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ABSTRACT OF THESIS

THE EFFICACY OF SCHOOL WELLNESS POLICIES IN KENTUCKY

With the passage of the Child Nutrition and WIC Reauthorization Act of 2004, all schools that participate in the National School Lunch Program are required to establish local wellness policies to address childhood obesity. In the state of Kentucky, Senate Bill 172 requires all elementary schools to adopt a local wellness policy addressing competitive foods, healthy choices, and daily physical activity. This study measured federal and state compliance among schools that responded to the 2008 Kentucky School Nutrition Survey. This study analyzed differences in the school nutrition environment among policies based on data from the 2002 and 2008 Kentucky School Nutrition surveys. The majority of school wellness policies were compliant with both federal and state guidelines. Significant differences in the school environment include a reduction in the availability of vending machines, decreased percentage of teachers using food as a reward, and increased use by teachers of non food items as a reward. Significant differences were not found among foods offered in vending machines, snack bars, and classroom parties. In 2008, elementary schools provided an average of 174 minutes of physical activity weekly, which is above the recommended guideline of 150 minutes per week.

KEY WORDS: School wellness policies, childhood obesity, school nutrition environment, physical activity, Kentucky

Margaret O'Bryan Murphy

August 24, 2009

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IN KENTUCKY

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THESIS

Margaret O'Bryan Murphy

The Graduate School

University of Kentucky

2009

THE EFFICACY OF SCHOOL WELLNESS POLICIES
IN KENTUCKY

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Sciences
College of Agriculture
at the University of Kentucky

By

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2009

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Chapter 1: Introduction

In the United States and other developed countries, obesity among adults and children has become an alarming health concern. The prevalence of overweight among U.S. children has more than doubled in the past 20 years and tripled among adolescents (1). Obesity in youth is related to numerous long-term health consequences including elevated blood cholesterol levels and high blood pressure, which leads to an increased risk of cardiovascular disease, increased risk of diabetes mellitus, as well as other ailments including respiratory disorders, orthopedic conditions, and hyperinsulinemia (2).

Experts attribute much of this increased prevalence of childhood overweight to decreased physical activity and over-consumption of high-calorie foods. Schools play an important role in influencing the diet of children and adolescents since more than 95% of this nation's youth attends public or private institutions (3). The Institute of Medicine's action plan for the prevention of childhood obesity observed that schools are in a unique position to influence the diets and physical activity of US children. Most US children attend school for 6 or more hours per day, 180 days per year, from ages 5 through 17 years (4).

Because of these alarming trends, the Child Nutrition and WIC Reauthorization Act of 2004 was adopted in order to improve the school environment through sound nutrition and education. This law mandates that every school must develop a local wellness policy with specific requirements (5). These requirements include goals for nutrition education, physical activity, and other school-based activities designed to promote student wellness; nutrition guidelines for all foods available on the school

campus throughout the school day; establish a plan for measuring implementation of the local wellness policy; and involve parents, students, representatives of the school food authority, the school board, school administrators, and the public in the development of the local wellness policy (5). The law mandates that each school must have had its wellness policy in effect by July 1, 2006 (5).

In February 2006, the Kentucky legislature approved Senate Bill 172 (SB 172). It requires school districts to annually assess the nutrition and physical activity environments, report the results, and make recommendations to improve the school environment. The report must include an evaluation of the district's compliance with the school breakfast and lunch programs; an evaluation of the availability of contracted fast foods; a review of access to foods and beverages sold outside the school lunch and breakfast programs whether through vending machines, school stores canteens, or as a la carte items on the cafeteria lines; a list of foods and beverages that are available to students including the nutritional value of those food and beverages; and recommendations for improving the school nutrition environment (6).

In addition to these district requirements, SB172 requires nutrition regulations for competitive foods and beverages with the exception of a la carte items (6). For schools that contain any combination of grades kindergarten through fifth grade, a local wellness policy must be adopted and implemented, which encourages healthy choices and provides for daily moderate to vigorous physical activity (6).

To date, there has not been a systematic evaluation of Kentucky's school wellness policies to measure compliance with federal and state guidelines. The primary

aim of this study is to examine school wellness policy efficacy and to make recommendations for further improvement of the Kentucky school nutrition environment.

This study analyzes policies written in response to the federal wellness policy requirement in Kentucky including federal and state compliance. The Kentucky School Board Association has placed 102 school districts' policy and procedure manuals online, which includes a section for Student Welfare and Wellness. The Kentucky Department of Education (KDE) has adopted a wellness policy template for school districts. This study examines differences in policy implementation among schools that followed the Kentucky School Board Association template or KDE template or those who created an original wellness policy. Implementation was measured by comparing results from the 2008 Kentucky School Environment Survey to those of the 2002 Kentucky School Environment Survey to determine what changes have been made in the school nutrition environment.

Chapter 2: Literature Review

Prevalence of Childhood Obesity

For children and adolescents (aged 2-19 years), the BMI value is plotted on the CDC growth charts to determine the corresponding BMI-for-age percentile. A child's weight status is determined based on an age- and sex-specific percentile for BMI (7). According to the CDC, overweight is defined as a BMI at or above the 85th percentile and lower than the 95th percentile, obesity is defined as a BMI at or above the 95th percentile for children of the same age and sex (7). For purposes of this study, childhood overweight will be used.

According to the 2007 Youth Risk Behavior Surveillance, 13.0% of high school students across the nation were obese while 15.8% were considered overweight (8). Another study determined that 36.4% of the children in a nationally representative sample of 69,000 children between the ages of 5 and 17 were overweight, representing an estimated 17 million children in the United States (9). This study also found that southeastern states had the highest prevalence of children who are at risk of overweight and/or overweight (9). A similar study utilizing a representative national sample of 46,707 children aged 10-17 found that children in West Virginia, Kentucky, Texas, Tennessee, and North Carolina had over twice the odds of being obese than children in Utah (10).

Overweight in childhood has a significant impact on both physical and psychological health. Overweight children are more likely to have cardiovascular and digestive diseases (11). Psychological disorders such as depression occur more frequently in overweight children (12). Children are often considered the priority

population for intervention strategies because weight reduction is more difficult in adult populations (13). Experts agree that prevention should be the key strategy for controlling the obesity epidemic (4, 13).

Role of Schools

Most US children attend school for 6 or more hours per day, 180 days per year, from ages 5 through 17 years (4). More than 25 million students use the National School Lunch Program (NSLP) daily, while approximately 7 million utilize the National School Breakfast program (14). School meals must meet the recommendations of the Dietary Guidelines for Americans, which recommend no more than 30 percent of an individual's calories come from fat and less than 10 percent from saturated fat. School lunches must provide one-third of the recommended dietary allowance (RDA) for protein, calcium, iron, Vitamin A, Vitamin C, and calories while school breakfasts must provide one-fourth of these RDAs (15). School meal programs significantly improve children's diets. Children who participate in school meal programs have higher mean intakes of vitamins and minerals than their counterparts who do not participate (16). Participation in school meal programs declines with age but also declines as competing options (competitive foods) to school meals become available (16). One study found that if a policy were enforced prohibiting parents or students from bringing food into the cafeteria from local fast-food establishments, the average daily participation in school lunch increased (17).

Competitive Foods

Competitive foods are all foods offered for sale at school except federal school meals. Competitive foods include a la carte foods offered in the school cafeteria as well as foods sold in snack bars, student stores, vending machines, and fundraisers (18).

Current law tightly limits the Agriculture Department's authority to regulate competitive foods, which are divided into two categories: foods of minimal nutritional value and all other foods offered for individual sale. In the 2004-2005 school year, almost two thirds of elementary schools (64%) and roughly 90% middle and high schools had foods or beverages other than milk for sale a la carte during lunch (19). The American Dietetic Association takes the position that "there is a growing concern that standards should be applied to food in the entire school environment" (20).

Foods of minimal nutritional value are foods that provide less than 5 percent of RDA per serving for each of eight key nutrients and include items such as soft drinks, water ices, chewing gum, and certain candies. These foods cannot be sold in food service areas during mealtimes, but may be sold anywhere else in the school throughout the school day (15). The second category of competitive foods consists of all other foods offered for individual sale and includes items such as candy bars, potato chips, cookies, cakes, and ice cream. The USDA has no authority to regulate this category of competitive foods (15).

Availability of Competitive Foods

Competitive foods are widely available in schools, especially secondary schools (21). Results from the School Health Policies and Program Study 2006 indicate that few states required schools to restrict the availability of deep-fried foods, to prohibit the sale of foods that have low nutrient density in certain venues, or to make healthful beverages available when beverages were offered. Many of these schools sold items high in fat, sodium, and added sugars (22). Investigators in Kentucky demonstrated that one-third of

743 sixth grade students who purchased a regular school lunch also bought competitive food items including potato chips, sport beverages, and cookies (23).

Impact of Competitive Foods on Child Nutrition

Children who habitually consume soft drinks ingest more calories and are more likely to be overweight or obese (24). Students in schools that provide access to soft drinks are less likely to consume fruits, juice, milk, and vegetables than students who do not have access (25). Briefel and others reported that sugar-sweetened beverages obtained at school contributed a daily mean of 29 calories in middle school children and 46 calories in high school children (26). Children attending a school without stores or snack bars were estimated to reduce sugar-sweetened beverage consumption by 22 calories per school day in middle school children and by 28 calories in high school children which translates into 3,040 to 17,100 calories per year, which is significant in reducing childhood obesity (26).

A 2003 study examined dietary behavior among 598 seventh- and eighth-grade students. Results from this study indicate that the greater the availability at school of a la carte foods, the lower the daily intake of fruits and vegetables and the higher the intake of total daily fat and saturated fat (27).

Physical Activity

A major factor associated with at risk for overweight and obesity in children is reduced physical activity (28). The National Association for Sport and Physical Education recommends 150 minutes per week of physical education for elementary students and 225 minutes per week for middle and high school students (29). Nationally,

only 8 percent of elementary schools and 6 percent of middle schools and high schools meet these recommendations (29).

Several studies have indicated the impact of physical education as a strategy to reduce childhood obesity. A 2004 study reported that one additional hour of physical education in first grade reduces BMI among girls who were overweight or at risk for overweight (31). Another study found no significant difference in steps per minute between overweight and non-overweight students during a variety of activities in physical education class (32). A California Department of Education study found that physical education courses not only increase physical activity but improve academic performance (33). These studies demonstrate the benefit all students receive from physical education.

Physical Activity School Interventions

The North Carolina State Board of Education updated the Healthy Active Children Policy to include a requirement that all kindergarten through eighth grade students receive at least 30 minutes of moderate-to-vigorous physical activity each school day. Schools met the physical activity through daily recess, physical education, classroom energizers, and intramural sports. School districts reported numerous benefits including increased student focus on academics, increased awareness of healthy habits, student enjoyment, and increased staff involvement (34).

The Stanford GEMS pilot study tested the feasibility, acceptability, and potential efficacy of after-school dance classes and a family-based intervention to reduce television viewing, among African-American girls. Girls in the treatment group, as compared to the control group, exhibited trends toward lower body mass index and waist circumference,

increased after-school physical activity; and reduced television, videotape, and video game use. The treatment group reported significantly reduced household television viewing and fewer dinners eaten while watching television, and a trend toward improved school grades (35).

Legislation and Preliminary Policy Findings

A 2007 study examined the patterns of childhood obesity prevention legislation in the United States and found that the amount of legislation introduced and adopted increased from 2003 through 2005. The topic areas with the most introduced legislation were school nutrition standards and vending machines, physical education, and physical activity, and studies, councils, or task forces (36).

Greves and Rivera examined nutrition policies on competitive foods from 51 school districts. The results indicate that 39% had competitive policies beyond state or federal requirements. Restrictions were most often applied to vending machines, cafeteria a la carte items, and student stores. Most of the policies did not address more comprehensive approaches to school nutrition environment including nutrition education, physical education, advertising, or restriction of foods sold for fundraising or requiring of monitoring physical health indicators. None of these nutrition policies had addressed all recommendations from the Institute of Medicine by 2004-2005. These findings highlight the opportunity for health professionals to help shape and implement more comprehensive school district nutrition policies in order to meet the requirements of CNRA by 2006-2007 school year (37).

Federal Requirements

The Child Nutrition and WIC Reauthorization Act of 2004 mandates that all schools participating in USDA school meal programs adopt a wellness policy by July 1, 2006 to encourage a school environment promoting healthy eating and active living. These policies are required to include goals for nutrition education, physical activity, and other school-based activities, establish a plan for measuring policy implementation, and involve parents, students, and representatives of the school authority, school administrators, and the public in the development of the local wellness policy (5).

State Requirements

In February 2006, the Kentucky legislature adopted Senate Bill (SB) 172, which requires schools to abide by minimum nutrition standards for foods and beverages available on public school campuses based on the most current edition of the US Dietary Guidelines (6). SB 172 requires schools to abide by nutrition regulations for competitive foods and beverages with the exception of a la carte items. Competitive foods may not be sold until thirty minutes after the last lunch period.

For schools that contain any combination of grades kindergarten through fifth grade, a local wellness policy must be adopted and implemented, which encourages healthy choices and provides for daily moderate to vigorous physical activity (6). Schools may use up to thirty minutes of the instructional day to provide for physical activity, however, no minimum amount of physical activity is required daily (6). Principals of these schools must annually assess each student's level of physical activity with an assessment tool of their choice as none is specified within the statute (6). Elementary schools must abide by specific beverage standards outlined in KRS 158.854.

