

Y E A R  
**TWO**  
*Report*

Assessing the Impact of the  
Mississippi Healthy Students Act





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## EXECUTIVE SUMMARY

The second year of examining the impact of the Mississippi Healthy Students Act provides the first opportunity to compare data from one school year to the next, from 2009 to 2010, on implementing regulations aimed at preventing childhood obesity. The Year Two Report focuses on findings from research examining the relationship between students' fitness and academic performance, on-site reviews of the nutrition environment in schools, surveys of parents and district officials, and interviews with key legislators. Highlights from the Year One Report are included on page 41.

Schools continue toward full implementation of all components of the Healthy Students Act even in a challenging economic environment. While much progress is evident, schools appear to be struggling to meet some standards. Budget constraints are likely a strong influence behind those areas where progress has slowed.

## PHYSICAL EDUCATION

### *Findings*

An evaluation of the relationship between the fitness of school children and their academic performance clearly demonstrates the association between fitness and test scores. Children who achieve more fitness zones score higher on standardized tests—in both math and language arts—and are absent less often. This relationship holds true even when other factors, such as grade, race, gender, and socioeconomic status, are controlled. The implications of this relationship for Mississippi cannot be overstated, as the state's children rate poorly on national scales for both physical activity and standardized test scores.

### *Policy Implications*

Given the strong evidence supporting the association between fitness and academic performance, schools in Mississippi should continue to work to improve students' physical fitness, such as strengthening the quality of physical education programs and increasing opportunities for students to be active during the school day.

To encourage students to eat nutritionally balanced meals, more schools are meeting standards that apply to sales of “extra” and “competitive” food items. Extra foods are those available for purchase in addition to a reimbursable school breakfast or lunch. They include additional servings of menu selections as well as individually packaged items—such as baked grain chips and cereal bars—that meet USDA and Mississippi nutrition requirements. Competitive foods, items carried in vending machines and school stores or available at parties, are not permitted to be sold or served for one hour before or during breakfast and meal times. Competitive foods also must meet state nutrition regulations.

## NUTRITION

### *Findings*

Schools persevere in making nutritional improvements both within and outside the cafeteria. Statistically significant progress was shown in several areas:

- Reduction of fried foods,
- Increased offering of whole grain products,
- Improved compliance with standards for extra food sales (items sold in the cafeteria in addition to a reimbursable meal), and
- Greater adoption of policies prohibiting unhealthy foods from being offered in staff meetings and school stores.

More than a quarter of schools have eliminated fryers, and approximately a third of schools report using at least one combination oven/steamer to prepare foods. The increase in schools adopting policies that restrict unhealthy foods in venues such as school stores and staff meetings represents an area where school officials have exceeded requirements set by law and regulations and taken the initiative to create a consistently healthy school environment.

Researchers also noted areas where less progress was evident in implementing nutrition standards:

- Less training for child nutrition program managers and food service staff,
- Fewer schools offering a minimum of one fresh fruit or vegetable choice to students consistently on a daily basis, and
- Reduction in the promotion of healthy eating and in the offering of family nutrition education.

### *Policy Implications*

Where weaknesses are noted, the State Board of Education should continue to strengthen nutrition standards, such as the board’s recent policies lowering fat content in milk, increasing whole grain requirements, and requiring plans to eliminate fryers. Grants that allow schools to purchase combination oven/steamers to replace fryers are having an impact. The State Department of Education and local school districts should continue to seek funding to further the transition from frying to baking. Incentive payments to encourage schools to participate in the HealthierUS School Challenge also work to push schools to meet higher nutrition standards. The State Department of Education should continue to allocate funds for these incentives.

## HOME & FAMILY

### *Findings*

Few changes were found in nutrition and physical activity in the home environment. Where changes are noted, they appear to be toward less healthy eating behaviors, such as a statistically significant increase in the number of days that parents served their families sodas.

The lack of family nutrition education contributes to poor knowledge of nutrition, such as few parents being aware of the recommended amount of fruit and vegetables their family should consume. Parents' poor recognition of obesity in their child is exacerbated by the absence of communication from their child's physician about their child's weight status. Parents express the desire to receive more information from schools about their child's health, including reports showing an evaluation of their child's body mass index.

### *Policy Implications*

Family nutrition education and health promotion need more attention if improvements are to be seen in parents' knowledge and practice of healthy behaviors. Schools should consider adding some of the optional policies suggested by the State Department of Education for family and community involvement to their local school wellness policies. Schools should consider BMI reporting as a means to raise awareness of parents and encourage physician involvement in childhood obesity prevention.

## SCHOOL HEALTH COUNCILS

### *Findings*

Very few parents are aware of school health councils, although they are required for every school. The composition of school health councils shifted significantly in several areas, including a drop in the percentage of schools with parents on their councils. Only one fifth of school health councils met all standard requirements, with many not meeting the requirement for inclusion of students in the membership of the group. The percentage of schools with superintendents serving on school health councils also declined significantly in 2010. This change may help explain why the percentage of superintendents reporting that each school in their district had a school health council was significantly lower in 2010.

### *Policy Implications*

To be more effective in promoting healthy eating and lifestyles at school, at home, and in the community, the school health councils' composition and function should be strengthened. Schools should review the composition of school health councils and work to achieve membership as required by policy and needed for greater involvement of all stakeholders both within and outside the school setting.

## **POLICY-MAKERS AND STATE OFFICIALS**

### *Findings*

Understanding of and support for the Mississippi Healthy Students Act remained high among state officials and policy-makers. State leaders uniformly confirm both an awareness of the necessity of childhood obesity prevention and a conviction that Mississippi could do more to improve the effectiveness of policies aimed at prevention. The survey of school board members, however, had a lower rate of participation than other surveys and a high rate of “don’t know” responses, indicating a possible lack of awareness of implementation efforts for coordinated school health and components of the Mississippi Healthy Students Act.

### *Policy Implications*

School board members, because of their critical role in establishing school policies, should be targeted to receive pertinent information on coordinated school health and its importance in the school environment.

## **LOOKING FORWARD**

Moving ahead in implementation of the Mississippi Healthy Students Act, it is essential that the state not lose momentum—momentum generated by concern over the impact of childhood obesity and fueled by intense efforts to improve nutrition and physical activity in public schools. As reported in the Year One Report for this project, according to the Children and Youth Prevalence of Obesity Survey (CAYPOS), the state has begun to see a leveling off of childhood obesity rates, but racial disparities have increased. Continued effort to fully implement coordinated school health in all schools statewide is needed to realize the benefits of healthy, fit students across the state.



## INTRODUCTION

Mississippi has consistently been ranked among the top states with the highest rates of children who are overweight or obese. This situation is of great concern because of the significant consequences of obesity, including higher risk of heart disease, high blood pressure, type 2 diabetes, stroke, and depression.

In an effort to prevent a further rise in the state's childhood obesity rates, the Mississippi Legislature in 2007 passed the Mississippi Healthy Students Act to improve nutrition, physical activity, and health education in public schools. Focusing on schools, the place where children spend much of their time as they are forming lifelong habits, the Healthy Students Act also contains provisions for parental and community involvement through school health councils.

In 2008, the Robert Wood Johnson Foundation (RWJF) awarded the Center for Mississippi Health Policy (C4MHP) a five-year grant to assess the impact of the Healthy Students Act on childhood obesity in the state. The center directs the evaluation project in collaboration with three Mississippi universities: The University of Southern Mississippi, Mississippi State University, and the University of Mississippi. The C4MHP uses the RWJF grant in conjunction with funding from The Bower Foundation to provide for a comprehensive evaluation of the effectiveness of state policies aimed at preventing childhood obesity.

This document summarizes the key findings from the second year of the evaluation project. Copies of the Year One and Year Two reports as well as each of the individual studies are available on the center's web site at [www.mshealthpolicy.com](http://www.mshealthpolicy.com).

On the following page is a timeline of legislative actions and the policies, standards, and regulations adopted by the Mississippi State Board of Education to guide school districts in fully implementing the Healthy Students Act.

The National Survey of Children's Health and the Centers for Disease Control and Prevention's Youth Risk Behavior Survey (YRBS) have ranked Mississippi as having one of the highest rates of childhood obesity of all states.

The Child and Youth Prevalence of Obesity Survey (CAYPOS), conducted biennially by The University of Southern Mississippi, monitors the prevalence of obesity among public school children in Mississippi using height and weight measurements collected by school nurses. CAYPOS data provide further documentation of the high rates of obesity among Mississippi's youth.

Unlike CAYPOS, YRBS monitors the prevalence of obesity in youth nationwide through a school-based questionnaire completed by students. The survey is conducted by the Centers for Disease Control and Prevention (CDC) in collaboration with state and local education and health agencies. Data from at least two states, Mississippi and North Carolina, showed that middle school students who completed the questionnaire consistently underestimated their weight compared to actual measurements, leading the CDC to eliminate questions about height and weight from the middle school YRBS. The questions remain on the high school YRBS because of a higher correlation between students' self-reported data and actual measurements.

## POLICIES RELATED TO THE HEALTHY STUDENTS ACT

- 2006** ..... The Mississippi Legislature instructed the State Board of Education to develop a wellness curriculum and outline rules and regulations to be followed by school districts in implementing the curriculum. The legislature also mandated that the board define what products could be sold in vending machines on school campuses and when they could be sold.
- 2007** ..... The State Board of Education began a two-year phase in of newly developed rules and regulations defining the products that may be sold in vending machines on school campuses.
- The Mississippi Legislature enacted the Mississippi Healthy Students Act to address the state's high rates of childhood obesity by improving nutrition, physical activity, and health education in public schools. The act's provisions:
- Mandate minimum requirements for health education and physical education;
  - Require local school wellness plans to promote increased physical activity, healthy eating habits, and abstinence from tobacco and illegal drugs;
  - Require a physical activity coordinator at the State Department of Education;
  - Make local school health councils mandatory rather than optional;
  - Direct the State Board of Education to adopt regulations that address healthy food and beverage choices, marketing of healthy food choices to students and staff, healthy food preparation, food preparation ingredients and products, minimum and maximum time allotments for lunch and breakfast periods, the availability of extra food items during lunch and breakfast periods, and methods to increase participation in the Child Nutrition School Breakfast and Lunch Programs; and
  - Specify the appointment of a committee to advise the State Board of Education in developing these regulations.
- 2008** ..... The State Board of Education adopted regulations defining nutrition standards along with physical education and health education requirements. All regulations were in effect as of the 2008-2009 school year.
- 2010** ..... The Mississippi Legislature enacted HB 1078, which provides financial incentives to public schools that successfully participate in the HealthierUS School Challenge, and HB 1079, which requires comprehensive training for school food service personnel.
- The State Board of Education made several regulatory changes to be effective in the 2010-11 school year:
- Clarified requirements for serving dark green and orange vegetables;
  - Required schools to submit a three-year plan to eliminate fried foods;
  - Increased whole grain products to at least one serving three days a week; and
  - Reduced milk fat content to 1%.

*The Office of Healthy Schools in the State Department of Education has been working closely with local schools to implement the new policies through its coordinated school health program. Visit [www.healthyschoolsms.org](http://www.healthyschoolsms.org) for more information.*

*examining signs of change*



PARENT'S DESCRIPTION  
OF CHILD'S WEIGHT\*

2009  
CAYPOS DATA

PARENT'S REPORT OF  
CHILD'S HEIGHT/WEIGHT\*

1%

24%

21%

OBESE

14%

19%

18%

OVERWEIGHT

77%

56%  
HEALTHY WEIGHT

55%

7%

2%

7%

UNDERWEIGHT

# Schools Continue Obesity Fight; Is the Message Hitting Home?

While supportive of the Mississippi Healthy Students Act's goal to fight childhood obesity, very few parents of obese children are aware of their child's weight status, the 2010 Survey of Parents & Adolescents by Mississippi State University revealed. Only 1 percent of public school parents described their child as obese—and 14 percent described their child as overweight—in the 3,755 telephone interviews that were conducted in the survey. Clearly, parents who were interviewed do not understand what constitutes obesity; the heights and weights they simultaneously reported for their children would classify 21 percent as obese and an additional 18 percent overweight—rates that track closely with the most recent numbers available. The actual prevalence of obesity among Mississippi's school children was 23.9 percent in 2009, and 18.5 percent of children were overweight, according to the Child and Youth Prevalence of Obesity Survey (CAYPOS) conducted by The University of Southern Mississippi.

