School Height and Weight Report

South Dakota Students
2011-2012 School Year

South Dakota Department of Health
September 2012

PREFACE

The South Dakota Department of Health prepared the *School Height and Weight Report, South Dakota Students, 2011-2012 School Year.*

The report includes 18 sections. These sections contain data on childhood obesity as well as guidelines and references for preventing and reversing the childhood obesity epidemic. Sections of note are: Executive Summary, which highlights data at a glance; Technical Notes, which explains the terminology and BMI for children and adolescents; and Regional Data, which examines the data by the Department of Education's regions.

Also included are instructions and a form for any school interested in submitting data in the future.

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Executive Summary

This report summarizes obesity data collected on South Dakota's school-age children and adolescents during the 2011-2012 school year, and includes obesity data collected since the 2000-2001 school year.

Although slightly different age group categories are used for analysis, South Dakota's school-age obesity prevalence is currently lower than national trends. Approximately 17 percent of children and adolescents, aged 2 to 19 years are obese in the United States. In comparison, 15.9 percent of South Dakota children and adolescents aged 5 to 19 years are obese. Since 1980, however, the obesity prevalence for children and adolescents has nearly tripled. While obesity trends in recent years have leveled off, they remain high for school-age children and are not returning to the lower levels seen in the 1970's and 1980's.

There are significant racial disparities in obesity prevalence. For American Indian children and adolescents in South Dakota, the obese percent is 26.8 compared to 13.8 percent for whites.

Key Findings:

- This is the fourteenth year data was collected and analyzed.
- The sample size is currently 35.6 percent of the state's students.
- School submissions in the current report represent 187 schools.
- There has been an increase in the overweight category from 16.1 percent in 2010-2011 to 16.6 percent in 2011-2012.
- By race, the percentage of American Indians in the overweight category increased from 19.4 percent in 2010-2011 to 21.3 percent in 2011-2012.
- Current data shows an increase in the obese category from 15.2 percent in 2010-2011 to 15.9 percent in 2011-2012.
- By race, the percentage of American Indians in the obese category decreased slightly from 26.9 percent in 2010-2011 to 26.8 percent in 2011-2012.
- South Dakota has not met the South Dakota Department of Health 2020 goal of 14 percent overweight and obese in children and adolescents.

2011-2012 South Dakota data at a glance (ages 5-19):

- 3.1 percent height-for-age below 5th percentile (Short stature)
- 3.3 percent BMI-for-age below 5th percentile (Underweight)
- 16.6 percent overweight
- 15.9 percent obese
- American Indians – 21.3 percent overweight and 26.8 percent obese
- Males show 16.8 percent obese compared to females at 14.9 percent obese

Introduction

Due to increasing rates of child obesity and its health risks, the Department of Health (DOH) in cooperation with the South Dakota Department of Education (DOE), started a process during the 1998-1999 school year to collect data on the height and weight of students. The intent of this data collection effort was to start a data surveillance system of school-aged children.

This report summarizes the data collected during the 2011-2012 school year and allows South Dakota to quantify the extent of the childhood obesity problem. In addition, it provides the data needed to address the prevention of childhood obesity and decrease it as a public health problem.

Data Collection Process

The Coordinated School Health Program sent letters to all South Dakota school health and physical education teachers and school nurses requesting that schools share their height and weight data with the DOH. Copies of this letter were also sent electronically to superintendents and building principals. Data collection instructions on the correct way to measure children and forms to submit data were posted on the project website, http://doh.sd.gov/SchoolWeight/. Electronic submission using the Infinite Campus system is preferred, but other formats are accepted and included in the results (Appendix 1). School participation in the data collection effort is voluntary and there is no payment for submitting data.

South Dakota completed this project for the fourteenth time during the 2011-2012 school year.

Comparison to Previous Reports

Please note that *The School Height and Weight Report, For South Dakota Students, 1998-1999 School Year* is not comparable to any report published after it. The 1998-1999 publication reported weight-for-height above the 95th percentile for younger students and Body Mass Index or BMI above the 95th percentile for adolescents between 15 percent and 18 percent.

Starting with the 2006-2007 report the category definition for the 95th percentile and above changed from ‘overweight’ to ‘obese’ and the category definition for the 85th through 94th percentile changed from ‘at risk of overweight’ to ‘overweight’. These changes reflect the new recommended definitions for children and adolescents.

The Centers for Disease Control and Prevention (CDC) reanalyzed all data along with this year’s data to the same standards and definitions. Comparisons are included in this report where possible.

Data Limitations

Data quality has been determined to be within acceptable standard deviation but has the following limitations:

First, schools voluntarily submitted height and weight data from across the state, but no attempt was made to obtain a representative sample (Appendix 2 and 3). However, school personnel collected data for 35.6 percent of the state’s students from 187 schools. While American Indian students comprise 15.6 percent of the South Dakota enrollment population, they represent 10.7 percent of the students surveyed.

Second, the data was filtered and the following types of records were removed: data gathered prior to the 2011-2012 school year, data that had biologically implausible results, entries where all essential data elements were not completed, and duplicate records. After removing the above cases, the sample size was 50,078 students and 187 schools for analysis.

Third, while the instructions included the type of equipment and technique that schools should use, there is no assurance that school personnel always followed the instructions. The DOH provided balance-beam scales and wall-mounted measuring boards to schools to help improve the quality of data. While it is not known what training persons who obtained the measurements had, it is known that school nurses or school health and physical education teachers obtained or supervised the data collected.

Fourth, South Dakota's height data are of acceptable quality, however, worldwide measurements of height tend to be of marginal quality. There could be several possible reasons for this including the use of measuring equipment that did not allow accurate heights to be obtained. This can occur when the person doing the measuring is shorter than the person being measured. Those who measure adolescents may need to stand on a step stool or a chair to have their eye level above the child's head. In addition, if the measuring stick on a standing scale was used, the children would be inaccurately reported as shorter than they are. South Dakota should be aware of this problem when determining heights. This may be solved now as adolescent height is more normal but this may explain the high level of short stature for the 1998-1999 school year.

Measurement Requirements

The DOH is able to provide school specific data, aggregate data in this report, and county specific data to schools who submitted measurements on 100 or more students. Schools submitting data on less than 100 students are given the aggregate data in this report and county specific data, provided there are 100 or more student measurements from all schools in that county. Provided again this year is a 3-year trend analysis for schools that have been unable to obtain measurements on 100 or more students for the past 3 years. The CDC determined that small numbers do not produce stable rates, so they have established the 100-student cut-off.

Body Mass Index (BMI) Measurement Tool

This data was compared to the growth charts developed by the Centers for Disease Control and Prevention. The growth charts are based on the body mass index* (BMI) and provide the most up-to-date standard for evaluating body measurements of children. The growth charts provide a reference that is consistent with adult standards and can be used from two years of age throughout adulthood.

Please note that even though BMI is an effective screening tool used to identify individuals who are underweight or overweight, it is not a diagnostic tool. For example, a relatively heavy child may have a high BMI for his or her age. Healthcare providers must make further assessments to determine whether the child has excess fat or is truly obese. This may include triceps skin fold measurements, assessments of diet, health, and physical activity.

* Calculate Body Mass Index by dividing a person's weight in pounds by their height in inches squared times 703. The mathematical equation for BMI is: weight (lb)/height (in)^2 x 703.

Height

Short stature means height-for-age below the 5th percentile for children of the same height and age in the CDC reference populations. Short stature may be evidence of compromised health, delayed development, and poor diet.

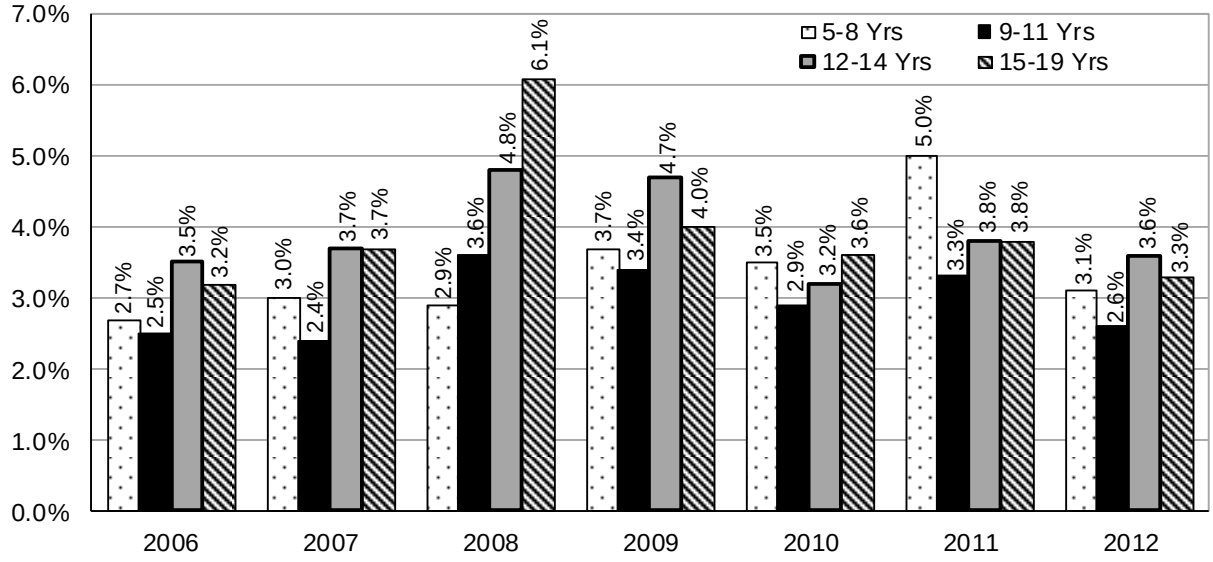
Table 1, below, contains the height-for-age data for South Dakota students. The data for South Dakota children ages 5 to 8 indicate that 3.1 percent are below the 5th percentile. The data also indicate that 2.6 percent of students ages 9 to 11, 3.6 percent of students ages 12 to 14, and 3.3 percent of students ages 15 to 19 are below the 5th percentile. Lastly, the data for total students indicate that 3.1 percent are below the 5th percentile. Gender wise, 3.1 percent of females and 3.1 percent of males are below the 5th percentile. There are 17 schools in the 2011-2012 school year with results above 5 percent. Figure 1, below, illustrates the height-for-age from the years of 2006 to 2012.

