

Idaho 3rd Grade  
Body Mass Index (BMI) Assessment

2007/2008 School Year

## **Introduction**

### *Background or Problem*

The percentage of overweight children in the U.S. tripled between 1980 and 2002. Each year more U.S. children are identified as overweight or obese. Overweight children are more likely to have increased blood pressure, cholesterol, lipid and insulin levels. They are also more likely to be obese as adults. In Idaho, the prevalence of overweight and obese adults has increased significantly from 1996 to 2005 (51.6% to 61.4%). There are currently no estimates available for the prevalence of overweight and obese children in Idaho nor are there any data which provide time-series analysis of overweight and obese Idaho children.

The Bureau of Community and Environmental Health (BCEH) contracted with each of Idaho's seven Public Health Districts to assess the weight status of 3rd grade public school students using the Body Mass Index (BMI) and associated standardized weight status categories (defined below).

## **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 public health districts – for a statewide sample of 2,122 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*

The results presented here are weighted to represent all 3rd grade public school students in Idaho. School level results were not weighted as they already represent all 3rd grade students for that school (with the exception of those 3rd grade students who did not participate due to absence, refusal, etc.).

*Response Rates*

The response rate for participation in the BMI assessment among schools was 92% (44/48), while the student response rate was 89% (2,125/2,386) for a combined response rate of 82%.

	<b># Eligible Schools</b>	<b># Schools Selected</b>	<b># Schools Participated</b>	<b># Total 3rd Grade Students</b>	<b># 3rd Graders Selected</b>	<b># 3rd Graders Measured</b>
<b>Idaho</b>	<b>324</b>	<b>48</b>	<b>44</b>	<b>19,783</b>	<b>2,386</b>	<b>2,125</b>
D1	40	7	7	2,269	302	281
D2	27	11	10	941	354	326
D3	45	4	4	3,536	358	327
D4	80	5	5	5,647	291	246
D5	38	8	8	2,315	426	378
D6	37	7	5	2,048	343	303
D7	57	6	5	3,027	312	264

	<b>School Response Rate</b>	<b>Student Response Rate</b>	<b>Overall Response Rate</b>
<b>Idaho</b>	<b>92%</b>	<b>89%</b>	<b>82%</b>
D1	100.0%	93.0%	93.0%
D2	90.1%	92.1%	83.0%
D3	100.0%	91.3%	91.3%
D4	100.0%	84.5%	84.5%
D5	88.9%	88.7%	78.9%
D6	62.5%	88.3%	55.2%
D7	83.3%	83.7%	69.7%

**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 5<sup>th</sup> percentile
- Healthy Weight ..... 5<sup>th</sup> percentile to less than 85<sup>th</sup> percentile
- At Risk for Overweight ..... 85<sup>th</sup> to less than the 95<sup>th</sup> percentile
- Overweight ..... Equal to or greater than the 95<sup>th</sup> percentile

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

## Idaho Statewide and Health District Results

The table below shows weighted results (see Methodology in the Introduction) of the 2007/2008 Idaho 3rd Grade BMI Assessment. Among Idaho 3rd grade students; **1.6%** were underweight, **70.3%** were a healthy weight, **15.2%** were at risk for overweight, and **12.8%** were overweight based on their BMI-for-age percentile. Among sexes, male students were slightly more likely than female students to be categorized as overweight (13.9% and 11.5% respectively).

**Underweight** - **1.6%** of 3rd grade students in Idaho are considered underweight. The proportion of students who are underweight varied from a low of **0.6%** in District 2 to a high of **2.6%** in District 7. There were no statistically significant differences between health districts in the proportion of 3rd grade students who were underweight.

**Healthy Weight** - **70.3%** of 3rd grade students in Idaho are considered to be at a healthy weight. District 1 (**76%**) had the highest proportion of 3rd grade students who are considered to be at a healthy weight, while District 2 (**63%**) had the lowest proportion. There were no statistically significant differences among health districts concerning the proportion of students at a healthy weight.

**At Risk for Overweight** - **15.2%** of 3rd grade students in Idaho were at risk for becoming overweight. District 1 (**11%**) had the lowest proportion of students who were at risk for overweight, while District 2 (**21%**) had the highest proportion of students at risk for overweight. Only Districts 1 and 2 differed significantly.

**Overweight** - **12.8%** of 3rd grade students in Idaho are overweight based on results of the assessment. While there are no significant differences in the proportion of overweight 3rd graders among health districts, District 5 (**16%**) had the greatest proportion of overweight students and District 4 (**10%**) had the lowest proportion.

