Publication #2008-40

4301 Connecticut Avenue, NW, Suite 350, Washington, DC 20008 Phone 202-572-6000 Fax 202-362-8420 www.childtrends.org

SCHOOL FOOD UNWRAPPED: WHAT'S AVAILABLE AND WHAT OUR KIDS ACTUALLY ARE EATING

By Elizabeth Hair, Ph.D., Thomson Ling, and Laura Wandner

November 2008

OVERVIEW

Childhood obesity has emerged as a critical health problem of the 21st century.³⁰ The seriousness of this issue stems from the grave health consequences of overweight and obesity that begin in childhood and persist later in life.^{1,4,23,27} In light of these consequences, public health officials and others have begun to focus on schools as key settings in which to foster healthy eating and exercise habits. Their efforts reflect a growing recognition that the school food environment (that is, the types of food sold to children) represents a natural place for intervention.

This Research Brief examines the prevalence of vending machines, school stores, and other outlets in elementary schools that often provide non-nutritious foods, the types of food and beverages sold within these outlets, and student consumption of food at school among a nationally representative sample of fifth-grade students. We found that competitive foods (i.e., foods that are not part of the National School Lunch and School Breakfast programs) are available in most schools and that as many as one in four children reports buying unhealthy competitive foods. Contrary to popular belief, we also found that most of these purchases are made in school cafeterias, rather than through vending machines.

Our findings also run counter to the expectation that the kind of food available in a school depends on the income level of its students. We found that higher-income students in suburban school districts were no more likely to have access to healthy foods than were their lower-income, urban peers. But there was a fundamental income-related difference: Schools attended by higher-income students offered their students a greater selection of both types of food.

THE NUMBER OF OVERWEIGHT CHILDREN IN THE UNITED STATES IS RISING

Approximately 16 percent or 3.5 million U.S. children between the ages of 6 and 11 were overweight^a in 2005, the most recent year for which data are available. That proportion was 2.5 times higher than the proportion of overweight children 25 years ago.⁸ In addition,

another 14.3 percent of the nation's children in 2005 were at risk of becoming overweight.^{b,20} In response to this alarming trend, *Healthy People 2010* lists reducing the proportion of children and adolescents aged 6 to 19 who are overweight or obese as one of its objectives.²⁹

^a≥95th percentile of body mass index [BMI; in kg/m²] for age.

^b ≥85th percentile, but <95th percentile of BMI for age.

ABOUT THE DATA SOURCES FOR THIS BRIEF

Data for this brief were drawn from the Early Childhood Longitudinal Study, Kindergarten Cohort (ECLS-K). The ECLS-K, conducted by the National Center for Education Statistics, followed a nationally representative sample of more than 22,000 children from kindergarten entry in the fall of 1998 through fifth grade in 2004.

Information on school food policies and the availability of both healthy and unhealthy foods—as well as demographic characteristics of the school and student body—were obtained from a school administrator survey in the spring of the children's fifth-grade year. Data on the purchase and consumption of competitive foods were collected from children through a self-report questionnaire.

Analyses presented in Figures 2-5 this brief are based on a national sample of 2,400 schools with fifth-grade classrooms. Our sample of schools varied by geographic region, urbanicity (the degree to which the school was located in an urban area), and percentage of minority students. Further, most schools were public, received Title 1 funding, and participated in the U.S. Department of Agriculture school breakfast or lunch programs.

Information about student food purchases came from a sample of approximately 11,300 fifth-grade students who self-reported their food consumption. All findings in this brief are based on 2004 data.

A glossary of terms used in this paper are listed at the end of the brief.

Consequences of being overweight. Being overweight as a child can lead to an array of adverse physical, emotional, and behavioral outcomes, including:

- An increased risk of developing orthopedic problems, ¹¹ Type 2 diabetes, ^{1,7,21} and cardiovascular problems, including high cholesterol levels and high blood pressure; ^{4,10}
- An increased risk of being stigmatized and subject to negative stereotyping and discrimination, ^{1,23,27} which, in turn, may lead to low self-esteem, ²⁸ negative body image, ¹² or depression; ^{28,32}
- Higher levels of *externalizing* behaviors, such as fighting or arguing, and higher levels of *internalizing* behaviors, such as feeling sad, lonely, or anxious.⁵

Current directions. Given the seriousness of this health crisis, efforts have been launched to develop and evaluate programs, policies, and other interventions to reduce the

overweight prevalence o f children. 17,19,26 Recognition has grown about the many individual and family factors that contribute to obesity, such as lack of exercise and insufficient sleep, 14 consumption of fast foods, 6 and increased portion size.² In addition, evidence that child's shows a environment. specifically in school, may have a significant impact on his or her health behaviors, food choices, and weight.