Table 1: School Year 2011-2012
Height-for-Age

Age	Number of Students	Height-For-Age Below 5th Percentile
5-8 years	20,030	3.1%
9-11 years	15,477	2.6%
12-14 years	11,286	3.6%
15-19 years	3,285	3.3%
Total	50,078	3.1%

Source: South Dakota Department of Health
Note: Due to changes in the CDC/WHO age and height references, these data cannot be compared to reports of *School Height and Weight for South Dakota Students published before the 2000-2001 school year.*

Figure 1
Height-for-Age Below 5th Percentile 2006-2012, by Age



Source: South Dakota Department of Health
Note: Year represents the end of school year, i.e. 2012 is for school year 2011-2012, etc.

Table 2, below, provides the percent of height-for-age by race for students. When analyzing the data by race, South Dakota has less than the expected 5 percent below the 5th percentile in all race categories except other races, which includes Black, Hispanic, and Asian or Pacific Islander.

Table 2: School Year 2011-2012 Height-For-Age, by Race		
Race	**Number of Students**	**Height-for-Age Below 5th Percentile**
White	37,517	2.9%
American Indian	5,297	1.4%
Other*	5,316	6.3%
Unknown/Not Specified	1,079	3.4%
Total	50,078	3.1%

Source: South Dakota Department of Health
Note: Due to changes in the CDC/WHO age and height references, these data cannot be compared to data in previous reports prior to the *School Height and Weight for South Dakota Students 2000-2001 School Year*.
Failure of students to add to the total is due to multiple races.
*Other category includes Black, Asian/Pacific Islander, and Hispanic

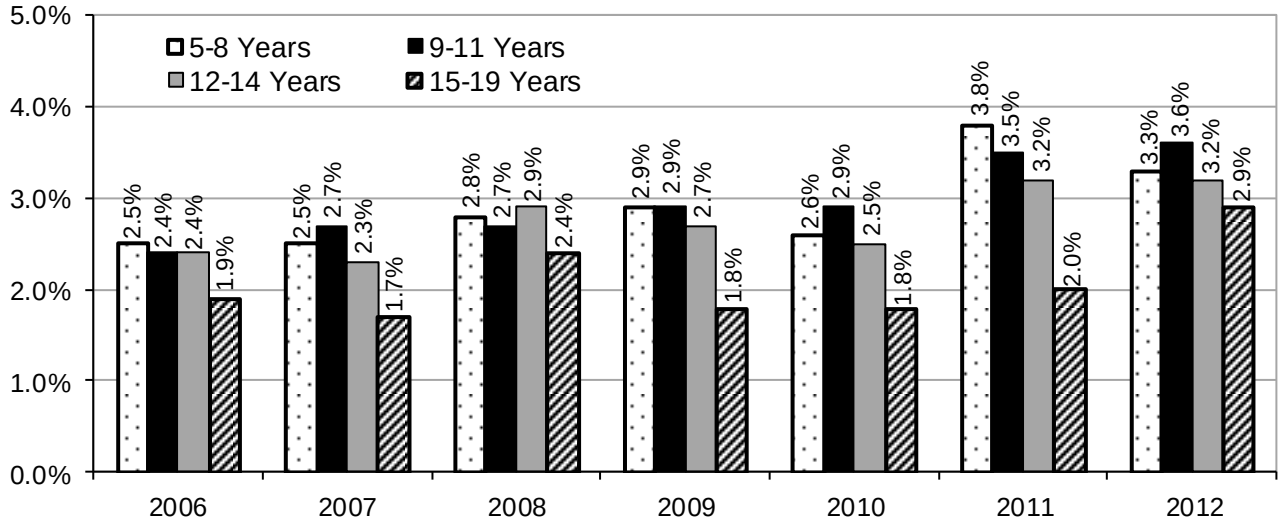
Underweight

Children falling below the 5th percentile in BMI-for-age, compared to children of the same gender and age in the CDC reference population, are considered underweight. The conditions contributing to a low BMI are inadequate dietary intake, failure to thrive, chronic and infectious diseases, and variations within a population. Table 3, below, indicates that South Dakota (statewide) has less than the expected 5 percent below the 5th percentile of school children from all age groups and as a population are not considered to be underweight when compared to their peers nationally. This is true for all the years of data collected to date, as shown on the next page, Fig. 2. This is also true when looking at data by gender. Just 3.5 percent of male students and 3.2 percent of female students are below the expected 5 percent.

Table 3: School Year 2011-2012 Underweight, Low Body Mass Index, for Age		
Age	**Number of Students**	**Body Mass Index Below 5th Percentile**
5-8 years	20,030	3.3%
9-11 years	15,477	3.6%
12-14 years	11,286	3.2%
15-19 years	3,285	2.9%
Total	50,078	3.3%

Source: South Dakota Department of Health
Note: Due to changes in the CDC/WHO age and height references, these data cannot be compared to data in previous reports prior to the *School Height and Weight for South Dakota Students 2000-2001 School Year*.

Figure 2
Underweight Weight-for-Height 2006-2012, by Age



Source: South Dakota Department of Health
Note: Year represents the end of school year, i.e. 2012 is for school year 2011-2012, etc.

Table 4, below, provides the percent of underweight students by race. When the data is analyzed by race, South Dakota again has less than the expected 5 percent below the 5th percentile in each race category. However, there are 23 schools in the 2011-2012 school year with results above 5 percent.

Table 4: School Year 2011-2012
Underweight, Low Body Mass Index, by Race

Age	Number of Students	Body Mass Index Below 5th Percentile
White	37,517	3.4%
American Indian	5,297	1.8%
Other	5,316	4.9%
Unknown/Unspecified	1,079	1.8%
Total	50,078	3.3%

Source: South Dakota Department of Health
Note: Due to changes in the CDC/WHO age and height references, these data cannot be compared to data in previous reports prior to the *School Height and Weight for South Dakota Students 2000-2001 School Year*.
Failure of students to add to the total is due to multiple races.

Overweight and Obese

The DOH began using the definitions of overweight and obese beginning with the 2006-2007 report to describe elevated BMI-for-age for children and adolescents. BMI-for-age is the preferred term to describe children and adolescents. For adults, just a BMI value is used, but as children grow at different rates depending upon age and gender, the BMI value is plotted on growth charts. The resulting value of BMI-for-age is given as a percentile value.

The American Medical Association, along with the U.S. Department of Health and Human Services and the Centers for Disease Control and Prevention, convened an expert committee to develop recommendations on the assessment, prevention, and treatment of child and youth overweight and obesity. This expert panel representing 15 professional organizations recommended changing the terms used to describe pediatric obesity. If a child's BMI-for-age is between the 85th and 94th percentile in the CDC reference population of children matched for age and gender, the term to describe the child is "overweight". If a child is at or above the 95th percentile for children of that age and gender, the term to describe the child is "obese". The terms overweight and obese provide continuity to adult definitions of overweight and obese.

One of the objectives of the national Healthy People 2020 initiative is to "reduce the proportion of children and adolescents who are considered obese." This is defined as, "at or above the gender- and age-specific 95th percentile of BMI based on a preliminary analysis of data used to construct the year 2001 U.S. Growth Charts." Throughout this report, the term obese is used to indicate children and adolescents who meet the criteria for the Healthy People 2020 objectives. The national target for the 6-11 year old age group is 15.7 percent or less and the 12-19 year old age group is 16.1 percent or less.

The DOH also identified a South Dakota goal, "reversing the trend and reducing the percent of school-age children and adolescents who are at or above the 95th percentile BMI for age (obese) to 14 percent by 2020."

The prevalence of obesity has dramatically risen among children in the United States, particularly among minority populations. There are multiple causes of childhood obesity, most of which are associated with poor nutritional habits and inactivity. Conditions of obesity and overweight are difficult and expensive to treat and cure. The key to addressing this national epidemic will be to prevent this condition in children.

Table 5, on the next page, provides the BMI-for-age statistics for South Dakota students. The data shows that for all age groups, excluding the 5- to 8-year-olds, South Dakota needs to reduce the number of obese children and adolescents to meet the South Dakota DOH 2020 objective of 14 percent for childhood obesity.

Table 5: School Year 2011-2012 Overweight and Obese Body Mass Index for Age				
Age	**Number of Students**	**Overweight**	**Obese**	**Overweight and Obese Combined**
5-8 years	20,030	16.2%	13.8%	30.0%
9-11 years	15,477	16.7%	17.4%	34.1%
12-14 years	11,286	17.5%	17.1%	34.6%
15-19 years	3,285	15.3%	16.8%	32.1%
Total	50,078	16.6%	15.9%	32.5%

Source: South Dakota Department of Health
Note: Due to changes in the CDC/WHO age and height references, these data cannot be compared to data in previous reports prior to the *School Height and Weight for South Dakota Students 2000-2001 School Year*.

Figures 3 – 6, below, illustrate each age group's obese rate by year, compared to that year's rate of all students at the 95th percentile and above. When compared to statewide rates, students ages 9 to 19 are consistently higher than the group as a whole each year, while 5- to 8-year-olds are the only age group that is repeatedly lower.

