

# THE STATE OF NUTRITION AND PHYSICAL ACTIVITY IN OUR SCHOOLS



ENVIRONMENT & HUMAN HEALTH, INC.

THE STATE OF  
NUTRITION AND  
PHYSICAL ACTIVITY  
IN OUR SCHOOLS

*Research and publication of this report was made possible by the Beldon Fund, the Tortuga Foundation, the Alida R. Messinger Charitable Lead Trust, No. 2, and the Connecticut Health Foundation.*



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*This research project involved on-site visits to 62 schools across the State of Connecticut. The Project Investigator visited each school for one day, from before the beginning of the first lunch period until after the end of the last. School districts from all eight Connecticut counties and from each of the nine Connecticut Board of Education Economic Reference Groups (ERGs) participated in this study. In each school district, the project investigator interviewed school principals, teachers, food service directors, cafeteria staff, and students. This report also includes a literature review on the subjects of childhood obesity, school nutrition, and physical activity in schools.*

*The Board of Environment and Human Health, Inc. and the Project Investigator are especially grateful to the food service directors and cafeteria managers across Connecticut for their critical contributions to, and collaboration in, this research study.*

*We would also like to thank the local and regional health directors who worked with us and who encouraged their school districts to be a part of this study. Appreciation is also extended to school superintendents, principals, physical education teachers, nutrition education teachers, cafeteria staff, and students for their participation.*

*For their encouragement to undertake this study, our gratitude goes out to Kelly Brownell, Ph.D., Professor and Chair of Psychology and Director of the Center for Eating and Weight Disorders, Yale University; and Anthony Iton, M.D., J.D., M.P.H., Public Health Officer at the Department of Public Health, Alameda County, California, and former Director of Health, Stamford, Connecticut.*

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A STUDY OF NUTRITION AND  
PHYSICAL EDUCATION IN SCHOOLS,  
PROMPTED BY RISING RATES  
OF CHILDHOOD OBESITY



**In the United States, obesity and overweight prevalence is estimated to be at least 15 percent for all children and adolescents, and higher than 30 percent in some population subgroups.**



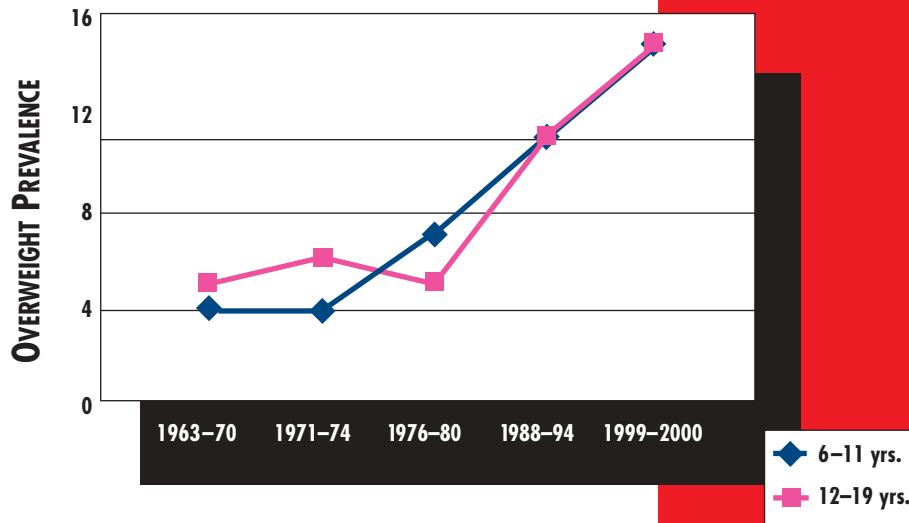
## Introduction

In 1998, the World Health Organization determined obesity to be a global epidemic.<sup>1</sup> This epidemic affects not only adults, but also children and adolescents worldwide. In the United States, obesity and overweight prevalence is estimated to be at least 15 percent for all children and adolescents,<sup>2</sup> and higher than 30 percent in some population subgroups.<sup>3</sup> Obesity is now the most serious dietary problem affecting the health of American children.<sup>4</sup>

The most extensive data on obesity and overweight prevalence are provided by the National Health and Nutrition Examination Survey (NHANES). As part of a comprehensive set of body measurements, this survey records height and weight, and reports results in terms of body mass index (BMI), expressed as weight/height<sup>2</sup> (kg/m<sup>2</sup>). While defining childhood obesity is problematic due to a lack of a standard definition and vocabulary, it is generally accepted that a child whose BMI is above the 95th percentile for his or her gender and age is overweight or obese.<sup>5, 6</sup>

Results from the NHANES survey are reported approximately every five years. Figure 1 shows the trend in overweight prevalence for children and adolescents for selected years from 1963 through 2000.<sup>7</sup> While overweight prevalence was relatively stable from the 1960s through the 1980s, this figure shows a marked increase from the late 1970s to 2000. In fact, overweight prevalence doubled for children aged 6–11 years and tripled for adolescents aged 12–19 years. A further disturbing trend is that the distribution curve of children's weight has become skewed to the right over time, indicating that children who are already overweight are getting fatter.<sup>8</sup>

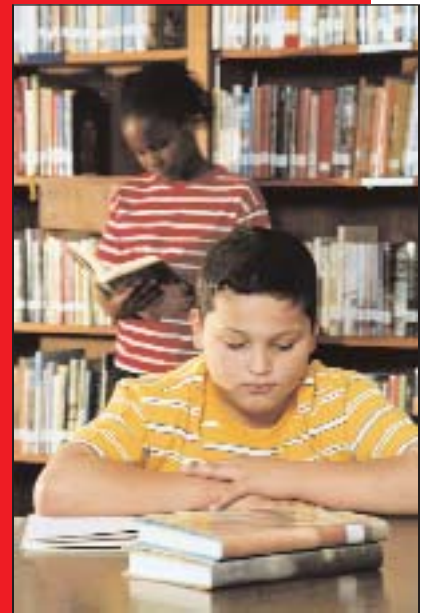
**Figure 1.** Prevalence of children with BMIs exceeding the 95th percentile for selected periods between 1963 and 2000. (Data source: CDC, 2004).



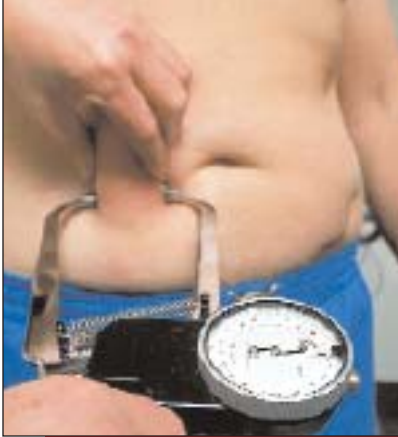
## Disparities in prevalence

Between 1976 and 1994, overweight and obesity prevalence increased in both genders, across all races and ethnicities, and across all age groups.<sup>9, 10</sup> However, disparities in overweight and obesity prevalence do exist based on race, ethnicity, gender, and socioeconomic status.

Data from the NHANES III survey, collected from 1988-1994, demonstrated that Mexican-American boys had a higher prevalence of overweight than did non-Hispanic black and non-Hispanic white boys.<sup>11, 12</sup> In addition, Hispanic girls and non-Hispanic black girls have shown a higher prevalence of overweight than non-Hispanic white girls.<sup>13, 14, 15, 16</sup>







**Childhood obesity is defined as the presence of excess adipose tissue, while childhood overweight simply means having too much weight.... Regardless of difficulties in precisely defining childhood obesity, it is clear that millions of American children are overweight or obese, and that this problem is increasing at an alarming rate.**



## **What is childhood obesity, and how does it differ from childhood overweight?**

Childhood obesity is defined as the presence of excess adipose tissue,<sup>17, 18</sup> while childhood overweight simply means having too much weight. The BMI described earlier is currently the preferred method for evaluating weight status in children, and a BMI greater than the gender- and age-specific 95th percentile is strongly indicative of obesity in children and adolescents.

It should be noted that only criteria based on measures of fatness or adiposity can classify individuals as obese. Weight-based measures, including the BMI, are only indirect measures of adiposity. This is particularly relevant in populations of children who are growing and developing muscle, and may vary widely even within the same age and gender groupings.<sup>19</sup> Thus, the NHANES survey described previously makes no reference to childhood obesity, and confines its results to childhood overweight prevalence.

However, other researchers have argued that the association between obesity and high BMI is quite strong,<sup>20</sup> and in a majority of studies, a BMI greater than the 95th percentile is considered obese.<sup>21</sup> Regardless of difficulties in precisely defining childhood obesity, it is clear that millions of American children are overweight or obese, and that this problem is increasing at an alarming rate.

## What health problems are associated with childhood obesity?

Childhood obesity can lead to a startling variety of negative health effects, both acute and long-term. Prior to adulthood, obese children may develop gallstones, hepatitis, and sleep apnea.<sup>22</sup> Obese children and adolescents also have increased risks of childhood hypertension and high cholesterol.<sup>23</sup>

Because they carry excess weight, obese children are at increased risk of orthopedic problems.<sup>24</sup> They are also prone to psychosocial disorders. Discrimination is common, and overweight children are ranked the lowest of those with whom other children would like to be friends.<sup>25</sup>

One of the most alarming health outcomes associated with the growing prevalence of childhood obesity is the increase in Type 2 diabetes in children. This type of diabetes has been traditionally termed “adult-onset diabetes” because, historically, the overwhelming majority of cases have been found among adults. Until recently, only 1-2 percent of children were diagnosed with Type 2 diabetes.<sup>26</sup> Now, however, reports indicate a steep increase in incidence of this disease.<sup>27</sup>

One large study in Cincinnati found a 10-fold increase in Type 2 diabetes in adolescents between 1982 and 1994.<sup>28</sup> This increase is strongly linked to childhood obesity, as 85 percent of children with Type 2 diabetes are either overweight or obese at diagnosis.<sup>29</sup> Overweight and obese children are more likely



**Because they carry excess weight, obese children are at increased risk of orthopedic problems.... One of the most alarming health outcomes associated with the growing prevalence of childhood obesity is the increase in Type 2 diabetes in children.**





The growing obesity crisis is due to a changing environment, one that researchers have described as “toxic.”



to become overweight or obese adults, and morbidity from obesity in adults may be as great as from poverty, smoking, or problem drinking.<sup>30</sup> Obesity is estimated to contribute to more than 280,000 deaths every year in the U.S.,<sup>31</sup> and the total cost of obesity was estimated to be \$117 billion in the year 2000 alone.<sup>32</sup>

### What are the factors involved in childhood obesity?

The growing obesity crisis is due to a changing environment, one that researchers have described as “toxic.”<sup>33</sup> For the vast majority of individuals, obesity results from excess caloric intake paired with inadequate physical activity.<sup>34</sup>

An overabundance of food, much of which is high in fat and sugar, coupled with sedentary lifestyles, is driving these rising obesity rates. In 1997, American children obtained 50 percent of their calories from added fat and sugar, and only 1 percent regularly ate diets that resembled the USDA’s dietary guidelines.<sup>35</sup>

A study by the Centers for Disease Control and Prevention (CDC) found that 64 percent of young people ages 6 to 17 eat too much total fat, and 68 percent eat too much saturated fat.<sup>36</sup> According to another national survey, less than 50 percent of children participate in any physical activity that would promote long-term health benefits.<sup>37</sup>

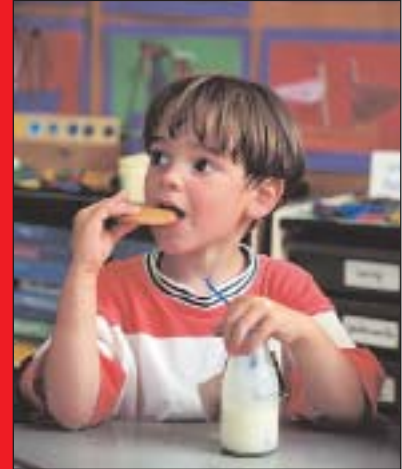
## What is the role of the school in childhood obesity prevention?

The school environment has a powerful influence on students' eating behaviors,<sup>38</sup> and the Surgeon General has identified schools as key settings for public health strategies to prevent and/or decrease the prevalence of overweight and obesity.<sup>39</sup> Children spend a large portion of their time at school, and many of the lifestyle and behavior choices associated with obesity develop during this time.<sup>40</sup> Researchers have concluded that schools can help prevent childhood obesity by providing appropriate meals, physical activity, and health education.<sup>41</sup>

In addition, research has shown that the influence of the school environment on behavior extends beyond the school. Students are exposed to food throughout the school day, and this repeated exposure is likely to influence food selection outside of school, as well.<sup>42</sup>

A study of the association between adolescents' dietary behavior and food sales at school found that students choosing less healthful foods at school do not compensate by choosing more healthful foods at other times.<sup>43</sup> Research has also shown that increased focus on physical education in school can lead to overall increases in the amount of time students spend engaged in vigorous physical activity.<sup>44</sup>

This study evaluates the nutrition and physical activity environments in a cross-section of public schools.



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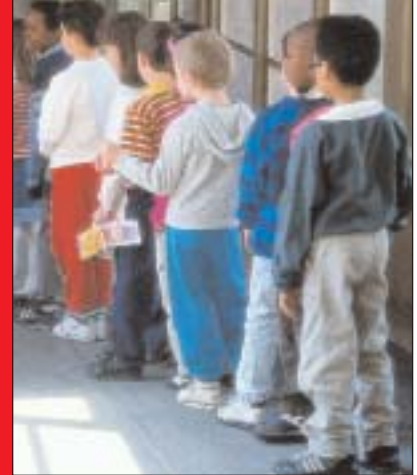
# I. School Lunch Periods



*Previous research suggests that inadequate time to eat discourages students from purchasing and eating complete lunches. Waiting in line is the most commonly reported factor contributing to student dissatisfaction with lunches. When they do not have enough time to buy and eat lunch, students report buying snacks instead, buying lunch and throwing away a large portion, or skipping lunch entirely. On average, the last student in the lunch line at schools in this study had 13 minutes to eat, with a range of 7 to 25 minutes.*

## Summary of Findings

- Thirty-four percent of schools included in this study provided the last student in the lunch line with only 10 minutes or less to eat his or her lunch.
- The average time between the last student in line receiving his or her lunch and the end of the lunch period was 13 minutes. This did not vary significantly by level of school.
- As opportunity time to eat decreased, students, cafeteria staff, and lunch monitors were significantly more likely to report that students had insufficient time to buy and eat their lunches.
- When asked what they did when they did not have enough time to buy and eat lunch, students reported buying à la carte snacks, eating from vending machines, bringing lunch from home, skipping lunch entirely, or buying lunch and throwing away a large portion.
- In order to accommodate the entire student body, some large schools scheduled as many as seven lunch periods, and these lunches started as early as 9:25 a.m. Fifty percent of the middle and high schools included in this study scheduled the first lunch period before 11:00 a.m., despite national recommendations that school lunches not begin before this hour.<sup>1</sup>
- Providing students with constructive activities at the end of lunch can allow for longer lunch periods without increasing behavioral problems.
- Decreasing wait in line by adding extra serving lines or overlapping lunch waves can allow more students to be served more quickly and can reduce the discrepancy in opportunity time to eat between the first student in line and the last.



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## I. School Lunch Periods

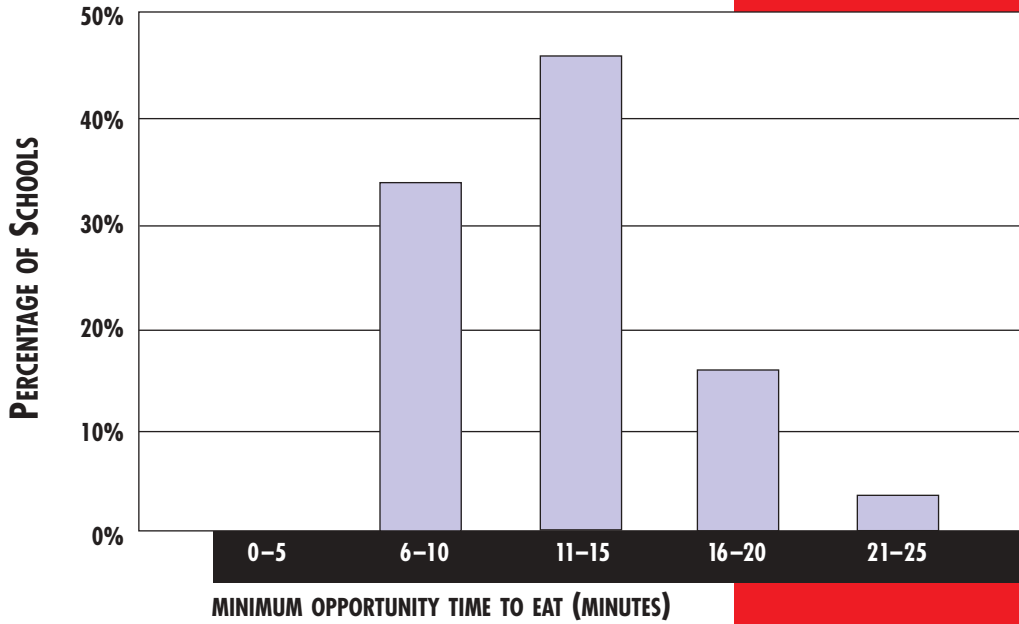
Lengths of lunch periods in the schools included in this study ranged from 19 to 44 minutes, with an average length of 26 minutes. Maximum length of time spent in the lunch line (“wait in line”) ranged from 7 to 23 minutes, and averaged 13 minutes. “Opportunity time to eat” is defined as the difference between these two quantities, the time between a student’s receipt of his or her lunch and the end of the lunch period.<sup>2</sup> On average, schools in this study provided the last student in the lunch line with an opportunity time to eat of 13 minutes, with a range of 7 to 25 minutes. Table 1 lists the lengths of lunch periods, wait time, and minimum opportunity time to eat (that of the last student in line) by school level.

*Table 1. Lengths of lunch periods (minutes) by school level. ▼*

	Elementary <sup>a</sup> (n=23)	Middle <sup>a</sup> (n=22)	High (n=16)
<b>Lunch period length (minutes)</b>			
<i>Average</i>	26	26	27
<i>Range</i>	19–30	19–30	20–44
<b>Maximum wait in line (minutes)</b>			
<i>Average</i>	12	12	13
<i>Range</i>	7–21	5–23	7–17
<b>Minimum opportunity time to eat (minutes)</b>			
<i>Average</i>	14	14	14
<i>Range</i>	8–20	7–20	7–25

<sup>a</sup>The five K–8 schools participating in this study were included in both the “Elementary” and “Middle” school categories.

**Figure 1.** Amount of time between the last student in line's receipt of his or her lunch and the end of the period ("minimum opportunity time to eat") at schools included in this study.



*Figure 1 shows the minimum opportunity time to eat. ▼*

Thirty-four percent of schools provided the last student in line with 10 minutes or less to eat his or her lunch. Figure 1 shows the minimum opportunity time to eat at schools included in this study.

In each school, both a member of the cafeteria staff and a lunch monitor, defined as either a lunchroom aide or a teacher on lunch duty, were asked whether or not they felt the students at their school had enough time to buy and eat lunch. They were asked to rank their answer on a scale of 1–5, with 1 indicating an answer of “definitely not” and 5 indicating “definitely.” The responses of both the cafeteria staff and the lunch monitors were significantly correlated with the minimum opportunity time to

**Thirty-four percent of schools provided the last student in line with 10 minutes or less to eat his or her lunch.**





**Teachers on lunch duty who reported bringing lunch from home were asked why they did not purchase lunch in the cafeteria.... The second most common answer given was that there was not enough time for them to buy and eat their lunches during the lunch periods.**



eat. As that time decreased, the likelihood of a lower rating by the staff increased.<sup>3</sup> The responses of the cafeteria staff and lunch monitors were also significantly correlated with each other, though lunch monitors were more likely to say that students had enough time to eat than were cafeteria staff.<sup>4</sup>

In each school, the lunch monitor was also asked whether he or she brought his or her lunch from home or purchased lunch from the cafeteria. Teachers on lunch duty who reported bringing lunch from home were asked why they did not purchase lunch in the cafeteria. While the most common response had to do with dietary choices, the second most common answer was that there was not enough time for them to buy and eat their lunches during the lunch periods.

Over the course of this study, 324 students were asked whether or not they felt they had enough time to buy and eat lunch during their lunch periods. Student responses were recorded as “no” = 1, “sometimes” = 2, and “yes” = 3. As minimum opportunity time to eat decreased, students were significantly more likely to report that they did not have enough time to buy and eat lunch.<sup>5</sup> When asked what they did when they did not have enough time to buy and eat lunch, students reported buying à la carte snacks, eating from vending machines, bringing lunch from home, skipping lunch entirely, or buying lunch and throwing away a large portion.

