



# YEAR ONE

*Report*



Assessing the Impact of the  
Mississippi Healthy Students Act





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## EXECUTIVE SUMMARY

Mississippi has one of the highest rates of childhood obesity in the United States.

As a result, Mississippi children face significant negative consequences for their health status, academic performance, and future productivity. The state, in turn, faces economic costs that burden both the private and public sectors. Mississippi policy-makers recognized the need to address the issue and enacted comprehensive legislation and regulations aimed at transforming the environment of the state's schools to promote healthy eating and physical activity among the students and reduce the impact of childhood obesity.

In 2008, the Robert Wood Johnson Foundation awarded a five-year grant to the Center for Mississippi Health Policy to evaluate the impact of the Mississippi Healthy Students Act and associated regulations on childhood obesity. Using this grant and additional funding from the Bower Foundation, the Center has collaborated with three Mississippi universities – The University of Southern Mississippi, Mississippi State University, and the University of Mississippi – to conduct a comprehensive set of studies to measure the impact of the statewide policies. This report presents results of the first year of data collection under this project.

Overall, research results indicate considerable progress in implementation of school wellness policies but also point to areas where more work is needed. Most schools were reported to have implemented local school wellness committees and established school health councils; however, more emphasis needs to be placed on the work of the councils, particularly in ensuring that councils report to school boards as required. Evidence of schools making tremendous improvement in the nutritional quality of foods offered to students is confirmed by data from surveys conducted by the Centers for Disease Control and Prevention (CDC). CDC recognized Mississippi as making the greatest strides among all surveyed states in removing unhealthy foods from its schools.<sup>1</sup>

Middle schools have demonstrated the most progress toward full implementation of local school wellness policies, followed by high schools, then elementary schools. Of the 11 components, the areas with the greatest degree of implementation were food safe schools; counseling, psychological and social services; and nutrition. The areas with the lowest levels of implementation were quality staff wellness programs, marketing a healthy school environment, and family and community involvement.

While parents express strong support in general for school policies that require physical education and healthy eating, they are not widely aware of specific policies being implemented in their child's school. The fact that school superintendents and school board members report little feedback from parents on implementing the Healthy Students Act may reflect this lack of awareness. School board members also report a lower level of awareness regarding school wellness policies than principals or school superintendents.

Policy-makers at the state and district levels demonstrate a keen understanding of the impact childhood obesity has on the health of Mississippians and the state's economy. Policy-makers are also aware that childhood obesity is a complicated issue that requires a multi-faceted approach. Similarly, while policy-makers convey strong support for full implementation of the Healthy Students Act, they also express a practical and realistic perspective in recognizing the constraints that schools face in fulfilling its requirements.

On an encouraging note, statewide data showing trends in childhood obesity rates indicate that the rates may be leveling off in Mississippi after decades of steady increases. On the other hand, disparities in obesity rates between white and nonwhite students appear to be increasing.

The research conducted during this first year of the evaluation project provides the base from which changes will be measured over the next three years. Researchers will monitor changes in implementation of the various components of the Healthy Students Act as well as the health practices within students' homes. Shifts in perspectives and attitudes of parents, adolescents, and state and local policy-makers will be monitored as well. As one of the legislators interviewed for this study stated, "We need to stay aware of what's going



## INTRODUCTION

Mississippi has consistently been ranked among the top states with the highest rates of children who are overweight or obese, according to both The National Survey of Children's Health and The Centers for Disease Control and Prevention's Youth Risk Behavior Survey. This is problematic for Mississippi's future in many ways. Risk factors for heart disease (such as high cholesterol and high blood pressure) and type 2 diabetes occur more frequently in obese children and obese adolescents. There are risks of overweight and obese children developing psychological problems as well, including depression, eating disorders, discrimination, stigmatization, negative self-image, passivity, and withdrawal from peers. In addition to health and psychological problems, research shows that obese children miss significantly more school days and perform less well academically than healthy weight children. Research also indicates that obese adolescents are more likely to become overweight or obese adults.<sup>2</sup>

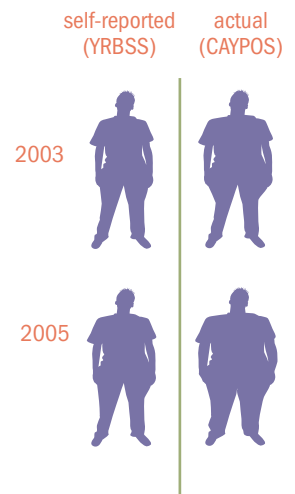
## MISSISSIPPI RESPONDS

In an effort to better understand the true nature of the problem, the Bower Foundation in Mississippi commissioned The University of Southern Mississippi in 2003 and again in 2005 to conduct a statewide body mass index (BMI) survey of Mississippi school children. In conducting the survey, researchers used school nurses to weigh and measure the children. The results revealed that the actual rates of overweight and obesity were higher than the self-reported rates from the national surveys and were increasing in almost every grade level.<sup>3</sup>

In 2006, as a means to gauge Mississippi's awareness and attitude toward obesity, The University of Southern Mississippi, funded by the Center for Mississippi Health Policy (CMHP), surveyed the public. The results demonstrated that about 95 percent of adult Mississippians considered childhood obesity to be a serious problem and 56 percent thought that government should play a significant role in addressing the issue. Mississippians obviously recognized the seriousness of the problem and supported public policies to address the situation.<sup>4</sup>

Compelled by the evidence, policy-makers in Mississippi investigated the problem and examined policies already implemented in other states. Particular attention was given to Arkansas, which had demonstrated that comprehensive action could halt the rise in childhood obesity rates. Convinced, the Mississippi Legislature took action to address the issue, and in 2007, the Healthy Students Act was created to address the state's high rates of childhood obesity by improving nutrition, physical activity, and health education in public schools.

FACT: In the past 10 years there has been a dramatic increase in the prevalence of type 2 diabetes in adolescents.



The Youth Risk Behavior Surveillance System (YRBSS) monitors the prevalence of obesity in youth nationwide through a school-based survey conducted by the Centers for Disease Control and Prevention (CDC) in collaboration with state and local education and health agencies.

The Child and Youth Prevalence of Obesity Survey (CAYPOS) monitors the prevalence of obesity among school children in Mississippi using height and weight measurements collected by school nurses under the guidance and direction of researchers from the University of Southern Mississippi.



The Robert Wood Johnson Foundation (RWJF) awarded the CMHP a five-year grant to study the impact of the Mississippi Healthy Students Act on childhood obesity. This report presents the key findings from the first year of data collection, which for most of the studies represents the baseline year.

CMHP directs this evaluation project in collaboration with three Mississippi universities: The University of Southern Mississippi, Mississippi State University, and the University of Mississippi. The CMHP 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. Copies of the complete reports from each of the studies may be found on the Center's web site at [www.mshealthpolicy.com](http://www.mshealthpolicy.com).



#### **POLICIES RELATED TO THE HEALTHY STUDENTS ACT**

- 2006-** The Mississippi Legislature instructed the State Board of Education to develop a wellness curriculum outlining 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 phasing in newly developed rules and regulations defining the products that may be sold in vending machines on school campuses and when they could be sold over the next two years.
- 2007-** The Mississippi Legislature enacted the 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 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.

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.

