



New Hampshire Obesity Data Book 2010

New Hampshire Department of Health and Human Services
Division of Public Health Services
Bureau of Population Health and Community Services
Obesity Prevention Program



New Hampshire Obesity Data Book 2010

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Executive Summary

New Hampshire Obesity Data Book, 2010 is a collection of data from a variety of sources through 2008. Data sources include the Behavioral Risk Factor Surveillance System, National Survey of Children's Health, Youth Risk Behavior Surveillance System, Pediatric Nutrition Surveillance System, National Immunization Survey, the New Hampshire Head Start Survey, and the New Hampshire Third Grade Survey.

Overweight and obesity increase the risk of developing chronic diseases such as heart disease, type 2 diabetes, stroke, high blood pressure, and some cancers. It is associated with nonalcoholic fatty liver disease, gallstones, orthopedic problems, and depression.

Nationally, obesity has been increasing among males and females in all age groups and in all socioeconomic backgrounds. Contributing factors include a social environment that supports physical inactivity, excessive food consumption, and unhealthy food choices. To help communities reverse this trend, the Common Community Measures for Obesity Prevention Project was initiated to create a set of community measurements to be used for community planning, evaluation, and research. The 24 measures focus on policy and environmental strategies that impact obesity rates.

New Hampshire specific data indicate the following burden:

Current Obesity Rates in New Hampshire

Low income children, 2-5 years old	15.5%
Third grade students enrolled in public schools	18.0%
High school students	11.7%
Adults	24.9%

Current Obesity Risk Factors in New Hampshire

Inadequate Physical Activity

Children, 6-17 years old	71.0%
High school students	53.1%
Adults	46.0%

Excessive Television Viewing

Low income children, 2 to 5 years old	12.7%
High school students	25.1%

Inadequate Fruit and Vegetable Consumption

High school students	77.7%
Adults	71.5%

Introduction

New Hampshire Obesity Data Book, 2010, the first comprehensive compilation of New Hampshire obesity rates and trends, documents the magnitude of this public health problem in our state. The report also examines contributing factors such as excessive television viewing time, excessive consumption of sugar-sweetened beverages, inadequate physical activity, and inadequate fruit and vegetable consumption.

Both overweight and obesity increase the risk of chronic diseases such as type 2 diabetes, heart disease, and high blood pressure. They are also associated with nonalcoholic fatty liver disease, gallstones, orthopedic problems, and depression.

Obesity and overweight have increased markedly in recent years. Contributing factors include a social environment that supports physical inactivity, excessive food consumption, and unhealthy food choices.

The New Hampshire Department of Health and Human Services, Obesity Prevention Program (OPP) is part of a consortium of organizations working to support the implementation and evaluation of the comprehensive state plan, the Healthy Eating, Active Living (HEAL), to prevent and control obesity. OPP serves all state residents and is funded by a five-year cooperative agreement with the Centers for Disease Control and Prevention (CDC).

In accordance with the recommendations of CDC, the OPP focuses on six target areas:

- Increasing physical activity
- Decreasing television viewing
- Increasing breastfeeding initiation, duration, and exclusivity
- Decreasing consumption of sugar-sweetened beverages
- Decreasing consumption of high-energy-dense foods
- Increasing consumption of fruits and vegetables

Technical Notes

Data Sources

New Hampshire Obesity Data Book, 2010 is a collection of data from a variety of sources through 2008. Data sources include the Behavioral Risk Factor Surveillance System, National Survey of Children's Health, Youth Risk Behavior Surveillance System, Pediatric Nutrition Surveillance System, National Immunization Survey, the New Hampshire Head Start Survey, and the New Hampshire Third Grade Survey.

Chronic Disease Indicators

New Hampshire Obesity Data Book, 2010 builds upon chronic disease indicators (CDI), a set of 98 indicators that were developed by consensus of the Council of State and Territorial Epidemiologists and Chronic Disease Directors. The CDI allow states and territories to uniformly define, collect, and report chronic disease data that are important to public health practice. Eight of those recommended chronic disease indicators are related to physical activity and nutrition. They are included in this data book and marked with the "CDI" in the upper right-hand corner.

Confidence Intervals

Throughout this data book, survey data are presented with 95% confidence intervals. Confidence intervals reflect the degree of certainty for each data point. For example, in 2008, 24.9% of New Hampshire adults reported being obese with a 95% confidence interval of 23.5% to 26.3%. This means that while the best estimate is 24.9%, the range that is likely to capture the true value 95 percent of the time could be as low as 23.5% or as high as 26.3%.

Statistical Significance

The confidence interval can be used to evaluate the statistical significance between two rates. If the interval for one rate does not overlap the interval for another, it is very likely that the difference between the rates is statistically significant. If the confidence intervals do overlap, no statistically significant difference between the rates being compared was detected. This could mean that no difference actually exists, or if they are survey data it could mean that a difference does exist but was not detected due to insufficient sample size.

Data Sources

Behavioral Risk Factor Surveillance System (BRFSS)

Since 1984, the BRFSS uses a population-based telephone survey to assess behavioral risk factors of American adults 18 years old and older. Body mass index (BMI), fruit and vegetable intake, and physical activity are assessed as behavioral risk factors. The BRFSS provides national and state level data. Since 2005, BRFSS has also provided county-level data for New Hampshire.

Available from: <http://www.cdc.gov/brfss/>

National Survey of Children's Health (NSCH)

The NSCH assesses health indicators of children, youth and families using a population-based telephone survey. The survey was conducted twice, in 2003 and 2007. The NSCH data sets provide national and state health estimates based on representative population samples.

Available from: <http://www.nschdata.org/Content/Default.aspx>

Youth Risk Behavior Surveillance System (YRBSS)

The YRBSS monitors health risk behaviors that contribute to the leading causes of death, disability, and social problems among youth in the United States. Questions related to nutrition and physical activity are also included. The YRBSS is self-reported data that includes surveys of representative samples of high school students in grades 9-12.

Available from: <http://www.cdc.gov/HealthyYouth/yrbs/index.htm>

Pediatric Nutrition Surveillance System (PedNSS)

PedNSS is a program-based public health surveillance system. It describes the nutrition status of low-income U.S. children who participate in federally-funded maternal and child health and nutrition programs. PedNSS provides data on the prevalence and trends of BMI, and nutrition-related indicators including breastfeeding.

Available from: <http://www.cdc.gov/PEDNSS/>.

National Immunization Survey (NIS)

NIS is a random digit dialed telephone survey providing current national, state, and selected urban-area data. NIS provides estimates of vaccination coverage for U.S. children ages 19 to 35 months. Since July 2001, breastfeeding questions have been asked on the NIS to assess current breastfeeding practices.

Available from: <http://www.cdc.gov/vaccines/stats-surv/imz-coverage.htm>

New Hampshire Head Start Survey (NHHS)

During the 2007-2008 school year, the NHHS was conducted collaboratively by the New Hampshire Department of Health and Human Services and the New Hampshire Head Start Program. The survey directly assessed the oral health and height/weight status of a representative sample of children enrolled in New Hampshire Head Start.

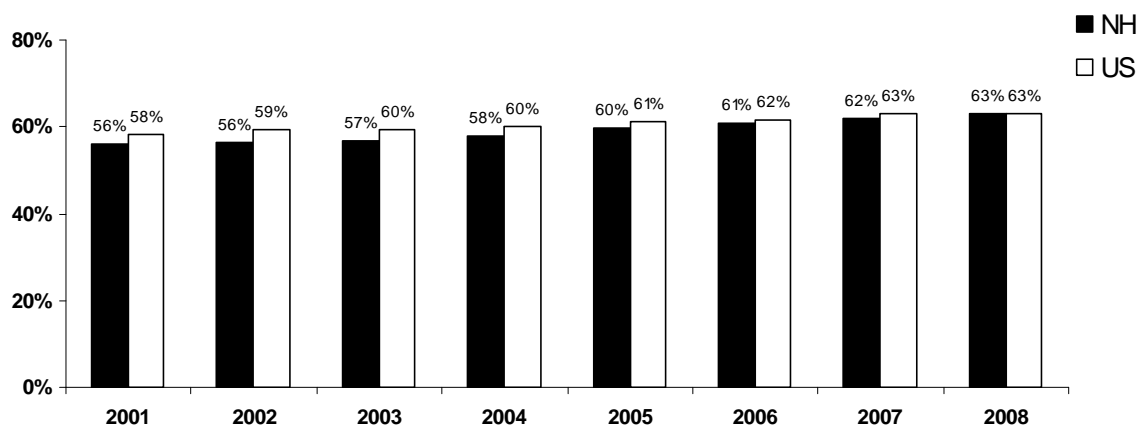
New Hampshire Third Grade Survey (NHTGS)

NHTGS assessed the weight status and oral health of third grade students during the 2008-2009 school year. A representative sample of students enrolled in public schools provided prevalence estimates of overweight and obesity in New Hampshire.