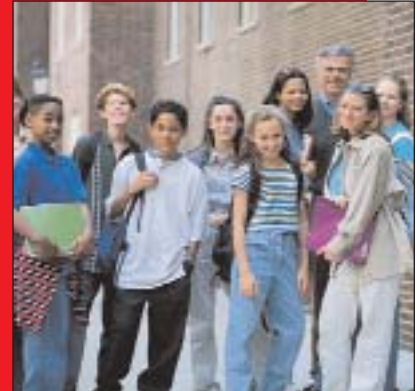
Previous research has shown that students who participate in the National School Lunch Program (NSLP) have better nutrient intakes than students who make other choices, such as purchasing lunch from vending machines, bringing lunch from

home, or eating off campus.<sup>6</sup> Given the results of the current research, this finding suggests that not giving students enough time to buy and eat lunch will negatively impact their nutrient intake.

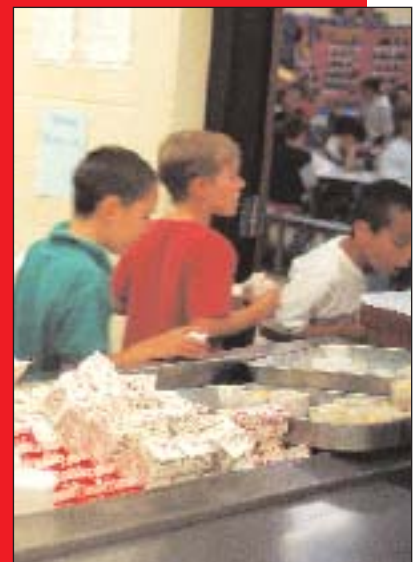
The preceding analysis focuses on opportunity time to eat for the last student in line. However, students who are near the front of line have very different opportunity times to eat than students who are near the end of line. This can present a challenge to schools that consider simply increasing lunch period lengths as a means of increasing opportunity time to eat. What are the students who have finished eating to do while other students have lunch? In some schools this problem is dramatic; in a cafeteria where the maximum wait time was 23 minutes, some students were completely finished eating while others were still waiting in line.

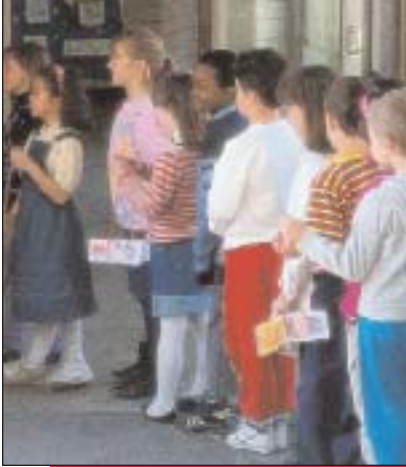
Behavioral problems were a concern of lunch monitors, especially from those students who had finished eating lunch. Lunch monitors were asked if they thought that increasing the length of the lunch period would lead to an increase in behavioral problems. They were again asked to rank their answers on a scale of 1–5, with 1 indicating an answer of “definitely not” and 5 indicating “definitely.” Sixty-seven percent of the lunch monitors responded with a 4 or 5, indicating that they thought that extending lunch periods would lead to increased behavioral problems. This result did not vary by school level. The lunch monitors’ answers were consistent with the fact that in many cafeterias, the noise level increased as the end of lunch approached.

One problem leading to long wait times, and subsequently short opportunity time to eat, is overcrowding in cafeterias. An



**Sixty-seven percent of the lunch monitors ... indicat[ed] that they thought that extending lunch periods would lead to increased behavioral problems.**





**To accommodate entire student populations, some schools already schedule as many as seven lunch periods. School days at the high and middle school level often begin around 7:30 a.m., and one school lunch period began as early as 9:25 a.m.**



apparent solution to this problem is to increase the number of lunch periods, thus reducing the number of students per period. However, there is only so much time in a school day.

To accommodate entire student populations, some schools already schedule as many as seven lunch periods. School days at the high and middle school level often begin around 7:30 a.m., and one school lunch period began as early as 9:25 a.m., despite the national recommendations that school lunches not start before 11:00 a.m.<sup>7</sup> In fact, 50 percent of the middle and high schools included in this study began serving lunch before 11:00 a.m. Elementary schools tended to begin the day later than middle or high schools, and only 13 percent of elementary schools had lunches starting before 11:00 a.m. No elementary schools had lunches starting before 10:30 a.m.

### **Challenges to balancing lunch length, behavior, and school schedules**

Students need time to buy and eat their lunches, and to socialize during their lunch period.<sup>8</sup> Without adequate time, they may throw away portions of lunch, not eat at all, or eat unhealthy snacks instead of a complete, nutritious meals. However, providing lunch for hundreds, or even thousands, of students in short periods of time can be a challenge. Students who get their lunches first may be bored or unruly by the end of the period, and strategies to simply increase the number of lunch periods may not be practical in some schools due to scheduling limitations. However, several schools in the study found ingenious ways to approach this problem.

## Examples of effective strategies to improve school lunch periods

- One mid-sized elementary school, with a student population of 500, decided to increase opportunity time to eat by decreasing wait time with overlapping lunch waves. In that school, each of 21 classes entered the cafeteria three minutes apart. Lunch periods were 25 minutes long, and after eating, students left the cafeteria by classroom every three minutes, providing the table space for the next incoming class. The wait in line time for this school was just seven minutes, which allowed even the last student in line 18 minutes to eat lunch.
- A small K–8 school, with a student population of 300, approached the problem in a similar way. This school had seven lunch waves lasting 30 minutes each, and each wave overlapped by 15 minutes. For example, Group 1 came in at 11:15 and Group 2 at 11:30. At 11:45, Group 1 left and Group 3 came in, and so forth. This way, lines were relatively short, and opportunity time to eat was a full 20 minutes, even for the last students in line.
- The cafeteria staff at a large high school, with a student population of 1,850, added a third serving line and found that wait time was significantly decreased. Opportunity time to eat therefore increased without increasing the lunch length or the number of lunch periods.
- To reduce behavioral problems, some schools provided activities for students who had finished eating. At one K–8 school, students who had finished lunch played card games. At one elementary school, students were supplied with crayons and paper, and those who had finished eating were encouraged to draw pictures. At two other elementary schools, a teacher



At one K–8 school, students who had finished lunch played card games. At one elementary school, students were supplied with crayons and paper, and those who had finished eating were encouraged to draw pictures.





**In another case, a large high school...combined its study hall with the lunch period, so that students who had finished eating could do homework, or access the computer center, which was adjacent to the cafeteria.**



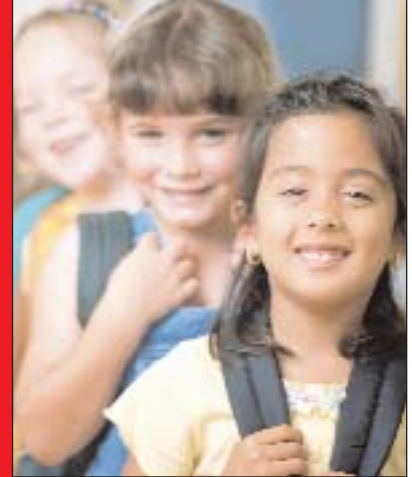
and an assistant principal read stories in the cafeteria during the last 10 minutes of the lunch period. These activities entertained students who had already eaten and gave students who were still eating a chance to finish their lunches.

- In another case, a large high school, with a student population of 900, combined its study hall with the lunch period so that students who had finished eating could do homework, or access the computer center, which was adjacent to the cafeteria.
- One relatively small high school, with a student population of 325, had only one lunch period, but that period lasted for 40 minutes. During the lunch period, students had access not only to the cafeteria, but also to the gymnasium, the library, and the downstairs hallways. For example, students who were first in line could play a game of basketball after finishing their lunches. Students who realized that they would be in the back of the line could browse the library or talk with a friend, and know that they would still have time to eat. The teacher on lunch duty said that behavioral problems were scarce, and this was one of only two high schools where all students interviewed felt they had enough time to buy and eat lunch.

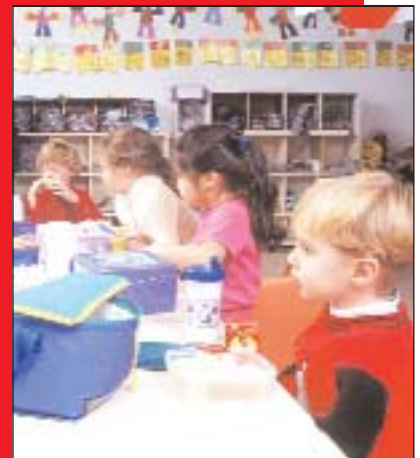
These examples demonstrate creative solutions to one of the challenges schools face in managing the lunch period. By adding serving lines, staggering cafeteria entry, and finding constructive activities for students who have finished eating, schools were able to provide students enough time to eat complete lunches without creating behavioral problems or starting lunch early in the morning.

# I. Recommendations

- Schools should provide even the last student in line with enough time to buy and eat a complete lunch.
- Schools should work to reduce wait time or to extend lunch periods when lunch lengths are insufficient to provide all students appropriate opportunity time to eat. In schools where students who are first in line have excess time, constructive activities should be provided for those students.
- Administrators should work with lunch monitors and cafeteria staff to determine the length of their students' opportunity time to eat and, based on their school's unique characteristics, create a strategy that will ensure sufficient time. Due to differences between schools in size, number of lunch periods, and cafeteria and food service structure, the length of time allotted to school lunches does not easily lend itself to regulation.



**Due to differences between schools in size, number of lunch periods, and cafeteria and food service structure, the length of time allotted to school lunches does not easily lend itself to regulation.**



## II. The National School Lunch Program



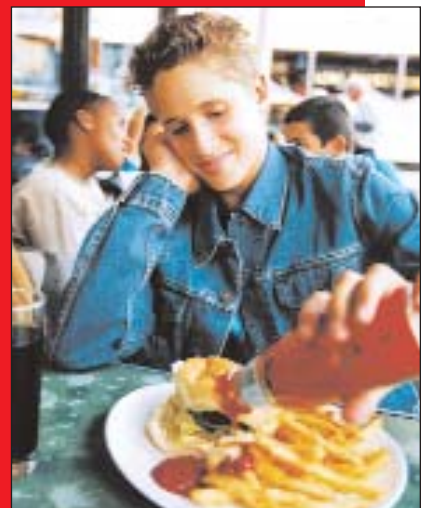
*The National School Lunch Program (NSLP) is the largest child nutrition program in the United States. Participation in this program allows schools to receive both cash subsidies and donated foods for every meal served. The meals must meet certain nutritional requirements, and must be offered either free or at reduced prices to eligible children. Each school day, 25 million children receive low-cost or free lunches. Ninety-five percent of the schools in this study participated in the National School Lunch Program.*

## *Summary of Findings*

- Ninety-five percent of the schools in this study participated in the National School Lunch Program (NSLP).
- At the schools in this study that participated in the NSLP, an average of 53 percent of students bought a lunch on a typical day.
- Student participation in the NSLP was found to decrease with increasing school level. In elementary schools, an average of 59 percent of students bought a qualifying lunch on a typical day. This value dropped to 54 percent in middle schools, and 44 percent in high schools.
- Most school districts in this study provided little or no financial support to the food service program. The majority of food service programs were nearly one hundred percent financially self-supporting, aside from the subsidies and commodities provided by the NSLP. This means that the money made from selling school lunches and other foods must pay not only for the food itself, but also for staff salaries, benefits, staff training, and kitchen equipment.
- Some school districts concentrated more than others on encouraging students to eat lunches containing all of the required components. This is important, as fruit and vegetable components are those most commonly ignored. Focus on fruit and vegetable consumption did not appear to be related to either school level or Economic Reference Group (ERG). In fact, one of the districts that appeared to be most focused on



In elementary schools, an average of 59 percent of students bought a qualifying lunch on a typical day. This value dropped to 54 percent in middle schools, and 44 percent in high schools.







Oil-fried French fries were so popular at many schools that some lunch monitors reported students buying lunches for the fries only, and throwing everything else away.



encouraging students to eat the fruit and vegetable lunch components was in the lowest ERG. This suggests that with a commitment from the food service staff and administration, all schools can provide students with nutritious lunches, including appealing fruits and vegetables.

- Food service directors and cafeteria managers reported that, on average, 32 percent of their food came from the federal government commodities program.
- At 63 percent of the schools visited, food service directors or cafeteria managers reported that the commodities they received helped them to provide healthy lunches.
- Fresh fruits and vegetables are currently not available to school food service programs through the federal commodities program. A majority of food service directors and cafeteria managers, including those who felt strongly that the commodities helped them provide healthy lunches, reported this to be a significant gap in the federal commodities program.
- Oil-fried French fries were so popular at many schools that some lunch monitors reported students buying lunches for the fries only, and throwing everything else away.
- Food service directors and cafeteria managers who participated in “Farm-to-School” programs reported that these programs were very successful. The most commonly mentioned programs were those featuring fresh Connecticut apples.

## II. The National School Lunch Program

The National School Lunch Program (NSLP) is the largest child nutrition program in the country. It allows schools to receive both cash subsidies and donated foods from the U. S. Department of Agriculture (USDA) for every meal served.<sup>1</sup> In return, the meals must meet certain nutritional requirements, and must be offered either free or at reduced prices to eligible children.<sup>2</sup> Ninety-five percent of the schools in this study participated in the National School Lunch Program.

The nutritional requirements dictate that qualifying lunches must provide one-third of the Recommended Daily Allowance (RDA) for calories, protein, calcium, iron, and vitamins A and C for the applicable age group.<sup>3</sup> Reimbursable lunches also must adhere to the standards set forth by the Dietary Guidelines for Americans, including the requirement that total fat cannot constitute more than 30 percent of the calories and saturated fat cannot constitute more than 10 percent of the calories.<sup>4</sup>

Several approaches to menu planning are allowed by the USDA to meet the National School Lunch Program requirements. These different approaches include both “foods-based menus” and “nutrient standard menus” as available options. The foods-based menu approach is structured around meal patterns, while the nutrient standard approach is based on nutritional analysis. For each lunch, a cafeteria employing the foods-based approach must offer five components: a grain, a meat or meat alternative (protein), milk, and two fruits and/or vegetables.<sup>5</sup> Under the nutrient standard menu approach, lunch menu development is based on the analysis for nutrients in the foods offered over an entire school week. A cafeteria employing the nutrient standard



The National School Lunch Program (NSLP) is the largest child nutrition program in the country.









THE STATE OF NUTRITION AND PHYSICAL ACTIVITY IN OUR SCHOOLS

*Although each of the lunches below meets the federal nutrition guidelines, there are great disparities among them. ▼*

Chart 1. Below are examples of school lunches observed in this study. In order to meet federal regulations in a foods-based menu approach, all lunches must contain five components: one protein (P), one grain (G), two fruits and/or vegetables (FV), and one 8-oz. serving of milk.<sup>5</sup>

<span style="color: blue;">■</span>	One protein (P)
<span style="color: orange;">■</span>	One grain (G)
<span style="color: green;">■</span>	Two fruits and/or vegetables (FV)

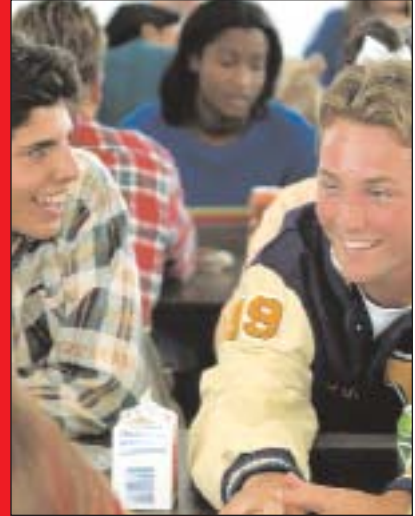
Lunch	Meal components	Also served with
	Eggplant parmesan <span style="color: green;">FV</span> , <span style="color: blue;">P</span> French fries <span style="color: green;">FV</span>	Sub Roll <span style="color: orange;">G</span> Milk
	Fried mozzarella cheese sticks <span style="color: blue;">P</span> Pasta shells <span style="color: orange;">G</span> Tossed salad <span style="color: green;">FV</span>	Canned peaches <span style="color: green;">FV</span> Milk
	Corn chips <span style="color: orange;">G</span> Cheese <span style="color: blue;">P</span>	Apple sauce <span style="color: green;">FV</span> Carrot sticks <span style="color: green;">FV</span> Milk
	Turkey with gravy <span style="color: blue;">P</span> Corn <span style="color: green;">FV</span> Apple <span style="color: green;">FV</span>	Roll <span style="color: orange;">G</span> Milk
	Teriyaki chicken tenders <span style="color: blue;">P</span> Apple <span style="color: green;">FV</span> Roll and/or rice <span style="color: orange;">G</span>	Mixed vegetables <span style="color: green;">FV</span> Milk
	Salad with ham and egg <span style="color: green;">FV</span> , <span style="color: blue;">P</span>	Crackers <span style="color: orange;">G</span> Apple <span style="color: green;">FV</span> Milk

menu approach must offer at least three menu items daily, one of which must be an entrée and one an 8-oz. serving of milk.<sup>6</sup>

The National School Lunch Program provides a structure for school lunches, but within that structure there is room for variation between, and even within, schools. Most schools in this study offered more than one choice of lunch every day. A majority of elementary schools offered three choices daily. For example, students could choose between a hot entrée, a cold sandwich, or a bagel and yogurt, all plus two fruit and/or vegetable side dishes, and milk. At the high school level, choices were even broader. Many high school cafeterias were set up as food courts with food stations, offering items like pizza, sandwiches and salads, grill items, and hot entrées. Identical fruit and vegetable side dishes were often available at each of the stations.

### School lunch participation

This study found that in the schools that participated in the National School Lunch Program, an average of 53 percent of the student body bought a qualifying lunch each day. Average daily student participation in the NSLP was found to decrease with increasing school level.<sup>7</sup> In elementary schools participating in the NSLP, an average of 59 percent of students bought a qualifying lunch each day. This value dropped to 54 percent in middle schools, and 44 percent in high schools (see Table 1). Students who eat school lunches that meet the federal requirements have higher nutrient intakes and consume more vegetables than other students.<sup>8</sup> They also drink more milk, drink fewer sweetened beverages, and eat fewer cookies, cakes, and salty snacks than students who make other lunch choices.<sup>9</sup>



Students who eat school lunches that meet the federal requirements have higher nutrient intakes and consume more vegetables than other students.

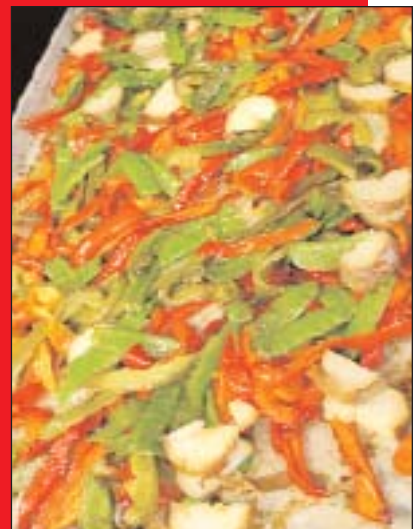


Table 1. National School Lunch Program (NSLP) participation, percentage of students who received free and reduced-price lunch, and cost of full-price lunch by school level.

	Elementary <sup>a</sup> (n=22)	Middle <sup>a</sup> (n=21)	High (n=15)
<b>Average daily participation in the NSLP by students</b>			
<i>Average</i>	59%	54%	44%
<i>Range</i>	30%–93%	29%–93%	15%–85%
<b>Percentage of students who received free and reduced-price lunch</b>			
<i>Average</i>	21%	28%	14%
<i>Range</i>	1%–100%	2%–100%	1%–43%
<b>Cost of full-price school lunch</b>			
<i>Average</i>	\$1.75	\$1.91	\$2.01
<i>Range</i>	\$1.25–\$2.15	\$1.50 – \$2.40	\$1.30 – \$2.50

<sup>a</sup>The five K–8 schools that participated in this study were included in both the “Elementary” and “Middle” school categories. The schools that did not participate in the NSLP were excluded from this analysis.