Parents may not recognize their children as obese, but they are aware that obesity can seriously affect a child's health. Nine out of ten parents said they understand that health problems can occur when children are overweight, and eight out of ten felt that the likelihood of overweight children developing health problems was very high. Studies have shown that obese children have a much higher risk of serious health conditions, including asthma, type 2 diabetes, and heart disease. With the obesity rate more than four times higher among children ages 6 to 11 than it was a generation ago, some experts warn that today's children may be the first American generation to die younger than their parents. Mississippi parents who were surveyed saw diabetes as a consequence of obesity, but fewer than half identified heart disease and high blood pressure as such.



State laws now require schools to offer only healthy foods to children and to increase physical education. Asked if they support this, 95.9 percent of parents again responded positively in 2010.

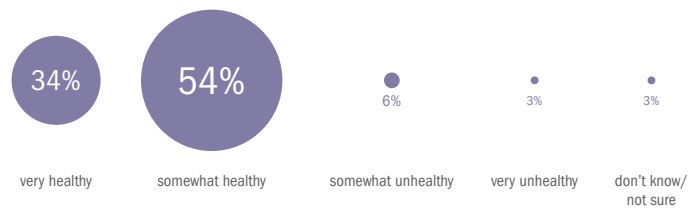
Percentage of parents identifying a condition as a health problem that could happen to overweight children:

Diabetes	79%
High Blood Pressure	42%
Heart Disease	49%
Asthma	13%
High Cholesterol	13%
Other	10%

Believing that schools have a role in preventing childhood obesity, almost all parents surveyed were again in favor of state laws to allow only healthy foods to be served in schools and to increase physical education. Nine out of ten parents considered the school's role in preventing childhood obesity at least "somewhat important," and 65 percent called it "very important." A high percentage (96%) endorsed requiring physical education for all students.

Overall, parents believe that schools have created healthier environments for their children. Asked to rate their child's school environment on whether healthy foods and opportunities for physical activity are offered, 88 percent scored the school environment as either "very healthy" or "somewhat healthy." Although most parents continued to be aware of general efforts to improve students' health, a much smaller proportion of parents knew of specific changes that schools have made in response to the Mississippi Healthy Students Act. Only 37 percent said they were aware of any changes in vending machines, school lunch choices, or physical exercise requirements at their child's school.

How parents rate their child's school on providing a healthy environment  
(in terms of offering healthy foods and opportunities for physical activity)



## STUDENTS ARE LEARNING HEALTHIER LESSONS

Mandating that minimum requirements for health education be defined, the Mississippi Healthy Students Act led to much higher percentages of students receiving a comprehensive health education and higher percentages of students receiving health education from classroom teachers, nurses, physical education teachers, and certified staff. The importance of healthy eating and physical activity in maintaining a healthy weight is a lesson students are learning at school, according to 8 out of 10 adolescents surveyed in 2010.

## SCHOOL OFFICIALS SEE PROGRESS

Overall, school district superintendents and school board members reported progress in implementing the components of the Mississippi Healthy Students Act. Six out of ten superintendents continued to rate their district's implementation between 75 percent and 100 percent. While the proportion of school board members responding "don't know/not sure" declined, more than 25 percent of board members continued to fall into this category.

Overwhelmingly, school superintendents (92.3%) and school board members (84.3%) reported being "somewhat satisfied" to "very satisfied" with the strides their school district is making to create a healthier environment.

Regarding community reception of changes being implemented, school superintendents and school board members reported a drop in the combined "somewhat supportive" and "very supportive" levels. The proportion of school board members describing the community's reception as "somewhat unsupportive" increased from 4 percent to 15 percent from 2009 to 2010, a change that is statistically significant.

School district's progress in implementing the Healthy Students Act of 2007, as reported by superintendents and school board members

● % of school board members  
● % of superintendents



# Improving Nutrition Inside and Outside the Cafeteria

Lunch prepared in the school cafeteria is still the overwhelming midday choice of Mississippi's public school students. More than three-quarters (77%) of parents surveyed in 2010 said their child ate a school-prepared lunch every day, and another 7 percent said their child ate the school lunch and took a lunch from home half the time; 12 percent said their child took a lunch from home every day. Participation in the School Breakfast Program remained lower than lunch. While 85 percent of parents said their child ate breakfast every day, only 27 percent of those said the breakfast was at school.

Recognizing the importance of providing healthy, appealing foods and promoting good nutrition to children, the Mississippi Healthy Students Act required the State Board of Education to adopt a series of school nutrition regulations covering everything from the foods served at lunch and breakfast to the ingredients and techniques used in their preparation. Schools moved rapidly to comply with many of the nutritional policy points that were set. To check for continued progress in meeting the standards and identify specific areas in which further education and training may be needed, 147 randomly selected schools were visited in 2010 by University of Mississippi researchers and surveyed using the Mississippi School Nutrition Environment Evaluation Data System (MS NEEDS).

## CHANGES IN THE SCHOOL NUTRITIONAL ENVIRONMENT

One nutritional improvement that has gained increased focus is the reduction of fried foods. The 2010 results showed statistically significant shifts in the frequency of fried foods served to students at lunch. The percentage of schools reporting that they never served fried foods increased by 27 percent, with more than one-third of schools now reporting no fried foods were served at lunch. There was a drop in the percentage of schools that said they have a long-range plan for reducing fried foods, but some of this reduction was due to the fact that more schools reported they no longer serve any fried foods.

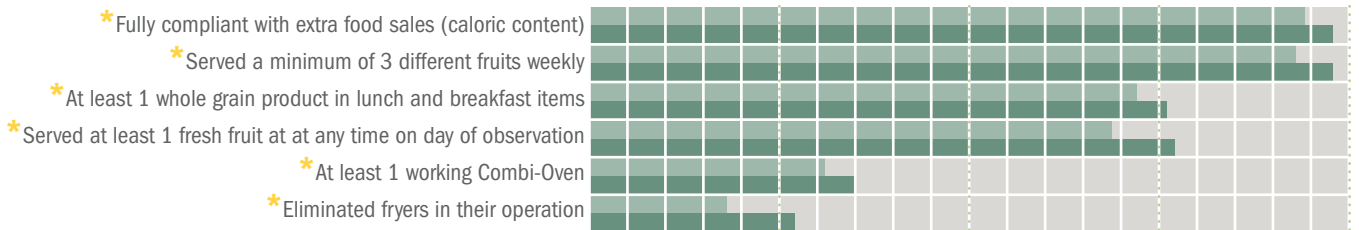




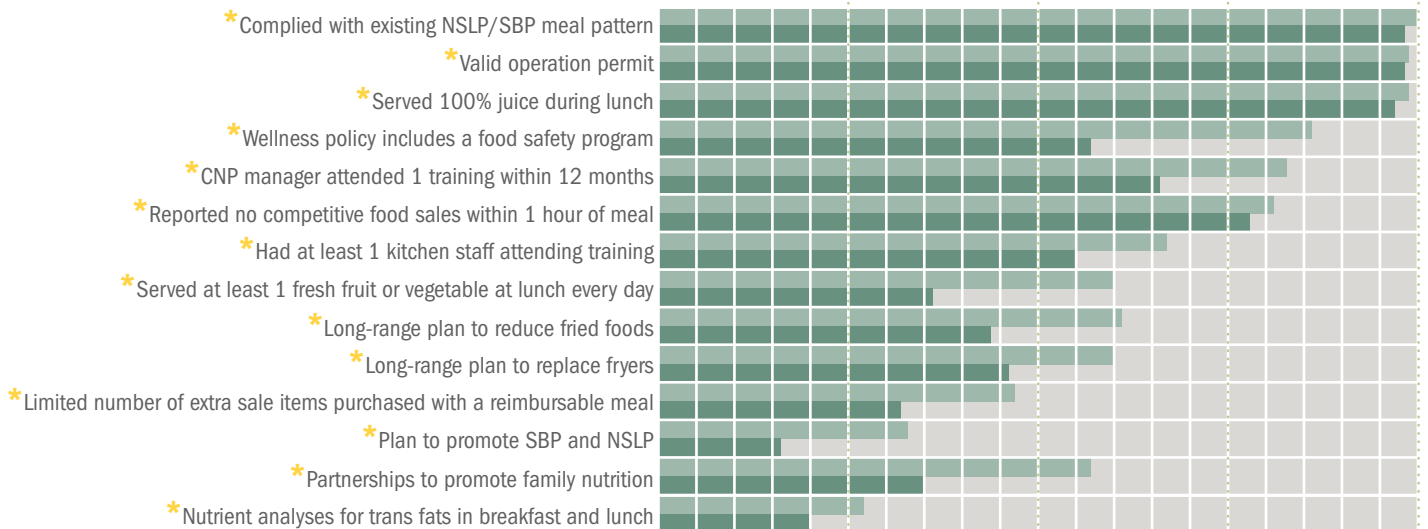
Percentage of schools in compliance with nutrition policy

2009  
2010 \* comparisons that are statistically significant

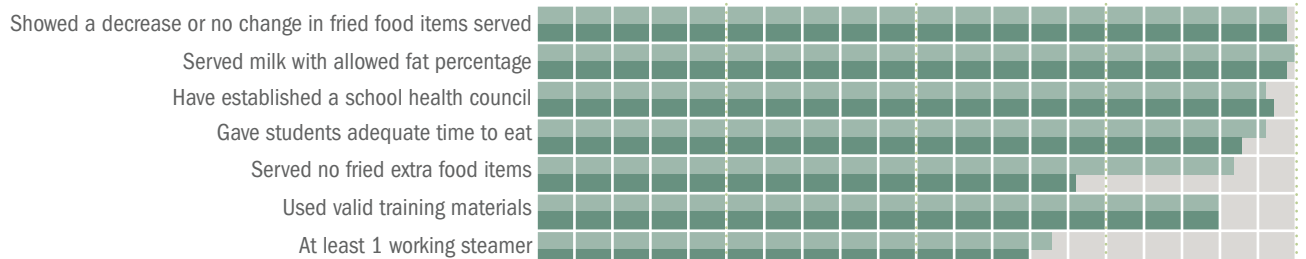
Components that showed statistically significant increases in compliance rates: 25% 50% 75% 100%



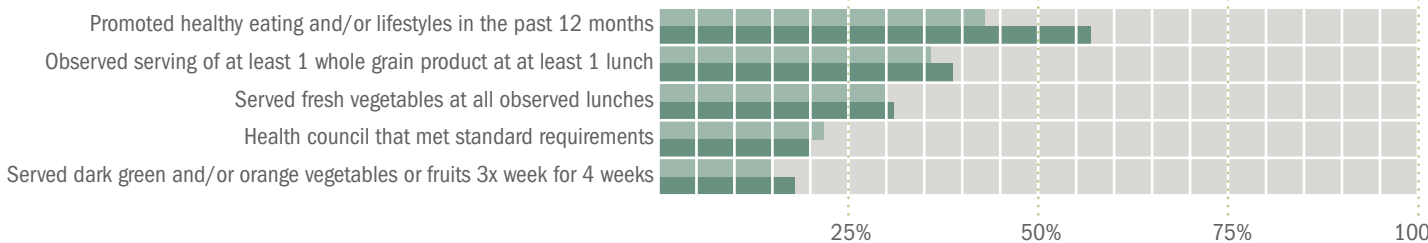
Components that showed statistically significant decreases in compliance rates: 25% 50% 75% 100%



Components that showed no statistically significant change, but compliance rates remained high: 25% 50% 75% 100%



Components that showed no statistically significant change, but compliance rates remained low: 25% 50% 75% 100%



As funds have become available, schools have gradually replaced fryers with combination oven/steamers that allow for healthier food preparation. From 2009 to 2010, there were statistically significant increases in the percentages of schools that eliminated fryers and used at least one working combination oven/steamer in their operations. Many schools that have not yet replaced fryers have a long-range plan to do so.