These beverage standards require a mandate to provide “school-day-approved-beverages” only. “School-day-approved beverages“ include water, 100% fruit juice, low fat milk, and any beverage that contains no more than 10 grams of sugar per serving.

Chapter 3: Research Purpose

The purpose of this study is to examine the effectiveness of school wellness policies in Kentucky and to measure implementation of such policies by measuring differences in the school nutrition environment over a six year period. This study will determine if policies are in compliance with federal and state guidelines.

Research Questions

#1 Do Kentucky public schools have wellness policies in place that meet current federal and state laws?

#2 Of the three different types of wellness policies (KDE, KSBA or original) in Kentucky, which type creates the healthiest school environment?

Chapter 4: Methodology

This study used a descriptive design to assess the strength of wellness policies in Kentucky written in response to the CNRA of 2004 and SB172. This study utilizes data collected during two separate School Nutrition Environment Surveys in 2002 and 2008. The 2002 School Nutrition Environment Survey provides baseline data for comparison to the survey conducted after state and federal legislation had been promulgated. The 2008 School Nutrition Environment Survey for the state of Kentucky assessed the implementation of policy and progress towards the Child Nutrition and WIC Reauthorization Act of 2004. This survey included questions addressing meals, a la carte items, vending machines, school stores, snack bars, fundraising activities, school events and parties, reward systems, and physical education in each Kentucky public school. Each survey was distributed to Cooperative Extension agents in February 2008 who traveled to each school to answer the questions. All surveys were completed and returned by May 2008 for analysis and comparison to the results of the 2002 School Nutrition Environment Survey.

Sample Selection

The initial sample was a randomized selection of 471 public schools in the state of Kentucky from the 2002 School Nutrition Environment Survey. This survey had a 73% (n=343) response rate. The final sample consisted of 189 elementary, 76 middle, and 74 high schools.

The 2008 School Nutrition Environment Survey used the same database as the 2002 survey with a response rate of 37% (n=127). This sample includes 59 elementary

schools, 35 middle and 33 high schools. Sample selection for this particular study was based on the schools that responded to the 2008 survey.

Data Collection

Wellness policies were collected from all schools who responded to the 2008 School Nutrition Environment Survey. The survey requested each school to attach the wellness policy and any related procedural documents. When schools did not attach a wellness policy as requested, the remaining school wellness policies were obtained by email or from the district's website.

Measurements

Federal Compliance: To assess compliance with the federal guidelines, policies were compared to each category required by the CNRA including nutrition education, physical activity, school-based activities designed to promote school wellness, nutrition guidelines for foods provided at school, monitoring, and inclusion of parents and community members. Based on these guidelines, a checklist was developed to measure compliance. If at least one statement was present in the policy that addressed the subject of the category in any manner, compliance was noted.

State Compliance: To assess compliance with state guidelines, policies were compared to each category required by SB 172. Elementary schools are required to develop and implement a wellness policy that includes daily physical activity, assesses the student body's physical fitness annually, and encourages healthy choices. In addition to these wellness policy requirements, elementary schools were assessed based on the requirement of providing only "school-day approved beverages," meeting minimum

nutrition standards, and complying with competitive foods standards. Based on these guidelines, a checklist was developed to measure compliance. If at least one statement was present in the policy that addressed the subject of the category in any manner, compliance was noted.

KSBA template: The first variable in this study is the presence of the Kentucky School Board Association's policy. It is hypothesized that presence of a non-template policy will produce a more healthy school environment than the KSBA template policy. By utilizing data from the 2008 and 2002 School Nutrition Environment Survey, key differences were measured including the types of competitive foods available, types of food most commonly served at classroom parties, and use of food and non-food items as rewards. The KBSA template can be found in the appendix.

KDE Template: The second variable in this study is presence of the KDE template policy. Policies were further divided into schools that followed the wellness policy template developed by the Kentucky Department of Education and those who did not follow the template. It is hypothesized that a non-template policy leads to a healthy school environment. By utilizing data from the 2008 and 2002 School Nutrition Environment Survey, key differences were measured including the types of competitive foods available, classroom parties, and use of food and non-food items as rewards. The KDE template can be found in the appendix.

Data Analysis

Data were entered, managed, and analyzed using SPSS (version 16.0.1, Chicago, IL). Data were divided into three categories including elementary, middle, and high

school. Frequency distributions were obtained to measure federal and state compliance for each school's wellness policy. Each school's policy was further divided into the type of policy observed including an original policy, the KDE template policy, and the KSBA template policy.

To compare school nutrition environments over time, specifically differences among number of vending machines available for student use, food availability in vending machines, and the percentage of teachers' using food and non-food items as rewards, the Wilcoxon Signed Rank test was used because the variables were ordinal and assumption of a normal distribution was not applicable. To compare school nutrition environments over time, specifically food availability in snack bar items, types of foods available at classroom parties, and types of food used as reward, the McNemar's test of symmetry was used because variables were nominal and a normal distribution could not be assumed. An alpha level of 0.05 or less was considered significant.

Chapter 5: Results

Policies were first separated into elementary, middle, and high school categories. Of the elementary schools examined, 98.3% (n=58) were analyzed because one could not be obtained via the school district website or from the food service director. Elementary school wellness policies were further divided into categories based on type of policy: 53.4% (n=31) developed an original policy, 24.1% (n=14) followed the KDE template, and 22.4% (n=13) followed the KSBA template.

Of the middle schools examined, 100% (n=35) were analyzed. Middle school policies were further divided into categories based on type of policy: 17.1% (n=6) developed an original policy, 28.6% (n=10) followed the KDE template, and 54.3% (n=19) followed the KSBA template.

Of the high schools examined, 93.9% (n=31) were analyzed because two could not be obtained from the district website or from the schools' food service directors. High school policies were further divided into categories based on type of policy: 29.0% (n=9) developed an original policy, 25.8% (n=8) followed the KDE template, and 45.2% (n=14) followed the KSBA template.

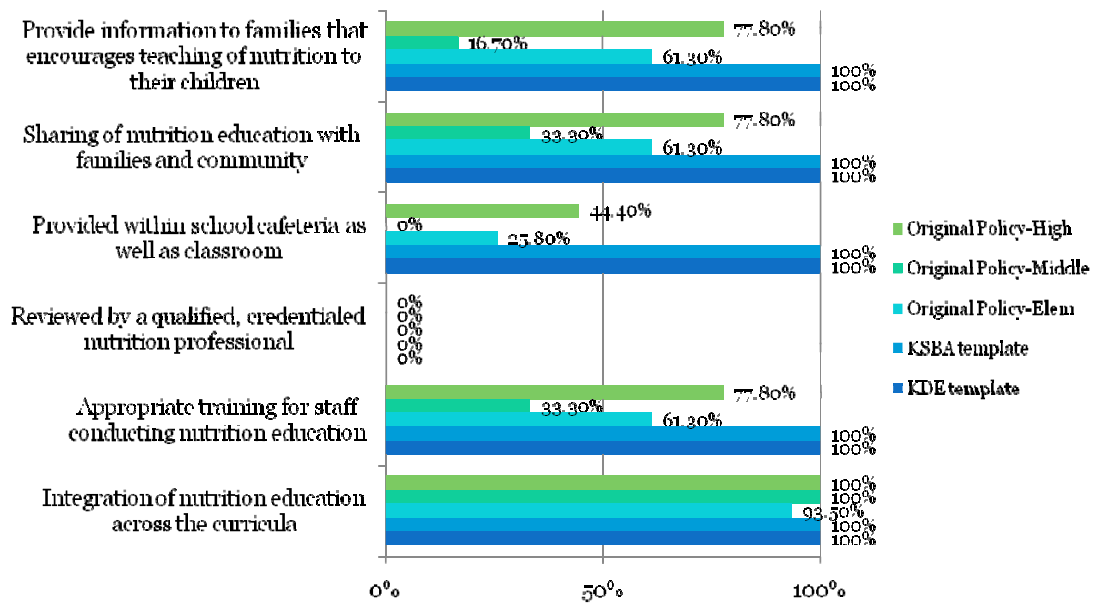
Of the original 126 wellness policies, 124 policies were analyzed for a response rate of 98%. Of the 343 schools from the 2002 Kentucky School Nutrition survey, 124 were analyzed for a response rate of 36%.

Federal Compliance

Within each component of the CNRA, a checklist of questions was developed based on recommendations from the School Nutrition Association. Schools following the

KDE template (n=32) and KSBA template (n=46) were grouped together, however, elementary (n=31), middle (n=6), and high schools (n=9) who created an original template were analyzed separately. In order to meet each component of the CNRA, at least one statement in the policy needed to be addressed (nutrition education, physical activity, nutrition standards, other school-based activities, implementation and monitoring, and inclusion of parents and community members).

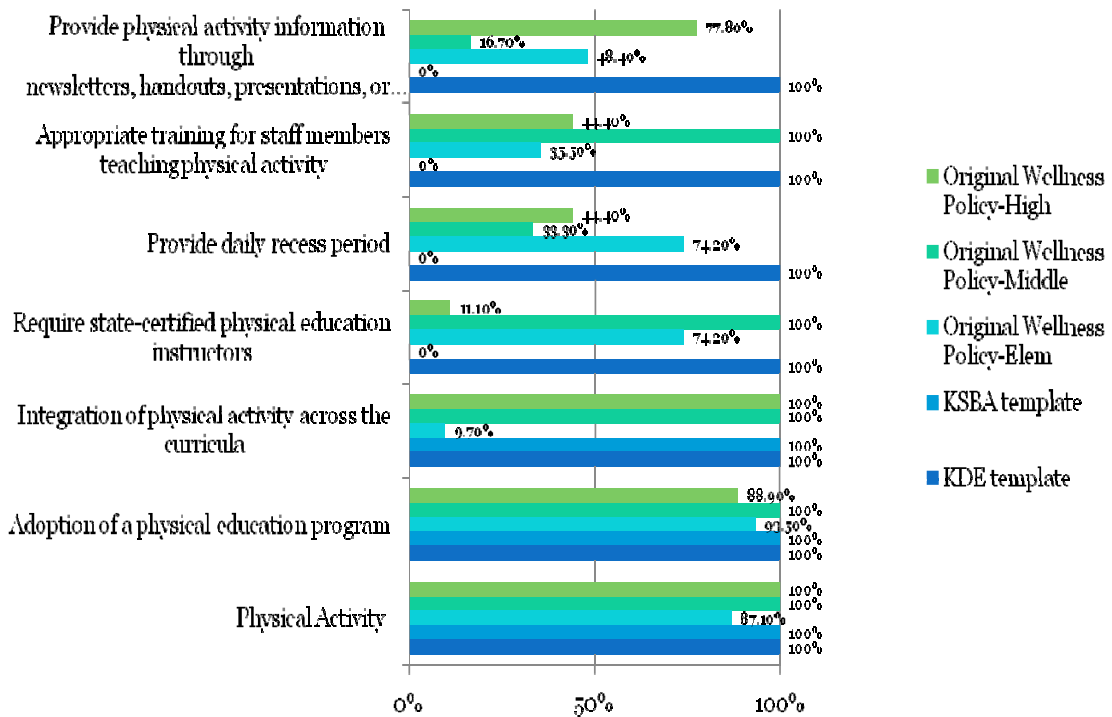
Table 1a: Federal Compliance Among Policy Type: Nutrition Education



Both the KDE and KSBA policy templates met the minimum requirement of CNRA by having at least one statement that addresses nutrition education. The majority of schools who adopted an original policy met this requirement as well with 93.5% of elementary schools who followed the original policy meeting this requirement. Regardless of policy type, the majority of schools included the recommendation of integration of nutrition education across the curricula; however, no schools met the recommendation to have nutrition education be reviewed by a qualified, credentialed

nutrition professional. Both KDE and KSBA templates met the following recommendations: appropriate staff training for staff conducting nutrition education, providing nutrition education within school cafeteria as well as the classroom, providing nutrition education with families and communities, and providing information to families that encourages teaching of nutrition to their children. Less than half of original policies failed to meet the recommendation to provide nutrition education within the school cafeteria as well as the classroom. The majority of elementary and high schools who created original policies met the recommendations to share nutrition education with families and communities, appropriate training for staff conducting nutrition education, providing information to families that encourages teaching of nutrition to their children, however, few middle schools met these recommendations.

