year	Maine	U.S.
1992	36.8	27.4
1993	34.7	—
1994	40.7	28.8
1995	—	—
1996	34	27.8
1997	—	—
1998	27.7	27.7
1999	—	—
2000	27.2	26.9
2001	23.2	25.7
2002	25.8	24.4
2003	20.6	23.1
2004	21.5	22.8

Note: — = No data available.

**Table 6. Percent of Maine adults who have no leisure time physical activity, and who do not meet physical activity recommendations, by selected demographic factors, 2002-2004 BRFSS.**

		No leisure time physical activity % (95% CI)	Do not meet physical activity recommendations % (95% CI)
<b>Total</b>		22.6 (21.6-23.7)	47.87 (46.2-49.5)
<b>Sex</b>			
	Male	21.5 (20.0-23.1)	45.0 (42.5-47.6)
	Female	23.7 (22.4-25.0)	50.5 (48.4-52.6)
<b>Age</b>			
	18-24	15.3 (12.1-19.2)	35.4 (29.6-41.6)
	25-34	17.6 (15.3-20.2)	41.5 (37.3-45.8)
	35-44	19.1 (17.1-21.3)	46.7 (43.2-50.2)
	45-64	23.2 (21.6-24.9)	49.0 (46.4-51.6)
	65+	33.8 (31.3-36.3)	60.9 (57.2-64.4)
<b>Education</b>			
	<High School	46.8 (42.5-51.1)	57.2 (51.6-62.6)
	High School or GED	28.6 (26.8-30.5)	51.6 (48.8-54.5)
	Some college	18.7 (16.9-20.6)	46.7 (43.4-50.0)
	College grad	11.7 (10.4-13.1)	41.5 (38.7-44.4)
<b>Income</b>			
	<\$25,000	35.2 (33.1-37.4)	55.2 (52.2-58.3)
	\$25,000-49,999	21.0 (19.1-22.9)	47.7 (44.7-50.7)
	\$50,000+	11.5 (10.2-13.0)	39.8 (36.9-42.8)
<b>BMI</b>			
	Healthy weight	18.9 (17.3-20.5)	41.9 (39.3-44.6)
	Overweight	20.9 (19.3-22.6)	48.2 (45.6-51.0)
	Obese	30.8 (28.3-33.3)	56.1 (52.4-59.7)

**Table 7. Percent of Maine adults who do not meet the Surgeon General's physical activity recommendations, by county, 2002-2004 BRFSS.**

County	Do not meet physical activity recommendations	
	%	95% CI
Androscoggin	47.5	41.2-53.9
Aroostook	53.9	47.1-60.5
Cumberland	47.0	43.3-50.8
Franklin	44.3	34.6-54.4
Hancock	40.1	32.5-48.2
Kennebec	50.3	44.9-55.8
Knox	47.1	37.7-56.8
Lincoln	47.6	38.0-57.4
Oxford	49.8	44.1-53.7
Penobscot	48.9	44.1-53.7
Piscataquis	43.7	32.1-56.1
Sagadahoc	42.0	32.6-52.0
Somerset	43.0	35.6-50.6
Waldo	48.1	38.6-57.8
Washington	49.8	40.7-58.9
York	47.2	42.6-51.9

**Table 8. Percent of Maine and U.S. adults who consume at least 5 servings of fruits and vegetables per day, 1992-2003.<sup>4</sup>**

Year	Consume at least 5 servings of fruits and vegetables per day (%)	
	Maine	U.S.
1992	—	—
1993	—	—
1994	21.1	22.0
1995	—	—
1996	26.2	23.7
1997	—	—
1998	26.4	23.8
1999	—	—
2000	24.5	23.2
2001	—	—
2002	29.3	22.7
2003	28.0	—

Note: — = No data available.