## Financing school lunch

As part of the National School Lunch Program, schools receive cash subsidies for every qualifying meal served. Free lunches are available to children from families whose income is at, or below, 130 percent of the poverty level, and reduced-price lunch is available to children from families whose income is between 130 and 185 percent of the poverty level.<sup>10</sup> As would be expected, the percentage of the student body receiving free and reduced-price lunch at each school was found to be significantly associated with the school's Economic Reference Group (ERG),<sup>11</sup> when adjusted for school level. ERGs are a classification used by the Connecticut Department of Education to group together schools with similar socioeconomic status. There are nine ERGs, ranging from the most affluent school districts in ERG A to the least affluent school districts in ERG I (see Appendix 4).

School food service programs participating in the NSLP receive \$2.19 from the federal government for each free lunch served, and \$1.79 for every reduced-price lunch served. For each full-price lunch served, the government still provides a subsidy of \$0.21.<sup>12</sup> Students eligible for free lunch pay nothing for the meal, whereas those receiving reduced-price lunch pay \$0.40. The cost to students of a full-price lunch varies by school district and school level. The cost of lunches at schools in this study averaged \$1.75 for elementary schools, \$1.91 for middle schools, and \$2.01 for high schools (see Table 1).

In addition to providing these cash subsidies, the USDA provides school food service programs with donated foods for each meal they serve. Commodity foods are provided at a value of approximately \$0.16 for each meal served.<sup>13</sup>



The percentage of the student body receiving free and reduced-price lunch at each school was found to be significantly associated with the school's Economic Reference Group (ERG).





The money made from selling school lunches and other foods must pay not only for the food itself, but also for the staff salaries, their benefits, their training, and the kitchen equipment.



Aside from these commodities and subsidies, most food service programs included in this study were nearly one hundred percent financially self-supporting. Most school districts in this study provided little or no financial support to the food service programs in their schools. When districts did contribute financially, it was generally minimal, such as providing the benefits package of the food service director. This lack of financial support from the school districts means that the food service programs must be run as businesses. The money made from selling school lunches and other foods must pay not only for the food itself, but also for the staff salaries, their benefits, their training, and the kitchen equipment.

## Federal commodities

As discussed above, school food service programs receive donated commodity foods for each meal served. At each school in this study that participated in the National School Lunch Program, a food service director or cafeteria manager was asked what percentage of the total food purchased came from federal commodities, as opposed to other vendors. They reported that, on average, 32 percent of their food came from the government commodities program. They were also asked what foods they ordered and received most frequently. The most common answers were cheese, ground beef, frozen and canned vegetables (including French fries and Tater Tots), canned fruits, and chicken products (for example, nuggets, tenders, patties, etc.).

The food service directors or cafeteria managers were then asked whether or not they felt that the commodities that they were offered help them to provide healthy lunches. They were asked to rank their answers on a scale of 1–5, with 1 indicating an answer of “definitely not” and 5 indicating “definitely.” At 63 percent of

the schools to which commodities were available, food service directors responded with a 4 or 5, indicating that they thought that the commodities they received helped them to provide healthy lunches. They cited items such as ground turkey, lowfat cheese, chicken products, and frozen green vegetables as being particularly helpful. Many food service directors and cafeteria managers reported cheese to be the main commodity they received. Some felt that this made it difficult to meet the federal regulations regarding fat content, while other cafeteria managers and food service directors stressed the importance of the calcium content of cheese, especially given the increasing rates of calcium deficiency in teenagers.

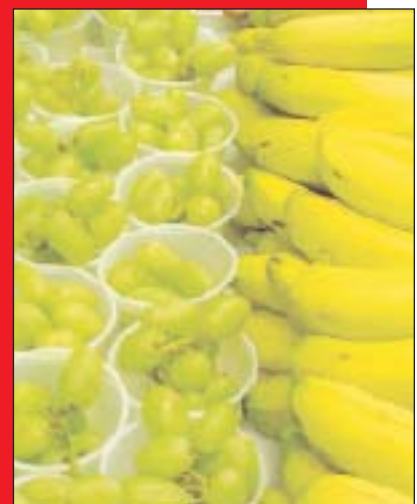
Fresh fruits and vegetables currently are not available to school food service programs through the federal commodities program. A majority of food service directors and cafeteria managers, including those who felt strongly that the commodities helped them provide healthy lunches, reported this to be a major gap in the federal commodities program. Research has suggested that children often prefer fresh, raw vegetables to those that are cooked.<sup>14</sup> A study of plate waste in school children's lunches found that more cooked vegetables were thrown away than fresh vegetables, salad, or fresh fruit.<sup>15</sup>

The federal government has, in the past, provided fresh fruits and vegetables as part of the NSLP commodities program. The current lack of fresh fruits and vegetables in the program may be due to difficulties with transportation. Thomas Stenzel, president and CEO of the United Fresh Fruit and Vegetable Association, has described USDA's current procurement and distribution system as "woefully inadequate to handle fresh produce for the federal child nutrition programs."<sup>16</sup>



**USDA's current procurement and distribution system is "woefully inadequate to handle fresh produce for the federal child nutrition programs."**

**— Thomas Stenzel,  
United Fresh Fruit and  
Vegetable Association**







The “Farm-to-School” program...encourages small farmers to sell fruits and vegetables to schools and encourages schools to buy this produce from small farmers.



## “Farm-to-School” programs

Programs are available to encourage school food service programs to increase purchases of fresh fruits and vegetables from other vendors. The 2002 Farm Bill included a provision requiring the Secretary of Agriculture to encourage institutions participating in the school lunch programs to purchase locally grown foods.<sup>17</sup> One way for this to occur is through the Small Farms/School Meals Initiative, popularly known as the “Farm-to-School” program. This program encourages small farmers to sell fruits and vegetables to schools and encourages schools to buy this produce from small farmers.<sup>18</sup> Food service directors and cafeteria managers interviewed in this study who participated in “Farm-to-School” programs reported that they have been very successful. The most commonly mentioned programs were those featuring fresh Connecticut apples.

## “Offer vs. Serve”




Though the National School Lunch Program regulates the components and nutritional qualities of lunches served at participating schools, there remains a large variance within those lunches. In order to reduce food waste, schools operate on a system of “offer versus serve,” meaning that though they must offer all components of a qualifying lunch, students do not have to take every component. In a cafeteria offering a foods-based menu, students must take only three components of a school lunch in order for it to qualify as a reimbursable lunch,<sup>19</sup> and in a nutrient analysis based approach, students need take only two components.<sup>20</sup>

However, the complete lunches are more nutritious, and different schools gave different amounts of attention to encouraging students to choose and consume the additional components. This is important, as these components were often fruit and vegetable side dishes (see Chart 2).

This varying amount of attention does not appear to be related to either school level or Economic Reference Group. In fact, one of the districts that appeared to be most focused on encouraging students to eat the fruit and vegetable lunch components was in the lowest ERG. This suggests that with a commitment from the food service staff and administration, all schools can provide students with nutritious lunches that include appealing fruits and vegetables.

*Although all three examples of fruit components shown below meet federal guidelines, there are great disparities among the choices. ▼*

Chart 2. The pictures at right show the fruit offerings at three different schools. The canned fruit and trail mix in the top picture were less appealing than the variety of fresh whole and cut up fruit in the bottom two pictures. More students chose a fruit component at the schools in the bottom two pictures than at the school shown in the top picture.

Fruit components	Fruit shown
	<ul style="list-style-type: none"> <li>Canned peaches</li> <li>Trail mix</li> </ul>
	<ul style="list-style-type: none"> <li>Whole apples</li> <li>Whole oranges</li> <li>Whole nectarines</li> </ul>
	<ul style="list-style-type: none"> <li>Fresh cut oranges</li> <li>Fresh cut apples and pears</li> <li>Fresh cut cantaloupe</li> <li>Fresh grapes</li> </ul>



By providing fresh, cut up fruits, which are also easy to eat in a limited time, some elementary schools greatly increased the number of students choosing and consuming these components.



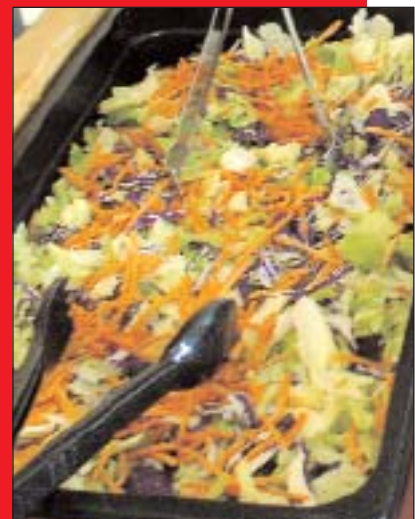
## Examples of effective strategies to encourage students to eat healthy lunches

- Since students are not necessarily required to take fruit and vegetable side dishes as part of their lunches, some food service programs do not focus on these components. However, at other schools, fruit and vegetable consumption has been made a priority, and food service directors focused time and attention on making these components appealing. By providing fresh, cut up fruits, which are also easy to eat in a limited time, some elementary schools greatly increased the number of students choosing and consuming these components. At the high school level, providing fresh whole fruits daily increased the number of students choosing to eat fruit in some schools.
- Like fresh fruit, fresh vegetables were often cited as the most popular form of vegetable by cafeteria managers and food service directors interviewed in this study. To encourage more students to eat vegetables, cafeteria staff in one district in ERG B began serving pre-dressed tossed salads every day, with every meal. The food service director reported that this change has been overwhelmingly well received.
- In addition to tossed salad, other fresh vegetable options were also found to be very popular. At one large middle school, with a student population of 1,100, fresh cut vegetables such as broccoli, carrots, cauliflower, cucumber, and celery were served daily, often with a lowfat dip, such as Italian dressing. Notably, this school was in the lowest Economic Reference Group, ERG I.

- At a mid-sized middle school in ERG D, with a student population of 570, the cafeteria staff found that serving soups was a very popular way to entice students to eat vegetables. They began serving homemade, vegetable-based soups every day, with every meal. These soups included tomato, mixed vegetable, and chicken vegetable, and were reported to be a big success.
- Oil-fried French fries were so popular at many schools that some lunch monitors reported students buying lunches for the fries only, and throwing everything else away. In schools where fries were commonly served with lunch, students were sometimes forced to choose between fries and another vegetable. One school lunch program found that it was serving as many as 250 pounds of oil-fried French fries per day to just over 500 middle school students. In response, several schools have begun to remove fries from their lunch menus, to bake them instead of frying them, or to include them only on certain days of the week.
- Some schools found salad bars to be a good way to encourage students to eat vegetables. In a number of cases, the salad bar even included a protein (such as cups of tuna, cheese, or grilled chicken) and a grain (such as a roll or bread), so that the salad bar itself contained all the components of a qualifying lunch. Salad bars were often supervised by the lunch monitors, and were reported to be very popular with students.



At a mid-sized middle school in ERG D, with a student population of 570, the cafeteria staff found that serving soups was a very popular way to entice students to eat vegetables.





By providing tasty, appealing, and healthy choices, food service staff created healthier school environments for students.



- “Bagel lunches,” which usually included a protein, two fruit and/or vegetable choices, and a milk in addition to a bagel, were offered every day at several elementary and middle schools. The protein component was usually a yogurt and/or a mozzarella cheese stick. However, at one large middle school in ERG B, with a student population of 800, students were offered a variety of protein choices daily, including peanut butter, yogurt, sausage, egg, and ham. They could choose any two proteins, as well as two fruits or vegetables and milk to go with the bagel. The food service director reported that increasing the number of choices increased the percentage of students purchasing this lunch.
- Several food service directors and cafeteria managers reported meeting regularly with student groups to learn from the students what lunch choices they liked best, and what new things students would like to see on the menu.
- One food service director in a large district in ERG H, whose entire student population totaled 7,500, reported very positive results from working with a local “Farm-to-School” program. He reported that the Connecticut apples provided by the program were fresher, more popular, and longer lasting than the apples he had bought from other vendors in the past.

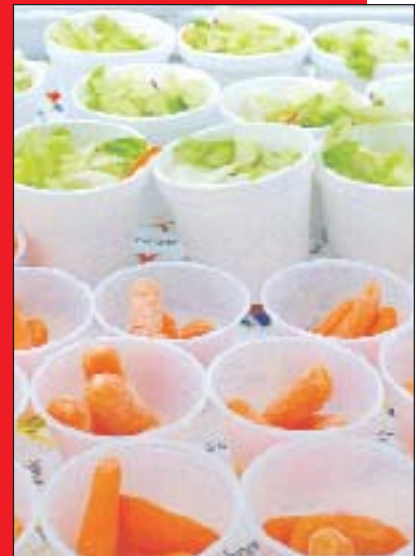
These examples demonstrate some of the things that food service directors, cafeteria managers, and cafeteria staff have done to encourage students to choose and consume complete lunches meeting all NSLP requirements. By providing tasty, appealing, and healthy choices, food service staff created healthier school environments for students.

## II. Recommendations

- Food service directors and cafeteria managers should meet with student councils and other student groups to involve them in the school lunch program, and to learn from the students about food items that they might like to have for lunch.
- Food service directors and cafeteria managers should make fruit and vegetable choices as appealing as possible. Offering a variety of whole or pre-cut fresh fruits and vegetables is one way to encourage more students to eat these foods.
- Food service directors and cafeteria managers should limit offerings of higher fat vegetables, such as oil-fried French fries, not only because of fat content, but also because offering them may decrease consumption of other, more nutritious foods.
- The federal government should continue to work to include fresh fruits and vegetables in the federal NSLP commodities program.
- Food service directors should take advantage of state and federal programs designed to increase fresh fruits and vegetable offerings in school lunches. District participation in local “Farm-to-School” programs is one way to do this.



The federal government should continue to work to include fresh fruits and vegetables in the federal NSLP commodities program.



### III. Cafeteria Foods Sold in Competition with the National School Lunch Program



*In addition to the reimbursable meals offered as part of the National School Lunch Program (NSLP), school food service programs often sell a variety of foods and beverages during lunchtime. Such additional items are known as “competitive foods” because they compete with sales of NSLP reimbursable lunches. Competitive foods tend to be low in nutrient density and high in fat, added sugars, and calories, compared with NSLP lunches, which are required to meet federally regulated nutrition standards.*

## Summary of Findings

- School food service programs often sell a variety of foods and beverages during lunchtime in addition to the reimbursable meals offered as part of the National School Lunch Program (NSLP). Compared to NSLP lunches, which are required to meet federally regulated nutrition standards, competitive foods are relatively low in nutrient density and high in fat, added sugars, and calories.<sup>1</sup>
- In the study, the most common foods sold in competition with the reimbursable lunches were ice cream, cookies, potato chips, sweetened beverages, water, and prepackaged baked goods such as donuts, cupcakes, and honey buns.
- While the federal government prohibits the sale of “foods of minimal nutritional value” and the State of Connecticut prohibits the sale of “extra foods,” these regulations do not restrict the sale of many higher-fat and/or higher-sugar snack items, such as potato chips, cookies, prepackaged baked goods, French fries, or sweetened beverages.
- Many food service directors and cafeteria managers argue that without the competitive food sales, they could not afford to run their programs. Since school districts rarely provide significant financial support for these programs, they cannot simply cut off this source of revenue, even if that revenue source is negatively impacting student health.
- While some elementary schools have rules that prohibit the purchase of competitive foods instead of lunch, this was rarely the case at the middle or high school level. In fact, at 92 percent of the middle and high schools in this study, there were no rules whatsoever restricting the purchase of competitive foods either from the à la carte service or from the cafeteria-run vending machines.



Many food service directors and cafeteria managers argue that without the competitive food sales, they could not afford to run their programs.







Food service directors reported that 19 percent of elementary students, 47 percent of middle school students, and 57 percent of high school students purchased a competitive food item on a typical day.



- The quantity of foods sold in competition with the NSLP lunches was found to differ by school level. Competitive foods were available à la carte in 100 percent of the high schools included in this study and were available in cafeteria-run vending machines in 63 percent of those schools. All middle schools sold à la carte items, and 45 percent had cafeteria-operated vending machines. Seventy-eight percent of elementary schools sold foods à la carte, but only 22 percent provided cafeteria-operated vending machines.
- Food service directors reported that 19 percent of elementary students, 47 percent of middle school students, and 57 percent of high school students purchased a competitive food item on a typical day.
- At the elementary school level, 29 percent of the directors or managers felt that they were somewhat or completely dependent on the income from competitive food sales to support the school lunch program. This value rose to 70 percent in middle schools, and to 80 percent in high schools.
- Despite these fiscal concerns, the abundance of higher-fat, higher-sugar, and lower-nutrient competitive foods is not healthy. It conveys to children a poor message about nutrition, and may encourage students to choose competitive foods over nutritionally balanced meals.<sup>2</sup>
- By incorporating à la carte items into NSLP qualifying meals and by increasing the nutritional quality of all the competitive food items offered, schools can improve their nutritional environment.

### III. Cafeteria Foods Sold in Competition with the National School Lunch Program

School food service programs often sell a variety of foods and beverages during lunchtime in addition to the reimbursable meals offered as part of the National School Lunch Program (NSLP). These additional items are known as “competitive foods,” as they compete with sales of the reimbursable lunch. Research has shown that compared to NSLP lunches, which are required to meet federally regulated nutrition standards, competitive foods tend to be low in nutrient density and high in fat, added sugars, and calories.<sup>3, 4, 5, 6</sup>

The results of this study are consistent with that research. The majority of competitive foods sold in schools participating in this study were high in fat and/or added sugars, as compared to reimbursable meals. Common items sold in competition with NSLP meals included ice cream, cookies, potato chips, sweetened beverages, and prepackaged baked goods such as donuts, cupcakes, honey buns, and so forth.

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Figure 1. Examples of competitive foods are shown below. The pictured items were sold during lunch by food service programs at schools participating in the study.



*Figure 1 shows the variety of competitive foods offered at schools participating in this study. ▼*



Neither the federal government's prohibition against "foods of minimal nutritional value" nor the State of Connecticut's ban on "extra foods" restricts the sale of many higher-fat and/or higher-sugar items.



Competitive foods are regulated to some extent at both the federal and state levels. For schools participating in the NSLP, competitive foods are regulated nationally under the Competitive Food Service Rule. This rule requires that no "foods of minimal nutritional value" may be sold during mealtimes.<sup>7</sup> However, this regulation is not particularly restrictive, as "foods of minimal nutritional value" are defined only as those food items providing less than 5 percent of the Recommended Daily Allowance (RDA) for eight specified nutrients per serving.<sup>8</sup> Therefore, the national Competitive Food Service Rule essentially prohibits the sale of just four categories of food items: chewing gum, water ices, hard candy, and carbonated beverages such as soda.<sup>9</sup>

The State of Connecticut further requires that no "extra foods" be sold during the school lunch period, or from 30 minutes before the first lunch to 30 minutes after the end of the last lunch.<sup>10</sup> These "extra foods" include just coffee, tea (including iced tea), soda, and candy. Income from sales of any food sold on the school campus during this time must accrue to the food service program.<sup>11</sup>

Unfortunately, as demonstrated by the types of competitive foods sold at schools in this study, neither the federal government's prohibition against "foods of minimal nutritional value" nor the State of Connecticut's ban on "extra foods" restricts the sale of many higher-fat and/or higher-sugar items, such as potato chips, cookies, French fries, sweetened beverages, and donuts.



Figure 2. Three ways that competitive foods were sold in this study: (a) à la carte items sold in the same line as NSLP meals; (b) à la carte items sold in a separate “snack bar” area of the cafeteria; and (c) cafeteria vending machine sales.

## Competitive food sales

Competitive foods are sold both “à la carte” and in cafeteria-run vending machines. A la carte items offered at schools in this study were available either in the same line as the reimbursable lunches or in separate “snack bar” areas within the cafeteria (see Figures 2a and 2b). Cafeteria-run vending machines were found in and around cafeterias at all school levels (see Figure 2c).

## A la carte offerings

A la carte offerings were found to differ by school level. Among the elementary schools in this study, 61 percent sold a variety of “snacks” in addition to the meal. The most commonly available snacks, listed in order by the number of schools offering them, were ice cream; potato chips; cookies; sweetened fruit-flavored snacks, such as Fruit Roll-Ups, Fruit by the Foot, and Sour Bites; and partial fruit drinks such as Snapple, lemonade, and Hawaiian Punch. In comparison, low-fat yogurt was offered as an à la carte item at just two elementary schools. Twenty-two percent of the food service

The most commonly available snacks, listed in order by the number of schools offering them, were ice cream; potato chips; cookies; sweetened fruit-flavored snacks...and partial fruit drinks such as Snapple, lemonade, and Hawaiian Punch.





Unlike all of the elementary schools and many of the middle schools, most high schools also offered à la carte items that were more than just “snacks.” These items included hamburgers, cheeseburgers, sandwiches, salads, and pizza.



programs at elementary schools in this study offered no food other than the reimbursable meal, and another 17 percent sold no competitive foods other than ice cream.

