

Idaho 3rd Grade Body Mass Index (BMI) Assessment

2011/2012 School Year

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2nd Revision



IDAHO DEPARTMENT OF
HEALTH & WELFARE

Introduction

Background

According to the Centers for Disease Control and Prevention, childhood obesity is the result of eating too many calories and not getting enough physical activity. From a public health perspective this is an important reminder that obesity is essentially a symptom of unhealthy living. Using this approach, the key objective of public health is not to reduce the prevalence of obesity per se, but to see a reduction in obesity associated with an increase in the prevalence of people eating healthy diets and getting regular physical activity.

Body Mass Index (BMI) is calculated using a child's height and weight, and is one of the most widely used indicators of body fat for children and adolescents.

Obesity prevalence among children and adolescents in the U.S. has tripled over the past 30 years, and it is currently estimated that there are approximately 12.5 million obese children and adolescents aged 2 to 19 years. Although there are currently no overall estimates available for the number of overweight and obese children in Idaho; based on results of the 2011/12 Idaho 3rd Grade BMI Assessment and the 2011 Idaho Youth Risk Behavior Survey there are an estimated 6,200 (29%) overweight or obese 3rd grade students and 17,700 (23%) overweight or obese high school students (grades 9 through 12).

During the 2007/08 and 2011/12 school years, the Bureau of Community and Environmental Health (BCEH) contracted with each of Idaho's seven Public Health Districts (PHDs) to assess the weight status of 3rd grade public school students using the BMI and associated standardized weight status categories (defined below).

Childhood Obesity

Obesity is often the result of environments that do not promote healthy eating and participation in adequate physical activity. Schools, communities, child care centers, and homes are environments where choices about eating and physical activity have the greatest impact on children and adolescents. Within these environments, the ability of children to make healthy choices is influenced by:

- Sugary drinks and less healthy foods in schools
- Advertising and promotion of less healthy foods
- Significant variation in child care center licensure regulations
- Lack of daily, quality physical activity in schools
- Lack of safe, appealing places to play or be active outside of the home
- Limited access to healthy affordable foods
- Greater choice and availability of high-energy-dense foods and sugary drinks
- Increasing portion sizes.
- Increased utilization of television and media

Obesity is considered a problem because of the harmful effect it can have on the body, even for children and adolescents. Obese children are more likely to have:

- High blood pressure and high blood cholesterol, which are both risk factors for cardiovascular disease
- Impaired glucose tolerance, insulin resistance, and type 2 diabetes
- Respiratory problems like asthma and sleep apnea
- Musculoskeletal problems
- Fatty liver disease, gallstones, and heartburn associated with gastro-esophageal reflux
- Social and psychological problems

Obese children are at risk for other health risks later in life and are more likely to become obese adults. Overweight children are also at a greater risk for more severe obesity in adulthood.

Strategies and Solutions

Although there is no single solution for addressing childhood obesity, there are a number of strategies that states and local communities can adopt to address obesity among children and adolescents.

- Assess the retail food environment.
- Provide incentives for local farmers' markets and grocery stores to establish businesses in lower socioeconomic neighborhoods and/or sell healthier foods.
- Expand programs that promote the use of local fruits and vegetables in public schools.
- Adopt childcare licensing standards that address healthy food choices and limit computer or TV screen time.
- Increase access to drinking water and limit the sale of sugar drinks.
- Support breast-feeding.
- Create and maintain safe neighborhoods that support engaging in regular physical activity.
- Support quality daily physical education standards in child care facilities and schools.

In addition to community- and state-based strategies, parents can have a huge impact in addressing childhood obesity.

- Limit screen time for kids to no more than 1 to 2 hours per day
- Ensure that their children attend child care centers that serve healthy foods and drinks, and limit TV and video time.
- Work with schools to promote the adoption of healthy food and snack policies.
- Provide their children with plenty of fruits and vegetables, and limit foods high in sugar or fat.
- Serve their family water instead of sugar drinks.
- Encourage their family to get adequate physical activity each day (i.e., 60 minutes or more of physical activity each day).

Methodology

Study Design

The assessment utilized a disproportionate stratified sampling (DSS) methodology for selecting schools for participation in the BMI assessment. Schools were randomly chosen such that approximately 300 students from each of Idaho's seven PHDs – for a statewide sample of 2,102 students – had their height and weight measured by a trained health professional. This sampling methodology provided the statistical power to detect (in future years of screening) a 5% change in BMI prevalence at the district level 99% of the time ($\alpha=0.05$, $SD=2$) and a 1% change in BMI prevalence at the state level 99% of the time ($\alpha=0.05$, $SD=2$). Enrollment data from the Idaho Department of Education were used to estimate the expected 3rd grade student populations within each school selected.

All 3rd grade students were eligible for selection and inclusion if they were enrolled and in attendance (on the day in which the assessment measurements were collected) in any of the selected public schools.