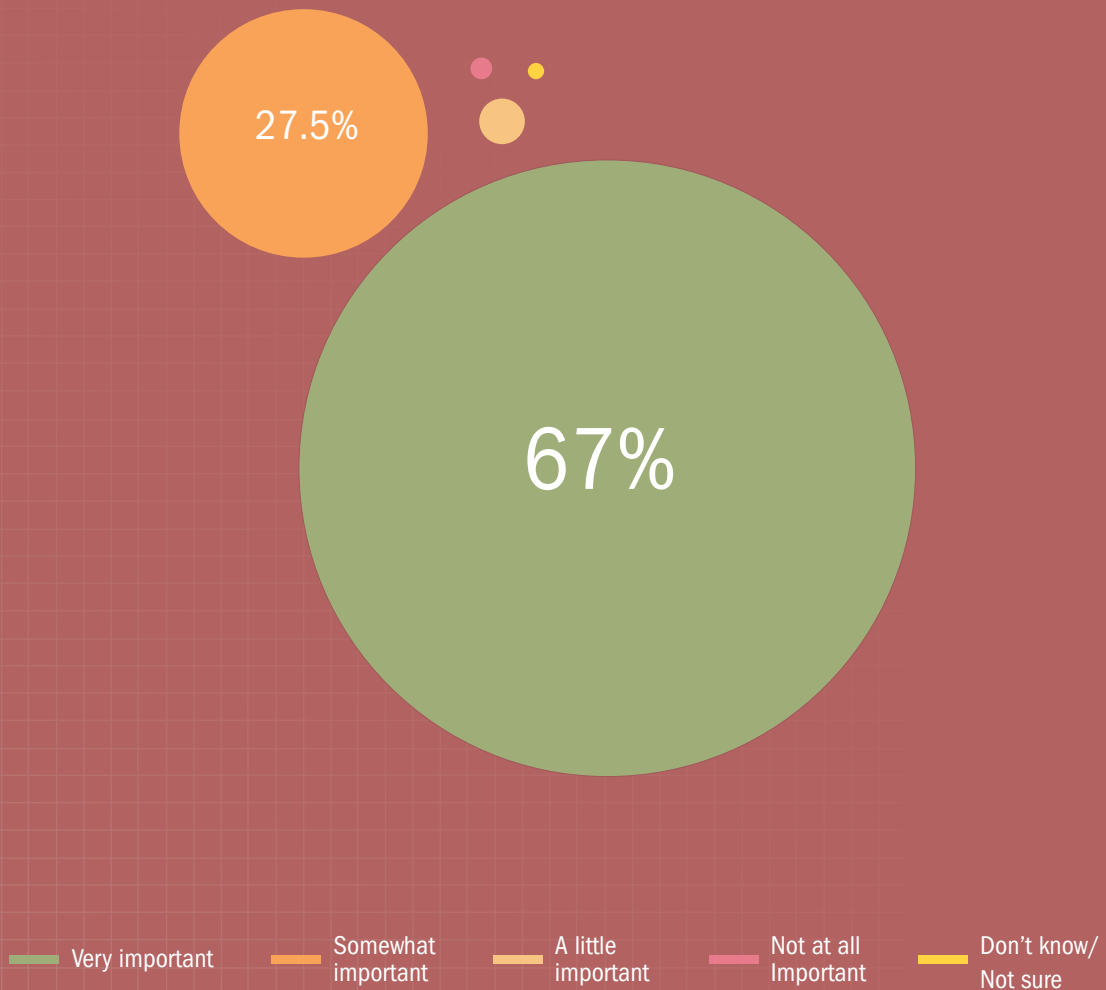
*defining the baseline*





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

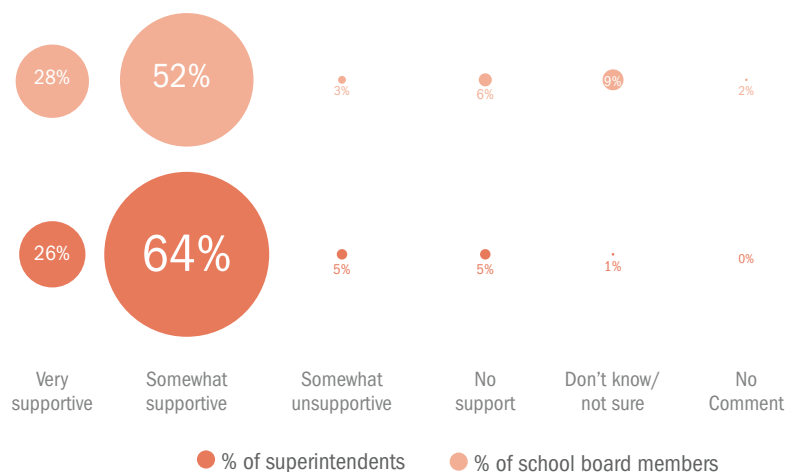
## PARENTS' RESPONSE



# Fighting Obesity in Schools

Today, 42.4 percent of Mississippi school children are heavier than their recommended weight, and 23.9 percent of Mississippi school children are considered obese by CDC standards. It is widely accepted that a constructive method to curb Mississippi's obesity problem is to encourage healthy behavior in children at school, because habits formed during childhood frequently continue into adulthood. Therefore, legislators created the Healthy Students Act, which is policy directed toward combating obesity in schools by developing statewide standards to increase student nutrition, physical education, and health education.

Reported level of community support school districts receive on promoting physical education, nutrition, and health education



*“...the schools of the state have control of our children for the majority of their day, the majority of their meals, the majority of their food intake. Even if everything they’re getting at home is awful, if we do right between 7:30 in the morning and 3:30 in the afternoon and we can live a healthy lifestyle and give healthy foods, it will have a dramatic impact on children...”*

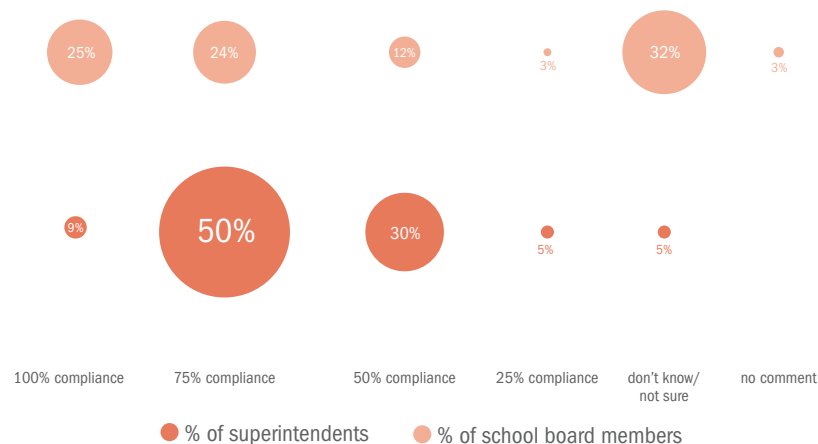
- Board of Health member

# Impact of the Mississippi Healthy Students Act

Since 2006, schools have been working hard to implement the Healthy Students Act. To gauge the degree to which these policies have been implemented, superintendents and school board members were asked to fill out surveys that inquired about their actions.

The findings show that both school board members and superintendents reported their school districts are making progress in the implementation of the Healthy Students Act, although almost one-third of the school board members reported “not knowing” or were “not sure” of the progress their districts had made. Superintendents, however, reported that their school districts are making substantial progress in implementation of the Healthy Students Act, with one-half noting their progress at the 75 percent level, while 9.1 percent reported their districts at the 100 percent level.

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



Marking the highest success rate of policy implementation, approximately three-fourths of school board members (77.0%) and district superintendents (72.7%) reported that their school district adopted policies during the past year to specifically create a healthier environment or to prevent childhood obesity.

## EFFECT ON STUDENTS

Students are starting to feel the impact from more focus on physical and health education in recent years. A high percentage of adolescents (88.7%) reported they have learned in school the importance of healthy eating and physical activity in maintaining healthy weight.





When students were asked:  
Are you learning the  
importance of healthy eating  
and physical activity in  
maintaining a healthy weight?

1%

answered they don't know  
or are not sure





State laws now require schools to offer only healthy foods to children and to increase physical education.

Asked if they support this, 95.6 percent of parents said yes.

## PARENTS' AWARENESS AND SUPPORT

Nearly all parents agree with and support the Healthy Students Act, but apparently most parents are unaware of specific changes. The 3,710 adults who answered the survey revealed a general awareness of and nearly full support of school policies related to decreasing childhood obesity and overweight. For instance, parents were extremely supportive that schools should offer only healthy foods to children and increase physical education (95.6%). However, when parents were asked about specific changes within the school environment, in all instances less than half reported awareness.

Interestingly, when school superintendents and school board members were asked about the level of feedback they had received from parents on implementing the Mississippi Healthy Students Act of 2007, the majority reported either “none” or “minimal.” Among superintendents the combined categories of “none” or “minimal” were 71.9 percent and among school board members, the same two categories accounted for 64.5 percent.



Are you aware of any changes in vending machines, school lunch choices, or physical exercise requirements at her/his school?

In the last year, has your child's school adopted any policies to prevent childhood obesity?

Does your child's school have a health committee, council, or task force?

# Wellness Policy Implementation

As directed by the Healthy Students Act, schools have established wellness policies that meet specific requirements that were defined by the Board of Education. Each school's wellness policy must set goals for nutrition education, physical activity, campus food provision, and other school-based activities designed to promote student wellness. Additionally, schools are required to create health councils to keep the wellness policy on track. The councils are supposed to involve a broad group of individuals in the policy development, meet at least three times a year, conduct a self assessment, and submit an annual report to their local school board.

## PROGRESS IN IMPLEMENTATION OF LOCAL SCHOOL WELLNESS POLICIES

In 2008, statistically significant increases compared to 2006 were reported by principals regarding the percentages of schools that partially or fully:

- Implemented the local school wellness policy (96.0% vs. 78.2%)
- Used a monitoring instrument for self-assessment (78.0% vs. 45.4%)
- Established a school health council (84.2% vs. 66.5%)

Furthermore, 79 percent of superintendents responded that there is a health council within every school in their district. While much progress has been made in these areas, the surveys show there is still room for improvement, particularly in fully implementing school health councils by ensuring that the councils meet at least three times per year and submit annual reports to their school boards. Only 35 percent of school board members affirmed the presence of a health council in each school.

According to principals, full implementation of local school wellness policies was highest among middle schools (73.3%), followed by high schools (73.0%) and elementary schools (69.4%). The use of a monitoring instrument was highest among high schools (43.8%), followed by elementary (43.1%) and middle schools (41.7%). Full implementation of a school health council was highest among elementary schools (61.4%), followed by middle (59.3%) and high schools (59.1%).





### STAFF WELLNESS PROGRAMS

Staff wellness programs provide and promote additional wellness and health opportunities for school faculty based on an assessment of their needs and interests. When asked about the importance of providing staff wellness programs in their schools, 89.4 percent of school board members responded either “very important” or “moderately important,” and 96.3 percent of superintendents responded either very important or moderately important. The Healthy Students Act, however, does not require this policy, and only 42.8% of schools implemented it, making it the lowest percentage of fully implemented categories of wellness policies.

The highest percentages of full implementation of the minimum requirements of the local school wellness policies in 2008 were in the categories of food safe schools (87.2%); counseling, psychological, and social services (84.0%); and nutrition (81.0%).

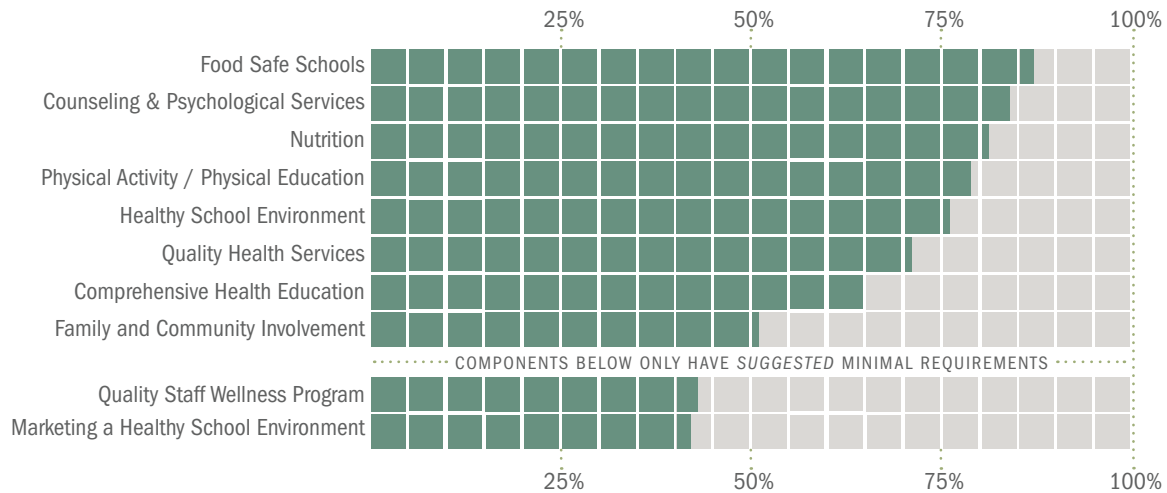
The components with the lowest percentages of implementation were in having a quality staff wellness program (42.8%) and marketing a healthy school environment (42.5%). It should be noted that the Mississippi Healthy Students Act does not state minimum requirements for either of these components. The lowest percentage of implementation for both was found in the high schools (38.0% and 33.8% respectively).