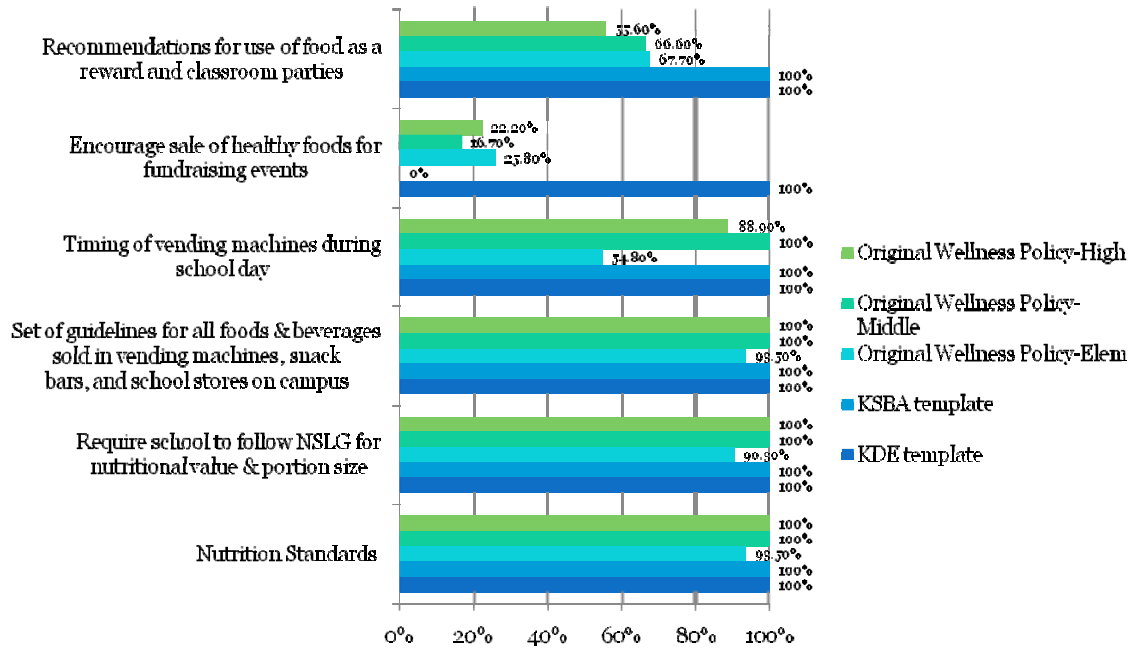
Table 1b: Federal Compliance among Policy Type: Physical Activity



Both the KDE and KSBA policy templates met the minimum requirement of CNRA by having at least one statement that addresses physical activity. The majority of schools that adopted an original policy met the minimum requirement of CNRA except for four elementary schools. The KDE template met all recommendations for physical activity, however the KSBA template failed to require state-certified physical education instructors, provide daily recess period, include appropriate training for staff members teaching physical activity, and provide physical activity information through newsletters, handouts, presentations, or websites.

The majority of elementary schools who adopted an original policy met the following recommendations: adoption of a physical education program, require state-certified physical education instructors, and provide daily recess; however, these schools fell short on requiring integration of physical activity across the curricula, providing appropriate training for staff, and providing physical activity information to the community. All middle schools (n=6) who adopted an original policy met the following requirements: adoption of a physical education program, integration of physical activity across the curricula, requires state-certified physical education instructors, and appropriate staff training. Few middle schools (n=2) provide daily recess or provide physical activity information through media (n=1). All high schools who adopted an original policy (n=9) include the recommendation to integrate physical activity across the curricula while the majority include the adoption of physical education program (n=8) and provide physical activity information through media (n=7); however, few meet the following recommendations: require state-certified physical education instructors (n=1), provide daily recess period (n=4), and provide appropriate staff training (n=4).

Table 1c: Federal Compliance among Policy Type—Nutrition Standards

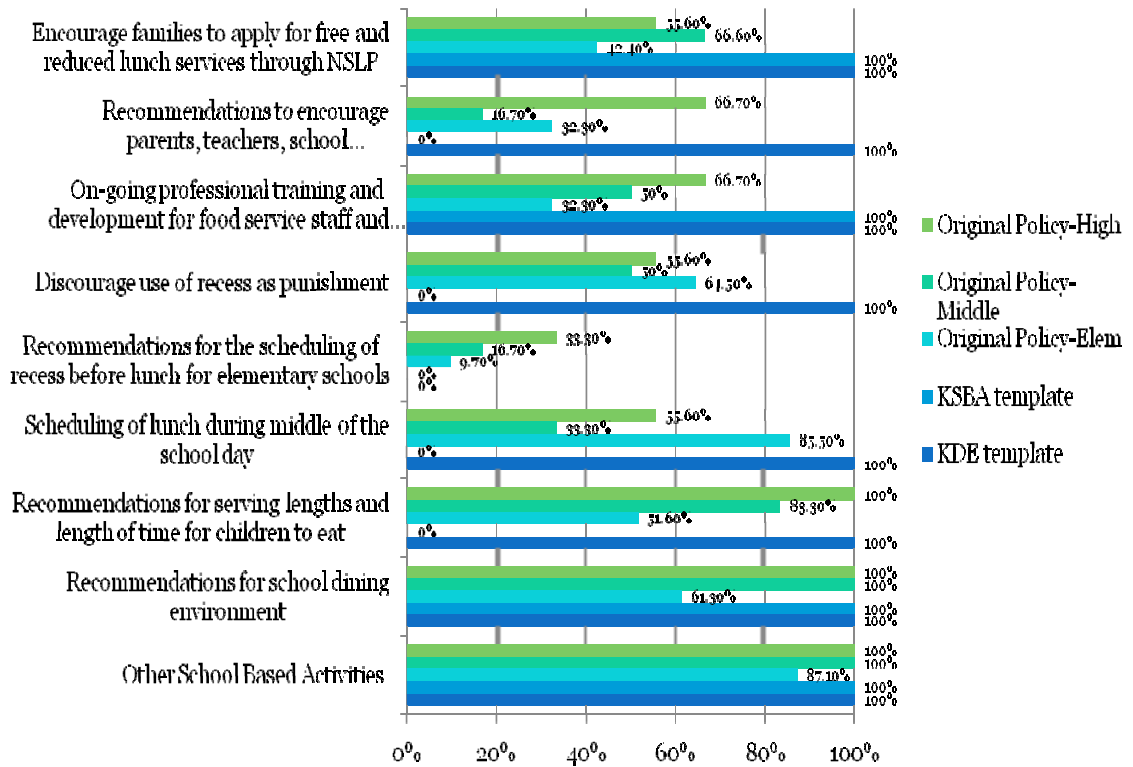


Regardless of policy type, the majority of schools met the minimum requirement of CNRA under the component of nutrition standards. The KDE template included all of the recommendations, however, the KSBA template failed to meet the recommendation to encourage the sale of healthy foods for fundraising events.

The majority of schools who adopted an original policy included the recommendation to require schools to follow NSLG for nutritional value and portion size and a set of guidelines for all foods and beverages sold outside of the school meal program. Approximately half of elementary schools included the recommendation to require timing of vending machines during the school day (30 minutes after the last lunch period), while the majority of both middle (n=6) and high (n=8) met this recommendation. Few elementary (n=8), middle (n=1), and high (n=2) schools included the recommendation to encourage the sale of healthy foods for fundraising events while

approximately two-thirds of these schools included recommendations for use of food as a reward and at classroom parties.

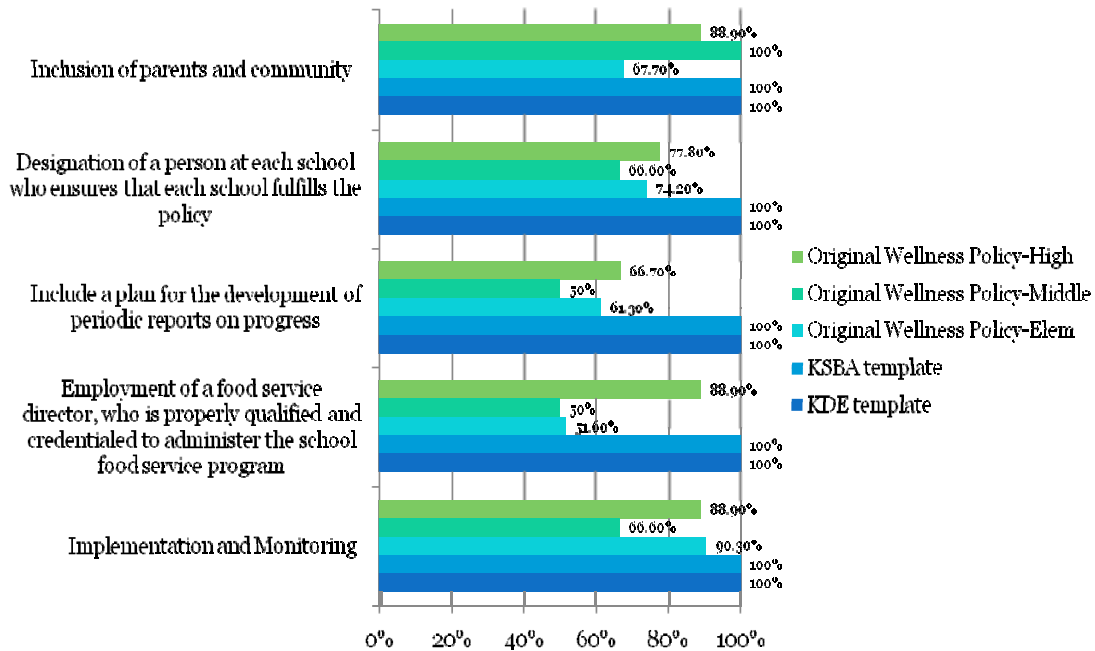
Table 1d: Federal Compliance among Policy Type-Other School-Based Activities



Both the KDE and KSBAs policy templates met the minimum requirement of CNRA by having at least one statement that addresses other school-based activities. The majority of schools that adopted an original policy met the minimum requirement of CNRA except for four elementary schools. Regardless of policy, the majority of schools met the recommendation to include school dining environment. The KDE policy template met the majority of recommendations except scheduling of recess before lunch for elementary schools. The KSBAs policy template met three of the eight recommendations.

The majority of schools which adopted an original policy included recommendations for school dining environment and length of time for students to consume lunch. The majority of elementary and high schools met the recommendation to schedule lunch during the middle of the school day; however, 66.6% of middle schools did not include this recommendation. Approximately half of these schools which created an original policy discourage the use of recess as a punishment and encourage families to apply for free-and-reduced lunch services through NSLP. Two thirds of high schools include recommendations to encourage parents, teachers, school administrators, staff, and community members to serve as role models in practicing healthy behavior whereas less than one third of elementary and middle schools include this recommendation. Few policies included recommendations for the scheduling of recess before lunch.

Table 1e: Federal Compliance among Policy Type-Implementation and Monitoring

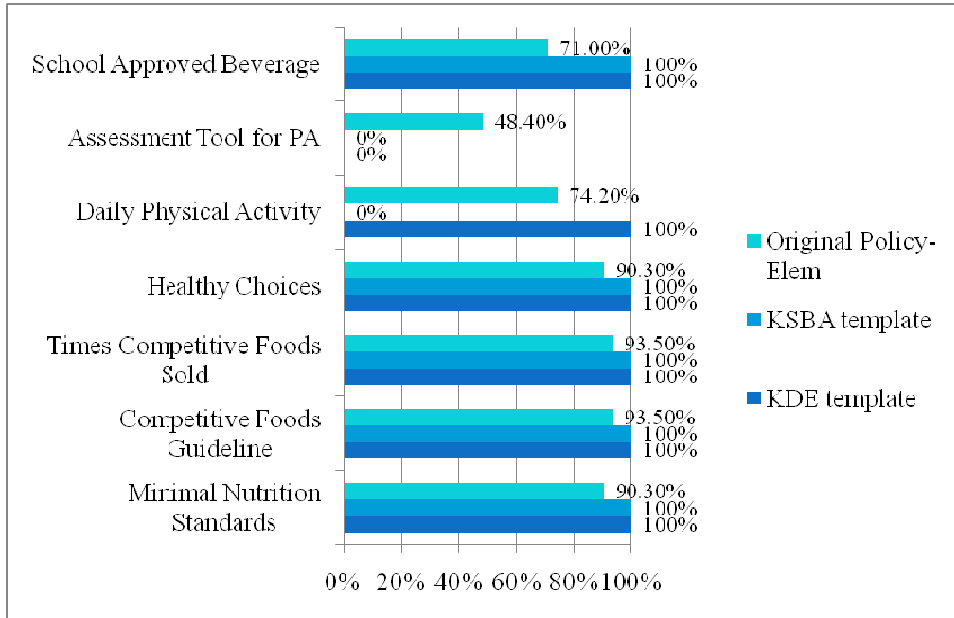


The KDE and KSBA policy templates met the minimum requirement of CNRA by having at least one statement that addresses implementation and monitoring while the majority of schools that adopted an original policy also met the minimum requirement. Both the KDE and KSBA policies included all of the recommendations within implementation and monitoring. The majority of schools of high schools that adopted an original policy included all of the recommendations; however, approximately half of elementary and middle schools included the recommendation to employ a food service director to administer the school food service program and include a plan for the development of periodic reports on progress. The majority of elementary and middle high schools included the recommendation to designate a person at each school who ensures implementation of the adopted policy. The KDE, KSBA template policies, and the majority of original policies included the inclusion of parents and community, thus fulfilling the minimum requirement of CNRA.

State Compliance

A checklist of components for SB172 was created based on the law requirements for elementary schools in Kentucky. The results are summarized in the table below.

Table 2: State Compliance among Policy Types



Fourteen elementary schools follow the KDE template. This policy met six of the seven required components (85.7%). This template failed to include the adoption of an assessment tool to report physical activity annually. Thirteen elementary schools follow the KSBA template. This policy met five of the seven required components (71.4%). This policy failed to include the adoption of an assessment tool to report physical activity annual and the requirement for daily physical activity.