Instruments

Questionnaires and measurement protocols were developed by the Bureau of Community and Environmental Health (Idaho Department of Health and Welfare) as part of the Idaho 3rd Grade BMI Assessment project. The data collection forms were designed to collect school level information (school location, name of measurer, date of measurement, public health district, number of 3rd grade students enrolled in school) and individual student information (date of birth, sex, weight in kilograms, height in centimeters). No other information or any identifying information was collected about the students.

Student height and weight were measured with a standard protocol by trained health professionals. Every person involved in the screening process signed a confidentiality statement prior to program participation. Height was measured to the nearest 0.1 cm with a portable stadiometer (Seca 214) with the student in a standing position. Weight was measured to the nearest 0.1 kilograms using a portable Tanita (model BWB-800S) scale.

Data Analysis and Weighting

Body Mass Index estimates were calculated and all statistical analysis was performed using SAS 9.2 by the Bureau of Community and Environmental Health. Christopher Johnson, Epidemiologist with the Cancer Data Registry of Idaho provided valuable technical assistance on sampling methods and data analysis. The results presented here are statistically weighted to represent all 3rd grade public school students in Idaho and account for probability of selection and non-response.

Statistical Significance

Any difference determined to be statistically significantly different (using 95% confidence intervals) is designated as such and is preceded by the words “significantly” or “statistically.”

Response Rates

The student response rate for participation in the 2011/12 Idaho 3rd grade BMI assessment was 80% (2,102/2,641). The BMI assessment used a combination of active and passive consent based on individual school- or school-district preference. A school response rate was not calculated because the sampling protocol allowed for schools that declined participation to be replaced by a school with similar enrollment within the public health district boundaries.

	# Eligible Schools	# Schools Participated	# Total 3rd Grade Students	# 3rd Graders Selected	# 3rd Graders Measured
Idaho	344	45	21,195	2,641	2,102
PHD1	41	8	1,876	407	222
PHD2	28	9	1,037	268	246
PHD3	51	6	3,740	502	378
PHD4	87	5	6,138	380	330
PHD5	40	6	2,656	451	364
PHD6	43	4	2,592	309	288
PHD7	54	7	3,156	324	274

BMI Percentiles for Children

After BMI is calculated for children, the BMI number is plotted on a BMI-for-age growth chart (specific for either girls or boys) to obtain a percentile ranking. The percentile indicates the relative position of the child’s BMI number among children of the same sex and age.

Definition of Standardized Weight Status Categories (Percentile Range):

- Underweight..... Less than the 5th percentile
- Healthy Weight..... 5th percentile to less than 85th percentile
- Overweight..... 85th to less than the 95th percentile
- Obese..... Equal to or greater than the 95th percentile

For more information regarding the assessment protocol or analysis please contact Joseph Pollard at 208.332.7302 or BCEH@dhw.Idaho.gov.

Idaho Statewide and Health District Results

The table below shows results of the 2011/12 Idaho 3rd Grade BMI Assessment. Among Idaho 3rd grade students; **1.5%** were underweight, **68.8%** were a healthy weight, **15.1%** were overweight, and **14.6%** were obese. Compared with results of the 2007/08 BMI assessment, there was a slight increase in 2011/12 of the proportion of obese students (12.8% to 14.6%). For a more complete comparison between 2007/08 and 2011/12 results see Appendix A.

Among sexes, male students were slightly more likely than female students to be categorized as obese (15.6% and 13.7% respectively).

Underweight - 1.5% of 3rd grade students in Idaho are considered underweight. The proportion of students who are underweight varied from a low of **0.5%** in Public Health District 2 (PHD2) to a high of **2.1%** in PHD5.

Healthy Weight - 68.8% of 3rd grade students in Idaho are considered to be at a healthy weight. PHD4 (**75%**) had the highest proportion of 3rd grade students who are considered to be at a healthy weight, while PHD3 (**61%**) had the lowest proportion.

Overweight - 15.1% of 3rd grade students in Idaho were overweight. PHD4 (**13%**) had the lowest proportion of students who were overweight, while PHD2 (**19%**) had the highest proportion of students who were overweight.

Obese - 14.6% of 3rd grade students in Idaho are obese based on results of the assessment. PHD3 (**22%**) had the greatest proportion of obese students; a difference that is statistically higher than the statewide obesity rate. PHD4 (**10%**) had the lowest proportion of obese students.