Nutrition standards call for schools to offer at least one fresh fruit or vegetable to students each day. Researchers noted an increase in the percentage of schools (61%) where they observed at least one fresh fruit or vegetable served at lunch. A review of schools' cafeteria records, however, showed that there had been a significant decline in the percentage of schools (36%) that were offering at least one fresh fruit or vegetable all five days of the week for the four weeks reviewed. Only 22 percent of schools served at least one fresh fruit and 10 percent served at least one fresh vegetable daily for four weeks.

While schools apparently struggle to offer fresh fruits or vegetables on a daily basis, they continue to improve in offering a variety of fruits and vegetables. Almost 9 out of 10 schools comply with nutrition standards to offer a minimum of five different vegetables weekly, and the percentage of schools serving at least three different fruits weekly increased from 93 percent to 98 percent, a statistically significant improvement. For both 2009 and 2010, schools averaged serving seven types of fruit and eight types of vegetables a week.

There also was a statistically significant change in the availability of whole grain products at lunch and/or breakfast. The percentage of schools serving a whole grain product at lunch and/or breakfast increased from 72 percent to 76 percent. The percentage of schools serving a whole grain product at every lunch period, however, remained low, with approximately 4 out of 10 schools (39%) complying.

The percentage of schools complying with standards for extra food sales increased to 98 percent, a statistically significant improvement.

Another significant change noted by researchers was a decline in the percentage of schools whose food service staff had attended training programs in the past 12 months.

### **MOST SUPERINTENDENTS REPORT POLICIES AGAINST FOOD AS REWARD**

School superintendents and school board members were asked about district policies relating to use of food/food coupons as a reward. For the second year, more than half of superintendents reported their district had policies that recommend against or prohibit the

To encourage students to eat nutritionally balanced meals, 98% of schools limit the number and types of "extra" foods that may be purchased with a reimbursable school breakfast and lunch. Extra items are restricted to individually packaged foods—e.g., ice cream; granola, cereal, and 100% juice bars; or baked (grain) chips—that do not exceed 200 calories, as well as additional servings of breakfast and lunch menu selections that do not exceed the size of the normal meal portion. Schools are urged to use promotional strategies—e.g., pricing fresh fruit lower than ice cream and providing fun, easy-to-understand nutrition comparisons—to increase students' healthy choices.

To prevent students from choosing non-nutritious snacks before breakfast and lunch, no "competitive" foods may be sold on school campuses for one hour before the start of any meal period. The regulation covers all food available to students through vending machines, student stores, snack bars, fundraisers, events, and parties.

use of food/food coupons as a reward; while 40 percent of school board members also provided that response, the majority answered “no policy” or “don’t know/not sure.”

### **SCHOOLS & NUTRITION & COMMUNITY: MORE WORK TO DO**

State Board of Education policy strongly encourages schools to promote healthful eating and healthy lifestyles to students, parents, teachers, administrators, and the community. Unfortunately, schools are lagging in all categories related to creating greater awareness of nutrition among school and community audiences. In 2010, a significantly higher percentage of schools (69.6% compared to 58% in 2009) had no plans in place to promote participation in their lunch or breakfast program. There also was a statistically significant drop in the percentage of schools with plans to promote both lunch and breakfast meals: from 32.6 percent in 2009 to only 16.1 percent in 2010.

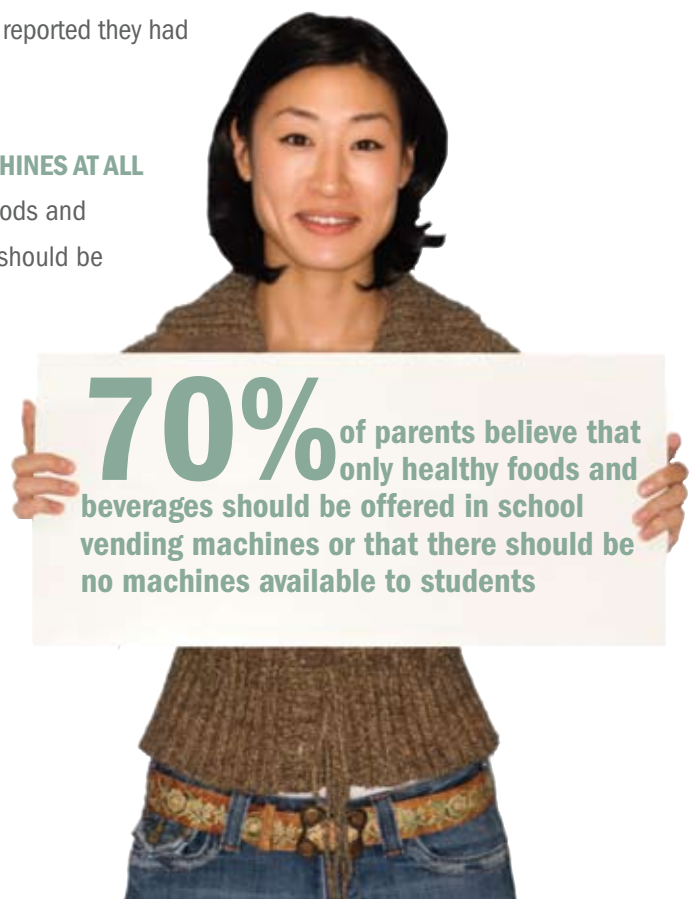
State Board of Education policy also identifies family nutrition education as the key to building healthier home environments and, consequently, healthier futures for the state’s residents. Citing public schools as having the best resources, facilities, and structure to provide the programs, the policies urge schools to partner with appropriate governmental agencies to offer family nutrition education.

While some schools reported making an effort to educate families about healthy foods in 2010, the percentages of those doing so fell by statistically significant amounts. Statistically significant declines were noted in the percentages of schools that offered resources or participated in partnerships to promote family nutrition. The percentage of schools including family education in their wellness policies also decreased by a statistically significant amount. In the parent survey, 40 percent of those interviewed reported they had never received information about healthy eating from their child’s school.

### **PARENTS WANT HEALTHY FOODS IN VENDING MACHINES OR NO MACHINES AT ALL**

An overwhelming majority (70%) of parents believe that only healthy foods and beverages should be offered in school vending machines or that there should be no machines available to students.

Under the vending regulations that were phased in over two years (beginning with the 2008-2009 school year), full-calorie, sugared carbonated soft drinks can no longer be sold to students in Mississippi schools during the school day. The only beverages that can be sold include bottled water, low-fat or non-fat milk, and 100% fruit juices. No calorie/low-calorie beverages and



light juices/sports drinks are allowed in high schools. Standards for snack items vary by the type of snack product, and the Department of Education maintains a list of products meeting state standards.

Regulations call for schools that choose to offer vending to provide a selection of healthful food options to students, guided by goals to:

- Minimize excessive intake of calories, especially empty calories from fat and sugar;
- Increase intake of nutrients for optimal growth, development, and brain function, especially from nutrient-rich, minimally processed foods like whole grains, fruits, vegetables, nuts, seeds, lean meats, and dairy foods; and
- Promote healthful options to all students, families, and school staff by developing marketing and nutrition education strategies.

The regulations cover all foods offered through vending machines, student stores, snack bars, fundraisers, and other sales available to students. Further, at least 50 percent of the items in staff areas that are inaccessible to students must meet the regulations. Research supports that proper nutrition improves the health and performance not only of students but also teachers, who are important adult role models for children and youth.

#### **MORE SCHOOLS BAN UNHEALTHY FOODS IN SCHOOL STORES, AT STAFF MEETINGS**

School policies about the offering of foods outside the cafeteria or in vending machines vary by the venue in which the foods are available. To encourage students to make healthy choices, most schools prohibit unhealthy food in school stores and vending machines, and slightly more than half do not allow the low-nutrition items at student parties and after-school programs.

While few schools extend the ban to their concession stands or staff meetings, there was a statistically significant increase in those prohibiting unhealthy foods at staff meetings in 2010.

Superintendent surveys also showed a statistically significant rise in the percentage of schools adopting policies that keep unhealthy foods out of school stores.

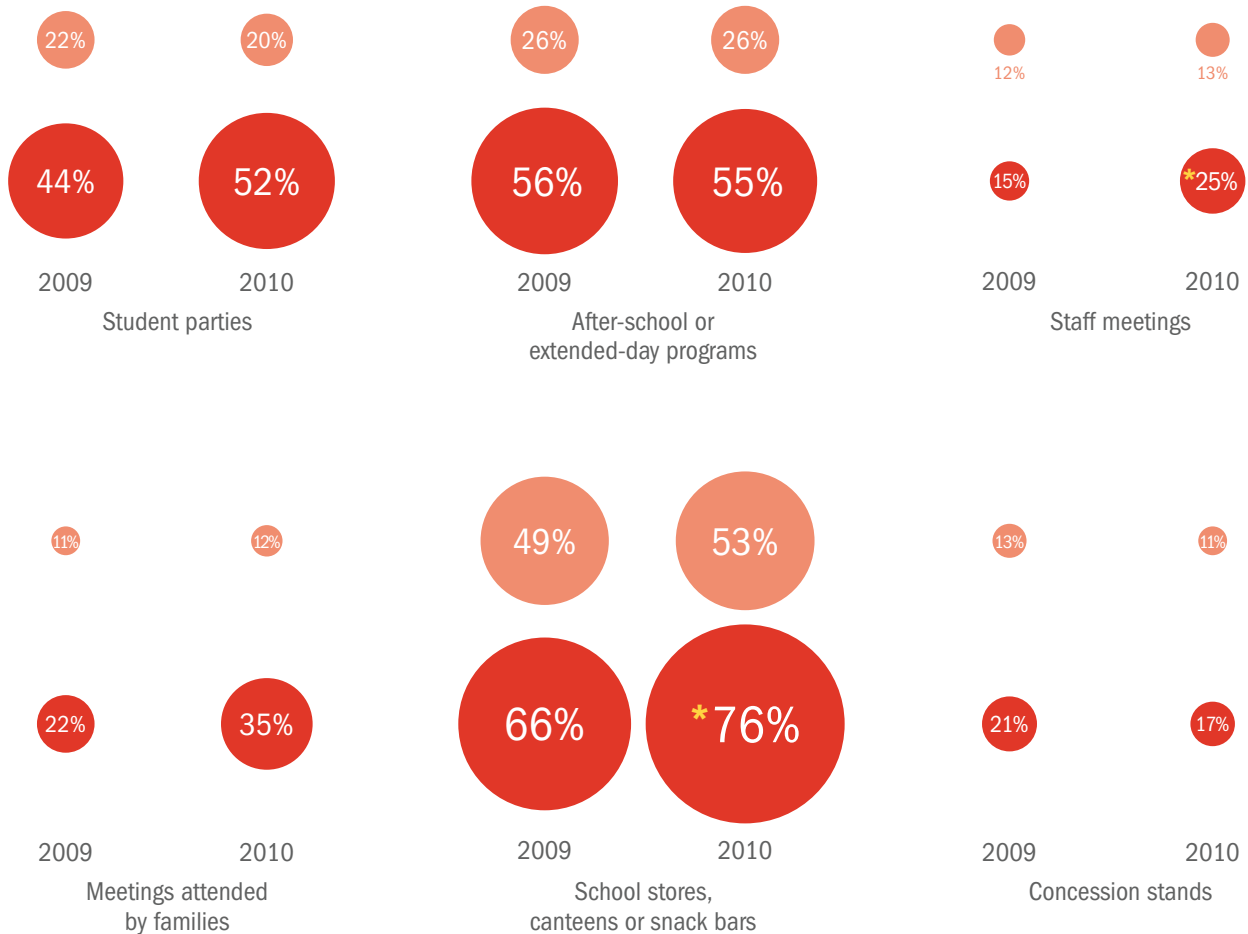


“Yes,” school district has adopted a policy stating that schools are prohibited from offering unhealthy foods in these places

\*statistically significant change

● % of school board members

● % of superintendents



*Note: These policies exceed those required by law or regulation.*

# Linking Fitness to Academics; Requiring Physical Education

As part of the *Committed to Move* project, students in grades 3–8 were assessed using Fitnessgram, a physical fitness test battery developed by the Cooper Institute. Fitnessgram includes: the Pacer test for measuring aerobic capacity, 2) the curl-up test for assessing abdominal strength and endurance, 3) the 90-degree push up for gauging upper-body strength and endurance, 4) the trunk lift for measuring back extensor strength and flexibility, 5) the backsaver sit-and-reach for review of hamstring flexibility, and 6) skinfold assessment for determining body composition. (Mississippi chose to use BMI screening instead of the skinfold assessment.)