At the middle school level, 91 percent of the schools in this study offered a variety of à la carte items. The most commonly available foods and beverages, listed in the order of the number of schools offering the item, were: ice cream; water; potato chips; cookies; partial fruit drinks such as Snapple, Hawaiian Punch, and lemonade; hot pretzels; and prepackaged baked goods, such as donuts, honey buns, and cupcakes. In comparison, one middle school offered only water, low-fat yogurt, soup, and 100 percent juice in competition with the reimbursable meals, and another sold just water and Snapple brand beverages.

At the high school level, all schools in this study offered à la carte items in addition to the reimbursable lunches. The most commonly available à la carte foods and beverages, listed in order by the number of schools offering them, were: ice cream; prepackaged baked goods, such as donuts, honey buns, and cupcakes; cookies; potato chips; partial fruit drinks such as Snapple, Hawaiian Punch, and lemonade; and water. Unlike all of the elementary schools and many of the middle schools, most high schools also offered à la carte items that were more than just “snacks.” These items included hamburgers, cheeseburgers, sandwiches, salads, and pizza. Many of these items would fulfill some of the requirements of the NSLP, but would not qualify as a complete lunch. Generally, the competitive food items were missing at least two components. These components were typically a milk and a fruit/vegetable, which are items that most children’s diets lack.<sup>12</sup>

## Cafeteria-run vending machine offerings by school level

Regulations regarding the nutritional content of foods sold in cafeteria-run vending machines are the same as those pertaining to other competitive foods. Proceeds from cafeteria-run vending machines go to the food service program, and by state law, these are the only vending machines allowed to be turned on in the school during lunchtime, or in the 30 minutes directly before or after the lunch periods. As with à la carte items, the prevalence of vending machines was associated with school level.

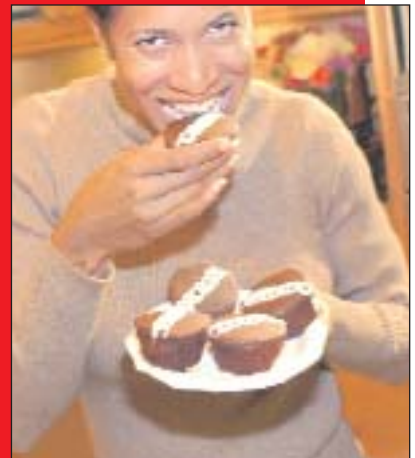
Twenty-two percent of the food service programs in elementary schools operated vending machines during lunch. These machines contained milk, 100 percent juice, and partial juice drinks.

At the middle school level, 45 percent of the food service programs operated cafeteria-run vending machines, while 55 percent did not. Of the cafeterias that operated vending machines, 50 percent provided vending machines containing sweetened beverages, 100 percent juice, water, partial juice drinks, and/or sports drinks such as PowerAde and Gatorade. Thirty percent operated machines containing only milk and/or 100 percent juice, and the remaining 20 percent operated vending machines containing both beverages and “snacks” such as potato chips, cookies and prepackaged baked goods.

At the high school level, 63 percent of the food service programs operated vending machines. As many as nine vending machines were maintained by food service programs at these schools. These vending machines offered a variety of beverages and snacks, including partial juice drinks, water, ice cream, potato chips, and prepackaged baked goods.



Proceeds from cafeteria-run vending machines go to the food service program, and by state law, these are the only vending machines allowed to be turned on in the school during lunchtime.





Competitive foods have diet-related health risks. When children replace school meals with competitive foods and beverages, they risk missing key nutrients necessary for growth and learning.



## Concerns about competitive foods

Since competitive foods are less regulated than foods offered as part of the National School Lunch Program, there are a number of concerns regarding these items. Action for Healthy Kids, a nationwide initiative dedicated to improving nutrition and physical activity in schools, cites three potential negative impacts of competitive food sales in schools:<sup>13</sup>

- Competitive foods have diet-related health risks. When children *replace* school meals with competitive foods and beverages, they risk missing key nutrients necessary for growth and learning. When they consume competitive foods and beverages in *addition* to school meals, there is a likelihood of over-consumption and the potential for unhealthy weight gain.
- Competitive foods may affect the viability of school meal programs. Increases in sales of competitive foods cause a subsequent reduction in student participation in the National School Lunch Program.
- Competitive foods convey a mixed message. While nutrition education in the classroom supports healthy food choices, the prevalence of foods higher in fat or added sugar in vending machines, snack bars, and alongside school meals undermines this message.

## Competitive food purchases by students

The results of this study suggest that these concerns regarding the sale of competitive foods are well founded. Although a few elementary schools had rules prohibiting the purchase of à la carte foods instead of lunch, the majority did not. For most schools, there would be no way to enforce such restrictions, even

if they existed. At 92 percent of the middle and high schools in this study, there were no rules whatsoever restricting student purchases of competitive foods.

This means that children are being entrusted with nutritional decisions that confound many adults. It was not uncommon throughout this study to see students eating multiple à la carte or vending items either in addition to or instead of a lunch. This was particularly prevalent at the middle school level, where students were sometimes new to the multitude of competitive food choices available. For example, one 12-year-old boy was observed eating a “meal” consisting of a large chocolate muffin, a serving of oil-fried French fries, and a Hawaiian Punch drink. This type of lunch was not uncommon at schools selling large amounts of competitive foods. At another middle school, the cafeteria staff reported that students often bought two and even three baskets of oil-fried French fries in lieu of lunch.

While drinking water cannot be offered as part of a reimbursable lunch, it was often sold as a competitive food. While water fountains were available in and around most cafeterias, cups were not provided, and students rarely drink this water with lunch. Bottled water was generally sold at a similar price to beverages sweetened with added sugars when sold à la carte or in vending machines. Students often chose these sweetened beverages over water when buying an extra drink.

At each school, a food service director or a cafeteria manager was asked to estimate the percentage of the student body purchasing an à la carte or vending item on a typical day. Responses were significantly associated with school level.<sup>14</sup> At the elementary level, 19 percent of students purchased a competitive food on a typical



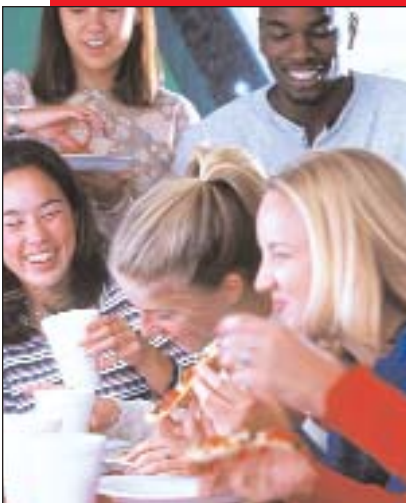
At 92 percent of the middle and high schools in this study, there were no rules whatsoever restricting student purchases of competitive foods.







The increase in competitive food sales by school level also coincided with a decrease in NSLP lunch sales as students got older.



day. This value grew to 47 percent at the middle school level, and 57 percent at the high school level. Competitive food options increased with increasing school level, and this likely explains some of the increases in purchases.

Competitive food purchases were also significantly associated with Economic Reference Groups (ERGs). As noted in Chapter II, ERGs are a classification used by the Connecticut Department of Education to group together school districts with similar socio-economic status. As the level of ERG decreased from A to I, corresponding to an increase in economic need, competitive food purchases were found to decrease.<sup>15</sup> This may have been related to the larger number of students who received free or reduced-price lunches in the lower socioeconomic level ERG schools, and perhaps also to a decrease in available spending money for extra snacks or other competitive food items.

The increase in competitive food sales by school level also coincided with a decrease in NSLP lunch sales as students got older. In elementary schools participating in the NSLP, an average of 59 percent of students bought a reimbursable lunch each day. This value dropped to 54 percent in middle schools, and 44 percent in high schools (see Chapter II).

Students generally come to lunch hungry and, unless they have brought food from home, they will most often purchase and consume something in the cafeteria. However, they have a limited amount of money and appetite. As the availability of competitive food options increases, NSLP lunch sales inevitably decrease. Given the limited nutritional requirements placed on competitive foods as compared to NSLP lunches, it follows that this will have a negative impact on the school nutrition environment and on student health.

## Financing school lunch

School food service programs obviously do not sell potato chips and cookies in order to discourage students from eating complete lunches. Instead, the sales of competitive foods are financially motivated. All proceeds from competitive food sales go to the food service program. In fact, by law in Connecticut, the income from any food sales during lunchtime or the hour surrounding it must be routed to the food service program, even if those sales are occurring in other parts of the school. This means that the school food service program is the only source of food in the school during lunch periods and the hour surrounding them, unlike the rest of the school day.

Many food service directors and cafeteria managers asserted that without the competitive food sales, they could not afford to run their programs. Since school districts rarely provided financial support for these programs, food service managers argued that they could not simply cut a source of revenue, even if that revenue source was negatively impacting students' health.

At each school in this study, a food service director or cafeteria manager was asked whether they felt their program was “not dependent,” “somewhat dependent,” or “completely dependent” on the income from the sales of competitive foods. As would be expected, the level of perceived dependence was significantly associated with the percentage of students purchasing competitive food items daily, when adjusted for school level.<sup>16</sup> In elementary schools, 29 percent of the directors or managers felt that they were somewhat or completely dependent on competitive food sales. This value rose to 70 percent in middle schools, and to 80 percent in high schools. Despite these fiscal concerns, the abundance of higher-fat, higher-sugar, and lower-nutrient competitive foods



Since school districts rarely provided financial support for these programs, food service managers asserted that they could not simply cut a source of revenue, even if that revenue source was negatively impacting students' health.





The food service program at one large middle school in ERG I, with a student population of 1,100, sold only 100-percent juice, milk, low-fat yogurt, and soup in competition with the NSLP meals.



being sold in schools is not healthy. It conveys to children a poor message about nutrition, and may encourage students to choose competitive foods over nutritionally balanced meals.<sup>17</sup> A number of schools in this study, however, found ways to reduce some of the negative aspects of competitive food sales.

### Examples of effective strategies to improve the school food environment

- Twenty-two percent of elementary schools in this study sold no competitive foods whatsoever. Every student who bought lunch in the cafeteria instead of bringing it from home received a complete reimbursable meal.
- The food service program at one large middle school in ERG I, with a student population of 1,100, sold only 100-percent juice, milk, low-fat yogurt, and soup in competition with the NSLP meals. This school had the second highest student participation in the NSLP of all middle schools in this study.
- The food service program at one large middle school in ERG B, with a student population of 800, did not allow entrées such as hamburgers or sandwiches to be bought separately as à la carte items. By requiring entrées to be purchased only as part of a complete meal, this program encouraged students to choose and consume all components of a nutritious lunch.
- A small K-8 school in ERG G, with a student population of 300, began to slowly decrease the number of competitive food choices available to students. Over time, the food service director noticed an increase in the number of reimbursable lunches sold.

- At another small K-8 school in ERG G, with a student population of 350, students buying à la carte snacks were required to provide a note from home saying that the purchase of these snacks was allowed by the child's parents. This helped to include parents in decisions regarding their child's nutrition, and also meant that a child could not buy competitive foods instead of a complete lunch without the parents' permission.
- Seventeen percent of elementary schools in this study sold no competitive foods other than ice cream. One of these schools, in ERG B with a student population of 900, restricted ice cream sales further: ice cream was available just two days a week. This way, students learned that ice cream was not a necessity at lunchtime.
- A la carte foods do not have to be unhealthy or non-nutritious. One large high school in ERG H, with a student population of 1,850, offered an à la carte potato bar daily, where baked potatoes were served with cheese, broccoli, mushrooms, and other toppings. Another, smaller, high school in ERG E, with a student population of 325, offered low-fat, nutritious dessert choices daily as part of the à la carte menu (see Figure 3).



One large high school in ERG H, with a student population of 1,850, offered an à la carte potato bar daily, where baked potatoes were served with cheese, broccoli, mushrooms, and other toppings.



Figure 3. Fruit salads like the one at right were sold daily as an à la carte food at one of the high schools in this study.



At least three school districts in this study created nutrition committees, consisting of parents, teachers, food service staff and administrators. These districts were of varying size and ERG classification.

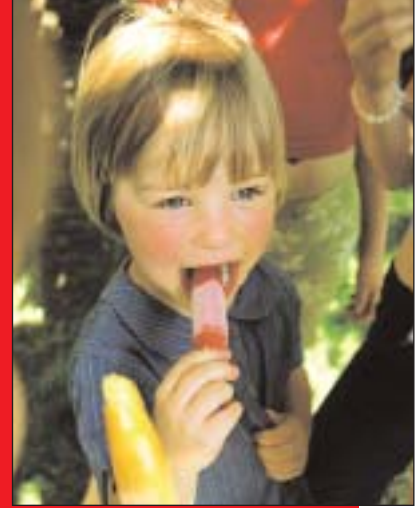


- Similarly, not all vending machine offerings are necessarily bad. One mid-sized middle school in ERG I, with a student population of 500, operated vending machines containing just 100-percent juice, water, and milk. Two schools in ERG A, one elementary and one middle, provided cafeteria-run vending machines that sold nothing but eight-ounce servings of milk. These machines allowed students who brought lunch from home to purchase milk without having to wait in line, which increased the opportunity time to eat for all students.
- At least three school districts in this study created nutrition committees, consisting of parents, teachers, food service staff and administrators. These districts were of varying size and ERG classification: one was in ERG E, and had a district-wide student population of 330; one was in ERG H, and had a district-wide student population of 15,000; and one was in ERG I, with a district-wide student population of 20,200. The middle schools in each of these districts had, in the past, sold a variety of competitive foods higher in fat and added sugar, but replaced these foods with reduced-fat items, such as baked potato chips, water, granola bars, fruit, and popcorn. Food service directors at these schools reported that students accepted the new foods, and there were no lasting negative financial effects on the programs.

By reducing or eliminating foods high in fat and added sugars, increasing the sale of more nutritious competitive foods, and forming nutrition committees to aid in these transitions, schools were able to increase participation in the school lunch program and to encourage students to eat healthier snacks.

## III. Recommendations

- Sales of competitive foods should be based on nutrition goals for students as opposed to profits. School districts should provide financial support for food service programs if necessary to achieve a healthy nutritional environment.
- The state should prohibit competitive food sales in elementary schools, where most nutritionists do not consider students to be mature enough to make wise food choices.<sup>18</sup>
- The state should restrict competitive food sales in middle and high schools to nutritious foods and beverages. Some states have already adopted such regulations. For example, competitive food sales in Hawaii and West Virginia are limited to certain nutritious foods, such as nuts, yogurt and fruit juices.<sup>19</sup> Maine goes even further by prohibiting all food sales that are not part of the school lunch program.<sup>20</sup>
- School districts and individual schools should lower the price of bottled water so that it costs less than high-sugar alternatives such as partial fruit drinks or sports drinks. Research shows that lowering prices on healthier items may encourage students to purchase them.<sup>21</sup>
- School districts should create nutrition committees, including parents, teachers, food service staff, administrators, and other community members. These committees should work together to promote healthy school nutrition environments. One focus of these committees should be to evaluate the foods sold in competition with the National School Lunch Program.



The state should prohibit competitive food sales in elementary schools, where most nutritionists do not consider students to be mature enough to make wise food choices.



## IV. Other Food Available at School



*At schools throughout the country, students have access to a variety of foods and beverages throughout the day. Opportunities to eat and drink are often available from student-run stores, school-operated vending machines, or various fundraising activities. Students also may receive food items as rewards or incentives for good behavior or academic performance. Eighty percent of schools in this study provided students with opportunities to eat and drink outside of the cafeteria at lunchtime.*

## *Summary of Findings*

- At 80 percent of the schools in this study, opportunities to eat and drink were not limited to the cafeteria during lunchtime. In fact, students in many schools had access to a variety of food and beverage items throughout the day.
- Food and beverage items were available outside of the cafeteria food service program from many alternate sources, including school-operated vending machines, stores, classroom parties, fundraisers, and food offered to students as rewards for either academic achievement or good behavior.
- There are no nutritional constraints or restrictions whatsoever on foods or beverages available outside of the cafeteria food service program. Federal and State nutrition requirements apply only to the National School Lunch and Breakfast Programs, and, to a lesser extent, other foods and beverages sold during and around lunchtime.
- School-operated vending machines were available at 81 percent of the high schools in this study, and as many as 15 school-run vending machines were observed in a single school.
- Vending machines were operated by particular departments, such as the athletic or foreign language department, by student organizations, such as the Future Business Leaders of America, or by the school administration.
- Soda was the most commonly available item in school-run vending machines. It was offered in 69 percent of the high schools in this study.
- Sixty-nine percent of the high schools in this study had a school store on the premises where the merchandise included food or beverage items. The most commonly offered foods and



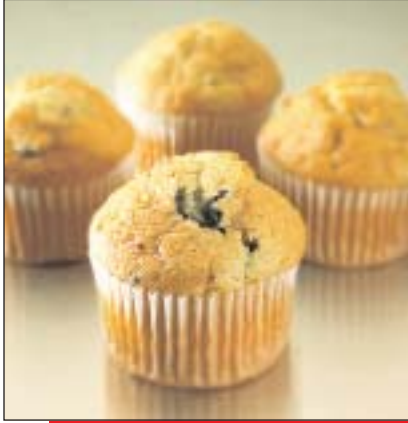
Food and beverage items were available outside of the cafeteria food service program from many alternate sources, including school-operated vending machines....





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## THE STATE OF NUTRITION AND PHYSICAL ACTIVITY IN OUR SCHOOLS



Many of the foods sold for fundraisers, such as candy bars and lollipops, were available on a relatively regular basis, and were often consumed by students in school.



beverages reported at school stores were soda, candy, cookies, and potato chips, all of which are high in fat and/or sugar.

- High school stores were most often run by student organizations, such as the Future Business Leaders of America or the Junior ROTC.
- Just five of the twenty-three middle and K-8 schools in this study operated vending machines, and no elementary schools contained non-cafeteria operated vending machines.
- Just three of the forty elementary and middle schools in this study operated a store that sold food or beverage items. These three stores were operated by student groups such as the student council, and sold items such as candy, granola bars, potato chips, and soda.
- Sixty-one percent of the administrators interviewed in this study reported that their school participated in some type of food-based fundraiser.
- Many of the foods sold for fundraisers, such as candy bars and lollipops, were available on a relatively regular basis, and were often consumed by students in school.
- Over a third of the students in this study reported that they usually came to school without having eaten breakfast. Students who do not eat breakfast often come to school hungry, and may purchase something to eat at school. If the school provides vending machines or school stores stocked with candy and sodas, this is likely to be what the student will choose to eat.
- Just 46 percent of the food service programs at schools in this study provided students with a breakfast option.

## IV. Other Foods Available at School

At 80 percent of the schools in this study, opportunities to eat and drink were not limited to the cafeteria during lunchtime. In fact, many schools provided students with access to a variety of foods and beverages throughout the day. This increased food availability is occurring in schools across the country, and many researchers have noted a marked increase in the number of food options available in schools in recent years.<sup>1, 2</sup>

At schools participating in this study, food and beverage items were available outside of the cafeteria food service program from a variety of sources. These sources included school-operated vending machines, school stores, and fundraisers. Food and beverage items available from these sources differ from those offered as part of the National School Lunch Program (NSLP) or through cafeteria-run competitive food programs (Chapters II and III) in three significant ways:

- (1.) Proceeds from the sale of these food and beverage items do not accrue to the school food service program. Instead, *they support a variety of other programs throughout the school.*
- (2.) Foods and beverages sold through alternate venues to support other programs are allowed to take place *from the time students arrive at school until 30 minutes before the first lunch period, and from 30 minutes after the last lunch period until students leave school.* This is



At 80 percent of the schools in this study, opportunities to eat and drink were not limited to the cafeteria during lunchtime.





Vending machines were among the most common sources of food and beverage items outside of the school food service program, particularly at the high school level.



because, in the State of Connecticut, all proceeds from food and beverage items sold during and around school lunch times must accrue to the food service program,<sup>3</sup> but the proceeds from those items sold at other times accrue to the group selling them.

- (3.) *There are no nutritional constraints or restrictions whatsoever on foods or beverages available at other times through separate venues.* Federal and State nutrition requirements apply only to the NSLP and, to a lesser extent, other foods and beverages sold during and around lunchtime.

### School-operated vending machines

Vending machines were among the most common sources of food and beverage items outside of the school food service program, particularly at the high school level. These school-run vending machines differ from the cafeteria-run vending machines because their proceeds do not accrue to the food service program, they are not available during lunchtime, and their offerings are not restricted by any nutritional requirements. School-operated vending machines were available at 81 percent of the high schools in this study, and as many as 15 school-run vending machines were observed in a single school. On average, four school-run vending machines were found per high school in this study.

