Act 256 Report:

Health-Related Physical Fitness Assessment in Schools

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The following state agencies and universities contributed to the information contained in this legislative report.

I. Introduction

Act No. 256 of the 2009 Louisiana legislative session encourages school districts to conduct health-related physical fitness assessments of students in public schools. This act includes the review and expansion of a current health-related physical fitness assessment program associated with 12 school districts in Louisiana that are piloting partners in the Coordinated School Health (CSH) initiative, through the Cecil J. Picard Center for Child Development and Lifelong Learning at University of Louisiana at Lafayette (Picard Center). This initiative uses a standard fitness assessment as its health-related physical fitness assessment and can be used to establish a statewide standard with easily comparable baselines and subsequent measurements. The implementation of the physical assessment will thus enable evaluation of the effectiveness of interventions and promote fitness for health, rather than just for performance.

This fitness assessment uses the Cooper Institutes' Healthy Fitness Zones, which are criterion referenced standards that represent minimal levels of fitness. The fitness assessment used during the 2009-10 school year measures three components of health-related physical fitness that have been identified as important to overall health and function:

- aerobic capacity;
- muscular strength and endurance; and
- flexibility

These three components are measured by six subtests including Body Mass Index or BMI (body composition). The BMI is a measurement that calculates a person's body mass based upon height, weight, age and gender factors. The results of these subtests place each student either within or outside the Healthy Fitness Zone (HFZ). Optimally, fitness assessments also provide personalized feedback and positive reinforcement, which are vital to changing behavior, and serves as a link between teachers, parents and students. In summary, the fitness assessment used during 2009-10 provides objective, easy-to-understand results that track physical fitness over time and assess the effectiveness of physical education curricula.

The Picard Center along with its reporting collaborators –Department of Education, Department of Health and Hospitals, Governor's Council on Physical Fitness and Sports, and Louisiana Council on Obesity Prevention and Management (Louisiana Obesity Council) submits this report as part of the requirement of Act 256. This report will include information on the implementation results of the health-related physical fitness assessment as well as progress on the 2009 plan for continued fitness assessment and best practice identification. In December, a second required report will be submitted by the Louisiana Obesity Council regarding recommendations regarding program implementation, best practices and future directions as well as a plan for the assessment expansion and intervention development and implementation.

II. Implementation Results of Fitness Assessment for 2009-10

This fitness assessment is a part of a larger effort to understand and improve student health. The Picard Center has collaborated with the Louisiana Department of Education and Louisiana Department of Health and Hospitals for several years to implement the Coordinated School Health (CSH) initiative. This initiative seeks to improve the health and well-being of Louisiana's students and thereby maximize their academic abilities. In addition, the Picard Center has partnered internally at the University of Louisiana at Lafayette with the College of Nursing and the Kinesiology Department, as well as externally with the University of Louisiana at Monroe, Northwestern State University and Louisiana State University at Baton Rouge.

In 2009-10, 15 school districts in Louisiana administered health-related, criterion-referenced physical fitness assessments as part of Act 256 and reported the results to the Picard Center for Child Development and Lifelong Learning at the University of Louisiana at Lafayette for analysis. In total, more than 25,000 students from 125 schools across the state participated in the administration of health-related physical fitness assessments. After data verification, 19,695 student records were used in the statewide data analysis. This section provides a summary of fitness assessment results completed during the 2009-10 school year.

The BMI analysis gives an overview of physical health, and the fitness assessment subtests fill in key details regarding physical fitness. BMI is a practical measure used to determine weight status (underweight, healthy, overweight or obese) by measuring weight in relation to height. While BMI is an accepted screening tool for the initial assessment of body fat in children and adolescents, it is not a diagnostic measure because BMI is not a direct measure of body fat. Healthy Fitness Zones (HFZ) are research-based standards for aerobic capacity; muscular strength and endurance; and flexibility. These standards indicate levels of fitness necessary for good health and act as a complement to BMI measures.

Table 1: BMI Classification Table

Healthy	**5th percentile to less than the 85th percentile**
Overweight	**85th to less than the 95th percentile**
Obese	**Equal to or greater than the 95th percentile**
Underweight	**Less than the 5th percentile**

The physical fitness assessment administered consisted of body mass index (BMI) calculation and five subtests.

- Shoulder Stretch
- Trunk Lift

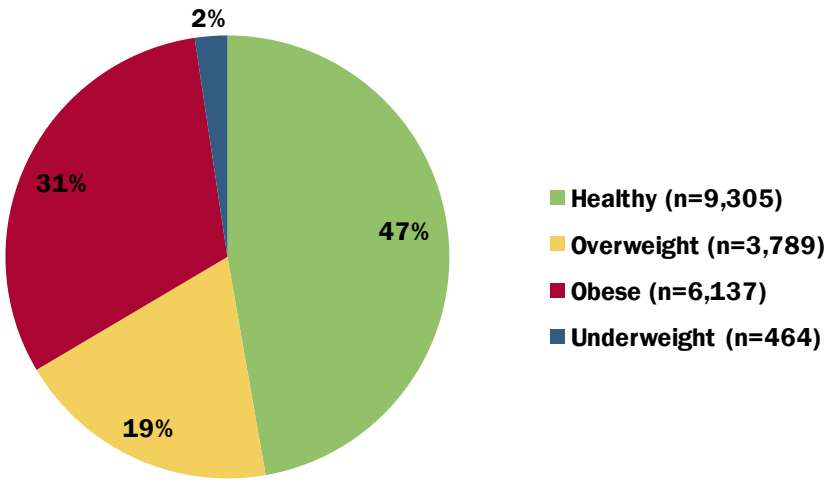
- Curl-Up
- Push-Up
- Progressive Aerobic Cardiovascular Run (PACER)

The subtests are calculated and categorized as either falling into the Healthy Fitness Zone (HFZ) or Needs Improvement (NI). These categories are research-based standards for aerobic capacity; muscular strength and endurance; and flexibility. These standards indicate levels of fitness necessary for good health and reflect reasonable levels of fitness that can be attained by most children who participate regularly in various types of physical activity.