In total, middle schools lead most categories in highest percentage of full implementation, high schools came in a distant second leading in a few categories, and elementary schools were third by not leading in any categories.





Percent of schools reporting that minimum requirements for the policy category or component are in place and fully implemented



Ranking of local school wellness policy categories with the highest occurrence of full implementation

ELEMENTARY SCHOOLS	MIDDLE SCHOOLS	HIGH SCHOOLS
Food Safe Schools—86.4%	Food Safe Schools—92.2%	Food Safe Schools—88.6%
Counseling and Psychological Services—84.0%	Counseling and Psychological Services—88.2%	Nutrition—87.3%
Physical Activity / Physical Education—81.1%	Physical Activity / Physical Education—88.2%	Counseling and Psychological Services—87.1%
Nutrition—79.9%	Healthy School Environment—86.3%	Comprehensive Health Education—85.7%
Healthy School Environment—76.5%	Nutrition—82.7%	Healthy School Environment—84.5%
Quality Health Services—71.8%	Quality Health Services—80.0%	Physical Activity / Physical Education—78.6%
Comprehensive Health Education—59.3%	Comprehensive Health Education—72.5%	Quality Health Services—72.9%
Family and Community Involvement—52.4%	Family and Community Involvement—62.7%	Family and Community Involvement—47.1%
Quality Staff Wellness Program—44.9%	Quality Staff Wellness Program—51.0%	Quality Staff Wellness Program—38.0%
Marketing a Healthy Environment—44.2%	Marketing a Healthy Environment—51.0%	Marketing a Healthy Environment—33.8%

# Nutrition in Schools

*"I believe that for many children, the meals they get at school are much of the nutrition they get during the school day. We've got either one or two meals to provide to most students, so we can and need to play a very large role in proper nutrition."*

*-board of health member*

The nutritional value of items found on breakfast and lunch menus in schools is a significant factor contributing to students' overall health. School cafeterias are potentially accountable for up to two meals per student per school day. A school's nutritional environment can influence the food choices that children make in and out of school for the rest of their lives.

To encourage healthy, balanced, appealing, and varied meals and snacks for students, the Healthy Students Act requires that the State Board of Education must "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 food items during lunch and breakfast periods, and methods to increase participation in the Child Nutrition School Breakfast and Lunch Programs."

## COMPLIANCE WITH NUTRITION STANDARDS

In 2008, principals reported statistically significant increases compared to 2006 in certain nutrition policies:

- Percentage of schools with 75 percent to 100 percent of students receiving nutrition education (72.3% vs. 35.2%)
- Percentage of schools serving at least three different fruits weekly (99.6% vs. 97.0%)
- Percentage of schools serving whole grains (31.7% vs. 21.5%)

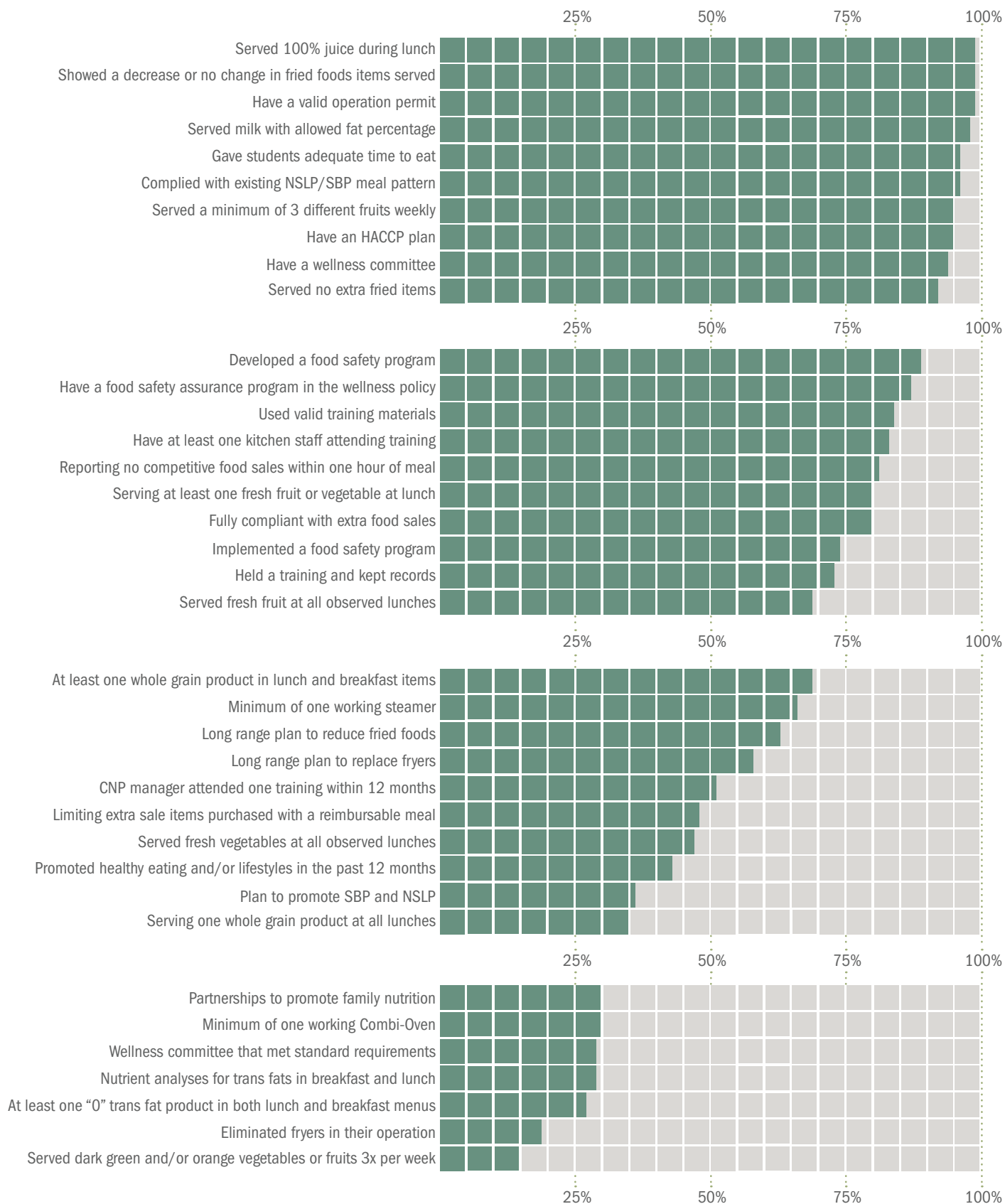
Percentages of students receiving nutrition education were highest among elementary (83.0%), followed by middle (82.4%) and high schools (69.2%).

Nutritionists visited over 100 Mississippi schools to examine the nutrition environments and how those environments may have changed since the enactment of the Mississippi Healthy Students Act. Results show that schools are aggressively trying to implement the nutrition standards within the Healthy Students Act. Numerous nutritional standards set by the Act are already near full compliance, meaning that 90 - 100% of Mississippi schools have complied with those standards.

While progress toward the nutritional goals set by the Healthy Students Act is clear, success is not yet universal. There are still many nutrition standards with less than 50 percent compliance of the stated goals. Review of these areas suggests the need for additional training and education on subjects such as trans fats, whole grains, substitution procedures, and marketing and business plan development, as well as the need for additional resources.



Percent of schools in compliance with nutrition policy





Assessment of barriers and challenges to implementing changes outlined in the Healthy Students Act reveals widespread acceptance by child nutrition personnel, other school personnel, and students. This acceptance should be viewed as very encouraging and should have a positive impact on future continued implementation.

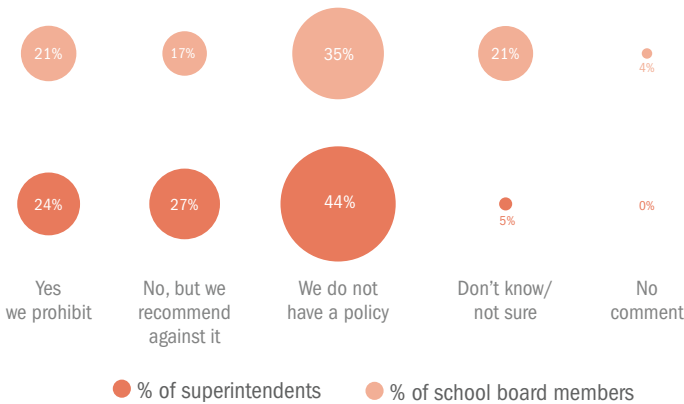
**ADDITIONAL NUTRITION-RELATED POLICIES**

Due to the inception of the Healthy Students Act, most schools have recently implemented policies to improve student nutrition. When asked if specific policies were adopted by the school board within the last year to improve student nutrition, 72.4 percent of school board members and 69.1 percent of superintendents responded positively. With the spotlight on improving student health, additional issues concerning the provision and monitoring of student nutrition have recently become more apparent. Though most of these additional policies are not mandatory, many schools still abide by them.

**POLICY REGARDING FOOD AS A REWARD**

Using junk food as a reward for good behavior or high test scores is a common practice in many classrooms, but this practice reduces the chances of reaching the goals set by the Healthy Students Act. Prohibiting the use of food or food coupons as a reward for good behavior and academic success is not mandatory, according to the Healthy Student Act. Still, approximately one-fifth of school board members (21.2%) and school superintendents (23.6%) reported that their school districts have adopted a policy to prohibit the use of food or food coupons as a reward for good behavior or good academic performance.

Has your school district implemented a policy stating that schools are prohibited from using food or food coupons as a reward for good behavior or good academic performance?



## **POLICY REGARDING FOOD AND FUNDRAISING**

Consistency in teaching good health practices is often an issue when it comes to fundraising in schools. It sends a mixed message to teach children the importance of eating right and exercise while asking them to sell junk food and candy bars to their families and friends. Healthy guidelines for fundraising are not required by the Healthy Students Act, so it is up to the schools to take the initiative and set a good example. Currently, without required guidelines, 21.6 percent of school board members and 46.4 percent of superintendents indicated that their district had a fundraising policy that included nutrition guidelines.



Does your district have a fundraising policy that includes nutrition guidelines?

### **SCHOOL VENDING MACHINE REGULATIONS**

Under the vending regulations, 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 percent fruit juices. No/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. These restrictions were phased in over two years beginning with the 2007-2008 school year.