Idaho State Total and Public Health District BMI Assessment Results													
		Underweight			Healthy Weight			At Risk for Overweight			Overweight		
	N	%	95% C.I.		%	95% C.I.		%	95% C.I.		%	95% C.I.	
<b>Idaho Total</b>	<b>2,122</b>	<b>1.6%</b>	<b>1.0%</b>	<b>2.3%</b>	<b>70.3%</b>	<b>67.6%</b>	<b>73.0%</b>	<b>15.2%</b>	<b>13.5%</b>	<b>16.9%</b>	<b>12.8%</b>	<b>11.0%</b>	<b>14.6%</b>
PHD1	281	<b>0.7%</b>	0.0%	2.0%	<b>75.8%</b>	69.1%	82.6%	<b>10.7%</b>	7.2%	14.1%	<b>12.7%</b>	6.1%	19.4%
PHD2	326	<b>0.6%</b>	0.0%	1.5%	<b>62.5%</b>	53.2%	71.9%	<b>20.9%</b>	14.4%	27.5%	<b>15.9%</b>	10.0%	21.8%
PHD3	327	<b>1.5%</b>	0.0%	3.2%	<b>72.5%</b>	68.9%	76.1%	<b>13.1%</b>	9.8%	16.5%	<b>12.8%</b>	10.7%	15.0%
PHD4	246	<b>2.0%</b>	0.0%	4.4%	<b>70.6%</b>	62.1%	79.1%	<b>17.0%</b>	11.8%	22.2%	<b>10.3%</b>	4.9%	15.7%
PHD5	378	<b>1.1%</b>	0.0%	2.4%	<b>66.4%</b>	58.0%	74.8%	<b>16.3%</b>	9.7%	22.8%	<b>16.2%</b>	12.5%	19.8%
PHD6	303	<b>1.3%</b>	0.1%	2.5%	<b>68.2%</b>	54.4%	82.0%	<b>17.3%</b>	10.4%	24.2%	<b>13.2%</b>	6.4%	19.9%
PHD7	261	<b>2.6%</b>	0.0%	5.2%	<b>70.0%</b>	60.4%	79.6%	<b>13.8%</b>	8.8%	18.8%	<b>13.6%</b>	7.0%	20.1%

Idaho 3rd Grade BMI Assessment Results by Sex of Student				
N=2122				
	Male Students		Female Students	
	N	%	N	%
Underweight	11	1.4%	18	2.0%
Healthy weight	757	69.2%	710	71.6%
At Risk for Overweight	177	15.5%	158	14.9%
Overweight	174	13.9%	117	11.5%

**PHD1 - Panhandle Health District**

<b>PHD1 - Panhandle Health District</b>				
N=281				
	N	Percent	95% C.I.	
Underweight	2	<b>0.7%</b>	0.0%	2.0%
Healthy Weight	213	<b>75.8%</b>	69.1%	82.6%
At Risk for Overweight	30	<b>10.7%</b>	7.2%	14.1%
Overweight	36	<b>12.7%</b>	6.1%	19.4%

**Panhandle Health District**

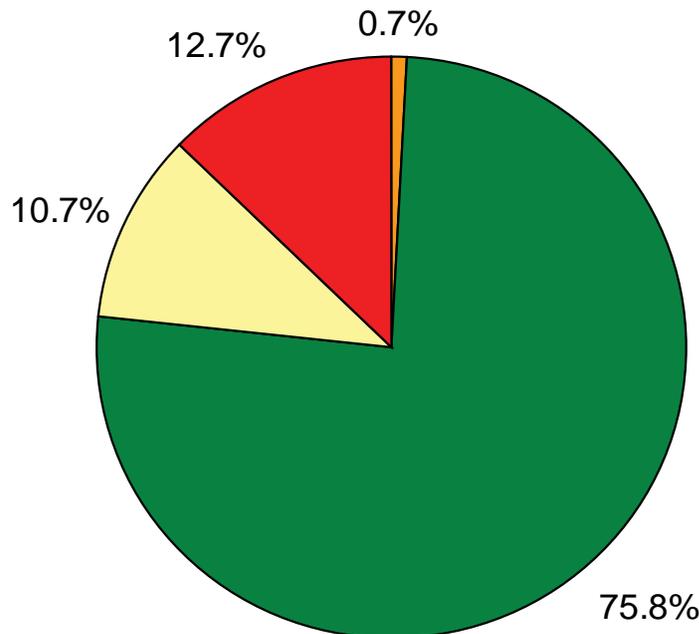
12.7% of 3rd grade students were considered overweight, which is slightly lower than the state average of 12.8%