Overall Analyses

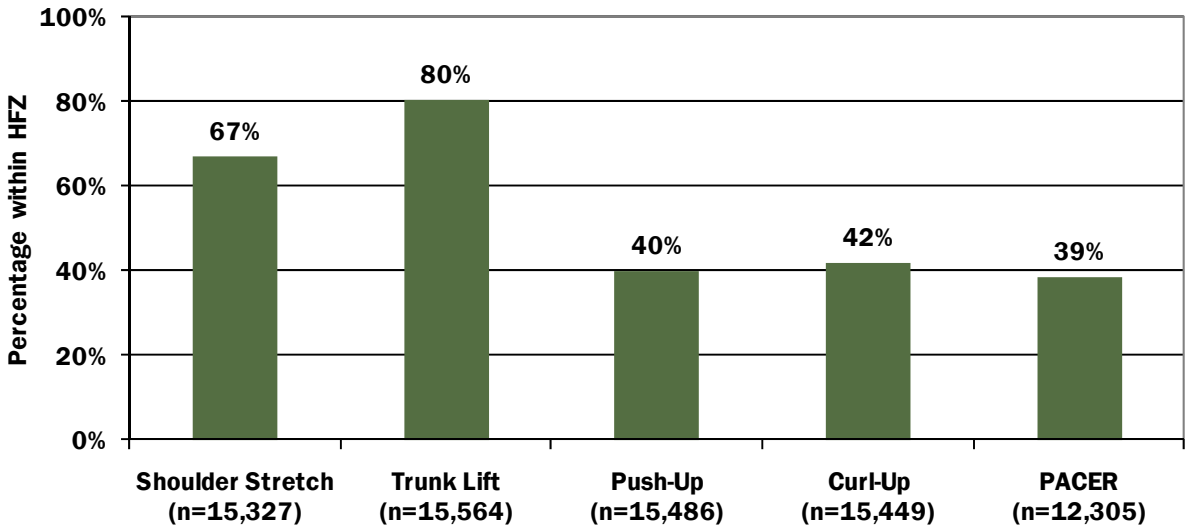
As illustrated in Chart 1, 47.2% of students statewide had a healthy body mass index (BMI), and 52.8% had some level of risk (either underweight, overweight or obese BMIs). Specifically, 31% were obese. This information indicates that a high percentage of students in this study are at risk for health complications due to their weight status.

Chart 1: 2009-10 Statewide Fitness Assessment BMI Results (n=19,695)



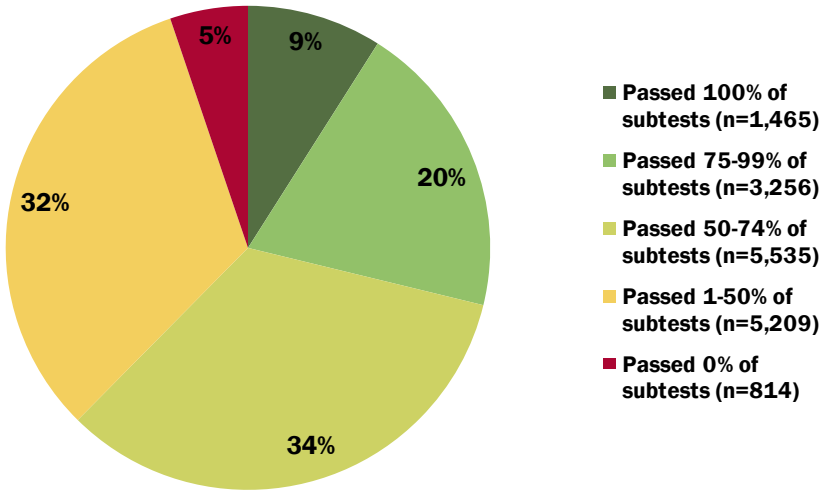
Physical fitness assessment results were analyzed according to assessment subtests (see Chart 2). Participating students did best on the trunk lift (80%), which measures core strength. The participating students scored lowest on the PACER (39%), which measures aerobic capacity. Hence, while most students could complete certain core strength activities, far fewer were successful in tests that emphasized cardiovascular endurance.

Chart 2: 2009-10 Statewide Fitness Assessment Subtest Results (n=16,279)



When looking at the fitness assessment as a whole, few students were unfit on every subtest (see Chart 3). Nine percent (9%) of participating students scored within the HFZ in all subtests, while 5% scored below the HFZ on all subtests. Most students (34%) scored within the HFZ on 50-74% of the tests, which means that they passed approximately three out of five subtests. Thirty-seven percent (37%) of students scored within the HFZ on less than half of the subtests.

Chart 3: 2009-10 Statewide Student Performance at Healthy Fitness Zone on Fitness Assessment (n=16,279)



Charts 4 and 5 on this page provide a longitudinal look at student health over time. Specifically, student BMI is reported for age 5 years to 16 years. In general, there is an increase in the percentage of students with a healthy BMI and a corresponding decrease in the percentage of students with unhealthy BMI. At age 5, the healthy BMI percentage is 47%, while at age 16 years, the percentage of students with a health BMI is 56%. When looking at the PACER subtest of the fitness assessment, a more pronounced decline is apparent. At age 10, 53% of students scored within the Healthy Fitness Zone for the PACER. This percentage declines to 13% at age 16. In summary, the physical fitness of Louisiana's students declines over time.

Chart 4: 2009-10 Statewide Fitness Assessment BMI by Age (n=19,055)