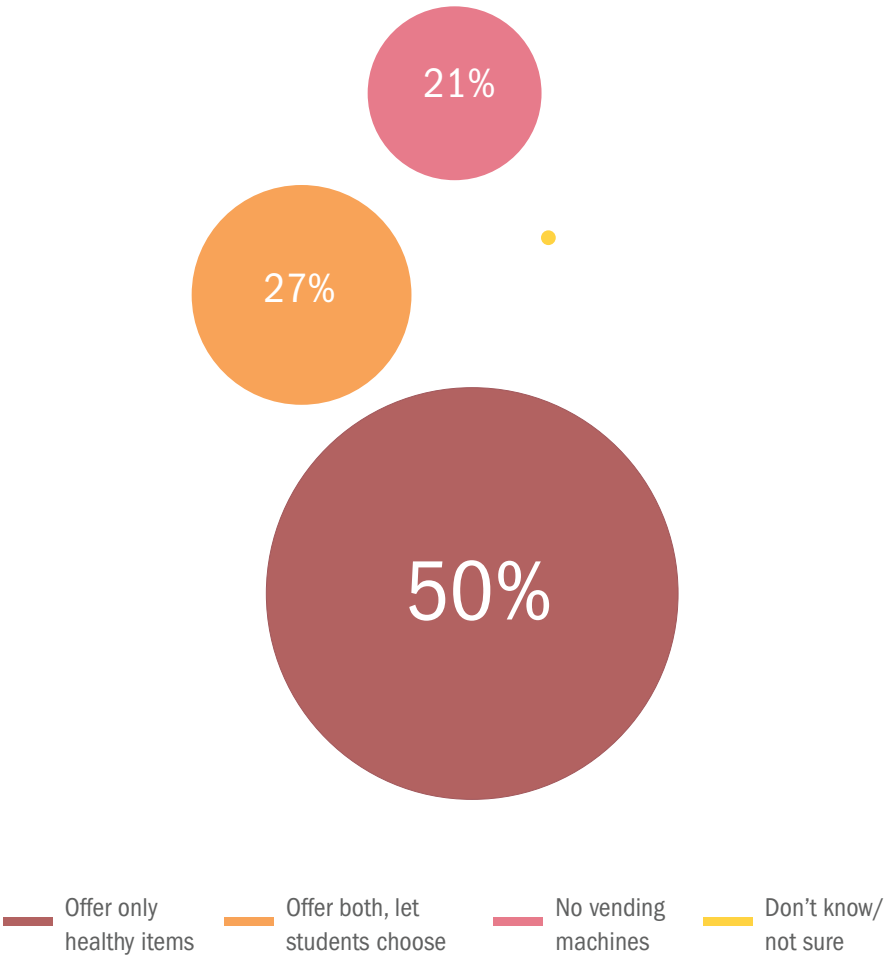
School administrators are relying on the vending industry to assure compliance with specifications, and with only a few exceptions, this relationship is producing positive results in keeping vending contents in compliance. In the few instances where vending contents were found to be out of compliance, surveyors reported that the noncompliance was in most cases due to misinterpretation of specifications and was in relation to beverage flavorings and variable portion sizes of acceptable items.

Parents were also asked about a few specifics regarding vending machine policies. For instance, more than half (50.2%) of parents believe only healthy items should be offered in school vending machines; 26.8 percent state vending machines should offer options of both healthy and less healthy snacks and let students decide. Another 21.2 percent of parents believe schools shouldn't have vending machines for students at all.

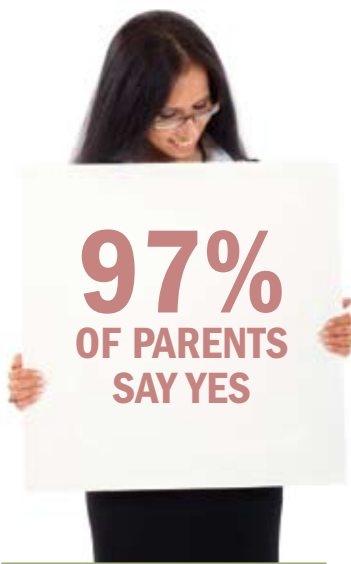


Question:  
Which best expresses your belief about foods and beverages  
that should be offered to students in school vending machines?

PARENTS' RESPONSE







When parents were asked if they thought schools in their community should require physical education for all students, 97 percent said “yes.” While support varies depending upon the grade level of children, parents believe students should be required to have physical education. For example, parents prefer a five day/week schedule by 51.5 percent for children in elementary schools, 61.5 percent for children in middle schools, and 54.2 percent in high school.

# Physical Activity & Physical Education In Schools

Regular physical activity is associated with a healthier, longer life and lower risk of cardiovascular disease, high blood pressure, diabetes, obesity, and some cancers.<sup>5</sup> Schools have the opportunity to increase students’ physical activity by offering physical education, sports, and other recreational activities that motivate students to exercise on a regular basis. Physical education classes coach proper exercise techniques, teach a variety of ways to be active, and help develop healthy habits that may carry into adulthood. For these reasons the authors of the Healthy Students Act mandated that minimum requirements for health education be defined.

Already, significant changes are being observed. Over half of school board members (55.9%) and superintendents (61.8%) stated “yes,” when asked the question, “Has your school board adopted any policies within the last year to increase student physical activity?” As a result of increased policies, research shows that more students are enrolled and participating in physical education.

Researchers found a statistically significant increase in the percentage of schools reporting that 75 percent to 100 percent of students receive a physical education curriculum (84.2% vs. 57.1%). Researchers also found a statistically significant increase in the percentage of schools with students physically active at least 75 percent of the time in a physical education class (73.8% vs. 64.1%). Highest percentages of students receiving physical education were among elementary (82.5%), followed by middle (81.5%) and high school students (75.4%).

## FITNESS TESTING

The goal of fitness testing is to assist students in recognizing good health and establishing lifelong habits of regular physical activity by teaching students how to apply behavioral skills such as self-assessment, goal setting, and self-monitoring. The tests also measure students’ knowledge of fitness, along with measuring their aerobic capacity, body composition, strength, endurance, and flexibility.

The Healthy Students Act only requires fitness testing in fifth grade and once in high school. Many schools have implemented fitness testing. Almost three-fourths of superintendents (72.7%) reported that schools in their district conduct fitness testing, but only one-third of school board members were aware of fitness testing in the schools. Both school board members (71.3%) and superintendents (92.5%) stated they are in favor of sending fitness testing results to children’s parents.

Change in physical activity between 2006  
and 2008 as reported by the principal

100%.....



50% .....



# Health Education In Schools

Health education provides students with accurate information on relevant health topics based on their grade levels. Students learn about the importance of a healthy lifestyle, including physical activity, healthy eating habits, preventing illness, and avoiding drugs and tobacco. Health education also allows students to gain an understanding of the growth and development of the human body and how one's health behavior is related to health status now and in the future. For these reasons the designers of the Healthy Students Act mandated that minimum requirements for health education be defined.

As a result of increased policies, in 2008 much higher percentages of students received a comprehensive health education, and higher percentages of students received health education from classroom teachers, nurses, PE teachers, and certified staff.

A statistically significant increase was found in the following areas:

- Percentage of schools with 75 percent to 100 percent of students receiving health education (75.9% vs. 38.4%)
- Percentage of schools with 75 percent to 100 percent of health education taught by classroom teachers (61.1% vs. 38.2%)

In 2008, the highest percentages of students receiving a comprehensive health education were among elementary (88.0%), followed by middle (85.4%) and high schools (70.1%).



# BMI Screening In Schools

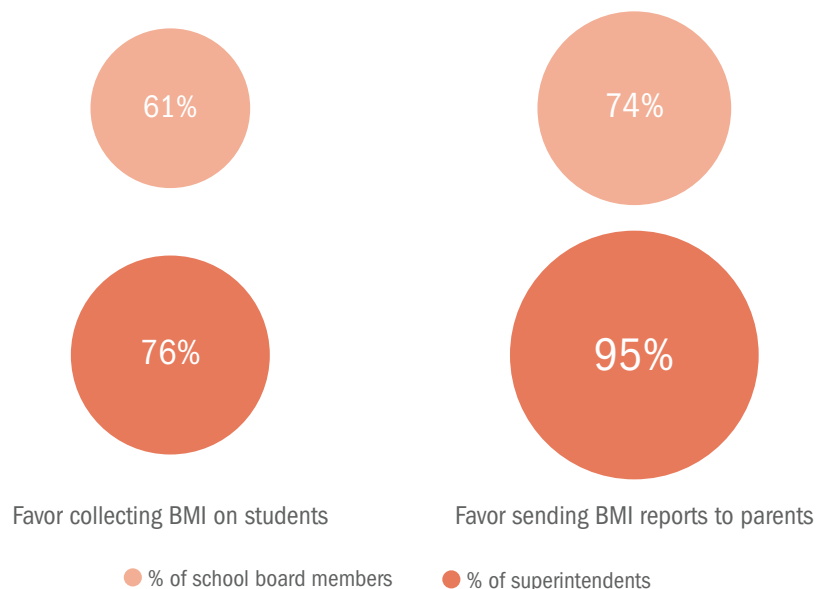
Body Mass Index (BMI) is a ratio of weight and height that also accounts for gender and age. A BMI assessment classifies a child as underweight, normal weight, overweight, or obese. It is a useful screening tool and a relatively efficient method for estimating rates of overweight and obese children.

Although BMI screening is not required by the Healthy Students Act, it was discussed as a possible requirement and is required by other states with similar acts. Questions about BMI screening were asked in anticipation of future policy discussions.

The majority of both superintendents (76.4%) and school board members (61.3%) noted they are in favor of collecting BMI measurements on children, and more than 95 percent of superintendents and 74 percent of the school board members who are in favor of BMI screening are also in favor of sending BMI results home to parents.

Based on survey responses, Mississippi public school parents appear very supportive of changes to policy concerning BMI screening: 85.3 percent of parents answered “yes” to the question, “Some schools collect information on children’s height and weight and give reports to parents. Are you in favor of this?”

Comparison of responses between school board members and superintendents



# “OBESITY

...is costing our children a long and healthy life”

“probably one of the greatest public health problems we have now in our state”

“such a big problem”

we’ve got to have a health care system that is based on healthy people as opposed to sick people.