A growing body of research,<sup>1,2,3</sup> including studies from California<sup>4</sup> and Texas<sup>5</sup> education departments, demonstrates that fitness is directly related to academic success. The CDC reviewed the research related to physical activity and academic performance<sup>6</sup> and found that most studies supported this conclusion. A similar review supported by the Robert Wood Johnson Foundation<sup>7</sup> confirms these findings.

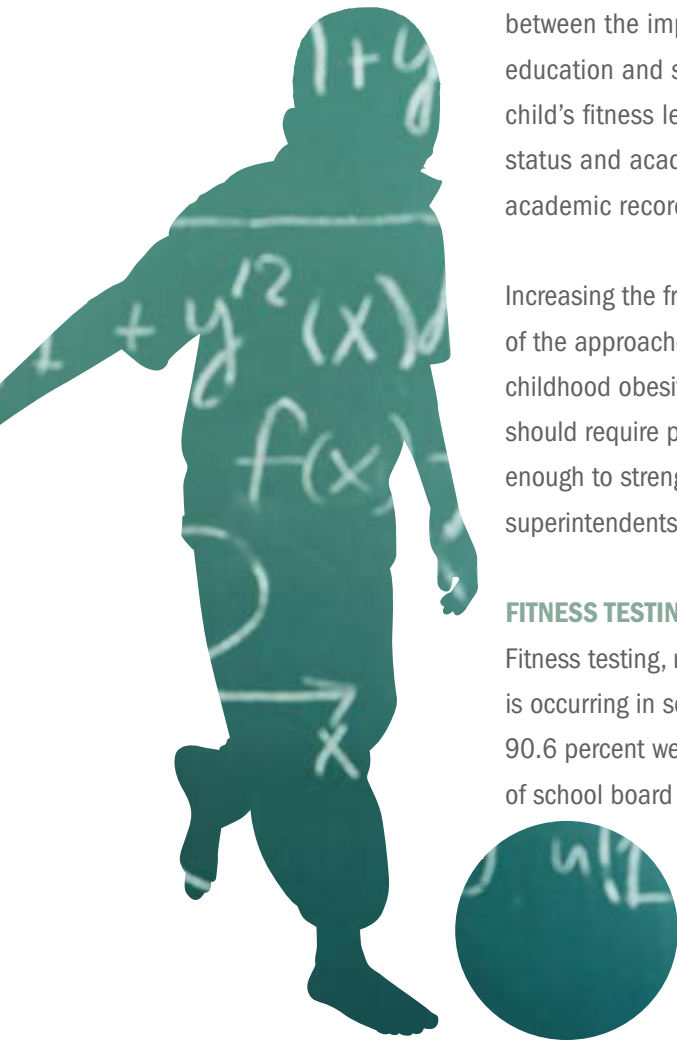
Mississippi students also perform better on academic tests when they are fit, at least one study has found. Results from the *Committed to Move* study demonstrated a statistically significant direct relationship between the fitness levels of students and their test scores in both math and language arts. Students achieving more fitness zones scored higher on academic tests. A direct correlation between low levels of fitness and high absenteeism among students also was evident. Students who were fit in more areas (measuring body mass index, aerobic capacity, strength, endurance, and flexibility) missed fewer days of school.

Two-thirds of superintendents (66.3%) believe there is a strong or very strong association between the implementation of coordinated school health programs that include physical education and students' academic performance. (Unlike the association between a child's fitness level and academic test scores, no relationship between a child's weight status and academic scores was shown when CAYPOS data were matched with student academic records.)

Increasing the frequency, intensity, and duration of physical activity at school is one of the approaches that research has identified as critical to reversing the epidemic of childhood obesity. Ninety-six percent of Mississippi parents surveyed said that schools should require physical education for all students. Asked if their school district had done enough to strengthen school policies on physical education, 65.4 percent of school superintendents and 42.8 percent of school board members responded affirmatively.

## FITNESS TESTING AND SHARING OF RESULTS WITH PARENTS

Fitness testing, required in fifth grade and once in high school by the Healthy Students Act, is occurring in school districts, according to 61.5 percent of superintendents. Of this group, 90.6 percent were in favor of sending students' results to parents. More than three-fourths of school board members (76.5%) agreed with sending fitness test results to parents.

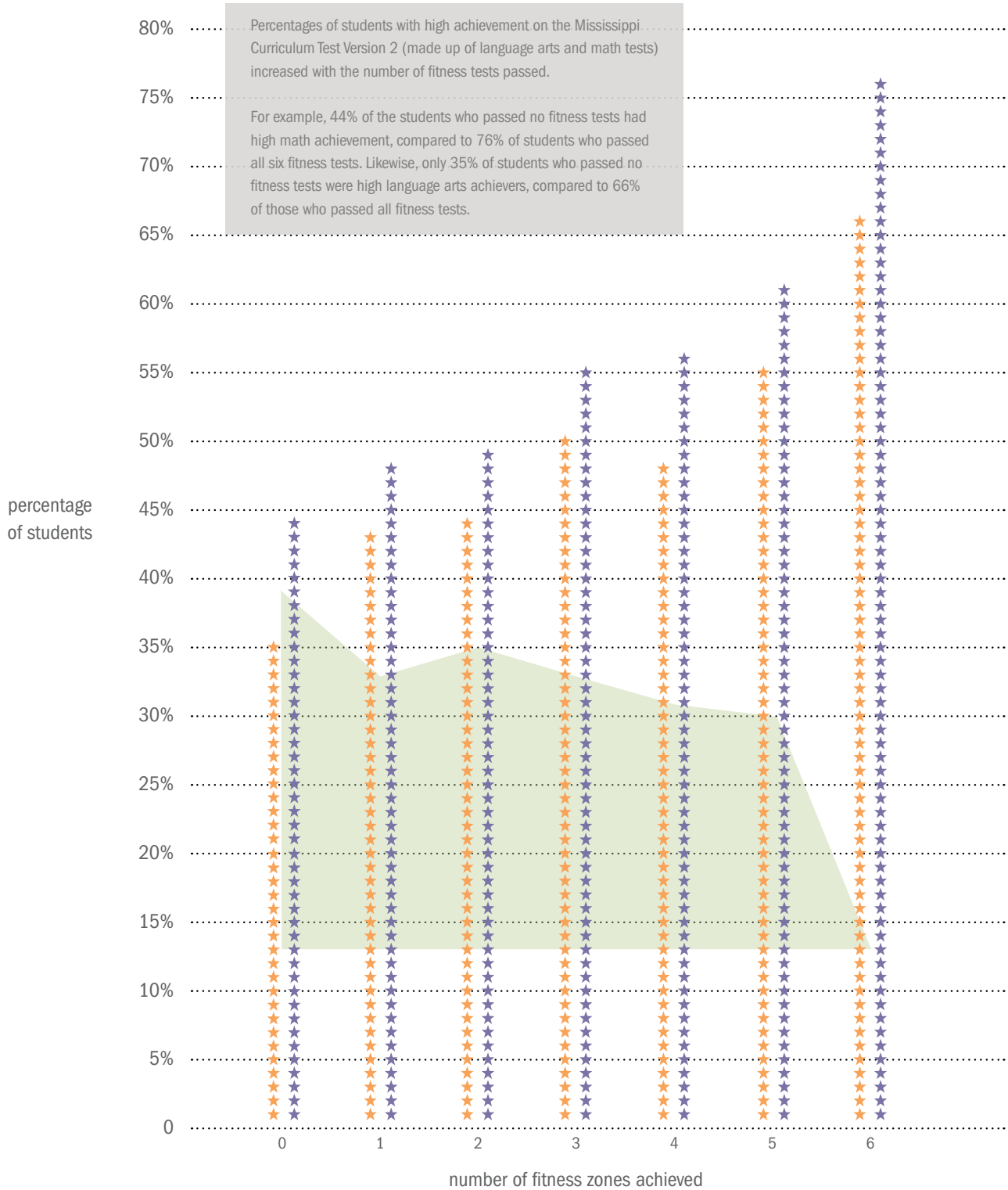


# Impact of Fitness on Academic Performance

★ % of high-achieving students in language arts

★ % of high-achieving students in math

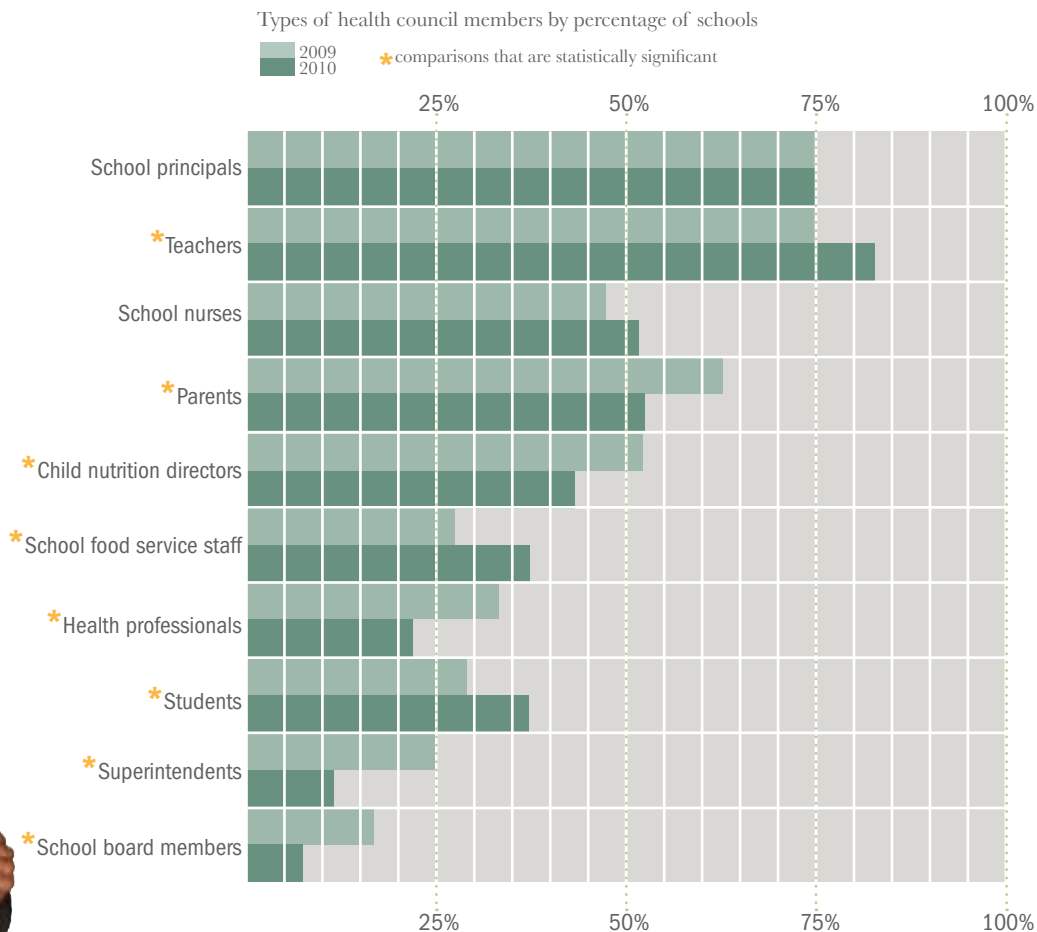
% of students with an absentee record in excess of 8 days





# School Health Councils Oversee Wellness Policies

The Healthy Students Act required the formation of school health councils to set wellness policies and keep them on track. Although the school health councils are meant to involve a broad group of individuals, including parents, only 22 percent of parents surveyed were aware of such a council; only about half of these parents had attended an actual council meeting.