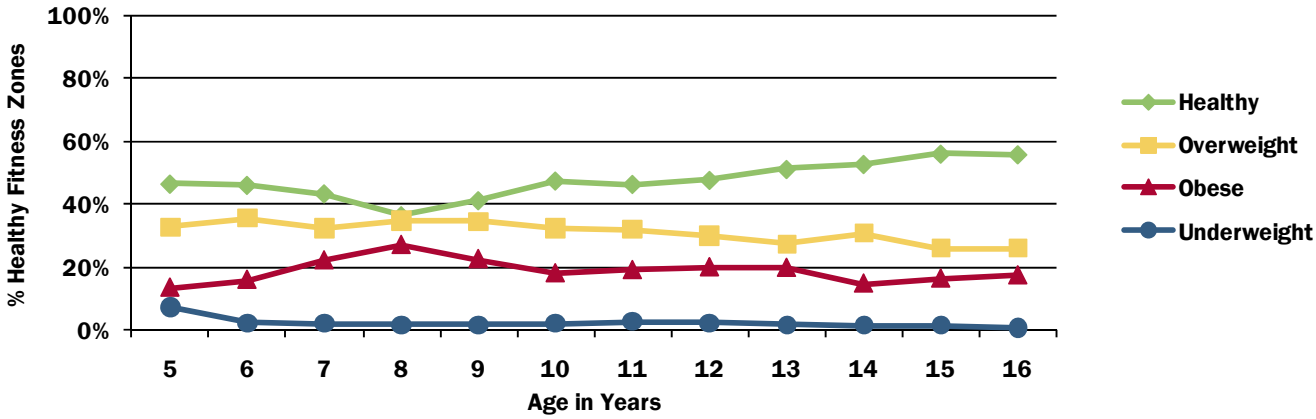
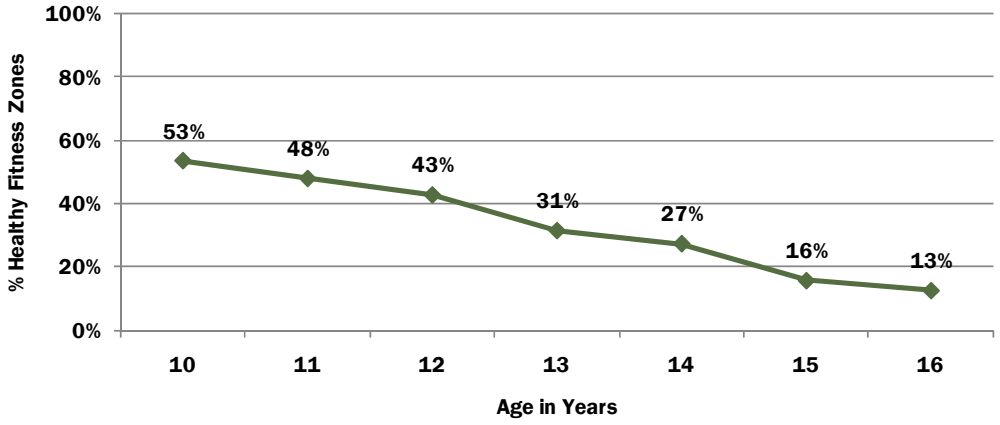


Chart 5: 2009-10 Statewide Fitness Assessment PACER Subtest Results by Age (n=12,035)



Subgroup Analyses

The physical fitness assessment was analyzed to determine performance trends in certain subgroups, including:

- Gender
- Race/Ethnicity
- Free/Reduced Lunch
- Special Education

When looking at fitness assessment data by gender, 47% of females and 48% of males have a healthy BMI. When looking at BMI status by gender, little differences are noted, with the exception of overweight females (2% higher than males) and underweight males, which was 1% higher than females (see Chart 6). On the fitness assessment, similar scores were noted for the trunk lift and curl-up results between genders. The largest difference was noted on the shoulder stretch, with females outperforming males by 13%. On the PACER, 44% of females and 33% of males scored within the HFZ. Males outperformed females by 11% on the push-up subtest, which is a test of muscular strength (see Chart 7).

Chart 6: 2009-10 Statewide Fitness Assessment BMI Results by Gender

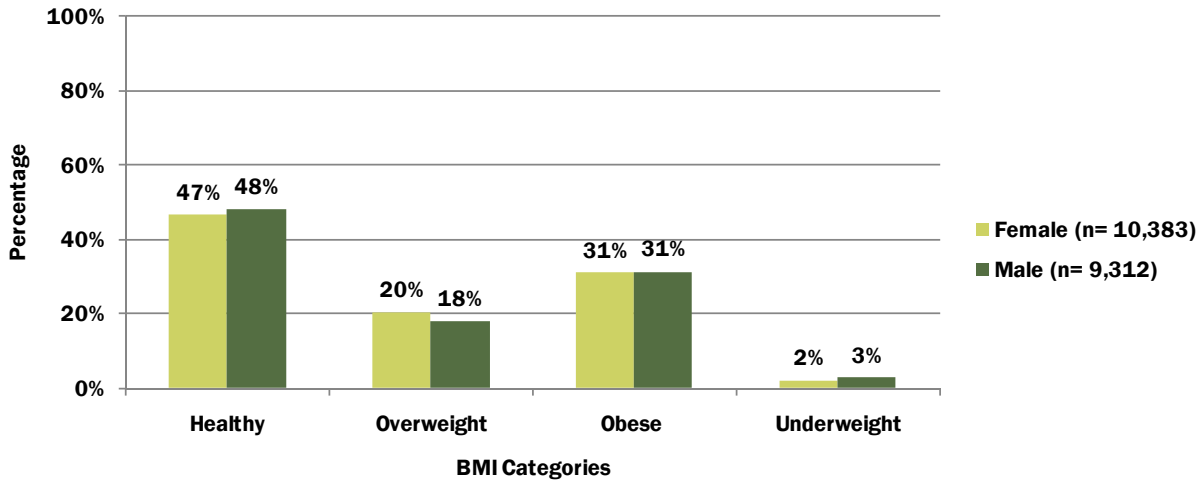
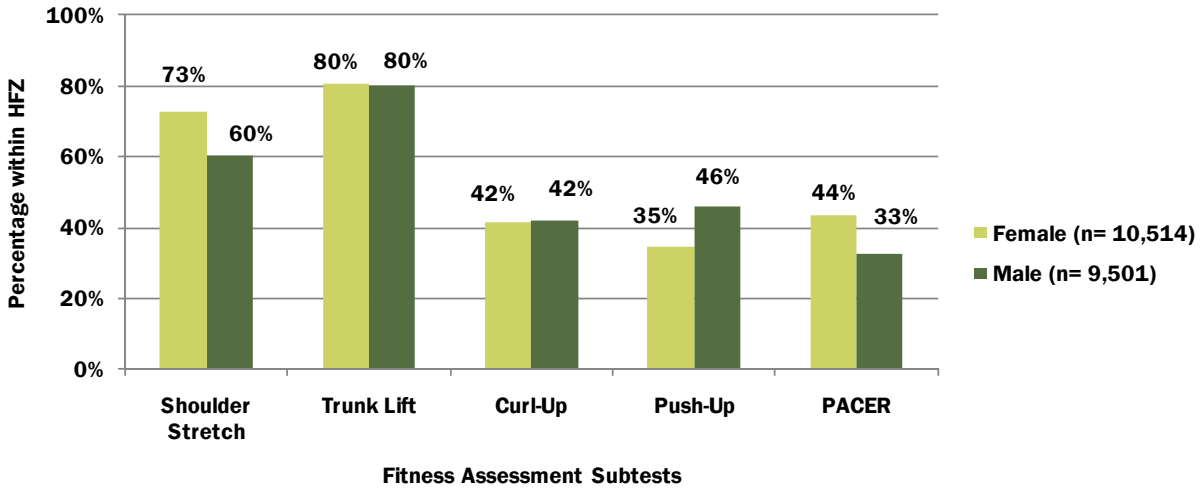


Chart 7: 2009-10 Statewide Fitness Assessment Subtest Results by Gender



When looking at results by race/ethnicity (Charts 8 and 9), 50% of white students had a healthy BMI, compared to 45% of African American students and 42% of Hispanic students. Conversely, Hispanic students, along with African American students, were more likely to be overweight or obese than white students (Hispanic: 36%; African American: 33%; White: 29%).