“the schools of the state have control of our children for the majority of their day”

“we can

**CHANGE**

the way children make

their life choices and change the face of health care in this country.”

“I think we just started and that we’re on to a good start.”

“do right between 7:30 in the morning and 3:30 in the afternoon”

“pass the legislation all you want, but if the funding doesn’t follow...”

schools can’t do everything

“the healthier children are, ...the better they will do in school”

we can and need to play a very large role in proper nutrition

“we need to stay aware of what’s going on and what works”

“All agencies and organizations should be involved”

“our entire community...will benefit ... from having healthier people in the state.”

# Policy-Makers & State Officials

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Policy-makers at the state and local levels are clearly important to the success of the Mississippi Healthy Students Act. Legislators are responsible for the enactment and implementation of the policies associated with the Healthy Students Act, as well as assessing feedback received from constituents. Using these assessments, legislators also determine whether to reinforce and/or refine the policies. State Board of Education members issue regulations to further define the requirements under the Act, and school superintendents and school board members must implement the requirements at the local level through school wellness policies. Health officials at the state and local levels are integral in carrying out policies and programs that are interrelated with school health efforts.

The attitudes, opinions, and perceptions of these policy-makers directly affect the strength and intensity of school policies. The degree to which policies are effectively implemented and enforced is heavily dependent on these officials. In addition, they provide a means of assessing community support or opposition to policy actions as they are often the first to hear complaints from the public and various constituent groups. It is therefore important to monitor changes in the perceptions and opinions of these leaders in order to fully understand the impact of the Healthy Students Act on the prevention of childhood obesity in Mississippi.

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.

Members of the state boards of Education and Health were asked to rank the following target areas:

- increasing consumption of fruits and vegetables
- decreasing consumption of high-calorie, dense foods
- decreasing children's screen time (TV viewing and computer screen time)
- decreasing consumption of sugary beverages

Following is the list of variables that interviewees were given to choose from when ranking variables outside the school setting that may have an impact on childhood obesity:

- child care centers
- nutrition labeling
- media policy (restrictions on advertising, promoting positive messages)
- farmer's markets
- body mass index (measuring children's height and weight) reporting
- built environment (sidewalks, green space, bike lanes)
- local food policy council
- fat and trans fat restrictions
- location of supermarkets (proximity to where residents live)

## **SURVEY OF STATE-LEVEL POLICY-MAKERS**

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

Based on their rankings, board members and legislators agree that the prevention of childhood obesity is very important. When asked to rank the importance of the prevention of childhood obesity on a scale of 1 to 5, with 5 being most important, board members and legislators agreed that the issue is very important as evidenced by all groups selecting an average ranking of greater than 4.

Answers between the two boards were generally in agreement when asked to rank target areas that could be addressed by their respective departments. Both groups' answers mostly focused on the same three target areas — Increasing children's physical activity; increasing children's consumption of fruits and vegetables; and decreasing consumption of sugary beverages.

There is strong agreement on the importance of promoting healthy lifestyles for both students and staff. Board of Health and Board of Education members were both unanimous (100%) in their assertion that schools should promote healthy lifestyles for both students and staff, and the majority of legislators also agreed.

Opinions between the boards varied slightly when asked to rank variables outside a school setting that may have an impact on childhood obesity. Board of Education members respectively ranked child care centers, nutritional labeling, built environments, and fat and trans fat restrictions as the most important influences. Board of Health members, however, respectively ranked media policy messages, built environments, BMI reporting, and child care centers as the the most important.

Board of Education members were divided on the issue of whether Mississippi is already doing enough to strengthen school health policies. Approximately half of the surveyed



members felt that Mississippi is already doing enough to strengthen school policies in the areas of nutrition (57%), health education (43%), and physical education (43%). On a 1-5 scale (5 meaning excellent) rating the strength of current policies addressing childhood obesity, Board of Education members rated the current policies a 3.2, which was the highest group out of the policy-makers, legislators rated the policies a 2.8, and Health Board members rated them at 2.7.

Legislators, in general, believe that the state should be doing more to strengthen school policies in the areas of nutrition, health education, and physical education. Legislators were asked to rank the components of the Healthy Students Act—improving physical education, improving school nutrition, and increasing health education—in order of importance, 1 being the most important. Taking an average of the legislators' answers, physical education topped the rankings (1.7), followed by health education (1.9), and nutrition (2.4).

When asked about using government funds to create exercise places in local communities, both boards support the idea, but the degree of support varied slightly. Board of Education members responded with unanimous (100%) support that local government funds should be used to build and maintain places in the community where people can exercise. Board of Health members responded with large support (87.5 percent) as well. Board of Education members also unanimously agreed that school facilities—such as tracks, ball fields and playgrounds—should be made available to the community after school hours to promote physical activity.

The majority of Board of Education members who responded to the question were in favor of collecting information to determine student BMIs. Those in favor of collecting the information were also in favor of sending BMI reports to the students' parents.

From their specific comments and responses, it is clear that Board of Education and Board of Health members understand and emphasize their understanding of the impact of obesity on personal health status and the economy. This sentiment is best summarized by the statement of one member of the Board of Education who said,

“Obesity is becoming one of the most serious health problems for our children that is costing them a long and healthy life...”.

A Board of Health member further explained the far-reaching effects of obesity, saying, “...the cost of health care is growing so exponentially that we’ve got to have a system that is about creating healthy people as opposed to making it [health care] for sick people... So yes, we’ve got to have a health care system that is based on healthy people as opposed to sick people. And so to do this, we must start with the youth.” Probably the strongest case for addressing childhood obesity came from a Board of Health member who said, “I think that if we can change the way children make their life choices, we’re [going to] change the face of health care in this country.”

Like board members, legislators also consistently expressed an understanding of the seriousness of the problem of childhood obesity for Mississippi and the future of the state. One legislator sums it up well, saying, “...obesity is probably one of the greatest public health problems we have now in our state.” Legislators exhibited a belief that if left unchecked, the increasing childhood obesity rates would create a financial burden on society. “If we can ever get that all the way down to school kids, we’re gonna save this state multiple billions of dollars over the years, and have a healthy interactive kid,” was another of the comments from the state legislators.

Board of Education members express a clear understanding and support of the school’s role in addressing childhood obesity, offering comments like “I believe that for many children that the meals they get at school are much of the nutrition they get during the school day. We’ve got either one or two meals to provide to most students, so we can and need to play a very large role in proper nutrition.”

All of the groups interviewed recognize the challenges schools face in increasing their role in the fight against childhood obesity, and interviews reveal an understanding that it will take time to see change and be able to more fully assess the impact of policies that are currently being put in place. One member of the Board of Education cites a realistic

example when describing the type of challenge schools face: “[Increasing health education] is limited by the number of minutes in a day and other core subjects that must be taught.” Asked how effective Mississippi’s current policies are on childhood obesity, another Board of Education member states, “I think we’ve made good improvement here recently. How effective those policies will end up being, it’s probably a little early to tell...”. Board of Health members also expressed support for and understanding of the school’s unique role in addressing childhood obesity. One member said, “...the schools of the state have control of our children for the majority of their day, the majority of their meals, the majority of their food intake. Even if everything they’re getting at home is awful, if we do right between 7:30 in the morning and 3:30 in the afternoon and we can live a healthy lifestyle and give healthy foods, it will have a dramatic impact on children...”

Legislators, in particular, see the challenges facing the state when it comes to supplying funding to combat childhood obesity. They recognize that this year has been “a low resource year,” but they believe that it is still important to look for ways to address the problem and believe the House/Senate would be “amenable to any plans that come forward.” They also realize that “...you can pass the legislation all you want, but if the funding doesn’t follow it then you are just passing an additional burden to the local school district.” Providing an example of the gap in policy and funding, one legislator explains, “We passed...another unfunded mandate that kids...have 30 minutes of physical education, but we don’t pull the funding with that to give the school the funding they need to hire physical education teachers and playground equipment and things like that.”

Each group expressed beliefs that schools should not be alone in addressing childhood obesity and that effectively reducing rates of childhood obesity in Mississippi calls for a team effort, requiring much more than policy changes alone. Board of Health members were specific in saying that the policies must be carried out and have support on a local level, not just on a state governmental level. However, Board of Education members also recognize the importance of an integrated approach to address childhood obesity that includes—along with the schools—parents, communities, and private sector initiatives.

“There is no question that it needs to be emphasized in all facets of life. All agencies and organizations should be involved. We should all be well aware of the dangers of obesity, and we should work toward that end,” stated one Board of Education member.

Legislators also recognize that childhood obesity is a multi-faceted problem and that parents and community members share in the responsibility. They make their point clear with statements like, “...I don’t think it’s fair to put all of the burden of the problem of dealing with childhood obesity on the backs of the schools. Ultimately it’s the responsibility of the parents to deal with some of these issues.” And, “...I don’t see anything wrong with our churches, our pastors, our Sunday schools talking about the importance of being healthy, the importance of not being overweight.”

Knowing that they play a key role in the state, legislators also expressed the opinion that additional policy actions would likely be taken. One legislator said, “...I don’t think we’re through because I think what we realize is that this is the first prong...that is, getting a handle on nutritional requirements, what these kids are actually eating. But, you’ve got to put a physical education requirement to it. And you’ve got to look generally at a child’s health care...I think we just started [and] that we’re on to a good start. We have nothing to apologize for, but I think there’s more work to be done.”

Finally, legislators are interested in learning what policies and programs are effective. Asked how effective Mississippi’s current policies are on childhood obesity, one offered, “...from my exposure of what’s going on nationally, our policies are good; there’s still room for improvement; we need to stay aware of what’s going on and what works.”