**Table 9. Percent of Maine adults who consume at least 5 servings of fruits and vegetables per day, by selected demographic factors, 2002-2004 BRFSS.**

		Consume 5 or more servings of fruits and vegetables per day % (95% CI)
<b>Total</b>		28.2 (26.8-29.6)
<b>Sex</b>		
	Male	21.4 (19.4-23.6)
	Female	34.4 (32.5-36.4)
<b>Age</b>		
	18-24	28.7 (23.2-34.9)
	25-34	24.9 (21.4-28.6)
	35-44	27.1 (24.3-30.2)
	45-64	26.7 (24.6-29.0)
	65+	34.1 (30.9-37.4)
<b>Education</b>		
	<High School	21.2 (17.1-25.9)
	High School or GED	22.1 (19.9-24.5)
	Some college	29.4 (26.6-32.5)
	College grad	36.7 (34.0-39.4)
<b>Income</b>		
	<\$25,000	23.1 (20.7-25.7)
	\$25,000-49,999	27.8 (25.3-30.4)
	\$50,000+	30.7 (28.1-33.5)
<b>BMI</b>		
	Healthy weight	30.9 (28.5-33.3)
	Overweight	26.1 (23.8-28.6)
	Obese	25.3 (22.3-28.5)

**Table 10. Percent of Maine adults who consume at least 5 servings of fruits and vegetables per day, by county, 2002-2004 BRFSS.**

County	Consume 5 or more servings of fruits and vegetables per day	
	%	95% CI
Androscoggin	25.7	20.9-29.9
Aroostook	27.1	21.7-33.3
Cumberland	31.5	28.2-35.0
Franklin	32.9	24.7-42.2
Hancock	33.8	26.9-41.4
Kennebec	26.8	22.5-31.6
Knox	31.7	23.7-40.9
Lincoln	35.2	26.9-44.4
Oxford	28.1	21.9-35.3
Penobscot	22.5	18.9-26.6
Piscataquis	32.4	22.5-44.2
Sagadahoc	24.2	17.2-33.0
Somerset	28.2	22.3-34.8
Waldo	24.9	17.8-33.6
Washington	27.1	19.4-36.5
York	29.0	25.0-33.4

## Youth Risk Behavior Survey (YRBS)

**Table 11. Prevalence of overweight and obesity among Maine high school students, by selected demographic factors, 2005 High School YRBS.**

		Healthy Weight % (95% CI)	Overweight* % (95% CI)	Obese** % (95% CI)
<b>Total</b>		73.3 (69.5-76.8)	14.4 (12.2-17.0)	10.9 (9.2-13.0)
<b>Sex</b>				
	Male	68.4 (63.4-73.0)	15.0 (12.2-18.4)	15.2 (12.4-18.4)
	Female	78.7 (73.4-83.2)	13.8 (10.6-17.9)	6.3 (4.7-8.3)
<b>Grade</b>				
	9th	71.3 (64.9-77.0)	15.7 (12.6-19.3)	11.2 (8.1-15.3)
	10th	70.7 (64.8-76.0)	16.4 (10.4-25.1)	12.1 (7.8-18.2)
	11th	77.0 (67.1-84.6)	10.0 (6.4-15.4)	11.7 (6.1-21.4)
	12th	75.2 (66.7-82.2)	15.0 (9.6-22.7)	8.3 (5.6-12.1)
<b>Physical Activity</b>				
	Sufficient vigorous PA	75.1 (71.8-78.2)	14.2 (12.2-16.4)	9.7 (7.3-12.8)
	Not sufficient vigorous PA	70.9 (63.3-77.5)	14.2 (10.3-19.5)	13.2 (10.1-17.2)
<b>Television Viewing</b>				
	≤2 hrs/day	64.3 (59.2-69.1)	12.7 (10.0-16.1)	9.1 (7.5-11.2)
	>2 hrs/day	76.7 (72.4-80.5)	19.0 (15.9-22.5)	15.5 (12.0-19.9)

\* Overweight = BMI in 85th-<95th percentile for age and sex.

\*\* Obese = BMI in 95th percentile or above for age and sex.

