The Burden of Overweight & Obesity in Alaska

Alaska Department of Health & Social Services
Division of Public Health
Section of Epidemiology
Health Promotion Unit

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Frank H. Murkowski
Governor
State of Alaska

Joel Gilbertson, JD, MPH
Commissioner
Department of Health & Social Services

Doug Bruce
Director
Division of Public Health

John Middaugh
Chief
Section of Epidemiology

Jayne Andreen
Manager
Health Promotion Unit

Laura Wertz-Stein
Program Manager
Obesity Program

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Introduction

Overweight and obesity represent an increasingly urgent health issue in Alaska and the nation. *The Surgeon General's Call to Action to Prevent and Decrease Obesity, 2001* states that "Overweight and obesity have reached epidemic proportions".[1] The extent of the epidemic is illustrated by the fact that overweight and obesity have been increasing for both sexes, in nearly all population subgroups, and in all states and regions of the nation.[2,3]

Measuring Overweight and Obesity

Adults

Body Mass Index (BMI) is a ratio of height to weight squared, and is calculated by dividing body weight in kilograms by the square of height in meters, or by weight in pounds divided by the square of height in inches multiplied by 703. In 1998, the National Heart, Lung, and Blood Institute published the *Clinical Guidelines for the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults.* The clinical guidelines set forth BMI values equal to or greater then 25 and less than 30 as indicating overweight, while obese is defined as BMI equal to or greater than 30 (Table 1) (See Appendix A).[4] For the purposes of this document, the term "overweight/obesity" will be used to refer to the combination of these two categories, or those with BMI equal to or greater than 25.

There is wide support for using BMI as a measure of overweight and obesity in adults based on evidence that suggests that health risks increase with BMI greater than 25 and those with BMI values greater than 30 show a modest increase in risk of death.[1] The BMI measurement is recommended because of how easy it is to use, and because it can easily be compared. It is well established that BMI is not the best measure of body fat. It places muscular individuals in high-risk categories, as opposed to those with high body-fat levels. There is also some controversy as to whether waist to hip ratio or waist circumference should be measured as well as, or in lieu of the BMI, because they more accurately measure central adiposity, which is specifically associated with increased risk of many chronic diseases.

Table 1

Classification of Overweight and Obesity in Adults by Body Mass Index (BMI)	
Classification	**BMI, kg/m^2**
Underweight	< 18.5
Normal	18.5-24.9
Overweight	25.0-29.9
Obese	≥ 30

Source: Adapted from Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults. Bethesda, MD: National Heart, Lung, and Blood Institute, 1998.

Children and Adolescents

BMI can also be used to identify children and adolescents 2-20 years old that are overweight or at risk of becoming overweight. For children and adolescents a BMI greater than the 85th percentile and less than the 95th percentile is considered at risk of overweight and a BMI greater than the 95th percentile is considered overweight (Table 2). The current criteria for identifying such children are based on the Centers for Disease Control and Prevention (CDC) BMI-for-age growth charts for the U.S. The CDC growth charts (See Appendix B), released in May 2000, consist of revised versions of the growth charts developed by the National Center for Health Statistics (NCHS) in 1977, and the addition of the new BMI-for-age growth charts. CDC recommends that the BMI-for-age growth charts be used for all children 2 to 20 years of age in place of the weight-for-stature charts developed in 1977.

Table 2

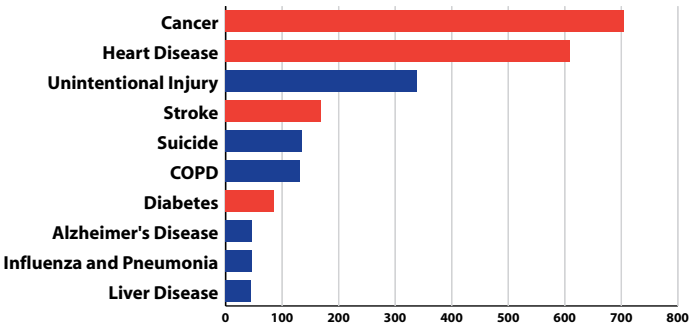
Percentile Cut Off Value	Nutritional Status Indicator
≥ 95th Percentile	Overweight
≥ 85th and < 95th Percentile	At Risk of Overweight
< 5th Percentile	Underweight

Impact of Overweight and Obesity on Mortality

Premature death and disability, increased heath care costs, and lost productivity are all associated with overweight and obesity.[5] Unhealthy dietary habits combined with sedentary behavior are primary factors in increasing body fat levels. Overweight and obesity are estimated to be responsible for approximately 300,000 deaths per year in the United States.[6,7]

National studies show an association of overweight and obesity with certain types of cancers (endometrial, colon, post menopausal breast, and prostate), as well as heart disease, stroke and diabetes.[8] Overweight and obesity are directly associated with at least four of the top ten leading causes of death (Figure 1). Mortality due to unintentional injury, suicide, chronic obstructive pulmonary disease (COPD), pneumonia, and liver disease may also be influenced by obesity to some extent.

Figure 1
Leading Causes of Death in Alaska, 2000
Actual Number of Deaths



Source: Alaska Bureau of Vital Statistics, 2000

Health Consequences of Overweight and Obesity

Premature Death

- An estimated 300,000 deaths per year may be attributable to obesity.
- The risk of death rises with increasing weight.
- Even moderate weight excess (10 to 20 pounds for a person of average height) increases the risk of death, particularly among adults aged 30 to 64 years.
- Individuals who are obese have a 50 to 100% increased risk of premature death from all causes, compared to individuals with a healthy weight.

Heart Disease

- The incidence of heart disease (heart attack, congestive heart failure, sudden cardiac death, angina or chest pain, and abnormal heart rhythm) is increased in persons who are overweight or obese.
- High blood pressure is twice as common in adults who are obese than in those who are at a healthy weight.
- Obesity is associated with elevated triglycerides (blood fat) and decreased HDL cholesterol (“good cholesterol”).

Diabetes

- A weight gain of 11 to 18 pounds increases a person’s risk of developing type 2 diabetes to twice that of individuals who have not gained weight.
- Over 80% of people with diabetes are overweight or obese.

Arthritis

- For every 2-pound increase in weight, the risk of developing arthritis is increased by 9 to 13%.
- Symptoms of arthritis can improve with weight loss.

Cancer

- Overweight and obesity are associated with an increased risk for some types of cancer including endometrial (cancer of the lining of the uterus), colon, gall bladder, prostate, kidney, and postmenopausal breast cancer.
- Women gaining more than 20 pounds from age 18 to midlife double their risk of postmenopausal breast cancer, compared to women whose weight remains stable.

Breathing Problems

- Sleep apnea (interrupted breathing while sleeping) is more common in obese persons.
- Obesity is associated with a higher prevalence of asthma.

Reproductive Complications

- Complications of pregnancy
  - Obesity during pregnancy is associated with increased risk of death in both the baby and the mother and increases the risk of maternal high blood pressure by 10 times.
  - In addition to many other complications, women who are obese during pregnancy are more likely to have gestational diabetes and problems with labor and delivery.
  - Infants born to women who are obese during pregnancy are more likely to be high birth weight and, therefore, may face a higher rate of Cesarean section delivery and low blood sugar (which can be associated with brain damage and seizures).
  - Obesity during pregnancy is associated with an increased risk of birth defects, particularly neural tube defects, such as spina bifida.
- Obesity in premenopausal women is associated with irregular menstrual cycles and infertility.

Additional Health Consequences

- Overweight and obesity are associated with increased risks of gall bladder disease, incontinence, increased surgical risk, and depression.
- Obesity can affect the quality of life through limited mobility and decreased physical endurance as well as through social, academic, and job discrimination.

Children and Adolescents

- Risk factors for heart disease, such as high cholesterol and high blood pressure, occur with increased frequency in overweight children and adolescents compared to those with a healthy weight.
- Type 2 diabetes, previously considered an adult disease, has increased dramatically in children and adolescents. Overweight and obesity are closely linked to type 2 diabetes.
- Overweight adolescents have a 70% chance of becoming overweight or obese adults. This increases to 80% if one or more parent is overweight or obese.
- The most immediate consequence of overweight, as perceived by children themselves, is social discrimination.

Benefits of Weight Loss

- Weight loss, as modest as 5 to 15% of total body weight in a person who is overweight or obese, reduces the risk factors for some diseases, particularly heart disease.
- Weight loss can result in lower blood pressure, lower blood sugar, and improved cholesterol levels.
- A person with a BMI above the healthy weight range may benefit from weight loss, especially if he or she has other health risk factors, such as high blood pressure, high cholesterol, smoking, diabetes, a sedentary lifestyle, and a personal and/or family history of heart disease.