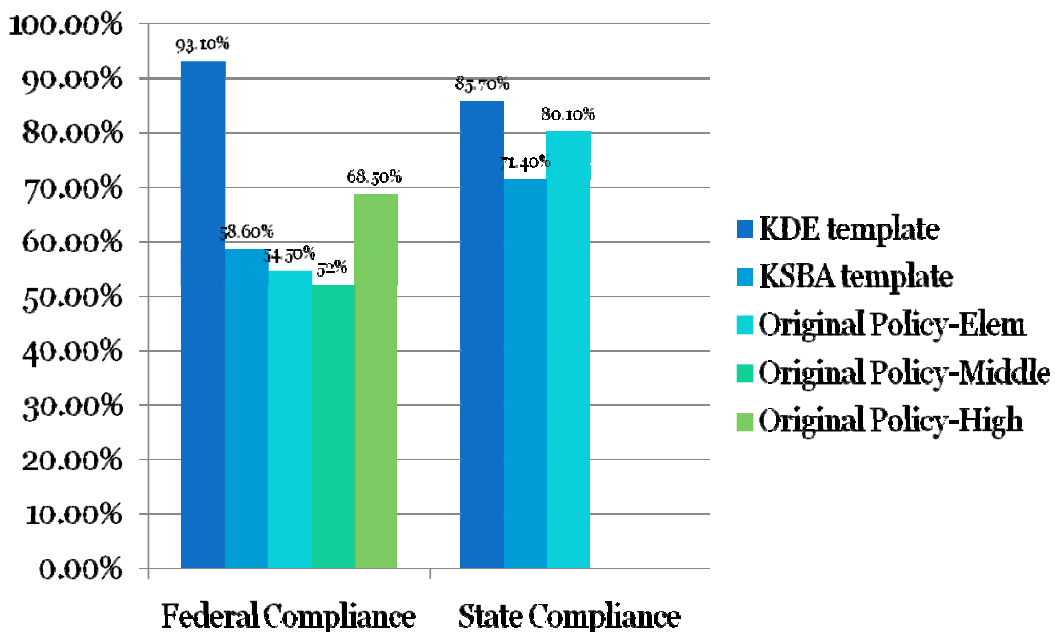
Thirty-one elementary schools created an original policy. The majority of policies met the requirements for minimal nutrition standards, competitive food guidelines and times competitive foods may be sold, healthy choices, daily physical

activity, and the requirement for “school-day-approved beverages.” However, less than half of policies met the requirement to include the adoption of an assessment tool to report physical activity annually (48.4%). On average, these policies met 5.61 of the seven components (80.1%).

Summary of Federal & State Compliance

Of the twenty-nine additional requirements from the School Nutrition Association, elementary schools that adopted original policies met 15.8 of them (54.5%) with a range of 7-24 recommendations for each school. Of the twenty-nine additional requirements from the School Nutrition Association, middle school policies met on average 15.2 (52%) of them with a range of 12-24 recommendations for each school. Of the twenty-nine additional requirements from the School Nutrition Association, these High school policies met 19.8 (68.5%) of them with policies ranging from 12-24 of these requirements.

Table 3: Federal and State Compliance among Policy Type

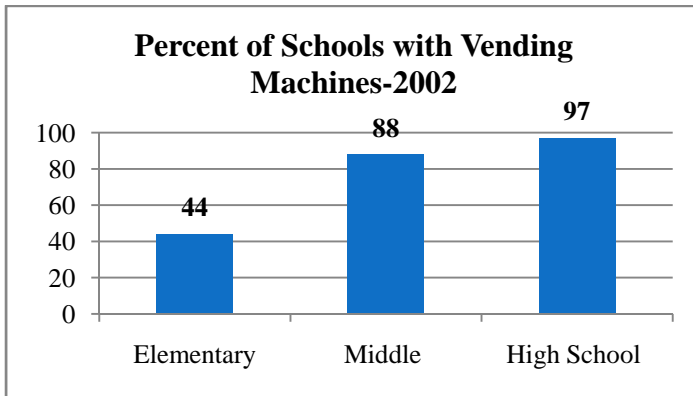


School Nutrition Environment

Vending Machine Availability

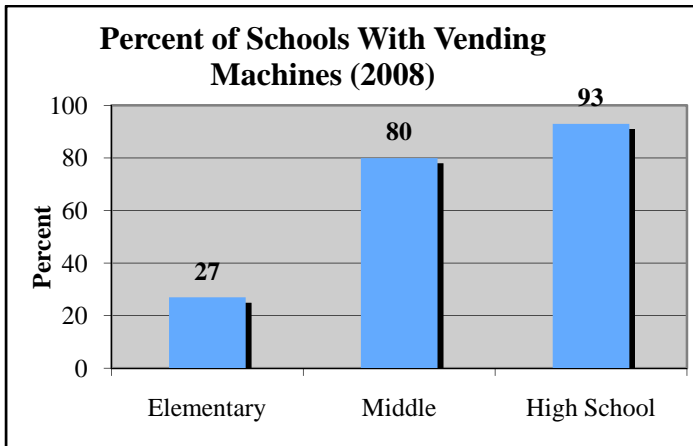
As illustrated in Figure 1, ninety-seven percent of high schools, eighty-eight percent of middle schools, and 44% of elementary schools had vending machines available for use.

Figure 1--Percent of Schools with Vending Machines (2002)



As illustrated in Figure 2, seventy-two percent (n=25) of high schools , eighty percent (n=24) of middle schools, and thirty-two percent(n=17) of elementary schools reported student access to vending machines in 2008.

Figure 2--Percent of Schools with Vending Machines (2008)



In order to test for a significant difference between vending machine availability among the two data sets, a Wilcoxon Signed Rank test was performed. Elementary, middle, and high schools were tested separately. Significant differences were found among elementary and middle schools indicating a decrease in vending machine availability ($Z=-2.164$, $p=0.030$, $Z=-2.545$, $p=0.011$).

In order to test for a significant difference between vending machine availability according to policy type, a Wilcoxon Signed Rank test was performed. Schools following an original wellness policy, schools following the KDE template, and schools following the KSBA template were tested separately. Significant differences were found among schools following the original template and the KDE template, however no significant differences were noted in those following the KSBA template (original template: $Z=-2.2285$, $p=0.022$; KDE template: $Z=-2.213$, $p=0.027$; KSBA template: $Z=-1.450$, $p=0.147$). All datasets indicate a decrease in number of vending machines available in 2008.

Foods Available in Vending Machines

Foods available in vending machines were further divided into two categories: low-nutrient, energy dense foods and nutrient dense foods. Low-nutrient, energy dense foods include regular soft drinks, diet soft drinks, fruit drinks containing less than 100% juice, sports drinks, ice cream, candy, gum, chips, cookies, cakes, and crackers. Nutrient dense foods include fruit juices containing 100% juice, milk, water, fruit, yogurt, granola bars, nuts, and popcorn.

Low-Nutrient, Energy Dense Foods

The table below depicts the percentages of schools which do not provide the above items based on the template followed.

Table 4: Percentage of Schools Not Providing Low-Nutrient, Energy Dense Foods Based on Policy Type

Type of Food	Percentage of Schools Not Providing Item in 2002-Original Template	Percentage of Schools Not Providing Item in 2008-Original Policy	Percentage of Schools Not Providing Item in 2002-KDE	Percentage of Schools Not Providing Item in 2008-KDE	Percentage of Schools Not Providing Item in 2002-KSBA	Percentage of Schools Not Providing Item in 2008-KSBA
Regular Soft Drinks	63	82.8 (p=0.130)	38.9	61.7 (p=1.00)	45.3	74.3 (p=0.019*)
Diet Soft Drinks	63	89.7 (p=0.092)	38.9	55.6 (p=0.317)	63.6	65.7 (p=0.397)
Fruit Drinks	74.1	72.4 (p=0.624)	88.9	66.7 (p=1.00)	90.6	61.8 (p=0.023*)
Sports Drinks	96.4	100 (p=0.317)	88.9	100 (p=1.00)	85.7	97.1 (p=0.102)
Ice Cream	96.4	100 (p=0.317)	88.9	66.7 (p=0.180)	87.9	76.5 (p=0.229)
Candy	85.8	86.2 (p=0.865)	88.9	66.7 (p=0.068)	90.9	64.7 (p=0.005*)
Gum	96.4	89.7 (p=0.461)	88.9	77.8 (p=0.180)	90.9	70.6 (p=0.032*)
Chips	89.3	86.2 (p=0.225)	88.9	83.3 (p=0.180)	90.9	88.2 (p=0.750)
Cookies	92.9	96.6 (p=0.180)	88.9	66.7 (p=0.180)	84.8	79.4 (p=0.678)
Cakes	96.4	96.6 (p=0.655)	88.9	66.7 (p=0.109)	87.9	73.5 (p=0.028*)
Crackers	90.9	85.2 (p=1.00)	33.3	50 (p=1.00)	100	81 (p=1.00)

*Significance level if p < 0.05

Schools following the original policy did not demonstrate a significant difference in providing less of these items overall during the 2008 school year. However, schools following an original policy did show a decrease in the following items: regular soft drinks, diet soft drinks (p=0.092), sports drinks, ice cream, chips, cookies, and cakes. The majority of these items are not provided in schools as evidenced by the table.

Schools who follow the KDE wellness policy template did not demonstrate a significant difference in providing less of these items in the 2008 school year. These schools

demonstrated in increase in providing the following foods: diet soft drinks, ice cream, candy (p=0.068), gum, chips, and cakes while providing the same amount of regular soft drinks, fruit drinks, sports drinks, and crackers. Schools who follow the KSBA wellness policy template demonstrate a significant difference in providing less of the following items: regular soft drinks (p=0.019). This data indicates that these schools provided an increased amount overall in 2008 for the following items: fruit drinks (Z=-2.275, p=0.023), candy, (Z=-2.805, p=0.005), gum (Z=-2.149, p=0.032), cakes (Z=-2.200, p=0.028), ice cream, chips, and cookies.

Nutrient Dense Foods

Nutrient dense foods provided by Kentucky public schools include 100% fruit juice, milk, water, fruit, yogurt, granola bars, nuts, and popcorn. The table below depicts the percentage of schools which provide the above items.

Table 5: Percentage of Schools Providing Nutrient Dense Foods Based on Policy Type

Type of Food	Percentage of Schools Providing Item in 2002-Original Template	Percentage of Schools Providing Item in 2008-Original Policy	Percentage of Schools Providing Item in 2002-KDE	Percentage of Schools Providing Item in 2008-KDE	Percentage of Schools Providing Item in 2002-KSBA	Percentage of Schools Providing Item in 2008-KSBA
100% fruit juice	14.8	3.3 (p=0.068)	33.3	22.3 (p=0.068)	9.1	17.6 (p=0.441)
Milk	0	0 (p=1.00)	0	0 (p=1.00)	0	0 (p=1.00)
Water	17.9	27.6 (p=0.138)	0	5.6 (p=0.317)	15.2	23.5 (p=0.058)
Fruit	3.6	3.4 (p=0.655)	0	20 (p=0.180)	3	20.6 (p=0.036*)
Yogurt	3.6	10.3 (p=0.285)	0	16.3 (p=0.180)	9.1	20.6 (p=0.207)
Granola bars	0	3.4 (p=1.00)	0	0 (p=0.317)	5	29.4 (p=0.059)
Nuts	0	4.8 (p=0.317)	0	0 (p=1.00)	0	0 (p=1.00)
Popcorn	0	0 (p=1.00)	0	0 (p=1.00)	0	0 (p=1.00)

*Significance level if p < 0.05

Schools following the original policy did not demonstrate a significant difference in providing more of these items overall during the 2008 school year. However, schools following this template reported providing more of the following items: water, yogurt, and nuts. A decrease in the amount of 100% fruit juice and fruit was noted. These schools did not offer milk or popcorn in their vending machines. Schools following the KDE policy template did not demonstrate a significant difference in providing more of these items. However, these schools provided more of the following: water, fruit, yogurt, and granola bars. Similar to schools following the original template, a decrease in 100% fruit juice was noted. These schools did not offer milk, nuts, or popcorn in their vending machines. Schools following the KSBA policy template demonstrated a significant difference in providing more fruit within their vending machines ($Z=-2.100$, $p=0.036$). These schools provided more of the following items: 100% fruit juice, water, yogurt, and granola bars with no decrease of nutrient dense foods noted. These schools did not offer milk, nuts, or popcorn in their vending machines during the 2008 school year.

Snack Bar Items

One of the survey questions specifically asked if schools have a snack bar, school store, or canteen located on their campus. Food provided at snack bars were categorized into low-nutrient, energy dense and nutrient dense foods.

Of the thirty schools analyzed who followed an original template, 33% ($n=10$) indicated having a snack bar available to students in 2002 whereas 13.3% ($n=4$) indicated having a snack bar available to students in 2008. A decrease in the number of schools providing ice cream was noted to be significant ($p=0.016$).

Low Nutrient, Energy Dense Foods

Table 6: Percentage of Schools Not Providing Low-Nutrient, Energy Dense Foods Based on Policy Type

Type of Food	Percentage of Schools Not Providing Item in 2002-Original Policy	Percentage of Schools Not Providing Item in 2008-Original Policy	Percentage of Schools Not Providing Item in 2002-KDE	Percentage of Schools Not Providing Item in 2008-KDE	Percentage of Schools Not Providing Item in 2002-KSBA	Percentage of Schools Not Providing Item in 2008-KSBA
Regular Soft Drinks	83.3	96.6 (p=0.219)	94.1	72.2 (p=0.125)	82.4	80.0 (p=1.00)
Diet Soft Drinks	83.3	93.1 (p=0.453)	88.1	72.2 (p=0.375)	88.2	80.0 (p=0.727)
Fruit Drinks	80	93.1 (p=0.288)	94.1	72.2 (p=0.125)	85.3	80.0 (p=0.754)
Sports Drinks	100	93.1 a	100	66.7 a	94.1	82.9 (p=0.289)
Ice Cream	73.3	96.6 (p=0.016*)	93.8	94.4 (p=1.00)	82.4	91.4 (p=0.375)
Candy	86.7	96.6 (p=0.375)	100	66.7 a	91.2	80.0 (p=0.508)
Gum	100	96.6 a	93.8	94.4 (p=1.00)	97.1	85.7 (p=0.219)
Chips	90	93.1 (p=1.00)	87.5	72.2 (p=0.453)	85.3	80.0 (p=1.00)
Cookies	93.3	96.6 (p=1.00)	93.8	88.9 (p=1.00)	91.2	88.6 (p=1.00)
Cakes	93.3	100 (p=1.00)	100	88.9 (p=1.00)	91.2	91.4 (p=1.00)
Crackers	86.7	93.1 (p=0.625)	100	83.3 a	85.3	82.9 (p=1.00)

a Computed only for a P x P table where P must be greater than 1.