## SURVEY OF DISTRICT HEALTH OFFICERS

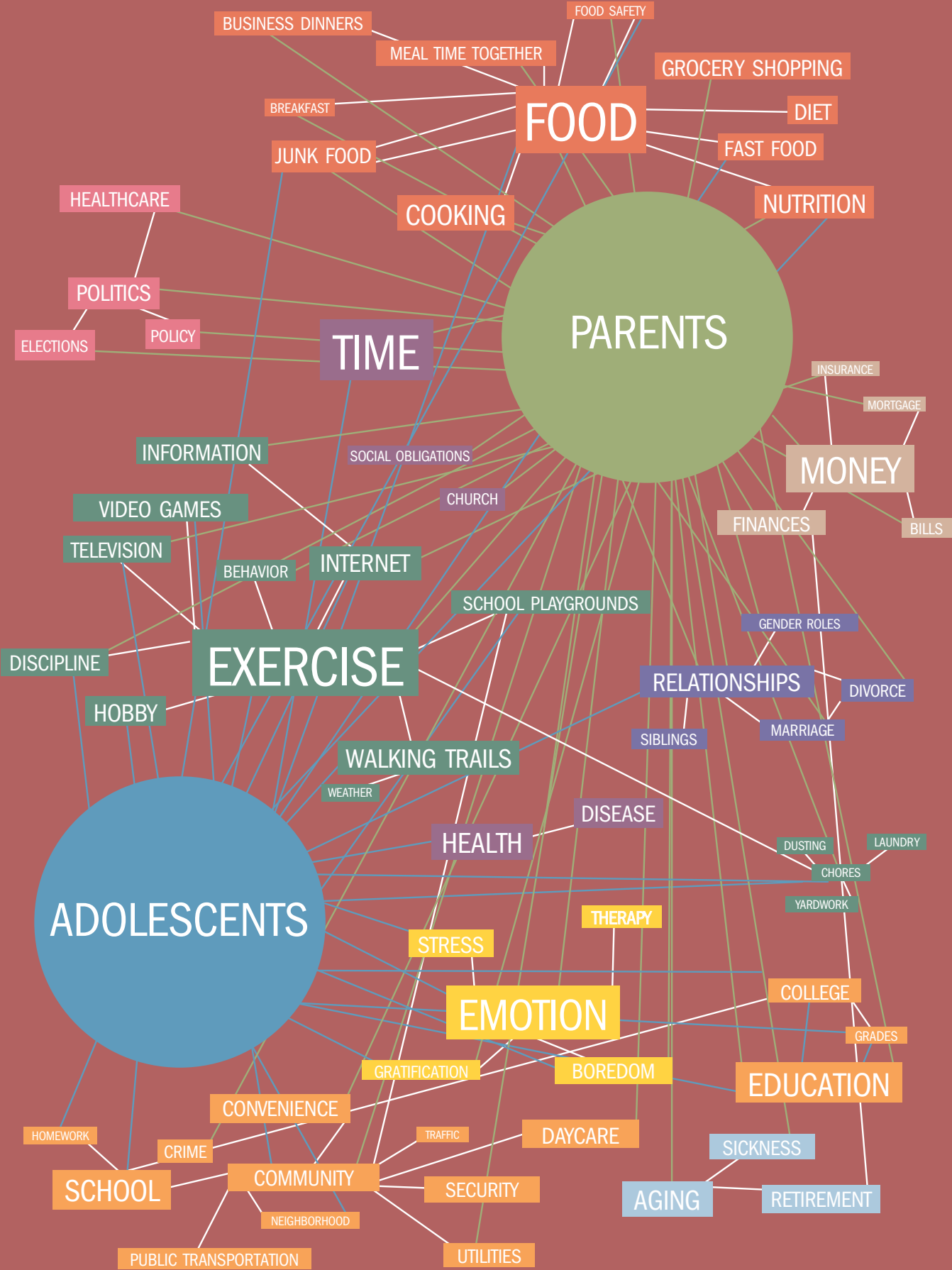
In addition to gauging the position and gathering the opinions of state-level policy makers, understanding the thoughts of local influencers is also necessary and important. To gain the local perspective, district health officers were asked their opinions about childhood obesity. Their answers are very much in line with the thoughts and consistent in the beliefs observed from the state-level policy-maker interviews.

Like the state-level policy-makers, district health officers reported that the prevention of childhood obesity was very important, rating it a 4.8 on the 5-point importance scale. They also identified fat and trans fat restrictions, built environments, media policy, and childcare as four variables outside of schools having the most impact on childhood obesity. Like board members, all district health officers surveyed believe that local government funds should be used to build and maintain places in the community where people can exercise.

Researchers noted several themes that arose from the interviews with district health officers. Health officers expressed their belief that the long-term impact of obesity and childhood obesity on the health of individuals and the public is significant. They also identified a link between better health and better student performance in schools. One health officer stated, “...the healthier children are, it is my true, true belief that they will do better in school and achieve higher levels of education...therefore, our entire community, our workforce in Mississippi will benefit too, from having healthier people in the state.”

While health officers are supportive of the steps taken to date to help create and implement the Healthy Students Act, they, like board members and legislators also recognize the process is in its infancy. Best summarizing the thoughts of the group, one health officer stated: “I think we have such a big problem, that it is not easily addressed. It is going to take a lot of time, and a lot of effort, and a lot of resources to target it more poignantly. I think, perhaps, it is a step in the right direction, but more is going to be needed as time goes by.”

Interrelational factors affiliated with the practices and constraints of the family environment



# The Family & Community

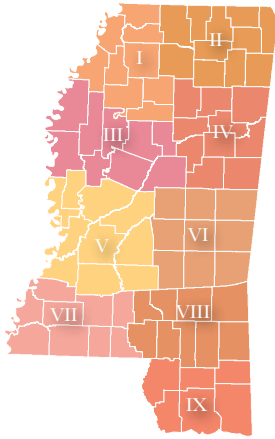
The parent/adolescent relationship is often fraught with complexity. When addressing the issue of obesity in adolescents, it is essential to understand not only the complexity of that relationship but also to assess the perceptions each group has of the other. As adolescents mature, parental influence declines and the adolescent relies more heavily on his/her own decisions. In separate surveys of parents and adolescents, researchers sought to determine both groups' knowledge of and attitudes toward the Mississippi Healthy Students Act of 2007 and related policies that are being or have been implemented in Mississippi school systems.

Understanding the attitudes, practices, and constraints within family environments around healthy eating and exercise is critical in knowing how receptive the parents/families may be toward school health policies, and in turn, how these families may influence the enforcement of local school policies. This knowledge also helps gauge change (or lack thereof) in children's health that may be attributed to family factors. Also, understanding the attitudes, practices, and constraints around healthy eating and exercise within the family environments from the adolescents' perspective is critical in understanding similarities and/or differences that exist between parental reporting and adolescent reporting of factors influencing adolescent obesity.

In an attempt to "paint a picture" of what might represent the typical Mississippi family with children attending public school, researchers separately interviewed parents and adolescents (youth 14 or older) about their general health status, nutrition knowledge and habits, and activity levels.







BMI by Public Health District

DISTRICT	BMI AVERAGE
District I	28.5
District II	28.1
District III	30.5
District IV	29.7
District V	28.5
District VI	28.7
District VII	29.6
District VIII	29.2
District IX	27.6
State	28.9

#### BMI Categories

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

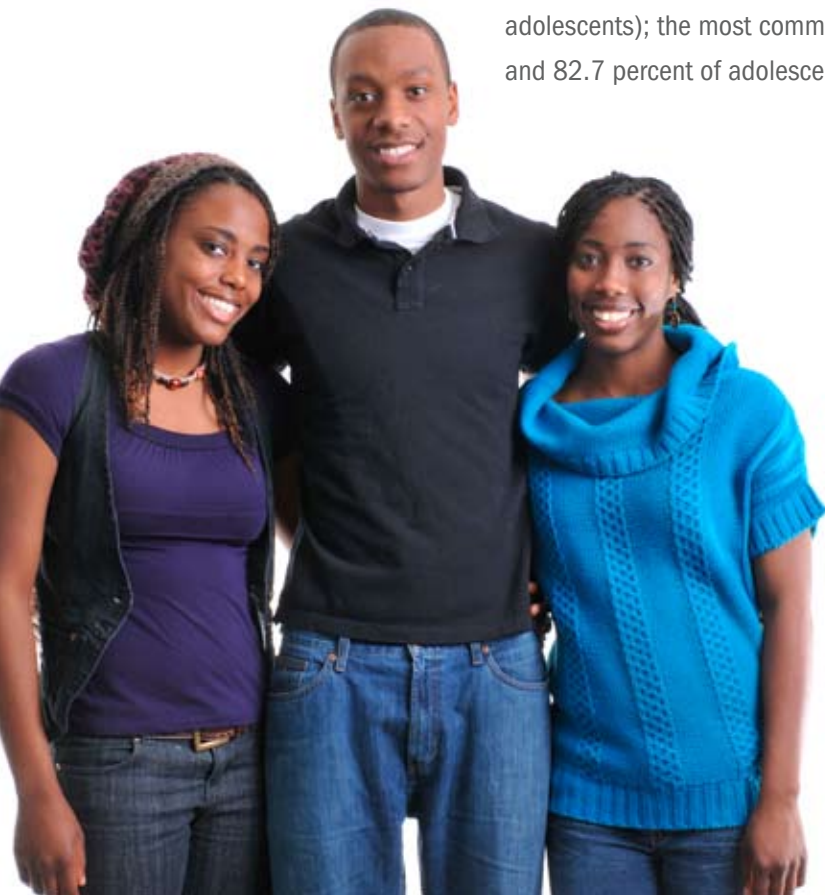
## HEALTH AND WEIGHT IN THE FAMILY

From a general health status standpoint, Mississippi parents are unfortunately modeling unhealthy weights for their children, as evidenced by their self-reported BMI status. Overall, the data show that in eight out of nine public health districts, the average BMI shows a weight status of “overweight” for adults. One district, based in the Delta, reflects an average BMI of 30.5, which is classified as obese. In many cases, little difference exists between the average BMI of the overweight districts and the obese district.

## NUTRITION

From a nutritional standpoint, the surveys reflect Mississippi families trying to eat more healthfully (64.2% parents and 64.7% adolescents) while still facing a few challenges. The majority of parents (86.5%) report that their child regularly eats breakfast and that 69.1 percent of those children eat breakfast at home. Parents report less togetherness at the end of the day; while 93.3 percent of parents report sitting down to an evening meal together at least one day a week, less than one-half (46.1%) of their families sit down to an evening meal together at least six nights per week. Seventy percent of both parents and adolescents report drinking sodas at least once a week. Of those, about a third of both parents and adolescents reported they drink sodas four to seven days a week. Three out of five adolescents reported drinking at least one soda the previous day.

One problem Mississippi families face in eating healthfully is an apparent lack of knowledge about basic nutrition guidelines. When asked to name the appropriate number of servings of fruits and vegetables needed each day for good health, less than 20 percent of both groups were able to correctly respond five or more (18.3% adults, 15.3% adolescents); the most common answer was “1-4 servings” from 78.3 percent of adults and 82.7 percent of adolescents.