Figure 3: Obese 5-8 Year Olds Compared to State Totals, 2006-2012

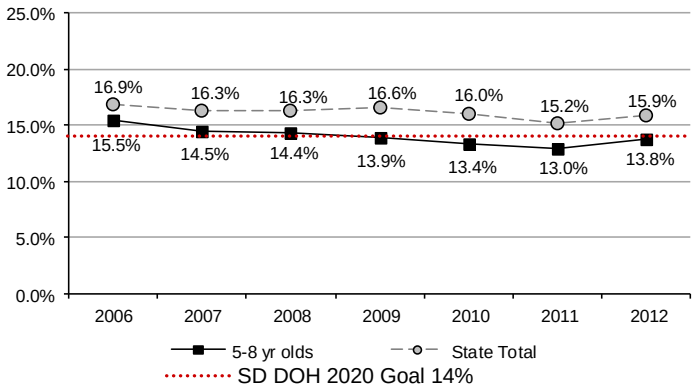


Figure 4: Obese 9-11 Year Olds Compared to State Totals, 2006-2012

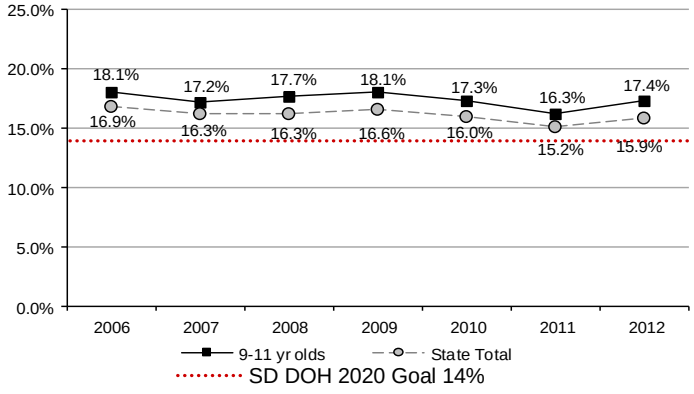


Figure 5: Obese 12-14 Year Olds Compared to State Totals, 2006-2012

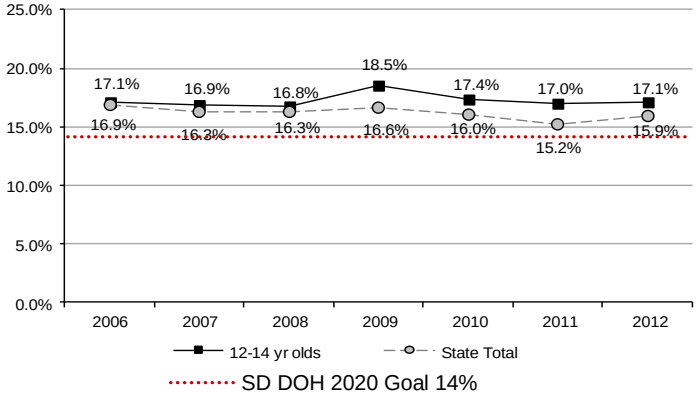
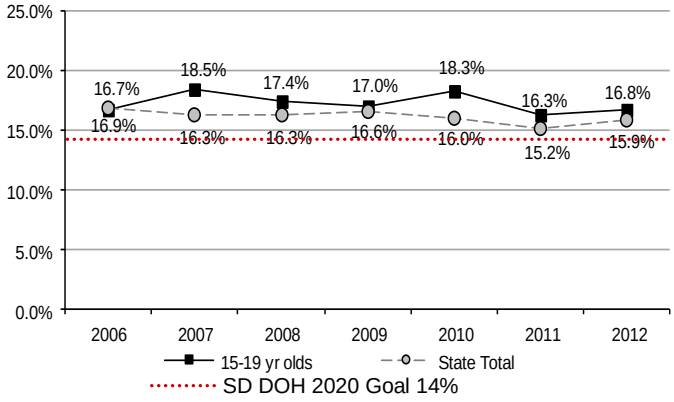


Figure 6: Obese 15-19 Year Olds Compared to State Totals, 2006-2012



Figures 3-6 Source: South Dakota Department of Health
Note: Year represents the end of school year, i.e. 2012 is for school year 2011-2012, etc.

When comparing the body mass index by race in Table 6, below, 15.8 percent of whites and 21.3 percent of American Indians were between the 85th percentile and 94th percentiles, or were overweight. The data also indicate that 13.8 percent of whites and 26.8 percent of American Indians were above the 95th percentile, or were obese. This is an increase for both white and American Indian students when compared to the obese percentages from the 2010-2011 school year.

Table 6: School Year 2011-2012
Overweight and Obese Body Mass Index, by Race

Race	Number of Students	Overweight	Obese	Overweight and Obese Combined
White	37,517	15.8%	13.8%	29.6%
American Indian	5,297	21.3%	26.8%	48.1%
Other	5,316	16.5%	18.8%	35.4%
Unknown/Not Specified	1,079	20.6%	17.2%	37.8%
Total	50,078	16.6%	15.9%	32.5%

Source: South Dakota Department of Health
Note: Due to changes in the CDC/WHO age and height references, these data cannot be compared to data in previous reports prior to the School Height and Weight for South Dakota Students 2000-2001 School Year.
Failure of students to add to the total is due to multiple races.

Table 7, below, shows the number of student measurements taken from 2003 to 2012 with the percent overweight and obese. The table also displays the data by gender. Since data collection began, males have consistently had a higher obese percentage than females.

Table 7: School Year 2003-2012
Overweight and Obese Body Mass Index, by Gender

	Total			Female			Male		
Year	# of Students	Overweight	Obese	# of Students	Overweight	Obese	# of Students	Overweight	Obese
2012	50,078	16.6%	15.9%	24,228	16.8%	14.9%	25,850	16.4%	16.8%
2011	49,146	16.1%	15.2%	23,721	16.0%	14.4%	25,425	16.1%	16.0%
2010	40,945	16.7%	16.0%	19,735	16.7%	14.6%	21,210	16.7%	17.3%
2009	40,202	17.0%	16.6%	19,412	17.1%	15.5%	20,790	17.0%	17.6%
2008	37,028	16.8%	16.3%	17,931	17.2%	14.5%	19,097	16.4%	17.9%
2007	41,579	16.6%	16.3%	20,359	16.9%	14.7%	21,220	16.3%	17.8%
2006	45,251	16.9%	16.9%	21,948	17.3%	15.3%	23,303	16.5%	18.3%
2005	35,489	16.6%	16.4%	17,295	16.7%	14.8%	18,194	16.6%	17.8%
2004	27,418	16.2%	15.8%	13,278	16.1%	14.3%	14,140	16.3%	17.2%
2003	19,424	16.7%	16.6%	9,518	17.0%	15.1%	9,906	16.4%	18.0%

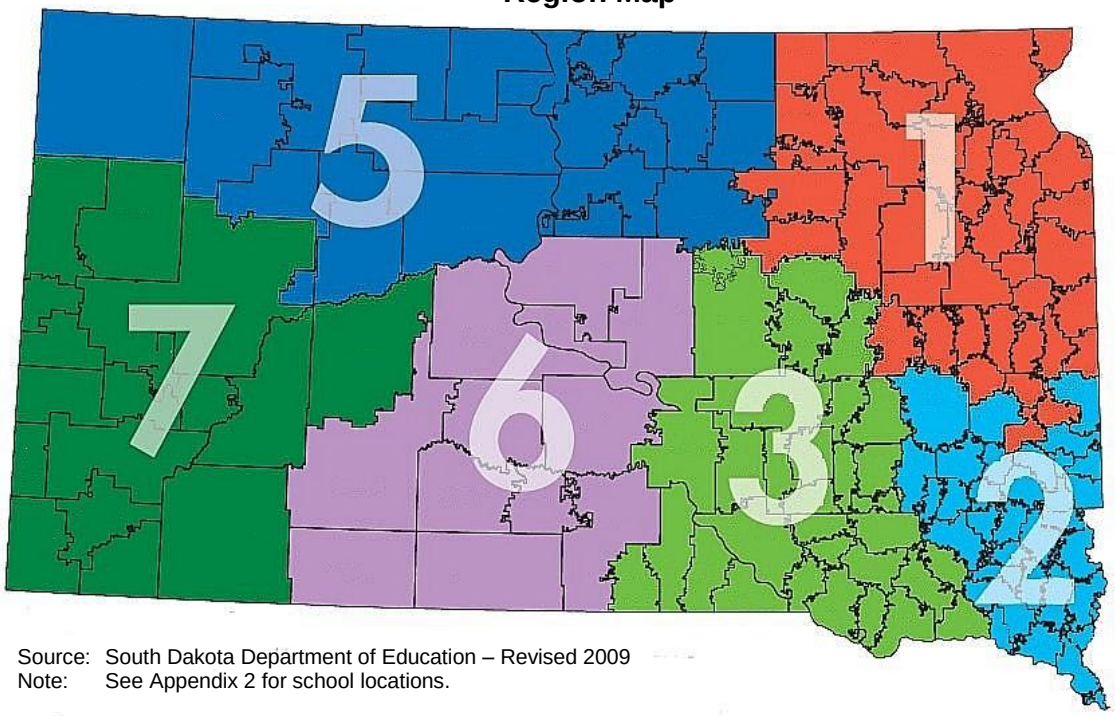
Source: South Dakota Department of Health
Note: 'Year' represents the end of school year, i.e. 2012 is for school year 2011-2012, etc.

Regional Data

As in previous years, the data was again analyzed by the Department of Education's education service agency regions (ESA). These educational regions reflect public, private, and tribal schools located in the geographic areas below (Figure 7). Beginning with the 2009-2010 school year, ESA region 4 school districts were distributed to the other regions and ESA 4 was eliminated.

Table 8 shows the racial distributions and Table 9 shows the demographics of those regions. Table 10, on the next page, shows that region 5 has an obese percent of 26.4. Table 8 shows that 55.6 percent of the participants in region 5 are American Indians. Of the 5,297 American Indian students included in the total submission, 17.6 percent came from region 5.

