



**NORTH DAKOTA**  
DEPARTMENT *of* HEALTH

**BASIC SCREENING SURVEY FOR THIRD GRADE CHILDREN  
HEIGHT, WEIGHT AND BODY MASS INDEX  
2009-2010**

**Sampling:** The sampling frame for this survey was all public and BIA schools with five or more students in third grade (231 schools with 6,662 students in third grade). The sampling frame was stratified by the urban/rural designation of the county. Schools within the urban/rural strata were ordered by percent of students participating in the free/reduced price meal program, then 47 schools were systematically selected. If a school refused to participate, a school within the same sampling strata was randomly selected. Data is available for all 47 sampling strata; 37 original schools and 10 replacement schools.

**Data Management and Analysis:** Data analysis for height, weight and BMI was completed using the survey analysis features of SAS 9.1 and the BMI-for-age analysis program developed by the Centers for Disease Control and Prevention (CDC) for their growth charts (<http://www.cdc.gov/nccdphp/dnpao/growthcharts/resources/sas.htm>). All results are adjusted for the sampling scheme and non-response. \*Confidence Intervals (C.I. (95%)) indicate with 95 percent confidence that the percentage of actual North Dakota third grade children having the indicated health condition fall within the interval range.

**Table 1: Height, Weight and BMI Stratified by Sex**

<b>Variable</b>	<b>Males</b>	<b>Females</b>
Height (cm) Number of Children Mean (se) *C.I. (95%) for Mean	780 135.7 (0.24) 135.2 – 136.2	708 134.4 (0.24) 133.9 – 134.8
Weight (kg) Number of Children Mean (se) *C.I. (95%) for Mean	780 34.8 (0.32) 34.2 – 35.5	708 34.0 (0.31) 33.4 – 34.6
BMI Number of Children Mean (se) *C.I. (95%) for Mean	779 18.7 (0.13) 18.5 – 19.0	708 18.7 (0.14) 18.4 – 19.0

**Table 2: BMI-For-Age Cutoffs Stratified by Sex**

<b>Variable</b>	<b>Males % *C.I. (95%) N=761</b>	<b>Females % *C.I. (95%) N=688</b>	<b>Both Sexes % *C.I. (95%) N=1,449</b>
Underweight 0 to 5 <sup>th</sup> percentile	1.1 (0.3 – 1.9)	2.3 (1.2 – 3.4)	1.7 (1.0 – 2.3)
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	63.7 (60.2 – 67.1)	63.3 (59.6 – 66.9)	63.5 (61.0 – 66.0)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	14.5 (12.0 – 17.0)	15.3 (12.5 – 18.1)	14.9 (13.0 – 16.7)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	16.2 (13.5 – 18.8)	15.8 (13.1 – 18.6)	16.0 (14.1 – 17.9)
Extreme Obesity > 99 <sup>th</sup> percentile	4.6 (3.1 – 6.0)	3.3 (1.9 – 4.6)	3.9 (2.9 – 5.0)

**Table 3: BMI-For-Age Cutoffs Stratified by Race**

<b>Variable</b>	<b>White Non-Hispanic % *C.I. (95%) N=1,121</b>	<b>American Indian % *C.I. (95%) N=208</b>
Underweight < 5 <sup>th</sup> percentile	1.9 (1.1 – 2.7)	1.0 (0.0 – 2.5)
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	67.3 (64.5 – 70.1)	43.4 (36.5 – 50.2)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	15.0 (12.9 – 17.1)	15.4 (10.4 – 20.3)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	13.3 (11.3 – 15.3)	28.4 (22.2 – 34.6)
Extreme Obesity > 99 <sup>th</sup> percentile	2.6 (1.6 – 3.5)	11.9 (7.4 – 16.3)

**Table 4: BMI-For-Age Cutoffs Stratified by Free and Reduced-Priced Meals Status**

<b>Variable</b>	<b>Percent of Children on Free and Reduced-Priced Lunch (FRL)</b>		
	<b>“Higher Income” &lt; 25% FRL *C.I. (95%) (n=524)</b>	<b>25-49% FRL *C.I. (95%) (n=571)</b>	<b>“Lower Income” ≥ 50% FRL *C.I. (95%) (n=354)</b>
Underweight < 5 <sup>th</sup> percentile	2.5 (1.1 – 3.8)	0.9 (0.1 – 1.7)	1.8 (0.4 – 3.2)
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	68.6 (64.6 – 72.6)	65.8 (61.8 – 69.8)	52.3 (47.1 – 57.5)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	14.7 (11.7 – 17.7)	14.8 (11.8 – 17.9)	15.2 (11.5 – 19.0)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	12.8 (10.0 – 15.7)	14.8 (11.9 – 17.7)	22.7 (18.3 – 27.0)
Extreme Obesity > 99 <sup>th</sup> percentile	1.4 (0.4 – 2.4)	3.7 (2.1 – 5.3)	8.1 (5.2 – 10.9)