Source: surgeongeneral.gov

Economic Impact of Overweight and Obesity

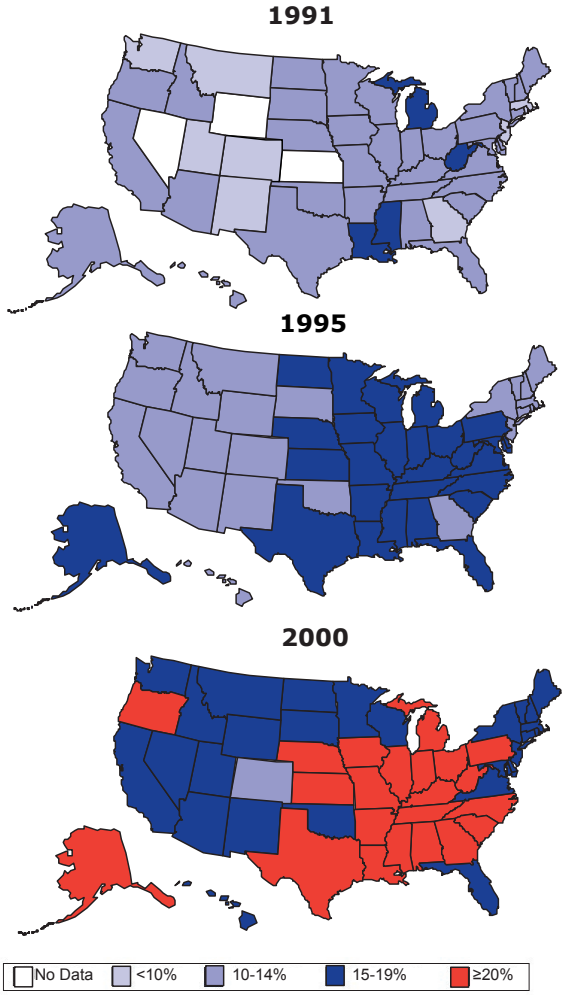
The economic consequences of overweight and obesity are enormous, and they have become increasingly burdensome on the U.S. health care system. These costs include both the direct costs of preventive, diagnostic, and treatment services associated with overweight and obesity, as well as indirect costs such as the value of wages not earned by people unable to work because of overweight/obesity-related illness or disability, and the value of future earnings lost by premature death. In 1995, the total cost attributable to overweight and obesity was $99 billion. By 2000, the total overall cost estimate had risen to $117 billion, with $61 billion being direct costs.[1]

Overweight and Obesity Prevalence Among U.S. Adults

Based on clinical height and weight measurements in the 1999 National Health and Nutrition Examination Survey (NHANES), 61% of the U.S. adult population between the ages of 20 and 74 were either overweight or obese. Twenty-seven percent were considered obese and 34% were considered overweight.

Within the U.S. population 18 years and older, the prevalence of self-reported obesity in 2000 was 20%, which reflects a 53% percent increase since 1991.[3] This prevalence suggests that as many as 38.8 million American adults now could be classified as obese, and are exposed to the associated health risks. The increase in obesity has been found in nearly every subgroup of the U.S. population.[3] Figure 2 shows how the trend toward obesity in the U.S. population is affecting every state. The vast majority of states reported less than 15% of their adult population as obese in 1991. By 1995, about half of the states reported more than 15% of their adult population as obese, and by 2000, all but one state reported that 15% or more of their adult population met the definition for obese.

Figure 2
Obesity Trends* Among U.S. Adults: Behavioral Risk Factors Surveillance System (BRFSS), 1991, 1995 and 2000
(*BMI ≥30 or ~ 30 lbs overweight for 5'4" woman)



Source: Mokdad A H, et al. *J Am Med Assoc* 1999;282:16, 2001;286:10.

Overweight and Obesity Prevalence Among U.S. Children and Adolescents

National studies suggest that children and adolescents are becoming overweight at an alarming pace. For example, BMIs of children 6 to 19 years of age can be compared from the four NHANES national surveys during the years: 1971-74, 1976-80, 1988-1994, and 1999-2000. As seen in Table 3, the percentage of surveyed children and adolescents who are overweight has more than tripled since 1971.[9]

Table 3

Prevalence of overweight among children and adolescents ages 6-19 years, for selected years 1971-74 through 1999-2000.

Age (years)[1]	1971-74	1976-80	1988-94	1999-2000
6-11	4%	7%	11%	15%
12-19	6%	5%	11%	15%

[1]Excludes pregnant women.

Source: National Health and Nutrition Examination Survey

Healthy People 2010 & Healthy Alaskans 2010 Goals

Reducing overweight and obesity have been identified as a national health priority. Healthy People 2010 outlines national goals and objectives for public health and lists overweight and obesity as one of ten leading health indicators. In Alaska, reducing the prevalence of overweight and obesity is identified as a leading health goal for the year 2010.[10] These Healthy Alaskans 2010 goals reflect the major public health concerns in Alaska.

Healthy Alaskans 2010 Targets for Adults

- Reduce the number of adults who meet the criteria for overweight (percentage of persons aged 18 years and older with BMI 25.0-29.9) to 30% by the year 2010.
- Reduce the number of adults who meet the criteria for obese (percentage of persons aged 18 years and older with BMI 30+) to 18% by the year 2010.
- Reduce the proportion of adults who are physically inactive (percentage of people aged 18 years and older who report no leisure time activity in the past 30 days) to 15% by the year 2010.
- Increase the proportion of adults who engage in regular, preferably daily, moderate physical activity (percentage of people aged 18 years and older who engage in physical activity five or more sessions per week for 30 or more minutes per session, regardless of intensity) to 40% by the year 2010.
- Increase the proportion of adults who engage in regular and vigorous physical activity (percentage of people aged 18 years and older who engage in physical activity for 3 or more sessions per week, 20 minutes or more per session, at 50% or more capacity) to 25% by the year 2010.
- Increase the number of adults (percentage of persons aged 18 years and older who consume at least 5 daily servings of fruits and vegetables) to 30% by the year 2010.

Healthy Alaskans 2010 Targets for Children and Adolescents

- Reduce the number of low-income children at risk for overweight (percentage of children aged less than 5 years served by WIC with weight-for-height greater than or equal to 85th percentile and less than 95th percentile) to 10% by the year 2010.
- Reduce the number of low-income children who meet the criteria for overweight (percentage of children aged less than 5 years served by WIC with weight-for-height greater than or equal to 95th percentile) to 10% by the year 2010.
- Reduce the number of adolescents at risk for overweight (percentage of high school students grades 9-12 with BMI equal to or greater than 85th percentile and less than 95th percentile) to 12% by the year 2010.
- Reduce the number of adolescents who meet the criteria for overweight (percentage of high school students grades 9-12 with BMI equal to or greater than 95th percentile) to 12% by the year 2010.

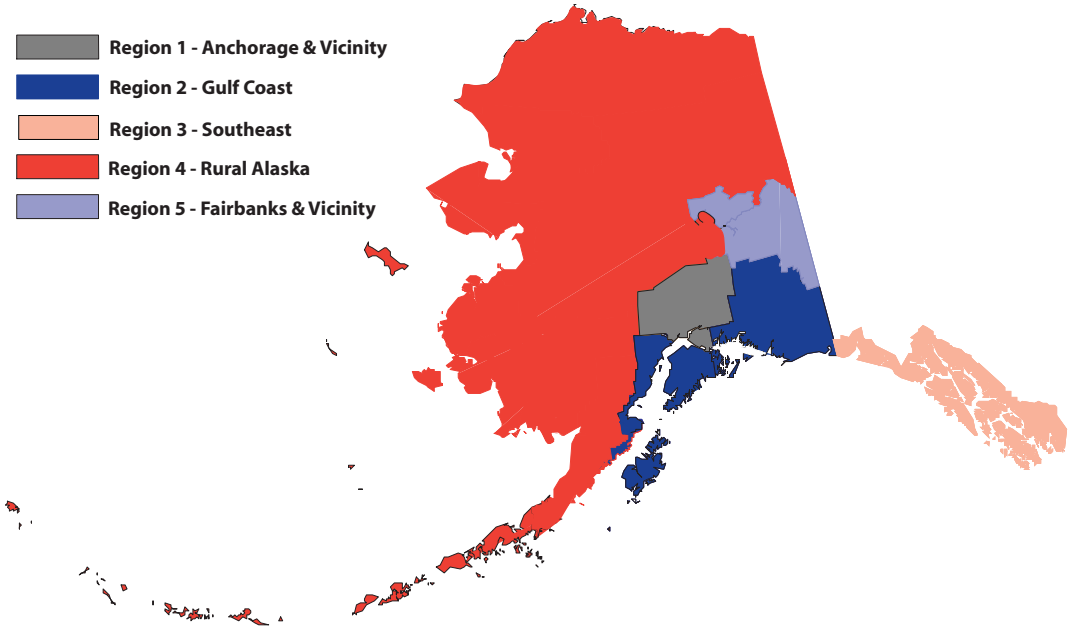
- Increase the proportion of adolescents who engage in vigorous physical activity (percentage of high school students grades 9-12 who exercise or participate in sports activities for at least 20 minutes that cause sweating and heavy breathing on 3 or more of the past 7 days) to 85% by the year 2010.
- Increase the proportion of adolescents who participate in daily school physical education (percentage of high school students grade 9-12 who attend PE class daily) to 45% by the year 2010.
- Increase the proportion of adolescents who are physically active during PE class (percentage of high school students attending PE class who exercise more than 20 minutes per class) to 97% by the year 2010.
- Increase the number of adolescents (percentage of high school students grades 9-12 who consume at least 5 daily servings of fruits and vegetables) to 30% by the year 2010.

Data Overview

The following is an overview of the existing data describing the burden of overweight and obesity in Alaska. This overview includes descriptions of the following, based on data from the Alaskan adult population: (a) trends over the last decade in overweight and obesity, (b) how the burden of overweight and obesity is distributed across several key demographic and behavioral factors, and (c) health correlates of overweight and obesity. Following this is an overview of the burden of overweight experienced by Alaskan children and adolescents, including an examination of the prevalence of overweight across key demographic (sex, race, school level) and behavioral (physical activity and nutrition) factors.

Behavioral Risk Factor Surveillance System Data for Alaskan Adults

Findings for the Alaskan adult population are based on the Alaska Behavioral Risk Factor Surveillance System (BRFSS). The survey was first implemented statewide in 1991 by the Alaska Department of Health and Social Services, Division of Public Health. The Division has continued to implement it annually to survey the day-to-day living habits of adults aged 18 years and older living in Alaska. The BRFSS survey is supported by CDC, and is currently conducted in all 50 states, the District of Columbia and Puerto Rico. The Alaska survey involves anonymous random telephone interviews that are conducted monthly. The annual sample started with 1,534 persons in 1991 and has grown to 2,875 in 2001. Between the years 1991 and 1997 the BRFSS survey was stratified into four geographic regions: 1) Urban, 2) Gulf Coast, 3) Southeast, and 4) Rural. In 1998 the Alaska sample was stratified into five BRFSS regions: 1) Anchorage and vicinity, 2) Gulf Coast, 3) Southeast, 4) Rural Alaska, and 5) Fairbanks and Vicinity. Prior to 1998 Fairbanks and vicinity was combined with Anchorage and vicinity for the urban region. The data collected are statistically adjusted to allow comparable prevalence estimates to be made at both the statewide and regional levels.