Behavioral Risk Factor Surveillance System

Overweight and Obesity Among Adults

Adults who were overweight or obese, New Hampshire and United States, 2001-2008



Adults who were overweight or obese, New Hampshire, 2008

	Overweight		Obese	
	%	95% CI	%	95% CI
Total	38.2	36.6-39.8	24.9	23.5-26.3
Male	47.0	44.5-49.6	27.0	24.8-29.2
Female	29.4	27.6-31.2	22.7	20.9-24.5
Age				
18-24	31.6	23.8-39.4	13.6	7.7-19.5
25-34	34.2	29.5-38.9	24.8	20.7-28.9
35-44	38.8	35.3-42.3	26.4	23.3-29.5
45-54	38.9	35.8-42.0	27.4	24.7-30.1
55-64	41.9	38.8-45.0	29.0	26.3-31.7
65+	41.1	38.6-43.6	23.4	21.0-25.8
Income				
<15,000	26.6	21.1-32.1	35.6	28.9-42.3
15,000-24,999	35.2	30.1-40.3	29.3	24.2-34.4
25,000-34,999	34.2	29.3-39.1	30.9	26.0-35.8
35,000-49,999	43.3	39.0-47.6	23.4	20.1-26.7
50,000-74,999	37.9	34.0-41.8	28.0	24.5-31.5
75,000+	40.7	38.0-43.4	20.7	18.5-22.9
Education				
< 12 years	35.7	28.4-43.0	33.4	26.7-40.1
12 years	40.5	37.4-43.6	27.8	24.9-30.7
12-16 years	34.4	31.3-37.5	28.4	25.3-31.5
> 16 years	39.6	37.1-42.1	19.8	17.8-21.8

Comment:

Being overweight or obese increases the risk for several chronic diseases including heart disease, stroke, hypertension, type 2 diabetes, osteoarthritis and certain cancers. Overweight is defined as having a BMI of 25.0-29.9, and obesity as having a BMI equal to or greater than 30. BMI is calculated by dividing weight in kilograms by height in meters squared. Among NH adults, overweight and obesity are increasing with age. Obesity rates are higher among those with lower incomes and less education. Overweight is more prevalent among those with higher incomes. Females are less likely to report obesity or overweight than males. Research shows, females are more likely to report their weight as lower than the actual measure, and males are more likely to report a higher height than the actual measure. It's likely that if the subjects responding in this survey, were directly measured, their BMIs and obesity rates would be higher than shown.

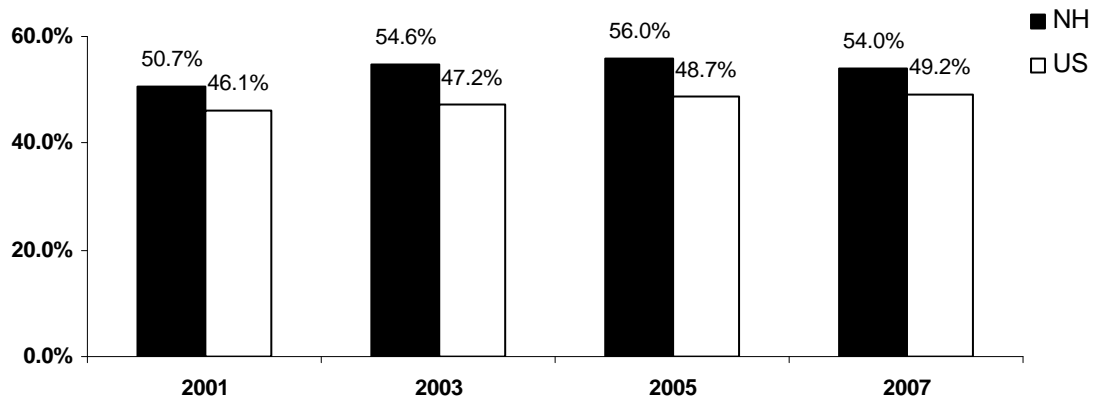
Methods:

The numerator includes all respondents, 18 years or older. BMIs were calculated (≥ 25.0 kg/m²) from self-reported weights and heights. The denominator includes all persons ≥ 18 years of age who reported their height and weight (excluding unknowns and refusals).

Data source: BRFSS

Recommended Physical Activity Among Adults

Adults with 30 or more minutes of moderate physical activity five or more days per week, or vigorous physical activity for 20 or more minutes three or more days per week, New Hampshire and United States, 2001-2007



Adults with 30 or more minutes of moderate physical activity five or more days per week, or vigorous physical activity for 20 or more minutes three or more days per week, New Hampshire, 2007

	%	95% CI
Total	54.0	52.4-55.6
Male	56.1	53.6-58.6
Female	52.0	49.8-54.2
Age		
18-24	61.1	52.7-69.5
25-34	53.7	48.8-58.6
35-44	55.7	52.2-59.2
45-54	54.2	51.1-57.3
55-64	54.4	51.1-57.7
65+	47.6	44.7-50.5
Income		
<15,000	38.4	31.5-45.3
15,000-24,999	46.0	40.9-51.1
25,000-34,999	48.2	42.3-54.1
35,000-49,999	50.4	46.1-54.7
50,000+	58.1	55.7-60.5
Education		
< 12 years	51.0	43.7-58.3
12 years	48.8	45.5-52.1
12-16 years	54.5	51.2-57.8
> 16 years	57.4	55.0-59.8

Comment:

Physical activity reduces the risk for heart disease, colon cancer, stroke, type 2 diabetes and its complications. Survey respondents were asked about any physical activity or exercise, and their answers were used to calculate the percentage of adults that meet the current physical activity recommendations. NH adults who were younger and those with higher incomes were more likely to meet recommended levels of physical activity. There are no significant differences in reported physical activity practices between adult males and adult females.

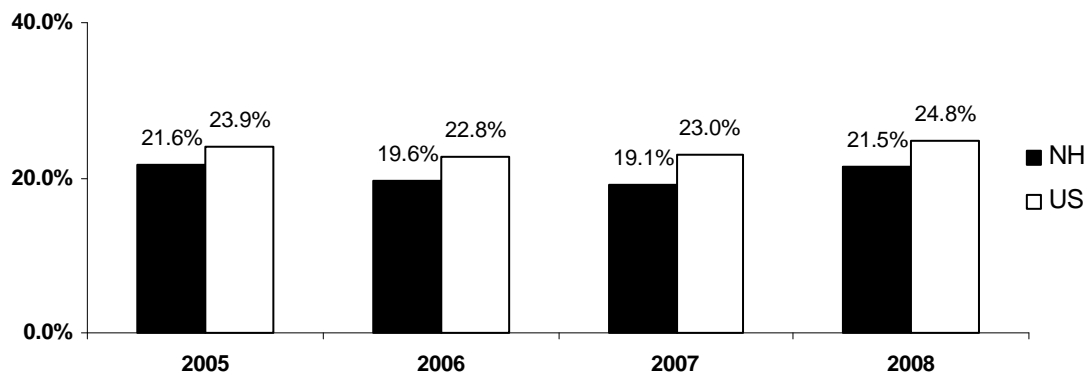
Methods:

The numerator includes number of adults aged 18 years and older who reported either moderate physical activity for 30 or more minutes at least five times a week or vigorous physical activity for 20 or more minutes at least three times a week during the previous month. The denominator includes the number of adults age 18 years and older that report any or no physical activity within the previous month (excluding unknowns and refusals).

Data source: BRFSS

No Physical Activity Among Adults

Adults who did not participate in any physical activity during the past month, New Hampshire and United States, 2005-2008



Adults who did not participate in any physical activity during the past month, New Hampshire, 2008

	%	95% CI
Total	21.5	20.2-22.8
Male	19.5	17.6-21.4
Female	23.4	21.7-25.0
Age		
18-24	13.4	7.7-19.1
25-34	17.7	14.1-21.4
35-44	18.6	15.9-21.2
45-54	21.6	19.0-24.1
55-64	23.3	20.8-25.8
65+	31.9	29.5-34.4
Income		
<15,000	41.0	34.3-47.7
15,000-24,999	35.7	30.8-40.6
25,000-34,999	31.5	26.8-36.3
35,000-49,999	24.5	20.9-28.0
50,000+	15.0	13.4-16.6
Education		
< 12 years	43.1	36.0-50.1
12 years	30.2	27.4-32.9
12-16 years	21.9	19.2-24.6
> 16 years	13.1	11.6-14.6

Comment:

Physical activity reduces the risk for heart disease, colon cancer, stroke, type 2 diabetes and its complications. Respondents were asked about any physical activity or exercise, other than their regular job, such as running, calisthenics, golf, gardening, or walking. Among NH adults, leisure time physical activity levels increase as respondents' income and education levels increase. Females are more likely than males to report no leisure time physical activity, other than the physical activity required by their job.

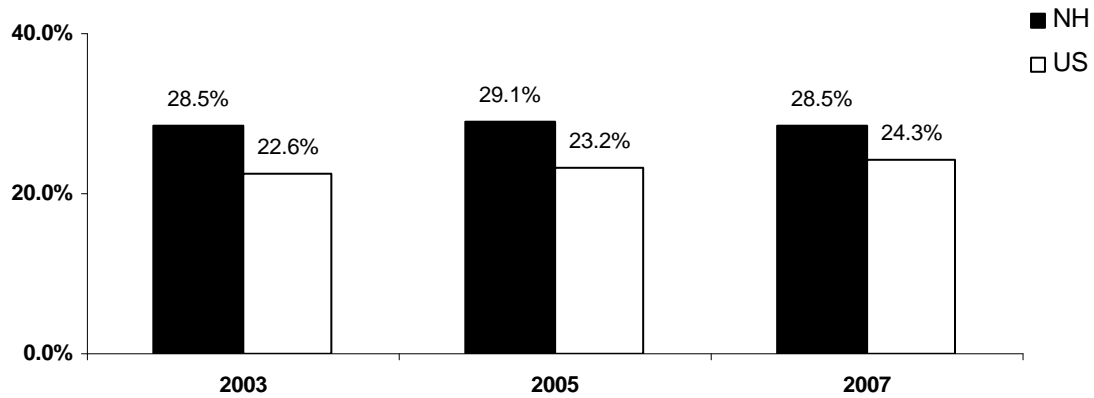
Methods:

The numerator included all respondents 18 years and older who reported no physical activity during the past month. The denominator included all persons 18 years and older who responded to the question (excluding unknowns and refusals).