Figure 7: South Dakota Education Service Agencies Region Map



Source: South Dakota Department of Education – Revised 2009
Note: See Appendix 2 for school locations.

Table 8: School Year 2011-2012 Racial Distribution by Regions

Region	White	American Indian	Other Race	Unknown/ Not Specified
1	85.0	5.1	4.9	4.3
2	76.6	4.4	16.8	0.1
3	63.4	12.2	12.6	11.2
5	39.5	55.6	1.2	3.5
6	67.6	25.3	3.7	0.0
7	74.7	16.5	6.4	0.1
Total	**74.8**	**10.7**	**10.6**	**2.2**

Table 9: School Year 2011-2012 Age Distribution by Regions

Region	5-8 Years	9-11 Years	12-14 Years	15-19 Years
1	37.1	27.2	27.0	8.7
2	45.8	31.5	18.4	4.3
3	43.4	30.7	21.0	4.9
5	34.0	38.0	20.2	7.7
6	28.9	25.7	23.7	21.8
7	34.1	33.9	27.0	5.0
Total	**40.1**	**30.9**	**22.5**	**6.5**

Source: South Dakota Department of Health
Note: As of the 2009-2010 school year, ESA region 4 school districts were distributed to the other regions and ESA region 4 was eliminated.
Table 8 does not include multiple races, therefore the total will not equal 100 percent.

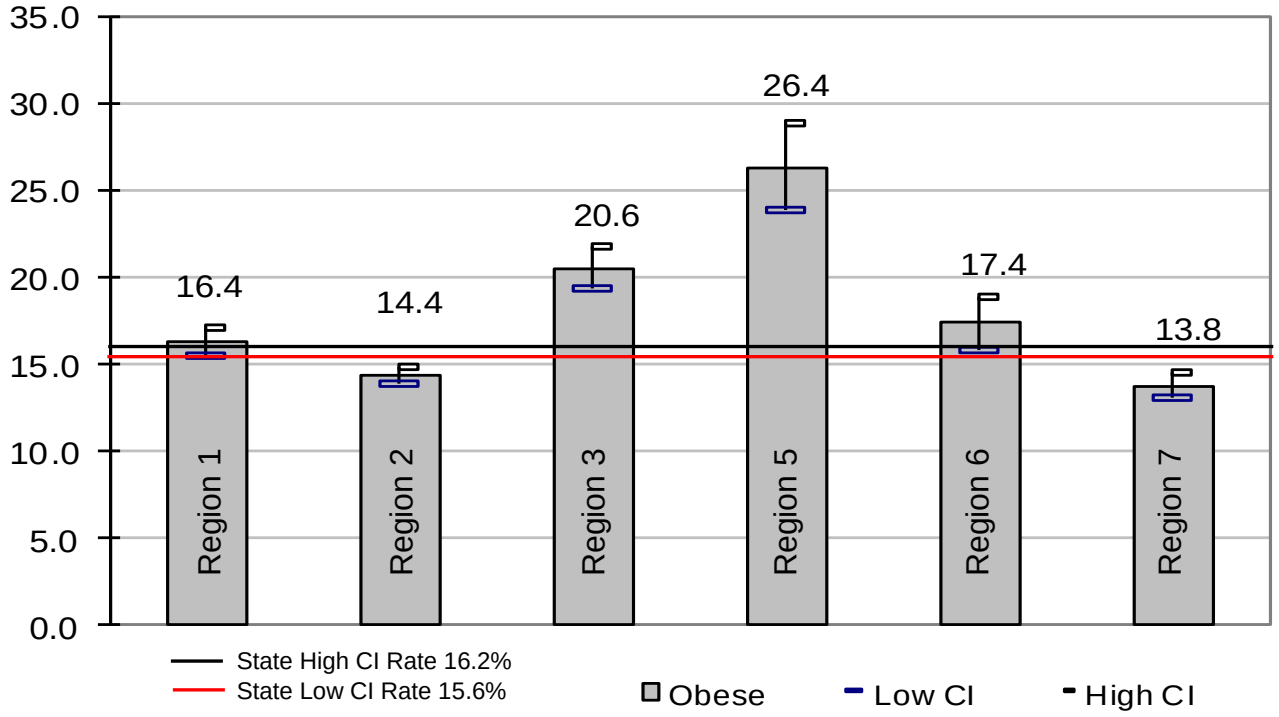
Table 10: School Year 2011-2012 Overweight and Obese Body Mass Index, by Regions				
Region	**Number of Students**	**Overweight**	**Obese**	**Overweight/Obese Combined**
1	9,931	17.2%	16.4%	33.6%
2	20,468	16.2%	14.4%	30.6%
3	5,057	19.5%	20.6%	40.1%
5	1,650	17.2%	26.4%	43.6%
6	3,023	18.6%	17.4%	36.0%
7	9,949	14.5%	13.8%	28.3%
Total	50,078	16.6%	15.9%	32.5%

Source: South Dakota Department of Health
Note: As of the 2009-2010 school year, ESA region 4 school districts were distributed to the other regions and ESA region 4 was eliminated.

Figure 8, below, shows that regions 2 and 7 are the only regions that are significantly below the state low confidence interval rate of 15.6 percent. Regions 3 and 5 are significantly higher than the state rate.

Regions 1 and 6 are not significantly different as they fall into the statewide range of 15.6 to 16.2 percent. See page 19 for an explanation of confidence interval rates.

Figure 8: School Year 2011-2012 Obese Body Mass Index for Age, by Regions with Confidence Intervals



Source: South Dakota Department of Health
Note: As of the 2009-2010 school year, ESA region 4 school districts were distributed to the other six regions and ESA region 4 was eliminated.

Obesity Risk Factors

Obesity is a risk factor for the following conditions in adulthood: cardiovascular disease, hypertension, diabetes, degenerative joint disease, and psychological problems. Although commonly thought of as an adult disease, obesity is a growing problem in children and adolescents and its consequences are increasingly being seen. Numerous studies show pediatric obesity is associated with the increased risks of psychological and psychiatric problems, cardiovascular risk factors, chronic inflammation, type 2 diabetes mellitus, and asthma. (Krebs, Pediatrics 120 Suppl, December 2007) Research shows that 60 percent of overweight 5- to 10-year-old children already have at least one risk factor for heart disease, including hyperlipidemia and elevated blood pressure or insulin levels. Type 2 diabetes, a disease that typically appears in adults, is increasing at alarming rates among children and adolescents. Liver disorders are more frequently found in overweight children and overweight children also have more hypertension, sleep apnea, and orthopedic complications. Overweight children are taller and mature earlier than non-overweight children. (Dietz, *Pediatrics 101 Suppl,* March 1998).

The most widespread consequences of obesity in children are psychological. With a culture that generally prefers thinness, obese children are targets of early and systematic discrimination. They have fewer friends and are regarded as lazy or sloppy. Obese adolescents develop a negative self-image. Children who mature early tend to have lower self-esteem. (Dietz, *Pediatrics 101 Suppl,* March 1998).

Having excess weight during childhood increases the chance that the person will be obese as an adult. Whitaker et al (NEJM: 1997;337-869-873) reported that 69 percent of obese children 6 to 10 years will be obese at age 25, 83 percent of obese children 10-15 years will be obese at age 25, and 77 percent of obese adolescents 15-18 years will be obese at age 25. For children overweight, the percentages are 55, 75, and 67 respectively. Overweight and obesity in childhood and adolescence have also been associated with adverse socioeconomic outcomes in adulthood.

Comparison to Other Data

Height and weight data were measured nationally in a series of representative surveys, the National Health Examination Survey (NHES) and the National Health and Nutrition Examination Survey (NHANES). When the new obese definition is applied to data from earlier national health examination surveys, it is apparent that obesity in children and adolescents was relatively stable from the 1960s to 1980. However, from NHANES II (1976-80) to NHANES III, the prevalence of obesity nearly doubled among children and adolescents. In the time interval between NHANES II and III, the prevalence of obesity among children ages 6-11 years increased from an estimated 7 percent to 11 percent, and among adolescents ages 12-19 years, increased from 5 percent to 11 percent. NHANES IV results for 2003-2004 indicated that 18.8 percent of children, ages 6 to 11 were obese and 17.4 percent of adolescents ages 12 to 19 were obese.

Another recent NHANES survey found that obesity prevalence among children and adolescents showed no significant changes between 2003-2004 and 2005-2006. The current NHANES survey reports 18.0 percent of 6- to 11-year-olds were obese and 18.4 percent of 12- to 19-year-olds were obese. (Ogden CL, Carroll MD, Kitt BK, Flegal KM: Prevalence of Obesity and Trends in Body Mass Index Among US Children and Adolescents, 1999-2010 JAMA. 2012;307(5):483-490)

Using the Pediatric Nutrition Surveillance System (PedNSS), the DOH has collected height and weight data of infants and children participating in the South Dakota Supplemental Nutrition Program for Women, Infants, and Children (WIC) since 1995. WIC serves children under the age of 5 who are at nutritional risk and are from families with limited incomes. The 2011 rate for those at or above the 95th percent for BMI-for-age, ages 2 to 5 years was 15.3 percent, down from 16.1 percent in 2010.

Prevention of Child Overweight and Child Obesity

Child overweight and child obesity is a multi-faceted problem that should be addressed by promoting healthy eating and increasing physical activity and decreasing inactivity. While it will take all South Dakotans working together to overcome this increasing problem, schools can play a key role in providing education and healthy environments.

Care must also be taken not to encourage weight preoccupation, inappropriate eating habits, and extreme amounts of exercise associated with eating disorders in youth. While overweight and obese are used in this report, choosing language to inform the child and family should be more neutral, such as using “weight” , “excess weight”, and “BMI.”