Additionally, differences by race/ethnicity were noted on subtest performance. White students performed better than African American and Hispanic students on the PACER (White: 46%; African American: 34%; Hispanic: 32%). African Americans performed better than white and Hispanic students on the curl-up (African American: 42%; White: 40%; Hispanic: 36%). Other subtests have white students performing slightly better than African Americans and moderately better than Hispanic students.

Chart 8: 2009-10 Statewide Fitness Assessment BMI Results by Race/Ethnicity

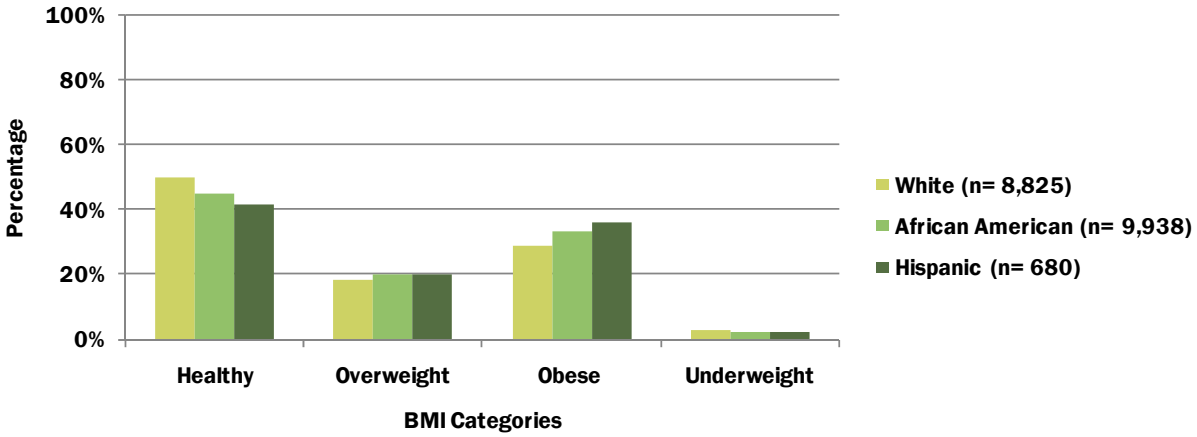
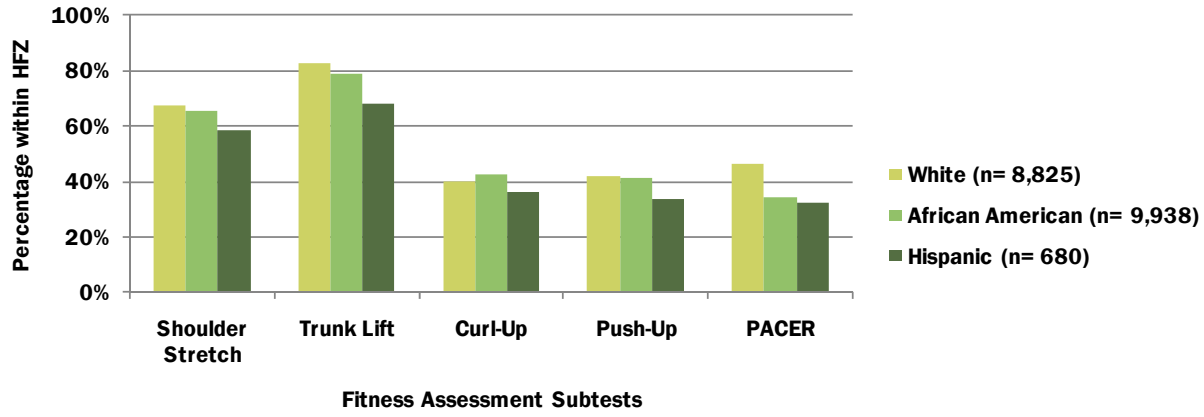


Chart 9: 2009-10 Statewide Fitness Assessment Subtest Results by Race/Ethnicity



Fitness assessment data was also analyzed by free/reduced price lunch status, which is a marker for poverty (Charts 10 and 11). Forty-five percent (45%) of students with free/reduced price lunch status had a healthy BMI, which was 6% lower than non-free/reduced price lunch status (51%). Correspondingly, students with free/reduced price lunch status had a higher level of obesity than non-free/reduced price lunch status (33% to 27%). This same trend held when looking at fitness assessment passage rates. Students receiving free or reduced price lunch performed lower than their non-free and reduced price lunch peers. This was particularly true with the PACER subtest, which had an 11% difference (35% to 46%).

Chart 10: 2009-10 Statewide Fitness Assessment BMI Results by Free and Reduced Price Lunch Status (n=19,695)