CHILDREN'S FOOD CHOICES ARE INFLUENCED BY THE SCHOOL FOOD ENVIRONMENT

Children between the ages of five and 13 spend an average of 6.5 hours a day at school, ¹⁸ and almost all elementary school children eat at least one meal a day while there. Children either bring a lunch from home, which may or may not be healthy, or buy a lunch at school. Given this situation, it is reasonable to hypothesize that food

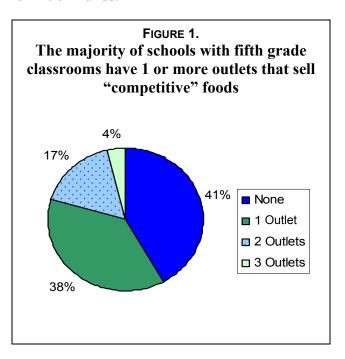
choices made by children, both in and outside of school, are influenced by school food policies. These policies establish the availability of nutritious foods and non-nutritious foods (e.g., those that are high in fat, sugar, and salt) in schools, as well as how those foods are made available to students (e.g., vending machines, à la carte items in cafeterias, or school snack bars).

Foods served as part of the National School Lunch and School Breakfast programs must comply with federal nutritional standards. Other foods that may be available at schools (referred to as "competitive foods") do not need to adhere to these standards. 15,25 Competitive foods are often sold through vending machines, snack bars, or on an à la carte basis in lunchrooms. These foods are of particular concern because often they lack nutritional content. In fact, during the 2003-2004 school year, approximately nine out of 10 schools sold competitive foods.³¹ Unhealthy competitive foods may lead to eating fewer fruits and vegetables and eating more foods that are high in saturated fat and calories. 13

MOST SCHOOLS WITH FIFTH GRADE CLASSES HAVE FOOD OUTLETS THAT ARE COMPETITIVE

Of the schools in our sample with information on the prevalence of competitive outlets, administrators of more than one-half (57.2 percent) of the schools reported that children could purchase food or beverages through one or more of these outlets; and one-fifth of schools had two or more venues (see Figure 1). Almost one-quarter of schools had vending machines (24.9 percent) and snack bars (23.4 percent), and one-third of schools had foods available for purchase in the cafeteria as à la carte choices (33.6 percent).

The availability of competitive outlets differed by the percentage of minority students in the student body. Having a lower percentage of minority students was associated with having competitive venues. The availability of competitive venues did not differ by urbanicity, public or private school status, participation in school breakfast or lunch programs, and receipt of Title 1 funds.

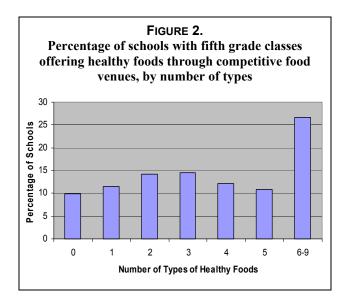


BOTH HEALTHY AND UNHEALTHY FOODS AND BEVERAGES ARE SOLD IN COMPETITIVE FOOD OUTLETS

Administrators who reported that foods or beverages were available for purchase through competitive venues were asked to provide additional detail on the types of foods and beverages that were available. School administrators reported on the availability of nine food and beverage items that were considered healthy, and the availability of seven food or beverage items that were considered unhealthy.

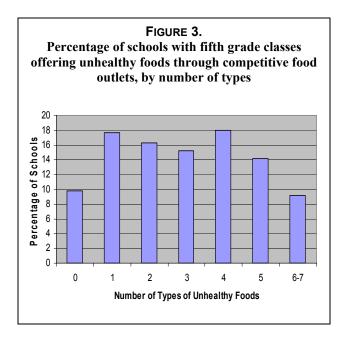
MOST SCHOOLS WITH FIFTH GRADE CLASSES OFFER A VARIETY OF HEALTHY AND UNHEALTHY FOODS THROUGH COMPETITIVE FOOD VENUES

The types of healthy foods available for purchase through competitive venues ranged in number from 0 to 9, with an average of 3.7 (see Figure 2).