75.8% of Panhandle Health District 3rd graders were at a healthy weight compared to 70.3% statewide

Panhandle Health District found that 10.7% of 3rd grade students were at risk for overweight, which is markedly lower than the statewide average of 15.2%

<b>Idaho Total</b>		
N=2122		
	N	Percent
Underweight	29	<b>1.6%</b>
Healthy weight	1467	<b>70.3%</b>
At Risk for Overweight	335	<b>15.2%</b>
Overweight	291	<b>12.8%</b>

**PHD1 - Panhandle Health District  
2007/2008 Idaho 3rd Grade BMI Assessment**



Underweight
  Healthy weight
  At Risk for Overweight
  Overweight

**PHD2 - North Central Health District**

<b>PHD2 - North Central Health District</b>				
N=326				
	N	Percent	95% C.I.	
Underweight	2	<b>0.6%</b>	0.0%	1.5%
Healthy Weight	203	<b>62.5%</b>	53.2%	71.9%
At Risk for Overweight	69	<b>20.9%</b>	14.4%	27.5%
Overweight	52	<b>15.9%</b>	10.0%	21.8%

**North Central Health District**

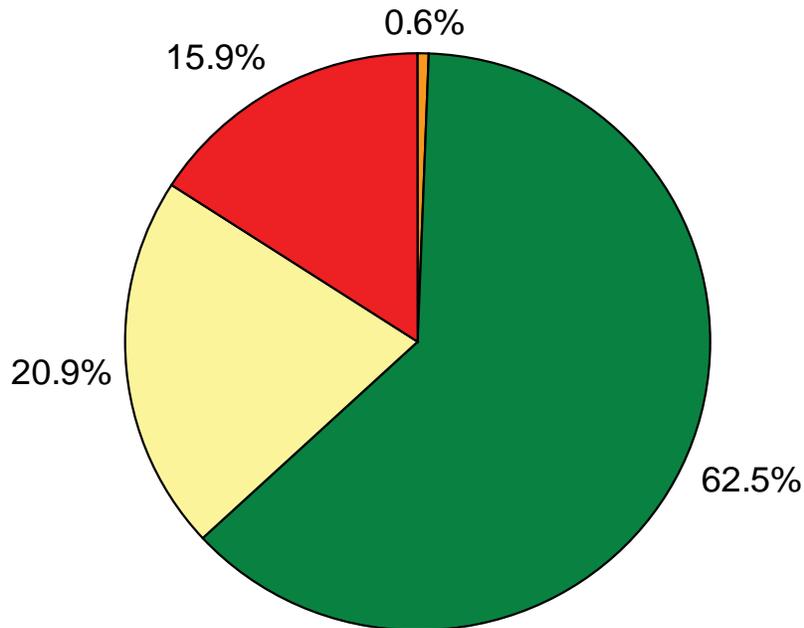
15.9% of 3rd grade students were considered overweight, which is higher than the state average of 12.8%

Only 62.5% of participating North Central Health District 3rd graders were at a healthy weight compared to 70.3% statewide

North Central Health District found that 20.9% of participating 3rd grade students were at risk for overweight, which is higher than the statewide average of 15.2%

<b>Idaho Total</b>		
N=2122		
	N	Percent
Underweight	29	<b>1.6%</b>
Healthy weight	1467	<b>70.3%</b>
At Risk for Overweight	335	<b>15.2%</b>
Overweight	291	<b>12.8%</b>

**PHD2 - North Central Health District  
2007/2008 Idaho 3rd Grade BMI Assessment**



■ Underweight 
 ■ Healthy weight 
 ■ At Risk for Overweight 
 ■ Overweight

**PHD3 - Southwest Health District**

<b>PHD3 - Southwest Health District</b>				
N=327				
	N	Percent	95% C.I.	
Underweight	5	<b>1.5%</b>	0.0%	3.2%
Healthy Weight	237	<b>72.5%</b>	68.9%	76.1%
At Risk for Overweight	43	<b>13.1%</b>	9.8%	16.5%
Overweight	42	<b>12.8%</b>	10.7%	15.0%