*Significance level if p < 0.05

Schools following the original template demonstrated a decreased amount of food availability for regular soft drinks, diet soft drinks, fruit drinks, ice cream, candy, chips, cookies, cakes, and crackers. An increased amount of availability of gum and sports drinks were noted.

Of the eighteen schools analyzed who followed the KDE template, 11.1% (n=2) indicated having a snack bar available to students in 2002 whereas 33.3% (n=6) indicated having a snack bar available to students in 2008. No relationships were found to be significant. Schools following the KDE template demonstrated an increased amount of

food availability for the following items of minimal nutrition value including regular soft drinks, diet soft drinks, fruit drinks, sports drinks, candy, chips, cookies, cakes, and crackers.

Of the thirty-five schools analyzed which follow the KSBA template, 22.9% (n=8) indicated having a snack bar available to students in 2002 whereas 34.3% (n=12) indicated having a snack bar available to students in 2008. No relationships were found to be significant. These schools demonstrated a decreased amount of food availability for cakes and ice cream. However, an increased amount of food availability for regular soft drinks, diet soft drinks, fruit drinks, sports drinks, candy, gum, chips, cookies, and crackers were noted.

Nutrient Dense Foods:

Nutrient dense foods provided by Kentucky public schools include 100% fruit juice, milk, water, fruit, yogurt, granola bars, nuts, and popcorn. The following table depicts the percentage of schools which provide the above items.

Table 7: Percentage of Schools Providing Nutrient Dense Foods Based on Policy Type

Type of Food	Percentage of Schools Providing Item in 2002-Original Policy	Percentage of Schools Providing Item in 2008-Original Policy	Percentage of Schools Providing Item in 2002-KDE	Percentage of Schools Providing Item in 2008-KDE	Percentage of Schools Providing Item in 2002-KSBA	Percentage of Schools Providing Item in 2008-KSBA
100% fruit juice	10	6.9 (p=1.00)	17.6	5.6 (p=0.625)	14.7	5.7 (p=0.375))
Milk	10	0 a	17.6	11.1 (p=1.00)	8.8	2.9 (p=0.625)
Water	3.3	10.3(p=0.625)	5.9	27.8 (p=0.219)	20.6	25.7 (p=1.00)
Fruit	3.3	3.4 (p=1.00)	0	16.7 a	0	5.7 a
Yogurt	6.7	3.4 (p=1.00)	6.2	5.6 (p=1.00)	5.9	5.7 (p=1.00)
Granola bars	6.7	6.9 (p=1.00)	0	16.7 a	14.7	11.4 (p=1.00)
Nuts	6.7	3.4 (p=1.00)	0	5.6 a	0	11.4 a
Popcorn	13.8	0 a	7.7	16.7 a	17.1	11.4 a

a Computed only for a P x P table where P must be greater than 1.

*Significance level if $p < 0.05$

Schools following the original policy did not demonstrate a significant difference in providing more of these items overall during the 2008 school year. However, schools following this template did show an increase in the following items: water, fruit, and granola bars. There was a decrease in the amount of 100% fruit juice, milk, yogurt, nuts, and popcorn. No significant differences were noted.

Schools following the KDE template policy did not demonstrate a significant difference in providing more of these items during the 2008 school year. However, schools following this template demonstrated an increase in the following items: water, fruit, granola bars, nuts, and popcorn. These schools provided less 100% fruit juice, milk, and nuts within the snack bars.

Schools following the KSBA template did not demonstrate a significant difference in providing more of these items during the 2008 school year. However,

schools following this template increased the availability of the following items: water, fruit, and nuts while 100% fruit juice, milk, yogurt, granola bars, and popcorn were less available.

Foods Commonly Served at Classroom Parties

Schools were asked to report if a policy was in place regarding classroom parties. Of the thirty schools who followed the original template, 16.7% (n=5) reported having a policy in 2002 compared with 27.6% (n=8) in 2008. Of the eighteen schools who followed the KDE template, 42.9% (n=6) reported having a policy in 2002 compared with 11.1% (n=2) in 2008. Of the thirty-five schools who follow the KSBA template, 50.0% (n=16) reported having a policy in place compared with 8.6% (n=3) in 2008. The table below depicts the most commonly served food items at classroom parties.

Table 8: Percentage of Schools Providing Commonly Served Items at Classroom Parties Based on Policy Type

Type of Food	Percentage of Schools Providing Item in 2002-Original Policy	Percentage of Schools Providing Item in 2008-Original Policy	Percentage of Schools Providing Item in 2002-KDE	Percentage of Schools Providing Item in 2008-KDE	Percentage of Schools Providing Item in 2002-KSBA	Percentage of Schools Providing Item in 2008-KSBA
Pizza	80.0	69.0 (p=0.508)	85.7	83.3	71.9	76.5 (p=0.754)
Regular soft drinks	73.3	48.3 (p=0.143)	78.6	77.8 (p=0.625)	56.2	61.8 (p=0.629)
Ice cream	50.0	41.4 (p=0.791)	71.4	50.0 (p=0.754)	59.4	41.2 (p=0.332)
Chips	70.0	48.3 (p=0.180)	71.4	77.8 (p=0.375)	43.8	41.2 (p=1.00)
Candy	53.3	20.7 (p=0.049)	42.9	44.4 (p=0.774)	25.0	17.6 (p=1.00)

a Computed only for a P x P table where P must be greater than 1.

*Significance level if p < 0.05

Schools which followed an original policy did not demonstrate a significant difference among foods commonly served at classroom parties. These schools indicated

a decrease in the serving of pizza, regular soft drinks, ice cream, chips, and candy at classroom parties.

Schools which followed the KDE template did not demonstrate a significant difference among foods commonly served at classroom parties. These schools indicated a decrease in the serving of pizza, regular soft drinks, and ice cream. An increase in the serving of chips and candy at classroom parties was noted.

Schools which followed the KBSA template did not demonstrate a significant difference among foods commonly served at classroom parties. These schools indicated a decrease in the serving of ice cream, chips, and candy at classroom parties. However, an increase in the serving of pizza and regular soft drinks was observed.

Use of Food as A Reward

One survey question asked for an approximation of the percentage of teachers who use food as a reward within the classroom setting. A Wilcoxon signed rank test was used to determine differences between the 2002 and 2008 school year. Significant differences were found among schools who developed an original template ($Z=-2.003$, $p=0.045$) indicating a decrease in the number of teachers who use food as a reward. Schools that follow the KDE template demonstrated a decline in the percentage of teachers using food as a reward, however, the differences were not significant ($Z=-0.236$, $p=0.813$). Schools following the KSBA template demonstrated an increase in the percentage of teachers using food as a reward ($Z=-0.687$, $p=0.492$), however, the differences were not significant. The table below depicts the percentages of the most common types of food used as rewards.

Table 9: Percentage of Schools Providing Commonly Used Food as a Reward Based on Policy Type

Type of food	Original Policy-2002	Original Policy-2008	KDE Policy-2002	KDE Policy-2008	KSBA policy-2002	KSBA policy-2008
Candy	48.3	27.6 (p=0.180)	71.4	66.7 (p=1.000)	44.1	29.4 (p=0.210)
Soft Drinks	41.4	20.7 (p=0.180)	78.6	33.3 (p=0.031)	41.2	29.4 (p=0.267)
Pizza	55.2	65.5 (p=0.629)	28.6	72.2 (p=0.039)	50.0	52.9 (p=1.000)
Ice Cream	27.6	6.9 (p=0.070)	50.0	44.4 (p=1.00)	23.5	23.5 (p=1.00)
Chips	10.3	3.6 (p=0.500)	7.1	0 (p=1.00)	5.9	5.9 (p=1.00)

*Significance level if $p < 0.05$

Schools which followed an original policy did not demonstrate a significant difference among foods commonly used as rewards. These schools indicated a decrease in the use of the following foods for use as a reward: candy, soft drinks, pizza, ice cream (p=0.070), and chips, however, an increase in the use of pizza as a reward was observed.

Schools following the KDE template demonstrated a significant difference among foods commonly used as rewards, specifically a decrease in the use of soft drinks (p=0.031), and an increase in the use of pizza (p=0.039). These schools indicated a decrease in the use of the following foods as reward: candy, ice cream, and chips.

Schools following the KSBA template did not demonstrate a significant difference among foods commonly used as rewards. These schools indicated a decrease in the use of the following foods for use as a reward: candy and soft drinks, however, an increase in the use of pizza as a reward was observed while no changes were observed in the use of ice cream and chips as a reward.

Use of Non-food Items as Reward

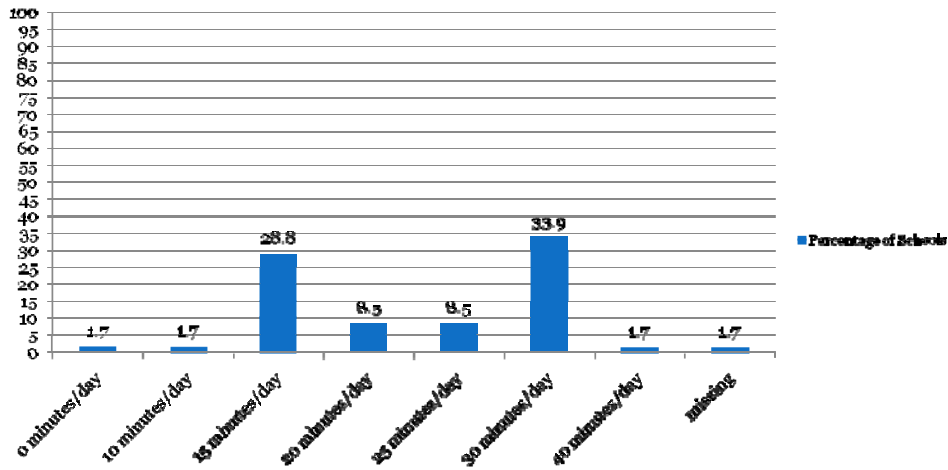
One of the survey questions specifically asked for an approximation of the percentage of teachers who use non-food items as a reward within the classroom setting. A Wilcoxon signed rank test was used to determine differences between the 2002 and 2008 school years. Significant differences were found among schools who developed an original template ($Z=-3.572$, $p=0.001$) and schools following the KDE template ($Z=-2.555$, $p=0.158$), which indicate an increase in the percentage of teachers using non-food items as a reward. Schools who followed the KSBA template indicated an increase in the percentage of teachers using non-food item as well, however, the results were not statistically significant ($Z=-1.411$, $p=0.158$).

Physical Activity in Elementary Schools

In 2002 School Nutrition Survey, physical activity data, schools reported time spent in physical education classes and recess. The mean number of minutes spent in physical education class was 67 per week while the mean number spent in recess per week was 70 minutes.

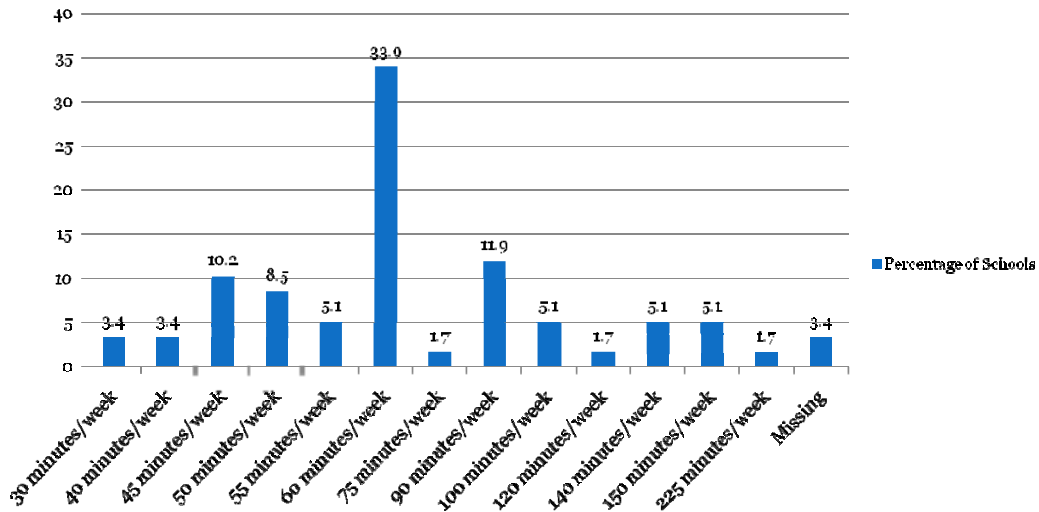
In 2008, schools reported time spent in physical education classes, recess, and percentage of time that students are moderately to physically active. Ninety-eight percent of schools reported recess information from 2008. Ninety-seven percent ($n=57$) provide daily recess. The mean amount of time spent in recess per week is 111 minutes (22.2 minutes/day). The table below depicts the amount of time spent in recess weekly.