Data source: BRFSS

Fruit and Vegetable Consumption Among Adults

Adults who consumed fruits and vegetables five or more times per day, New Hampshire and United States, 2003-2007



Adults who consumed fruits and vegetables five or more times per day, New Hampshire, 2007

	%	95% CI
Total	28.5	27.1-29.9
Male	22.2	20.0-24.4
Female	34.5	32.5-36.5
Age		
18-24	22.3	15.4-29.2
25-34	30.8	26.5-35.1
35-44	25.7	22.8-28.6
45-54	28.7	26.0-31.4
55-64	30.2	27.3-33.1
65+	31.1	28.6-33.6
Income		
<15,000	22.1	17.2-27.0
15,000-24,999	23.0	18.9-27.1
25,000-34,999	24.6	19.9-29.3
35,000-49,999	28.5	24.6-32.4
50,000+	30.9	28.7-33.1
Education		
< 12 years	23.1	17.0-29.2
12 years	19.0	16.6-21.4
12-16 years	29.5	26.6-32.4
> 16 years	35.1	32.7-37.5

Comment:

A diet rich in fruits and vegetables offers many health benefits, including reduced risk for type 2 diabetes, stroke, certain cancers and perhaps heart disease and high blood pressure. NH adults with higher income or education are more likely to report recommended daily consumption of fruits and vegetables than those with lower income or education.

Methods:

The numerator included all respondents 18 years and older who report eating fruits and vegetables five or more times a day. The denominator included all persons 18 years and older who responded to the question (excluding unknowns and refusals).

Data source: BRFSS

County Comparison, BRFSS, New Hampshire, 2007-2008

Region	Overweight (2008)	Obesity (2008)	Overweight And Obesity (2008)	Recommended Physical Activity (2007)	Fruits and Vegetables (2007)
Belknap	37.0 30.1-43.9	28.7 22.2-35.2	65.7 58.5-72.9	52.4 45.7-59.1	24.7 19.2-30.3
Carroll	36.8 29.8-43.9	25.6 18.4-32.8	62.4 54.6-70.2	61.5 54.5-68.5	27.7 21.1-34.3
Cheshire	35.2 29.6-40.9	31.4 25.4-37.5	66.7 61.2-72.2	53.4 47.8-59.1	27.9 23.1-32.6
Coos	40.8 35.9-45.6	28.9 24.5-33.4	69.7 65.4-74.1	47.7 40.6-54.7	22.8 17.4-28.1
Grafton	38.7 33.9-43.4	22.0 17.8-26.1	60.6 55.9-65.4	61.5 56.0-67.0	34.4 28.9-39.7
Hillsborough	36.5 33.4-39.7	24.3 21.6-27.1	60.9 57.6-64.1	52.9 49.7-56.1	27.9 25.1-30.6
Merrimack	39.1 34.0-44.2	25.0 20.6-29.4	64.1 59.3-68.9	55.1 49.9-60.2	27.6 23.2-32.0
Rockingham	41.4 37.7-45.1	23.2 20.0-26.3	64.6 60.9-68.3	52.2 50.4-58.1	31.4 28.0-34.8
Strafford	36.5 31.5-41.5	26.1 21.6-30.6	62.6 57.5-67.7	49.8 44.4-55.1	26.2 21.9-30.5
Sullivan	36.6 29.6-43.6	29.1 23.2-35.0	65.7 59.1-72.3	55.0 47.8-62.2	25.2 19.7-30.8
New Hampshire	38.2 36.6-39.8	24.9 23.5-26.3	63.1 61.5-64.7	54.0 52.4-55.6	28.5 27.1-29.9

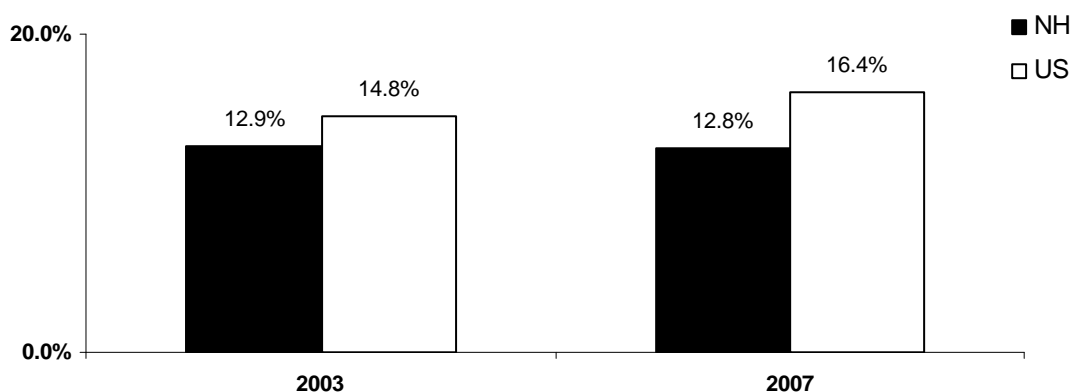
Weighting adjustments were incorporated into the 2008 BRFSS county estimates.

Based on 2008 estimates, there are no regional differences in the prevalence of overweight or obesity in NH. When overweight and obese categories are combined (BMI \geq 25), Coos County appears to have the highest rates, but all of the other counties, except Grafton and Hillsboro, have similar rates.

Rates of fruit and vegetable consumption and physical activity are lowest in Coos County and highest in Grafton County but other counties were found to have similar rates. County data will need to be compared over time in order to draw definite conclusions.

Obesity Among Children

Children, age 10-17 years, who were obese (children $\geq 95^{\text{th}}$ percentile for body mass index, by age and sex, based on reference data), New Hampshire and United States, 2003-2007



Comment:

In children and teens, body mass index (BMI) is used to assess underweight, overweight, and obesity. BMI for children, also referred to as BMI-for-age, is sex and age specific. BMI-for-age in NSCH is based on parent-reported height and weight of children and is not independently measured. Calculation of BMI-for-age is usually based on the age of the child in months. Because age was only reported in years for this survey, children were assumed to be at the midpoint of the age-year for purposes of calculating BMI-for-age. Based on the 2007 parental report, approximately 12.8% (95% CI: 9.9-15.6) of New Hampshire children between the ages of 10 and 17 were obese.

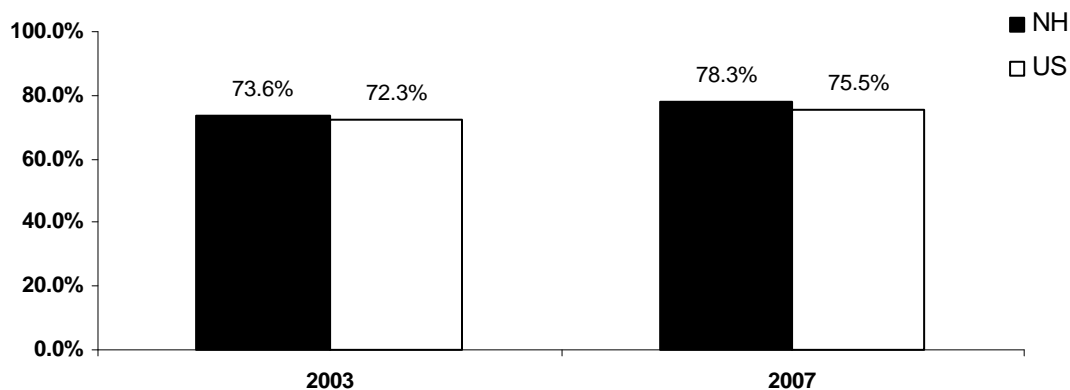
Methods:

The numerator includes responses for 10-17 years old with a BMI at or above the sex- and age-specific 95th percentile from the CDC Growth Charts: United States.¹ The denominator includes responses for 10-17 years old who answered the height and weight questions. Unknown values (responses coded as "refused", "don't know", or missing) were removed from the denominator.

Data source: NSCH

Breastfeeding

Children, age 0-5 years, who were ever breastfed or fed breast milk, New Hampshire and United States, 2003-2007



Comment:

Both babies and mothers gain many benefits from breastfeeding. Breastfeeding may help prevent future obesity among children. In addition, breast milk is easy to digest and contains antibodies that can protect infants from bacterial and viral infections. History of breastfeeding is associated with a reduction in the risk of obesity and childhood leukemia. Maternal history of breastfeeding is associated with reduced risk of breast and ovarian cancer.² In 2007, approximately 78.3% (95% CI: 73.1-83.4) of New Hampshire children 5 years and younger were reported to have ever been breastfed or fed breast milk.

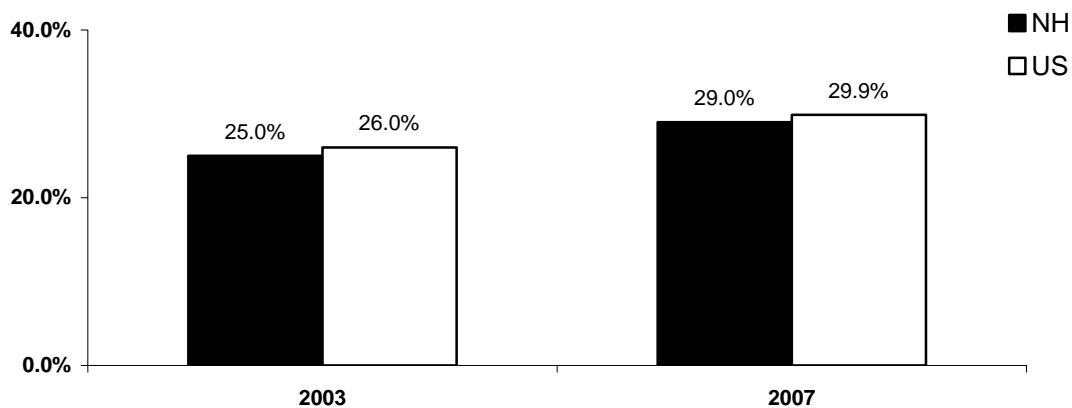
Methods:

The numerator includes responses for children 0-5 years old who were breastfed or fed breast milk for any length of time. The denominator includes the total responses to the breastfeeding question for children 0-5 years. Unknown values (responses coded as "refused", "don't know", or missing) were removed from the denominator.