**Southwest Health District**

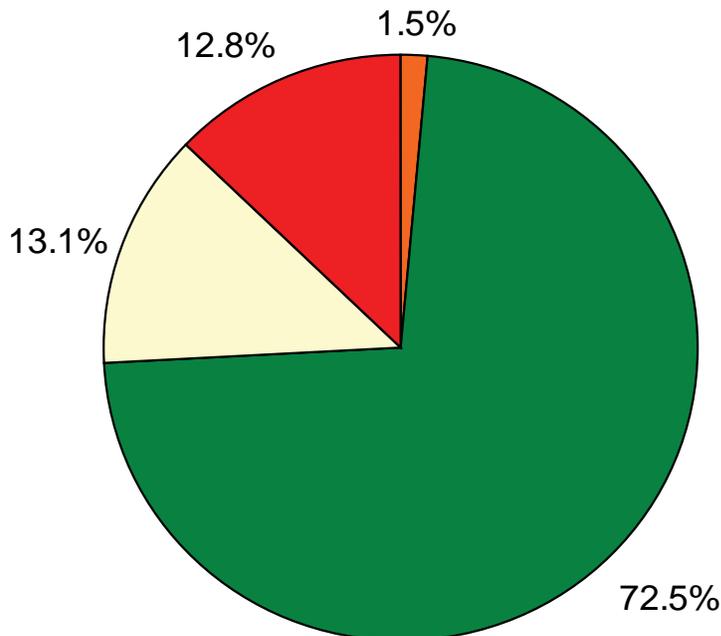
12.8% of students were considered overweight, which does not differ from the state average of 12.8%

72.5% of Southwest Health District 3rd graders were at a healthy weight compared to 70.3% statewide

Southwest Health District found that 13.1% of 3rd grade students were at risk for overweight, which is lower than the statewide average of 15.2%

<b>Idaho Total</b>		
N=2122		
	N	Percent
Underweight	29	<b>1.6%</b>
Healthy weight	1467	<b>70.3%</b>
At Risk for Overweight	335	<b>15.2%</b>
Overweight	291	<b>12.8%</b>

**PHD3 - Southwest Health District  
2007/2008 Idaho 3rd Grade BMI Assessment**



■ Underweight 
 ■ Healthy weight 
 ■ At Risk for Overweight 
 ■ Overweight

**PHD4 - Central Health District**

<b>PHD4 - Central Health District</b>				
N=246				
	N	Percent	95% C.I.	
Underweight	5	<b>2.0%</b>	0.0%	4.4%
Healthy Weight	173	<b>70.6%</b>	62.1%	79.1%
At Risk for Overweight	42	<b>17.0%</b>	11.8%	22.2%
Overweight	26	<b>10.3%</b>	4.9%	15.7%

**Central Health District**

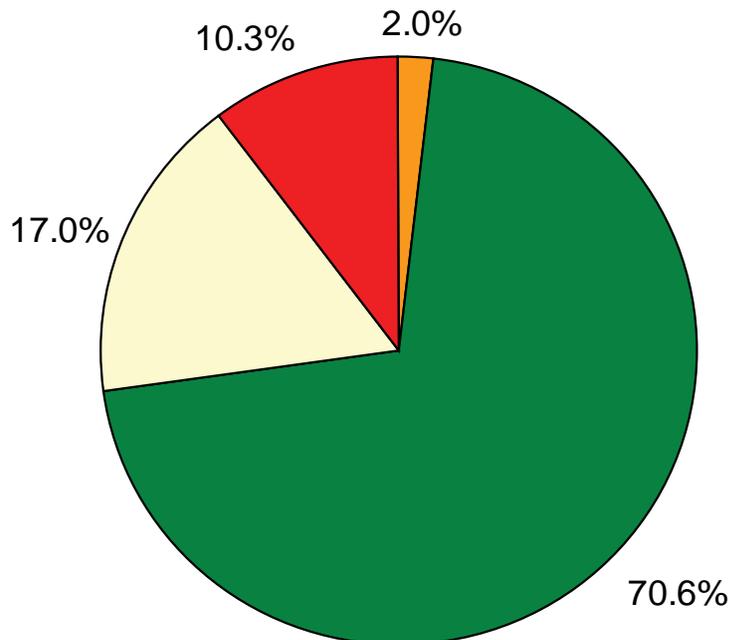
10.3% of students were considered overweight, which is lower than the state average of 12.8%

70.6% of Central Health District 3rd graders were at a healthy weight compared to 70.3% statewide

Central Health District found that 17.0% of 3rd grade students were at risk for overweight, which is slightly higher than the statewide average of 15.2%