Idaho State Total and Public Health District 3rd Grade BMI Assessment Results													
	N	Underweight			Healthy Weight			Overweight			Obese		
		%	95% C.I.	95% C.I.	%	95% C.I.	95% C.I.	%	95% C.I.	95% C.I.	%	95% C.I.	95% C.I.
Idaho Total	2,102	1.5%	1.1%	2.0%	68.8%	65.2%	72.3%	15.1%	13.1%	17.0%	14.6%	11.7%	17.6%
PHD1	222	0.6%	0.0%	1.5%	67.8%	63.1%	72.5%	19.0%	10.0%	28.0%	12.6%	4.2%	21.1%
PHD2	246	1.6%	0.0%	3.4%	64.0%	55.1%	72.8%	19.2%	14.0%	24.4%	15.2%	9.9%	20.6%
PHD3	378	1.1%	0.4%	1.9%	61.4%	54.9%	67.9%	15.3%	9.3%	21.4%	22.2%	18.5%	25.8%
PHD4	330	1.8%	0.9%	2.7%	75.4%	68.1%	82.7%	12.6%	9.9%	15.4%	10.1%	3.5%	16.7%
PHD5	364	2.1%	1.4%	2.9%	66.4%	58.5%	74.2%	17.0%	14.9%	19.2%	14.5%	6.8%	22.2%
PHD6	288	1.7%	0.0%	3.6%	64.8%	54.5%	75.0%	15.6%	12.9%	18.3%	17.9%	9.8%	26.1%
PHD7	274	1.4%	0.1%	2.7%	71.9%	62.9%	80.9%	13.7%	8.1%	19.2%	13.0%	8.1%	17.9%

Idaho 3rd Grade BMI Assessment Results by Sex of Student									
	Male Students N=1,040			Female Students N=1,062			Total Students N=2,102		
	%	95% C.I.	95% C.I.	%	95% C.I.	95% C.I.	%	95% C.I.	95% C.I.
Underweight	1.9%	1.2%	2.7%	1.2%	0.5%	1.8%	1.5%	1.1%	2.0%
Healthy Weight	67.7%	63.8%	71.6%	69.8%	66.0%	73.7%	68.8%	65.2%	72.3%
Overweight	14.8%	12.4%	17.2%	15.3%	12.9%	17.8%	15.1%	13.1%	17.0%
Obese	15.6%	12.3%	19.0%	13.7%	10.2%	17.2%	14.6%	11.7%	17.6%

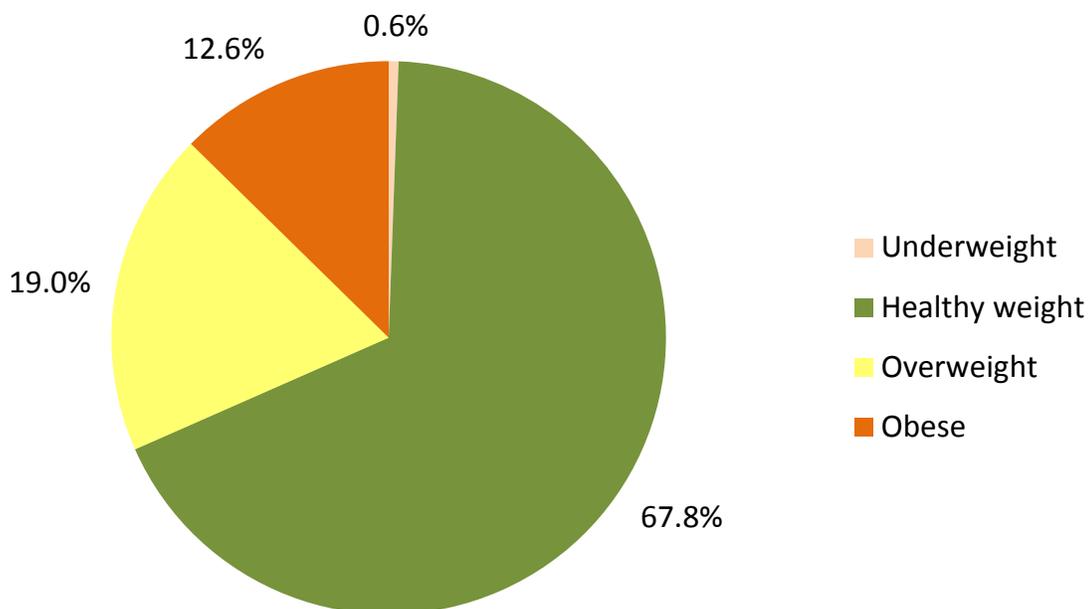
PHD1 - Panhandle Health District

PHD1 - Panhandle Health District				Idaho Total			
N=222				N=2,102			
	N	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	2	0.6%	0.0%	1.5%	1.5%	1.1%	2.0%
Healthy Weight	148	67.8%	63.1%	72.5%	68.8%	65.2%	72.3%
Overweight	36	19.0%	10.0%	28.0%	15.1%	13.1%	17.0%
Obese	36	12.6%	4.2%	21.1%	14.6%	11.7%	17.6%

Panhandle Health District - PHD1

- 12.6% of 3rd grade students in PHD1 were considered obese, which is slightly lower than the state obesity rate of 14.6%.
- 67.8% of 3rd graders in PHD1 were considered to be at a healthy weight compared to 68.8% statewide.
- The percentage of obese students did not increase in 2011/12; however the percentage of overweight students in PHD1 increased markedly from 10.7% in 2007/08 to 19.0% in 2011/12. (See Appendix A)