Although lower in 2010 than in 2009, a third of school board members still responded “don’t know/not sure” when asked if each school in their district had a health council. The rating of councils’ effectiveness by State Board of Education members fell from 3.6 to 3.1, a marginally significant decline.

Related to the composition of the councils, past research revealed a low percentage of food service staff and child nutrition program directors serving as members. While the presence of food service staff increased from 2009 to 2010, the percentage of child nutrition directors who were serving declined. Asked if each school in their district had a health council, more superintendents responded “no” in 2010 as more school board members answered “yes.” More than a third of school board members, but a lower percentage than in 2009, still responded “don’t know/not sure.” Their uncertainty may be due to the fact that fewer than 10 percent of schools include a school board member on their health council, according to an analysis of information collected through MS NEEDS.



# BMI Screening in Schools, Reports to Parents Favored

Body mass index (BMI) screening is a useful tool in estimating the rates of underweight, normal weight, overweight, and obese children. BMI is a ratio of weight and height that also accounts for gender and age. Because measurements must take continued growth into account, methods and charts for calculating BMI in children vary greatly from those used for adults. The CDC provides guidance regarding safeguards for protecting students' confidentiality and dignity and also supplies growth charts and BMI information for children on its website. While some states with legislation similar to the Healthy Students Act require schools to assess students' BMI and report results to parents, Mississippi currently does not. BMI screening of students and reporting of results to parents could be valuable in helping parents recognize whether their children are overweight or obese. Eight out of ten Mississippi parents said they would like for schools to collect and report to them information on their child's weight status. State Board of Education members unanimously concurred: 100 percent of those responding to the survey said they were in favor of measuring students to determine BMI and reporting results to their parents. Likewise, the majority (62.5%) of school superintendents agreed with BMI screening, and 89.2 percent of those endorsed reporting to parents. Most local school board members (63.6%) also supported collecting BMIs on children, with 78.8 percent of those in favor of reports to parents.



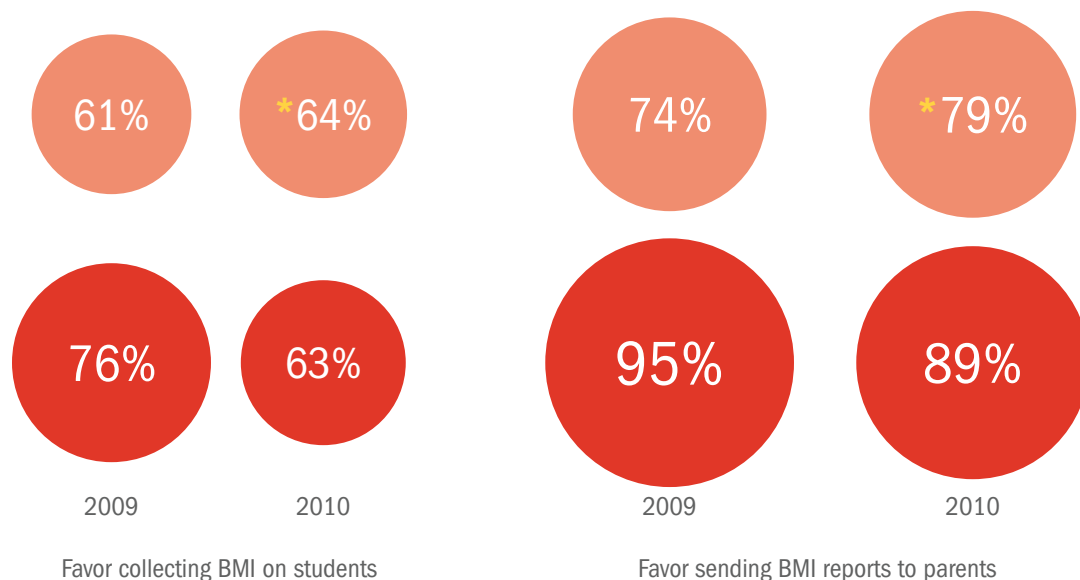
Eight out of ten Mississippi parents said they would like for schools to collect information on students' height and weight and provide it to them.

Comparison of school board members' and superintendents' responses on collecting and reporting BMI

\* statistically significant change

● % of school board members

● % of superintendents



We've got to promote health education as a formal curriculum

It's important that people have information...goals...models and incentives to do what is in their best interest, and that's just what this legislation does

**Moving Mississippi from its position as No. 1 in obesity among the 50 states**

Should have health education to teach kids what they should eat and why

Decreasing the obesity rate, decreasing childhood diabetes, and a decrease in the problems that are associated with obesity

As health leaders, one of the most important things we can do is make the public aware of the obesity problem

We know that an ounce of prevention saves a pound of cure



# Policy-Makers & State Officials

The Institute of Medicine and other expert groups agree that improving public policies and changing community environments are the most effective strategies for preventing childhood obesity. Continued implementation of the Mississippi Healthy Students Act clearly requires leadership by policy-makers at the state and local levels. Legislators are responsible for enacting and implementing related policies, as well as reinforcing or refining them based on feedback from constituents. State Board of Education members issue regulations to further define policy mandates, and school superintendents and school board members follow through on implementation by schools. State and local health officials are integral in advising and carrying out policies and programs related to school health efforts from the public health perspective.

The attitudes, opinions, and perceptions of legislators, state and local education officials, and state and local health officials directly influence the strength and effective implementation of school policies. Monitoring changes in the perceptions and opinions of these leaders is important to fully understand the impact of the Mississippi Healthy Students Act on the prevention of childhood obesity in the state.

Legislative authority in Mississippi resides with a bicameral legislature, whose 52 senators and 122 representatives are elected for four-year terms. For purposes of this report, the Mississippi Legislature is interpreted through a purposive sample of six representatives and six senators, reflecting diversity in party affiliation and constituent demographics.

The Mississippi Board of Education is comprised of nine members appointed across various branches of government, including four at-large representatives, a teacher representative, an administrator-at-large representative, and one representative from each of the state's three Supreme Court districts.

The Mississippi State Board of Health includes 11 members appointed by the governor for staggered six-year terms. The current board members include five physicians and two nurses, as well as representation from the academic and business communities.

Mississippi has six public health officers supervising a total of nine public health districts in a single, statewide public health system.

## STATE-LEVEL POLICY-MAKERS CONTINUE THE FIGHT

State legislators and members of the State Board of Education and State Board of Health were asked a series of questions to better define their position on Mississippi's obesity issue.

Overall in 2010, these state policy-makers continued to rank prevention of childhood obesity very high in importance to Mississippi. On a scale of 1 to 5, with 5 being most important, scores ranged from 4.5 to 5.0. The group as a whole continued to reflect the opinion that the state has more work to do. Legislators recognized their role in establishing state policies that will encourage healthy lifestyles, and members of both state-level boards agreed their agencies' leadership is important in preventing childhood obesity. While it is still too early to see the full effect of the Mississippi Healthy Students Act, lawmakers expressed positive opinions about the legislation and said they have received favorable responses from the school districts and parents they represent. Among the legislators' comments: "...it's one of the most important things we've done in the education side of health care in many, many years. It's important that people have information...goals...models and incentives to do what is in their best interest. And that's just what this legislation does." Members of both state-level boards concurred, reporting strong support from local school districts and county health departments.

A majority of lawmakers expressed support for maintaining the Mississippi Healthy Students Act and strengthening it in the future. Increased academic pressures and the constraints of budget and time within schools were cited by both legislators and State Board of Education members as realities that slow full implementation of the act's components, particularly physical education. "It used to be that physical education was an integral part of (the school day), and then they added so many other things...that something had to give somewhere" one legislator noted. Another explained: "We're demanding more (from schools) academically. We're having more rigorous testing which means they've got to spend more time in (the) classroom." A State Board of Education member considered the emphasis on physical education and nutrition a cultural shift that calls for more training of educators, and another suggested that academic achievement should be a higher priority than physical/health education. State Board of Health members strongly endorsed

the Mississippi Healthy Students Act's components as integral to education: "We've got to promote health education as a formal curriculum (pre-K through 12th grade) that's just as important as math, science, social studies, languages, and so forth. Physical education should be as important as the other formal subjects and should be sequential and age appropriate from pre-K through 12th grade instead of the minimal amount we have right now."

Recognizing the importance of education in combating obesity, State Board of Education members said successful implementation of the act requires "buy-in" from educators and parents. State-level officials agreed that other segments of the school community and public must be involved in promoting health and healthy lifestyles. Legislators identified a broad array of potential conduits of information, including parents, parent-teacher associations/organizations, booster clubs, churches, businesses, and non-profit agencies. The lawmakers also recommended health insurance wellness plans and community park/recreational programs be integrated into prevention efforts. State Board of Education members added that local government officials, resources such as walking and biking trails and summer camps, programs such as YMCA and Boys and Girls Clubs, childcare centers, and the medical community should be included in the collaborative effort. The State Board of Health underscored the necessity of physicians participating.

Asked how the effectiveness of the Mississippi Healthy Students Act should be evaluated, legislators indicated that they would like to see improved health and educational outcomes over time. "Decreasing the obesity rate, decreasing childhood diabetes, and a decrease in the problems that are associated with obesity" were among the desired outcomes cited, as well as increasing the percentages of students who graduate from high school, attend community college, and earn four-year degrees. State Board of Education members agreed that reducing the numbers of Mississippi children who are obese and improving children's overall health over time were sound measures of success. State Board of Health members expressed ideas that ranged from collecting baseline and follow-up data on specific cohorts of students to evaluating the act's health education, nutrition, and physical education components separately. The varied suggestions indicated

that members recognize that the breadth of the Mississippi Healthy Students Act allows for multiple assessment methods, ultimately strengthening the validity of outcome results.

One member of the State Board of Education proposed a statewide improvement goal of “moving Mississippi from its position as No. 1 in obesity among the 50 states.”

#### **DISTRICT HEALTH OFFICIALS SUPPORT HEALTHY STUDENTS ACT COMPONENTS**

District and county health offices are “front line” organizations that touch the lives of large groups of people. They are key resources within communities with the capacity to inform and support lifestyle changes that improve health outcomes for children and adults alike. Questioned about reactions to the Mississippi Healthy Students Act by the individuals and district health personnel with whom they interact, district health officers had a wide range of responses, reflecting, in part, their varying lengths of service in public health. Their comments varied from “They love it; we’re into it” and “We’ve all been ecstatic about the law” to “...generally positive, although (there’s) limited familiarity with it” and “...don’t think any of them know about it.” The health officers indicated that health department staff members primarily work throughout the community and are involved in implementing or coordinating school health programs in a limited way, if at all.

Asked what other policies are needed to strengthen the act, the district health officers’ answers coincided with other stakeholders’ suggestions that the act’s current components (physical education, nutrition, and health education) are adequate and will make a difference in the health of Mississippi’s school children if given time. Among the officers’ comments: “Physical education should be required in each grade through high school; “...should have health education to teach kids what they should eat and why;” “...ought to have healthier options in the cafeteria;” and “...provide more money to schools for combination ovens and healthier food choices.”

Tracking with State Board of Health members’ responses, local health officers stated that the success of the Mississippi Healthy Students Act should be measured by the collection of empirical data. Among their evaluation suggestions: “...ultimately, by results in student health, interval measure of students’ knowledge, and changes in

practice,” “Look at evidence-based programs that have already been done to see how others measure outcomes,” “...(by measuring) the number of schools that are successful in changing the type of food they serve and...the physical activity we see students involved in,” and “..by fitness testing and health education in schools; should include BMI on every child every year.”