<b>Idaho Total</b>		
N=2122		
	N	Percent
Underweight	29	<b>1.6%</b>
Healthy weight	1467	<b>70.3%</b>
At Risk for Overweight	335	<b>15.2%</b>
Overweight	291	<b>12.8%</b>

**PHD4 - Central Health District  
2007/2008 Idaho 3rd Grade BMI Assessment**



Underweight
  Healthy weight
  At Risk for Overweight
  Overweight

**PHD5 - South Central Health District**

<b>PHD5 - South Central Health District</b>				
N=378				
	N	Percent	95% C.I.	
Underweight	4	<b>1.1%</b>	0.0%	2.4%
Healthy Weight	252	<b>66.4%</b>	58.0%	74.8%
At Risk for Overweight	62	<b>16.3%</b>	9.7%	22.8%
Overweight	60	<b>16.2%</b>	12.5%	19.8%

**South Central Health District**

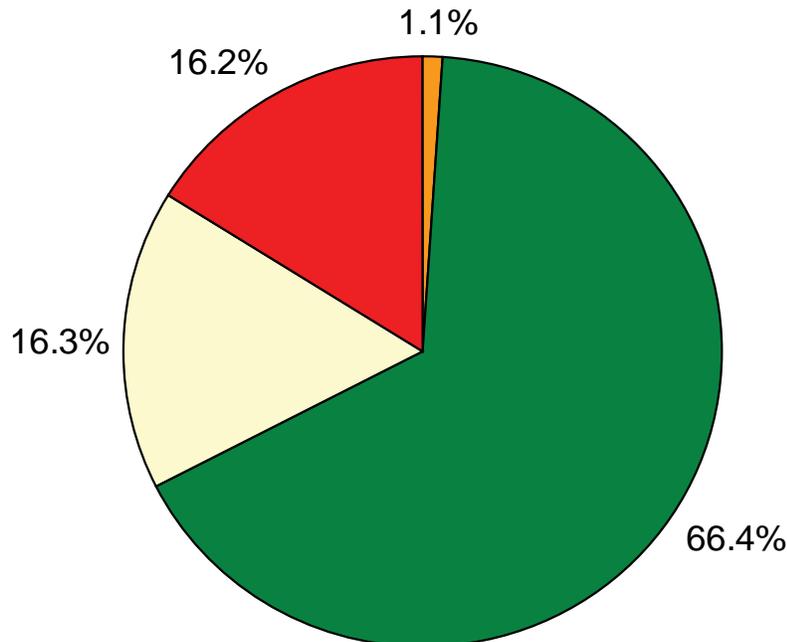
16.2% of students were considered overweight, which is higher than the state average of 13.7%

66.4% of South Central Health District 3rd graders were at a healthy weight compared to 70.3% statewide

South Central Health District found that 16.3% of 3rd grade students were at risk for overweight, which is slightly higher than the statewide average of 15.2%

<b>Idaho Total</b>		
N=2122		
	N	Percent
Underweight	29	<b>1.6%</b>
Healthy weight	1467	<b>70.3%</b>
At Risk for Overweight	335	<b>15.2%</b>
Overweight	291	<b>12.8%</b>

**PHD5 - South Central Health District  
2007/2008 Idaho 3rd Grade BMI Assessment**



**PHD6 - Southeastern Health District**

<b>PHD6 - Southeastern Health District</b>				
N=303				
	N	Percent	95% C.I.	
Underweight	4	<b>1.3%</b>	0.1%	2.5%
Healthy Weight	206	<b>68.2%</b>	54.4%	82.0%
At Risk for Overweight	53	<b>17.3%</b>	10.4%	24.2%
Overweight	40	<b>13.2%</b>	6.4%	19.9%