Data source: NSCH

Physical Activity Among Children

Children, age 6-17 years, who were physically active for a total of at least 20 minutes per day during the past seven days, New Hampshire and United States, 2003-2007



Comment:

It is recommended that children and adolescents engage in at least 60 minutes of physical activity each day. The NSCH asked parents of 6-17 year olds if their children participated in physical activity during the previous week, specifically, physical activity that lasted at least 20 minutes and made the children sweat and breathe hard. In 2007, parents reported that approximately 29.0% (95% CI: 25.8-32.2) of the children engaged in at least 20 minutes of vigorous physical activity every day, during the past 7 days.

Methods:

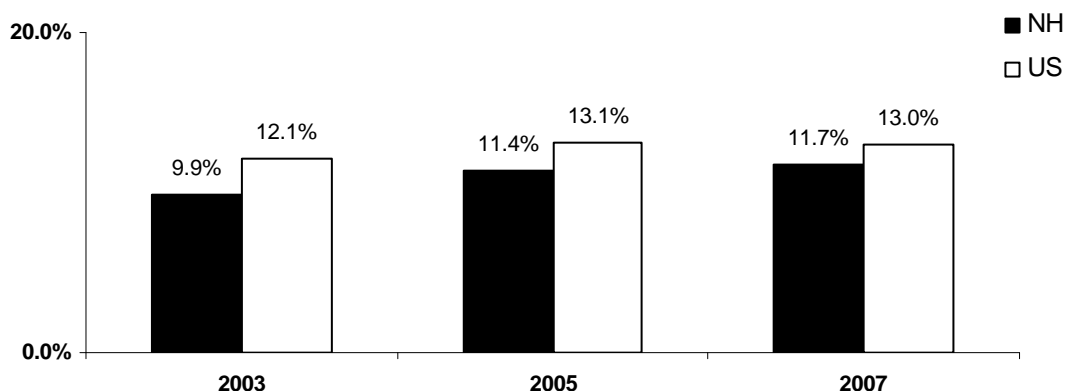
The numerator includes children age 6-17 years old, who were reported to have engaged in vigorous physical activity at least 20 minutes every day during the past seven days. The denominator includes 6-17 years old whose parents answered the physical activity question. Unknown values (responses coded as "refused", "don't know", or missing) were removed from the denominator.

Data source: NSCH

Youth Risk Behavior Surveillance System

Obesity Among High School Students

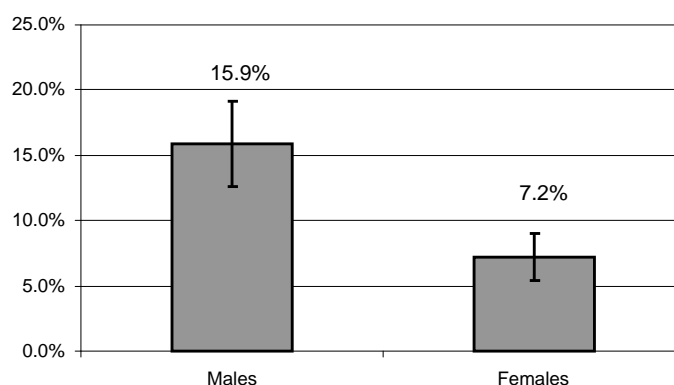
High school students who were obese (students \geq 95th percentile for body mass index, by age and sex, based on reference data), New Hampshire and United States, 2003-2007



Comment:

The proportion of children who are at or above the sex- and age-specific 95th percentile for BMI is increasing. In 2007, 11.7% (95% CI: 9.8–13.8) of New Hampshire students in grades 9–12 were obese, compared to 13.0% of students in the United States. In the same year, 15.9% of male students (95% CI: 12.9–19.4) and 7.2% of female students (95% CI: 5.6–9.2) were obese in New Hampshire.

High school students who were obese, by sex, New Hampshire, 2007



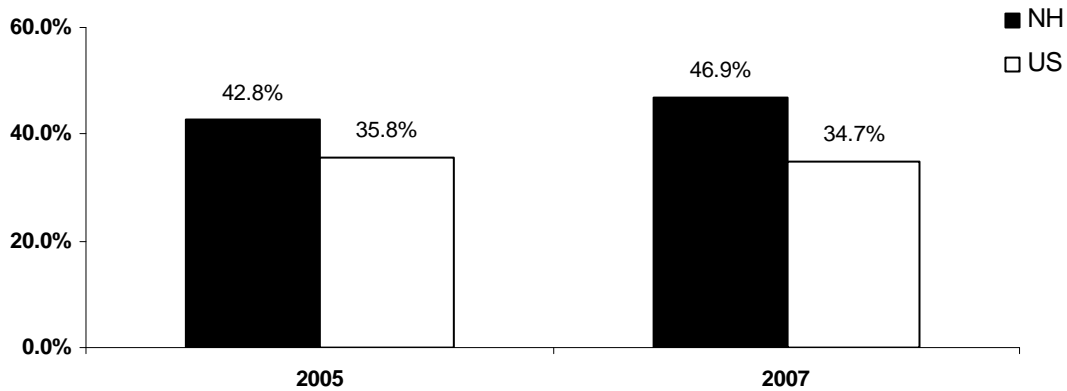
Methods:

The numerator includes all respondents in grades 9–12 with a BMI at or above the sex- and age-specific 95th percentile, as defined by the CDC Growth Charts. The denominator includes respondents in grades 9–12 who answered the height and weight questions.

Data source: YRBS

Physical Activity Among High School Students

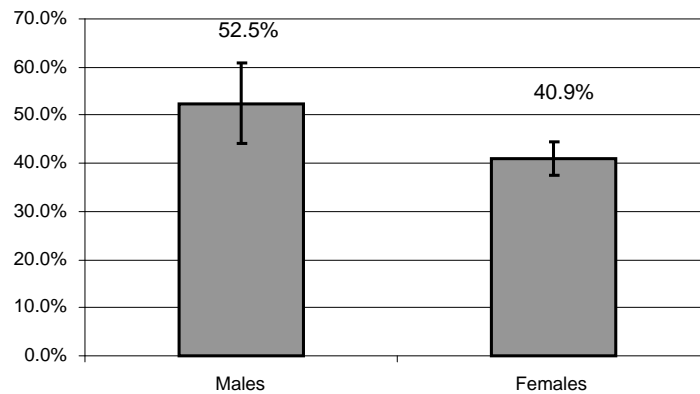
High school students who were physically active for a total of at least 60 minutes per day on five or more of the past seven days, New Hampshire and United States, 2005-2007



Comment:

According to the 2008 Physical Activity Guidelines for Americans, developed by the United States Department of Health and Human Services, children and adolescents should be physically active for at least 60 minutes each day. Physical activity reduces risk for heart disease, stroke, type 2 diabetes and its complications, overweight, and osteoporosis. Physical activity may also decrease risk of colon and breast cancers. Physical activity patterns established during adolescence may continue into adulthood and affect future chronic disease risk. In 2007, a total of 46.9% (95% CI: 43.9–49.9) of New Hampshire students in grades 9–12 engaged in physical activity that increased their heart rate and made them breathe hard some of the time. The total activity reported had to be for at least 60 minutes per day, on five or more days, during the seven days prior to the survey. Comparing males and females, 52.5% (95% CI: 49.0-56.0) of males reported being physically active compared to 40.9% (95% CI: 36.7-45.2) of females.

High school students who were physically active for a total of at least 60 minutes per day on five or more of the past seven days, by sex, New Hampshire, 2007



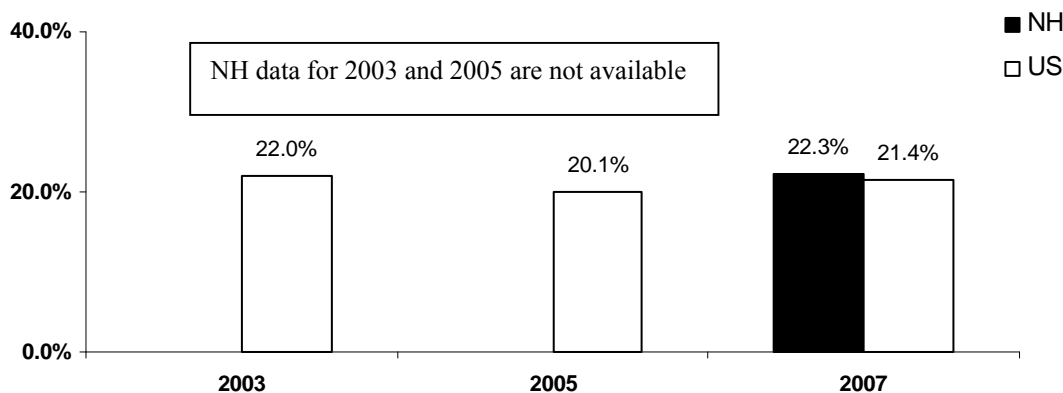
Methods:

The numerator includes all respondents in grades 9–12 who report engaging in any kind of physical activity that increased their heart rate and made them breathe hard some of the time for a total of at least 60 minutes per day on five or more days during the seven days prior the survey. The denominator includes all respondents in grades 9–12 who answered the physical activity question.