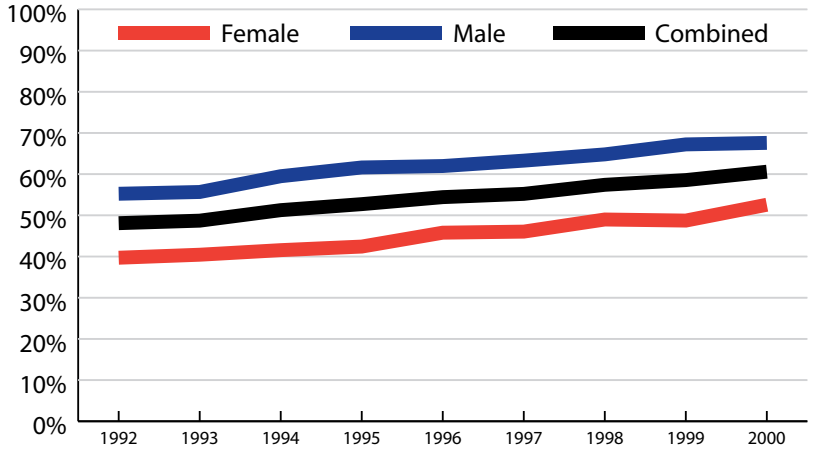


The Alaska BRFSS data reported here are weighted to reflect sex and age compositions of the different regions in Alaska. Subgroup analysis for a single year's data is not always statistically reliable, even with a sample size of nearly 3,000 respondents, so data from three years were combined when available to provide more reliable estimates. Data here are presented for Alaskan males and females, looking at overweight and obesity compared to other demographic characteristics, such as age, race, region, education and income.

Sex

From 1991-1993 to 1999-2001, the prevalence of overweight/obesity in Alaska rose from 48% to 61%, an increase of 26%. Over the course of the decade, Alaskan males consistently experienced a higher prevalence of overweight/obesity than did Alaskan females. However, the percentage of overweight/obesity in both sexes increased over time--32% among females and 22% among males.

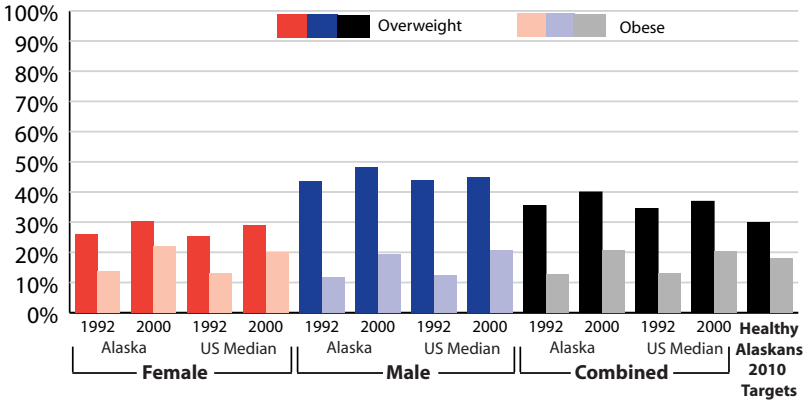
Figure 4
Alaska BRFSS: Percentage of Adults Overweight/Obese by Sex, 1992-2000
(Three-Year Moving Averages, Listed at Midpoint)



Age

Figure 5 illustrates the increase in overweight/obesity over time in the state, and distinguishes between the classifications of overweight and obese. Between 1991-1993 and 1999-2001 the prevalence of overweight among Alaskans increased 13%. The prevalence of overweight increased 17% in among females and 11% among males. The prevalence of obesity among Alaskans increased 63% during this time, with similar trends seen in males and females. In comparison, during this period slightly smaller increases in overweight and obesity were seen in the United States as a whole.

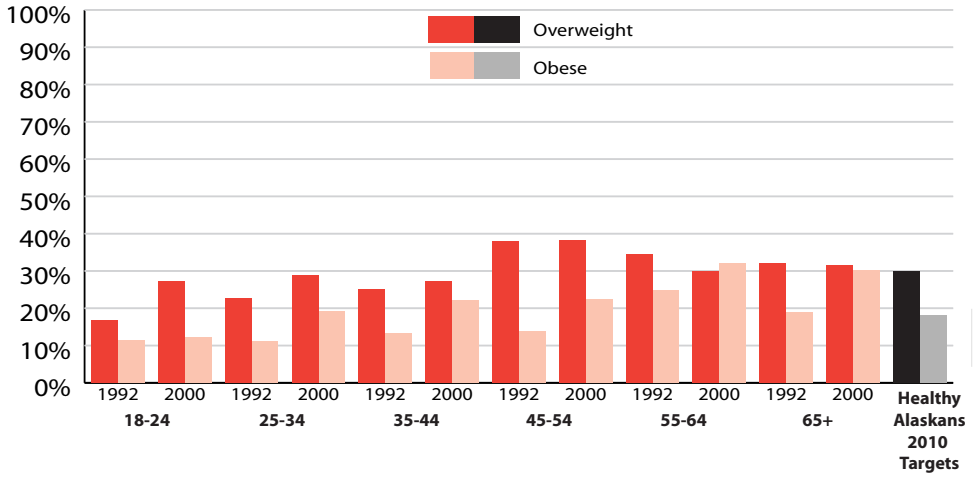
Figure 5
Alaska BRFSS: Percentage of Adults Overweight or Obese, Alaska and US Median by Sex, 1991-1993 and 1999-2001
(Three-Year Averages Listed at Midpoint)



Age

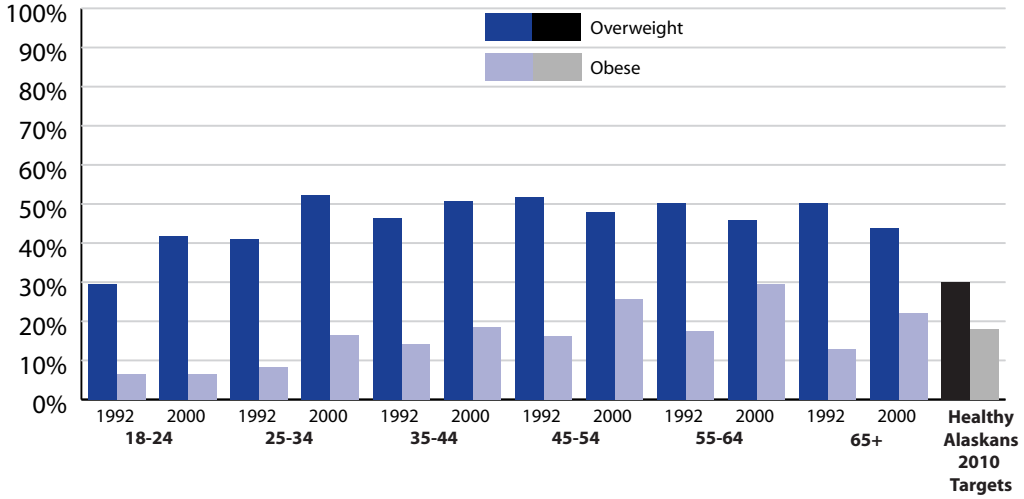
Among Alaskan females, overweight/obesity generally increased with age between 1991-1993 and 1999-2001, but tended to level off in the age groups 55 years and older. Also, within each age group, the percentage of the female population that was overweight or obese tended to increase between the two time periods. The increases in both overweight and obesity were especially evident in the younger age groups.

Figure 6
Alaska BRFSS: Percentage of Female Adults Overweight or Obese, 1991-1993 and 1999-2001
(Three-Year Averages Listed at Midpoint)



As with females, the percentage of Alaskan males who were considered overweight/obese generally increased with age, and changes over time were especially apparent in the younger age groups. The leveling off of prevalence in later life for both sexes, particularly after age 65, may be explained, at least in part, by early mortality among the overweight and obese.

Figure 7
Alaska BRFSS: Percentage of Male Adults Overweight or Obese, 1991-1993 and 1999-2001
(Three-Year Averages Listed at Midpoint)

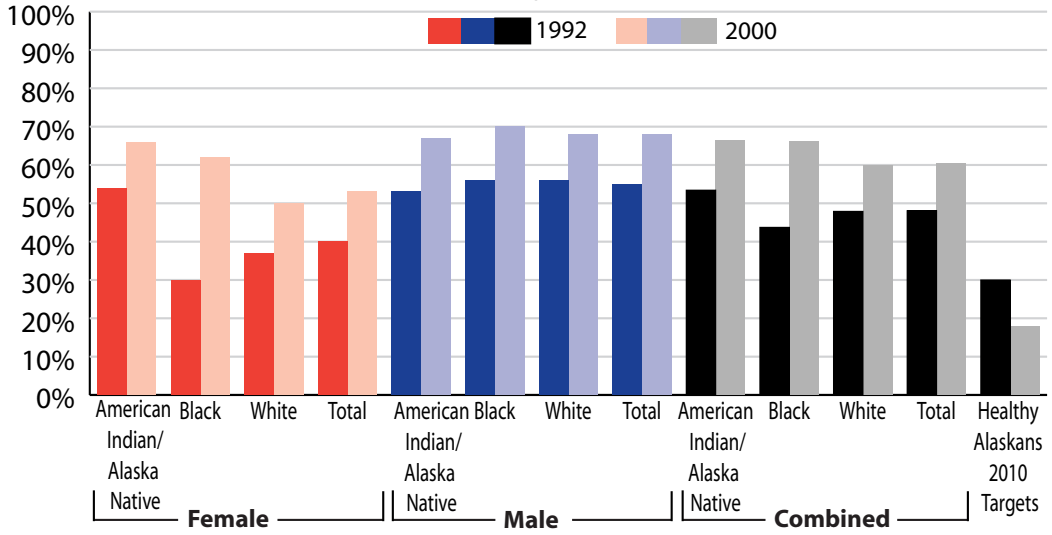


Race

Examination of Alaska BRFSS data by racial group can be statistically unreliable because of the small numbers of individuals in some of the groups. For this reason, only the three largest racial groups are represented in Figure 8.