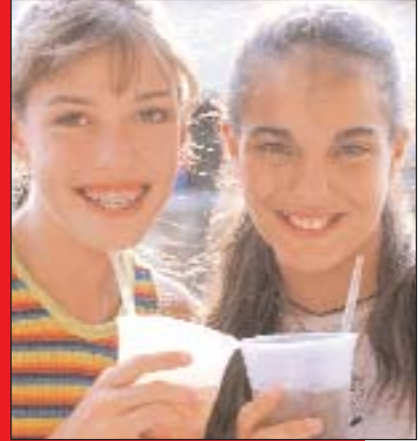
Soda was the most commonly available item in school-run vending machines, and was offered in 69 percent of the high schools in this study. This is cause for concern, as soft drinks such as soda contribute significant amounts of calories and sugar

to the diets of children and adolescents, and are replacing milk as the beverage of choice.<sup>4, 5</sup> Researchers describe soft drinks as the “quintessential junk food”<sup>6</sup> and the Center for Science in the Public Interest considers soft drinks to be “liquid candy.”<sup>7</sup> Studies have also linked high soft drink consumption with excessive energy intake, and have suggested that soft drinks may be a direct contributor to the epidemic of childhood obesity.<sup>8</sup>

Additional items available in vending machines operated by high schools in this study included other beverages high in added sugars, such as sports drinks and partial juice drinks, water, candy, potato chips, pretzels, and prepackaged baked goods, such as donuts and cupcakes.

The money made from these vending machines accrued to a wide variety of programs within the school. Some vending machines were operated by particular departments, such as the athletic or foreign language department. In other schools, student organizations, such as the Future Business Leaders of America or other business and marketing clubs, were responsible for the vending machines. In several schools, the vending machines generated income for the general fund, and thereby supported a wide range of student programs and activities.

School-run vending machines were less common at middle and elementary schools. In this study, five of the 23 middle and K-8 schools operated vending machines, and no elementary schools provided noncafeteria-operated vending machines. The vending machines operated by the middle and K-8 schools offered beverages including soda, partial juice drinks, sports drinks, and water. No food items were available in any of these machines.



...vending machines operated by high schools in this study included other beverages high in added sugars, such as sports drinks and partial juice drinks, water, candy, potato chips, pretzels, and prepackaged baked goods...





Like vending machines, school stores offering food or beverage items were most common at the high school level.



## School stores

Like vending machines, school stores offering food or beverage items were most common at the high school level. High school stores in this study typically offered a variety of merchandise, including school supplies, sweatshirts and tee shirts, and snacks and drinks. Sixty-nine percent of the high schools in this study had a school store on the premises where the merchandise included food or beverage items. The most commonly offered foods and beverages reported at school stores were soda, candy, cookies, and potato chips, all of which are high in fat and/or sugar.

This is consistent with previous research regarding fat and sugar levels in snacks purchased from school stores. A 2000 study of foods sold at student stores in middle schools found that 89 percent of the store inventory was high in fat and/or sugar, and that sugar candy accounted for one third of all store sales.<sup>9</sup>

High school stores were most often run by student organizations, such as the Future Business Leaders of America or the Junior ROTC, and the profits generated from the stores benefited these organizations. Usually, these stores were only open during certain times, such as just during the morning, or only in between certain classes.

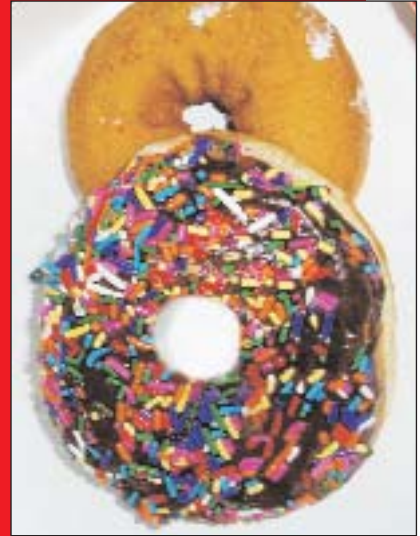
While a number of middle and elementary schools had school stores selling non-food items, such as pencils and notebooks, just three of 40 (eight percent) operated a store that sold food or beverage items. These three stores sold items such as candy, granola bars, potato chips, and soda, and were operated by student groups, such as the student council.

## Other fundraisers

Selling food to raise funds for schools and school groups has long been a common practice. Candy companies such as Mars and Hershey attend meetings of the National Parent Teacher Association (PTA) in order to entice local PTAs to sell candy for fundraisers,<sup>10</sup> and bake sales are often associated with this organization. Student groups across the country also sell a variety of food and beverage items as fundraisers, and have done so for years.

Schools in this study were no exception. Of the administrators interviewed, 61 percent reported that their school participated in some type of food-based fundraiser. For example, student organizations such as high school marching bands were reported to sell extra-large candy bars from cardboard suitcases throughout the school day. Other student groups sold food items such as lollipops, cheesecakes, pies, pizzas, cookie dough, donuts, and, in two schools, citrus fruit. Two administrators reported raising funds through all-you-can-eat pasta nights and pancake breakfasts.

The inclusion of food and beverage items in fundraisers was significantly associated with school level: food-based fundraisers increased with increasing school level.<sup>11</sup> Seventy-seven percent of high schools, 63 percent of middle schools, and 44 percent of elementary schools in this study participated in at least one food-based fundraiser. In some cases, these fundraisers did not contribute to the daily school nutrition environment. For example, frozen cheesecakes or cookie dough do not lend



Other student groups sold food items such as lollipops, cheesecakes, pies, pizzas, cookie dough, donuts, and, in two schools, citrus fruit.





Some schools also allowed the use of food as a reward for good academic performance, or as an incentive for good behavior.



themselves to regular snacking. However, many of the foods sold for fundraisers, such as candy bars and lollipops, were available on a relatively regular basis, and were frequently consumed while students were at school.

### Food-based rewards and incentives

Not all food made available to students in school was intended to raise money. Some schools also allowed the use of food as a reward for good academic performance, or as an incentive for good behavior. For example, some teachers in this study reported rewarding students with coupons for free ice cream from the cafeteria for behaving well in class or for scoring highly on tests. One elementary teacher stated that the librarian at her school handed out candy in order to encourage students to be quiet in the library. At another elementary school, donuts were being passed out during lunchtime on the day of the study visit to students who had completed a certain percentage of homework assignments. This school was participating in a Dunkin' Donuts program called "Grade A Donuts: Honoring Homework Stars," and Dunkin' Donuts provided these donuts free to the "Homework Heros."

National groups such as the USDA Team Nutrition suggest that food should not be used as a reward or withdrawn as a punishment, and encourage teachers to use non-food alternatives such as inexpensive stickers, pencils, and erasers.<sup>12</sup> Other researchers have agreed, suggesting that programs like those described above may negatively influence children's food habits.<sup>13</sup>

## Food in the classroom

High schools may have been the largest overall provider of foods and beverages throughout the school day, but elementary schools led in terms of food availability in the classroom. Administrators at a majority of elementary schools in this study reported that there were no rules prohibiting food and beverage items from being served in the classroom, and many elementary teachers acknowledged that cupcakes, cookies, and other treats were often brought in by students and shared with the class in order to celebrate birthdays or other events.

## Breakfast

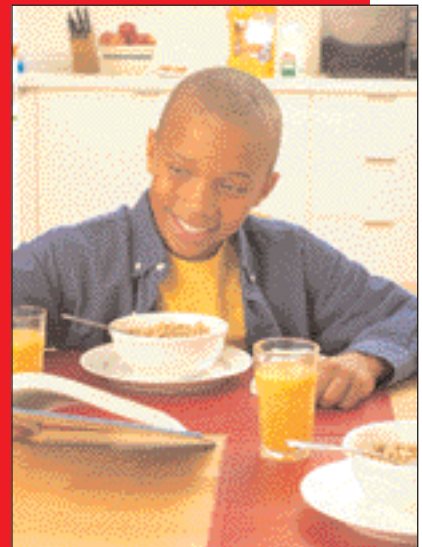
Over the course of this study, 324 students were asked how often they ate breakfast. Twenty-seven percent of the students stated that they never ate breakfast, and another nine percent stated that they ate breakfast only once or twice a week. This means that over a third of the students usually came to school without having eaten breakfast. Many students who reported not eating breakfast said there was often not enough time in the morning to do so.

Students who do not eat breakfast often come to school hungry, and may purchase something to eat at school. If the only options available are from vending machines or school stores stocked with candy and sodas, this is likely to be what the students will choose to eat.

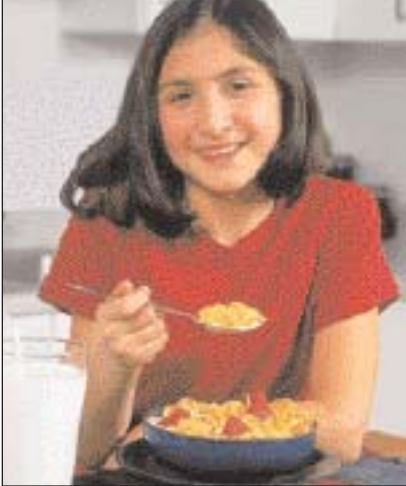
However, some cafeteria food service programs participated in the national School Breakfast Program (SBP), which, like the



Twenty-seven percent of the students stated that they never ate breakfast, and another nine percent stated that they ate breakfast only once or twice a week.







...research shows that children who eat balanced, nutritious breakfasts have higher test scores, are better able to concentrate on learning, and are less likely to be sent to the principal or visit the school nurse.



NSLP, provides students with meals meeting federally regulated nutrition standards. School participation in this program can provide students with balanced, nutritious alternatives to the high-fat and high-sugar choices available from other venues within the school. Providing these healthy alternatives can be invaluable, because research shows that children who eat balanced, nutritious breakfasts have higher test scores, are better able to concentrate on learning, and are less likely to be sent to the principal or visit the school nurse.<sup>14</sup> They are probably also less likely to eat an unhealthy alternative.

Unfortunately, in this study, schools participating in the SBP were in the minority, as just 46 percent of the food service programs served breakfast. Some of these schools, however, have found clever ways to encourage students to skip unhealthy snacks in favor of nutritious breakfasts. For example, the cafeteria manager at one elementary school realized that one of the barriers to student participation in the SBP was insufficient time. She began offering “Breakfast To Go,” which consisted of portable items like graham crackers, fresh fruit, and milk. Her breakfast program had the highest student participation of any school in this study not offering universal free breakfast.

### **The school nutrition environment**

Clearly, not all food and beverage sales in schools have a negative impact on student health, and students do need opportunities to snack. One researcher has pointed out that “as adolescents need to snack between meals to maintain adequate energy intake, student stores have the potential to offer an important

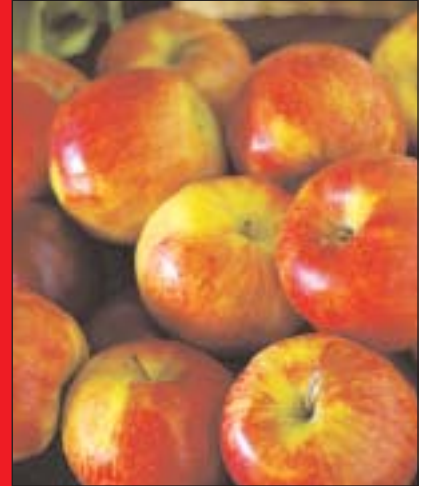
opportunity for nutrition supplementation.”<sup>15</sup> The California Department of Health Services and the USDA’s Team Nutrition encourage schools to try a variety of healthful fundraisers, including food items such as fruit smoothies, frozen bananas, and fruit and nut baskets, among others.<sup>16</sup>

Vending machines can also be stocked with low-fat alternatives. However, simply adding a few low-fat choices to existing vending machines is not likely to have much of an effect on students’ choices. Researchers have suggested that the sale of unhealthy items in vending machines will be “unaffected by inserting a few healthier items.”<sup>17</sup>

Schools can, however, use creative strategies to promote sales of low-fat items in vending machines and in school stores. For example, a study of vending machine sales in 12 Minnesota high schools found that reducing the price of low-fat snacks relative to other items was effective in encouraging students to make more low-fat choices.<sup>18</sup> Nonetheless, researchers have maintained that “[f]or most children, most of the time, healthy foods will be eaten if only healthy foods are available and if unhealthy foods are not available as competition.”<sup>19</sup>

## Financing school programs

Despite nutritional concerns, school systems raise a significant amount of money through food-based fundraisers because in the present system, that money is needed for education, athletics, and myriad other student services. When asked about the availability of soft drinks in schools in a recent newspaper interview, a Virginia superintendent put it plainly, stating



Schools can, however, use creative strategies to promote sales of low-fat items in vending machines and in school stores.





Some schools in this study have also developed strategies to balance the need for funds with the need to protect student health.



“The bottom line is money. We’ve had to become real scrappers in public education [to provide programs for students]. We’ve become dependent on this revenue.”<sup>20</sup> Several groups, however, have put forth fundraising suggestions that do not include the sale of high-fat or high-sugar foods and beverages.<sup>21</sup> Some schools in this study have also developed strategies to balance the need for funds with the need to protect student health.

### Examples of effective strategies to improve the school food environment

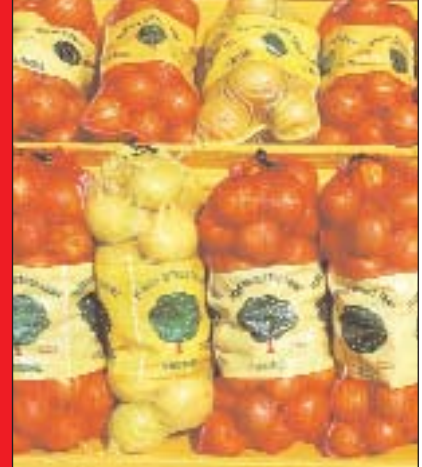
- One school district in ERG B, with a district-wide student population of 3,600, banned the sale of all food and beverages outside of those provided by the school food service program. Students were not allowed to bring in cupcakes or cookies for birthdays or other events, although they were encouraged to celebrate with non-food items.

Teachers were not allowed to reward students with food, and no food-based fundraisers were allowed. There were no school-operated vending machines in any schools in this district. The nursing director for this district championed this policy not only because of childhood obesity concerns, but also due to increases in peanut-allergic students. By combining these two arguments, she received less resistance to this policy than she otherwise might have.

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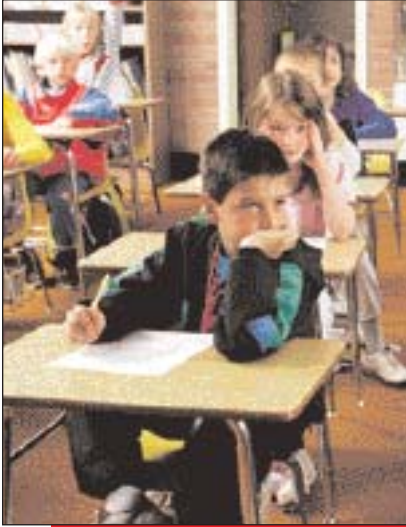
THE STATE OF NUTRITION AND PHYSICAL ACTIVITY IN OUR SCHOOLS

- A number of schools have made rules banning candy fundraisers, and have replaced these fundraisers with sales of alternative items like candles, wrapping paper, or foods that cannot be consumed at school, such as pies or frozen pizza.
- At two high schools in this study, oranges and grapefruits were sold throughout the year to support various student organizations.
- At one high school in ERG F, with a student population of 950, the school food service program did not offer breakfast. The student-run school store began selling egg sandwiches, yogurt, bagels, juice, and fruit in the morning to provide students a chance to eat breakfast. While this is not ideal, as the SBP breakfasts must meet certain nutritional standards that may not be met by the school store, this was certainly better than just offering candy and sodas in the morning.
- The nutrition committees at some schools have drafted rules limiting fundraisers to non-food items.
- Based on the recommendations from its Nutrition Committee, one school district in ERG H, with a district-wide student population of 15,000, prohibited the operation of vending machines in middle schools during the entire school day. These vending machines also contained no soda or candy, but instead offered beverages such as water and sports drinks, which were generally purchased only by students staying for after-school activities.



At two high schools in this study, oranges and grapefruits were sold throughout the year to support various student organizations.





School districts should create nutrition committees that include parents, teachers, food service staff, administrators, and other community members.



## IV. Recommendations

- The state should impose nutritional requirements on all food and beverage items sold at school, not just those sold in and around lunchtime. Sales of “extra foods,” such as soda and candy, should not be permitted at any time during the school day, at any school level.
- In elementary schools, the state should ban the sale of any foods outside of the School Breakfast Program and the National School Lunch Program. Many nutritionists suggest that elementary school children are not mature enough to make wise food choices.<sup>22</sup> Therefore, students this age are best served by eating complete, nutritious meals and snacks, such as those meeting the requirements of the NSLP and the SBP.
- The state should create policies restricting all food sales at the middle and high school levels to nutritious foods and beverages.
- School districts should create policies banning the use of food as either an incentive or a reward for good behavior or academic performance.

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THE STATE OF NUTRITION AND PHYSICAL ACTIVITY IN OUR SCHOOLS

- School districts should create nutrition committees that include parents, teachers, food service staff, administrators, and other community members. These committees should work to promote healthy school nutrition environments. One focus of these committees should be to help school districts draft policies that encourage healthy fundraising activities. For example, some school nutrition committees drafted rules limited to non-food items, such as wrapping paper and notecards.
- School districts should create policies that include nutrition standards for foods offered as part of celebrations, birthday parties, or other events.
- School districts should be encouraged to participate in the School Breakfast Program, which is presently available to all schools across the country. This program can help schools offer students complete, nutritious breakfasts instead of just high-fat, high-sugar snacks.



School districts should create policies that include nutrition standards for foods offered as part of celebrations, birthday parties, or other events.



## V. Nutrition Education in Schools



*Knowledge of good nutrition and healthy eating habits can help students make appropriate food choices. Schools have the ability to provide students with nutrition education, but many schools teach very little nutrition in the classroom, and even fewer schools use the cafeteria as a place to teach good eating habits. Nutrition education is most effective when it is integrated throughout the school curriculum, and when the nutritional messages that children receive from the school food environment are consistent with the information taught.*

## *Summary of Findings*

- The U.S. Department of Education recommends that elementary schools provide at least 50 hours of nutrition education per year in order to impact children's eating behavior.<sup>1</sup>
- Elementary school teachers participating in this study reported that students in their schools received an average of 3 hours of nutrition education per year, with a range of 0 to 5 hours.
- Middle school teachers participating in this study reported that students in their schools received an average of 6 hours of nutrition education per year, with a range of 0 to 30 hours.
- High school teachers participating in this study reported that students in their schools received an average of 3 hours of nutrition education per year, with a range of 1 to 5 hours.
- A majority of nutrition teachers in this study stated that they did not feel that enough nutrition education was taught in their schools. However, several teachers said that increasing nutrition education in the classroom would not impact students' health unless the school nutrition environment reflected the information they taught.
- Elementary schools were more likely than middle or high schools to provide nutrition education in the cafeteria. At the elementary level, this education included skits, demonstrations, and menu contests. In the middle and high schools using the cafeteria to teach about nutrition, this education included nutrition fairs and cooking demonstrations.



A majority of nutrition teachers in this study stated that they did not feel that enough nutrition education was taught in their schools.







Classroom teachers and health teachers were equally likely to be responsible for nutrition education; classroom teachers were the main source of nutrition education at 39 percent of elementary schools....



## V. Nutrition Education in Schools

Researchers suggest that nutrition education, combined with a healthy school nutrition environment, can teach children lessons that will enable them to make wise eating choices both inside and outside of school.<sup>2, 3</sup> At each school in this study, an administrator was asked to identify who was responsible for nutrition education at that school. When available, the teacher identified was asked how many hours of nutrition education students at that school typically received in a year.<sup>4</sup>

### Elementary schools

At elementary schools in this study, administrators reported that nutrition was taught by either regular classroom teachers, health teachers, science teachers, physical education teachers, or no one. Classroom teachers and health teachers were equally likely to be responsible for nutrition education; classroom teachers were the main source of nutrition education at 39 percent of elementary schools, and health teachers were the main source at another 39 percent. These teachers reported that elementary students received an average of three hours of nutrition education per year, with a range of 0 to 5 hours (see Table 1).

### Middle schools

Nutrition was taught primarily by health teachers at 59 percent of middle schools. In the other 41 percent of the schools, nutrition was taught through Family and Consumer Science programs, through physical education programs, in general science classes, or not at all. Teachers reporting nutrition education requirements at the middle school level stated that students received an average of 6 hours of per year, with a range of 0 to 30 hours (see Table 1).