## PHYSICAL ACTIVITY

Survey results revealed that 46.7 percent of parents reported that their families' level of physical activity increased within the past year. Another 47.3 percent reported no change, while 5.8 percent of families actually reported a decrease in physical activity levels.

More specifically, slightly more than half (52%) of the parents reported that they have increased their child's exercise within the past year. Most parents (60.1%) stated that they had signed their child up for sports or exercise class within the past year. Twenty-five percent of parents stated they have taken action to address their child's weight gain or loss. These responses reflect important parental concern and involvement.

In the area of activity levels, families appear to face greater challenges in setting and encouraging healthy lifestyles. Access to facilities for physical activity can often be a limiting factor to a family increasing physical activity. On this survey, less than half (46.5%) of the parents responding stated that public school facilities are available to use for physical activity outside the regular school hours and almost two-thirds reported having a park nearby for their child to play.



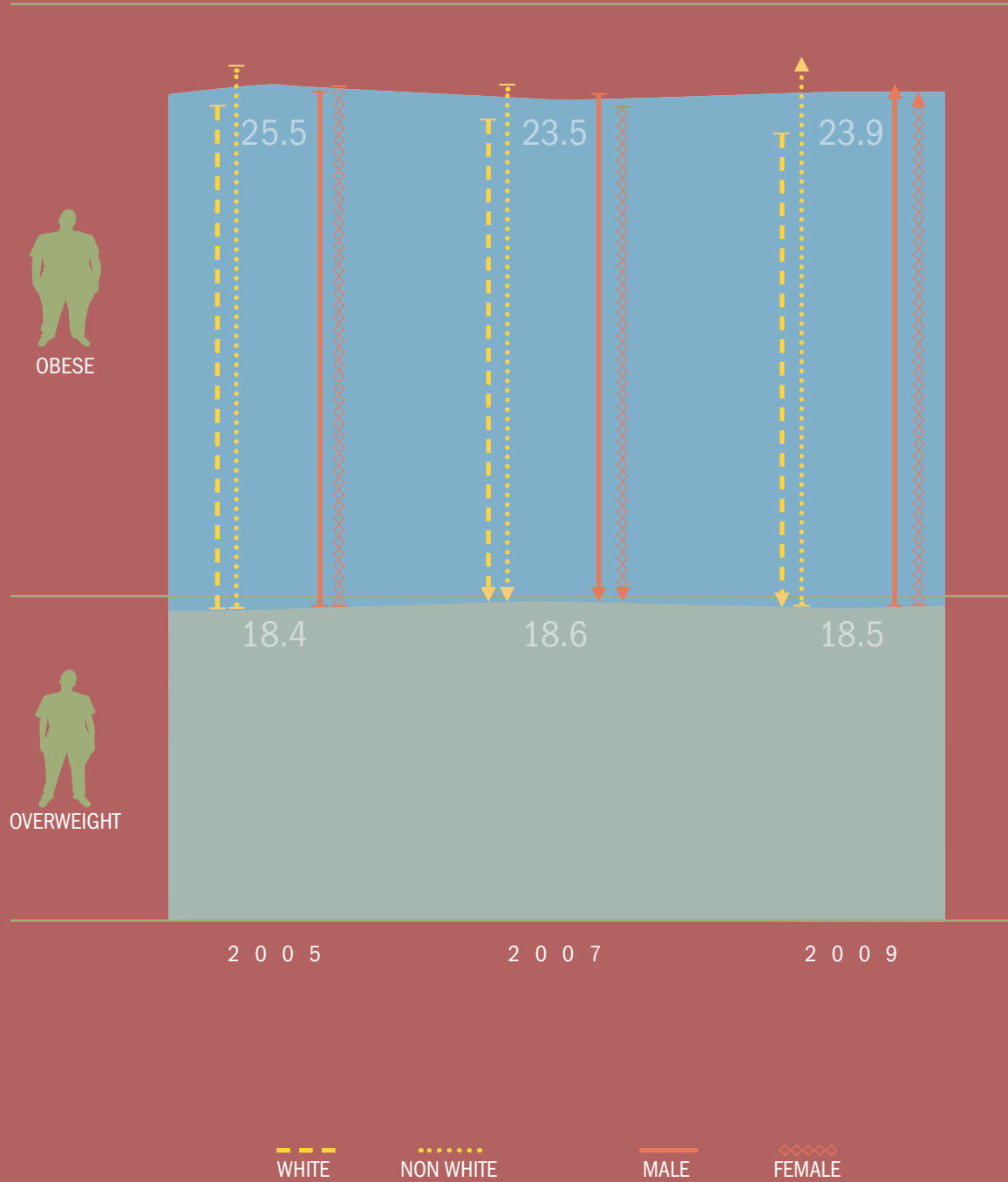
Numerous studies<sup>6,7</sup> have shown links between screen-time, (amount of time watching television or using a computer instead of participating in physical activity) and rising levels of obesity. Parents and adolescents were both asked about limits placed on children's time spent watching television/playing video games and on the internet. Parents appear to believe they are placing more stringent controls on their children than the adolescents themselves perceive. While 60.9 percent of parents report limits on television and video games, only 34.7 percent adolescents report their time being limited. Similarly, 62.3 percent of parents report limiting time spent on the internet, while only 44.7 percent of adolescents report that their time is limited. (Note: parent percentages account for children of all ages in grades k-12, while adolescents interviewed were 14 years or older. Discrepancies between parents and adolescents may be affected by differing parental restrictions based on age. These results should be interpreted with caution.) Although both parents and adolescents reported that parents limited screen-time, 26.0 percent of adolescents reported having a computer in their bedroom, and 80.7 percent reported having a TV in their bedroom.



*summarizing the findings*



## Mississippi's childhood overweight and obesity rates by year



# Summary of Findings & Discussion

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Childhood obesity in Mississippi is a problem that became most apparent after studying and tracking data collected through the Child and Youth Prevalence of Obesity Survey (CAYPOS). Starting in 2003 and conducted every two years, the CAYPOS is a statewide body mass index (BMI) survey of Mississippi school children that is administered and recorded by school nurses. The initial results revealed that the actual rates of overweight and obesity were higher than the self-reported rates and were increasing in almost every grade level.<sup>3</sup>

Results from the 2009 CAPYOS, however, indicate that rates of overweight and obesity among Mississippi's school children may be leveling off after decades of steady increases. From 2005 – 2009 there are no statistically significant differences from year to year. There are disparities between rates for white students and those for nonwhite students, and these disparities appear to have increased. The data suggest more improvement in the white population, particularly in white female students, than in the non-white population, particularly in non-white female students. Between 2005 and 2009, the percentage of Mississippi public school students who were overweight has changed little; the percentage of obese students has decreased slightly from 25.5 percent in 2005 to 23.9 percent in 2009 though the change is not significantly different. During the same period, the obesity rate among white students has decreased, and a significant difference was observed between white and nonwhite students in 2009. The racial disparity appeared to have increased (Note: 93% - 95% of nonwhite students are black). There is no significant difference between male and female students in each survey year; in addition, no significant differences were found across different years.

Child obesity rates may have leveled off here, but they are still excessively high, and Mississippians recognize it. The results of the surveys conducted in this evaluation show that Mississippians consider childhood obesity to be a serious problem in the state, and worthy of significant government intervention. The surveys further indicate widespread

support for the role of schools in the prevention of childhood obesity and for the Mississippi Healthy Students Act provisions.

Policy-makers at the state and district levels demonstrate a keen understanding of the impact of childhood obesity on the health of the state's population and economy, as well as strong support for full implementation of the Healthy Students Act. Policy-makers, however, express a practical and realistic perspective in recognizing the constraints that schools face in fulfilling the requirements of the Healthy Students Act, as well as noting that childhood obesity is a complicated issue that requires a multi-faceted approach.

The research conducted during this first year of the evaluation project provides the basis from which changes will be measured over the next three years. Researchers will monitor changes in implementation of the various components of the Healthy Students Act and in the health practices in students' homes. Shifts in perspectives and attitudes of parents, adolescents, and state and local policy-makers will be noted as well. As one of the legislators interviewed for this study stated, "We need to stay aware of what's going on and what works." The information collected in these studies will be used to meet that need.

Results from the 2008 Principal Survey indicate considerable progress in implementation of school wellness policies, but also point to areas in which more work is needed. Data collected through the Mississippi School Nutrition Environment Evaluation Data System (MS NEEDS) further support this conclusion in reference to school nutrition standards. The conclusion that schools have made tremendous improvement in the nutritional quality of foods offered to students is confirmed by data from surveys conducted by the Centers for Disease Control and Prevention that show Mississippi as making the greatest strides among all states in removing unhealthy foods from its schools.<sup>1</sup>

Schools have implemented local school wellness committees and established school health councils, although more emphasis needs to be placed on the work of the councils. Less than three-quarters of principals reported that their school health councils met at least three times per year, and only 63 percent of schools had submitted an annual report to the school board.

Of the wellness policy components defined by the Board of Education, the areas with the greatest degree of implementation were food safe schools; counseling, psychological and social services; and nutrition. The areas with the lowest levels of implementation were the two for which the Mississippi Healthy Students Act and regulations do not state minimum requirements: quality staff wellness programs and marketing a healthy school environment.



The component for family and community involvement rated the next lowest in degree of implementation.

Researchers encountered a low response rate in conducting the survey of school board members. School board members who did respond indicated a lower level of awareness regarding school wellness policies than principals or school superintendents. Thirty percent of school board members did not know or were unsure about their school district's progress in implementing the requirements of the Healthy Students Act. The State Department of Education has developed a template for school health councils to use in making presentations to school boards. Such technical assistance can facilitate communication between the school health councils and school boards, strengthening compliance with state guidelines and improving awareness and knowledge among school board members.

Results from the MS NEEDS study reflect the emphasis the schools have placed on food safety and implementation of nutrition guidelines. MS NEEDS data also corroborate the weaknesses in the area of marketing a healthy school environment and in serving whole grain foods at the recommended frequency.

While parents express strong support in general for school policies that require physical education and healthy eating, they are not widely aware of specific policies being implemented in their child's school. The fact that school superintendents and school board members report little feedback from parents on implementing the Healthy Students Act may reflect this lack of awareness.