The racial group who experienced the largest increase in overweight/obesity from 1991-1993 to 1999-2001 was Black Alaskans, among whom prevalence went from 44% to 66%. Among Alaskan females, the group that experienced the largest increase in percent overweight/obese during this time was Black females, with an increase from 30% to 62%. The second largest increase was in White females, among whom overweight/obesity increased from 37% to 50%. Among Alaskan males, the largest increase in percent overweight/obese from 1991-1993 to 1999-2001 was in American Indian/Alaska Native males, among whom overweight/obesity increased from 53% to 67%. The second largest increase was in Black males, who experienced an increase from 56% to 70% overweight/obese.

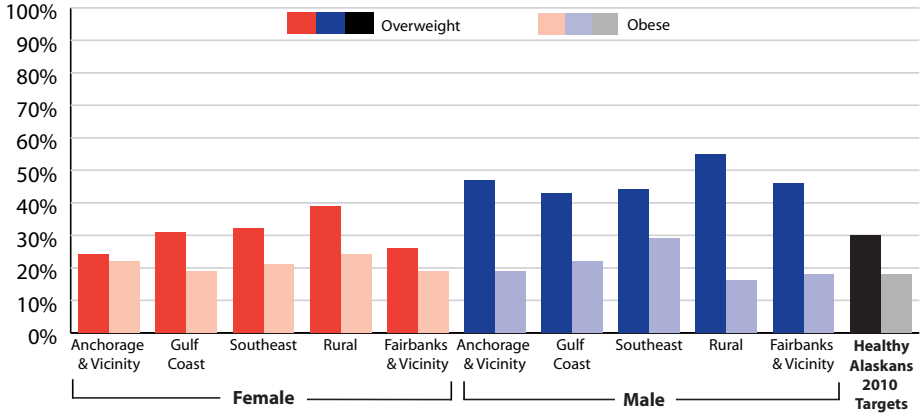
Figure 8
Alaska BRFSS: Adults Overweight/Obese by Race and Sex, 1991-1993 and 1999-2001
(Three-Year Averages Listed at Midpoint)



Regions

Looking at data from 1999-2001 only, there appears to be regional differences in reported overweight/obesity among Alaskan males and in being overweight among Alaskan females. Males in Southeast Alaska were almost twice as likely to be obese as males residing in the rural region, where only 16% of Alaskan males were obese. The prevalence of being only overweight did not vary greatly among Alaskan males by region. Among Alaskan females obesity was similar across regions, but rural females were more likely to report being only overweight than their urban counterparts in the Anchorage and Fairbanks regions. These regional comparisons do not take into account differences in the age structures among populations compared, which could account for some of the prevalence disparities found.

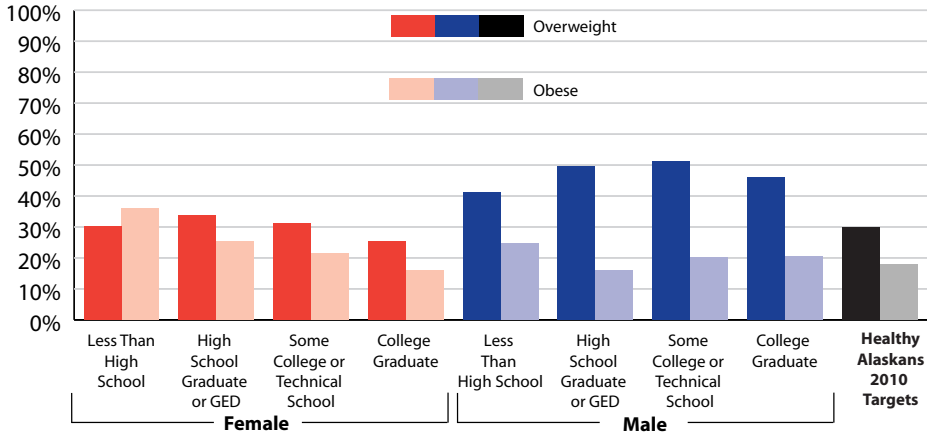
Figure 9
Alaska BRFSS: Percentage of Adults Overweight or Obese by Region and Sex, 1999-2001
(Three-Year Average)



Education

Overweight and obesity are affecting Alaskan adults of all education levels. Alaskan males with a high school diploma /GED or some college or technical school were slightly more likely to be considered overweight. Alaskan females with less than a high school diploma were slightly more likely to be considered obese. For Alaskan females the likelihood of being considered obese decreased as education level increased.

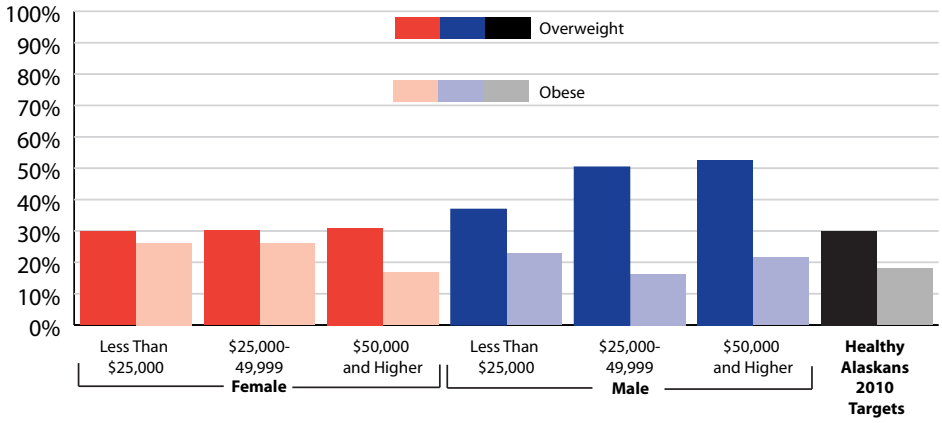
Figure 10
Alaska BRFSS: Percentage of Adults Overweight or Obese by Education Level and Sex, 1999-2001
(Three-Year Average)



Household Income

There was not much variation in prevalence among Alaskan females considered overweight or obese within household income categories. Alaskan males were more likely to be considered overweight as their household income rose. The prevalence of obesity for Alaskan males is fairly similar within all household income categories.

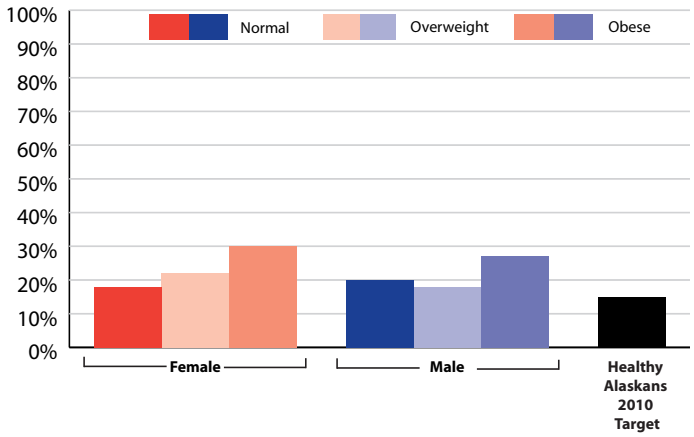
Figure 11
Alaska BRFSS: Percentage of Adults Overweight or Obese by Income Level and Sex, 1999-2001
(Three-Year Average)



Physical Activity

Sedentary lifestyle is a risk factor for obesity and many chronic diseases, and is associated with poor quality of life. Figure 12 shows the prevalence of sedentary lifestyle, as measured by the lack of leisure time physical activity in the past 30 days. Alaskan females and males who were considered obese were most likely to report no leisure time activity in the past 30 days. Alaskan females who were considered overweight were the next most likely to report no leisure time activity in the past 30 days. All weight classes were above the Healthy Alaskans Target of 15% of the Alaskan population reporting no leisure time activity in the past 30 days.

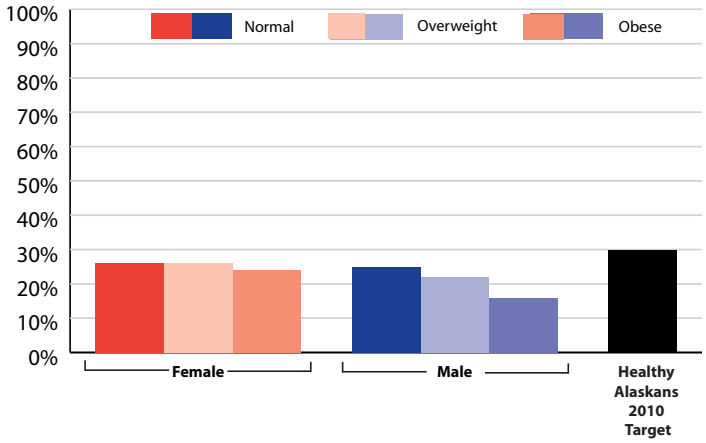
Figure 12
Alaska BRFSS: Adults Who Report No Leisure Time Activity in the Past 30 Days by Weight Class and Sex, 1999-2001
(Three-Year Average)



Nutrition

A dietary pattern with a high intake of vegetables and fruits is associated with a variety of health benefits. Figure 13 shows the percentage of Alaskan adults that reported consuming at least 5 servings of fruits and vegetables daily by each weight class. All weight classes were below the Healthy Alaskan 2010 Target of 30% of the Alaskan population consuming at least 5 daily servings of fruits and vegetables. Alaskan males who were considered overweight/obese were the furthest from meeting the goal. Alaskans of normal weight and Alaskan females considered overweight were the closest to reaching the goal. Fruits and vegetables are sometimes scarce in rural Alaskan communities, and that is an important consideration when looking at how many people reach the goal.