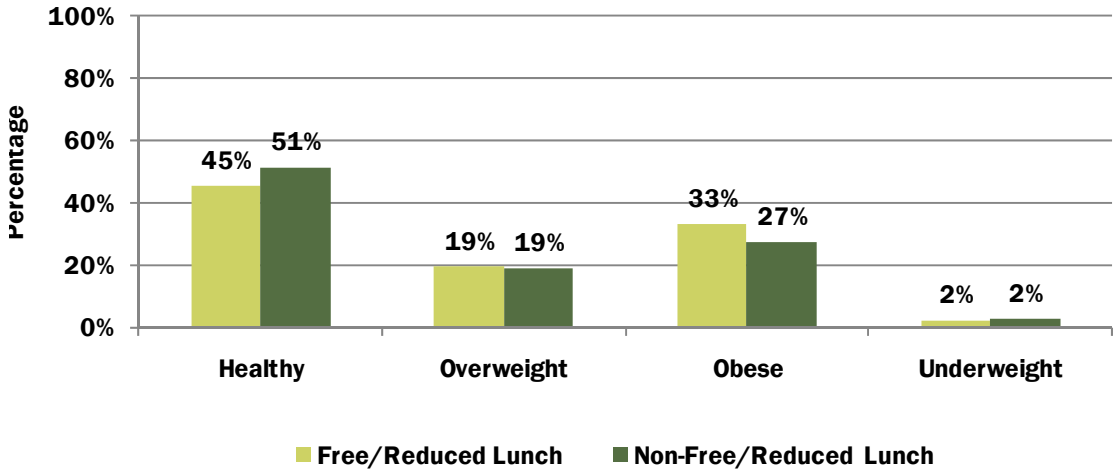
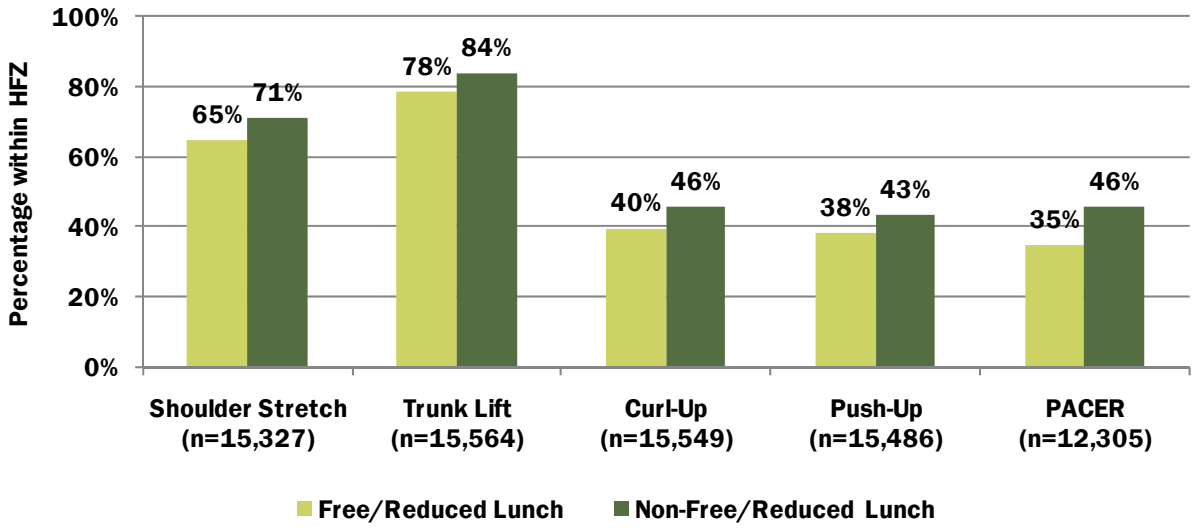


Chart 11: 2009-10 Statewide Fitness Assessment Subtest Results by Free and Reduced Price Lunch Status



Understanding the health of special education students is critically important. This information was collected on 1,769 special education students (9% of the overall sample). From this sample, 44% had a healthy BMI, compared to the total sample, which had a healthy BMI of 47%. This left 56% of special education students with an unhealthy BMI (compared to 53% of total sample). Of the unhealthy BMI students, 34% were classified as obese, which is 3% higher than the total sample (see Chart 12).

Less than 1,000 special education students also participated in one or more of the fitness assessment subtests. The chart on this page indicated the percentage of students scoring within the Healthy Fitness Zone. Specifically, 21% scored within the HFZ on the PACER subtest, which is a measure of aerobic cardiovascular performance, compared to 39% of the total sample. Students with special education needs scored lower on all fitness assessment subtests than the total sample (see Chart 13).

Chart 12: 2009-10 Fitnessgram Special Education by BMI Result Statewide Assessment (n=1,769)

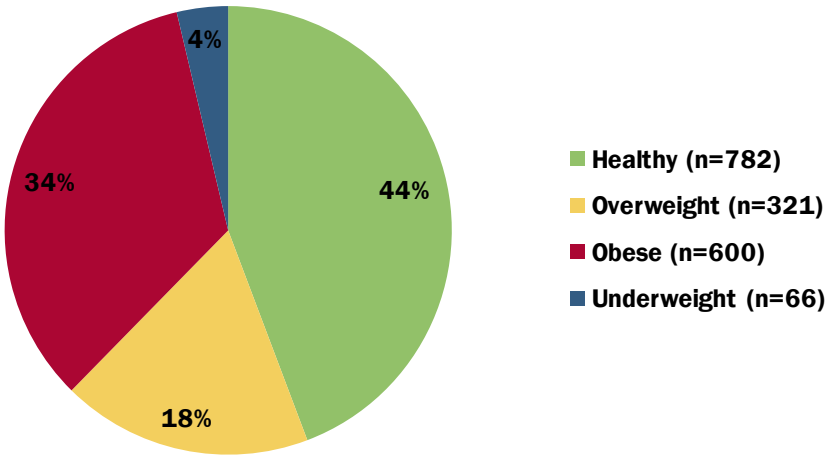
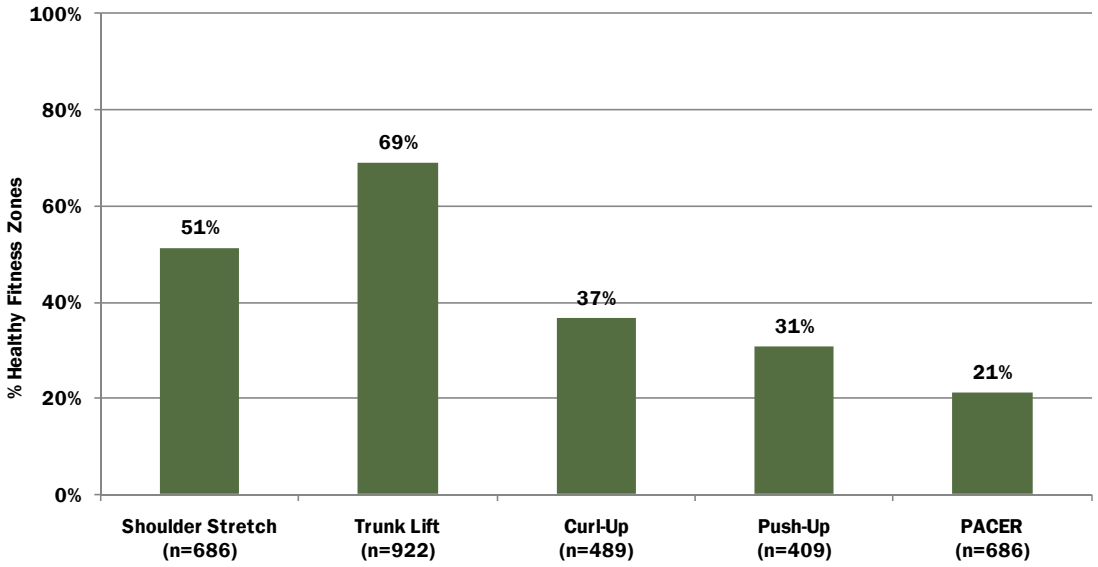