The number of types of unhealthy foods available for purchase through competitive outlets ranged from 0 to 7, with an average of 3 (see Figure 3). This is similar to the patterns of healthy foods available for purchase in competitive outlets (see Figure 2). Furthermore the distribution of unhealthy foods was similar to those of healthy foods with regard to the location of school and minority population.

Several school characteristics were significantly associated with the number of healthy and unhealthy food choices available for purchase through competitive food venues. In general, the same characteristics associated with a larger number of types of healthy foods were associated with a larger number of unhealthy foods. And again, these numbers represent averages.



SUBURBAN SCHOOLS WITH FIFTH GRADE CLASSES OFFER MORE HEALTHY AND UNHEALTHY FOODS

- Suburban schools offered more types of healthy foods (an average of 4 types) than did urban schools (an average of 3.4 types) or rural schools (an average of 3.5 types).
- Suburban and rural schools had more types of unhealthy foods (3.1 types for each locale) than did urban schools (2.7 types).

SCHOOLS WITH FIFTH GRADE CLASSES THAT PROVIDE SCHOOL BREAKFAST OR LUNCH OFFER MORE HEALTHY FOODS

- Schools that provided school breakfast or lunch programs offered more types of healthy foods than did schools that did not offer these programs (an average of 3.8 versus an average of 3.2 types).
- The researchers found that unhealthy foods were equally available to students at schools that provided breakfast and/or lunch to the students and those that did not.

SCHOOLS WITH FIFTH GRADE CLASSES THAT RECEIVE TITLE 1 FUNDING OFFER FEWER HEALTHY AND UNHEALTHY FOODS

- Schools receiving Title 1 funding, however, offered fewer types of healthy foods than schools that did not receive this funding (an average of 3.6 versus an average of 4.1 types).
- Schools with Title 1 funding offered fewer types of unhealthy foods than did schools that did not receive this funding (2.9 versus 3.1 types).

PUBLIC SCHOOLS WITH FIFTH GRADE CLASSES OFFER MORE HEALTHY FOOD

- Public schools offered more healthy food types than did private schools.
- But no differences between public and private schools were found when it came to the availability of unhealthy foods at school.

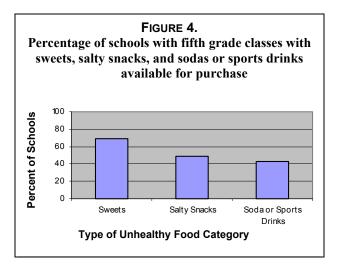
SCHOOLS WITH FIFTH GRADE CLASSES WITH LOWER MINORITY POPULATIONS OFFER MORE HEALTHY AND MORE UNHEALTHY FOODS

- Schools with lower minority populations offered more healthy food types than did schools with higher minority populations.
- Schools with lower minority students also offered more unhealthy types of food than did schools with higher minority students.

SWEET FOODS REPRESENT THE MAJORITY OF UNHEALTHY FOODS AVAILABLE IN SCHOOLS WITH FIFTH GRADE CLASSES

The unhealthy food category can be further refined into three broader categories: sweets (candy, baked goods, and ice cream), salty snacks, and sodas or sports drinks. As shown in Figure 4, sweets accounted for the largest category of unhealthy foods available in

schools. Specifically, sweets could be purchased through competitive outlets in approximately 69 percent of schools with fifth-grade classrooms. Salty snacks and sodas, sports drinks, or fruit drinks that were not 100-percent juice were available in nearly one-half of these schools.



STUDENTS PURCHASE UNHEALTHY FOODS AND BEVERAGES AT SCHOOL WITH FIFTH GRADE CLASSES

Among the students in the fifth-grade sample, 26 percent reported purchasing sweets in school in the past week, 17 percent reported purchasing salty snacks in school, and 13 percent reported purchasing sodas or sports drinks in school.

MOST UNHEALTHY FOOD PURCHASES WERE IN SCHOOL CAFETERIAS WITH FIFTH GRADE CLASSES

Among students who purchased unhealthy foods, a majority of sweets (77 percent) and salty snacks (73 percent) purchased in school came from school cafeterias. Among students who reported purchasing sodas or sports drinks in school in the past week, approximately 43 percent purchased these items from school vending machines and approximately 42 percent purchased these items from school cafeterias.