Figure 13
Alaska BRFSS: Adults Who Consume at Least 5 Daily Servings of Fruits and Vegetables per Day by Weight Class and Sex, 2000
(Actual Year)



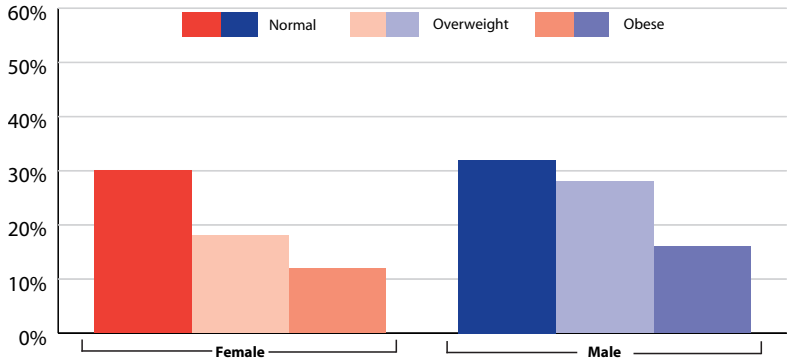
Health Correlates of Overweight and Obesity

The next set of figures show how overweight and obesity are associated with each of several self-reported health outcomes, including general health status, number of "poor health days", high cholesterol, hypertension, diabetes, arthritis, and asthma.

General Health Status

Alaskan adults of normal weight were most likely to report they were in excellent health. Alaskan adults who were considered obese were the least likely to report excellent health. As overweight/obesity increased for both sexes the likelihood of reported excellent health decreased.

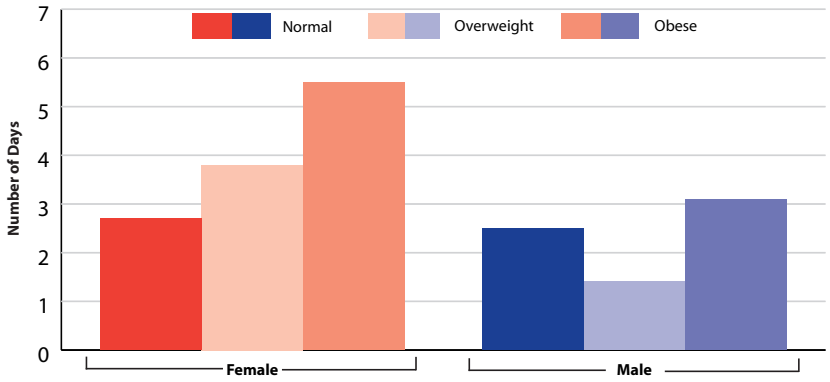
Figure 14
Alaska BRFSS: Adults Reporting Excellent Health Status by Weight Class and Sex, 1999-2001
(Three-Year Average)



Poor Physical Health

Figure 15 shows that Alaskan females of normal weight reported having 2.7 days out of the last 30 days that their physical health was not good, overweight females reported 3.8 days, and obese females reported 5.5 days. Alaskan males of normal weight reported having 2.5 days out of the last 30 days that their physical health was not good, overweight males reported 1.4 days, and obese males reported 3.1 days. Obese females reported the highest number of days that they felt their physical health was not good out of the last 30 days.

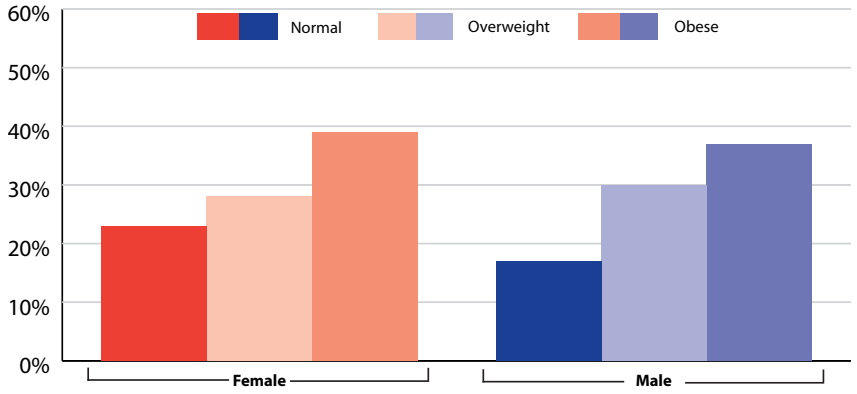
Figure 15
Alaska BRFSS: Adults Number of Days Physical Health Not Good by Weight Class and Sex, 2000
(Actual Year)



High Cholesterol

High cholesterol is often seen with overweight/obesity and both are risk factors for many chronic diseases. In 2001, 73% of Alaskan adults reported that they had been tested for high cholesterol. Among Alaskan adults tested for high cholesterol, overweight/obese males and females were most likely to have reported high cholesterol levels.

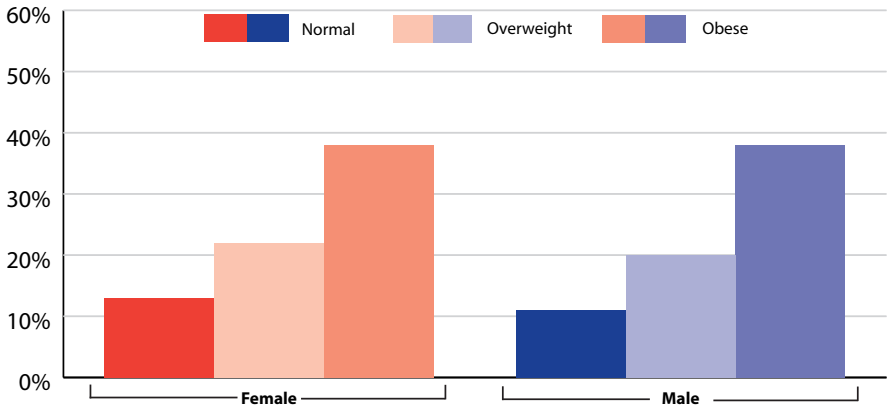
Figure 16
Alaska BRFSS: Adults Ever Told Have High Cholesterol by Weight Class and Sex, 2000
(Actual Year)



Hypertension

Hypertension is often seen with overweight/obesity and both are risk factors for many chronic diseases. Similar to the previous figure illustrating the prevalence of high cholesterol by weight class, this figure of hypertension by weight class demonstrates the relationship between hypertension and overweight/obesity. The Alaskans considered overweight/obese were most likely to have reported being told by a health care professional that they had high blood pressure.

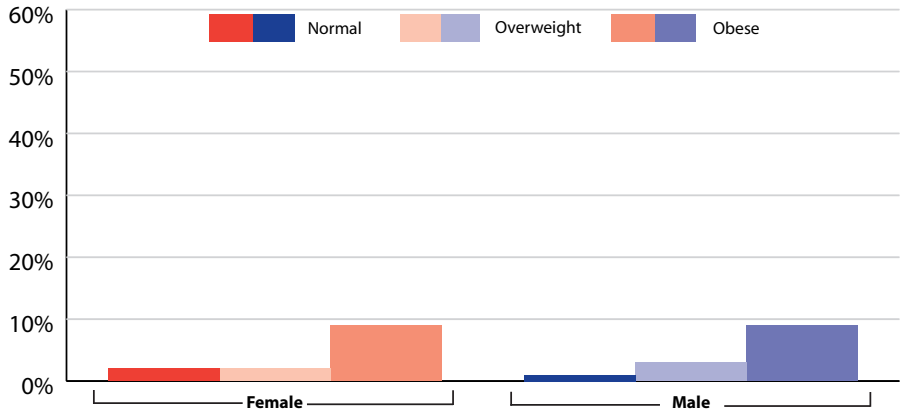
Figure 17
Alaska BRFSS: Adults Ever Told Have High Blood Pressure by Weight Class and Sex, 2001
(Actual Year)



Diabetes

The relationship between diabetes and overweight/obesity is illustrated by Figure 18. Alaskans who were considered obese were the most likely to have reported being told by a health care professional that they had diabetes. Although this data set is relatively small because the absolute number of diabetic individuals surveyed is relatively small (approximately 60 people per year), this three-year average demonstrates the close link between overweight/obesity and diabetes, and how the epidemic of diabetes is closely linked to the epidemic of obesity.

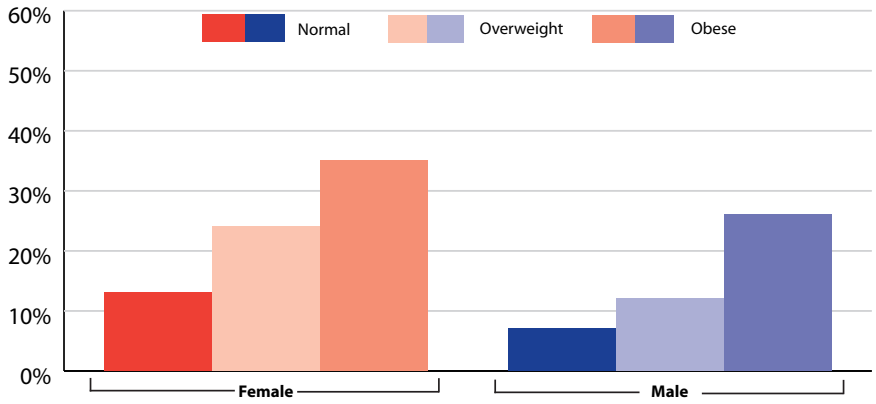
Figure 18
Alaska BRFSS: Adults Ever Told Have Diabetes by Weight Class and Sex, 1999-2001
(Three-Year Average)



Arthritis

Arthritis, like other chronic diseases, is associated with overweight/obesity. Alaskans who were considered overweight/obese were most likely to have reported being told by a health care professional that they had arthritis. The outcomes of arthritis are negatively affected by being overweight or obese, and can more severely affect quality of life.