Chart 13: 2009-10 Statewide Fitness Assessment Subtest Results for Special Education



Behavioral Analysis

When analyzing the health and fitness level of students by their behavior incidences (Charts 14 and 15), few patterns emerge. It appears that the BMI distribution is very similar among the three groups (no incidences, one incidence, and two or more incidences). Similar results are also seen when looking at fitness assessment passage rates by number of behavior incidences. Students with no behavior incidences performed slightly better than those students with either one incidence or two or more behavior incidences. Twenty-nine percent (29%) of students with no behavior incidences passed 75% or more fitness subtests, while 24% of students with only one behavior incidence passed 75% or more fitness subtests. Twenty-six percent (26%) of students with two or more behavior incidences passed 75% or more fitness subtests.

Chart 14: 2009-10 Statewide Fitness Assessment BMI Results by Number of Behavior Incidences (n=19,695)

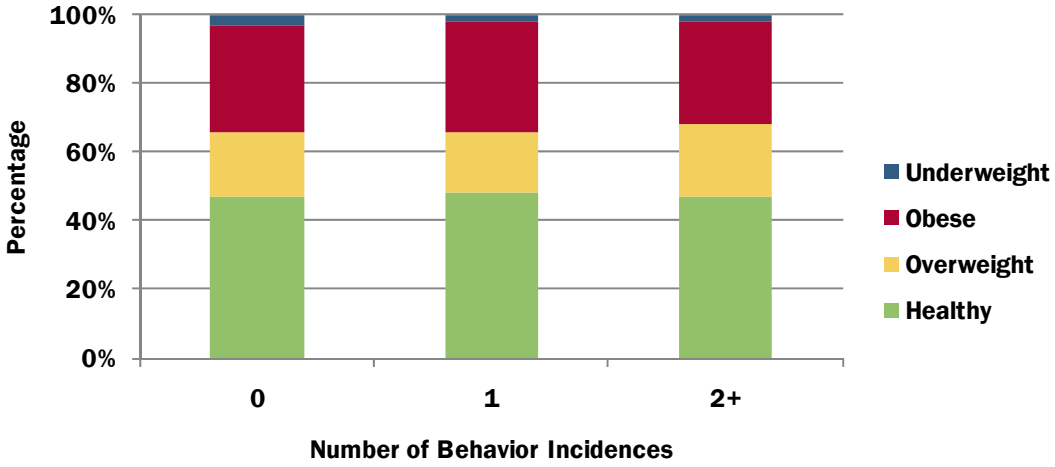
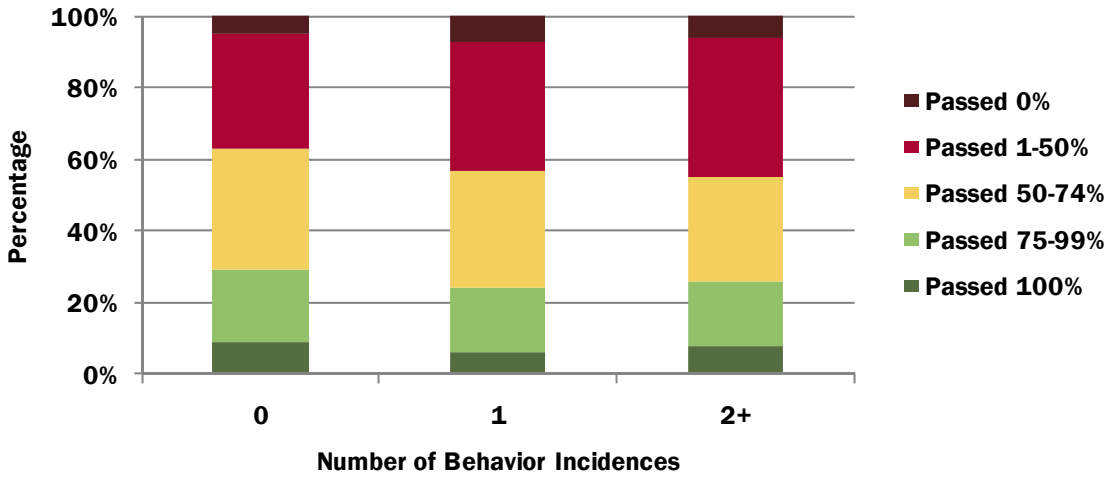


Chart 15: 2009-10 Statewide Fitness Assessment Subtest Results by Number of Behavior Incidences (n=19,695)



Academic Analysis

The two charts below (Charts 16 and 17) illustrate the performance level of LEAP categories by fitness assessment subtest performance. In other words, the charts show patterns in performance on academic tests through fitness assessment analysis. In general, students who passed 75% or more of the fitness subtests tended to perform in a higher category on the LEAP test (Advanced, Mastery or Basic). Conversely, students who passed less than 50% of the fitness subtests tended to perform in a lower category on the LEAP test (Approaching Basic or Unsatisfactory).

Chart 16: 2009-10 Statewide Fitness Assessment Scores within HFZ by ELA LEAP Passage Categories (n=4,629)