**Table 12. Prevalence of overweight and obesity among Maine middle school students, by selected demographic factors, 2005 Middle School YRBS.**

		Healthy Weight % (95% CI)	Overweight* % (95% CI)	Obese** % (95% CI)
<b>Total</b>		70.4 (65.4-74.9)	14.7 (12.3-17.4)	12.2 (9.5-15.7)
<b>Sex</b>				
	Male	64.1 (59.2-68.8)	17.2 (14.5-20.4)	15.9 (12.4-20.2)
	Female	78.1 (72.0-83.2)	11.5 (8.1-16.0)	7.7 (5.4-10.9)
<b>Grade</b>				
	7th	70.1 (63.7-75.7)	16.7 (13.5-20.4)	10.9 (8.2-14.4)
	8th	70.6 (63.2-77.1)	13.1 (10.0-16.9)	13.1 (9.0-18.8)
<b>Physical Activity</b>				
	Sufficient vigorous PA	72.1 (65.4-77.9)	15.0 (11.9-18.7)	10.8 (7.9-14.5)
	Not sufficient vigorous PA	65.8 (60.1-71.0)	13.2 (9.1-18.9)	18.2 (13.0-25.1)
<b>Television Viewing</b>				
	≤2 hrs/day	73.5 (67.1-79.0)	13.8 (10.8-17.6)	9.5 (6.8-13.1)
	>2 hrs/day	64.4 (56.6-71.5)	16.6 (12.0-22.5)	17.0 (12.5-22.6)

\* Overweight = BMI in 85th-<95th percentile for age and sex.

\*\* Obese = BMI in 95th percentile or above for age and sex.

**Table 13. Perception of weight, and activities related to weight loss/gain, among Maine high school students, 2005 High School YRBS.**

		Perceive self as slightly or very overweight	Trying to lose weight % (95% CI)	Exercise to lose or maintain weight % (95% CI)	Use unsafe weight loss methods*
<b>Total</b>		30.8 (27.7-34.2)	50.9 (46.7-55.2)	64.8 (60.6-68.8)	15.3 (12.9-18.0)
<b>Sex</b>					
	Male	25.3 (21.0-30.3)	35.0 (31.4-38.9)	53.0 (48.1-57.8)	10.7 (7.6-14.8)
	Female	36.3 (31.2-41.8)	67.6 (61.2-73.3)	76.8 (72.0-81.0)	20.0 (16.3-24.3)
<b>Grade</b>					
	9th	29.9 (24.4-36.0)	49.8 (45.3-54.3)	67.0 (61.3-72.1)	16.0 (11.8-21.3)
	10th	31.0 (26.8-35.5)	50.1 (45.6-54.5)	66.1 (60.2-71.5)	13.0 (9.1-18.4)
	11th	27.8 (21.6-35.1)	49.0 (41.4-56.5)	60.5 (52.8-67.8)	16.1 (12.6-20.5)
	12th	34.7 (29.3-40.6)	55.6 (44.9-65.8)	66.7 (54.3-77.1)	15.8 (9.6-24.9)
<b>BMI</b>					
	Healthy weight	17.7 (14.8-20.9)	44.2 (39.1-49.4)	63.0 (58.4-67.4)	14.5 (11.4-18.2)
	Overweight	57.0 (50.5-63.2)	72.3 (61.9-80.8)	73.3 (61.5-82.5)	14.9 (10.2-21.2)
	Obese	81.5 (68.1-90.1)	72.7 (63.9-80.1)	75.7 (63.4-84.9)	17.3 (10.9-26.3)

\*Extreme fasting, diet pills, laxatives, and/or vomiting

**Table 14. Perception of weight, and activities related to weight loss/gain, among Maine middle school students, 2005 Middle School YRBS.**