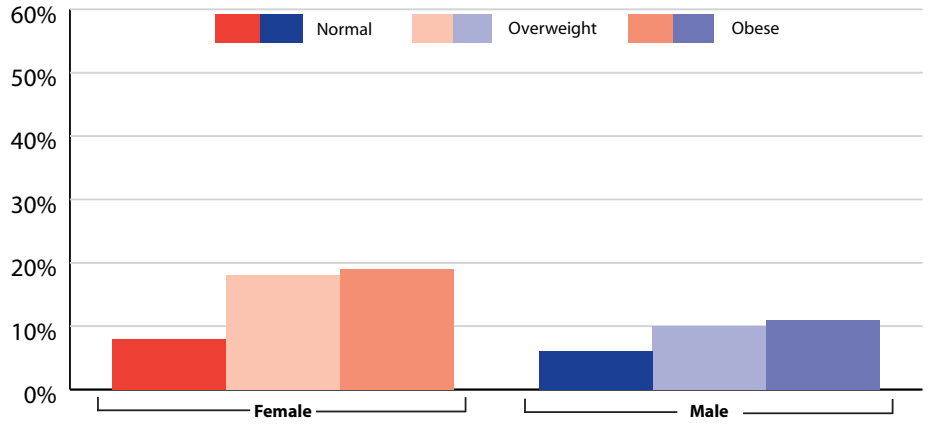
Figure 19
Alaska BRFSS: Adults Ever Told Have Arthritis by Weight Class and Sex, 2001
(Actual Year)



Asthma

In 2001, there was a positive relationship between overweight/obesity and asthma in Alaskan females and males. Alaskan adults who were considered overweight/obese were most likely to have reported being told by a health care professional that they had asthma.

Figure 20
Alaska BRFSS: Adults Ever Told Have Asthma by Weight Class and Sex, 2001
(Actual Year)



Weight Control

According to the Alaska BRFSS in the year 2000, 37% of Alaskan adults were trying lose weight. More Alaskan females than males were trying to lose weight. Thirteen percent of Alaskan adults were given advice from a doctor, nurse or other health professional about their weight.

Among overweight Alaskan adults, 41% were trying to lose weight. Among overweight Alaskan females, 59% were trying to lose weight while 31% of overweight Alaskan males were trying to lose weight. Among overweight Alaskan females, 15% were eating fewer calories, 28% were eating less fat and 29% were eating fewer calories and less fat. Among overweight Alaskan males, 18% were eating fewer calories, 29% were eating less fat and 18.4% were eating fewer calories and less fat. Among overweight Alaskan adults who were trying to lose weight or maintain their current weight, 71% were using physical activity or exercise to lose weight or keep from gaining weight.

Among obese Alaskan adults, 62% were trying to lose weight. Among obese females, 62% were trying to lose weight while 60% of obese males were trying to lose weight. Of obese adults trying to lose weight or maintain their weight, 15% were eating fewer calories, 35% were eating less fat, and 22% were eating less calories and less fat. Among obese adults who were trying to lose weight or maintain their current weight, 65% were using physical activity or exercise to lose weight or keep from gaining weight.

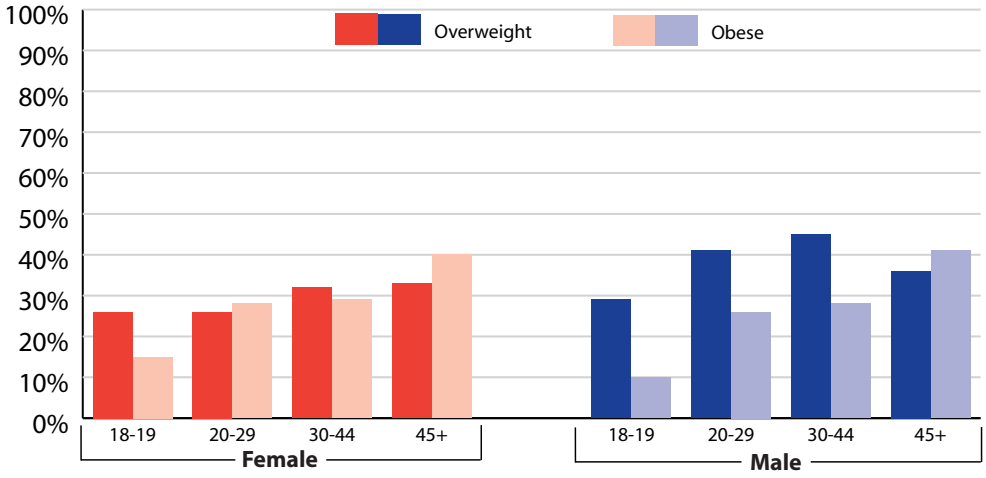
Resource Patient Management System Data for Alaskan Adults

Limited data on levels of obesity among Alaskan adults are also available from the Resource Patient Management System (RPMS). This system is a database of selected patient visit information originating from visits to regional Alaska Native hospitals, community health centers, and village health clinics.

Overweight and obesity prevalence estimates obtained from the RPMS system have the advantage of being based on measured rather than self-reported height and weight. In addition, prevalence estimates coming from the RPMS data are based on a very large number of cases: the RPMS data describe over 10,000 hospital/clinic visits per year. These data also have several limitations. Not all patient visits to regional Alaska Native hospitals, community health centers, and village health clinics are included. It is unclear how those visits that are recorded differ from others. Although data on patient race are not available, RPMS administrators have estimated that 85% to 95% of visits represent Alaska Native patients; clearly the data are not representative of the racial composition of the entire state. Similarly, RPMS data are biased toward the more rural healthcare facilities. Data are collected during healthcare visits. Given the association between obesity and various chronic diseases and health problems, one might expect data based on a patient population to over-represent the overweight and obese. Furthermore, height and weight are not measured at every single visit. Weight may be more likely to be measured when the healthcare provider is concerned about overweight or obesity.

The Section of Public Health Nursing, Alaska Division of Public Health provided data on all patient visits during 2000 in which height and weight measurements were taken. Recorded height and weight values from individual patients were analyzed. Extreme low or high height values, and extreme low weight values were identified and removed from the dataset, resulting in a total sample of 3,757 adult records. Body mass index and the cut-offs for overweight and obesity were calculated in the same manner as was done with the BRFSS data.

Figure 21
Alaska RPMS: Adults Overweight or Obese by Sex and Age Group, 2000
(Actual Year)



As seen with the BRFSS data, this figure shows that levels of overweight and obesity generally increased with age. Alaskan males between 20 and 44 appear to be more likely than Alaskan females of the same age to be overweight; there is little difference in the prevalence of obesity by sex. By age 45, over three-quarters of both females and males in this sample met the definition of overweight or obesity.

Youth Risk Behavior Survey for Alaskan Children and Adolescents

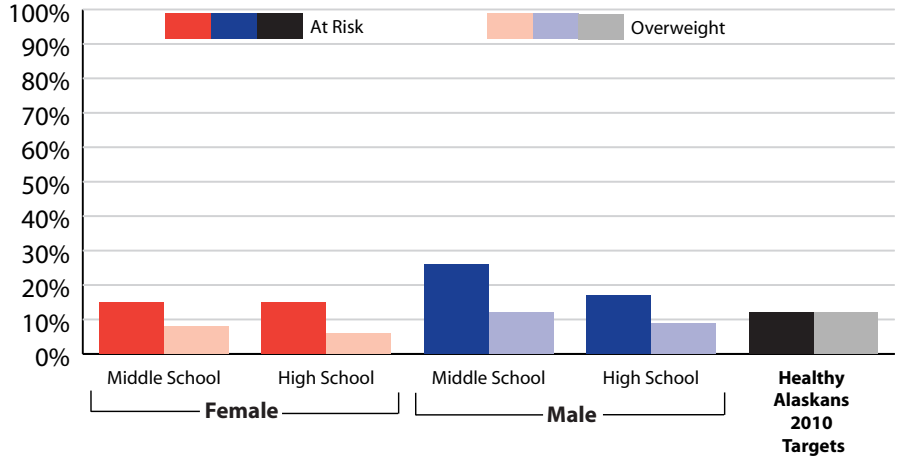
Alaska has one point in time survey from which overweight status of youth can be estimated. The 1999 Youth Risk Behavior Survey (YRBS) was a random sample of students enrolled in public school that year, and results for students in grades 9 through 12 are statistically adjusted to represent most Alaskan high school students. Unfortunately, the Anchorage school district chose not to participate in the in the 1999 YRBS survey. However, the 1999 YRBS survey results do provide representative prevalence data for the state's student population excluding Anchorage. The 1999 YRBS survey was also administered to middle school students (grades 7 and 8). The middle school survey failed to meet statistical standards for statewide adjustment but does represent the health risk characteristics of a fairly large number of students in the middle school grades.

This next section examines the prevalence of overweight among Alaskan youth, by sex, school-level, and race.

Middle School/High School

In 1999, 15% of both female middle school and high school students were considered at risk for becoming overweight ($\geq 85^{th}$ and $< 95^{th}$ percentile BMI). Among male students, 26% of those in middle school and 17% in high school were considered at risk. Those female students considered overweight ($\geq 95^{th}$ percentile BMI) represented 8% of females in middle school and 6% in high school. Among males students, 12% in middle school and 9% in high school were considered overweight.