Based on the school height and weight data submitted, some South Dakota schools have successfully worked to reverse the increasing trend in overweight children. For ideas about what these schools can do, see the schools’ tab on www.HealthySD.gov. School wellness policies can be a great tool for creating healthier environments. For help in creating a school wellness policy, go to http://doe.sd.gov/schoolhealth/wellnesspolicy.asp

While prevention should be the goal, recognize that individual children may need specific plans of care. Schools are encouraged to work with their local health care providers to define when and how referrals for further evaluation and intervention are made for individual students.

What Everyone Can Do

- Set a good example by being physically active and eating a healthy, balanced intake high in fruits, vegetables, and whole grains.
- Advocate for convenient, safe, and adequate places for young people to play and take part in physical activity programs.
- Support daily physical education and other school programs that promote lifelong healthy eating and physical activity, not just competitive sports.
- Urge parent associations and school clubs to sell healthy foods or non-food items for fund-raising activities.
- Join a school health or nutrition advisory council, such as Team Nutrition, to help guide nutrition policy and educational programs.
- Access walking and bicycling trails in your community and area parks.
- Participate in outdoor activities at South Dakota state parks. For a schedule listing, go to http://gfp.sd.gov/calendar.aspx
- Participate in Action for Healthy Kids network to improve the health and educational performance of children through better nutrition and physical activity in schools. http://www.actionforhealthykids.org/

Research shows **six science-based strategies** to prevent obesity and other chronic diseases:

- ✓ Increase physical activity
- ✓ Decrease television viewing
- ✓ Increase fruit and vegetable intake
- ✓ Decrease sweetened beverage intake
- ✓ Decrease portion sizes
- ✓ Increase breastfeeding

What Parents Can Do

- Provide children with healthy food choices for meals and snacks.
- Encourage children to be physically active.
- Involve children in selecting and preparing food.
- Learn what your children want from physical activity programs and help choose appropriate activities.
- Volunteer to help children's sports teams and recreation programs.
- Make physical activity a fun, family event.
- Serve as a role model for your children by eating a variety of healthy foods.
- Play and be physically active with children.
- Limit television watching or video games to no more than two hours per day.

Research shows that children must be offered a food ***9-15* times** before they will try it. Continue to offer a new food and eventually they are likely to try it.

What Students Can Do

- Make healthy choices in the school cafeteria, when packing lunch, and for snacks.
- Walk to school where possible.
- Set goals for increasing your physical activity and monitor your progress.
- Encourage friends and family members to be physically active and to eat healthfully.
- Use protective clothing and proper equipment to prevent injuries and ill-nesses.
- Encourage the student council to ad-vocate for physical education classes and after-school programs that are attractive to all students and to request healthy food choices in school and at school events.
- Take elective courses in health, physical education, cooking, and nutrition.
- Limit television watching or computer games to no more than two hours per day.

Screen-Free Week is a national awareness campaign that encourages Americans to turn off the TV and media for seven days and use that time to take part in other activities.

In 2013***, National Screen-Free Week*** will be promoted April 28-May 4 through www.HealthySD.gov and state partners.

What Teachers & Coaches Can Do

- *Team Nutrition* provides a wealth of information that can be downloaded or ordered without charge. http://doe.sd.gov/cans/teamnutrition.aspx
- Use the South Dakota Health Education Content Standards and the South Dakota Physical Education Content Standards as guides for curriculum planning. http://doe.sd.gov/contentstandards/
- Coordinated School Health in the Departments of Education and Health provides technical assistance in selecting quality curriculum and increasing physical activity. http://doe.sd.gov/schoolhealth/index.asp
- Promote walking or biking to school and participate in the "South Dakota Walk-n-Roll to School" program. http://doe.sd.gov/schoolhealth/schoolwalk.aspx
- Offer healthy, appealing foods wherever food is available and discourage the availability of foods high in fat, sodium, and added sugars (such as soda, candy, and fried chips) at school functions and trips and as part of fund-raising activities.
- Learn about the Munch Code model policy which helps students identify healthy foods to eat at concession stands, school events, etc. and order the free kit. www.munchcode.org
- Emphasize activity and enjoyment over competition.
- Help students become competent in many motor and behavioral skills.
- Provide nutrition education through activities that are fun, participatory, developmentally appropriate, and culturally relevant. Activities should emphasize the positive, appealing aspects of healthy eating rather than the harmful effects of unhealthy eating.

- Provide opportunities for all children to participate in quality physical education classes every school day. For information regarding physical activity standards, training events and a tool to analyze the quality of current curriculum, see http://doe.sd.gov/schoolhealth/index.aspx
- Work with food nutrition managers, coaches, physical education teachers, and other staff to coordinate nutrition education efforts and give students consistent messages about healthy eating.
- Model good nutrition and physical activity habits.
- Involve physical activity when teaching in a classroom setting.
- Involve families and community organizations in physical activity programs.
- Refrain from using food to discipline or reward students.
- Request healthy snacks for class parties.
- Include in teaching a discussion of body image and societal pressures, especially for young girls.

South Dakota Walk-n-Roll to School was designed to get children to walk or bike to school all year long. It focuses not only on kids walking and biking to school, but also while they are at school, such as walking during recess or before and after the school day. **SD Walk-n-Roll to School** can take on whatever form you choose that works best for your school and students.

What School Nutrition Staff Can Do

- Provide meals that are tasty and appealing to students and that meet USDA nutrition standards and the Dietary Guidelines for Americans.
- Post the nutritional content of foods served.
- Sell ala carte foods that meet nutrition standards.
- Involve students and families in planning and evaluating school meals.
- Look for continuing education opportunities to learn more about nutrition, preparing healthier meals, food safety, and making healthy choices.
- Incorporate marketing and promotion strategies from the Fruit and Vegetables Galore toolkit from *Team Nutrition*.
- Apply for the Healthier U.S. School Challenge from the U.S. Department of Agriculture.
- Support classroom lessons by offering foods to illustrate key messages and decorating the cafeteria with educational posters.
- Provide healthy sack lunches for students for out-of-school events such as athletic trips.
- Invite parents to lunch and give them information about the nutritional value of the meal.
- Implement a Harvest of the Month program to get kids excited about trying fruits and vegetables by sampling produce and learning in short presentations. To get more information, go to this website: www.sdharvestofthemonth.org

What School Administrators & Board Members Can Do

- Organize a school health or nutrition advisory committee that includes all key groups.
- Allocate adequate time for nutrition education as part of a sequential, comprehensive health education program.

NEWS infused Coordinated School Health

Coordinated School Health has developed a monthly communications network for informing all public, private, BIE and tribal school districts about current health issues, available resources, professional development and funding opportunities. Information focuses on Coordinated School Health priority areas including promoting physical activity and nutrition, HIV prevention, and tobacco prevention. To view past issues online, go to http://doe.sd.gov/schoolhealth/newsinfused/index.asp

- Make schools available to the public to use for walking.
- Require health education and daily physical education for students in grades K-12.
- Encourage food service staff to limit serving sizes to recommended portions.
- Become a *Team Nutrition* school and access information available.
- Provide adequate time and space for students to eat meals in a pleasant, safe environment.
- Provide time during the day, such as recess, for unstructured physical activity, such as walking or jumping rope.

Did you know?

79.4 percent of S.D. High School Students did not attend physical education classes daily (when they were in school) as compared to 68.5 percent nationally?

Source: 2011 SD YRBS and 2011 National YRBS

- Stock vending machines with 100 percent fruit juice and other healthy snacks; make sure that healthy foods are served at school meetings and events.
- Limit the sale of high-fat, high-sugar snacks during mealtimes and at fund-raisers.
- Hire qualified physical activity specialists and coaches, food service and nutrition education staff.
- Provide health promotion programs for faculty and staff.
- Evaluate school nutrition and physical activity programs using the School Health Index.
- Use the SD Health Education Content Standards and the SD Physical Education Content Standards as guides for curriculum planning. http://doe.sd.gov/contentstandards/
- Utilize the "Strides to a Healthier Worksite" guide that will take you step by step through starting a worksite wellness program in your school. http://www.healthysd.gov/Workplace/PDF/WorksiteToolkit.pdf

What School Nurses & Health Professionals Can Do

- Measure height and weight accurately and use the CDC growth charts to screen children and adolescents.
- Provide anticipatory guidance to parents and children regarding healthy eating and physical activity habits. Evaluate children and adolescents with constructive screens and refer as appropriate for intervention.
- Include in teaching a discussion of body image and societal pressures, especially for young girls.
- View information from "Obesity in South Dakota: a Clinical Toolkit for Healthcare Providers" to help address weight issues in patients. www.healthysd.gov/HealthProfs/obesitytoolkit.aspx

Did you know?

Only 15 percent of South Dakota high school students ate 5 or more servings of fruits and vegetables per day during the past seven days?

Source: 2011 SD Youth Risk Behavior Survey

What Communities Can Do

- Utilize the "Strides to a Healthier Community" planning guide to evaluate your community. http://www.healthysd.gov/Communities/pdf/StridesHealthyCommunity.pdf
- Provide a mix of competitive team sports and noncompetitive, lifelong fitness and recreation activities.
- Increase the availability of parks, public swimming pools, hiking and biking trails, and other places for physical activity, including sidewalks.
- Ensure that coaches have appropriate coaching competencies.
- Provide after-school programs for children.
- Work with schools, businesses, and community groups to ensure that low-income young people have transportation to and appropriate equipment for physical activity programs.

Technical Notes

Height- Short stature is defined as a height-for-age below the 5th percentile for children of the same height and age in the reference populations used by the CDC.

Children grow at different rates depending upon age and gender. The BMI value is plotted on growth charts, and the resulting value of BMI-for-age is presented as a percentile value.

Underweight- Children falling below the 5th percentile in BMI-for-age, compared to children of the same gender and age in the CDC reference population, are considered underweight.

Overweight- If a child's BMI-for-age is between the 85th and 94th percentile in the CDC reference population of children matched for age and gender, the child is considered to be overweight.

Obese- If a child is at or above the 95th percentile for children of that age and gender, the child is considered to be obese.