Table 10: Weekly Time Spent in Recess



Ninety-seven percent (n=57) of schools reported weekly time spent in physical education classes. The mean amount of time spent in physical education class per week is 74 minutes. The table below depicts the weekly time spent in physical education classes.

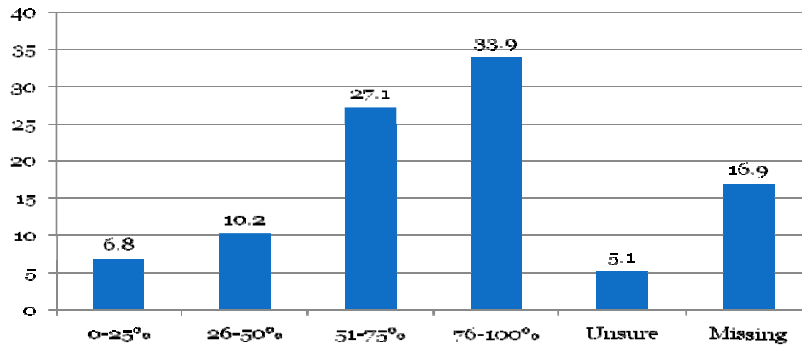
Table 11: Weekly Time Spent in Physical Education Classes



Data regarding time spent moderately to vigorously active in physical education class is depicted in the table below. Eighty-three percent of schools reported this

information with the majority of schools reporting that students are moderately to vigorously active at least 50% of time (73.4%).

Table 12: Physical Education Time Spent Moderately to Vigorously Active



Chapter 6: Discussion

Federal Compliance

The results indicate that the KDE template and the KSBA template meet the minimum requirements of the CNRA. The KDE template meets 27 of the 29 additional requirements for 93.1% compliance while the KSBA template meets 17 of the 29 additional requirements for 58.6% compliance. The majority of elementary schools that created an original policy met the five components of the CNRA but demonstrated lower rates of compliance for the 29 additional requirements. Middle and high schools that created an original policy met four of the five components of the CNRA but middle schools demonstrated lower rates of compliance for the 29 additional requirements while high schools had higher rates of compliance overall.

Nutrition Education

Ninety-eight percent of policies establish goals for nutrition education within this study, which is consistent with previous findings (38). None of the policies in this study require nutrition education be reviewed by a qualified, credentialed nutrition professional. Other goals that were least likely to be included are goals that engage families, provide opportunities for community nutrition projects, and extend nutrition education to the cafeteria. Schools may benefit from examples of successful strategies for extending nutrition education outside of the classroom in order to reinforce this education (39).

Physical Activity

Ninety-seven percent of policies establish goals for physical education. Forty-nine percent of policies (n=61) require daily recess, which is consistent with previous findings (38). The least-often selected physical activity goals include appropriate training

for staff members conducting physical activity and providing physical activity information to the community. These findings are consistent with previous studies and suggest room for improvement (39-40).

Nutrition Standards

Ninety-eight percent (n=121) of policies establish nutrition guidelines for the reimbursable school meal program and set guidelines for food and beverages available on campus (n=122). Thirty-five percent (n=43) of policies include recommendations for the types of food sold for fundraisers, which is lower than previous findings (39-40).

Schools following the KBSA template as well as those who created an original policy may need assistance with setting fundraising standards. Seventy-six percent of policies establish guidelines for classroom celebrations and the use of food as reward, which is higher than previous findings (40). Original policies fall short on this guideline and may benefit from assistance in meeting these requirements.

Other-School Based Activities

The majority of goals found in this section relate to the school dining environment with a need for improvement in following areas: encourage parents, teachers, school administrators, staff, and community members to serve as role models in practicing healthy behavior, discourage use of recess as a punishment or reward, and scheduling of recess before lunch for elementary schools.

Implementation and Monitoring

Previous research has suggested weaknesses in the component of implementation and monitoring (39-42). Implementation and monitoring were not met by all policies (90.3%

elementary, 66.6% middle schools, 88.9% high schools), which is consistent with these earlier findings.

State Compliance

All policies that follow the KDE template and KBSA templates met the following requirements of SB 172: minimal nutrition standards, competitive foods guidelines, times competitive foods may be sold, encouraging healthy choices within the curriculum, and mandating “school-approved beverages.” Both template policies did not meet the requirement for the development of an assessment tool to report students’ physical activity annually. This could result because the legislation does not mandate a specific assessment tool for this reporting. Previous analysis found that schools and food service directors were unclear of uniform methods of accountability for SB 172 requirements due to the level of ambiguity in the legislation (43).

The majority of schools that created an original wellness policy met the same requirements of SB 172 that the KDE and KBSA templates also met. Similarly, less than half of original policies met the requirement for the development of an assessment tool to report students’ physical activity annually.

Results indicate that the KDE template had the highest rate of compliance, which shows that this template took into account both federal and state laws in its creation. Original policies had the second highest rate of compliance, however, improvement is still needed. The KSBA template had the lowest rate of compliance, indicating that this policy needs to be updated to include all requirements of SB 172 to ensure compliance.

Vending Machines

Results indicate that schools which developed an original policy and those that follow the KDE template have significantly decreased the number of vending machines available for student use. Schools that follow the KSBA template demonstrated a decrease in vending machine availability; however, the results were not significant.

Schools following the original policy did not demonstrate a significant difference in providing less low-nutrient, energy dense foods during the 2008 school year. Schools following the KDE template and KBSA template demonstrated a significant decrease in the amount of soft drinks provided. Schools following the KBSA template demonstrated a significant increase in the number of fruits provided within vending machines, however, schools following the original template and the KDE template did not significantly increase the availability of nutrient dense foods.

The reduction in the number of vending machines is a positive step towards improving the school nutrition environment. However, these results indicate that low-nutrient, energy dense foods are provided more frequently than nutrient dense foods in vending machines. Previous findings have suggested that wellness policies may want to consider limiting children's access to low-nutrient, energy-dense foods through competitive foods (44).

Snack Bars

Results indicate that schools which developed an original policy and schools that followed the KBSA template increased the number of snack bars available to students from 2002. Schools that followed the KDE template decreased the number of snack bars during this time. Schools that developed an original policy had a significant decrease in

the amount of ice cream sold to students. Schools that followed the KDE template and KBSA template had no significant relationships regarding a decrease in the amount of low-nutrient, energy dense foods provided. Regardless of policy type, no schools demonstrated a significant difference in offering more nutrient dense foods.

Previous findings have suggested that wellness policies may want to consider limiting children's access to low-nutrient, energy-dense foods through competitive foods (44).

Classroom Parties

Regardless of policy, more schools have developed a policy for foods served at classroom parties. Less than half of the schools reporting in 2008 have a policy in place, indicating room for improvement. The most commonly served food items at classroom parties are low-nutrient and energy dense. No significant differences in the amounts of food offered were noted among each policy type. Schools that developed an original wellness policy had decreased the amount of these foods served. An increase in the serving of chips and candy at classroom parties was noted for schools following the KDE template as well as an increase in the serving of pizza and soft drinks for schools following the KSBA template.

Teachers play an important role in improving the school nutrition environment. Policies for classroom parties should be developed and properly implemented in order to improve the school nutrition environment.

Use of Food as a Reward

Schools that created an original policy indicate a significant decrease in the percentage of teachers using food as a reward. Schools that follow the KDE template indicated a decrease in the percentage of teachers using food as a reward; however, results were not significant. Schools that follow the KSBA template indicated an increase in the percentage of teachers using food as a reward; however, results were not significant. The foods most commonly used as a reward are low-nutrient, energy dense. Regardless of policy, all schools indicated an increase in the use of pizza as a reward with significant results for those schools following the KDE template. Results indicate that the percentage of teachers who use non food items as a reward have significantly increased in schools that developed an original policy. Teachers who use non food items as a reward have increased in schools that follow the KDE template and the KSBA template; however, the results were not significant. These findings demonstrate that low-nutrient, energy-density foods are provided for achievement over more healthy items within the majority of Kentucky public schools.

Teachers play an important role in the effort of improving the school nutrition environment. Teachers should continue offering non food items as a reward but areas of improvement are needed regarding the use of food as a reward

Physical Activity in Elementary Schools

The average number of minutes that schools spent in recess and physical education classes has increased since 2002. Almost three-quarters of schools report that students spent more than 50% of physical education class moderately to vigorously active. These results are promising, indicating that the nutrition environment in

elementary schools has improved. On average, students have approximately 22.2 minutes of daily recess and have 74 minutes of physical education courses per week for a total of 184 minutes of physical activity weekly with is higher than current guidelines, which recommend 150 minutes weekly of physical activity. These results are similar to a previous finding in Texas after the adoption of Texas Senate Bill 19. Students spent an average of 179 minutes in physical education classes weekly with 50% of class time being spent in moderate to vigorous activity (45).

However, another study in Colorado found that opportunities for physical activity did not change after the policy went into effect. Physical education increased by approximately 14 minutes per week, but recess declined by roughly 19 minutes per week (46). This study identified several barriers to the impact of local wellness policies, including competing pressures facing school districts, principal's lack of knowledge about the policy, and lack of accountability mechanisms to ensure policy implementation. A previous analysis of SB 172 indicated a lack of accountability, indicating that implementation can be negatively affected (43).

Limitations

There are several limitations to this study including the sample size of the 2008 School Nutrition Environment Survey. The response rate of 37% (n=127) is much lower than that of the 2002 School Nutrition Environment Survey (73% response rate, n=343). This analysis is limited by districts that did not respond to the survey or were not included due to an incomplete survey. Other school demographic variables such as previous wellness initiatives, geographic location, and percentage of schools receiving free-and-reduced lunches may have been more helpful in fully understanding the results of this study. This study utilized self-reported data from both the 2002 and 2008 Kentucky School Nutrition Surveys.

This study did not measure body mass index of children or relation of variables to academic performance, which would provide stronger evidence of the effect of the Child Nutrition and WIC Reauthorization Act of 2004 and Senate Bill 172 have had on the nutrition environment within the state of Kentucky.

Chapter 7: Conclusions and Recommendations

In the current study, all schools who completed the 2008 School Nutrition Survey had established a wellness policy, and the majority of policies met the requirements of the Child Nutrition and Reauthorization Act of 2004. The KDE policy has the highest rate of compliance followed by original wellness policies and KSBA policy. Original policies need to be updated to include guidelines for implementation and monitoring. All policies should be updated to meet compliance. Under the category nutrition education, guidelines including the review of nutrition education by a licensed nutrition professional and the engagement of families, opportunities for community nutrition projects, and extend nutrition education to the cafeteria should be included. Physical activity should include goals for appropriate staff training and providing physical activity information to the community. All policies should include guidelines regarding food served at fundraisers and class parties. Under other school-based activities, guidelines regarding the use of recess as a reward, scheduling of recess before lunch for elementary students, and encouraging parents, teachers, and other school administrators and staff to serve as role models in practicing healthy behavior should be included in updated wellness policies. A designated person who is responsible for insuring that the wellness policy is implemented and reports the school's progress to the Kentucky Department of Education should be in place at each school in order to encourage proper implementation and monitoring of the guidelines within each policy.

In 2006, the Kentucky legislature adopted SB 172 requiring elementary schools to adopt a local wellness policy with specific requirements regarding physical activity, competitive foods, and encouraging healthy choices. The majority of all policies did not

meet the requirement for the development of an assessment tool to report students' physical activity annually. This could be because the legislation does not mandate a specific assessment tool for this reporting. Legislation that includes a specific physical activity assessment tool would alleviate ambiguity and increase compliance with SB172 among school districts within the state of Kentucky.

Analysis of the changes in the school nutrition environment within the state of Kentucky provide a comprehensive view of how school food environments and practices have changed with the adoption of school wellness policies required under the Child Nutrition and WIC Reauthorization Act of 2004 and Kentucky Senate Bill 172.

This study demonstrates that vending machine availability has decreased significantly for schools following the original policy and KDE template. However, low-nutrient, energy dense foods are provided more frequently than nutrient dense foods in vending machines. It is recommended to not only decrease the availability of low-nutrient, energy dense foods in schools, but to also increase the availability of nutrient dense foods including but not limited to low fat dairy products, fruits, vegetables, and whole grain products.

. More schools, regardless of policy, have developed a policy for foods served at classroom parties; however, approximately 50% of schools do not have this policy in place. The most commonly served food items at classroom parties are low-nutrient and energy dense. The adoption of a fundraising and classroom party policy regarding the types of foods provided should encourage providing only nutrient-dense foods.

The majority of schools report a lower percentage of teachers using food as a reward. The most commonly foods used as a reward are low-nutrient, energy dense. Regardless of policy, the percentage of teachers who use non food items as a reward has increased. These findings demonstrate that low-nutrient, energy-dense foods are provided for achievement over more healthy items within the majority of Kentucky public schools. Because of these findings, it is recommended that teachers provide non-food items such as bonus points, stickers, free homework passes instead of food items for achievement and other desirable behaviors.

On average, elementary students have approximately 22.2 minutes of daily recess and have 74 minutes of physical education courses per week for a total of 184 minutes of physical activity weekly with is higher than current guidelines, which recommend 150 minutes weekly of physical activity. Initial findings of physical activity in elementary schools are positive, indicating that legislation such as SB 172 that require changes to nutrition environment yield positive results.