Data source: YRBS

Fruit and Vegetable Consumption Among High School Students

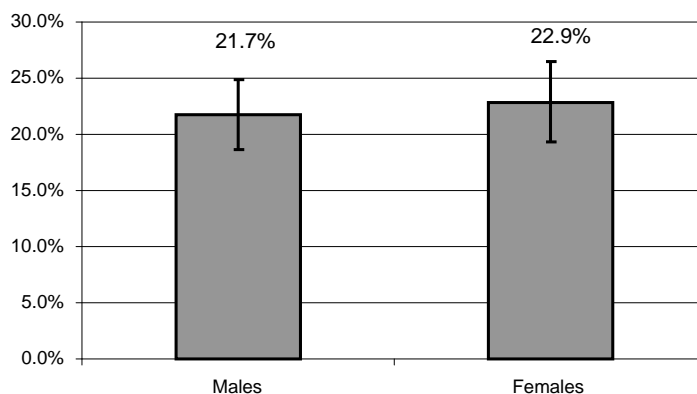
High school students who ate fruits and vegetables five or more times per day during the past seven days, New Hampshire and United States, 2003-2007



Comment:

Compared to people who eat few fruits and vegetables, those who eat more generous amounts, as part of a healthy diet, are likely to have reduced risk of chronic diseases, including stroke, type 2 diabetes, some cancers, and perhaps heart disease and high blood pressure. Dietary habits established during youth likely continue into adulthood and affect risk for various chronic diseases. In 2007, the first time fruit and vegetable questions were included on the NH survey, 22.3% (95% CI: 20.0–24.8) of New Hampshire students in grades 9–12 consumed fruits and vegetables five or more times a day during the previous seven days. Comparing males to females, approximately 22.9% (95% CI: 19.5–26.7) of females and 21.7% (95% CI: 18.8–25.0) of males reported consuming fruits and vegetables five or more times a day.

High school students who ate fruits and vegetables five or more times per day during the past seven days, by gender, New Hampshire, 2007



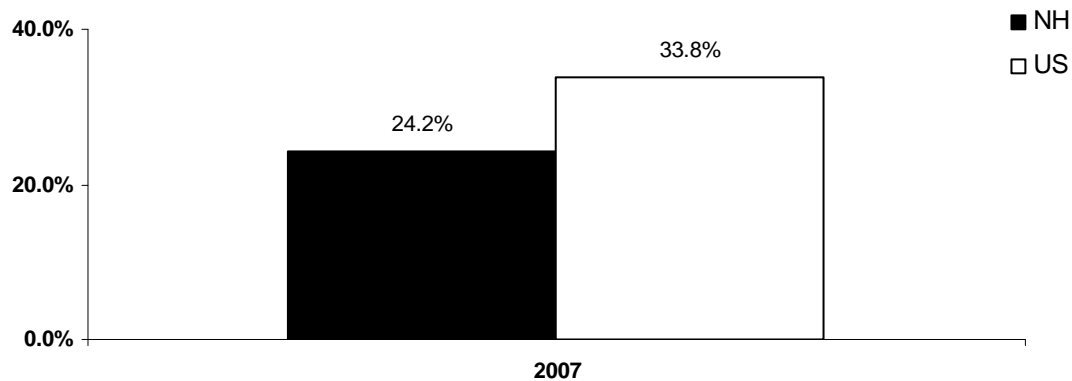
Methods:

The numerator includes respondents in grades 9–12 who report eating fruits and vegetables five or more times a day during the previous seven days. The denominator includes respondents in grades 9–12 who report eating fruits and vegetables any number of times, including zero (excluding those who did not answer).

Data source: YRBS

Sugar-Sweetened Beverage Consumption Among High School Students

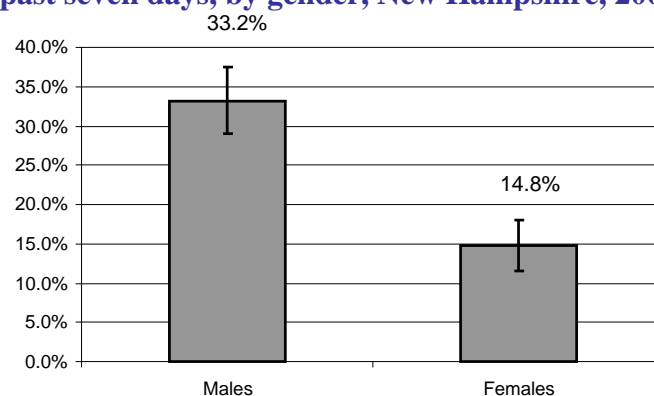
High school students who drank a can, bottle, or glass of soda or pop (not including diet soda or diet pop) at least one time per day during the past seven days, New Hampshire and United States, 2007



Comment:

The *Dietary Guidelines for Americans 2005* indicate that one way to reduce caloric intake is to decrease consumption of sugar-sweetened beverages.³ In 2007, approximately 14.8% (95% CI: 11.8-18.3) of New Hampshire female high school students, and 33.2% (95% CI: 29.2-37.5) of males reported drinking at least one sugar-sweetened beverage per day in the seven days before the survey. Altogether, 24.2% (95% CI: 21.2-27.4) of New Hampshire high school students reported drinking at least one sugar-sweetened beverage per day in the seven days leading up to the survey.

High school students who drank a can, bottle, or glass of soda or pop at least one time per day during the past seven days, by gender, New Hampshire, 2007



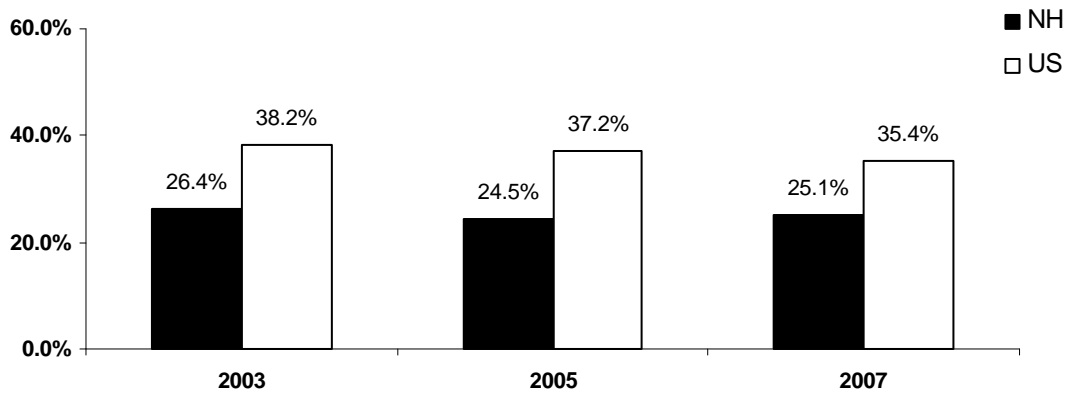
Methods:

The numerator includes all respondents in grades 9–12 who reported consuming at least one sugar-sweetened beverage per day during the seven days before the survey. The denominator includes all respondents in grades 9–12 who responded to the question (excluding those who did not answer).

Data source: YRBS

Television Viewing Among High School Students

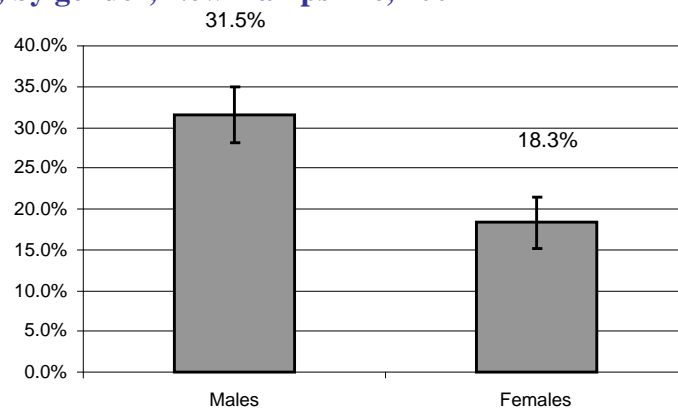
High school students who reported watching television for three or more hours on a regular school day, New Hampshire and United States, 2003-2007



Comment:

Excessive television watching is associated with obesity and physical inactivity among children. Television viewing is a sedentary activity, and children viewing television for several hours a day are usually less physically active than recommended. Furthermore, television viewing exposes viewers to commercials for high-energy-dense food. Typically, viewers eat excess calories while watching TV. Physical activity reduces the risk for heart disease, cancer, stroke, osteoporosis, and type 2 diabetes. In 2007, a total of 25.1% (95% CI: 22.8–27.5) of New Hampshire high school students in grades 9–12 watched television for three or more hours on an average school day. Comparing New Hampshire males to females, 31.5% (95% CI: 28.2–35.0) of males reported watching TV for 3 or more hours on an average school day, versus 18.3% (95% CI: 15.4–21.6) of females.