SUMMARY

Consistent with results from previous research, 9,31 our findings show that competitive foods are available in a majority of schools with fifth grade classes in the nation. Moreover, we found that even though healthy choices (that is, fruits, vegetables, etc.) exist, schools offer almost as many unhealthy choices. One in four children in our study sample reported buying unhealthy competitive foods. Surprisingly, more of these children reported that they purchased these foods from school cafeterias than from vending machines.

Consistent with popular belief, we found that more advantaged districts were more likely to have access to healthy foods than were less advantaged school districts. But these more advantaged schools also offered their students a greater selection of unhealthy foods as well.

IMPLICATIONS FOR POLICY AND PRACTICE

Schools can do much more to restrict unhealthy foods and expand healthy foods offered to students. The findings reported here suggest that efforts to change school food policies should not focus just on vending machines, but also examine all cafeteria offerings, such as à la carte items. For example, schools could increase the ratio of healthy to unhealthy types of foods sold in both vending machines and cafeterias. Our findings also reinforce the importance of the Institute of Medicine recommendation that schools replace snacks high in sugar and sodium with more healthy options such as fruit, vegetables, whole-grain baked goods, and low-fat or fat-free dairy products.²⁴ It is also important to implement programs to improve children's nutrition, such as giving children tips and guidance on how to buy healthy foods, providing children with instruction on how to read food labels, and talking to children about the caloric content of unhealthy items.³³ In addition, whereas previous studies on school food policies concentrated on schools that serve low-income students,²⁵ our analyses suggest that changes in school food policies need to be directed at *all* schools.

Even though our findings indicate that a large proportion of schools do offer unhealthy competitive foods, we also recognize that some efforts are under way to improve the availability of healthy food options in schools and eliminate unhealthy food options. For example, the Robert Wood Johnson Foundation's Healthy Eating Research program supports research on how environments and policies can be shaped to promote healthy eating and prevent childhood obesity. 22 Specifically, the program seeks to combat childhood obesity by changing the food environment (which includes schools) to encourage healthier eating and more exercise. In addition, the Alliance for a Healthier Generation—in conjunction with the National Governors Association—entered into an agreement with guidelines for school food consumption.³ Under these guidelines, food and beverage manufacturers would limit total fat, saturated fat, and sugar in snack foods sold in schools and would limit the types and amounts of soft drinks sold in schools as well. These guidelines will be fully implemented by the 2009-2010 school year, and will affect almost 35 million children. The Robert Wood Johnson Foundation has recently reported that the Alliance for a Healthier Generation and the American Beverage Association have taken steps to limit the sale of non-diet soda and high-calorie beverages in schools. Eighty percent of all school beverage contracts now comply with the School Beverage Guidelines established by the Alliance in cooperation with Coca-Cola,

PepsiCo, Dr Pepper Snapple Group (formerly Cadbury Schweppes), and the American Beverage Association (ABA). The Foundation's evaluation also shows that there has been a nearly 60 percent reduction in beverage calories shipped to schools since 2004. ¹⁶

School food policy offers an important opportunity to improve the health and well-being of children across the country today and to lay a solid foundation for advancing the health and well-being of children in the future.

This Research Brief is a product of a partnership between Child Trends and the Policy Information and Analysis Center - Child/Adolescent at the University of California, San Francisco. The purpose of the partnership is to identify and analyze the effects of public policies, regulations, programs, and practices at the community, State and Federal levels on the health, safety and well-being of schoolaged children, adolescents, young adults, and their families. This brief was supported by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau (MCHB), grant number U45 MC00023. We would like to thank Jane Park, Charlie Irwin, Claire Brindis and Tina Paul Mulye at the University of California, San Francisco for their reviews.

Editor: Harriet J. Scarupa

Child Trends is a nonprofit, nonpartisan research center that studies children from pregnancy to the transition to adulthood. Its mission is to improve outcomes for children by providing research, data, and analysis to the people and institutions whose decisions and actions affect children. For additional information on Child Trends, including a complete set of available *Research Briefs*, visit our Web site at www.childtrends.org. For the latest information on more than 100 key indicators of child and youth well-being, visit the Child Trends DataBank at www.childtrendsdatabank.org. For summaries of over 300 experimental evaluations of social interventions for children, visit www.childtrends.org/LINKS.