**Southeastern Health District**

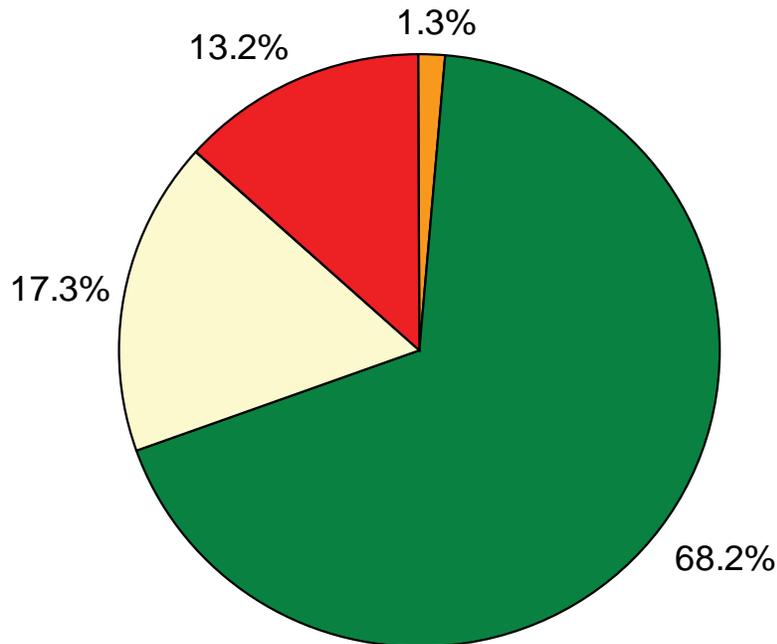
13.2% of students were considered overweight, which is slightly higher than the state average of 12.8%

68.2% of Southeastern Health District 3rd graders were at a healthy weight compared to 70.3% statewide

Southeastern Health District found that 17.3% of 3rd grade students were at risk for overweight, which is higher than the statewide average of 15.2%

<b>Idaho Total</b>		
N=2122		
	N	Percent
Underweight	29	<b>1.6%</b>
Healthy weight	1467	<b>70.3%</b>
At Risk for Overweight	335	<b>15.2%</b>
Overweight	291	<b>12.8%</b>

**PHD6 - Southeastern Health District  
2007/2008 Idaho 3rd Grade BMI Assessment**



**PHD7 - Eastern Idaho Health District**

<b>PHD7 - Eastern Idaho Health District</b>				
N=261				
	N	Percent	95% C.I.	
Underweight	7	<b>2.6%</b>	0.0%	5.2%
Healthy Weight	183	<b>70.0%</b>	60.4%	79.6%
At Risk for Overweight	36	<b>13.8%</b>	8.8%	18.8%
Overweight	35	<b>13.6%</b>	7.0%	20.1%

**Eastern Idaho Health District**

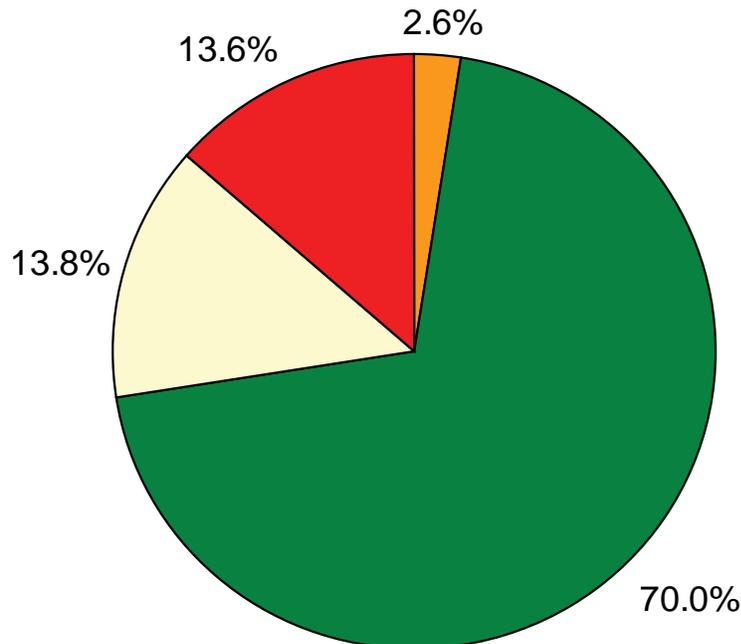
13.6% of students were considered overweight, which is slightly lower than the state average of 12.8%

70.0% of Eastern Idaho Health District 3rd graders were at a healthy weight compared to 70.3% statewide

Eastern Idaho Health District found that 13.8% of 3rd grade students were at risk for overweight, which is lower than the statewide average of 15.2%

<b>Idaho Total</b>		
N=2122		
	N	Percent
Underweight	29	<b>1.6%</b>
Healthy weight	1467	<b>70.3%</b>
At Risk for Overweight	335	<b>15.2%</b>
Overweight	291	<b>12.8%</b>

**PHD7 - Eastern Idaho Health District  
2007/2008 Idaho 3rd Grade BMI Assessment**



Underweight
  Healthy weight
  At risk for overweight
  Overweight