High school students who reported watching television for three or more hours on a regular school day, by gender, New Hampshire, 2007



Methods:

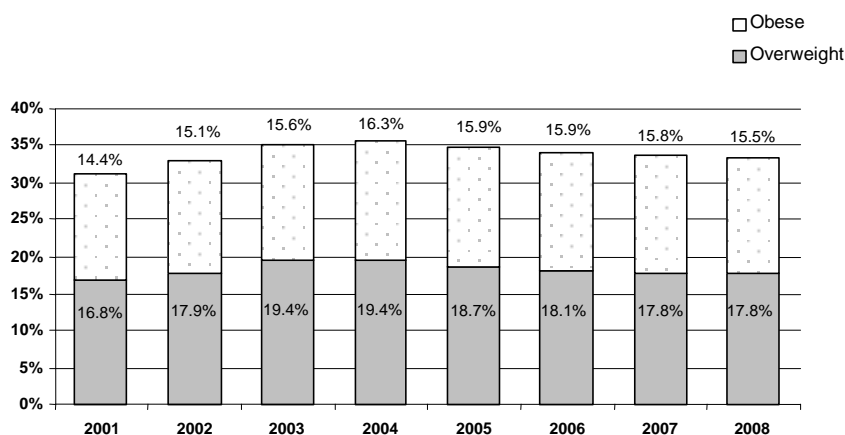
The numerator included all respondents in grades 9–12 who report watching television for three or more hours on an average school day. The denominator included all respondents in grades 9–12 who report watching television for any number of hours, including zero, on an average school day (excluding those who did not answer).

Data source: YRBS

Pediatric Nutrition Surveillance System

Overweight and Obesity Among Low-Income Children

Children 2-5 years old, who were overweight or obese, New Hampshire, 2001-2008



Comment:

PedNSS is a public health surveillance system that describes the nutrition status of low-income US children who attend federally-funded maternal and child health and nutrition programs. In NH PedNSS uses data exclusively from the Special Supplemental Nutrition Program for Women, Infants and Children Program (WIC) that serves children up to age five. WIC collects data to assess nutrition status including weight and height. BMI (length is done for children under 2 years and BMI is not done at that age) is then determined for each child. BMI is defined as body weight in kilograms divided by height in meters squared (wt/ht^2). BMI for children, often referred to as BMI-for-age, is defined by age and gender-specific percentile values for children and adolescents ages 2–19 years. BMIs at or above the 95th percentile are considered obese; BMIs at or above the 85th percentile and less than the 95th percentile are considered overweight.

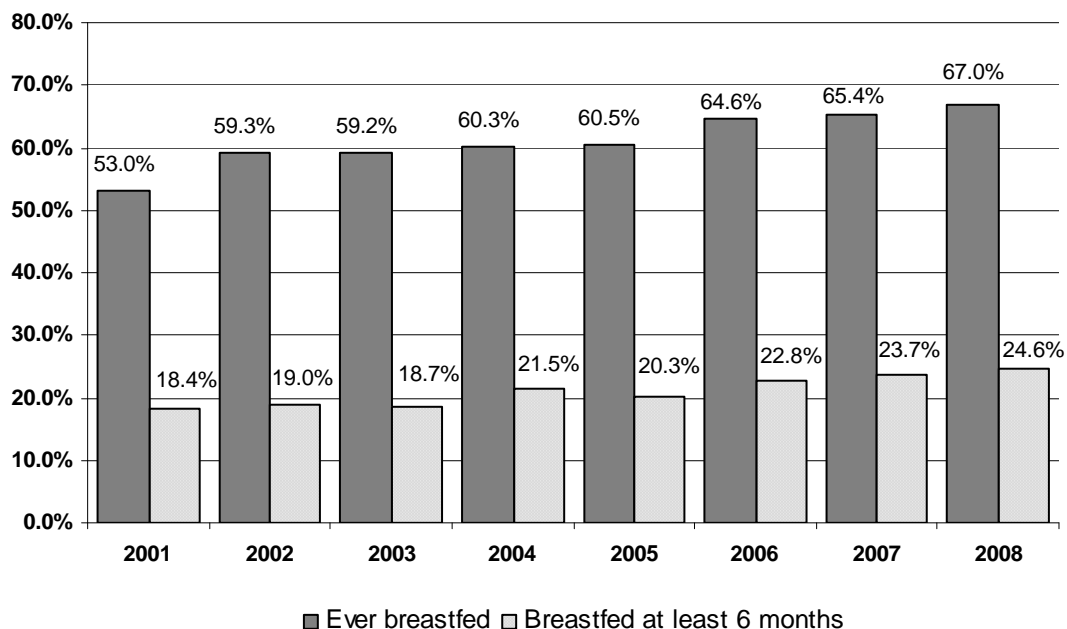
Methods:

The numerator includes the number of children 2-5 years old who were at or above the 95th or at or above the 85th and less than the 95th percentiles BMI-for-age. The denominator includes the number of children ages 2-5 years with height and weight data available. The CDC provided prevalence estimates.

Data source: PedNSS

Breastfeeding in Low Income Households

Low-income children up to age five, who were ever breastfed of fed breast milk, New Hampshire, 2001-2008



Comment:

PedNSS is a child-based public health surveillance system that describes the nutrition status of low-income US children who attend federally-funded maternal and child health and nutrition programs. PedNSS uses existing data from several sources. The majority of the data is from the Special Supplemental Nutrition Program for Women, Infants and Children Program (WIC) program, which serves children up to age five. The chart represents the proportion of children that were ever breastfed and breastfed for at least six month. The proportion of children in both categories has been increasing over the past several years.

Methods:

The numerator includes the number of infants currently breastfed at date of visit plus number of infants ever breastfed (ever breastfed infants) or number of infants breastfed at date of their six-month visit. The denominator includes number of infants with breastfeeding data available. The CDC provided prevalence estimates.

Data source: PedNSS

County Comparison, PedNSS, New Hampshire, 2008

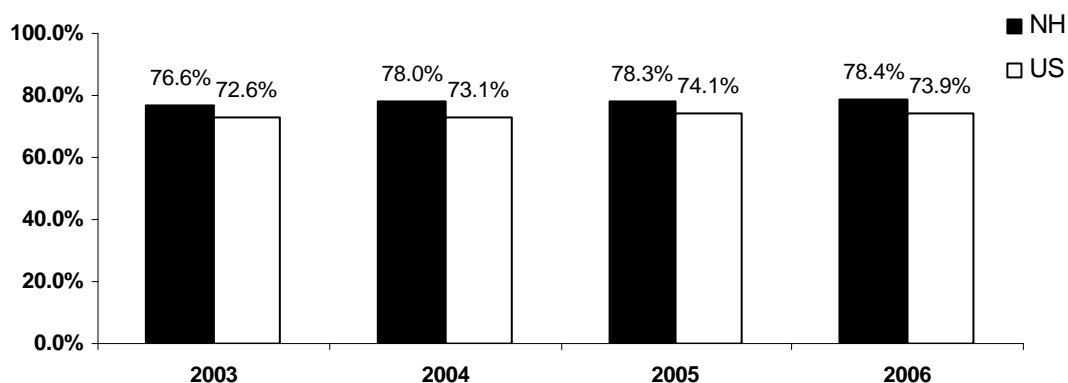
Region	Overweight ≥85th percentile BMI-for-age and <95th percentile (2008)	Obesity BMI-for-age ≥95th percentile (2008)	Ever Breastfed (2008)	TV Viewing ≤ 2 hours (2008)
Belknap	17.9%	18.5%	71.3%	89.8%
Carroll	19.4%	18.1%	77.2%	92.5%
Cheshire	18.8%	14.4%	63.8%	91.3%
Coos	10.1%	9.3%	63.2%	81.5%
Grafton	16.7%	15.0%	71.1%	84.8%
Hillsborough	17.2%	15.3%	64.1%	89.0%
Merrimack	22.0%	16.3%	71.4%	87.1%
Rockingham	16.6%	16.1%	62.7%	86.2%
Strafford	17.1%	13.3%	71.3%	80.9%
Sullivan	20.7%	20.5%	67.6%	88.7%
New Hampshire	17.8%	15.5%	67.0%	87.3%

Prevalence estimates are based on data collected for all children enrolled in the NH WIC program and are reported without confidence intervals.

National Immunization Survey

Breastfeeding

Children, 19-35 months old, that were ever breastfed, New Hampshire and United States, 2003-2006



Comment:

Each year, the CDC conducts the National Immunization Survey, a household telephone survey that asks questions about childhood immunization. Beginning in July 2001, respondents were also asked about breastfeeding. Household responses to the question, “Was [child] ever breastfed or fed breast milk?,” are shown in the graph above.

Methods:

The numerator included infants that were reportedly ever breastfed. The denominator included all who responded to the question (excluding unknowns and refusals).

Data source: NIS

New Hampshire Head Start Survey

The New Hampshire “*Head Start Healthy Smiles – Healthy Growth Survey*” was conducted between October 2007 and February 2008. Altogether, 27 (out of 45 total) randomly selected New Hampshire Head Start sites participated. The goal of the survey was to collect uniform information related to the oral health and height/weight status of enrolled children. A one-stage cluster design was used.

The study population consisted of all 3-5 year olds enrolled in the selected Head Start locations. Only the children returning a signed consent form were measured. Trained health department personnel and Head Start staff assessed the height and weight of each child.

Height was recorded to within a 1/8 of an inch, and weight to within a 1/10 of a pound. The gender and date of birth were collected for each child, in order to calculate the age and sex-specific BMI percentile.

Out of 918 eligible children, 771 consented to the BMI screening. Some children with a signed consent form were absent on the day of the screening and one child refused to be measured. Altogether, 629 children were included in the BMI analyses. SAS software and CDC growth charts were used to calculate BMI percentiles.

Approximately 18.1% of 3-5 year olds were determined to be obese and 18.4% were overweight. There were no significant differences by gender or age.