## High schools

At all high schools in this study, students were reported to receive some nutrition education. Nutrition classes were taught by health teachers in 94 percent of the high schools. Additional nutrition education was provided by Family and Consumer Science programs, in elective classes on food preparation, and in general science classes. High school teachers reported that students received an average of 3 hours of nutrition education, with a range of 1 to 5 hours (see Table 1).

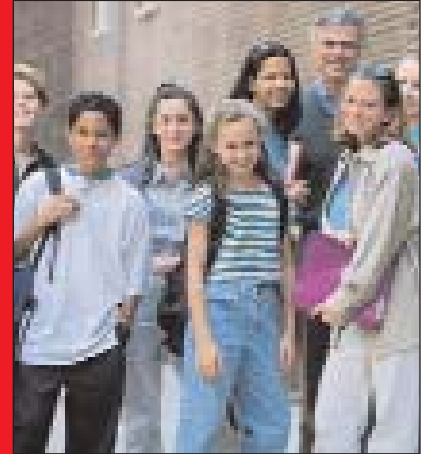


Table 1. Hours of nutrition education per year at schools in this study.

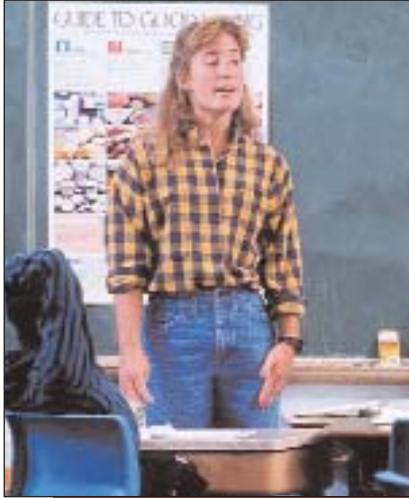
	Elementary <sup>a</sup> (n=23)	Middle <sup>a</sup> (n=22)	High (n=16)
<b>Nutrition education time per year (hours)<sup>b</sup></b>			
<i>Average</i>	3	6	3
<i>Range</i>	0–5	0–30	1–5
<b>Nutrition education in the cafeteria (% yes)<sup>c</sup></b>			
	39%	14%	13%

<sup>a</sup>The five K–8 schools participating in this study were included in both the “Elementary” and “Middle” school categories.

<sup>b</sup>Hours of nutrition education per year were averaged across years at each school. For example, if a high school provided 12 hours nutrition education for 10<sup>th</sup> graders only, the average amount of nutrition education per year at that school was determined to be 3 hours.

<sup>c</sup>Percentage of food service directors or cafeteria managers responding that some nutrition education occurred in the cafeteria. This education was provided either by the cafeteria staff or by a nutrition teacher (see text).

The U.S. Department of Education recommends that elementary schools provide a minimum of 50 hours of nutrition education per year to impact nutrition behaviors of children.



Teachers said it did not help to teach nutrition principles in the classroom that differed so clearly from the nutritional messages of the cafeteria competitive foods program....



The number of hours of nutrition education reported at schools in this study was consistent with the results of the CDC's School Health Policies and Programs Study (SHPPS), which investigates school health policies and programs at state, district, school, and classroom levels.<sup>5</sup> The SHPPS survey reported that the median amount of nutrition education provided to students nationwide was between 4 and 5 hours per year at all school levels.<sup>6</sup>

These figures differ sharply from recommendations by the U.S. Department of Education, which state that elementary schools should provide at least 50 hours of nutrition education per year to impact nutrition behaviors of children.<sup>7</sup>

In addition to number of hours of nutrition education, nutrition teachers at each school were asked whether or not they felt that the nutrition education requirements were adequate at their school. Teachers were asked to rank their answers on a scale of 1–5, with 1 indicating an answer of “definitely not” and 5 indicating “definitely.” Significantly more teachers responded with a 1 or 2 than with a 4 or 5, indicating that they did not feel that enough nutrition was taught.<sup>8</sup> However, 20 percent of the teachers indicated that they did feel that enough nutrition was taught in their schools.<sup>9</sup> This was surprising, given the gulf between the actual hours of nutrition education and the national recommendations.

When asked about this difference, these teachers said it did not help to teach nutrition principles in the classroom that differed so clearly from the nutritional messages of the cafeteria competitive foods program and other food sources in school. Teachers said that increasing nutrition education in the classroom would not impact students' eating patterns unless the information taught in the classroom was reflected throughout the entire school environment.

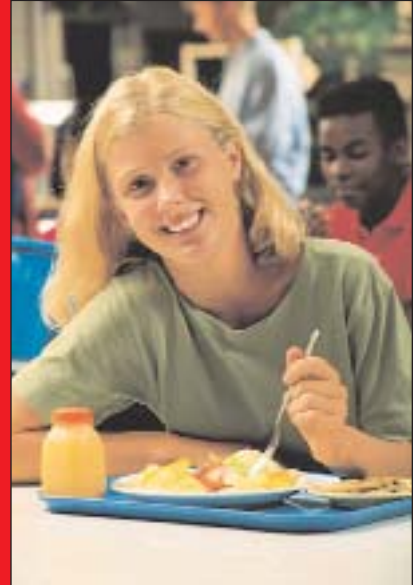
## Nutrition education in the cafeteria

The Federal Code of Regulations encourages food service directors and school administrators to “use the school food service program to teach students about good nutrition practices and to involve the school faculty and the general community in activities to enhance the Program.”<sup>10</sup>

At each school in this study, a food service director or cafeteria manager was asked whether or not nutrition was taught in the cafeteria, either by the cafeteria staff or by nutrition teachers. Elementary schools were more likely than middle or high schools to provide nutrition education in the cafeteria; 39 percent of elementary schools provided some nutrition education in the cafeteria, as compared to 14 percent of middle schools and 13 percent of high schools. At the elementary level, nutrition education included skits, demonstrations, and menu contests. In the middle and high schools, nutrition education in the cafeteria included nutrition fairs and cooking demonstrations.

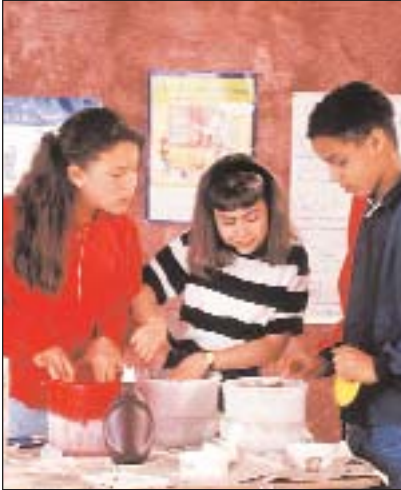
Research has shown that nutrition education programs that focus on influencing students’ eating behaviors are much more likely to be effective than programs that use the traditional fact-based approach.<sup>11, 12</sup> Nutrition education is also more effective when it is integrated throughout the curriculum, and when the nutrition information taught is consistent with nutrition messages throughout the school, including in the cafeteria.<sup>13</sup>

Several schools in this study have found ways to focus nutrition education on eating behaviors, incorporate healthy nutrition messages throughout the school, and increase nutrition education in areas other than health class, such as in the cafeteria.



Nutrition education is also more effective when... the nutrition information taught is consistent with nutrition messages throughout the school.





Fourth graders... worked with the health teacher and the cafeteria manager to put together a lunch menu that met the nutritional requirements of the National School Lunch Program.



## Examples of effective strategies to teach students about nutrition

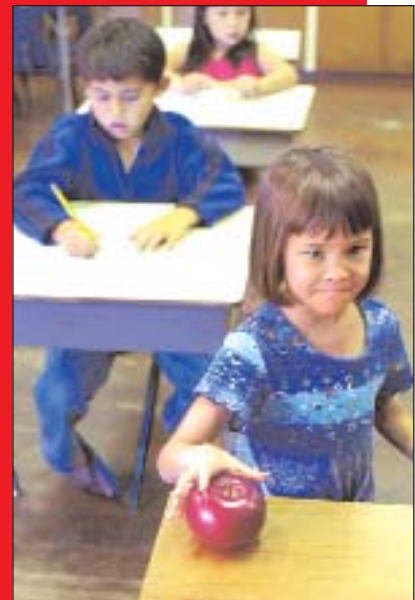
- The cafeteria manager at an elementary school in ERG I visited 2nd and 4th grade classrooms to talk about nutrition and to teach students about the components of a complete, healthy meal. Fourth graders then worked with the health teacher and the cafeteria manager to put together a lunch menu that met the nutritional requirements of the National School Lunch Program. Each of five classes provided a menu for one meal, and these meals were served district-wide during a special week devoted to nutrition education.
- The food service director at one K–8 school in ERG C worked closely with the school’s health teacher. Several times throughout the year during the lunch period, the food service director gave demonstrations that corresponded to the nutrition lessons being taught in the classroom.
- At one large high school in ERG H, the food service staff devoted a week to nutrition education. During this week, a chef came into the high school cafeteria to put on cooking demonstrations that focused on healthy foods and cooking methods.
- The cafeteria staff at two other elementary schools, one in ERG E and one in ERG H, put on annual skits conveying nutritional messages. The cafeteria managers at each of these schools dressed up in animal costumes to engage students in learning about healthy food choices.

- A health and physical education teacher at a high school in ERG B worked with students to encourage them to eat healthy snacks. Homework for health class included preparing healthy and nutritious snacks, which were then discussed and shared in class. Students were also required to keep food diaries, and to put together complete, healthful meals from the foods offered in the school cafeteria.
- At least three school districts in this study created nutrition committees consisting of parents, teachers, food service staff, and administrators. These districts varied in size and ERG classification: one was in ERG E, with a district-wide student population of 330; one was in ERG H, with a district-wide student population of 15,000; and one was in ERG I, with a district-wide student population of 20,200. One goal of these committees was to reduce the prevalence of high-fat and high-sugar food options in schools in these districts. This helped to create a consistent nutritional message between what was taught in the classroom and what was available in the school.

These examples demonstrate some of the ways that food service directors, cafeteria staff, teachers, and administrators found to help students learn about good nutrition. By incorporating nutrition education into the food service program, providing interactive nutrition lessons in the classroom, and creating partnerships focused on consistent, positive nutritional messages, school systems can help students learn to make smart food choices.



A health and physical education teacher at a high school in ERG B worked with students to encourage them to eat healthy snacks.





Schools should integrate nutrition education throughout the curriculum, and should utilize the cafeteria environment to teach students nutrition skills.



## V. Recommendations

- School districts should provide nutrition education to students in all grade levels, and this education should afford students the skills they need to make healthy food choices.
- Schools should integrate nutrition education throughout the curriculum, and should utilize the cafeteria environment to teach students nutrition skills.
- School districts should create nutrition committees, including parents, teachers, food service staff, administrators, and other community members, to work together to promote healthy school nutrition environments. One focus of these committees should be to create school food policies that reflect and reinforce nutritional messages taught in the classroom.
- The state should impose regulations restricting the sale of foods high in fat and added sugar in schools. This, too, will help to create an atmosphere where the school food environment is consistent with the nutritional messages taught in the classroom.

## VI. Physical Education (PE) and Physical Activities in Schools



*Physical activity is on the decline in our country and in our schools. Lack of physical activity is a key contributor to the childhood obesity epidemic. Schools can provide students with opportunities to be physically active throughout the school day, and can teach children skills and habits that will allow them to be physically active for their entire lives. Unfortunately, physical education and physical activity have been decreasing in our schools in recent years, despite the fact that they are especially critical given children's poor eating habits.*





None of the schools included in this study met the physical activity recommendations put forth by *Healthy People 2010*....



## *Summary of Findings*

- In elementary schools included in this study, students received an average of 59 minutes of physical education per week or less than one-half the nationally recommended time. Middle school students received an average of 92 minutes per week, which is also less than one-half the recommended time, and high school students averaged 65 minutes per week, which is less than one-third of the physical education time recommended.
- None of the schools included in this study met the physical activity recommendations put forth by *Healthy People 2010*, the Centers for Disease Control and Prevention, the National Association of Sports and Physical Education, the National Association of State Boards of Education, and the American Academy of Pediatrics.
- Connecticut requires some physical education in schools, but neither the amount nor the consistency of the scheduling is prescribed. Even during years when physical education is included in the curriculum, students in 23 percent of the middle schools and 69 percent of the high schools included in this study can go for weeks or even months with no physical education whatsoever.
- The majority of physical education teachers interviewed did not feel that the physical education requirements at their schools were adequate. However, they did feel that when physical education classes were held, they were usually successful in getting students to engage in at least 20 minutes of aerobic activity.
- Providing recess, as well as intramural and interscholastic sports, can create opportunities for daily physical activity.
- Creating after-school programs through partnerships with local groups, such as the town parks and recreation department or the YMCA, can be an effective strategy in helping students become more physically active.

## VI. Physical Education (PE) and Physical Activities in Schools

This study not only recorded information about the school nutrition environment, but also about physical education and activity at school. Physical education requirements at each school were reported by a principal or other administrator, or by a physical education teacher. As shown in Table 1, elementary school children received an average of 59 minutes of physical

Physical education was often only required during certain years at the high school level.

Table 1. Amount of physical education (minutes) by school level.

	Elementary <sup>a</sup> (n=23)	Middle <sup>a</sup> (n=22)	High <sup>b</sup> (n=16)
<b>National Recommendations<sup>c</sup></b>			
<i>Minutes per week</i>	150	225	225
<b>Actual physical education time per week (minutes)</b>			
<i>Average</i>	59	92	65
<i>Range</i>	40–90	55–134	45–103
<b>Physical education time per week (minutes) recommended by teachers in this study</b>			
<i>Average</i>	139	187	133
<i>Range</i>	80–210	75–300	94–225

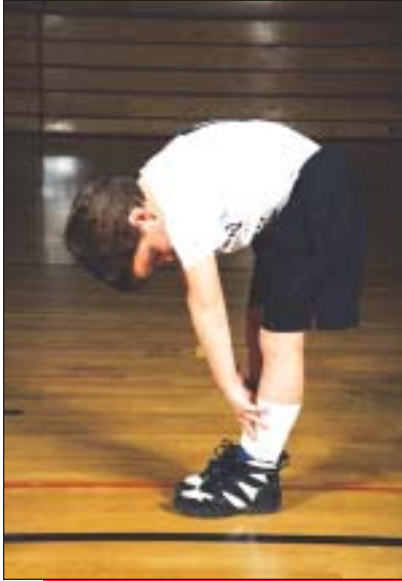
<sup>a</sup> For the five K-8 schools included in this study, physical education requirements for elementary students were considered separately from physical education requirements for middle school students.

<sup>b</sup> Physical education was often only required during certain years at the high school level. In this analysis, the average minutes of PE per week were calculated by averaging the requirements across all four years.

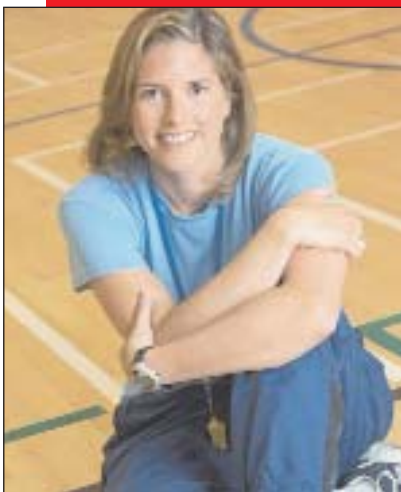
<sup>c</sup> Based on recommendations from the National Association for Sport and Physical Education (NASPE) and the National Association of State Boards of Education (NASBE). (See text.)

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## THE STATE OF NUTRITION AND PHYSICAL ACTIVITY IN OUR SCHOOLS



State of Connecticut... legislation does not require a minimum amount of time that should be given to physical education.



education per week, while middle school students received an average of 92 minutes per week and high school students received an average of 65 minutes per week.

As Table 1 demonstrates, the average quantity of physical education in these schools was well below the amount recommended by the physical education teachers interviewed in this study as well as national organizations such as *Healthy People 2010*, the Centers for Disease Control and Prevention (CDC), the National Association of Sports and Physical Education (NASPE), the National Association of State Boards of Education (NASBE), and the American Academy of Pediatrics (AAP). All of these organizations recommend daily physical education for all students.<sup>1</sup> NASPE and NASBE recommend that at least 150 minutes per week be provided for elementary school students and 225 minutes per week be provided for middle and high school students.<sup>2</sup> None of the 56 schools included in this study met these recommendations.

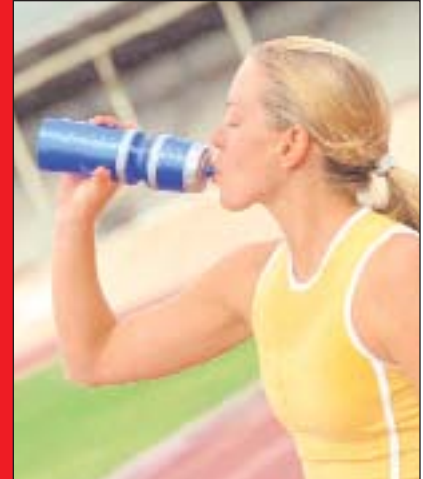
Although the State of Connecticut requires a planned and sequential program of physical education for students K–12,<sup>3</sup> the legislation does not require a minimum amount of time that should be given to physical education nor does it stipulate any requirements for an even distribution of physical education throughout the year.

During the study, a physical education teacher at each school was asked whether or not he or she felt the physical education requirements were adequate at his or her school. Teachers were asked to rank their answers on a scale of 1–5, with 1 indicating an answer of “definitely not” and 5 indicating “definitely.” Significantly more teachers responded with a 1 or 2 than with a

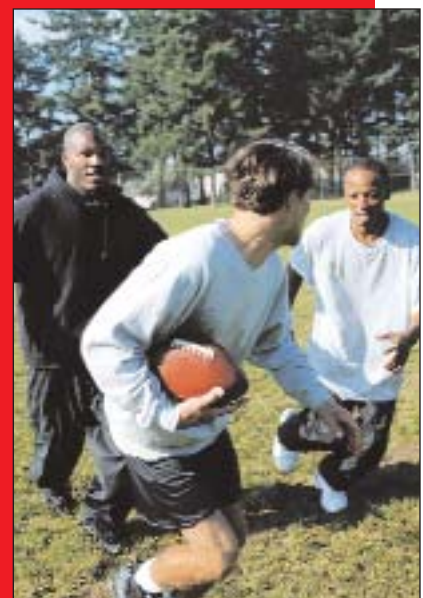
4 or 5, indicating that they did not feel that the physical education requirements were adequate.<sup>4</sup> These results were found at every school level, and across all Economic Reference Groups (ERGs).

The physical education teachers were then asked how much physical education they thought would be adequate for the students in their schools (see Table 1). Nearly all teachers stated that schools ideally should meet the national recommendations of daily physical education, and often echoed the guidelines of 150 minutes for elementary school children and 225 minutes for both middle and high school students. However, the majority of teachers (63 percent) also said that this was not realistic in their school system due to current staffing or facilities limitations, and offered the following suggestions.

At the elementary level, 23 percent of the teachers interviewed said that two classes per week would be adequate. Another 46 percent reported that students needed physical education at least three to four times per week, while the remaining 31 percent said that physical education needed to be provided daily. At the middle school level, 20 percent of the teachers felt that physical education should be required either twice a week or every other day. Another 20 percent felt that it should be required three to four days per week. The remaining 60 percent felt that physical education needed to be provided daily. At the high school level, every teacher interviewed recommended that at least some physical education be required each year. Thus, as shown in Figure 1, actual physical education amounts were far below what the teachers recommended as well as the national recommendations for physical education in schools. This finding held even in the schools that provided the most physical education.