Almost all district health officers saw a role for the local health departments in programs to prevent obesity, noting: “As health leaders, one of the most important things we can do is make the public aware of the obesity problem and make them aware of the law and the need for change in our children,” “If you don’t have them on board in a passionate way, you are doomed to fail,” and “We need to get a script together, similar to what we have for tobacco. Great opportunities exist with the large numbers of people who come through the health department.” In contrast, a minority expressed concern that local health departments did not have the financial or professional capacity to increase their role in obesity prevention.

Asked to share their ideas about childhood obesity legislation, the health officers’ responses indicated their support of the Mississippi Healthy Students Act and highlighted their recognition that the act’s success lies in creating an environment in which all stakeholders are invested in creating a healthy Mississippi. Among their comments: “You can’t legislate obesity out of existence, but you can [enact] legislation to facilitate people staying fit and trim;” “Obesity is the No. 1 health issue, and it can lead to the chronic diseases we are trying to prevent;” “We must get the word out to parents as well as the school(s) about how to choose and prepare healthy foods;” “...pleased that Mississippi passed this type of legislation. It’s a start, but there’s more to be done. Starting with schools and children is the perfect place...;” and “We know that an ounce of prevention saves a pound of cure, so...these efforts at prevention are going to help our state be healthier as well as save our state money in the long run.”





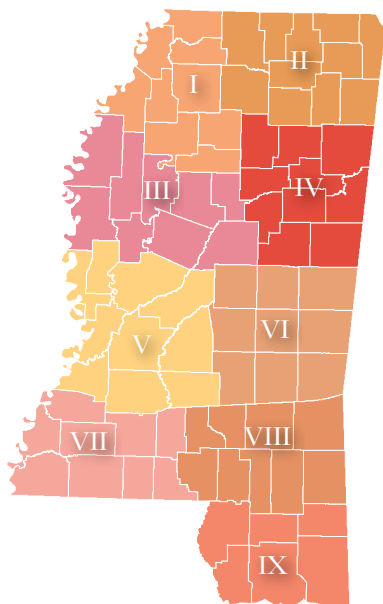


# The Family & Community

In separate surveys, parents and adolescents were asked questions about health practices in their families in both 2009 and 2010, providing a view of changes occurring in the home environment.

## PARENTS CONFIRM STATE IS OVERWEIGHT/OBESE

Mississippi parents continue to model unhealthy weights for their children, based on the heights and weights they gave for themselves during the survey interviews. When BMI was calculated for respondents, the average adult status was “overweight” in seven out of nine public health districts. Adults in two health districts (in the Delta and southwestern corner of the state) had an average BMI considered “obese.” Although one district had a statistically significant decrease in BMI, the overall state average BMI, calculated from all parents’ self reports, increased from 28.9 to 29.4, also a statistically significant amount.




Average adult BMI by public health district, calculated from self-reported height/weight

DISTRICT	BMI AVERAGE	
	2009	2010
District I	28.5	29.0
District II	28.1	29.3
District III	30.5	30.6
District IV	29.7	29.3
District V	28.5	29.2
District VI	28.7	29.4
District VII	29.6	30.4
District VIII	29.2	29.5
District IX	27.6	28.3
State	28.9	29.4

### BMI Categories

- Underweight = <18.5
- Normal weight = 18.5-24.9
- Overweight = 25-29.9
- Obese = BMI of 30 or greater



While 94 percent of parents reported their child had a regular doctor or health care provider, only 13 percent said a doctor had ever told them that any of their children weighed too much. Only 14 percent of parents said that they would describe their child as overweight, and 1 percent would describe their child as obese. However, 27 percent of parents told surveyors that they were worried about their child's weight (9 percent slightly worried, 9 percent somewhat worried, and 9 percent very worried). Seven percent of parents said they considered their child to be underweight.

An alarming finding in the 2010 survey was that children ages 5-6 were more likely to be classified as overweight or obese, based on the heights and weights their parents provided for them, than older children. Calculations of BMI from the parent-reported measurements indicated that 60 percent of the young children were overweight or obese.

Children who were described by their parents as “mostly A students” were less likely to be classified as obese, based upon the heights and weights simultaneously reported for them, than children described by parents as “mostly F students.” When CAYPOS data, however, are matched with student academic records, results show no relationship between a child's weight status and test scores, unlike the positive correlation of students' fitness levels and academic test scores.

The results indicating that parents often do not recognize obesity in their own children represent a situation confirmed by a growing body of research.<sup>8,9,10</sup> Parents understand that excess weight causes numerous health problems, but they are unlikely to take action to prevent these problems in their own children if they cannot judge the risk accurately.

As noted above, few physicians are helping parents improve their perspective in the matter as well, based on parent reports.

### TRYING TO EAT HEALTHIER BUT NOT MEETING THE GOAL

Although 80 percent of parents—up from 64.2 percent—reported in 2010 that they and their families were trying to adopt healthier eating patterns, there were few major shifts from 2009. Trends, if any, appear to be toward less healthy eating behaviors.

Disturbing was a statistically significant increase in the average number of days that families were served sodas (from 3.0 to 3.6); at the same time, servings of fruits, vegetables, and 100% juice were down slightly, based on parents' reports.

There was a very slight improvement in the number of parents who knew that individuals should eat at least five servings of fruits and vegetables each day for good health. With only 1 in 5 parents answering correctly, however, the rate is still extremely low.

There was no change from 2009 to 2010 in the average number of days that parents reported their families sat down to an evening meal together in the typical week. Parents on average said that their families ate together five evenings a week. Almost 9 out of 10 children eat breakfast, and most of these children eat the meal at home, according to parents' reports.

### FAMILY EXERCISE TIME REMAINS FLAT

Although almost half (46.8%) of parents reported in 2010 that the physical activity level of their family had increased in the past year, the amount of time spent exercising showed no statistically significant change from 2009. Parents said they were active with their family (e.g., went to a park) an average of two days in the past week (2.3 in both 2009 and 2010) and had exercised (walked, jogged, swam, etc.) an average of three days (3.3 in 2009 and 3.4 in 2010). On days when they were active, the amount of time spent in activities with their families averaged 97 minutes for both 2009 and 2010; on exercise days, the amount of exercise time averaged 66 minutes in 2009 and 60 minutes in 2010. The primary reasons cited for not exercising were lack of time, being too tired, and poor health. Encouraging was a statistically



significant drop in the percentage of parents who said their family's physical activity level had decreased from the previous year: only 4.3 percent reported a decrease in 2010 compared to 5.8 percent in 2009.

Two out of every five parents reported public school facilities were available for individuals to use for physical activities outside of regular school hours; more than half of these parents said their family took advantage of the facilities. The primary reasons given for not using available facilities for physical activity were lack of time and transportation.

More than two-thirds of parents surveyed said there was a park nearby where their children could play, and three-quarters of these parents said their children played there. The primary reasons cited for not using a nearby park were lack of time and/or transportation and safety issues. Parents reported their child played outside or was physically active outside of school for more than two hours on an average day. Asked for reasons why their child would not be physically active for more than 30 minutes outside of school hours, parents' most common explanations were that there was not enough time after school and their child was involved in other after-school activities.

Very few public school children walk or bike to school, according to their parents. In 2009, 9.8 percent of parents reported that their child walked or rode a bicycle to school. In 2010, that rate dropped slightly to 8.7 percent.



*summarizing the findings*



Mississippi's childhood overweight and obesity rates by year according to CAYPOS data

25.5

23.5

23.9

# OBESE

18.4

18.6

18.5

# OVERWEIGHT

2 0 0 5

2 0 0 7

2 0 0 9

# Summary of Findings & Discussion

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The data collected from the second year of this evaluation project indicate that schools are continuing to implement all components of the Mississippi Healthy Students Act, although the pace of implementation may be slowing as some schools move closer to full execution. There are also indications that budget restrictions may be having an impact on schools' abilities to keep up the pace of reform.

## **PHYSICAL EDUCATION**

An evaluation of the relationship between the fitness of school children and their academic performance clearly demonstrates the association between fitness and test scores. Children who achieve more fitness zones score higher on standardized tests—in both math and language arts—and are absent less often. This relationship holds true even when other factors, such as grade, race, gender, and socioeconomic status, are controlled. The implications of this relationship for Mississippi cannot be overstated, as the state's children rate poorly on national scales for both physical activity and standardized test scores. Given the strong evidence supporting the association between fitness and academic performance, schools in Mississippi should continue to work to improve students' physical fitness, such as strengthening the quality of physical education programs and increasing opportunities for students to be active during the school day.

## **NUTRITION**

Schools persevere in making nutritional improvements both within and outside the cafeteria. There were statistically significant improvements noted in the reduction of fried foods, increased offering of whole grain products, and compliance with extra food sales regulations. Significantly more schools had adopted policies prohibiting junk foods from being offered in staff meetings and school stores as well. The increase in schools adopting policies restricting unhealthy foods in venues such as school stores and staff meetings represents an area where school officials have exceeded requirements set by law and

regulation, demonstrating a commitment to creating a consistently healthy school environment. Researchers also noted areas of lesser progress in implementation of nutrition standards. A statistically significant decline was seen in the percentage of schools whose child nutrition program manager and food service staff attended training programs in the past 12 months. This change is possibly related to financial restrictions in place during that period due to statewide budget cuts. While schools showed improvements in the offering of fresh fruits and vegetables on the day researchers visited, there was a significant decline in the number of schools providing students at least one fresh fruit or vegetable choice every day—for all five days each week for the four weeks reviewed. The schools' ability to adhere to this nutrition standard may also be compromised by budget restraints.

The percentage of schools active in the promotion of healthy eating and in the offering of family nutrition education was low in 2009 and dropped significantly lower in 2010. The State's Local School Wellness Policy Development Guide includes few requirements for schools related to family and community involvement and health promotion. Other than the requirement that schools give parents and community members the opportunity to serve on the school health council, policies in this area are optional. Given the shortage of resources for wellness policy implementation, it is not surprising that optional categories receive little attention. The lack of emphasis on family nutrition education may influence the fact that few health improvements were seen in the home environment.

Where weaknesses are noted, the State Board of Education should continue to strengthen nutrition standards as it has done with recent policies, lowering fat content in milk, increasing whole grain requirements, and requiring schools to have plans to eliminate fryers. Grants that allow schools to purchase combination oven/steamers to replace fryers are having an impact. The State Department of Education and local school districts should continue to seek funding to further the transition from frying to baking. Incentive payments to encourage schools to participate in the HealthierUS School Challenge also work to push schools to meet higher nutrition standards. The State Department of Education should continue to allocate funds for these incentives.

#### **HOME & FAMILY**

Trends at home, where changes are noted, appear to be toward less healthy eating behaviors, such as a statistically significant increase in the number of days that parents served sodas to their families. Although more parents reported in 2010 that they and their families were trying to adopt healthier lifestyles, there were few major shifts from 2009. Family nutrition education and health promotion need more attention if improvements are to be seen in parents' knowledge and practice of healthy behaviors. Schools should



consider adding some of the optional policies suggested by the State Department of Education for family and community involvement to their local school wellness policies.

Results from the parent survey indicating that parents often do not recognize obesity in their own children are consistent with current research. Many states or local school districts assess each student's body mass index and send a report to the child's parent. This practice, however, has been controversial in some of the states implementing it. The controversy raised by parents upset at being told their child is overweight or obese may be the consequence of awakening parents to a more accurate picture of their child's health risk. Approximately 4 out of 5 parents, superintendents, and school board members in Mississippi support sending information regarding students' body mass index home to parents.

Because BMI is a useful tool for screening populations to determine obesity rates but not necessarily a precise measure of obesity in an individual, parents are advised by schools to seek consultation from their child's physician. BMI reporting, therefore, can serve as a tool to encourage parents to engage physicians in a conversation about their child's weight. After Arkansas implemented BMI screening and reporting for public school students, more than half the physicians surveyed reported that at least one parent had brought a school BMI report to discuss with the physician.<sup>11</sup>

BMI screening and reporting are optional for schools in Mississippi. Schools should consider BMI reporting as a means to raise awareness of parents and encourage physician involvement in childhood obesity prevention.