		Perceive self as slightly or very overweight	Trying to lose weight % (95% CI)	Exercise to lose or maintain weight % (95% CI)	Use unsafe weight loss methods*
<b>Total</b>		28.1 (23.9-32.8)	44.7 (40.0-49.6)	68.4 (64.7-71.8)	20.7 (18.4-23.2)
<b>Sex</b>					
	Male	27.5 (22.4-33.2)	36.8 (31.3-42.5)	61.3 (55.7-66.5)	14.6 (10.8-19.4)
	Female	28.9 (24.0-34.4)	53.0 (47.9-58.1)	75.7 (72.3-78.9)	27.2 (22.7-32.1)
<b>Grade</b>					
	7th	26.4 (23.0-30.1)	43.4 (37.8-49.3)	65.9 (61.4-70.0)	17.0 (13.0-22.0)
	8th	28.9 (23.2-35.4)	46.3 (41.0-51.7)	71.3 (66.6-75.6)	23.9 (21.2-26.9)
<b>BMI</b>					
	Healthy weight	16.8 (14.2-19.7)	37.5 (32.4-43.0)	67.4 (62.6-71.8)	19.2 (16.6-22.0)
	Overweight	46.8 (38.2-55.7)	61.8 (54.7-68.5)	76.8 (69.8-82.6)	23.3 (15.3-33.7)
	Obese	86.7 (79.6-91.6)	77.3 (61.3-88.0)	86.5 (77.0-92.5)	25.7 (19.1-33.6)

\*Extreme fasting, diet pills, laxatives, and/or vomiting

**Table 15. Sufficient vigorous physical activity among high school students, Maine and U.S., 2005 YRBS.**

Participated in vigorous physical activity on three or more days per week		
Year	U.S.	Maine
1993	65.8	—
1995	63.7	63.1
1997	63.8	61.9
1999	64.7	
2001	64.6	65.9
2003	62.6	60.6
2005	—	62.3

Note: — = No data available.

**Table 16. Physical activity, television viewing, and fruit and vegetable consumption among Maine high school students, 2005 High School YRBS.**

		Participate in sufficient vigorous physical activity % (95% CI)	Participate in physical education on 1 or more days per week % (95% CI)	Watch 2 or fewer hours of television per day % (95% CI)	Consume 5 or more servings of fruits and vegetables per day % (95% CI)
<b>Total</b>		62.3 (56.7-67.6)	35.7 (27.0-45.4)	73.2 (70.2-76.0)	18.9 (16.7-21.4)
<b>Sex</b>					
	Male	63.2 (56.0-69.8)	40.1 (30.4-50.7)	70.0 (65.8-73.8)	19.8 (17.0-22.9)
	Female	61.2 (54.2-67.8)	31.2 (23.0-40.9)	76.5 (72.7-79.8)	17.7 (14.1-22.0)
<b>Grade</b>					
	9th	65.3 (56.1-73.5)	63.1 (45.3-78.0)	71.9 (66.6-76.7)	21.0 (15.7-27.5)
	10th	65.5 (57.2-72.9)	36.3 (21.3-54.6)	69.5 (62.9-75.3)	20.5 (16.3-25.4)
	11th	65.4 (56.9-73.0)	22.7 (15.3-32.4)	75.8 (71.8-79.3)	20.0 (14.8-26.4)
	12th	52.2 (37.5-66.5)	17.1 (9.2-29.4)	75.9 (65.5-83.9)	13.5 (10.3-17.6)
<b>BMI</b>					
	Healthy weight	64.3 (59.1-69.2)	34.3 (25.6-44.3)	76.5 (73.1-79.5)	18.9 (16.0-22.2)
	Overweight	62.8 (53.5-71.3)	42.0 (32.1-52.5)	64.7 (57.9-70.9)	20.0 (13.0-29.5)
	Obese	55.5 (41.2-68.9)	33.4 (22.0-47.2)	61.6 (53.0-69.6)	15.5 (8.4-26.9)