PHD1 - Panhandle Health District 2011/2012 Idaho 3rd Grade BMI Assessment



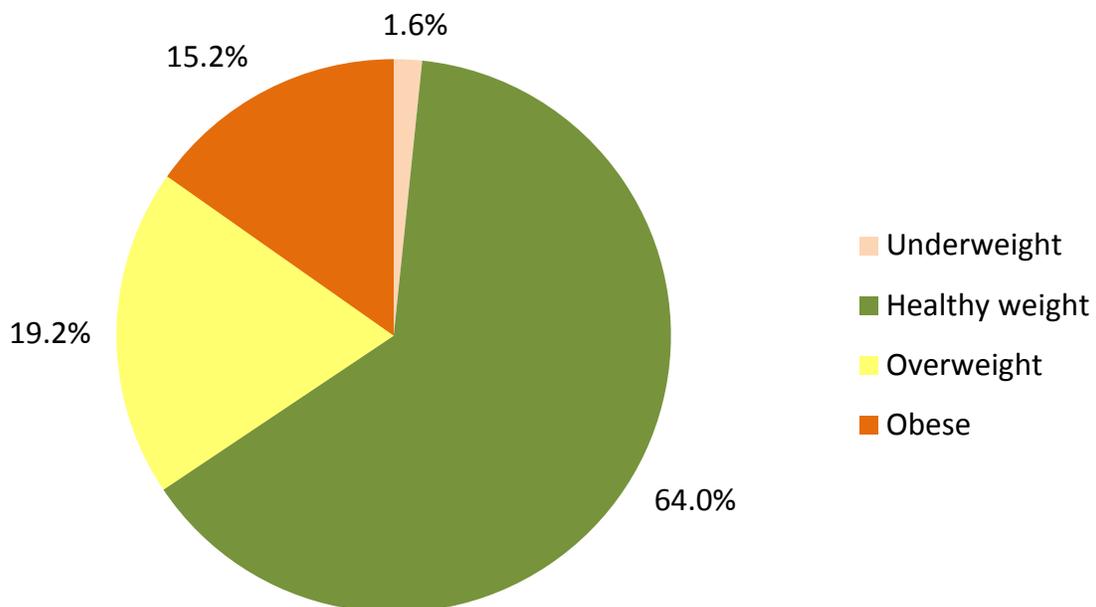
PHD2 - North Central District

PHD2 - North Central District				Idaho Total			
N=246				N=2,102			
	N	Percent	95% C.I.		Percent	95% C.I.s	
Underweight	4	1.6%	0.0%	3.4%	1.5%	1.1%	2.0%
Healthy Weight	158	64.0%	55.1%	72.8%	68.8%	65.2%	72.3%
Overweight	47	19.2%	14.0%	24.4%	15.1%	13.1%	17.0%
Obese	37	15.2%	9.9%	20.6%	14.6%	11.7%	17.0%

North Central District - PHD2

- 15.2% of 3rd grade students in PHD2 were considered obese, which is slightly higher than the state average of 14.6%.
- Only 64.0% of 3rd grade students in PHD2 were at a healthy weight compared to 68.8% statewide.
- The percentage of students who were overweight or obese in PHD2 decreased slightly from 2007/08 to 2011/12. (See Appendix A)