Table 5: BMI-For-Age Cutoffs Stratified by Urban/Rural Status

Variable	Urban % *C.I. (95%) N=970	Rural % *C.I. (95%) N=479
Underweight < 5 <sup>th</sup> percentile	2.2 (1.2 – 3.1)	0.6 (0.0 – 1.4)
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	66.4 (63.4 – 69.4)	57.5 (53.0 – 62.1)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	14.3 (12.1 – 16.5)	16.1 (12.6 – 19.6)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	14.1 (11.9 – 16.3)	20.0 (16.4 – 23.6)
Extreme Obesity > 99 <sup>th</sup> percentile	3.1 (2.0 – 4.2)	5.7 (3.6 – 7.8)

**Table 6A: BMI-For-Age Cutoffs Stratified by Self-Reported Milk Consumption**

Variable	Do you drink milk every day?	
	Yes % *C.I. (95%) N=1,235	No % *C.I. (95%) N=209
Underweight < 5 <sup>th</sup> percentile	1.9 (1.1 – 2.6)	0.4 (0.0 – 1.3)
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	63.5 (60.8 – 66.2)	62.9 (56.2 – 69.5)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	14.9 (12.9 – 16.9)	14.7 (9.9 – 19.5)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	15.5 (13.5 – 17.5)	19.5 (14.1 – 24.9)
Extreme Obesity > 99 <sup>th</sup> percentile	4.2 (3.1 – 5.3)	2.5 (0.3 – 4.6)

**Table 6B: BMI-For-Age Cutoffs Stratified by Self-Reported Milk Consumption  
White Children Only**

Variable	Do you drink milk every day? (White Children Only)	
	Yes % *C.I. (95%) N=974	No % *C.I. (95%) N=142
Underweight < 5 <sup>th</sup> percentile	2.1 (1.2 – 2.9)	0.6 (0.0 – 1.9)
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	67.1 (64.1 – 70.1)	67.8 (60.1 – 75.6)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	15.0 (12.7 – 17.3)	14.7 (8.8 – 20.6)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	13.2 (11.0 – 15.3)	14.7 (8.8 – 20.6)
Extreme Obesity > 99 <sup>th</sup> percentile	2.6 (1.6 – 3.6)	2.2 (0.0 – 4.6)

**Table 6C: BMI-For-Age Cutoffs Stratified by Self-Reported Milk Consumption  
American Indian Children Only**

Variable	Do you drink milk every day? (American Indian Children Only)	
	Yes % *C.I. (95%) N=165	No % *C.I. (95%) N=43
Underweight < 5 <sup>th</sup> percentile	1.3 (0.0 – 3.1)	0.0
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	40.0 (32.5 – 47.6)	55.7 (40.3 – 71.0)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	17.6 (11.8 – 23.5)	6.9 (0.0 – 15.0)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	27.3 (20.4 – 34.2)	32.5 (17.7 – 47.4)
Extreme Obesity > 99 <sup>th</sup> percentile	13.8 (8.4 – 19.1)	4.8 (0.0 – 11.7)

**Table 7: BMI-For-Age Cutoffs Stratified by Self-Reported Soda Consumption**

Variable	In the past seven days, how many cans of soda or sweetened beverages did you drink?					
	None % *C.I. (95%) N=188	1 can % *C.I. (95%) N=334	2 cans % *C.I. (95%) N=233	3 cans % *C.I. (95%) N=169	4 cans % *C.I. (95%) N=94	5 cans % *C.I. (95%) N=416
Underweight < 5 <sup>th</sup> percentile	1.7 (0.0 – 3.6)	1.5 (0.2 – 2.8)	3.8 (1.3 – 6.2)	0.6 (0.0 – 1.8)	0.0	1.4 (0.3 – 2.6)
Healthy Weight 5 <sup>th</sup> to < 85 <sup>th</sup> percentile	64.6 (57.7 – 71.5)	69.3 (64.3 – 74.3)	59.2 (52.7 – 65.7)	64.4 (57.1 – 71.7)	58.9 (48.7 – 69.2)	60.9 (56.2 – 65.6)
Overweight 85 <sup>th</sup> to < 95 <sup>th</sup> percentile	14.3 (9.2 – 19.4)	14.5 (10.7 – 18.3)	16.6 (11.3 – 21.8)	15.7 (10.1 – 21.2)	19.7 (11.6 – 27.8)	13.2 (9.9 – 16.4)
Obesity 95 <sup>th</sup> to 99 <sup>th</sup> percentile	15.8 (10.5 – 21.1)	12.1 (8.6 – 15.6)	17.5 (12.6 – 22.3)	16.3 (10.6 – 22.0)	16.1 (8.5 – 23.7)	18.6 (14.9 – 22.4)
Extreme Obesity > 99 <sup>th</sup> percentile	3.6 (1.0 – 6.3)	2.6 (0.9 – 4.2)	3.0 (0.8 – 5.2)	3.1 (0.4 – 5.8)	5.3 (0.7 – 9.9)	5.9 (3.6 – 8.2)

**Table 8: Number of Children with Outlier Values (based on World Health Organization fixed exclusion ranges)**

Variable	Too Low	Normal Range	Too High
Height	1	1,475	5
Weight	0	1,475	6
BMI	0	1,478	2