These findings mark an important step in improving the nutrition environment within the state of Kentucky. These findings demonstrate notable improvements among the school nutrition environment for schools that developed an original policy. Original policies decreased the availability of low-nutrient, energy dense foods, however, these schools were not significant with providing healthier options. The KDE and KSBA template policies were well-written and more compliant than original policies; however, compliance does not necessarily translate into an environment that promotes healthy eating and active living.

Future studies should examine the relationship of wellness policy efficacy to academic achievement and track children's BMI/obesity before and after implementation of specific changes to school food environments and practices to obtain more definitive information about the role of the school nutrition environment on childhood overweight.

Appendix A: Wellness Policy Templates

Kentucky Department of Education

_____ **School District's Wellness Policies on Physical Activity and Nutrition**

Preamble

Whereas, children need access to healthful foods and opportunities to be physically active in order to grow, learn, and thrive;

Whereas, good health fosters student attendance and education;

Whereas, obesity rates have doubled in children and tripled in adolescents over the last two decades, and physical inactivity and excessive calorie intake are the predominant causes of obesity;

Whereas, heart disease, cancer, stroke, and diabetes are responsible for two-thirds of deaths in the United States, and major risk factors for those diseases, including unhealthy eating habits, physical inactivity, and obesity, often are established in childhood.

Whereas, 33% of high school students do not participate in sufficient vigorous physical activity and 72% of high school students do not attend daily physical education classes;

Whereas, only 2% of children (2 to 19 years) eat a healthy diet consistent with the five main recommendations from the Food Guide Pyramid;

Whereas, nationally, the items most commonly sold from school vending machines, school stores, and snack bars include low-nutrition foods and beverages, such as soda, sports drinks, imitation fruit juices, chips, candy, cookies, and snack cakes;

Whereas, school districts around the country are facing significant fiscal and scheduling constraints; and

Whereas, community participation is essential to the development and implementation of successful school wellness policies;

Thus, the _____ School District is committed to providing school environments that promote and protect children's health, well-being, and ability to learn by supporting healthy eating and physical activity. Therefore, it is the policy of the _____ School District that:

- The school district will engage students, parents, teachers, food service professionals, health professionals, and other interested community members in

developing, implementing, monitoring, and reviewing district-wide nutrition and physical activity policies.

- All students in grades K-12 will have opportunities, support, and encouragement to be physically active on a regular basis.
- Foods and beverages sold or served at school will meet the nutrition recommendations of the *U.S. Dietary Guidelines for Americans*.
- Qualified child nutrition professionals will provide students with access to a variety of affordable, nutritious, and appealing foods that meet the health and nutrition needs of students; will accommodate the religious, ethnic, and cultural diversity of the student body in meal planning; and will provide clean, safe, and pleasant settings and adequate time for students to eat.
- To the maximum extent practicable, all schools in our district will participate in available federal school meal programs (including the School Breakfast Program, National School Lunch Program [including after-school snacks], Summer Food Service Program, Fruit and Vegetable Snack Program, and Child and Adult Care Food Program [including suppers]).
- Schools will provide nutrition education and physical education to foster lifelong habits of healthy eating and physical activity, and will establish linkages between health education and school meal programs, and with related community services.

TO ACHIEVE THESE POLICY GOALS:

I. School Health Councils

The school district and/or individual schools within the district will create, strengthen, or work within existing school health councils to develop, implement, monitor, review, and, as necessary, revise school nutrition and physical activity policies. The councils also will serve as resources to school sites for implementing those policies. (A school health council consists of a group of individuals representing the school and community, and should include parents, students, representatives of the school food authority, members of the school board, school administrators, teachers, health professionals, and members of the public.)

II. Nutritional Quality of Foods and Beverages Sold and Served on Campus

School Meals

Meals served through the National School Lunch and Breakfast Programs will:

- Be appealing and attractive to children;
- Be served in clean and pleasant settings;
- Meet, at a minimum, nutrition requirements established by local, state, and federal statutes and regulations;

- Offer a variety of fruits and vegetables;¹
- Serve only low-fat (1%) and fat-free milk² and nutritionally-equivalent non-dairy alternatives (to be defined by USDA); and
- Ensure that half of the served grains are whole grain.^{3,3}

Schools should engage students and parents, through taste-tests of new entrees and surveys, in selecting foods sold through the school meal programs in order to identify new, healthful, and appealing food choices. In addition, schools should share information about the nutritional content of meals with parents and students. Such information could be made available on menus, a website, on cafeteria menu boards, placards, or other point-of-purchase materials.

Breakfast. To ensure that all children have breakfast, either at home or at school, in order to meet their nutritional needs and enhance their ability to learn:

- Schools will, to the extent possible, operate the School Breakfast Program.
- Schools will, to the extent possible, arrange bus schedules and utilize methods to serve school breakfasts that encourage participation, including serving breakfast in the classroom, “grab-and-go” breakfast, or breakfast during morning break or recess.
- Schools that serve breakfast to students will notify parents and students of the availability of the School Breakfast Program.
- Schools will encourage parents to provide a healthy breakfast for their children through newsletter articles, take-home materials, or other means.

Free and Reduced-priced Meals. Schools will make every effort to eliminate any social stigma attached to, and prevent the overt identification of, students who are eligible for free and reduced-price school meals⁴. Toward this end, schools may utilize electronic identification and payment systems; provide meals at no charge to all children, regardless of income; promote the availability of school meals to all students; and/or use nontraditional methods for serving school meals, such as “grab-and-go” or classroom breakfast.

Summer Food Service Program. Schools in which more than 50% of students are eligible for free or reduced-price school meals will sponsor the Summer Food Service Program for at least six weeks between the last day of the academic school year and the first day of the following school year, and preferably throughout the entire summer vacation.

¹ To the extent possible, schools will offer at least two non-fried vegetable and two fruit options each day and will offer five different fruits and five different vegetables over the course of a week. Schools are encouraged to source fresh fruits and vegetables from local farmers when practicable.

² As recommended by the *Dietary Guidelines for Americans 2005*.

³ A whole grain is one labeled as a “whole” grain product or with a whole grain listed as the primary grain ingredient in the ingredient statement. Examples include “whole” wheat flour, cracked wheat, brown rice, and oatmeal.

⁴ It is against the law to make others in the cafeteria aware of the eligibility status of children for free, reduced-price, or “paid” meals.

Meal Times and Scheduling. Schools:

- will provide students with at least 10 minutes to eat after sitting down for breakfast and 20 minutes after sitting down for lunch;
- should schedule meal periods at appropriate times, e.g., lunch should be scheduled between 11 a.m. and 1 p.m.;
- should not schedule tutoring, club, or organizational meetings or activities during mealtimes, unless students may eat during such activities;
- will schedule lunch periods to follow recess periods (in elementary schools);
- will provide students access to hand washing or hand sanitizing before they eat meals or snacks; and
- should take reasonable steps to accommodate the tooth-brushing regimens of students with special oral health needs (e.g., orthodontia or high tooth decay risk).

Qualifications of School Food Service Staff. Qualified nutrition professionals will administer the school meal programs. As part of the school district's responsibility to operate a food service program, we will provide continuing professional development for all nutrition professionals in schools. Staff development programs should include appropriate certification and/or training programs for child nutrition directors, school nutrition managers, and cafeteria workers, according to their levels of responsibility.⁵

Sharing of Foods and Beverages. Schools should discourage students from sharing their foods or beverages with one another during meal or snack times, given concerns about allergies and other restrictions on some children's diets.

Foods and Beverages Sold Individually (i.e., foods sold outside of reimbursable school meals, such as through vending machines, cafeteria a la carte [snack] lines, fundraisers, school stores, etc.)

Elementary Schools. The school food service program will approve and provide all food and beverage sales to students in elementary schools. Given young children's limited nutrition skills, food in elementary schools should be sold as balanced meals. If available, foods and beverages sold individually should be limited to low-fat and non-fat milk, fruits, and non-fried vegetables.

Middle/Junior High and High Schools. In middle/junior high and high schools, all foods and beverages sold individually outside the reimbursable school meal programs (including those sold through a la carte [snack] lines, vending machines, student stores, or fundraising activities) during the school day, or through programs for students after the school day, will meet the following nutrition and portion size standards:

Beverages

⁵ School nutrition staff development programs are available through the USDA, School Nutrition Association, and National Food Service Management Institute.

- Allowed: water or seltzer water⁶ without added caloric sweeteners; fruit and vegetable juices and fruit-based drinks that contain at least 50% fruit juice and that do not contain additional caloric sweeteners; unflavored or flavored low-fat or fat-free fluid milk and nutritionally-equivalent nondairy beverages (to be defined by USDA);
- Not allowed: soft drinks containing caloric sweeteners; sports drinks; iced teas; fruit-based drinks that contain less than 50% real fruit juice or that contain additional caloric sweeteners; beverages containing caffeine, excluding low-fat or fat-free chocolate milk (which contain trivial amounts of caffeine).

Foods

- A food item sold individually:
 - will have no more than 35% of its calories from fat (excluding nuts, seeds, peanut butter, and other nut butters) and 10% of its calories from saturated and trans fat combined;
 - will have no more than 35% of its *weight* from added sugars;⁷
 - will contain no more than 230 mg of sodium per serving for chips, cereals, crackers, French fries, baked goods, and other snack items; will contain no more than 480 mg of sodium per serving for pastas, meats, and soups; and will contain no more than 600 mg of sodium for pizza, sandwiches, and main dishes.

- A choice of at least two fruits and/or non-fried vegetables will be offered for sale at any location on the school site where foods are sold. Such items could include, but are not limited to, fresh fruits and vegetables; 100% fruit or vegetable juice; fruit-based drinks that are at least 50% fruit juice and that do not contain additional caloric sweeteners; cooked, dried, or canned fruits (canned in fruit juice or light syrup); and cooked, dried, or canned vegetables (that meet the above fat and sodium guidelines).⁸

Portion Sizes:

- Limit portion sizes of foods and beverages sold individually to those listed below:
 - One and one-quarter ounces for chips, crackers, popcorn, cereal, trail mix, nuts, seeds, dried fruit, or jerky;
 - One ounce for cookies;
 - Two ounces for cereal bars, granola bars, pastries, muffins,

⁶ Surprisingly, seltzer water may not be sold during meal times in areas of the school where food is sold or eaten because it is considered a “Food of Minimal Nutritional Value” (Appendix B of 7CFR Part 210).

⁷ If a food manufacturer fails to provide the *added* sugars content of a food item, use the percentage of weight from *total* sugars (in place of the percentage of weight from *added* sugars), and exempt fruits, vegetables, and dairy foods from this total sugars limit.

⁸ Schools that have vending machines are encouraged to include refrigerated snack vending machines, which can accommodate fruits, vegetables, yogurts, and other perishable items.

- doughnuts, bagels, and other bakery items;
- Four fluid ounces for frozen desserts, including, but not limited to, low-fat or fat-free ice cream;
- Eight ounces for non-frozen yogurt;
- Twelve fluid ounces for beverages, excluding water; and
- The portion size of a la carte entrees and side dishes, including potatoes, will not be greater than the size of comparable portions offered as part of school meals. Fruits and non-fried vegetables are exempt from portion-size limits.

Fundraising Activities. To support children’s health and school nutrition-education efforts, school fundraising activities will not involve food or will use only foods that meet the above nutrition and portion size standards for foods and beverages sold individually. Schools will encourage fundraising activities that promote physical activity. The school district will make available a list of ideas for acceptable fundraising activities.

Snacks. Snacks served during the school day or in after-school care or enrichment programs will make a positive contribution to children’s diets and health, with an emphasis on serving fruits and vegetables as the primary snacks and water as the primary beverage. Schools will assess if and when to offer snacks based on timing of school meals, children’s nutritional needs, children’s ages, and other considerations. The district will disseminate a list of healthful snack items to teachers, after-school program personnel, and parents.

- If eligible, schools that provide snacks through after-school programs will pursue receiving reimbursements through the National School Lunch Program.

Rewards. Schools will not use foods or beverages, especially those that do not meet the nutrition standards for foods and beverages sold individually (above), as rewards for academic performance or good behavior,⁹ and will not withhold food or beverages (including food served through school meals) as a punishment.

Celebrations. Schools should limit celebrations that involve food during the school day to no more than one party per class per month. Each party should include no more than one food or beverage that does not meet nutrition standards for foods and beverages sold individually (above). The district will disseminate a list of healthy party ideas to parents and teachers.

School-sponsored Events (such as, but not limited to, athletic events, dances, or performances). Foods and beverages offered or sold at school-sponsored events outside the school day will meet the nutrition standards for meals or for foods and beverages sold individually (above).

⁹ Unless this practice is allowed by a student’s individual education plan (IEP).

III. Nutrition and Physical Activity Promotion and Food Marketing

Nutrition Education and Promotion. _____ School District aims to teach, encourage, and support healthy eating by students. Schools should provide nutrition education and engage in nutrition promotion that:

- is offered at each grade level as part of a sequential, comprehensive, standards-based program designed to provide students with the knowledge and skills necessary to promote and protect their health;
- is part of not only health education classes, but also classroom instruction in subjects such as math, science, language arts, social sciences, and elective subjects;
- includes enjoyable, developmentally-appropriate, culturally-relevant, participatory activities, such as contests, promotions, taste testing, farm visits, and school gardens;
- promotes fruits, vegetables, whole grain products, low-fat and fat-free dairy products, healthy food preparation methods, and health-enhancing nutrition practices;
- emphasizes caloric balance between food intake and energy expenditure (physical activity/exercise);
- links with school meal programs, other school foods, and nutrition-related community services;
- teaches media literacy with an emphasis on food marketing; and
- includes training for teachers and other staff.