Figure 22
Alaska YRBS: Middle School and High School Students At Risk for Overweight or Overweight by School Level and Sex, 1999

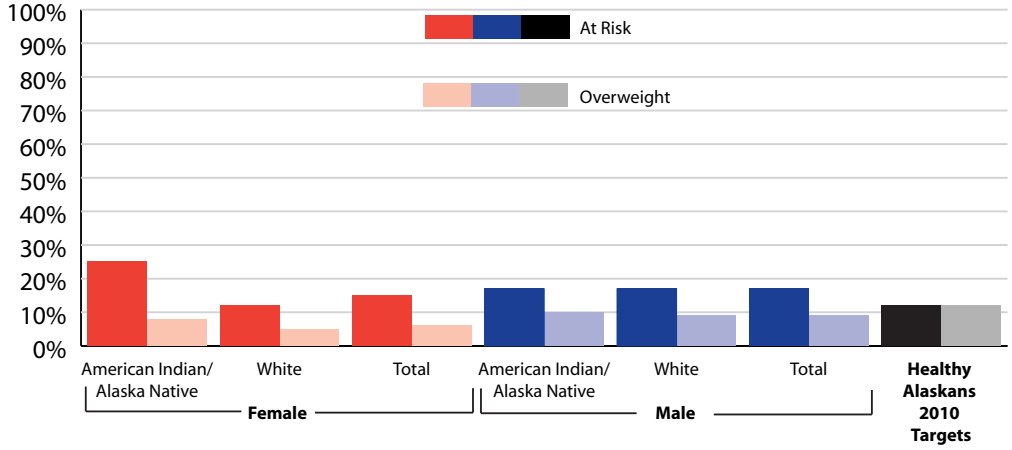


Due to the smaller size of the middle school sample, the remainder of the YRBS data presented below focus on only high school aged children.

Race

Among high school girls, there were large differences in the prevalence of both overweight and obesity across the two major race groups, with more American Indian/Alaska Native girls being overweight or at risk of becoming overweight than White girls. In comparison to girls, there was little variation by race in the prevalence of overweight/obesity among high school boys.

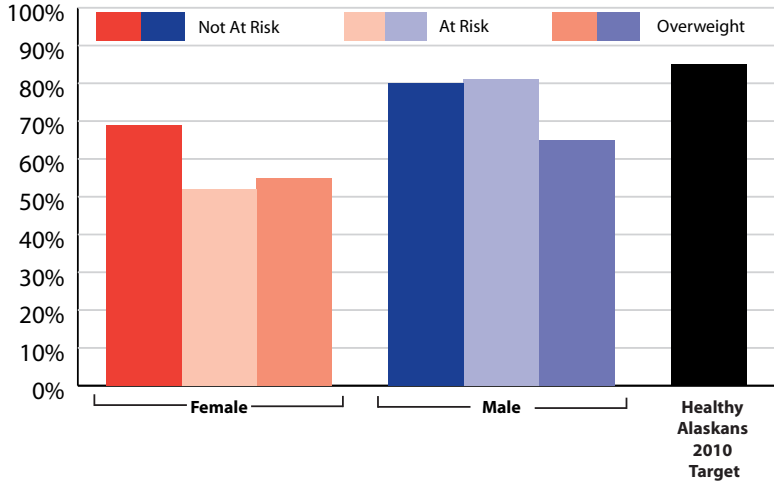
Figure 23
Alaska YRBS: High School Students At Risk for Overweight or Overweight by Race and Sex, 1999



Physical Activity

The important aspect of this figure is that all high school students were below the Healthy Alaskan 2010's target for vigorous activity. High school girls seem to be less active than high school boys, especially girls in the at risk and overweight categories.

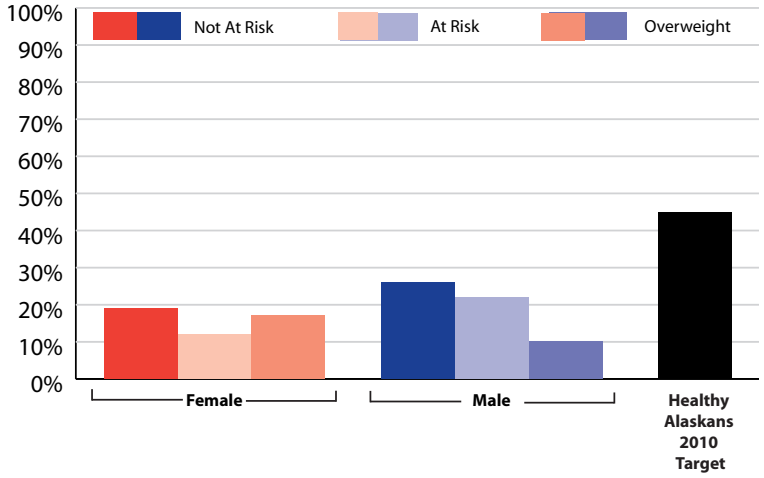
Figure 24
Alaska YRBS: High School Students Engaging in Vigorous Exercise for At Least 20 Minutes on 3 or More Days of the Past 7 Days by Weight Status and Sex, 1999



Physical Activity (cont.)

The most striking aspect of the below figure is how few high school students, regardless of risk status for overweight, participate in daily physical education. It seems that for both males and females the group most likely to participate in daily physical education is the not at risk group. Among high school girls, those at risk of becoming overweight had the lowest prevalence of daily PE participation, whereas the overweight and not at risk weight groups reported similar, relatively higher levels of daily PE participation. For boys, the descent was gradual with the smallest percentage of high school youths participating in daily physical activity among those meeting the definition of overweight.

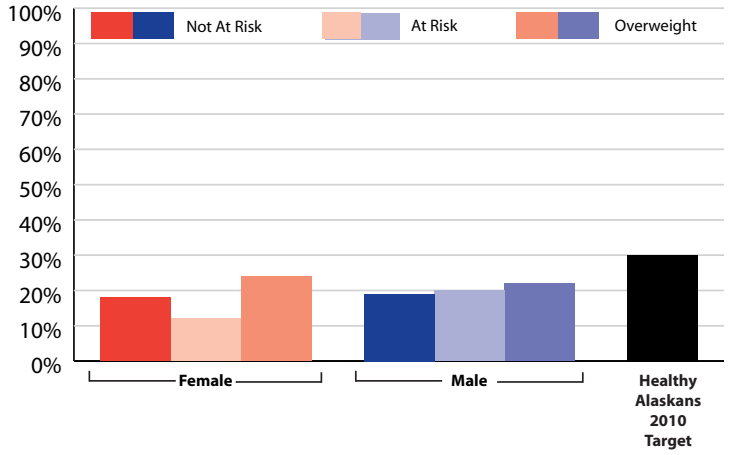
Figure 25
Alaska YRBS: High School Students Participating in Daily School Physical Education by Weight Status and Sex, 1999



Nutrition

In Figure 26 it is clear that neither female nor male high school students are meeting the Healthy Alaskan 2010's target of consuming of 5 servings of fruits or vegetables daily. In 1999, overweight students were the most likely to be eating 5 or more servings of fruits and vegetables daily.

Figure 26
Alaska YRBS: High School Students Eating 5 or More Servings of Fruits and Vegetables per Day by Weight Status and Sex, 1999

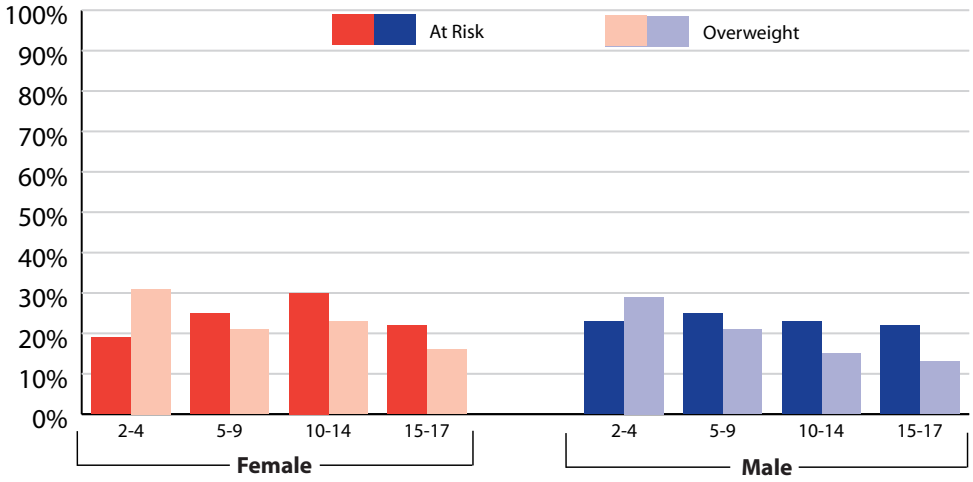


Resource Patient Management System Data for Alaskan Children and Adolescents

The RPMS database also contains measured height and weight data on children and adolescents. The limitations outlined previously in reference to the adult data available from RPMS also apply to the youth data. Extreme height and weight values were identified and removed. Body mass index was calculated using the standard formula, and at risk of overweight and overweight was determined using the 85th and 95th percentiles of the age-sex specific 2000 CDC growth charts.

For both girls and boys, the prevalence of overweight decreases with age, while the prevalence of being at risk of overweight stays relatively constant. One deviation from this general pattern is seen among girls, who appear to experience an increase in the prevalence of both overweight and being at risk of overweight between 10 and 14 years of age.

Figure 27
Alaska RPMS: Children and Adolescents (2-17) At-Risk of Overweight or Overweight by Sex and Age Group, 2000



Limitations and Gaps in Data

This report was intended to provide as accurate a picture as possible of the burden of overweight and obesity in Alaska. In the process of collecting, integrating, and summarizing the available obesity data, it became apparent that there were several data gaps that may limit the scope of this report. The gaps in available data include limitations in the populations assessed as well as the methods used to assess obesity.

The data presented in this document to describe the extent of obesity largely came from the Alaska Behavioral Risk Factor Surveillance System (BRFSS) and the Alaska Youth Risk Behavior Survey (YRBS). The strength of these surveillance systems is that they are designed to provide ongoing estimates of risk factor prevalence that are weighted to be representative of the entire state. One limitation is that estimates of obesity are based on self-reports of height and weight rather than objective measurements. Also, although both the BRFSS and YRBS collect data in a manner designed to provide estimates representative at both the state and region level, small numbers preclude examination of data for certain population subgroups. It is possible that social desirability may cause adolescents and adults to either under- or over-estimate height and weight values. A recent review article found the BRFSS height and weight data to have high reliability and validity, although weight tends to be slightly underreported by females.[11,12] The findings from two BRFSS validity studies suggest that BRFSS data underestimate BMI by about 5 percent.[12,13]

In addition, although the YRBS was designed to provide ongoing, representative risk factor prevalence estimates, active parental consent and the attendant administrative burden have threatened the collection of representative YRBS data in Alaska. Currently, only a single year of representative height and weight data for adolescents is available, and it is unclear whether these obstacles will be overcome in the near future. Furthermore, neither surveillance system captures data on elementary or preschool-aged children.