### **SCHOOL HEALTH COUNCILS**

School health councils are of key importance in implementing coordinated school health and promoting family and community involvement. The Mississippi Healthy Students Act requires every school to establish a school health council. Very few parents, however, are aware of school health councils. The composition of school health councils shifted significantly from 2009 to 2010 in several areas, including a drop in the percentage of schools including parents on their councils. Only 20 percent of schools had a health council that met all standard requirements.

The percentage of schools with superintendents serving on school health councils declined significantly, dropping more than half. This change may help explain why the percentage of superintendents reporting that each school in their district had a school health council also decreased significantly. School board members were represented on only 16 percent of school health councils in 2009, and that level dropped to 7 percent in 2010.

Given the important role school health councils play in the implementation of coordinated school health, emphasis should be given to ensuring their membership and function meet state requirements.

### **POLICY-MAKERS AND STATE OFFICIALS**

Understanding of and support for the Mississippi Healthy Students Act remained high among state officials and policy-makers. The state leaders uniformly confirm both their awareness of the importance of childhood obesity prevention and their conviction that Mississippi could do more to improve the effectiveness of prevention efforts.

The responses of school board members reflect their lack of awareness of implementation efforts for coordinated school health and the Healthy Students Act. This group continues to reflect a low survey response rate and report the highest percentage of “don’t know” answers for many survey items. Considering their role in establishing school policies, school board members should be targeted to receive information on the importance of school health.

### **LOOKING FORWARD**

Moving ahead in implementation of the Mississippi Healthy Students Act, it is essential that the state not lose momentum—momentum generated by concern over the impact of childhood obesity and fueled by intense efforts to improve nutrition and physical activity in public schools. While budget constraints appear to have created a barrier slowing progress in some areas, schools persist in meeting the standards set by the law. As reported in the Year One Report for this project from the 2009 Child and Youth Prevalence of Obesity Survey (CAYPOS), the state has begun to see a leveling off of childhood obesity rates, but racial disparities have increased. Continued effort to fully implement coordinated school health in all schools statewide is needed to realize the benefits of healthy, fit students across the state.

The intent of this evaluation project is to provide local and state policy-makers with the information needed to track the state’s progress in implementing the Healthy Students Act and to identify areas where policies need to be modified and resources need to be targeted in order to strengthen the act’s impact on the prevention of childhood obesity. The impact of some policy changes enacted subsequent to the Year One Report, such as reduction in milk fat content or increased requirements for whole grain products, are measurable in a short period of time and will be noted in the Year Three Report. Longer term outcomes, such as changes in obesity rates, are measured biennially. The Year Three Report will also contain the results of the 2011 Child and Youth Prevalence of Obesity Survey (CAYPOS), which examines obesity rates by gender, race, and grade level.

# Highlights from Year One

The Year One Report presented results of initial data collection under this project. Overall, considerable progress was shown in implementing school wellness policies in response to the Mississippi Healthy Students Act. While most schools had formed local school wellness committees and school health councils, the need for more emphasis on the work of the councils, particularly in making required reports to school boards, was noted.

Middle schools led in implementing wellness policies, followed by high schools, then elementaries. Of 11 policy components, implementation was highest for food-safe schools, nutrition, and counseling/psychological/social services and lowest for staff wellness programs, healthy school environment marketing, and family/community involvement.

Statistically significant increases (2008 vs. 2006) were found in several nutrition policies:

- Percentage of schools with at least 75 percent of students receiving nutrition education rose to 72.3 percent from 35.2 percent
- Percentage serving at least three different fruits weekly (99.6% vs. 97.0%)
- Percentage serving whole grains (31.7% vs. 21.5%)

CDC surveys confirmed the improvements. In 2009, CDC recognized Mississippi as making the greatest strides of all surveyed states in removing unhealthy foods from its schools.

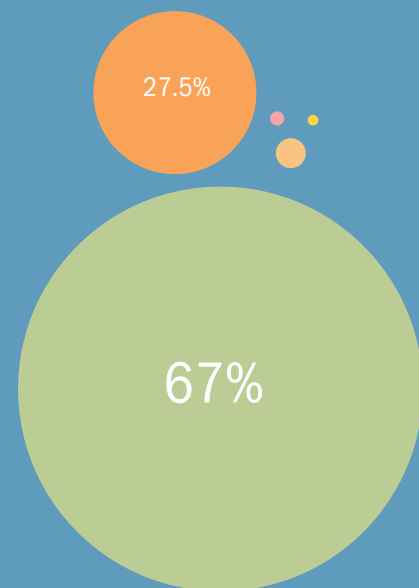
Also showing statistically significant increases were the percentages of schools reporting a physical education curriculum for at least 75 percent of students (84.2% vs. 57.1%), physical activity for at least 75 percent of physical education class time (73.8% vs. 64.1%), health education for at least 75 percent of students (75.9% vs. 38.4%), and at least 75 percent of health education taught by classroom teachers (61.1% vs. 38.2%)

Parents reported strong support for school policies requiring physical education and healthy eating but were not widely aware of specific changes at their child's school. Demonstrating keen understanding of the impact of childhood obesity on health and the economy, state and district policy-makers conveyed strong support for full implementation of the Healthy Students Act while recognizing the constraints schools face in fulfilling its requirements.

As statewide data suggested childhood obesity rates are leveling off, the gap between rates for white and nonwhite students showed a statistically significant increase for the first time.

Question:  
How important would you say is  
the role of the school in trying to  
prevent obesity?

## PARENTS' RESPONSE



- very important
- somewhat important
- a little important
- not at all important
- don't know/not sure

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## Methodology

All studies were approved by the respective university's Institutional Review Board.

### COMMITTED TO MOVE EVALUATION (USM)

Fitness data were collected from 6,022 Mississippi public school children in grades 3-8. Once these student records were matched by the Mississippi Department of Education (MDE) with student records within the Mississippi Student Information System (MSIS), a data set consisting of 3,398 students was produced. From these, 351 matched records did not include associated academic scores and/or behavior performance information. Further, 55 records were duplicated. Hence the final analysis included 2,992 records.

Demographic information related to gender, race, grade level, and lunch status based on the 2007-2008 academic year was obtained through the MDE's Office of Management Information Systems. This information was merged with fitness scores, behavioral performance measures, and academic test scores to produce a comprehensive analysis for each student.

To objectively assess physical fitness status, researchers used the Fitnessgram, a physical fitness test battery developed by the Cooper Institute. This test battery is used in tandem with the Physical Best curriculum developed by the National Association for Sport and Physical Education (NASPE) as a guide for best practice for implementing health-related physical fitness

in the K-12 physical education setting. The Fitnessgram test battery has six suggested tests for the measurement of health-related fitness for children in grades 3-12: 1) the Pacer test for the measurement of aerobic capacity, 2) the curl-up test for the measurement of abdominal strength and endurance, 3) the 90 degree push up for measurement of upper-body strength and endurance, 4) the trunk lift for the measurement of back extensor strength and flexibility, 5) the backsaver sit-and-reach to measure hamstring flexibility, and 6) skinfold assessment for the measurement of body composition. An alternative to the skinfold assessment, as provided in the reference guide, is the BMI, which was chosen for this study to ensure that there were no infractions of Mississippi school district policies. Each student's BMI was further categorized into one of the four weight status categories based on the 2000 Centers for Disease Control and Prevention (CDC) BMI-for-age growth charts: underweight, healthy weight, overweight, or obese.

The Mississippi Curriculum Test, Version 2 (MCT2), which is administered annually to all Mississippi students in grades 3-8 in the areas of language arts and mathematics achievement, has four categories of achievement: minimal, basic, proficient, and advanced. For the purposes of this study, the levels were further grouped into two categories: low academic achievement for minimal and basic scores, and high academic achievement for proficient and advanced scores.

MDE collects data on each student's attendance and disciplinary incidents on each student in K-12. For this study, attendance was measured by the number of days students were absent and categorized into three groups: 0-3, 4-7, and 8 or more days missed during the academic year. For the purpose of this study, disciplinary incidents that resulted in students receiving either in-school suspensions or out-of-school suspensions were used for categorization into one of two groups: those students with at least one reported incident or those with no reported incidents.

Due to the sensitive nature of using and merging student records, a memorandum of understanding (MOU) regarding the protection of the data was established between MDE and

Principal Investigator at The University of Southern Mississippi. All data were handled electronically and once merged, were password protected.

In November 2007, 25 elementary and middle schools from across the state of Mississippi received funding from The Bower Foundation as part of the Health is Academic Quality Physical Education Program. The gender composition of these schools (52.4% male vs. 47.6% female) was similar to the rest of the state for gender (50.9% vs. 49.1%). The racial composition of the sample (52.3% White, 42.8% Black, 4.9% Other) was somewhat different than the rest of the state (46.4% White, 50.6% Black, 3.0% Other). As for economic status, the percentage of students who received free or reduced lunch in the study sample (63.7%) was comparable to the rest of the state.

As part of their funding, each school received the Physical Best Curriculum and the Fitnessgram software. In January 2008, all schools sent three representatives (a school administrator, a physical education teacher, and a school health champion selected by each school) to training sessions on the curriculum and software. Training on the Physical Best Curriculum was conducted by a certified NASPE trainer and training on the use of the Fitnessgram software was provided by a certified Physical Best/ Fitnessgram Instructor from the Cooper Institute. During the remaining months of the spring semester of 2008, 22 of the 25 schools were able to implement the curriculum in their PE classes, conduct the fitness tests, and collect, record, and submit their data through the Fitnessgram software. Test administration was handled by the physical education teachers at each school using the procedures taught at the Fitnessgram training and found in the Fitnessgram/Activitygram Test Administration Manual (2007).

The participating PE teacher input all demographic, biostatistical, and fitness data into the Fitnessgram software as instructed in the training sessions and then exported the data files directly from the software as either a comma delimited file or zip file for use in Excel®. All data files submitted by the schools were checked to determine if the required information was included in the submitted data.

The researchers then created an Excel® Fitnessgram template from the exported data to confirm that necessary variables had been properly recorded and reported.

Consequently, several schools were asked to resubmit data in the correct format and to make sure all required information was included. Each record included student name, date of birth, gender, grade level, and fitness test scores. Once the data submitted by the 22 schools were in the correct format with all of the required information, the fitness data were reformatted into interval data as an overall fitness score. The overall fitness score was calculated based on Fitnessgram healthy fitness zones, which are criterion-referenced standards developed by Fitnessgram. These standards are considered to be the minimal level of performance on the test associated with good health or decreased risk. In the Fitnessgram software, students are given a score of “needs improvement” or “healthy fitness zone” based on whether the cutoff score is met. BMI, however, has a minimal and maximal score within which the student must fall to be considered in the healthy fitness zone. For this test, students’ BMI scores were categorized as too low, healthy fitness zone, or needs improvement. To appropriately score these measures, students’ tests had to fall within the given range based on age and gender. Student overall fitness scores ranged between zero and six as determined by the number of healthy fitness zones they attained on the test battery.

Once data were reformatted, all schools’ data were compiled into one file. This data file was submitted to the MDE’s Office of Management Information Systems. The fitness data from spring 2008 were merged with academic records within the Mississippi Student Information System. The data merged included race, free and reduced lunch status, academic achievement scores, and school behavioral factors.

SAS 9.2 (SAS Institute Inc, Cary, NC, USA, 2009) was used for all statistical analysis. Chi-square analyses were used to assess the statistical significance of observed differences in high academic achievement and unfavorable behaviors (i.e., absence and disciplinary incident) according to any

selected characteristics. Multiple logistic regression models were used to identify factors associated with high academic achievement and unfavorable behavior. Adjusted odds ratio (aOR) and 95% confidence interval (CIs) were obtained in each subgroup relative to a referent group while controlling for students’ gender, race, grade, SES/lunch status, and physical fitness. An aOR was considered statistically significant if its 95% CI did not include one (1.0). Reported p-values are two-sided.