**Table 17. Physical activity and television viewing among Maine middle school students, 2005 Middle School YRBS.**

		Participate in sufficient vigorous physical activity % (95% CI)	Participate in physical education on 1 or more days per week % (95% CI)	Watch 2 or fewer hours of television per day % (95%)
<b>Total</b>		74.7 (70.4-78.6)	82.5 (74.7-88.2)	69.0 (64.6-73.0)
<b>Sex</b>				
	Male	75.0 (68.8-80.3)	83.2 (76.0-88.6)	67.0 (61.6-72.0)
	Female	74.4 (70.2-78.2)	81.9 (72.9-88.3)	70.9 (65.7-75.6)
<b>Grade</b>				
	7th	74.1 (68.8-78.8)	81.9 (72.0-88.9)	69.9 (63.6-75.6)
	8th	76.0 (70.7-80.6)	83.0 (75.8-88.3)	69.0 (63.9-73.7)
<b>BMI</b>				
	Healthy weight	78.2 (73.2-82.6)	83.6 (75.5-89.4)	71.8 (65.8-77.2)
	Overweight	78.8 (69.9-85.6)	85.0 (74.2-91.8)	65.1 (55.5-73.6)
	Obese	66.0 (55.6-75.0)	79.6 (66.6-88.4)	55.6 (45.4-65.3)

## Maine Youth Drug and Alcohol Use Survey (MYDAUS)

Table 18. Percent of adolescents drinking 2 or more cans of soda per day, by grade and sex, 2004 Maine Youth Alcohol and Drug Use Survey.

		Drink 2 or more cans of soda per day (%)
Total		18.8
Sex		
	Male	23.2
	Female	14.2
Grade		
	6th	16.0
	7th	18.0
	8th	21.0
	6th-8th	18.2
	9th	20.0
	10th	20.1
	11th	18.4
	12th	18.0
	9th-12th	19.2

Note: Confidence intervals around individual estimates were not calculated for the Maine Youth Alcohol and Drug Use Survey, and are therefore not presented in this table.

## National Immunization Survey

Table 19. Percent of infants ever breastfed, and breastfed for at least 6 and 12 months, 2003 Maine and U.S., National Immunization Survey.

	Maine % (95% CI)	U.S. % (95% CI)
Ever Breastfed	71.3 (66.0-76.6)	70.9 (70.1-71.7)
Breastfed for at least 6 months	39.6 (34.2-45.0)	36.2 (35.4-37.0)
Breastfed for at least 12 months	20.6 (16.4-24.8)	17.2 (16.5-17.9)

## Maine Child Health Survey (MCHS)

Table 20. Percent of Maine kindergarteners overweight and obese, 2002 MCHS.

		Overweight % (95% CI)	Obese % (95% CI)
Total		21.3 (16.9-25.7)	15.2 (10.5-19.9)
Sex			
	Male	20.6 (15.1-26.1)	19.2 (13.4-25.0)
	Female	22.1 (15.7-28.5)	11.2 (6.5-15.9)

## Pediatric Nutrition Surveillance System

Table 21. Percent of 2-4-year-old WIC participants who are overweight and obese, Maine and U.S., 2003 PDNSS.

		Maine	U.S.
BMI			
	Overweight (85th-<95th percentile)	16.8	15.7
	Obese (95th percentile or above)	16	14.7

Source: Pediatric Nutrition Surveillance System (Table 6D), 2003.

## School Health Profiles

Table 22. Percent of Maine schools teaching a required physical education class in each grade, 2004 SHP.

Grade	Percent of schools teaching a required PE class
6	98.7
7	98.0
8	98.1
9	94.7
10	75.9
11	30.2
12	26.6

Source: School Health Profiles (Table 24), 2004.

Note: Confidence intervals were not provided in the original data source, and are therefore not included in this table.

**Table 23. Percent of Maine schools offering selected food and beverages at school vending machines or stores, 2004 SHP.**

		Percent of schools offering item
<b>Healthier options</b>		
	Salty snacks low in fat	79.6
	Fruits or vegetables	50.0
	Low fat baked goods	68.9
	100% fruit juice	94.9
	Bottled water	100.0
<b>Unhealthy options</b>		
	Other kinds of candy	45.1
	Chocolate candy	40.0
	Salty snacks not low in fat	61.4
	Soft drinks, sports drinks, or fruit drinks	78.9

Source: School Health Profiles (Table 29), 2004.

Note: Confidence intervals were not provided in the original data source, and are therefore not included in this table.







*John E. Baldacci, Governor*

*Brenda M. Harvey, Commissioner*

Printed under appropriation #014-10A-9922-022

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