Weight status of children enrolled in Head Start, New Hampshire, 2007-2008

	Underweight (95% CI)	Normal weight (95% CI)	Overweight (95% CI)	Obese (95% CI)
Boys (N=310)	1.6% (0.6-2.6)	61.9% (58.7-65.1)	17.1% (14.7-19.5)	19.4% (15.8-22.9)
Girls (N=319)	2.5% (1.4-3.6)	60.8% (56.5-65.2)	19.7% (16.5-23.0)	16.9% (14.7-19.2)
Total (N=629)	2.1% (1.2-2.9)	61.4% (58.5-64.2)	18.4% (16.5-20.4)	18.1% (16.1-20.2)

New Hampshire Third Grade Survey

The New Hampshire *Third Grade Healthy Smiles – Healthy Growth Survey* was conducted between September 2008 and June 2009. Altogether, 81 randomly selected New Hampshire public schools and 3,151 students participated in the survey. The goal of the survey was to collect uniform information related to the oral health and height/weight status of third-grade students, to document the burden of oral disease and obesity for surveillance, intervention planning, and evaluation.

The sampling frame consisted of all New Hampshire public schools with 15 or more students enrolled in third grade. Within this frame, a cross-sectional survey of height/weight status was conducted using a systematic sample stratified by region and percentage of students eligible for the free and reduced lunch program (FRL) in each school. With the exception of Coos County, where every eligible third grade student was screened, regions were sampled to provide reliable estimates of population parameters. The regions were Coos, Hillsborough, Strafford, Rockingham, Belknap/Merrimack, Carroll/Grafton, and Cheshire/Sullivan. Height and weight measurements were collected using a standardized protocol and equipment.

The proportion of obese and overweight students was determined using the CDC's BMI-for-age growth chart percentiles and the following classification: obese (BMI $\geq 95^{\text{th}}$ percentile), overweight (BMI $\geq 85^{\text{th}}$ and $< 95^{\text{th}}$ percentile), normal weight (BMI $\geq 5^{\text{th}}$ and $< 85^{\text{th}}$ percentile), and underweight (BMI $< 5^{\text{th}}$ percentile). All estimates were weighted (adjusted) according to selection probability and for non-response. Statewide estimates were adjusted for the target population. Estimates for Coos County were based on a census (every child enrolled in third grade in Coos County was included in the sample as such confidence intervals are not needed).

While the statewide sample consisted of 81 schools and 4,725 students, upon completion of the study, 3,082 consenting New Hampshire third grade students were included in the analysis of height and weight status. The reduced number was due to elected non-participation and absence.

Approximately 18.0% of New Hampshire third grade students were obese and 15.4% were overweight. Only 1.7% of third grade students were underweight. The full report and graphs are available at <http://www.dhhs.state.nh.us/DHHS/NHP/obesity.htm>.

Weight status of third graders, New Hampshire, 2008-2009

Variable	Number of Children	Percent of Children	95% Confidence Interval
Obese	556	18.0	16.1-19.9
Overweight	481	15.4	14.1-16.7
Normal weight	1,994	64.9	62.9-66.8
Underweight	51	1.7	1.0-2.4

Third graders who were overweight or obese, by gender, New Hampshire, 2008-2009

Variable	Females		Males	
	Number of Children	Percent and 95% CI (n=1,441)	Number of Children	Percent and 95% CI (n=1,641)
Obesity	236	14.6 (11.9-17.3)	320	20.8 (17.2-24.5)
Overweight	221	15.5 (13.1-17.8)	260	15.3 (13.2-17.5)
Normal weight	958	67.5 (64.0-71.0)	1,036	62.7 (59.2-66.2)
Underweight	26	2.4 (1.0-3.8)	25	1.1 (0.6-1.6)

Third graders who were overweight or obese, stratified by Free and Reduced Price Lunch (FRL) Participation Rate of School, New Hampshire, 2008-2009

Variable	<25% FRL* (n=1,665)	25-49% FRL* (n=1,111)	≥ 50% FRL* (n=306)
Obesity	16.3 (14.2-18.4)	20.1 (16.8-23.4)	27.3 (22.2-32.3)
Overweight	15.2 (13.5-16.9)	16.6 (14.7-18.6)	13.4 (11.7-15.1)
Normal weight	66.5 (64.1-68.9)	62.1 (59.1-65.1)	58.1 (53.9-62.3)
Underweight	2.0 (1.1-2.9)	1.1 (0.3-1.8)	1.2 (0.0-2.6)

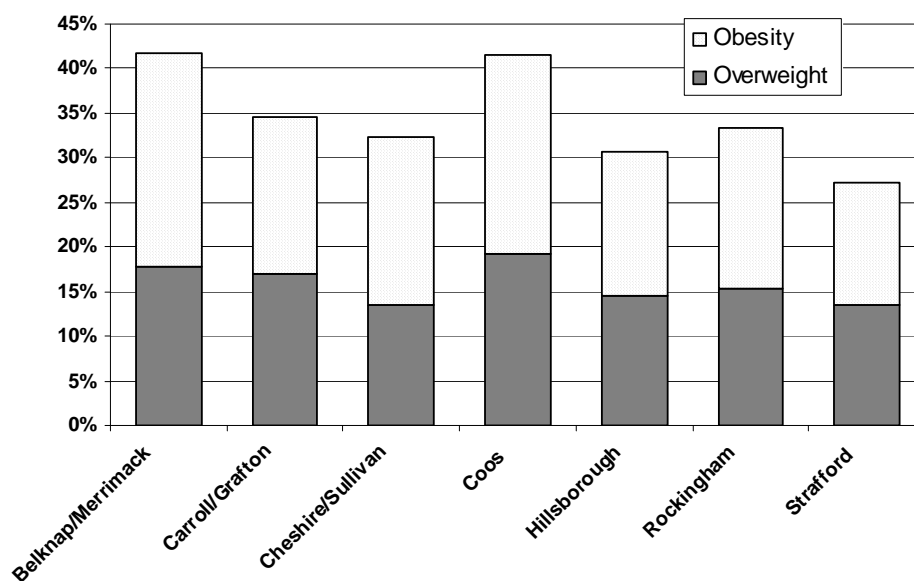
Third graders who were overweight or obese, by region, New Hampshire, 2008-2009

Variable	Belknap Merrimack (n=389)	Carroll Grafton (n=402)	Cheshire Sullivan (n=298)	Coos (n=220)	Hillsborough (n=1,021)	Rockingham (n=405)	Strafford (347)
Obese	23.9 (19.2-28.6)	17.7 (12.7-22.7)	18.7 (13.7-23.6)	22.2	16.2 (13.0-19.5)	18.1 (13.9-22.3)	13.6 (8.0-19.3)
Overweight	17.8 (13.9-21.6)	16.9 (12.6-21.2)	13.6 (9.9-17.3)	19.3	14.5 (12.1-17.0)	15.3 (12.8-17.9)	13.6 (10.0-17.2)
Normal weight	57.1 (53.6-60.6)	64.2 (59.4-68.9)	66.5 (60.9-72.2)	55.9	67.4 (63.9-71.0)	64.7 (60.7-68.6)	69.7 (62.7-76.7)
Underweight	1.2 (0.0-2.5)	1.2 (0.0-2.8)	1.2 (0.0-2.8)	2.6	1.8 (0.6-3.6)	1.9 (0.2-3.5)	3.1 (0.8-5.4)

Comment:

Findings regarding schools with higher participation in the free and reduced lunch program should not be interpreted to mean that individual children participating in the program are more likely or less likely to be overweight or obese or have unfavorable oral health status. In this survey participation in the free and reduced lunch program approximates school-level socioeconomic status.

Third graders who were overweight or obese, by region, New Hampshire, 2008-2009



Third graders who were overweight or obese combined, by region, by gender, New Hampshire, 2008-2009

Variable	Belknap Merrimack (n=389)	Carroll Grafton (n=402)	Cheshire Sullivan (n=298)	Coos (n=220)	Hillsborough (n=1,021)	Rockingham (n=405)	Strafford (347)
Obese and Overweight Males	40.4 (33.0-47.8)	37.4 (30.9-43.9)	35.7 (28.7-43.7)	45.9	33.1 (28.8-37.5)	37.5 (28.1-46.9)	27.8 (20.6-35.0)
Obese and Overweight Females	43.1 (38.7-47.5)	31.7 (24.8-38.6)	28.9 (21.1-36.7)	37.0	28.0 (23.3-32.7)	27.9 (17.7-38.2)	26.5 (14.5-38.6)

**New Hampshire and United States
Overweight and Obesity Prevalence Estimates**

	Age	New Hampshire		United States	
		Overweight	Obesity	Overweight	Obesity
Head Start (2008)	3-5 years old	18.4%	18.1%	N/A	N/A
PedNSS (2008)	2-5 years old	17.8%	15.5%	16.5%	14.8%
Third Grade (2009)	8-9 years old	15.4%	18.0%	N/A	N/A
NSCH (2007)	10-17 years old	16.7%	12.8%	15.3%	16.4%
YRBS (2007)	15-18 years old	14.4%	11.7%	15.8%	13.0%
BRFSS (2008)	18 and older	38.2%	24.9%	36.6%	26.6%

Recommended Community Strategies and Measurements to Prevent Obesity in the United States

“Reversing the U.S. obesity epidemic requires a comprehensive and coordinated approach that uses policy and environmental change to transform communities into places that support and promote healthy lifestyle choices for all U.S. residents.”⁴

Environmental factors such as “lack of access to full-service grocery stores, increasing costs of healthy foods and the lower cost of unhealthy foods, and lack of access to safe places to play and exercise” all contribute to increases in obesity rates, because they inhibit or prevent healthy eating and active living.