### **MISSISSIPPI SCHOOL NUTRITION ENVIRONMENT EVALUATION DATA SYSTEM (MS NEEDS) (UM)**

#### *Study design*

This study utilizes a cross-sectional design aimed to collect an annual snapshot of what is happening regarding nutrition policy development and implementation across a random sample of Mississippi public schools annually. To gain an independent assessment of statewide progress in implementation of school nutrition policies, staff at the University of Mississippi conducted onsite assessments of the school nutrition environments in 150 schools in the first year, and 180 schools starting the second year, which functioned as a statewide representative sample, to evaluate the stage of implementation and level of compliance with Mississippi’s established policies.

The statewide sample of schools was obtained using selection probability proportional to school enrollment size to assure representation of schools with demographic mix and regional placement. The Mississippi School Nutrition Environment Evaluation Data System (MS NEEDS) instrument was designed to assess the level of nutrition policy implementation at each school, provide a comparison between schools with different demographics, and through repeated measures, show nutrition-related environmental changes over time.

The MS NEEDS instrument was used to collect data through (1) observation of school lunches (Observation Form), (2) interviewing the Child Nutrition Program (CNP) manager (Interview Form), and (3) reviewing school and district written documentation of food policies and procedures (Written Documentation Form). In addition, (4) detailed information was collected about the food and beverage items

available at school stores, vending machines, a la carte (Competitive Food Venues Forms). Although the Healthy Students Act addresses school breakfast meals as well as lunch, only the lunch meals were observed. Where possible, data were collected about breakfast meals through the interview and written documents.

For Year Two (2010), 180 schools, 60 per school level, were randomly selected to participate. Of those, 147 agreed to participate for interview (participation rate of 82%), of which there are 3 elementary/middle combined schools and 3 middle/high school combined schools. According to the simple random sampling design, the 3 elementary/middle schools are used both in elementary school category and middle school category. Likewise the 3 middle/high schools are used in both middle and high school categories. For calculation of all-schools statistics, however, each school was counted only once, regardless of their multi-level status. This resulted in a final breakdown of 54 elementary schools, 48 middle schools, and 51 high schools for analyses.

Each school's CNP manager provided information about the implementation of nutrition-related policies adopted by the school. Verbal responses to both quantitative and open-ended qualitative questions, as well as data pulled from written documentation were recorded on the Interview Form. Written documentation provided by the CNP manager included the following: production records and lunch and breakfast menus from the first 4 full weeks after Labor Day, the school Wellness Policy, food safety policies, other school nutrition-related policy documents, and kitchen staff training records.

Data about schools' implementation of the MHS Act were collected on a single day through observation. Data recorded on the Observation Form primarily documented evidence of a school's compliance within the kitchen and cafeteria settings as observed during the lunch periods. Detailed information about specific food items sold were recorded on accompanying forms, the Reimbursable Meal, Vending, and A La Carte Foods forms, all of which were incorporated into the Observation protocol.

Data collectors documented the specific food and beverage items sold as part of the reimbursable lunch meal on the observation day. For each item they recorded a brief description, whether it was available only with the meal or if extra portions were for sale, whether the item was part of the original menu or was a substitution, and whether substitutions were reanalyzed for nutrients. In addition, if extra servings of the item were available after purchasing the meal, data collectors noted the price of the extra serving and its size in comparison to the portion served with the meal.

Data were also collected on foods and beverages sold a la carte during lunch periods. Data collectors recorded a description of each item, whether an item was available for sale without having purchased a meal, the item's price, and either the number of calories or enough information to determine caloric content at a later date.

A form was completed for each vending machine and/or school store in the school. First, data collectors documented general information about the machine or store itself including hours of operation, location, group responsible for the machine or store, and if a machine was in the faculty lounge, and whether or not students had access. Then item specific details were noted, such as manufacturer, product name, flavor, size, number of slots (vending machines only), and price.

Ten consultants (data collectors) with nutrition and/or educational background were recruited to collect data in the schools using the evaluation tool. Each of the data collectors were trained by the same researcher in two schools before evaluating a school on their own.

Written documents were requested to be at the school when the data collector met with the CNP manager. Upon arrival at the school, data collectors began the evaluation process by meeting with and interviewing the CNP manager. Once the interview was completed data collectors used their time to gather data on the competitive food venues such as vending machines and/or school stores. The observation evaluation was conducted during the lunch time to observe the reimbursable meal and a la carte item sales.



Once data were reviewed and validated, they were entered into the MS NEEDS database program and forwarded to the collaborating biostatistician for analysis. One-way analysis of variance (ANOVA) or Pearson Chi Square was used, as appropriate, to determine significant differences.

#### **SURVEY OF PUBLIC SCHOOL SUPERINTENDENTS (MSU)**

This survey was conducted by the Wolfgang Frese Survey Research Laboratory of the Social Science Research Center (SSRC) at Mississippi State University. The population included 149 school superintendents. The data collection period spanned from late July to late August, 2010. There were 104 superintendents who completed the survey for a response rate of 70 percent. Given that this was not a random sample, margin of error must not be calculated. The data from this survey represent a census with a minimal non-response rate.

#### **SURVEY OF SCHOOL BOARD MEMBERS (MSU)**

Researchers were given permission by Dr. Michael Waldrop, Executive Director of the Mississippi School Boards Association (MSBA), to distribute the surveys at their statewide meeting of school board members on February 23, 2010. Surveys were included in the packet of each individual school board member, with a cover letter to explain the purpose of the survey and provide a self-addressed envelope that individuals could use to insert the completed survey. A member of the research team was in attendance to answer any questions and to collect the surveys at the end of the meeting.

After collecting the surveys from the February 2010 meeting, the response rate was less than optimal and plans were made to send out surveys to each of the public school district offices, requesting that any school board members who had not had the opportunity to complete the survey be given the survey and a self-addressed, stamped envelope to return the completed survey to the SSRC research team. Again, the response rate was less than expected and written reminders were sent to school district offices in an attempt to increase the response rate. For a final appeal in 2010, two members of the research team attended the April 2010 Mississippi School Boards Association meeting and requested that any

school board members who were in attendance, but had not completed the surveys, do so at this meeting. The final response rate was 33.94% for school board members (251/739). The multiple attempts resulted in an improvement over Year 1 (2009) response rate of 20.8%.

#### **SURVEY OF PARENTS AND ADOLESCENTS (MSU)**

These surveys were conducted by the Wolfgang Frese Survey Research Laboratory of the Social Science Research Center (SSRC) at Mississippi State University. Following procedures established in a memorandum of understanding between the Mississippi Department of Education (MDE) and Mississippi State University, MDE provided the telephone numbers of all parents in the state of Mississippi who had at least one child enrolled in a public school during the 2009-2010 school year. From this database of approximately 491,084 telephone numbers, a random sample of 34,856 numbers was drawn. The data collection period spanned from late-April to late-June of 2010.

As in Year 1, adolescents surveyed in Year Two were 14 years of age or older whose parent had given permission for the survey to be conducted. In 2010, a total of 260 adolescents answered questions about nutrition standards and vending machines, physical education and physical activity, and health education and health knowledge, compared to 150 adolescents in 2009. The sampling error for the total dataset (binomial response option with 50/50 split) is no larger than + or - 3.5% with a 95% confidence interval. Telephone numbers were dialed a maximum of eight times. The cooperation rate was 67.6%.

#### **INTERVIEWS WITH STATE POLICY-MAKERS (MSU)**

A mixed method of telephone, written interviews via e-mail, and face-to-face interviews were conducted from February 2010 to August 2010. All telephone and face-to-face interviews were digitally recorded and were conducted by SSRC researchers. Key Mississippi policy-makers, including State Board of Education members, State Board of Health members, district health officers, and Mississippi legislators were asked about their perceptions and opinions regarding the Mississippi Healthy Students Act of 2007 (MHSA). Respondents were asked a series of open-ended questions concerning how the three major components (nutrition, health

education, and physical education) should be prioritized, their views on the roles of various district offices as related to MHSA, perceptions of support by local constituents, opinions regarding how well the components of MHSA have been implemented, opinions regarding the need for additional policies to increase the health of Mississippi school children, and appropriate methods of measuring the success of MHSA. Interviews were transcribed and then analyzed by four research associates affiliated with the SSRC.

Researchers analyzed each transcript qualitatively to identify patterns and their underlying meanings within each group of key stakeholder interviews. Working in teams of two, researchers were assigned two groups of stakeholder interviews. Researchers then independently reviewed each transcript within each group of interviews, noting key themes that emerged from the data. Themes were identified as a response topic that was mentioned by more than one respondent in the group and mentioned on one or more question. Researchers also identified key quotes that reflected the themes identified in the analyses. Once researchers completed their independent analyses of the groups, they exchanged their initial findings with the other researchers working on the same group. Researchers then compared analyses to identify theme consensus as well as any conflicting interpretations. Researchers again reviewed transcripts to identify themes they may have previously overlooked. In the end, at least two team members were able to reach consensus regarding themes and representative quotes.

The qualitative analysis component includes analysis of 30 interviews comprised of six Board of Education members (66% response rate), five State Board of Health members (55% response rate), six district health officers (100% response rate), and 12 Mississippi legislators (six representatives and six senators). The purposive sample of legislators was selected to reflect diversity in party affiliation and constituent demographics. Twelve were originally contacted, and 12 responded for a response rate of 100%. Each interview guide also had quantitative questions, and these responses were tabulated and, when appropriate, were compared to Year One (2009) findings as well.

## **CHILDREN AND YOUTH PREVALENCE OF OBESITY SURVEY (CAYPOS) (USM)**

The sampling frame consisted of 475,680 students in 894 public schools offering kindergarten or any combination of grades 1 through 12 in Mississippi. As with the 2003, 2005, and 2007 CAYPOS, the sample design was a two-stage stratified probability design. The first stage included the random selection of 96 schools. A systematic sample of schools was drawn with probability proportional to the enrollment in grades K–12 of each school. In the second stage of sampling, classes were randomly selected within the sampled schools. Classes were selected using equal probability systematic sampling. All eligible students in the selected classes were asked to participate in the survey. The sample was designed to yield a self-weighting sample so that every eligible student had an equal chance of selection, thereby improving the precision of the estimates.

As in each of the previous years, the weighting process was intended to develop sample weights so that the weighted sample estimates accurately represented the entire K–12 public school students in Mississippi. Every eligible student was assigned a base weight, which was equal to the inverse of the probability of selection for the student. Adjustments were made to the initial weights to remove bias from the estimates and reduce the variability of the estimates.

The CAYPOS was conducted in April 2009 in Mississippi. As with the previous studies, once selected schools agreed to participate and classes were chosen, measuring equipment (i.e., digital scales and stadiometers) and passive consent forms were delivered to the schools. Each school designated a school nurse who was responsible for collecting data and had been trained on the use of equipment. Students in the selected classes were read a prepared paragraph containing information about the study and then given a passive parental consent form to take home to parents or guardians. Students who returned a signed form did not participate in the study. All students were weighed and measured in a location where the information gathered would be confidential.

In previous years, nurses recorded all data on Optiscan forms and mailed them to the study authors. In the 2009 CAYPOS, nurses were

sent an e-mail with a link to a secure website developed and maintained by Qualtrics, Inc. to record and submit their data. These data were compiled in aggregate form by the Qualtrics software and made available in Excel® format to the study authors for analysis.

Body Mass Index (BMI) was computed for each responding student based on height (in meters) and weight (in kilograms). The height in feet and inches was first converted to meters. The weight in pounds was then converted to kilograms. BMI was calculated using the SAS program, gc-calculate-BIV.sas as follows:  $BMI = \text{Weight (in kg)} / [\text{Height (in m)}]^2$ . BMI values were checked to ensure that the results were biologically plausible, using the limits developed by the CDC. BMI percentiles were computed using the SAS program, gc-calculate-BIV.sas (CDC).

SUDAAN 9.01 (RTI, Research Triangle Park, NC, 2004) was used to calculate weighted estimates and standard errors, and Proc Crosstabs Procedure was used to compare prevalence of child overweight among different subgroups. As in previous years, differences between summary statistics were considered statistically significant if the p-value from Chi-square test was less than 0.05. For comparisons between 2009, 2007, and 2005, differences between summary statistics were considered statistically significant if their associated 95% confidence intervals did not overlap.

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