REFERENCES

- ¹ American Obesity Association. (2005). AOA Fact Sheet.
- ² Burger, K. S., Kern, M., & Coleman, K. J. (2007). Characteristics of self-selected portion size in young adults. *Journal of the American Dietetic Association*, 107(4), 611-618.
- ³ Clinton Foundation, American Heart Association broker deal for healthier school snacks. (2006). *Philanthropy News Digest*.
- ⁴ Cook, S., Weitzman, M., Auinger, P., Nguyen, M., & Dietz, W. (2003). Prevalence of a metabolic syndrome phenotype in adolescents: findings from the National Health and Examination Survey III, 1988-1994. *Archives of Pediatrics & Adolescent Medicine*, 157(8), 821-827.
- ⁵Datar, A., & Strum, R. (2006). Childhood overweight and parent- and teacher-reported behavior problems. *Archives of Pediatrics & Adolescent Medicine*, *158*, 804-810.
- ⁶ Duffey, K. J., Gordon-Larsen, P., Jacobs, D. R., Williams, O. D., & Popkin, B. M. (2007). Differential associations of fast food and restaurant food consumption with 3-year change in body mass index: the Coronary Artery Risk Development in Young Adults Study. *The American Journal of Clinical Nutrition*, 85, 201-208.
- ⁷ Fagot-Campagna, A., Saaddine, J., Flegal, K., & Beckles, G. (2001). Diabetes, impaired fasting glucose, and elevated HbA1c in U.S. adolescents. The Third National Health and Nutrition Examination Survey. *Diabetes Care*, *24*(5), 834-837.
- ⁸ Federal Interagency Forum on Child and Family Statistics. (2005). *America's Children: Key National Indicators of Well Being, 2005*. Washington, DC: Federal Interagency Forum on Child and Family Statistics.
- ⁹ Finkelstein, D. M., Hill, E. L., & Whitaker, R. C. (2008). School Food Environments and Policies in US Public Schools. *Pediatrics*, *122*(1), e251-e259.

- ¹⁰ Freedman, D. S., Dietz, W. H., Srinivasan, S. R., & Berenson, G. S. (1999). The relation of overweight to cardiovascular risk factors among children and adolescents: the Bogalusa Heart Study. *Pediatrics*, *103*(6), 1175-1182.
- 11 Gidding, S., Leibel, R., Daniels, S., Rosenbaum, M., van Horn, L., & Marx, G. (1996). A statement for healthcare professionals from the Committee on Atherosclerosis and Hypertention in the Young of the Council on Cardiovascular Disease in the Young and the Nutrition committee, American Heart Association. *Circulation*, 94, 3383-3387.
- ¹² Hill, A., Draper, E., & Stack, J. (1994). A weight on children's minds: body shape dissastifactions at 9-years old. *International Journal of Obesity*, *18*(383-389).
- ¹³ Kubik, M. Y., Lytle, L. A., Hannan, P. J., Perry, C. L., & Story, M. (2003). The association of the school food environment with dietary behaviors of young adolescents. *American Journal of Public Health*, *93*(7), 1168-1173.
- ¹⁴Lamberg, L. (2006). Rx for obesity: Eat less, exercise more, and—maybe—get more sleep. *Journal of the American Medical Association*, 295(20), 2341-2344.
- ¹⁵ Larson, N., & Story, M. (2006). *School foods* sold outside of meals (Competitive foods). St. Paul, Minnesota: The Robert Wood Johnson Foundation.
- ¹⁶ Lavizzo-Mourey, R. (2008). Robert Wood Johnson Foundation statement regarding release of the evaluation of school beverage guidelines [Electronic Version]. Retrieved September 22, 2008 from http://www.rwjf.org/pr/product.jsp?id=34388&c=EMC-CA138.
- ¹⁷Lytle, L., Murray, D., Perry, C., Story, M., Birnbaum, A., Kubik, M., et al. (2004). School-based approaches to affect adolescents' diets: results from the TEENS study. *Health Education & Behavior*, *31*(2), 270-287.
- ¹⁸ National Center for Education Statistics. (2005). Indicator 26 (2005) Time spent in school. Table 26-1. Retrieved February 16,