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## Methodology

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

### PRINCIPAL SURVEY OF LOCAL SCHOOL WELLNESS POLICIES (USM)

The purpose of this study was to assess the implementation of the 2007 Mississippi Public School Accountability Standards (Standard 37.2), the 2007 Mississippi Healthy Students Act, the Child Nutrition and WIC Reauthorization Act of 2004 (PL #108-265), and the Mississippi Code of 1972 (Annotated Section 37-13-134). These laws and regulations require each school to establish a local school wellness policy and define minimum content requirements. This survey was conducted in 2006, prior to the Healthy Schools policy's enactment; for the purposes of this project, the survey was administered again in 2008 and is scheduled to be repeated in 2010 and 2012. Where possible, researchers compared results with those from the 2006 survey. Between

October and November 2008, surveys were sent to principals in all 911 public schools in Mississippi. While a total of 635 surveys were returned (70%), a total of 540 complete surveys were used in the analysis for a response rate of 59.3 percent (up from 41.8% in 2006). It should be noted that analyses by grade level (elementary, middle, and high schools) does not include schools that crossed multiple categories (e.g. K-8 or K-12) and therefore the percentage of the overall response will not necessarily equal the average percentage of the subgroups.

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

#### Study design

The 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. Data are collected via interviews with school Child Nutrition Program (CNP) managers, existing production records and menus, observations of school cafeterias during lunch periods, and recording food items for sale in vending and school store venues. Similar data will be collected annually for 3 more years to investigate how MS public school nutrition environments may change. Results are structured around the sections of the MS Healthy Students Act. The MS NEEDS study evaluated pieces in the legislation, called “policy points.” The policy point numbering system maps directly to that in the legislation. Multiple indicators within and across data sources were used to address several policy points, as appropriate. Results tables are organized around the data sources and school levels – elementary, middle/junior high, and high – to facilitate the comparison of findings across both dimensions.

#### *Sampling Frame*

The sampling frame was obtained from the MDE Students Enrollment Database in November 2008, which provided data for fall of 2007-08. Schools serving only special education students were excluded from the sampling frame, as were schools with a total enrollment of less than 50 students and those serving only Pre-Kindergarten (PK) or Pre-Kindergarten and Kindergarten (PK-K) students. The sampling frame was stratified by school level. Per MDE classification, schools were eligible for the elementary sample if they served any grade Kindergarten (K) through 5th grade, schools serving any grade 6 through 8 were eligible for the middle sample, and schools serving any grade 9 through 12 could be selected into the high school sample. Schools serving grades from more than one level were represented in more than one sampling frame as appropriate, e.g., a 7-12 school was eligible to be included in both the middle and high school samples. Based on the criteria above, the final sampling frame included 538 elementary schools, 387 middle schools, and 254 high schools. This final sampling frame represents 895 unique schools, 310 of which served more than one level, i.e., were “multilevel”.

#### *Subjects and Sampling Methods*

Schools were selected using Simple Random Sampling stratified by school level. Data will be weighted to reflect the demographic

composition (e.g., race, gender, etc) of all students from the schools eligible for this study. The final year 1 sample was drawn using the SAS 9.2 (Carry, NC, 2008) Proc Select procedure. Among the 895 eligible schools, 50 elementary, 50 middle, and 50 high schools were selected as the study sample, representing 144 unique schools. The initial project outcomes are reported as non-weighted data for the total schools surveyed in Mississippi. Of the 144 schools randomly selected into the year 1 sample, 133 agreed to participate (92.4% participation rate) including 20 elementary schools, 13 middle schools, 31 high schools, and 69 schools serving more than one level. Four multilevel schools were selected into both the middle and high school sample levels; 2 multilevel schools were selected into all three sample levels. This yielded a final sample of 46 elementary level, 47 middle level, and 48 high schools.

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

From an initial list of 152 school superintendents, four were excluded from the study because they supervised independent schools not considered to be part of a school district. Five more cases were used to pilot test the survey. The final population included 143 school superintendents. The data collection period spanned from late-July to mid-August of 2009. A total of 110 superintendents completed the survey for a response rate of 76.9 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 initially received approval from MSU’s Institutional Review Board (IRB) to conduct a web-based survey for school board members, along the same time-frame as the telephone survey of superintendents. However, this method had to be discarded because researchers were unable to obtain personal contact information for members of local school boards. (School board members do not maintain offices within school districts.) Therefore researchers had to submit an alternate method to MSU’s IRB for data collection. Paper surveys were mailed to superintendents of 152 public school districts in Mississippi.

Superintendents were asked to distribute these surveys to school board members at the next scheduled school board meeting, collect the completed surveys and return them to researchers in a pre-paid return envelope. The final response rate was 20.8 percent of school board members representing 34.8 percent of school districts.

#### **SURVEY OF DISTRICT HEALTH OFFICERS (MSU)**

There are six public health officers in Mississippi, supervising a total of nine public health districts. During the time of the interviews, there was a retirement of one public health officer. Four of the five remaining district health officers were interviewed from May 2009 to mid-August 2009, reflecting an 80 percent response rate. The interviews were conducted using a mixed method of face-to-face and telephone interviews. They were asked primarily open-ended questions about the roles of the State Department of Health (local and district), feedback from their constituents on the Mississippi Healthy Students Act of 2007, and feedback regarding additional legislation/policies needed. Interviews were transcribed, and recognized qualitative analyses were used to determine major categories and themes. Also included were some quantitative measures/rankings on physical education, school nutrition, and health education. Basic descriptive statistics were used to analyze the quantitative items.

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

All methodologies were approved by Mississippi State University's Institutional Review Board for Human Subjects prior to the data collection and each member of the Research Team is trained in Human Subjects protection.

##### *Telephone survey of parents and children*

Surveys were conducted by the Wolfgang Frese Survey Research Laboratory of the Social Science Research Center at Mississippi State University. The Mississippi Department of Education 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 2008-2009 school year. From this database of approximately 360,000 telephone numbers, a random sample of 26,000 numbers was drawn. The data collection period spanned from early-May to late-July of 2009.

Adolescents who were 14 years of age or older were also surveyed, if parents gave their permission. A total of 150 adolescents answered questions about nutrition standards and vending machines, physical education and physical activity, and health education and health knowledge. It should be noted that the research team did not initially plan to interview adolescents for Year 1; however, once it was determined that adolescents would be surveyed, the initial interviews occurred prior to the end of the academic school year. Once the school year was completed, the response rate of the adolescents went down tremendously; thus it was not a matter of the parents not agreeing that their adolescent be interviewed, but rather adolescents not being as accessible once the spring semester ended.

The sampling error for the total dataset (binomial response option with 50/50 split) is no larger than + or - 3.5 percent with a 95 percent confidence interval. Telephone numbers were dialed a maximum of eight times. There was a cooperation rate of 74.6 percent and a Council of American Survey Research Organizations (CASRO) response rate of 47.8 percent.

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

##### *Board of Education members*

An interview guide was developed in concert with staff from the Center for Mississippi Health Policy, the SSRC research team and, when available, survey instruments from other RWJF school evaluation states of Arkansas and West Virginia. A mixed- method of telephone and face-to-face interviews were conducted from May 2009 - mid-August 2009. The State Board of Education members were asked primarily open-ended questions about their views on the roles of the Mississippi Department of Education, feedback they have received from their constituents on the components of the Mississippi Healthy Students Act of 2007, as well as feedback regarding additional legislation/policies needed. Interviews were transcribed, and recognized qualitative analyses were used to determine major categories and themes.

For exploratory qualitative research, when the major purpose is to assess fresh insights on a particular topic, a "negotiated" approach to qualitative analyses has been suggested as the "approach of choice." For this evaluation,

the particular topic of interest was the recently passed Mississippi Healthy Students Act of 2007. The SSRC research team used an adaptation of this negotiated approach to qualitative analyses, meaning that a team of researchers reviewed the interview transcriptions and conducted analyses, rather than having one analyst for all groups.

Four members of the research team analyzed the qualitative interviews. Initially, one member of the team was assigned to each of the four groups (State Board of Education members, State Board of Health members, district health officers, and Mississippi legislators) to search for themes. A theme was defined as a response topic that was mentioned by more than one respondent in the group and mentioned on more than one question. Once researchers completed their independent analyses of the groups, the findings were shared with the remaining team members and common themes, definitions, and example quotes were identified. Then, team members reviewed their assigned groups again, searching for any of the agreed upon themes that they may not have discovered during their initial analyses. At any time that there were question(s) regarding a certain theme, researchers would consult with one another to reach agreement. In the end, at least two team members agreed upon the themes and example quotes that were identified for each of the four groups.

Also included were some quantitative measures/rankings on physical education, school nutrition, and health education. Basic descriptive statistics were used to analyze the questions that respondents were asked to either rank or score their answers. Out of nine Board of Education members, seven consented to do an interview, yielding a response rate of 77.7 percent.

#### *State Board of Health Members*

The research team was successful in conducting interviews with eight of the 11 board members, yielding a 72 percent response rate. A mixed method of telephone, face-to-face and email interviews was used. These were conducted from May 2009 to mid-August 2009. The State Board of Health members were asked open-ended questions about the roles of the State Department of Health (local and district), feedback from their constituents on the Mississippi Healthy Students

Act of 2007, and feedback regarding additional legislation/policies needed. Interviews were transcribed, and recognized qualitative analyses were used to determine major categories and themes.

Also included were some quantitative measures/rankings on physical education, school nutrition, and health education. Basic descriptive statistics were used to analyze the questions where respondents were asked to rank or score questions.

#### *Mississippi Legislators*

Interviews were conducted with 12 Mississippi state legislators from January to August 2009. A purposive sample included six representatives and six senators, reflecting diversity in party affiliation and constituent demographics. A total of 11 legislators gave face-to-face interviews, and one provided information via email. Thirteen legislators were originally contacted and 12 responded for a response rate of 92.3 percent. The interviews consisted of primarily open-ended questions about the roles of the Mississippi legislature, feedback from their constituents on the Mississippi Healthy Students Act of 2007, and feedback regarding additional legislation/policies needed. Also included were some quantitative measures/rankings on physical education, school nutrition, and health education. Basic descriptive statistics were used to analyze the questions where respondents were asked to rank or score questions.

### **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 email with a link to a secure website developed and maintained by Qualtrics, Inc. (cite) 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.

#### Endnotes

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