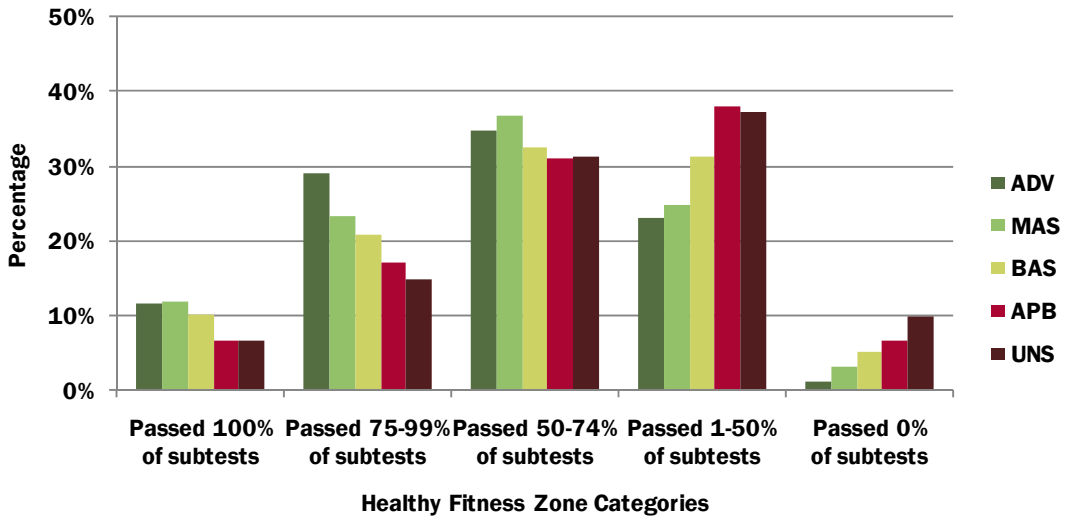
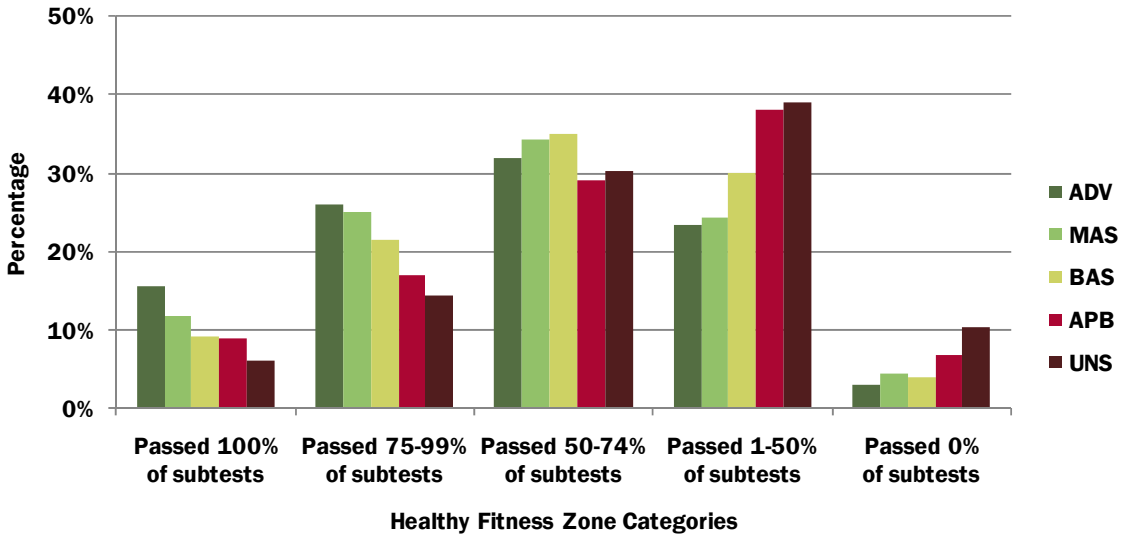
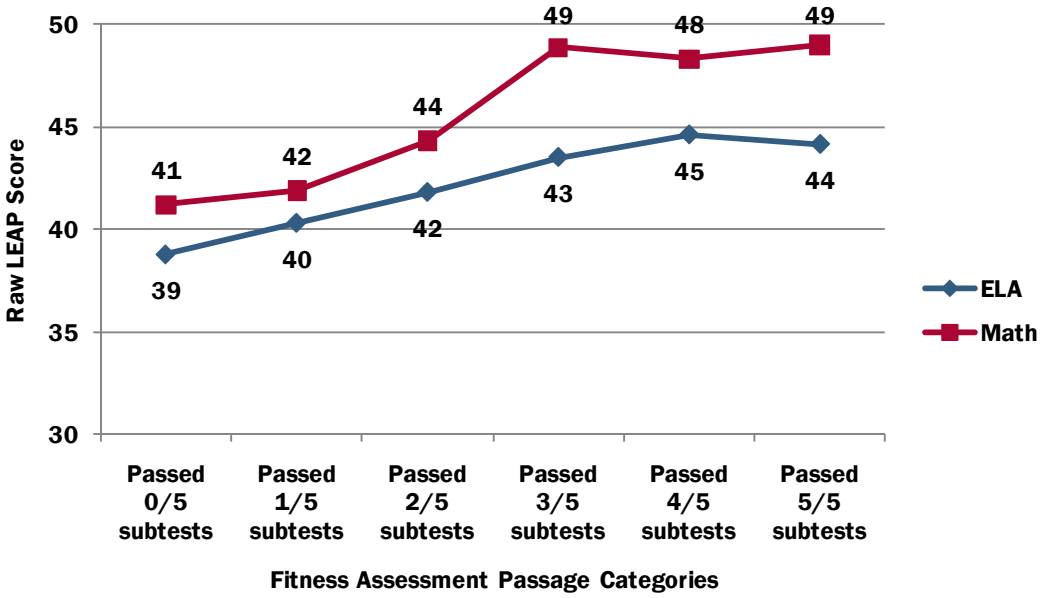


Chart 17: 2009-10 Statewide Fitness Assessment Scores within HFZ by Math LEAP Passage Categories (n=4,629)



Further analysis was designed to look at the effect of fitness on LEAP scores. A MANCOVA (multiple analysis of covariance) was performed to determine the effect of fitness (as determined by five standard physical fitness assessment measures) on average LEAP scores while controlling for previous *i*LEAP scores. Put simply, given the known relationship between prior *i*LEAP and current LEAP results, does fitness still predict better performance on the LEAP? The analysis conducted indicated a significant relationship (>0.05), sufficient power in all sections of the equation (1.00), and a corrected equation with strong explanatory importance (adjusted r-square = 0.568 for ELA and 0.620 for math). In short, performance on the combined fitness assessment measures tends to impact performance on the LEAP ELA and Math subtests (see Chart 18).