- 2006, from http://nces.ed.gov/programs/coe/2005/section4/table.asp?tableID=283
- ¹⁹ Neumark-Sztainer, D., Story, M., Hannan, P., & Rex, J. (2003). New Moves: a school-based obesity prevention program for adolescent girls. *Preventive Medicine*, *37*, 41-51.
- ²⁰ Ogden, C. L., Flegal, K. M., Carroll, M. D., & Johnson, C. L. (2002). Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA*, 288(14), 1728-1732.
- ²¹ Pinhas-Hamiel, O., Dolan, L., Daniels, S., Standiford, D., Khoury, P., & Zatler, P. (1996). Increased incidence of non-insulin-dependent diabetes mellitus among adolescents. *Journal of Pediatrics*, *128*(5), 608-615.
- ²² Robert Wood Johnson Foundation. (2006). Healthy Eating Research: Building evidence to prevent childhood obesity. Retrieved June 5, 2008, from

http://www.healthyeatingresearch.org/

- ²³ Schwartz, M., & Puhl, R. (2003). Childhood obesity: A societal problem to solve. *Obesity Reviews*, *4*(1), 57-71.
- ²⁴ Stallings, V. A., Bier, D. M., Bradford, M. T., Camargo, C. A., Contento, I. R., Cook, T. H., et al. (2007). *Nutrition standards for foods in schools: Leading the way toward healthier youth*. Washington, D.C.: Institute of Medicine of the National Academies.
- ²⁵ Story, M., Kaphingst, K. M., & French, S. (2006). The role of child care settings in obesity prevention. *The Future of Children, 16*(1), 143-168.
- ²⁶ Story, M., Mays, R., Bishop, D., Perry, C., Taylor, G., Smyth, M., et al. (2000). 5-a-Day Power Plus: Process evaluation of a multicomponent elementary school program to increase fruit and vegetable consumption. *Health Education & Behavior*, *27*(2), 187-200.
- ²⁷ Strauss, R., & Pollack, H. (2001). Epidemic increase in childhood overweight, 1986-1998. *JAMA*, *286*(22), 2845-2848.

²⁸ Strauss, R. S. (2000). Childhood obesity and self-esteem. *Pediatrics*, *105*(1), E15.

²⁹ U.S. Department of Health and Human Services. (2000). *Healthy People 2010, 2nd Edition. With Understanding and Improving Health and Objectives for Improving Health. 2 Vols.* (Vol. 2). Washington, D.C.: U.S. Government Printing Office.

³⁰ U.S. Department of Health and Human Services. (2001). *The Surgeon General's call to action to prevent and decrease overweight and obesity*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General.

³¹ United States General Accounting Office. (2005). School meal programs: Competitive foods are widely available and generate substantial revenues for schools. Washington, DC.

³² Wallace, W., Sheslow, D., & Hassink, S. (1993). Obesity in children: A risk for depression. In C. Williams & S. Kimm (Eds.), *Annals of the New York Academy of Science, 699: Prevention and treatment of childhood obesity* (pp. 301-302). New York: The New York Academy of Sciences.

³³ Wandner, L., & Hair, E. (2008). Assessing and improving children's nutrition in schools in and out-of-school time programs Washington, DC: Child Trends.

GLOSSARY

- Title I of the Elementary and Secondary Education Act (ESEA) is a set of programs set up by the United States Department of Education to distribute funding to schools and school districts with a high percentage of students from low-income families. To qualify as a Title I school, a school must have a sufficiently high percentage of economically disadvantaged children that attend the school. Schools receiving Title I funding are regulated by federal legislation.
- National School Lunch and School Food Breakfast programs is a federally assisted meal program that provides nutritionally balanced, low cost meals for children at school.
- Competitive Foods are foods that are not part of the National School Lunch and School Food Breakfast programs.
- Competitive Outlets in the schools included vending machines, snack bars, school stores, and a la carte items from the cafeteria
- **Healthy foods** consist of fruits or vegetables, low-fat baked goods, such as cookies, crackers, cakes, or pastries, low-fat chips or pretzels, low-fat or fat-free ice cream, frozen yogurt, or sherbet, low-fat or fat-free yogurt, 1-percent or skim milk, bottled water, 100-percent fruit juice, and 100-percent vegetable juice.
- Unhealthy foods consists of candy, baked goods, salty snacks, ice cream or frozen yogurt, 2-percent or whole milk, soda pop, sports drinks, and fruit drinks that are not 100-percent juice.
- **Percent Minority** represents the percentage of children in the school that are from a minority was classified into 5 groups: 1) <10%; 2) 20-25%; 3) 25-50%; 4) 50-75%; and 5) 75+%.