**At the high school level, every teacher interviewed recommended that at least some physical education be required each year.**



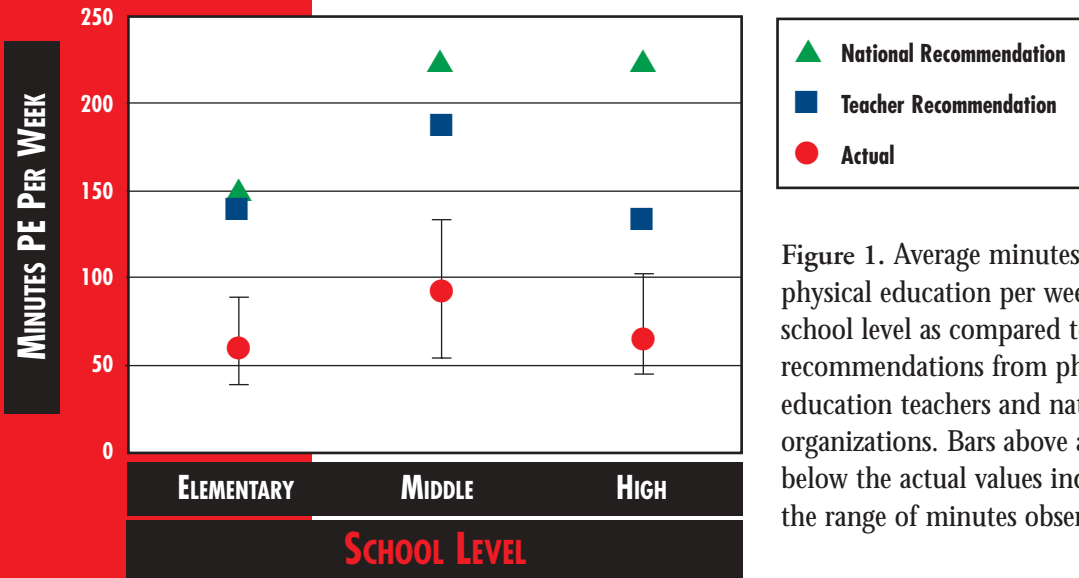


Figure 1. Average minutes of physical education per week by school level as compared to recommendations from physical education teachers and national organizations. Bars above and below the actual values indicate the range of minutes observed.

Many teachers commented that having regular physical education classes on a consistent basis throughout the year is crucial to developing a lifestyle that includes physical activity.



## Distribution of physical education class time

Not only was the amount of time spent in physical education inadequate, but the structure of that time was often unevenly distributed throughout the year. Even during years when physical education was included in the curriculum, it was not uncommon for students to go for weeks or even months with no physical education whatsoever.

Many teachers commented that having regular physical education classes on a consistent basis throughout the year is crucial to developing a lifestyle that includes physical activity, and they expressed frustration with the sporadic scheduling of physical education periods in many schools. While students in elementary schools generally had physical education classes once or twice per week throughout the year, older students often had much less consistency. Sixty-nine percent of high schools offered physical

education classes on a semester basis only, such that students would only attend these classes during half of the year. Twenty-three percent of middle schools offered physical education classes on either a semester or three- to five-week rotational basis, with physical education offered just one semester, or only on alternate rotations.

In this study, 55 percent of elementary schools had one physical education class each week, another 13 percent had two physical education classes in each six-day cycle, and the remaining 32 percent of schools scheduled two physical education classes each week.

At the middle school level, nine percent of the schools had one physical education class each week; 27 percent had two classes per week; and five percent had three classes per week. Another 27 percent of the middle schools had two physical education classes every six days, and nine percent had two classes every four days. Fourteen percent of the middle schools required physical education daily or four times per week for one-half the year (one semester), and then not at all during the other semester. The remaining nine percent of schools operated on three- to five-week rotations, with physical education classes scheduled every day during alternate rotations.

At the high school level, 25 percent of the schools in this study required one semester of daily physical education for each of two years, and five percent required half that—physical education classes were scheduled every other day for one semester during each of two years. Thirteen percent required two to three classes a week for a full two years, and another 13 percent required two to three classes a week for a full three years. Daily physical



Fifty-five percent of elementary schools had one physical education class each week....

At the middle school level, nine percent of the schools had one physical education class each week; 27 percent had two classes per week.





While physical education is a very important component of a child's overall health and fitness, there are often many opportunities to be physically active in school beyond physical education classes.



education was required at five percent of schools for just one year, and an additional 19 percent required two to four days of physical education during each of three semesters. At just 19 percent of the high schools was some physical education required every year. These schools generally required one trimester (12 weeks) of daily physical education from 9th through 12th grades.

### Aerobic activity

Another important consideration in the structure of physical education classes is the length of each class. Classes must be long enough to incorporate aerobic activity into the skills aspects of physical education. One of the objectives of *Healthy People 2010* was to increase the proportion of students nationally who are physically active in physical education class.<sup>5, 6</sup> In this study, physical education teachers were asked how often most students in their classes received at least 20 minutes of aerobic activity causing them to sweat and breathe hard. Teachers were asked to rank their answers on a scale of 1 to 5, with 1 indicating “never” and 5 indicating “always.” Seventy percent of the teachers responded with either a 4 or 5, indicating that physical education classes at the schools included in this study were generally successful in getting students to engage in sufficient amounts of aerobic activity.

### Other opportunities for physical activity

While physical education is a very important component of a child's overall health and fitness, there are often many opportunities to be physically active in school beyond physical education classes. The schools that participated in this study provided a wide variety of these opportunities, including recess, intramural sports, interscholastic sports, and after-school programs, among others.

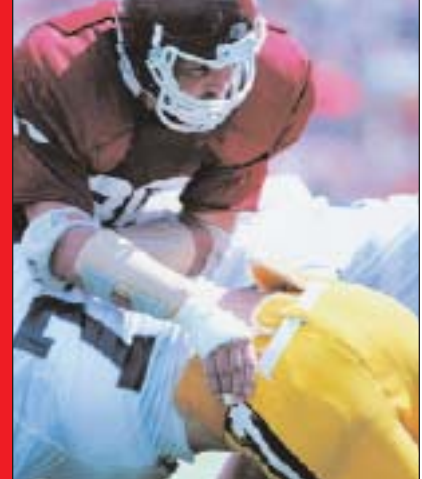
## Interscholastic and intramural sports

Interscholastic sports offered by schools in this study included badminton, baseball, basketball, cheerleading, crew, cross-country running, cross-country skiing, dance team, diving, downhill skiing, field hockey, football, golf, gymnastics, ice hockey, indoor track, lacrosse, soccer, softball, tennis, outdoor track and field, volleyball, and wrestling. While no elementary schools participated in interscholastic sports, 91 percent of middle schools and 100 percent of high schools included in this study competed in at least two interscholastic sports.

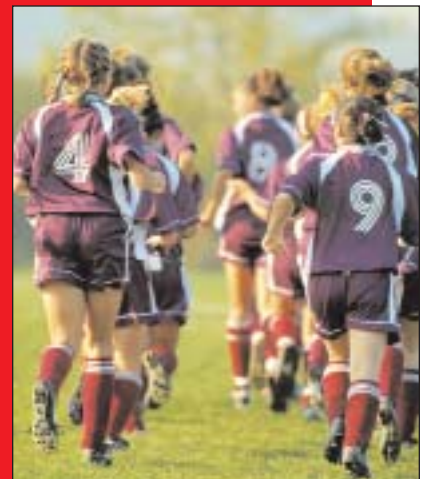
At each school, an administrator, a coach, or a physical education teacher was asked what percentage of the student body participated in at least one interscholastic sport during the school year. In middle schools providing interscholastic sports opportunities, an average of 33 percent of students played at least one sport, with a range of 10 to 60 percent. In high schools, an average of 50 percent of the student body participated in at least one sport, with a range of 25 to 70 percent. Athletes in these sports practiced or competed nearly every day during the season, which typically lasted two to three months.

Unfortunately, some schools have had to start charging students to participate in interscholastic sports. Instituting a “Pay to Play” program has allowed some schools to continue to offer sports despite tight budgets, but coaches at some of these schools reported a significant drop in the number of students trying out for sports teams.

Intramural sports, which are either noncompetitive or have teams competing with other teams from within the school, were most



While no elementary schools participated in interscholastic sports, 91 percent of middle schools and 100 percent of high schools included in this study competed in at least two interscholastic sports.







While few elementary schools included in this study had interscholastic or intramural sports programs, most provided recess.



common in middle schools. Intramural sports offered by schools in this study included badminton, basketball, bowling, fencing, flag football, golf, gymnastics, hackey sack, karate, soccer, tennis, trampoline, volleyball, weight-training, and yoga.

Nine percent of elementary schools, 50 percent of middle schools, and 25 percent of high schools provided intramural sports opportunities. In middle schools with intramural programs, an average of 26 percent of the student body participated in at least one sport (the range was from 10 percent to 71 percent). These sports often ran on shorter rotations than interscholastic sports, but usually did not have tryouts and were available to everyone.

## Recess

While few elementary schools included in this study had interscholastic or intramural sports programs, most provided recess. During this time students were free to play either indoors or outside, depending on the weather.

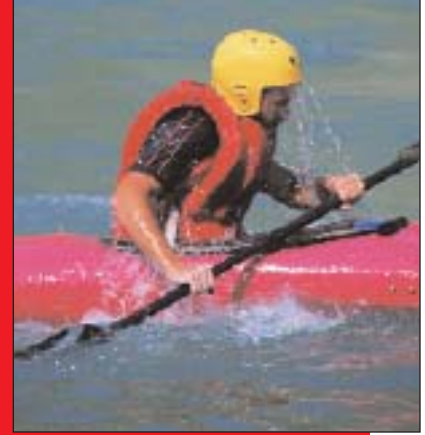
Schools included in this study provided students in grades K–5 an average of 21 minutes of recess time. However, recess lengths in some schools were as short as 10 minutes, and one school provided no recess at all. Most recess was scheduled after lunch, despite research suggesting that students who have recess before lunch may perform better in school.<sup>7</sup> Providing recess prior to lunch also allows students to socialize and burn off energy so that they come to cafeteria ready to eat at lunchtime.<sup>8</sup>

Students in general need to be more physically active. However, schools have only a limited amount of resources at their disposal,

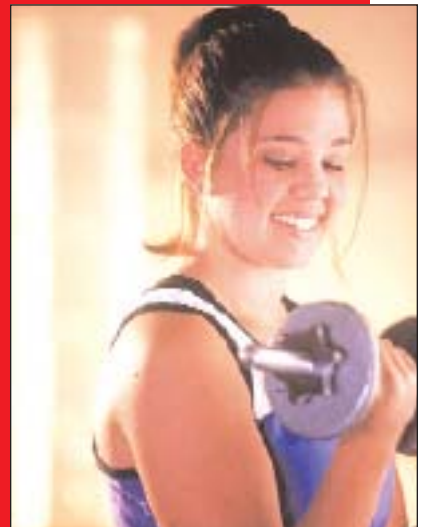
and there is often simply not enough time to include everything. Despite these limitations, several schools in this study found ways to encourage students to be more physically active both during the school day and beyond.

### Effective strategies for encouraging students to be physically active

- One mid-sized high school in ERG B, with a student population of 1,050, required a trimester of physical education every year. In 12th grade, students were allowed to fill the physical education requirement with an elective activity, which they could choose to participate in outside of school. Students could sign up to go on kayaking or canoeing trips, enroll in a pilates, yoga, or karate class, work with a physical education teacher after school on weight-training, or any one of many other activities. This was part of the school's "Fit for Life" philosophy, which held that students should try to find an activity that they might pursue well beyond high school.
- A teacher at one small elementary school in ERG D, which housed just 6th grade and had a student population of 300, began an after-school intramural basketball program eight years ago. It is coed, open to all students, and runs for three months during the winter. This program encourages students of all abilities to play together, to coach and organize themselves, and to be active. This program now boasts participation from over 60 percent of the student body.
- Several schools were very involved with their local Parks and Recreation department or their local chapters of the YMCA.



Students could sign up to go on kayaking or canoeing trips, enroll in a pilates, yoga, or karate class, work with a physical education teacher after school on weight-training, or any one of many other activities.



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## THE STATE OF NUTRITION AND PHYSICAL ACTIVITY IN OUR SCHOOLS

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One elementary school started an after-school “Fun Run” group for 4th and 5th graders, during which the physical education teacher took a group of students on a twice-weekly jog.



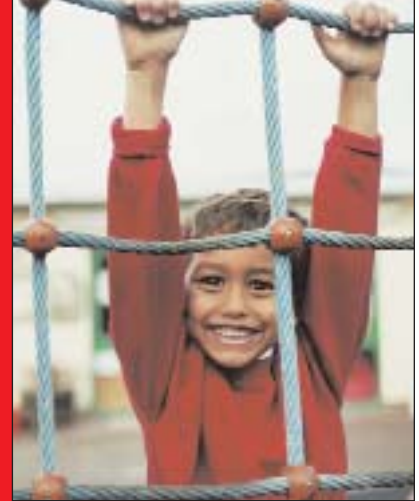
Many schools provided facilities and worked with their town Parks and Recreation departments to provide students the opportunity to play on a variety of sports teams after school.

- At one inner-city K–8 school in ERG I, the assistant principal walked a mile each morning before school with a small group of 7th and 8th grade students who may be at risk for obesity.
- Several physical education teachers required homework for days when students did not have a physical education class. They assigned certain aerobic activities, and required that a parent verify that these activities had been completed.
- One elementary school started an after-school “Fun Run” group for 4th and 5th graders, during which the physical education teacher took a group of students on a twice-weekly jog. Another elementary school started a “Fitness Club” that met three times a week. This club gave participants an opportunity to be active for an hour at the end of the school day.
- Two high schools, one in ERG B and one in ERG F, opened fitness centers with weight-lifting and cardiovascular equipment, and offered after-school weight-training and fitness programs for interested students.
- One relatively small high school in ERG E, with a student population of 325, had an extended lunch period of 40 minutes. Students had access not only to the cafeteria, but also to the gymnasium and several other areas of the school. Students who were finished eating were free to use the gymnasium, and many students chose to play basketball during this time.

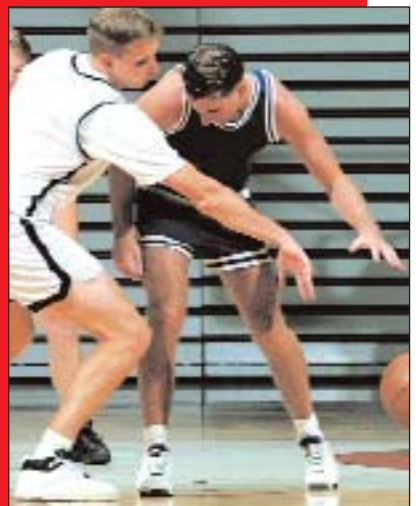
By teaching children ways to include physical activity in their daily lives, these schools made physical activity fun and helped students reduce their risk for obesity.

## VI. Recommendations

- Daily physical activity must be made a priority in our schools. The state should require physical education for children during every year that they are in school, and should include minimum time requirements for weekly physical education in this legislation.
- Schools should schedule physical education classes at regular intervals throughout the school year. Students should not go for weeks, and sometimes even months, without any physical education. Providing physical education every other day for a full year is preferable to providing physical education every day for only one half of the year.
- Schools should ensure that physical education classes are long enough and structured such that students are engaged in at least 20 minutes of aerobic activity in every class.
- Elementary school students should be provided daily recess, and should be encouraged to be active during that recess.
- Schools districts should encourage and financially support intramural and interscholastic sports programs in their schools.
- Schools should work with local organizations to provide as many opportunities as possible for students to be physically active.



Schools should schedule physical education classes at regular intervals throughout the school year. Students should not go for weeks, and sometimes even months, without any physical education.



# The Study's Recommendations for the Federal and State Governments

## *Recommendations for the Federal Government*

- The federal government should continue to work to include fresh fruits and vegetables in the National School Lunch commodities program.

## *Recommendations for the State Government*

- The state should impose nutritional requirements on all foods and beverages sold in schools, not just those sold in and around lunchtime. The sale of “extra foods,” such as soda and candy, should not be permitted at any time during the school day, at any school level.
- The state should create policies that restrict the sale of all food and beverage items in schools to those that are healthy and nutritious.
- In elementary schools, the state should ban the sale of any food or beverage items during the school day, other than those provided as part of the National School Lunch and Breakfast Programs.
- The state should require physical education for children during every school year. These requirements should include minimum standards for weekly physical education. Providing physical education every other day for a full year is preferable to providing physical education every day for only one half of the year.

# The Study's Recommendations for School Districts and Individual Schools

## *Recommendations for School Districts*

- School districts should create nutrition committees that include parents, teachers, food service staff, administrators, and other community members. These committees should work in the following ways to promote healthy school nutrition environments:
  - (A) The committees should evaluate the nutrition content of foods and beverages sold in competition with the National School Lunch Program.
  - (B) The committees should help school districts draft policies encouraging healthy fundraising activities.
  - (C) The committees should review and/or create school food policies that reflect and reinforce the nutritional messages taught in the classroom.
- School districts should be encouraged to participate in the National School Lunch and Breakfast Programs, which are currently available to all schools across the country. Participation in these programs can encourage students to eat complete, nutritious meals instead of high-fat, high-sugar snacks.
- School districts should take advantage of state and federal programs designed to increase fresh fruits and vegetable offerings in school lunches. District participation in local “Farm-to-School” programs is one way to accomplish this.

- School districts should provide financial support for food service programs, if additional funds are necessary to achieve a healthy nutrition environment. The decision to sell competitive foods should be based on nutrition goals for students, not financial needs.
- School districts should lower the price of bottled water so that it costs less than high-sugar alternatives such as partial fruit drinks or sports drinks. Research shows that lowering prices on healthier items often encourages students to purchase them.
- School districts should ban the use of food as an incentive or a reward for good behavior or good academic achievement.
- School districts should provide nutrition education to students in all grade levels. This education should afford students the skills they need to make healthy food choices.
- School districts should require physical education for children during every school year. These requirements should include minimum standards for weekly physical education. Providing physical education every other day for a full year is preferable to providing physical education every day for only one half of the year.
- School districts should encourage and financially support intramural and inter-scholastic sports programs.

### *Recommendations for Individual Schools*

- Schools should provide even the last student in line for lunch with enough time to buy and eat a complete meal. Administrators should work with lunch monitors and cafeteria staff to determine the length of their students' opportunity time to eat, and based on their school's unique characteristics, create a strategy that will ensure sufficient time.
- School food service directors and cafeteria managers should meet with student councils and other student groups to involve them in the school lunch program, and to learn from the students about food items that they might like to have included in the lunch program.

### *Recommendations for Individual Schools* (Continued)

- School food service directors and cafeteria managers should limit offerings of higher fat vegetables, such as oil-fried French fries, not only because of the fat content, but also because offering these foods may decrease consumption of other, more nutritious choices.
- School food service directors and cafeteria managers should make fruit and vegetable choices as appealing as possible. Offering a variety of whole or pre-cut fresh fruits and vegetables is one way to encourage more students to eat these foods.
- Schools should integrate nutrition education throughout the curriculum, and should utilize the cafeteria environment to teach students nutrition skills.
- School policies should include nutrition standards for all foods and beverages available to students throughout the school day, including those offered as part of celebrations or school events, and those sold during fundraising activities. All foods and beverages available at school become part of the daily school nutrition environment. Therefore, all of these items should be required to meet nutrition standards.
- Schools should lower the price of bottled water so that it costs less than high-sugar alternatives such as partial fruit drinks or sports drinks. Research shows that lowering prices on healthier items often encourages students to purchase them.
- Schools should schedule physical education classes at regular intervals throughout the year. Students should not go for weeks, and sometimes even months, without any physical education. Providing physical education every other day for a full year is preferable to providing physical education every day for only one half of the year.
- Schools should ensure that physical education classes are long enough and structured in such a way that students are engaged in at least 20 minutes of aerobic activity in every class.
- Elementary schools should provide daily recess, and students should be encouraged to be active during that recess.



## APPENDIX 1.

# Methods

This report includes data from 56 public schools in the state of Connecticut. EHHI's researcher observed food service programs at each school during one day from the beginning of the first lunch period until the end of the last lunch period. At each school, administrators, food service personnel, physical education teachers, nutrition education teachers, lunchroom monitors, and students were interviewed regarding their school's nutrition and physical activity opportunities.

### Study population

Ten local and regional health directors across the State of Connecticut worked with EHHI on this research project. These health directors contacted superintendents or other school administrators in their districts to inform them about this study. Administrators who expressed interest in participating were sent an informational letter from the study investigator (see Appendix 2). Based on the response from the administrator, the investigator presented information about the study either to: an administrative council, including superintendents and school principals; a nutrition committee, consisting of administrators, food service personnel, teachers, and parents; or an individual, such as a school nurse, food service director, or school principal. The investigator then worked with the school personnel to set up dates for study visits. Of all the school districts that were originally contacted by a health director, 73 percent participated in this study.

This resulted in a total study population of 56 schools, representing 21 public school districts in the state of Connecticut. These schools were visited during the 2003–2004 school year, between September 15, 2003, and March 25, 2004. Six additional schools were visited in the spring of 2003 as part of this study's pilot project, but are not included in any of the results presented in this report.

At least one school district in each of Connecticut's eight counties was included in this study, and the number of schools per county ranged from three to 19 (see Appendix 3

for a map of Connecticut counties). At least one school district was also visited in each Economic Reference Group (ERG), and the number of schools in each ERG ranged from three to nine (see Appendix 4 for a list of Connecticut school districts by ERG).