PHD2 - North Central District 2011/2012 Idaho 3rd Grade BMI Assessment



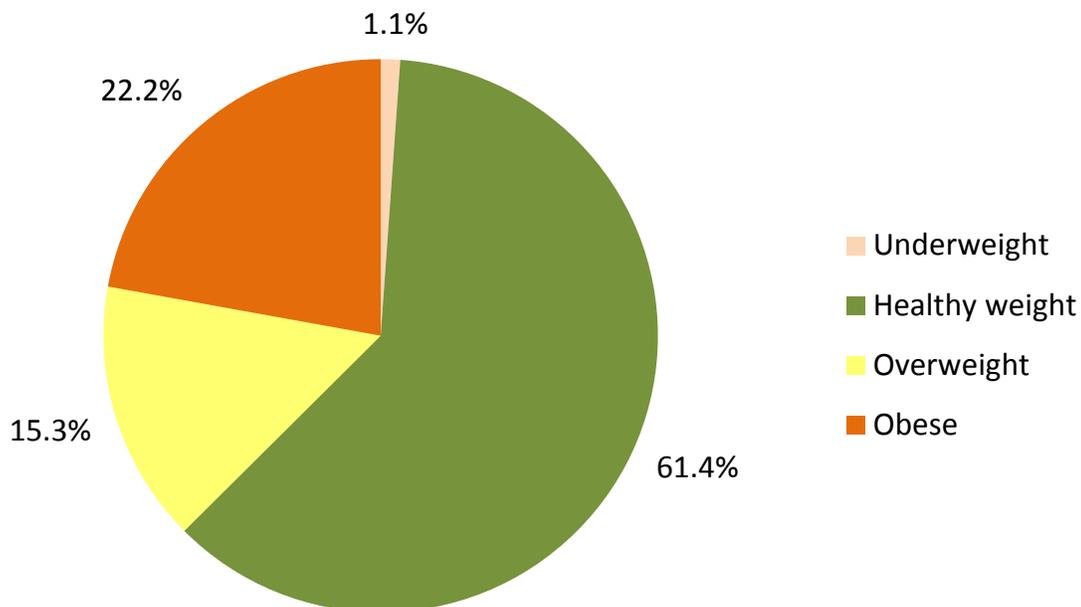
PHD3 - Southwest District Health

PHD3 - Southwest District Health				Idaho Total			
N=378				N=2,102			
	N	Percent	95% C.I.		Percent	95% C.I.	
Underweight	5	1.1%	0.4%	1.9%	1.5%	1.1%	2.0%
Healthy Weight	230	61.4%	54.9%	67.9%	68.8%	65.2%	72.3%
Overweight	57	15.3%	9.3%	21.4%	15.1%	13.1%	17.0%
Obese	86	22.2%	18.5%	25.8%	14.6%	11.7%	17.6%

Southwest District Health - PHD3

- 22.2% of students in PHD3 were considered obese, which is significantly higher than the state average of 14.6%.
- 61.4% of 3rd graders in PHD3 were at a healthy weight compared to 68.8% statewide.
- The percentage of 3rd grade students in PHD3 considered obese increased significantly from 12.8% in 2007/08 to 22.2% in 2011/12. The percentage of overweight 3rd grade students increased slightly during the same time period. (See Appendix A)

PHD3 - Southwest District Health 2011/2012 Idaho 3rd Grade BMI Assessment



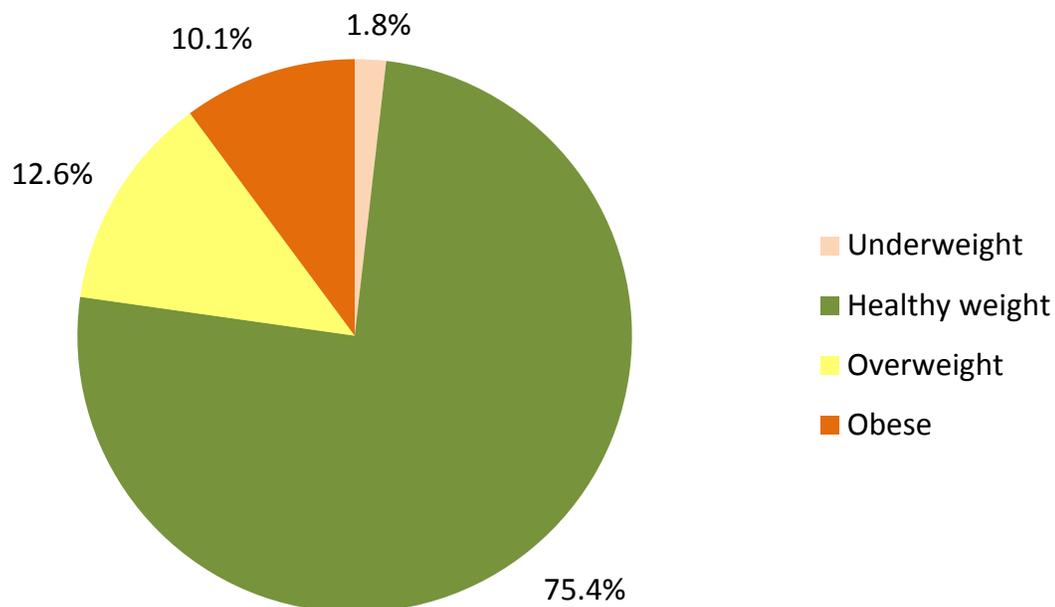
PHD4 - Central District Health Department

PHD4 - Central District Health Department				Idaho Total			
N=330				N=2,102			
	N	Percent	95% C.I.		Percent	95% C.I.s	
Underweight	6	1.8%	0.9%	2.7%	1.5%	1.1%	2.0%
Healthy Weight	249	75.4%	68.1%	82.7%	68.8%	65.2%	72.3%
Overweight	42	12.6%	9.9%	15.4%	15.1%	13.1%	17.0%
Obese	33	10.1%	3.5%	16.7%	14.6%	11.7%	17.6%

Central District Health Department - PHD4

- 10.1% of students in PHD4 were considered obese, which is lower than the state average of 14.6%
- 75.4% of 3rd graders in PHD4 were at a healthy weight compared to 68.8% statewide
- The percentage of overweight 3rd grade students in PHD4 decreased from 17.0% in 2007/08 to 12.6% in 2011/12 and the percentage of obese students decreased slightly. (See Appendix A)