Obesity- Obesity is an excessively high amount of body fat or adipose tissue in relation to lean body mass. Adults with a BMI of 25 to 29.9 are considered overweight, while adults with a BMI of 30 or more are considered obese**.**

Confidence Intervals (CI)- The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95 percent of the time. Rates for two different populations (areas, regions) are considered significantly different when their confidence intervals do not overlap.

The standard error and confidence intervals are calculated in the following manner. For example, region 5's obese rate is 26.4 percent. This was based on 1,650 student measurements of which 436 are "obese" in 2011-2012. The square root of 436 is roughly 20.9. By dividing the rate of 26.4 by 20.9, the estimated SE of approximately 1.26 is the result. The estimated SE can then be used to compute a 95 percent CI for the rate. The standard formula **RATE ± (1.96 *SE)** is used for determining the 95 percent CI. Following this formula, we produce an equation of 26.4 ± (1.96 * 1.26) and the result is 26.4 ± 2.5. From this, the estimated 95 percent CI is 23.9 to 28.9 percent. It could then be stated, with 95 percent certainty that the actual 2011-2012 obese rate for region 5 is between 23.9 and 28.9 percent.

Therefore, region 5's obese rate is considered significantly different from the state rate. This is because the confidence intervals for region 5 (23.9-28.9) and the state (15.6-16.2) do not overlap. The same can be said for region 3 (19.4-21.9). Regions 1 and 6 are not considered significantly different as the confidence intervals overlap the statewide intervals. See Figure 8 on page 11.

BMI (Body Mass Index)- The formula to calculate BMI is weight (lb) ÷ height (in) ÷ height (in) x 703. This formula is used for adults. See the next page for children and adolescents BMI.

BMI - Body Mass Index: BMI for Children and Adolescents- BMI is used differently with children and adolescents than it is with adults. In children and adolescents, body mass index for age is used to assess underweight, overweight, and obesity. Girls and boys differ in their body fatness as they mature. This is why BMI for children, also referred to as BMI-for-age, is gender and age specific.[1, 2] BMI-for-age is plotted on gender specific growth charts. These charts are used for children and adolescents 2 – 20 years of age. For the 2000 CDC Growth Charts and additional information visit CDC's National Center for Health Statistics website at http://www.cdc.gov/growthcharts/.

Each of the CDC BMI-for-age gender specific charts contains a series of curved lines indicating specific percentiles. So if a child is in the 60th percentile it means that compared to children of the same gender and age, 60 percent have a lower BMI. Healthcare professionals use the following established percentile cutoff points to screen underweight and overweight in children.

Underweight	BMI-for-age < 5th percentile
Overweight	BMI-for-age 85th percentile to < 95th percentile
Obese	BMI-for-age ≥ 95th percentile

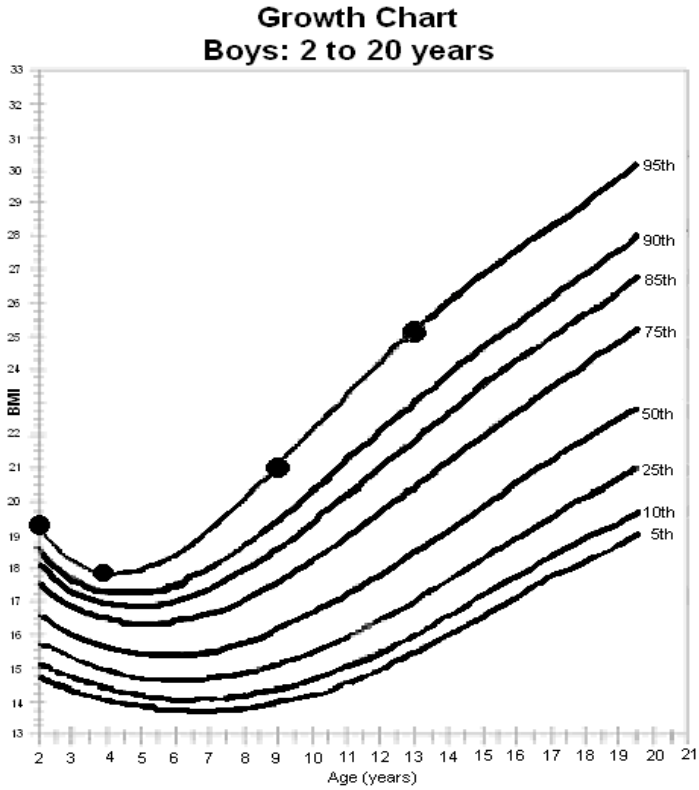
BMI decreases during the preschool years, then increases into adulthood. The percentile curves show this pattern of growth.

Sample of BMI and Growth Chart

As a boy grows, his BMI changes, but he remains at the 95th percentile BMI-for-age.

Age	BMI	Percentile
2	19.3	95th
4	17.8	95th
9	21.0	95th
13	25.1	95th

The example shows how the boy's BMI declines during his preschool years and increases, as he gets older.



BMI-for-Age for children and adolescents is a useful tool because:

- BMI-for-age provides a reference for adolescents that can be used beyond puberty.
- BMI-for-age in children and adolescents compares well to laboratory measures of body fat.
- BMI-for-age can be used to track body size throughout life

[1] Hammer LD, Kraemer HC, Wilson DM, Ritter PL, Dornbusch SM. Standardized percentile curves of body-mass index for children and adolescents. *American Journal of Disease of Child*. 1991; 145:259–263.

[2] Pietrobelli A, Faith MS, Allison DB, Gallagher D, Chiumello G, Heymsfield, SB. Body mass index as a measure of adiposity among children and adolescents: A validation study. *Journal of Pediatrics*. 1998; 132:204–210.

Acknowledgements

A special thanks goes to the school personnel who submitted the data and to the Centers for Disease Control and Prevention for technical assistance. This is an ongoing project and schools are encouraged to continue to submit data they are collecting.

Other South Dakota State Agency Websites:

Healthy South Dakota: www.HealthySD.gov

Healthy SD Coordinated School Health in the Departments of Education and Health: http://doe.sd.gov/schoolhealth/index.aspx

CANS/Team Nutrition SD Model School Wellness Policy and Resources: http://doe.sd.gov/schoolhealth/documents/Wellness_Policy.pdf

For More Information

For additional ideas about how to address overweight and obesity, try these websites:

Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Division of Adolescent and School Health**:** www.cdc.gov/healthyyouth/index.htm

Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition, Physical Activity, and obesity**:** http://www.cdc.gov/nccdphp/dnpao

School Health Index for Physical Activity and Healthy Eating: A Self-Assessment and Planning Guide: http://www.cdc.gov/HealthyYouth/SHI/

Action for Healthy Kids, nationwide initiative with guidance provided by more than 30 national organizations and government agencies: www.actionforhealthykids.org

Promoting Physical Activity A Guide to Community Action: http://www.cdc.gov/physicalactivity/professionals/promotion/communityguide.html

Team Nutrition—Healthy School Meals Resource System: http://healthymeals.nal.usda.gov/resource-library

South Dakota Department of Education: http://doe.sd.gov/schoolhealth/index.aspx

South Dakota Game, Fish, and Parks has brochures and resources for outdoor physical education opportunities. http://gfp.sd.gov/

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Appendix 1:
Directions for Completing School Heights and Weights Data Sheet

1. **School Name and County**: Provide full name of school and county in which school is located.
   District Name: Report the name of the school district in which the school is located.
   Contact Name and Email: This information is needed incase there are questions about the data. Provide the name of the contact person and their email address.
   School Principal's Name and Email: This information is needed for contact purposes.

2. **Date of Measurement:** Complete date using month, day, and year. If data was obtained on September 20, 2010 enter 09 20 2010. Use a *separate page for each day* data is collected. Please send data as obtained rather than wait until the end of the school year to send the recorded data.

Information on each student measured:

3. **Name of student:** Remove this information before submitting the data. It is provided for local school information only.

4. **ID#:** Each child measured needs a unique identification number. It can just be numerical order but three digits should be used (i.e., 001, 002, etc). The number is used for data collection purposes only. Please do not use an ID number more than once for each school.

5. **Sex:** Enter sex of student as either 1 (male) or 2 (female).

6. **Date of Birth:** Record person's date of birth. If date of birth is May 8, 2000, record as follows:

Mo.		Day		Year			
0	5	0	8	2	0	0	0

7. **Ethnic Origin/Race:** Enter each student's race. Complete this by your observation of the race. Select one or more of the categories listed below:

1	White, not Hispanic
2	Black, not Hispanic
3	Hispanic
4	American Indian or Alaskan Native
5	Hawaiian or Pacific Islander
6	Asian
7	Other
9	Not Specified / Unknown

8. **Height:** Enter height of individual. Use inches to the nearest 1/8 inch. Do not change denominator of fraction. Always convert to eighths: 3/4 should be converted to 6/8, 1/4 to 2/8, etc. If height is 45 1/8 inches, record as follows:

4	5	1/8

Allowable entries for numerator of fraction are 0-7. Do not leave blank if zero. Do not use 9 for an unknown fraction. If height is 62 inches, record as follows:

6	2	0/8

Below is a conversion chart to convert feet and inches to inches. We have added this to the report form for ease of submitting height in inches, as required.