Chart 18: Effect of 2009-10 Fitness Assessment Results on Spring 2010 LEAP Raw Scores (n=4,098)

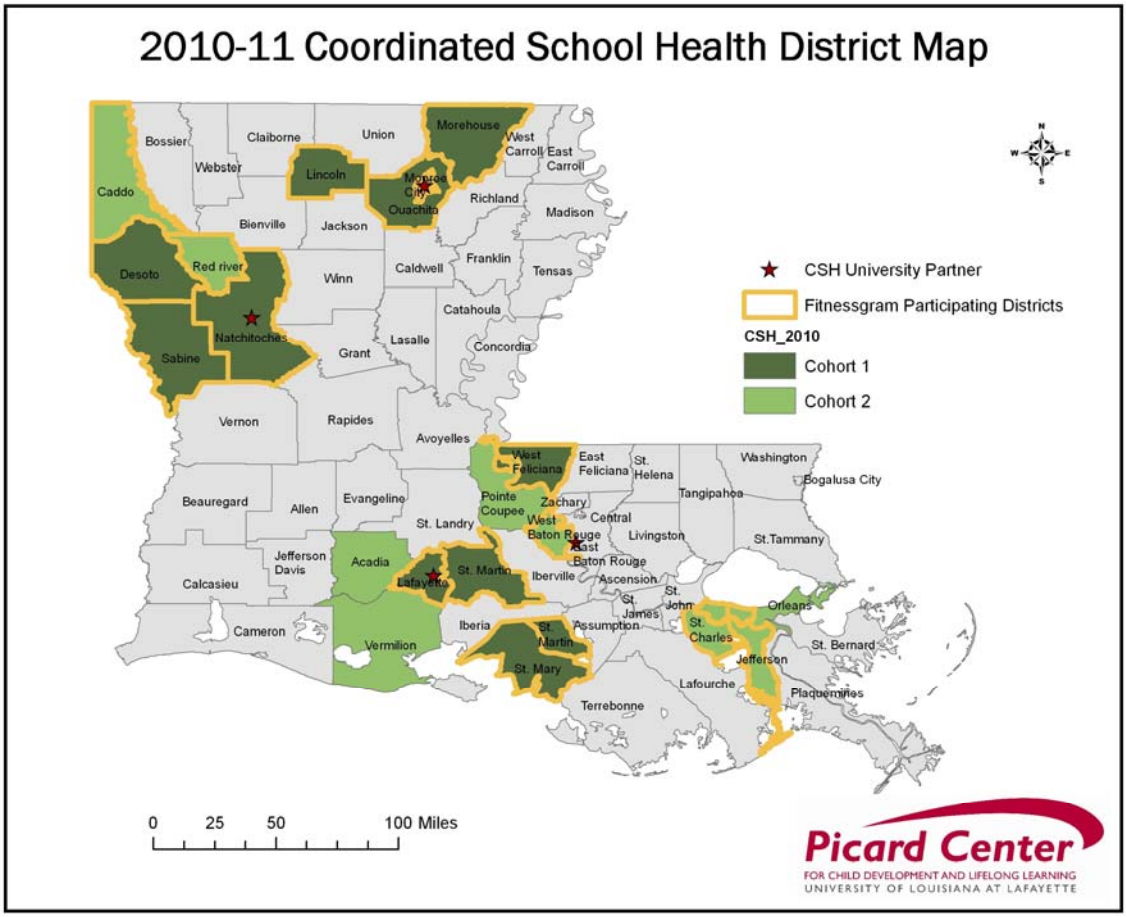


III. Progress on 2009 Plan

In 2009, with guidance from the Louisiana Obesity Council, the collaborators mentioned earlier developed a plan for physical health fitness assessment with three goals:

1. To establish baseline and annual measurements to monitor children's physical fitness and childhood obesity rates;
2. To identify best-practice universal interventions, targeted interventions and intensive, individual interventions and evaluate their effectiveness; and
3. To relate health outcomes to academic and behavioral outcomes (e.g., LEAP scores and suspension rates).

The previous section regarding fitness assessment findings indicates significant progress on Goals 1 and 3. From 2008-09 to 2009-10, the number of fitness assessments completed rose from 7,500 to 25,000 (more than 300% increase), with the number of districts increasing from 6 to 15 (a 250% increase). The map below indicates the 2009-10 participating school districts, along with the Picard Center's three university partners. These partners assisted in the collection, analysis and reporting of physical fitness assessment data.



Additionally, this report includes the initial findings of the Picard Center's efforts to relate health variables like physical fitness to academic outcomes like LEAP standardized test scores. The Picard Center and its university partners are continuing to explore this research area. Current research questions include the calculating the effect size of physical health on academic outcomes (how big an impact does physical fitness play in academic performance).

Finally, to achieve goal two, the collaborators are working on multiple fronts to indentify and implement tiered intervention for all Louisiana children. Over the past year, the Louisiana Childhood Obesity Research Consortium (LA CORC) was formed as a workgroup of the Louisiana Obesity Council to combine research efforts into causes and solutions to the childhood obesity epidemic in Louisiana. The Department of Education continues to provide training and technical assistance regarding the implementation of physical education grade level expectations to school districts. These research-based best practice guidelines will help create more effective physical education classrooms. The Department of Health and Hospitals through the Louisiana Obesity Council has been active in fostering partnership at the state, regional and local levels. Some projects include partnering with the New Orleans Saints, Louisiana Action for Healthy Kids and the Louisiana Dairy Association to distribute over 900 Fuel Up to Play 60 school wellness activation kits and coordinating efforts with the DHH Chronic Disease Tobacco Program and the Louisiana School Board Association on a grant to assist schools in the development of School Health Advisory Councils (requirement of Act 286 of the 2009 Louisiana legislative session) and comprehensive wellness policies. The NFL New Orleans Saints also partnered with the Louisiana Obesity Council to donate 35 Fitnessgram kits to be distributed to Louisiana schools. The Picard Center has continued its collaboration with twenty school districts around the state on its CSH initiative. Additionally, the Picard Center has extended its collaborative contracts with three universities and is seeking collaboration with two more universities.

In August 2010, representatives from DHH, DOE and Picard Center met (the Governor's Council on Physical Fitness was invited, but did not attend) to review and revise the plan for implementation and expansion of assessments and interventions. The decision was made to focus on ten strategies for school-based obesity prevention (as recommended by the Centers for Disease Control and Prevention). These ten strategies are:

1. Coordinate and integrate school health-related programs across state agencies and with nongovernmental organizations.
2. Use state and local data to guide decision-making and policy formulation.
3. Support the development of school health councils and rigorous school health planning processes.
4. Establish strong wellness policies.
5. Improve the capacity of school staff through certification and professional development.

6. Establish requirements for how much time students must spend in physical education (activity).
7. Set nutrition standards for food and beverages offered in schools.
8. Promote high quality health education and physical education.
9. Support student participation in high quality school meal programs.
10. Support opportunities for students to engage in physical activity and consume healthier foods.

In December 2010, the Louisiana Obesity Council, in consultation with the Department of Education, the Department of Health and Hospitals, the Governor's Council on Physical Fitness and sports, and the Cecil J. Picard Center, will develop a companion report as required by Act 256. This report will include further recommendations regarding program implementation, findings, best practices, and future direction through the Department of Health and Hospitals.