PHD4 - Central District Health Department 2011/2012 Idaho 3rd Grade BMI Assessment



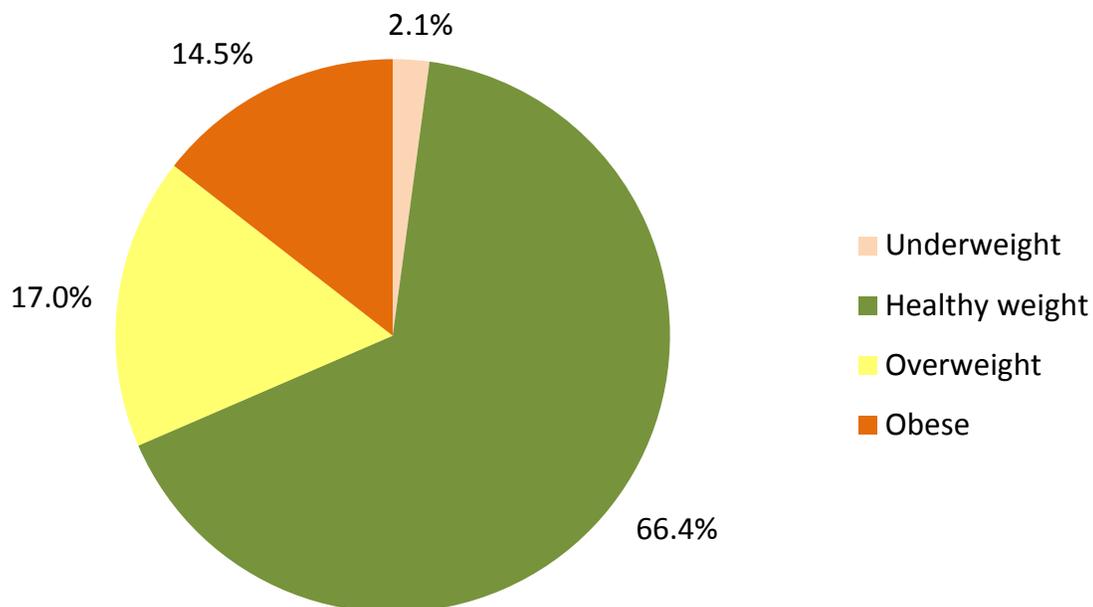
PHD5 - South Central Public Health District

PHD5 - South Central Public Health District				Idaho Total			
N=364				N=2,102			
	N	Percent	95% C.I.		Percent	95% C.I.s	
Underweight	8	2.1%	1.4%	2.9%	1.5%	1.1%	2.0%
Healthy Weight	243	66.4%	58.5%	74.2%	68.8%	65.2%	72.3%
Overweight	61	17.0%	14.9%	19.2%	15.1%	13.1%	17.0%
Obese	52	14.5%	6.8%	22.2%	14.6%	11.7%	17.6%

South Central Public Health District - PHD5

- 14.5% of students in PHD5 were considered obese, which is slightly lower than the state average of 14.6%.
- 66.4% of 3rd grade students in PHD5 were at a healthy weight compared to 68.8% statewide.
- The percentage of 3rd grade students in PHD5 who were overweight increased slightly and the percentage of obese students decreased from 16.2% in 2007/08 to 14.5% in 2011/12. (See Appendix A)

PHD5 - South Central Public Health District 2011/2012 Idaho 3rd Grade BMI Assessment