Ft.	In.	= In.	Ft.	In.	= In.	Ft.	In.	= In.	Ft.	In.	= In.
3	0	36	4	0	48	5	0	60	6	0	72
3	1	37	4	1	49	5	1	61	6	1	73
3	2	38	4	2	50	5	2	62	6	2	74
3	3	39	4	3	51	5	3	63	6	3	75
3	4	40	4	4	52	5	4	64	6	4	76
3	5	41	4	5	53	5	5	65	6	5	77
3	6	42	4	6	54	5	6	66	6	6	78
3	4	43	4	7	55	5	7	67	6	7	79
3	8	44	4	8	56	5	8	68	6	8	80
3	9	45	4	9	57	5	9	69	6	9	81
3	10	46	4	10	58	5	10	70	6	10	82
3	11	47	4	11	59	5	11	71	6	11	83

School personnel should measure height with a metal measuring tape and right-angle headpiece or full-length measuring board to insure accuracy. Do not use the measuring rod on the adult balance beam weight scale because it is not accurate. Have individual remove shoes, heavy outer clothing, hats, and hair barrettes. Procedure:

(1) Have the student stand with his or her back against the wall on a flat floor directly in front of the measuring tape. The tape should run directly down the center of the back.
(2) Individual should stand with feet slightly apart and the back as straight as possible. The heels, buttocks, and shoulder blades should touch the wall or surface of the measuring board.
(3) Have individual look straight ahead with head erect but not touching the wall or measuring board.
(4) Place the headpiece flat against the wall and at a right angle to the head. Lower it until it firmly touches the crown of the head.
(5) Hold the right-angle headpiece steady and have the person move out from under it.
(6) Read the measurement at eye level where the lower edge of the headpiece intersects the measuring tape.
(7) Repeat the procedure until two measurements agree within 1/4 inch. Record the larger of the two measurements on the form.

9. **Weight:** Enter weight of individual. Use pounds to the nearest 1/4 pound. Do not change the denominator of the fraction. Always convert to fourths (1/2 should be converted to 2/4, 4/16 to 1/4, etc.) For example, if weight is 56 1/2 pounds, record as follows:

0	5	6	2/4

Do not leave numerator of fraction blank if zero. Do not use 9 for unknown fraction unless pounds are unknown also. For example, 125 pounds is recorded as follows:

1	2	5	0/4

Weight should be taken without shoes or heavy outer clothing. Use adult beam balance scale if at all possible. Scale needs to be placed on uncarpeted floor if possible for an accurate weight. Child needs to stand on the center of scale platform and not be touching other objects or person. Child should be weighed, step off the scale, and then weighed again to ensure an accurate weight.

10. **Submit data as soon as possible after measurements are taken,** though data will be accepted throughout the school year until the June 15 deadline. Send all data to:

Email: Carrie.Cushing@state.sd.us

Mail: Carrie Cushing
South Dakota Department of Health
615 E. 4th St
Pierre, SD 57501-2535 Fax: 605.773.5509

Return to: Carrie Cushing
South Dakota Department of Health
615 E 4th St
Pierre, SD 57501

Email: Carrie.Cushing@state.sd.us

SCHOOL HEIGHTS /WEIGHTS

School Name: _____

County: _____

District Name: _____

Contact Person: _____ Contact Email: _____

School Principal Name: _____ Principal Email: _____

Date of Measurements: _____ (MO. DAY YEAR)

Name (**For your use only – remove before submitting**)	ID#	Sex **(required)**	DOB **(required)** mo	day	year	Race	Height **inches**	**8's**	Weight **pounds**	**4's**
								/8		/4
								/8		/4
								/8		/4
								/8		/4
								/8		/4
								/8		/4
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								/8		/4
								/8		/4
								/8		/4
								/8		/4
								/8		/4

Converting Feet & Inches to Inches

Ft.	In.	= Inches	Ft.	In.	= Inches
3	0	= 36	5	3	= 63
3	1	= 37	5	4	= 64
3	2	= 38	5	5	= 65
3	3	= 39	5	6	= 66
3	4	= 40	5	7	= 67
3	5	= 41	5	8	= 68
3	6	= 42	5	9	= 69
3	7	= 43	5	10	= 70
3	8	= 44	5	11	= 71
3	9	= 45	6	0	= 72
3	10	= 46	6	1	= 73
3	11	= 47	6	2	= 74
4	0	= 48	6	3	= 75
4	1	= 49	6	4	= 76
4	2	= 50	6	5	= 77
4	3	= 51	6	6	= 78
4	4	= 52	6	7	= 79
4	5	= 53	6	8	= 80
4	6	= 54	6	9	= 81
4	7	= 55	6	10	= 82
4	8	= 56	6	11	= 83
4	9	= 57	7	0	= 84
4	10	= 58	7	1	= 85
4	11	= 59	7	2	= 86
5	0	= 60	7	3	= 87
5	1	= 61	7	4	= 88
5	2	= 62	7	5	= 89

Race: 1=White, not Hispanic 2=Black, not Hispanic 3=Hispanic 4=American Indian or Alaskan Native 5=Hawaiian or Pacific Islander 6=Asian 7=Other 9=Unknown
For students with more than one race, please indicate each race and separate with a comma.

Sex: 1=Male 2=Female

Appendix 2
Participating Schools

School Name, City	Education Service Agency Region	County
Alcester-Hudson Elementary, Alcester	2	Union
All City Elementary, Sioux Falls	2	Minnehaha
Anne Sullivan Elementary, Sioux Falls	2	Minnehaha
Atall Elementary, Union Center	7	Meade
Axtell Park Middle School, Sioux Falls	2	Minnehaha
Baltic Elementary, Baltic	2	Minnehaha
Baltic High School, Baltic	2	Minnehaha
Baltic Middle School, Baltic	2	Minnehaha
Beadle Elementary, Yankton	3	Yankton
Belle Fourche High School, Belle Fourche	7	Butte
Belle Fourche Middle School, Belle Fourche	7	Butte
Black Hawk Elementary, Black Hawk	7	Meade
Blumengard Colony, Faulkton	5	Faulk
Brandon Elementary, Brandon	2	Minnehaha
Brentwood Colony, Faulkton	5	Faulk
Bridges at Horace Mann, Sioux Falls	2	Minnehaha
Bridges at Jefferson, Sioux Falls	2	Minnehaha
Bridgewater Elementary, Bridgewater	2	McCook
Brown High School, Sturgis	7	Meade
Buchanan Elementary, Huron	3	Beadle
Buchanan Elementary, Pierre	6	Hughes
Camelot Intermediate, Brookings	1	Brookings
Canyon Lake Elementary, Rapid City	7	Pennington
Career Tech High School, Sioux Falls	2	Minnehaha
CC Lee Elementary, Aberdeen	1	Brown
Central High School, Aberdeen	1	Brown
Challenge Center, Sioux Falls	2	Minnehaha
Chamberlain Elementary, Chamberlain	3	Brule
Cheyenne River BIA Elementary, Eagle Butte	5	Dewey
Cheyenne River BIA Upper Elem, Eagle Butte	5	Dewey
Cleveland Elementary, Sioux Falls	2	Minnehaha
Corral Drive Elementary, Rapid City	7	Pennington
Creekside Elementary, Spearfish	7	Lawrence
Dakota Middle School, Rapid City	7	Pennington
Dakota Valley Elementary, N. Sioux City	2	Union
Dakota Valley Middle School, N. Sioux City	2	Union
Dell Rapids Middle School, Dell Rapids	2	Minnehaha
Discovery Elementary, Sioux Falls	2	Minnehaha
Douglas Middle School, Box Elder	7	Pennington
Dupree Schools, Dupree	5	Ziebach
Edison Middle School, Sioux Falls	2	Minnehaha
Elk Point-Jefferson Elementary, Elk Point	2	Union
Elk Point-Jefferson Middle School, Elk Point	2	Union
Elm Springs Elementary, Wasta	7	Meade
Emery Elementary, Emery	2	Hanson
Enemy Swim Day School, Waubay	1	Day
Enning/Union Center Elementary, Enning	7	Meade

Participating Schools (continued)