In 14 of the 21 school districts participating in this study, the investigator visited three individual schools, generally one elementary, one middle, and one high school. When a district included more than one school at a certain level, school selection was based on the preference of the superintendent or other administrator. Of the seven remaining school districts, five were in relatively rural areas, and consisted of only one or two schools. In these districts, all schools were visited. The final two school districts had unconventional school configurations, such as both a lower and an upper middle school, and in both of these districts, four schools were visited.

## Survey

A survey instrument was developed both to systematize the information being asked in each school and to allow the researcher to uniformly record demographic data and information on physical activity and nutrition in each school (see Appendix 5). Survey questions were divided into six groups, and each group of questions was directed to one of the following: an administrator, who was generally a principal; a food service director or cafeteria manager; a lunch monitor, who was either a teacher on lunch duty or a lunchtime aide; a physical education teacher; a teacher responsible for nutrition education; and a group of students. The information obtained from each set of questions is described below:

**Administrators**, usually principals, were asked first about school demographics. They provided information on the grade levels at the school and the size of the student body. They were then asked about the financing of the food service program. Administrators also provided information on school scheduling and requirements, such as length and times of lunch periods and amounts of physical and nutrition education required for students. They were then asked about other opportunities for physical activity, such as

recess, interscholastic sports, and intramural sports. Finally, administrators were asked about the availability of food from sources other than the cafeteria, such as school stores, fundraisers, and non-cafeteria operated vending machines.

**Food service directors or cafeteria managers** were asked about their participation in the National School Lunch Program, including, if applicable, the number of students receiving free or reduced-price lunch, and student participation in the program. They were also asked about the commodities received from the federal government through that program. Food service directors or cafeteria managers were then asked whether or not they thought students at their school had enough time to buy and eat lunch. Finally, they were asked about the competitive foods program, and about other programs they might have, such as School Breakfast Programs or after-school snack programs.

**Lunch monitors** were asked whether they thought students had enough time to buy and eat lunch. They were then asked whether they felt an extension in the lengths of lunch periods would lead to student behavioral problems. Finally, they were asked whether they themselves ate lunch purchased in the cafeteria

**Physical education teachers** were asked about the physical education requirements in the school. They were also asked whether or not they felt these requirements were adequate. If they did not think they were adequate, they were then asked how much physical education they thought there should be. Physical education teachers were asked about the amount of aerobic activity that was incorporated into their classes. Finally, they were asked if there were any other programs in their schools that encouraged or created opportunities for students to be physically active.

**Nutrition education teachers** were identified by a school administrator, since nutrition education was housed under a variety of different departments in the various school systems. Once identified, nutrition education teachers were asked about the amount of nutrition education taught in their schools and whether or not they felt that that amount was adequate. Finally, they were asked if there were any other programs in their

schools that aimed to influence students' eating behaviors or increase their nutrition knowledge.

**Students** were asked whether or not they thought they had enough time to buy and eat lunch. If they answered sometimes or never, they were asked what they did when they did not have enough time. They were also asked about the frequency with which they exercised and ate breakfast. At each school, student selection was by convenience sample, and therefore may not be representative of the entire student body at that school.

Disclosure of individually identifiable student information without express consent is unethical and prohibited by state and federal law. No identifying characteristics of students were collected or recorded, and the issue of anonymity was addressed in the informational letter. In addition, anonymity for all school districts, individual schools, and individual respondents was also protected, as failure to do so would be likely to discourage participation in the study.

### **Observational survey**

In addition to the interview, the researcher also made several standard observations during school visits. On the day of the visit to each school, the researcher made a list of the foods offered both as part of the reimbursable lunch and as competitive food items. The researcher also recorded the opportunity time to eat for the last student in line during each lunch period. Finally, the researcher noted any innovative programs or strategies being used by the school to provide a healthy nutrition environment.

### **Data analysis**

Data were first recorded on hard copy questionnaires and subsequently coded and entered into an Excel (Microsoft) spreadsheet. Data were then imported into STATA (Stata 7, College Station, TX), and sorted by school level. Schools enrolling students in kindergarten through 6th grade were considered elementary schools. Schools including grades 7 and 8 were considered middle schools, though some middle schools also included grade 6. All high

schools were attended by students in grades 9 through 12. Kindergarten through 8th grade (K-8) schools were coded as both elementary and middle schools, but differences in school treatment of older and younger students were noted where appropriate. For example, it was not uncommon in K-8 schools for only 7th and 8th graders to play interscholastic sports.

Descriptive statistics were performed for all relevant variables, and associations were examined using Pearson correlations, multiple linear regressions, and analysis of variance (ANOVA) techniques. Where appropriate, regression models were adjusted for potential confounders, such as school level or Economic Reference Group.

### **Limitations of the study**

School districts were not randomly selected for inclusion in this study; rather, a convenience sampling approach was employed. Therefore, while schools in all counties and ERGs are included, the results of this study still may not be representative of all public schools in Connecticut. Similarly, the selection of students surveyed was not random, and may not reflect the opinions or habits of all students at included schools. Further, the majority of information was collected at the school level, not the individual level, so no assessment of individual level risk can be made from this data. This study also did not assess obesity prevalence, and therefore cannot be used to evaluate the relationship between school environments and childhood overweight or childhood obesity.

Another limitation of this study is that not all requested information was provided at all schools. In some schools, physical education or nutrition education teachers were not available for interview during the school visit, and in other schools, the administrators requested that the investigator not speak with students. Data were analyzed without these missing data. In addition, when respondents were not sure of the answer to a particular question, they were asked to provide their “best guess.” This may have increased the potential for recall bias.

## APPENDIX 2. INVESTIGATOR'S LETTER



1191 Ridge Road • North Haven, CT 06473

Tel: (203) 248-6582 • Fax: (203) 268-7571

Dear School Administrator:

Environment and Human Health, Inc. (EHHI) is conducting a survey of school nutrition and physical activity, with help from health departments and school systems across the state. EHHI is a non-profit organization committed to research, education, and public policy, and is led by a board of nine doctors, policy experts, and public health professionals. This project is designed to address the growing epidemic of childhood obesity. Our project aims to benefit school children, including those in your district, by helping to understand the components of childhood obesity, and by suggesting areas where change may occur.

Our first objective is to learn what children are eating at school and to determine how much time they spend exercising. We want to know what food choices are available to students and, within that availability, what decisions they are making. We hope to begin to answer these questions by observing school cafeterias during lunchtime, talking with teachers and cafeteria staff, and by asking students themselves about their food choices and exercise habits. We also hope to observe aspects of individual school lunch and physical activity programs that are working well, so that we can highlight these things, and pass this information on to other schools throughout the state.

School districts from all eight counties of Connecticut and in each of the nine Economic Reference Groups are participating in this study. This project is expected to last through the end of the 2003-2004 school year. When completed, we will produce a final report, which will summarize our findings regarding school nutrition, physical activity and childhood obesity. This report will not identify individual schools, but will provide recommendations based on school size, level, or ERG. All participating schools will receive copies of the report when complete.

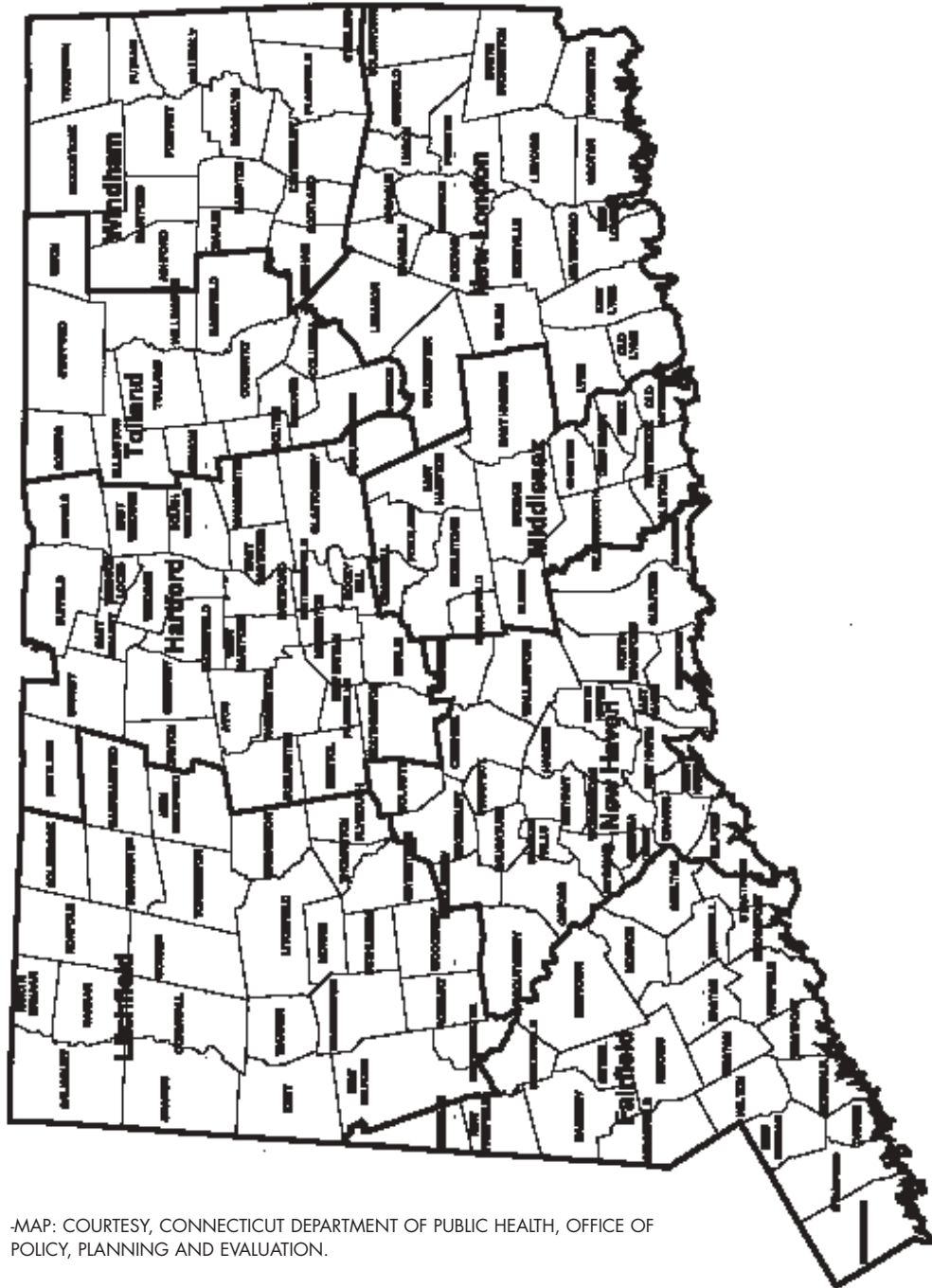
I would very much like to include schools in your district in this study. In each district, I try to visit one elementary, one middle, and one high school for one day each, during the time that lunch is served. During my visits, I interview the principal, the food service director or cafeteria manager, a PE teacher, a nutrition teacher, and a teacher on lunch duty. I also ask a few students some brief questions, such as whether or not they eat breakfast, and how often they exercise. All information is recorded anonymously, and no identifying characteristics are included.

Thank you in advance for your assistance in this important public health study. If you have any questions or would like any further information, please don't hesitate to contact me.

Sincerely,

Cynthia Curl Henderson, MS  
Project Investigator, EHHI

## APPENDIX 3. MAP OF CONNECTICUT



-MAP: COURTESY, CONNECTICUT DEPARTMENT OF PUBLIC HEALTH, OFFICE OF POLICY, PLANNING AND EVALUATION.

## APPENDIX 4. SCHOOL DISTRICTS BY ERG

### EDUCATION REFERENCE GROUPS (ERGs)

#### ERG A

Avon  
Darien  
Easton  
New Canaan  
Redding  
Regional #9  
Ridgefield  
Simsbury  
Weston  
Westport  
Wilton  
Woodbridge

#### ERG B

Bethel  
Brookfield  
Cheshire  
Fairfield  
Farmington  
Glastonbury  
Granby  
Greenwich  
Guilford  
Madison  
Marlborough  
Monroe  
New Fairfield  
Newtown  
Orange  
Regional #5  
South Windsor  
Trumbull  
West Hartford

#### ERG C

Andover  
Barkhamsted  
Bethany  
Bethlehem  
Bolton  
Bozrah  
Canton  
Cornwall  
Deep River  
Durham  
East Granby  
Ellington  
Essex  
Hebron

#### ERG C (Cont'd)

Ledyard  
Litchfield  
Mansfield  
New Hartford  
Oxford  
Pomfret  
Preston  
Regional #10  
Regional #13  
Regional #14  
Regional #15  
Regional #17  
Regional #18  
Regional #19  
Regional #4  
Regional #6  
Regional #7  
Regional #8  
Salem  
Salisbury  
Sherman  
Somers  
Suffield  
Westbrook  
Willington  
Woodstock

#### ERG D

Berlin  
Branford  
Clinton  
Colchester  
Columbia  
East Hampton  
East Lyme  
Hamden  
New Milford  
Newington  
North Branford  
North Haven  
Old Saybrook  
Regional #12  
Rocky Hill  
Shelton  
Southington  
Tolland  
Washington  
Watertown  
Wethersfield  
Windsor

#### ERG E

Ashford  
Brooklyn  
Canaan  
Canterbury  
Chester  
Colebrook  
Coventry  
Cromwell  
East Haddam  
Eastford  
Franklin  
Hampton  
Hartland  
Kent  
Lebanon  
Lisbon  
Norfolk  
North Stonington  
Portland  
Regional #1  
Regional #11  
Regional #16  
Scotland  
Sharon  
Union  
Woodstock Academy

#### ERG F

Bloomfield  
Enfield  
Groton  
Manchester  
Milford  
Montville  
Naugatuck  
Seymour  
Stonington  
Stratford  
Torrington  
Vernon  
Wallingford  
Waterford  
Windsor Locks  
Wolcott

#### ERG G

Chaplin  
East Haven  
East Windsor  
Griswold  
North Canaan  
Plainfield  
Plainville  
Plymouth  
Sprague  
Stafford  
Sterling  
The Gilbert School  
Thomaston  
Thompson  
Voluntown  
Winchester

#### ERG H

Ansonia  
Bristol  
Danbury  
Derby  
East Hartford  
Killingly  
Meriden  
Middletown  
Norwalk  
Norwich  
Putnam  
Stamford  
West Haven

#### ERG I

Bridgeport  
Hartford  
New Britain  
New Haven  
New London  
Waterbury  
Windham



## APPENDIX 5. THE SURVEY INSTRUMENT

### IN-PERSON SURVEY

#### Administrator interview:

1. What grades are included in this school?
2. How many students attend this school?
3. When does the school day begin and end?
4. Does the food program pay for itself? If so, does that include salaries and equipment? If not, how is it subsidized?
5. How long are the lunch periods, and what are the times of those periods?
6. How many minutes of physical education do students at your school receive per week, and how is that time structured?
7. Is nutrition education provided at your school?  
IF YES:
  - a) Who is primarily responsible for teaching nutrition?
  - b) How many hours of nutrition education do students at your school receive per year, and how is that time structured?
8. Does your school have an interscholastic sports program?  
IF YES:
  - a) What sports are offered?
  - b) What percentage of your student body plays at least one sport?
9. Does your school have an intramural sports program?  
IF YES:
  - a) What sports are offered?
  - b) What percentage of your student body plays at least one sport?

## APPENDIX 5. THE SURVEY INSTRUMENT (Cont'd)

10. Are your students provided recess?  
IF YES:  
a) How long is recess?  
b) When is recess scheduled?
11. Does your school have any non-cafeteria operated vending machines?  
IF YES:  
a) How many, and what do they contain?  
b) Who determines what is sold in these machines?  
c) Who collects the proceeds from these machines?  
d) Who makes the decision to operate vending machines in your school?
12. Is there a school store that sells food and/or beverage items?  
IF YES:  
a) What food and/or beverage items are sold there?  
b) When is it available to students?  
c) Who collects the proceeds from the store?
13. Are food sales a part of any fundraisers at your school?  
IF YES:  
a) What is sold?  
b) Who organizes and collects the proceeds from these fundraisers?
14. Does your school allow parents to send in food for birthdays, classroom parties, etc.?
15. Is any other food sold or provided in your school?
16. Do you have any other rules regarding food sale or consumption at your school?
17. Does your school have an organization aimed at overseeing or improving the school nutrition and/or physical activity environment, such as a nutrition committee or a health council?  
IF YES:  
a) Who is included in this organization?  
b) What is this organization responsible for?

## APPENDIX 5. THE SURVEY INSTRUMENT (Cont'd)

### Food service director / cafeteria manager interview:

1. Do you participate in the National School Lunch Program (NSLP)?

IF YES:

- a) What is the average daily percentage of students purchasing a reimbursable lunch?
- b) What percentage of your students receives free or reduced price lunch?
- c) What government commodities do you receive most frequently?
- d) What proportion of the total food you buy is represented by these commodities?
- e) Do you think the commodities you are offered help you to provide healthy lunches?  
*5 (Definitely) → 1 (Definitely not)*
- f) What items not currently offered would you most like to receive?
- g) Do you participate in any "Farm-to-school" programs?

2. Do you feel students have enough time during their lunch periods to buy and eat lunch?

*5 (Definitely) → 1 (Definitely not)*

3. How much does the full price lunch cost?

4. Do you sell foods à la carte?

IF YES:

- a) What is the average daily percentage of students purchasing an à la carte item?
- b) What items do you offer à la carte?
- c) Which items are most popular?

5. Do you operate any cafeteria-run vending machines?

IF YES:

- a) How many?
- b) What do they contain?
- c) Who decides how they are stocked?

6. Is your lunch program not at all, somewhat, or completely dependent on the proceeds from the competitive foods program?

7. Does any nutrition education occur in the cafeteria? If so, what does it entail?

## APPENDIX 5. THE SURVEY INSTRUMENT (Cont'd)

8. Are you involved in teaching nutrition to students, either in the cafeteria or elsewhere?
9. Do you operate a breakfast program?  
IF YES:
  - a) How many students participate?
  - b) What do you serve?
10. Do you operate an after-school snack program?  
IF YES:
  - a) How many students participate?
  - b) What do you serve?
11. Is any other food provided to students through the cafeteria food service program?

### **Lunch monitor interview:**

1. Do you feel students have enough time during their lunch periods to buy and eat lunch?  
*5 (Definitely) → 1 (Definitely not)*
2. Do you think that increasing the length lunch period would lead to increased behavioral problems in the cafeteria?  
*5 (Definitely) → 1 (Definitely not)*
3. Do you buy your lunch from the school food service program? If not, why not?

### **Physical education teacher interview:**

1. How many minutes of physical education do students at your school receive per week?
2. How is the physical education time structured?
3. Do you think the physical education requirements at your school are adequate?  
*5 (Definitely) → 1 (Definitely not)*
4. If not, how much do you think there should be?

## APPENDIX 5. THE SURVEY INSTRUMENT (Cont'd)

5. During one of your physical education classes, how often do most students get at least 20 minutes of exercise where they sweat and breathe hard?

5 (*Always*) → 1 (*Never*)

6. Are there any other programs or events at your school that aimed at increasing students' physical activity and education?

### **Nutrition education teacher interview:**

1. How many hours of nutrition education do students at your school receive per year?

2. How is the nutrition education time structured?

3. Do you think the nutrition education requirements at your school are adequate?

5 (*Definitely*) → 1 (*Definitely not*)

4. If not, how much do you think there should be?

5. Are there any other programs or events at your school that are aimed at influencing students' eating behaviors or increasing their nutrition knowledge?

### **Student interview:**

1. What grade are you in?

2. Do you feel like you always, sometimes, or never have enough time to buy and eat lunch? If sometimes or never, what do you do when you do not have enough time?

3. How many days per week do you get good aerobic exercise for at least 20 minutes? If one or more days, what do you do for that exercise?

4. How often do you eat breakfast?

## APPENDIX 5. THE SURVEY INSTRUMENT (Cont'd)

### Observational survey:

1. If the school participates in the National School Lunch Program, what are the reimbursable meal options?
2. Does the school sell competitive foods?  
IF YES:
  - a) What do they sell?
  - b) Do students appear to be in any way restricted as to what they can buy or when they can buy it?
  - c) How are competitive foods sold (in vending machines, at snack bars, in lunch lines, etc.)?
3. What time does the last student in line receive his or her meal? What is the interval between this time and the end of the lunch period?
4. Are any strategies employed to occupy or entertain students who have finished eating?
5. Are there are non-cafeteria operated vending machines available at the school, and if so, what do they offer?
6. Are there any other innovative programs or strategies being used at this school?
7. How is the overall atmosphere?

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