Both adult and youth data from the RPMS system provided the only measured height and weight estimates. These data certainly make a contribution to understanding the burden of obesity in Alaska. Given the many limitations of this data however, there still remains a need for objectively-measured obesity data on Alaskan adults, children, and adolescents. Moreover, the RPMS data did not allow an assessment of trends in overweight and obesity over time.

Obesity Data Workgroup

Through the State Obesity Program the Obesity Data Workgroup was formed and consists of members from the following organizations: State of Alaska Department of Health & Social Services, Division of Public Health, Section of Epidemiology; State of Alaska WIC program; State of Alaska Department of Education; Alaska Native Health Board - Epidemiology; Alaska Native Tribal Health Consortium; Alaska Native Medical Center; and the University of Alaska Center for Native Health Research. The Obesity Data Workgroup has conducted an analysis of existing data on overweight and obestiy in Alaska, determined gaps in existing data, and created a plan to address those gaps and for continued long-term surveillance of overweight and obesity in Alaska.

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Appendices

Appendix A — BMI Chart

Body Mass Index (BMI) Table

BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height	***Weight (in pounds)***																
4'10" (58")	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
4'11" (59")	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
5' (60")	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
5'1" (61")	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
5'2" (62")	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
5'3" (63")	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
5'4" (64")	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
5'5" (65")	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
5'6" (66")	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
5'7" (67")	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223
5'8" (68")	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230
5'9" (69")	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236
5'10" (70")	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243
5'11" (71")	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
6' (72")	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
6'1" (73")	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
6'2' (74")	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272
6'3' (75")	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279

Source: Evidence Report of Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults, 1998. NIH/National Heart, Lung, and Blood Institute (NHLBI)

Appendix B — CDC Growth Charts — Boys

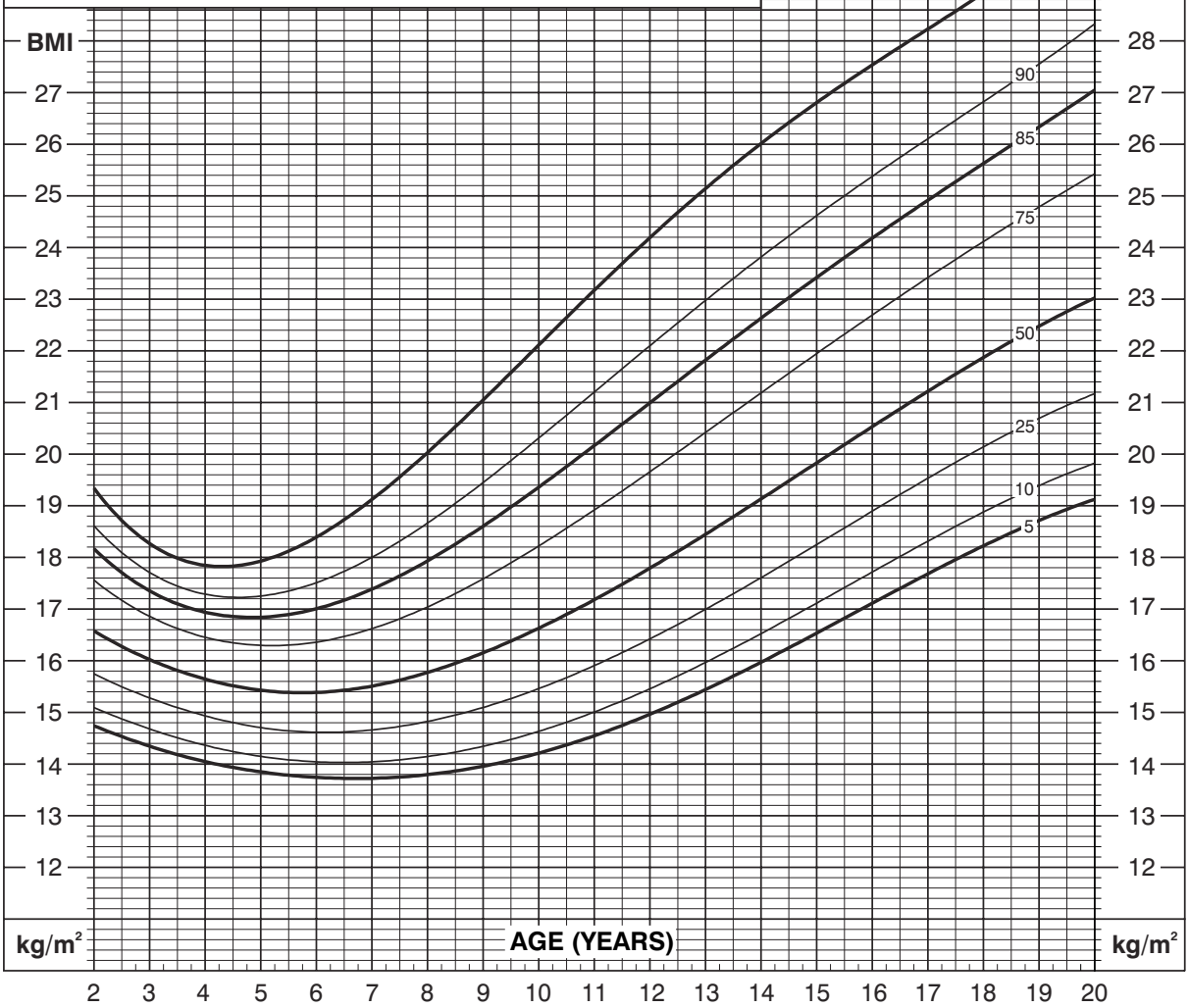
2 to 20 years: Boys
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

***To Calculate BMI**: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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Appendix B — CDC Growth Charts — Girls

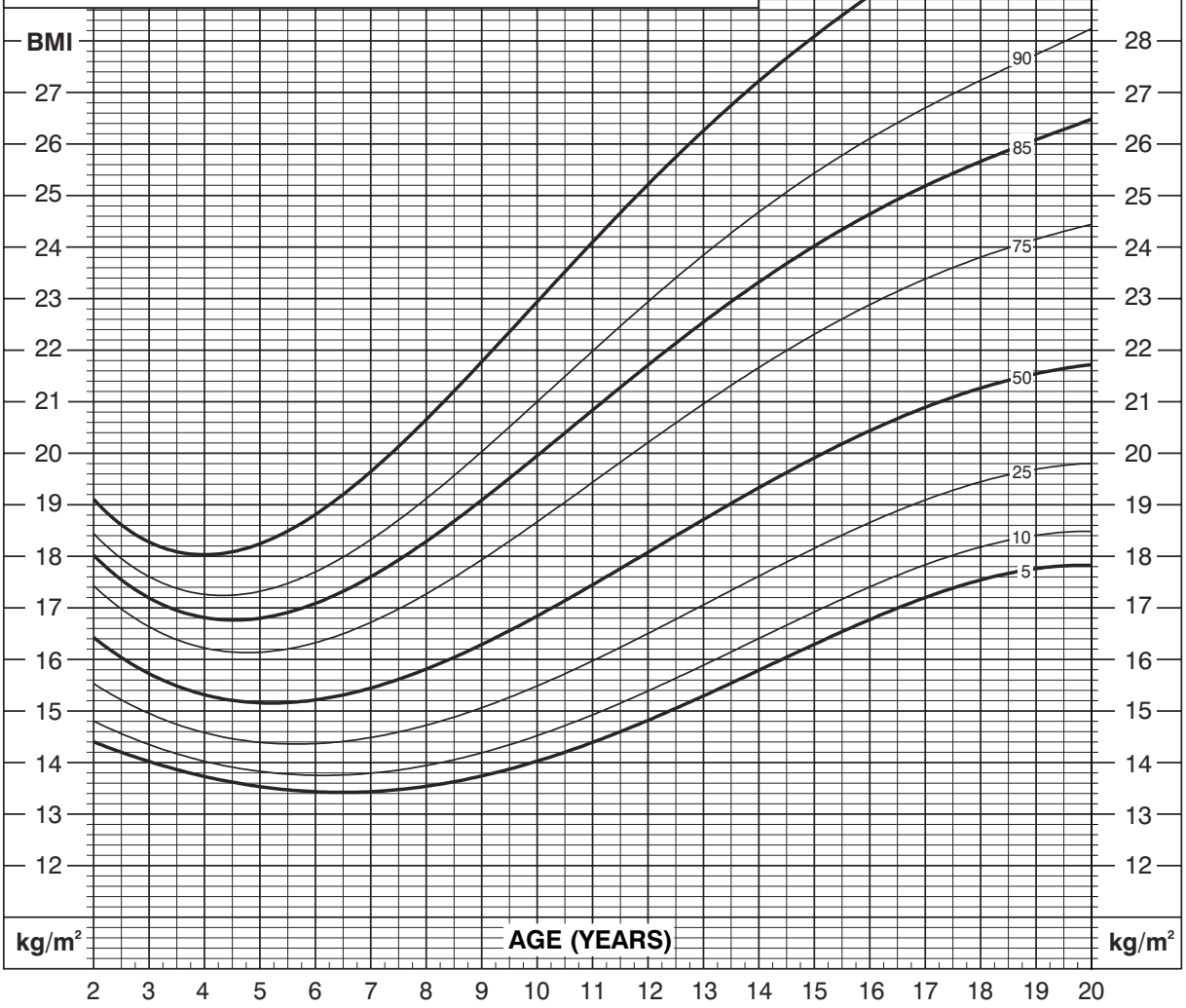
2 to 20 years: Girls
Body mass index-for-age percentiles

NAME _____

RECORD # _____

Date	Age	Weight	Stature	BMI*	Comments

***To Calculate BMI**: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
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