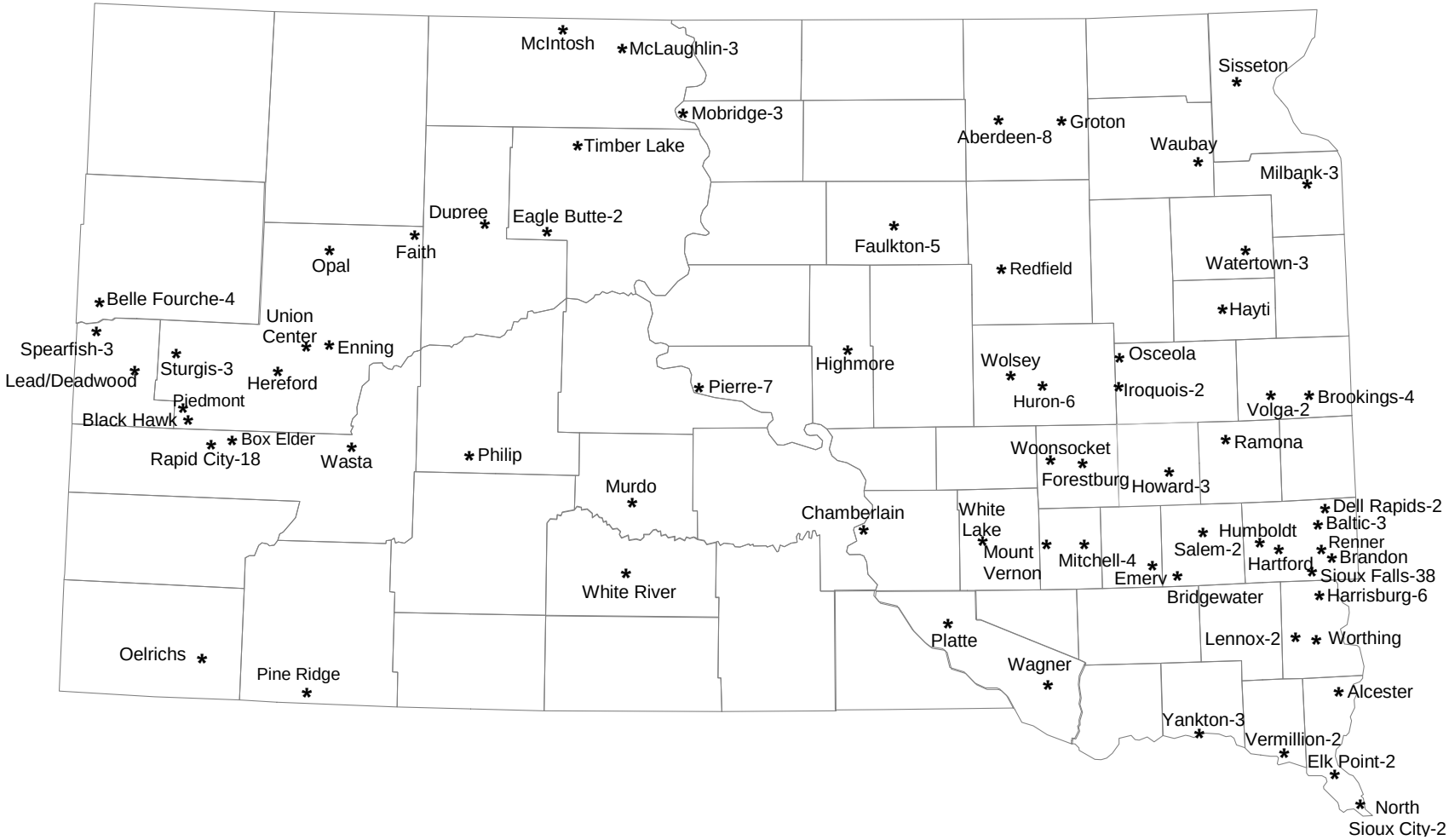
School Name, City	Education Service Agency Region	County
Eugene Field Elementary, Sioux Falls	2	Minnehaha
Evergreen Colony, Faulkton	5	Faulk
Explorer Elementary, Harrisburg	2	Lincoln
Faith Elementary, Faith	5	Meade
Faulkton Schools, Faulkton	5	Faulk
Fred Assam Elementary, Brandon	2	Minnehaha
Freedom Elementary, Harrisburg	2	Lincoln
Freeman Davis Elementary, Mobridge	5	Walworth
Garfield Elementary, Sioux Falls	2	Minnehaha
General Beadle Elementary, Rapid City	7	Pennington
George S. Mickelson Middle School, Brookings	1	Brookings
Georgia Morse Middle School, Pierre	6	Hughes
Gertie Belle Rogers Elementary, Mitchell	3	Davison
Grandview Elementary, Rapid City	7	Pennington
Groton Schools, Groton	1	Brown
Hamlin Elementary, Hayti	1	Hamlin
Harrisburg High School, Harrisburg	2	Lincoln
Harrisburg Middle School, Harrisburg	2	Lincoln
Hartford Elementary, Hartford	2	Minnehaha
Harvey Dunn Elementary, Sioux Falls	2	Minnehaha
Hawthorne Elementary, Sioux Falls	2	Minnehaha
Hayward Elementary, Sioux Falls	2	Minnehaha
Hereford Elementary, Hereford	7	Meade
Highmore-Harrold Elementary, Highmore	6	Hyde
Hillcrest Elementary, Brookings	1	Brookings
Holgate Middle School, Aberdeen	1	Brown
Horace Mann Elementary, Sioux Falls	2	Minnehaha
Howard Elementary, Howard	2	Miner
Howard High School, Howard	2	Miner
Howard Junior High School, Howard	2	Miner
Humboldt Elementary, Humboldt	2	Minnehaha
Huron High School, Huron	3	Beadle
Huron Middle School, Huron	3	Beadle
Iroquois Schools, Iroquois	1	Kingsbury
Jefferson Elementary, Huron	3	Beadle
Jefferson Elementary, Pierre	6	Hughes
Jefferson Elementary, Sioux Falls	2	Minnehaha
Joe Foss Alternative, Sioux Falls	2	Minnehaha
John F. Kennedy Elementary, Sioux Falls	2	Minnehaha
John Harris Elementary, Sioux Falls	2	Minnehaha
Jolly Elementary, Vermillion	2	Clay
John Paul II Elementary, Mitchell	3	Davison
Journey Elementary, Harrisburg	2	Lincoln
Jones County Schools, Murdo	6	Jones
Knollwood Heights Elementary, Rapid City	7	Pennington
Koch Elementary, Milbank	1	Grant
Laura B. Anderson Elementary, Sioux Falls	2	Minnehaha
Laura Wilder Elementary, Sioux Falls	2	Minnehaha
LB Williams Elementary, Mitchell	3	Davison
Lead-Deadwood Elementary, Deadwood	7	Lawrence

Participating Schools (continued)

School Name, City	Education Service Agency Region	County
Lennox Elementary, Lennox	2	Lincoln
Lennox Middle School, Lennox	2	Lincoln
Liberty Elementary, Harrisburg	2	Lincoln
Lincoln Elementary, Aberdeen	1	Brown
Lincoln Elementary, Watertown	1	Codington
Lincoln High School, Sioux Falls	2	Minnehaha
Longfellow Elementary, Mitchell	3	Davison
Longfellow Elementary, Sioux Falls	2	Minnehaha
Lowell Elementary, Sioux Falls	2	Minnehaha
Madison Elementary, Huron	3	Beadle
Mark Twain Elementary, Sioux Falls	2	Minnehaha
May Overby Elementary, Aberdeen	1	Brown
McCook Central Elementary, Salem	2	McCook
McCook Central Middle School, Salem	2	McCook
McIntosh Schools, McIntosh	5	Corson
McKinley Elementary, Pierre	6	Hughes
McKinley Elementary, Watertown	1	Codington
McLaughlin Elementary, McLaughlin	5	Corson
McLaughlin High School, McLaughlin	5	Corson
McLaughlin Middle School, McLaughlin	5	Corson
Meadowbrook Elementary, Rapid City	7	Pennington
Medary Elementary, Brookings	1	Brookings
Memorial Middle School, Sioux Falls	2	Minnehaha
Milbank High School, Milbank	1	Grant
Milbank Middle School, Milbank	1	Grant
Mitchell Middle School, Mitchell	3	Davison
Mobridge-Pollock Middle School, Mobridge	5	Walworth
Mobridge Upper Elementary, Mobridge	5	Walworth
Mount Vernon Schools, Mount Vernon	3	Davison
New Technology High School, Sioux Falls	2	Minnehaha
North Middle School, Rapid City	7	Pennington
North Park Elementary, Belle Fourche	7	Butte
Oelrichs Schools, Oelrichs	7	Fall River
Oldham/Ramona Elementary, Ramona	1	Lake
OM Tiffany Elementary, Aberdeen	1	Brown
Opal Elementary, Opal	7	Meade
Oscar Howe Elementary, Sioux Falls	2	Minnehaha
Patrick Henry Middle School, Sioux Falls	2	Minnehaha
Pearl Creek Colony, Iroquois	1	Kingsbury
Philip Schools, Philip	7	Haakon
Piedmont Valley Elementary, Piedmont	7	Meade
Pierre Indian Learning Center, Pierre	6	Hughes
Pinedale Elementary, Rapid City	7	Pennington
Platte-Geddes Elementary, Platte	3	Charles Mix
Rapid Valley Elementary, Rapid City	7	Pennington
Redfield Schools, Redfield	1	Spink
Renberg Elementary, Sioux Falls	2	Minnehaha
RF Pettigrew Elementary, Sioux Falls	2	Minnehaha
Robbinsdale Elementary, Rapid City	7	Pennington
Robert Frost Elementary, Sioux Falls	2	Minnehaha

Participating Schools (continued)

School Name, City	Education Service Agency Region	County
Roosevelt High School, Sioux Falls	2	Minnehaha
Rosa Parks Elementary, Sioux Falls	2	Minnehaha
Sacred Heart, Yankton	3	Yankton
Sanborn Central Schools, Forestburg	3	Sanborn
Simmons Elementary, Aberdeen	1	Brown
Simmons Middle School, Aberdeen	1	Brown
Sioux Valley Elementary, Volga	1	Brookings
Sioux Valley Middle School, Volga	1	Brookings
Sisseton High School, Sisseton	1	Roberts
South Canyon Elementary, Rapid City	7	Pennington
South Middle School, Rapid City	7	Pennington
South Park Elementary, Belle Fourche	7	Butte
Spearfish Middle School, Spearfish	7	Lawrence
St. Agnes Elementary, Vermillion	2	Clay
St. Elizabeth Seton School, Rapid City	7	Pennington
St. Mary's Schools, Dell Rapids	2	Minnehaha
St. Thomas More Middle School, Rapid City	7	Pennington
Sturgis Elementary, Sturgis	7	Meade
Sunny Plains Christian School, Osceola	1	Kingsbury
Terry Redlin Elementary, Sioux Falls	2	Minnehaha
TF Riggs High School, Pierre	6	Hughes
Thunderbird Colony, Faulkton	5	Faulk
Timber Lake Schools, Timber Lake	5	Dewey
Valley View Elementary, Rapid City	7	Pennington
Wagner Community Schools, Wagner	3	Charles Mix
Washington Elementary, Huron	3	Beadle
Washington Elementary, Pierre	6	Hughes
Washington High School, Sioux Falls	2	Minnehaha
Watertown Middle School, Watertown	1	Codington
Webster Elementary, Yankton	3	Yankton
West Elementary, Spearfish	7	Lawrence
West Middle School, Rapid City	7	Pennington
White Lake Schools, White Lake	3	Aurora
White River Schools, White River	6	Mellette
Whittier Middle School, Sioux Falls	2	Minnehaha
Williams Middle School, Sturgis	7	Meade
Wolf Creek Elementary, Pine Ridge	7	Shannon
Wolsey/Wessington Schools, Wolsey	3	Beadle
Woodrow Wilson Elementary, Rapid City	7	Pennington
Woonsocket Elementary, Woonsocket	3	Sanborn
Worthing Elementary, Worthing	2	Lincoln

Appendix 3

Schools Participating In Height & Weight Survey, 2011-2012