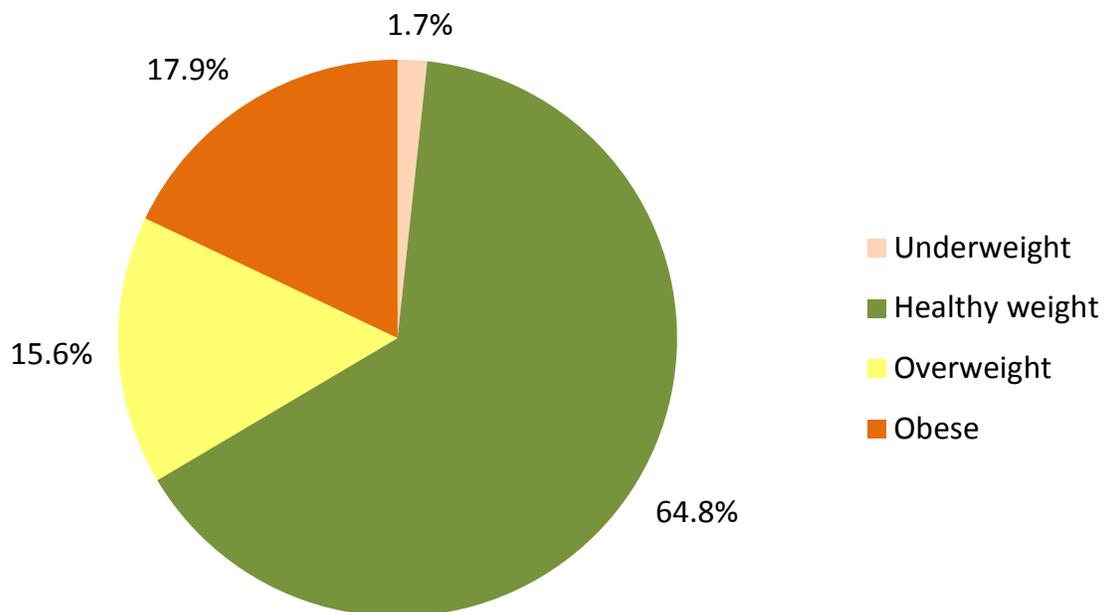
PHD6 - Southeastern Idaho Public Health

PHD6 - Southeastern Idaho Public Health					Idaho Totals		
N=288					N=2,102		
	N	Percent	95% C.I.		Percent	95% C.I.s	
Underweight	5	1.7%	0.0%	3.6%	1.5%	1.1%	2.0%
Healthy Weight	186	64.8%	54.5%	75.0%	68.8%	65.2%	72.3%
Overweight	45	15.6%	12.9%	18.3%	15.1%	13.1%	17.0%
Obese	52	17.9%	9.8%	26.1%	14.6%	11.7%	17.6%

Southeastern Idaho Public Health - PHD6

- 17.9% of students in PHD6 were considered obese, which is somewhat higher than the state average of 14.6%
- 64.8% of 3rd grade students in PHD6 were at a healthy weight compared to 68.8% statewide
- The percentage of 3rd grade students in PHD6 who were overweight decreased and the percentage of obese students increased markedly from 13.2% in 2007/08 to 17.9% in 2011/12. (See Appendix A)

PHD6 - Southeastern Idaho Public Health 2011/2012 Idaho 3rd Grade BMI Assessment



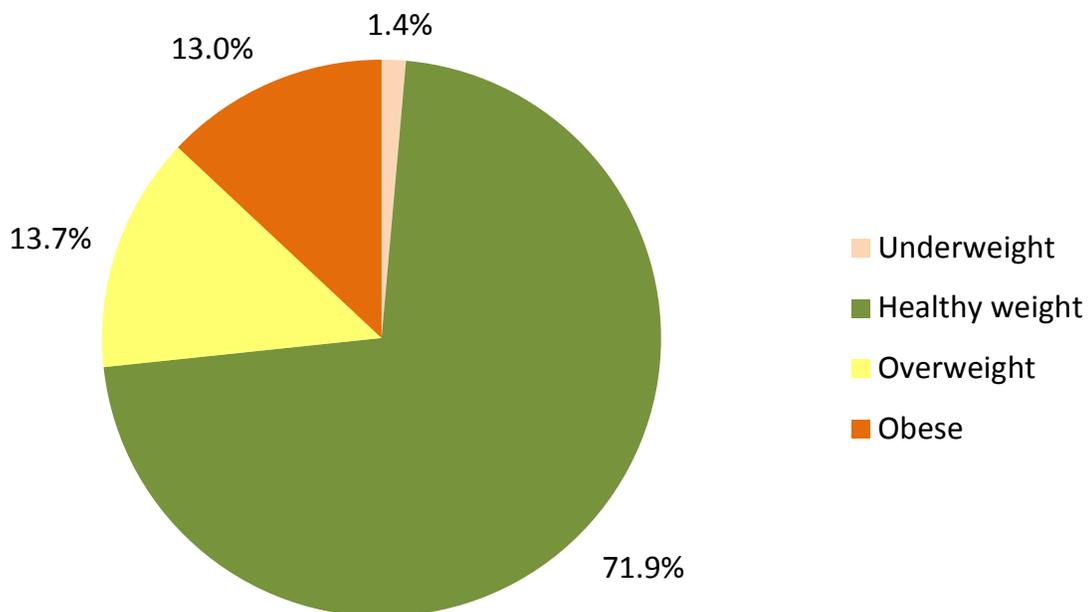
PHD7 - Eastern Idaho Public Health District

PHD7 - Eastern Idaho Public Health District				Idaho Total			
N=274				N=2,102			
	N	Percent	95% C.I.		Percent	95% C.I.s	
Underweight	4	1.4%	0.1%	2.7%	1.5%	1.1%	2.0%
Healthy Weight	198	71.9%	62.9%	80.9%	68.8%	65.2%	72.3%
Overweight	37	13.7%	8.1%	19.2%	15.1%	13.1%	17.0%
Obese	35	13.0%	8.1%	17.9%	14.6%	11.7%	17.6%

Eastern Idaho Public Health District - PHD7

- 13.0% of students in PHD7 were considered obese, which is slightly lower than the state average of 14.6%
- 71.9% of 3rd grade students in PHD7 were at a healthy weight compared to 68.8% statewide
- The percentage of 3rd grade students in PHD7 who were overweight or obese in PHD7 both decreased slightly from 2007/08 to 2011/12. (See Appendix A)