“Recommended strategies and appropriate measures are needed to assess the effectiveness of community initiatives.” To help communities in this effort, CDC initiated the Common Community Measures for Obesity Prevention Project, the Measures Project, which created a set of community measurements that can be used for community planning, evaluation, and research. The measures focus on policy and environmental strategies that impact obesity rates. The 24 strategies are divided into six categories. They are strategies that:

- Promote the availability of affordable healthy food and beverages
- Support healthy food and beverage choices
- Encourage breastfeeding
- Encourage physical activity or limit sedentary activity among children and youth
- Create safe communities that support physical activity
- Encourage communities to organize for change

The 24 strategies and measures are listed on the next three pages of this document. To learn more, refer to the *Recommended Community Strategies and Measurements to Prevent Obesity in the United States: Implementation and Measurement Guide*⁵ online at http://www.cdc.gov/obesity/downloads/community_strategies_guide.pdf.

Strategies to Promote the Availability of Affordable Healthy Food and Beverages

Strategy 1 Communities should increase availability of healthier food and beverage choices in public service venues.

Suggested Measure A policy exists to apply nutrition standards that are consistent with the dietary guidelines for Americans to all food sold (e.g., meal menus and vending machines) within local government facilities in a local jurisdiction or on public school campuses during the school day within the largest school district in a local jurisdiction.

Strategy 2 Communities should improve availability of affordable healthier food and beverage choices in public service venues.

Suggested Measure A policy exists to affect the cost of healthier foods and beverages relative to the cost of less healthy foods and beverages sold within local government facilities in a local jurisdiction or on public school campuses during the school day within the largest school district in a local jurisdiction.

Strategy 3 Communities should improve geographic availability of supermarkets in underserved areas.

Suggested Measure The number of full-service grocery stores and supermarkets per 10,000 residents located within the three largest underserved census tracts within a local jurisdiction.

Strategy 4 Communities should provide incentives to food retailers to locate in and/or offer healthier food and beverage choices in underserved areas.

Suggested Measure Local government offers at least one incentive to new and/or existing food retailers to offer healthier food and beverage choices in underserved areas.

Strategy 5 Communities should improve availability of mechanisms for purchasing foods from farms.

Suggested Measure The total annual number of farmer-days at farmers' markets per 10,000 residents within a local jurisdiction.

Strategy 6 Communities should provide incentives for the production, distribution, and procurement of foods from local farms.

Suggested Measure Local government has a policy that encourages the production, distribution, or procurement of food from local farms in the local jurisdiction.

Strategies to Support Healthy Food and Beverage Choices

Strategy 7 Communities should restrict availability of less healthy foods and beverages in public service venues.

Suggested Measure A policy exists that prohibits the sale of less healthy foods and beverages within local government facilities in a local jurisdiction or on public school campuses during the school day within the largest school district in a local jurisdiction.

Strategy 8 Communities should institute smaller portion size options in public service venues.

Suggested Measure Local government has a policy to limit the portion size of any entree (including sandwiches and entrée salads) by either reducing the standard portion size of entrees or offering smaller portion sizes in addition to standard portion sizes within local government facilities within a local jurisdiction.

Strategy 9 Communities should limit advertisements of less healthy foods and beverages.

Suggested Measure A policy exists that limits advertising and promotion of less healthy foods and beverages within local government facilities in a local jurisdiction or on public school campuses during the school day within the largest school district in a local jurisdiction.

Strategy 10 Communities should discourage consumption of sugar-sweetened beverages.

Suggested Measure Licensed child care facilities within the local jurisdiction are required to ban sugar-sweetened beverages, including flavored/sweetened milk and limit the portion size of 100% juice.

Strategy to Encourage Breastfeeding

Strategy 11 Communities should increase support for breastfeeding.

Suggested Measure Local government has a policy requiring local government facilities to provide breastfeeding

Strategies to Encourage Physical Activity or Limit Sedentary Activity Among Children and Youth

Strategy 12 Communities should require physical education (PE) in schools.

Suggested Measure The largest school district located within the local jurisdiction has a policy that requires a minimum of 150 minutes per week of PE in public elementary schools and a minimum of 225 minutes per week of PE in public middle schools and high schools throughout the school year (as recommended by the National Association of Sports and Physical Education).

Strategy 13 Communities should increase the amount of physical activity in PE programs in schools.

Suggested Measure The largest school district located within the local jurisdiction has a policy that requires K--12 students to be physically active for at least 50% of time spent in PE classes in public schools.

Strategy 14 Communities should increase opportunities for extracurricular physical activity.

Suggested Measure The percentage of public schools within the largest school district in a local jurisdiction that allow the use of their athletic facilities by the public during non-school hours on a regular basis.

Strategy 15 Communities should reduce screen time in public service venues.

Suggested Measure Licensed child care facilities within the local jurisdiction are required to limit screen viewing time to no more than 2 hours per day for children aged ≥ 2 years.

Strategies to Create Safe Communities That Support Physical Activity

Strategy 16 Communities should improve access to outdoor recreational facilities.

Suggested Measure The percentage of residential parcels within a local jurisdiction that are located within a half-mile network distance of at least one outdoor public recreational facility.

Strategy 17 Communities should enhance infrastructure-supporting bicycling.

Suggested Measure Total miles of designated shared-use paths and bike lanes relative to the total street miles (excluding limited access highways) that are maintained by a local jurisdiction.

Strategy 18 Communities should enhance infrastructure-supporting walking.

Suggested Measure Total miles of paved sidewalks relative to the total street miles (excluding limited access highways) that are maintained by a local jurisdiction.

Strategy 19 Communities should support locating schools within easy walking distance of residential areas.

Suggested Measure The largest school district in the local jurisdiction has a policy that supports locating new schools, and/or repairing or expanding existing schools, within easy walking or biking distance of residential areas.

Strategy 20 Communities should improve access to public transportation.

Suggested Measure The percentage of residential and commercial parcels in a local jurisdiction that are located either within a quarter-mile network distance of at least one bus stop or within a half-mile network distance of at least one train stop (including commuter and passenger trains, light rail, subways, and street cars).

Strategy 21 Communities should zone for mixed-use development.

Suggested Measure Percentage of zoned land area (in acres) within a local jurisdiction that is zoned for mixed use that specifically combines residential land use with one or more commercial, institutional, or other public land uses.

Strategy 22 Communities should enhance personal safety in areas where persons are or could be physically active.

Suggested Measure The number of vacant or abandoned buildings (residential and commercial) relative to the total number of buildings located within a local jurisdiction.

Strategy 23 Communities should enhance traffic safety in areas where persons are or could be physically active.

Suggested Measure Local government has a policy for designing and operating streets with safe access for all users which includes at least one element suggested by the national complete streets coalition (<http://www.completestreets.org>).

Strategy to Encourage Communities to Organize for Change

Strategy 24 Communities should participate in community coalitions or partnerships to address obesity.

Suggested Measure Local government is an active member of at least one coalition or partnership that aims to promote environmental and policy change to promote active living and/or healthy eating (excluding personal health programs such as health fairs).

Terms and Definitions

Body Mass Index

Body mass index (BMI) is calculated from a person's weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems. For adults, overweight is defined as a BMI of 25-29.9, and obesity as BMI equal to or more than 30.0. BMI is defined as body weight in kilograms divided by height in meters squared (wt/ht^2). For children and teens, once BMI is calculated, the BMI number is plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. Percentiles are the most commonly used indicator to assess the size and growth patterns of individual children in the United States. The percentile indicates the relative position of the child's BMI number among children of the same sex and age. Weight status categories and the corresponding BMI percentiles are shown below.

Weight Status Category	BMI Percentile Range Children and Teens	BMI Adults
Underweight	Less than the 5th percentile	Less than 18
Healthy weight	5th percentile to less than the 85th percentile	18 to less than 25
Overweight	85th to less than the 95th percentile	25 to less than 30
Obese	Equal to or greater than the 95th percentile	Equal to or greater than 30

Centers for Disease Control and Prevention

The Centers for Disease Control and Prevention (CDC) is one of the major operating components of the United States Department of Health and Human Services. For over 60 years, CDC has been dedicated to protecting health and promoting quality of life through the prevention and control of disease, injury, and disability. CDC is committed to programs that reduce the health and economic consequences of the leading causes of death and disability, thereby ensuring a long, productive, healthy life for all people.

Chronic Disease Indicators

The chronic disease indicators (CDI) are a set of 98 indicators that were developed by consensus of the Council of State and Territorial Epidemiologists and Chronic Disease Directors. CDI allow states and territories to uniformly define, collect, and report chronic disease data that are important to public health practice. Eight of those recommended chronic disease indicators are related to obesity. They are included in this data book and marked with the "CDI" in the upper right-hand corner.

Confidence Interval (CI)

Throughout the data book, survey data are presented with a 95% confidence interval that reflects the degree of uncertainty for each estimate. For example, in 2008, 24.9% of New Hampshire adults reported being obese with a 95% confidence interval of 23.5%-26.3%. This means that our best estimate is 24.9%, but the range that is likely to capture the true value 95 percent of the time could be as low as 23.5% or as high as 26.3%.

Prevalence

The measured or estimated percentage of people who actually had a specific attribute or disease during a specified time period

References

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- 2) Breastfeeding and Maternal Health Outcomes in Developed Countries, ARHQ Publication No. 07-E007
- 3) U.S. Department of Health and Human Services and U.S. Department of Agriculture. *Dietary Guidelines for Americans 2005*. Washington, DC: U.S. Government Printing Office; 2005.
- 4) Centers for Disease Control and Prevention. *Recommended community strategies and measurements to prevent obesity in the United States: Implementation and measurement guide*. MMWR Recommendations & Reports 2009; 58(No. RR-7): 1-29.
- 5) Keener, D., Goodman, K., Lowry, A., Zaro, S., & Kettel Khan, L. (2009). *Recommended community strategies and measurements to prevent obesity in the United States: Implementation and measurement guide*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.