PHD7 - Eastern Idaho Public Health District 2011/2012 Idaho 3rd Grade BMI Assessment



Appendix A

Comparison of Results from 2007/08 and 2011/12 Idaho 3rd Grade BMI Assessment

Idaho Total

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=2,122			N=2,102		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	1.6%	1.0%	2.3%	1.5%	1.1%	2.0%
Healthy Weight	70.3%	67.6%	73.0%	68.8%	65.2%	72.3%
Overweight	15.2%	13.5%	16.9%	15.1%	13.1%	17.0%
Obese	12.8%	11.0%	14.6%	14.6%	11.7%	17.6%

The percentage of obese 3rd grade students in Idaho public schools increased slightly from 12.8% in 2007/08 to 14.6% in 2011/12.

Panhandle Health District - PHD1

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=281			N=222		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	0.7%	0.0%	2.0%	0.6%	0.0%	1.5%
Healthy Weight	75.8%	69.1%	82.6%	67.8%	63.1%	72.5%
Overweight	10.7%	7.2%	14.1%	19.0%	10.0%	28.0%
Obese	12.7%	6.1%	19.4%	12.6%	4.2%	21.1%

The percentage of overweight 3rd grade students in PHD1 increased from 10.7% in 2007/08 to 19.0% in 2011/12.

North Central District - PHD2

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=326			N=246		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	0.6%	0.0%	1.5%	1.6%	0.0%	3.4%
Healthy Weight	62.5%	53.2%	71.9%	64.0%	55.1%	72.8%
Overweight	20.9%	14.4%	27.5%	19.2%	14.0%	24.4%
Obese	15.9%	10.0%	21.8%	15.2%	9.9%	20.6%

There were only slight changes in the percentage of 3rd grade students in PHD2 who were considered overweight or obese between 2007/08 and 2011/12.

Southwest District Health - PHD3

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=327			N=378		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	1.5%	0.0%	3.2%	1.1%	0.4%	1.9%
Healthy Weight	72.5%	68.9%	76.1%	61.4%	54.9%	67.9%
Overweight	13.1%	9.8%	16.5%	15.3%	9.3%	21.4%
Obese	12.8%	10.7%	15.0%	22.2%	18.5%	25.8%

There percentage of obese 3rd grade students in PHD3 increased significantly from 12.8% in 2007/08 to 22.2% in 2011/12. Subsequently, the percentage of 3rd grade students considered to be at a healthy weight decreased significantly.

Central District Health Department - PHD4

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=246			N=330		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	2.0%	0.0%	4.4%	1.8%	0.0%	2.7%
Healthy Weight	70.6%	62.1%	79.1%	75.4%	68.1%	82.7%
Overweight	17.0%	11.8%	22.2%	12.6%	9.9%	15.4%
Obese	10.3%	4.9%	15.7%	10.1%	3.5%	16.7%

The percentage of 3rd grade students in PHD4 who were considered overweight decreased from 17.0% in 2007/08 to 12.6% in 2011/12, while the percentage of students considered to be at a healthy weight increased from 70.6% to 75.4%.

South Central Public Health District - PHD5

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=378			N=364		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	1.1%	0.0%	2.4%	2.1%	1.4%	2.9%
Healthy Weight	66.4%	58.0%	74.8%	66.4%	58.5%	74.2%
Overweight	16.3%	9.7%	22.8%	17.0%	14.9%	19.2%
Obese	16.2%	12.5%	19.8%	14.5%	6.8%	22.2%

There were only small changes in the percentage of 3rd grade students in PHD5 who were overweight or obese between 2007/08 and 2011/12.

Southeastern Idaho Public Health - PHD6

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=303			N=288		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	1.3%	0.1%	2.5%	1.7%	0.0%	3.6%
Healthy Weight	68.2%	54.4%	82.0%	64.8%	54.5%	75.0%
Overweight	17.3%	10.4%	24.2%	15.6%	12.9%	18.3%
Obese	13.2%	6.4%	19.9%	17.9%	9.8%	26.1%

The percentage of 3rd grade students in PHD6 who were considered obese increased markedly from 13.2% in 2007/08 to 17.9% in 2011/12.

Eastern Idaho Public Health District - PHD7

	2007/08 BMI Assessment			2011/12 BMI Assessment		
	N=261			N=274		
	Percent	95% C.I.s		Percent	95% C.I.s	
Underweight	2.6%	0.0%	5.2%	1.4%	0.1%	2.7%
Healthy Weight	70.0%	60.4%	79.6%	71.9%	62.9%	80.9%
Overweight	13.8%	8.8%	18.8%	13.7%	8.1%	19.2%
Obese	13.6%	7.0%	20.1%	13.0%	8.1%	17.9%

There were only small changes in the percentage of 3rd grade students in PHD7 who were overweight or obese between 2007/08 and 2011/12.