Integrating Physical Activity into the Classroom Setting. For students to receive the nationally-recommended amount of daily physical activity (*i.e.*, at least 60 minutes per day) and for students to fully embrace regular physical activity as a personal behavior, students need opportunities for physical activity beyond physical education class. Toward that end:

- classroom health education will complement physical education by reinforcing the knowledge and self-management skills needed to maintain a physically-active lifestyle and to reduce time spent on sedentary activities, such as watching television;
- opportunities for physical activity will be incorporated into other subject lessons; and
- classroom teachers will provide short physical activity breaks between lessons or classes, as appropriate.

Communications with Parents. The district/school will support parents' efforts to provide a healthy diet and daily physical activity for their children. The district/school will offer healthy eating seminars for parents, send home nutrition information, post nutrition tips on school websites, and provide nutrient analyses of school menus. Schools should encourage parents to pack healthy lunches and snacks and to refrain from including beverages and foods that do not meet the above nutrition standards for individual foods

and beverages. The district/school will provide parents a list of foods that meet the district's snack standards and ideas for healthy celebrations/parties, rewards, and fundraising activities. In addition, the district/school will provide opportunities for parents to share their healthy food practices with others in the school community.

The district/school will provide information about physical education and other school-based physical activity opportunities before, during, and after the school day; and support parents' efforts to provide their children with opportunities to be physically active outside of school. Such supports will include sharing information about physical activity and physical education through a website, newsletter, or other take-home materials, special events, or physical education homework.

Food Marketing in Schools. School-based marketing will be consistent with nutrition education and health promotion. As such, schools will limit food and beverage marketing to the promotion of foods and beverages that meet the nutrition standards for meals or for foods and beverages sold individually (above).¹⁰ School-based marketing of brands promoting predominantly low-nutrition foods and beverages^{12,11} is prohibited. The promotion of healthy foods, including fruits, vegetables, whole grains, and low-fat dairy products is encouraged.

Examples of marketing techniques include the following: logos and brand names on/in vending machines, books or curricula, textbook covers, school supplies, scoreboards, school structures, and sports equipment; educational incentive programs that provide food as a reward; programs that provide schools with supplies when families buy low-nutrition food products; in-school television, such as Channel One; free samples or coupons; and food sales through fundraising activities. Marketing activities that promote healthful behaviors (and are therefore allowable) include: vending machine covers promoting water; pricing structures that promote healthy options in a la carte lines or vending machines; sales of fruit for fundraisers; and coupons for discount gym memberships.

Staff Wellness. _____ School District highly values the health and well-being of every staff member and will plan and implement activities and policies that support personal efforts by staff to maintain a healthy lifestyle. Each district/school should establish and maintain a staff wellness committee composed of at least one staff member, school health council member, local hospital representative, dietitian or other health professional, recreation program representative, union representative, and employee benefits specialist. (The staff wellness committee could be a subcommittee of the school health council.) The committee should develop, promote, and oversee a multifaceted plan to promote staff health and wellness. The plan should be based on input solicited from school staff and should outline ways to encourage healthy eating, physical activity, and other elements of a healthy lifestyle among school staff. The staff

¹⁰ Advertising of low-nutrition foods and beverages is permitted in supplementary classroom and library materials, such as newspapers, magazines, the Internet, and similar media, when such materials are used in a class lesson or activity, or as a research tool.

¹¹ Schools should not permit general brand marketing for food brands under which more than half of the foods or beverages do not meet the nutrition standards for foods sold individually or the meals are not consistent with school meal nutrition standards.

wellness committee should distribute its plan to the school health council annually.

IV. Physical Activity Opportunities and Physical Education

Daily Physical Education (P.E.) K-12. All students in grades K-12, including students with disabilities, special health-care needs, and in alternative educational settings, will receive daily physical education (or its equivalent of 150 minutes/week for elementary school students and 225 minutes/week for middle and high school students) for the entire school year. All physical education will be taught by a certified physical education teacher. Student involvement in other activities involving physical activity

(e.g., interscholastic or intramural sports) will not be substituted for meeting the physical education requirement. Students will spend at least 50 percent of physical education class time participating in moderate to vigorous physical activity.

Daily Recess. All elementary school students will have at least 20 minutes a day of supervised recess, preferably outdoors, during which schools should encourage moderate to vigorous physical activity verbally and through the provision of space and equipment.

Schools should discourage extended periods (*i.e.*, periods of two or more hours) of inactivity. When activities, such as mandatory school-wide testing, make it necessary for students to remain indoors for long periods of time, schools should give students periodic breaks during which they are encouraged to stand and be moderately active.

Physical Activity Opportunities Before and After School. All elementary, middle, and high schools will offer extracurricular physical activity programs, such as physical activity clubs or intramural programs. All high schools, and middle schools as appropriate, will offer interscholastic sports programs. Schools will offer a range of activities that meet the needs, interests, and abilities of all students, including boys, girls, students with disabilities, and students with special health-care needs.

After-school child care and enrichment programs will provide and encourage – verbally and through the provision of space, equipment, and activities – daily periods of moderate to vigorous physical activity for all participants.

Physical Activity and Punishment. Teachers and other school and community personnel will not use physical activity (e.g., running laps, pushups) or withhold opportunities for physical activity (e.g., recess, physical education) as punishment

Safe Routes to School. The school district will assess and, if necessary and to the extent possible, make needed improvements to make it safer and easier for students to walk and bike to school. When appropriate, the district will work together with local public works, public safety, and/or police departments in those efforts. The school district will explore the availability of federal “safe routes to school” funds, administered by the state department of transportation, to finance such improvements. The school district will encourage students to use public transportation when available and appropriate for travel to school, and will work with the local transit agency to provide

transit passes for students.

Use of School Facilities Outside of School Hours. School spaces and facilities should be available to students, staff, and community members before, during, and after the school day, on weekends, and during school vacations. These spaces and facilities also should be available to community agencies and organizations offering physical activity and nutrition programs. School policies concerning safety will apply at all times.

V. Monitoring and Policy Review

Monitoring. The superintendent or designee will ensure compliance with established district-wide nutrition and physical activity wellness policies. In each school, the principal or designee will ensure compliance with those policies in his/her school and will report on the school's compliance to the school district superintendent or designee.

School food service staff, at the school or district level, will ensure compliance with nutrition policies within school food service areas and will report on this matter to the superintendent (or if done at the school level, to the school principal). In addition, the school district will report on the most recent USDA School Meals Initiative (SMI) review findings and any resulting changes. If the district has not received a SMI review from the state agency within the past five years, the district will request from the state agency that a SMI review be scheduled as soon as possible.

The superintendent or designee will develop a summary report every three years on district-wide compliance with the district's established nutrition and physical activity wellness policies, based on input from schools within the district. That report will be provided to the school board and also distributed to all school health councils, parent/teacher organizations, school principals, and school health services personnel in the district.

STUDENTS 09.2

Student Welfare and Wellness

The health and safety of pupils shall be a priority consideration in all Board decisions.

The Board is committed to providing school environments that promote and protect student health, well-being, and ability to learn by supporting healthy eating and physical activity. To this end, the Board supports school efforts to implement the following:

1. The District will engage students, parents, teachers, food service professionals, health professionals, and other interested community members in developing, implementing, monitoring, and reviewing this policy, as well as District-wide nutrition and physical activity opportunities, plans, and initiatives.
2. All students will have opportunities, support, and encouragement to be physically active on a regular basis as provided by school/council policy.
3. Foods and beverages sold or served at school will meet the nutrition recommendations of the U.S. Dietary Guidelines for Americans.
4. Qualified child nutrition professionals will provide students with access to a variety of affordable, nutritious, and appealing foods that meet the health and nutrition needs of students; will accommodate the religious, ethnic, and cultural diversity of the student body in meal planning; and will provide clean, safe, and pleasant settings and adequate time for students to eat.
5. To the maximum extent practicable, schools will participate in available federal school meal programs.
6. Schools will provide nutrition education and physical education to foster lifelong habits of healthy eating and physical activity and will establish linkages between health education, school meal programs, and related community services.

SCHOOL HEALTH COUNCIL

Each school is encouraged to establish a health council consisting of individuals representing the school and community, including, but not limited to, parents, students, representatives of the school food service, school administrators, teachers, health professionals, and members of the public.

NUTRITION EDUCATION AND PROMOTION

Each school is encouraged to provide nutrition education and engage in nutrition promotion that:

1. is offered at each grade level as part of a sequential, comprehensive, standards-based program designed to provide students with the knowledge and skills necessary to promote and protect their health;

2. is part of not only health education classes, but also classroom instruction in subjects such as math, science, language arts, social sciences, and elective subjects;
3. includes enjoyable, developmentally-appropriate, culturally-relevant, participatory activities, such as contests, promotions, taste testing, farm visits, and school gardens;

STUDENTS 09.2

(Continued)

Student Welfare and Wellness

NUTRITION EDUCATION AND PROMOTION (CONTINUED)

4. is part of not only health education classes, but also classroom instruction in subjects such as math, science, language arts, social sciences, and elective subjects;
5. includes enjoyable, developmentally-appropriate, culturally-relevant, participatory activities, such as contests, promotions, taste testing, farm visits, and school gardens;
6. promotes fruits, vegetables, whole grain products, low-fat and fat-free dairy products, healthy food preparation methods, and health-enhancing nutrition practices;
7. emphasizes caloric balance between food intake and energy expenditure (physical activity/exercise);

MONITORING

The Superintendent/designee will monitor compliance with this and related policies. At the school level, the Principal/designee will monitor compliance with those policies in his/her school and will report on the school's compliance as directed by the Superintendent/designee.

REFERENCE:

P. L. 108-265

Adopted/Amended: 06/12/2006

Order #: 207

Appendix B: Federal Compliance

Table 1: Federal Compliance Among School Wellness Policies

Policy Requirements	KDE template (n=32)	KSBA Template (n=46)	Original Policy-Elementary Schools (n=31)	Original Policy-Middle Schools (n=6)	Original Policy-High Schools (n=9)
Nutrition Education	100%	100%	93.5% (n=29)	100% (n=6)	100% (n=9)
Integration of nutrition education across the curricula	100%	100%	93.5% (n=29)	100% (n=6)	100% (n=9)
Appropriate training for staff conducting nutrition education	100%	100%	61.3% (n=19)	33.3% (n=2)	77.8% (n=7)
Reviewed by a qualified, credentialed nutrition professional	0%	0%	0%	0%	0%
Provided within school cafeteria as well as classroom	100%	100%	25.8% (n=8)	0%	44.4% (n=4)
Sharing of nutrition education with families and community	100%	100%	61.3% (n=19)	33.3% (n=2)	77.8% (n=7)
Provide information to families that encourages teaching of nutrition to their children	100%	100%	61.3% (n=19)	16.7% (n=1)	77.8% (n=7)
Physical Activity	100%	100%	87.1% (n=27)	100% (n=6)	100% (n=9)
Adoption of a physical education program	100%	100%	93.5% (n=29)	100% (n=6)	88.9% (n=8)
Integration of physical activity across the curricula	100%	100%	9.7% (n=3)	100% (n=6)	100% (n=9)
Require state-certified physical education instructors	100%	0%	74.2% (n=23)	100% (n=6)	11.1% (n=1)
Provide daily recess period	100%	0%	74.2% (n=23)	33.3% (n=2)	44.4% (n=4)
Appropriate training for staff members teaching physical activity	100%	0%	35.5% (n=11)	100% (n=6)	44.4% (n=4)
Provide physical activity information through newsletters, handouts, presentations, or websites	100%	0%	48.4% (n=15)	16.7% (n=1)	77.8% (n=7)
Nutrition Standards	100%	100%	93.5% (n=29)	100% (n=6)	100% (n=9)
Require school to follow NSLG for nutritional value & portion size	100%	100%	90.3% (n=28)	100% (n=6)	100% (n=9)
Set of guidelines for all foods % beverages sold in vending machines, snack bars, and school stores on campus	100%	100%	93.5% (n=29)	100% (n=6)	100% (n=9)
Timing of vending machines during school day	100%	100%	54.8% (n=17)	100% (n=6)	88.9% (n=8)
Encourage sale of healthy foods for fundraising events	100%	0%	25.8% (n=8)	16.7% (n=1)	22.2% (n=2)
Recommendations for use of food as a reward and classroom parties	100%	100%	67.7% (n=21)	66.6% (n=4)	55.6% (n=5)
Other School Based Activities	100%	100%	87.1% (n=27)	100% (n=6)	100% (n=9)
Recommendations for school dining environment	100%	100%	61.3% (n=19)	100% (n=6)	100% (n=9)

Recommendations for serving lengths and length of time for children to eat	100%	0%	51.6% (n=16)	83.3% (n=5)	100% (n=9)
Scheduling of lunch during middle of the school day	100%	0%	85.5% (n=11)	33.3% (n=2)	55.6% (n=5)
Recommendations for the scheduling of recess before lunch for elementary schools	0%	0%	9.7% (n=3)	16.7% (n=1)	33.3% (n=3)
Discourage use of recess as punishment	100%	0%	64.5% (n=20)	50% (n=3)	55.6% (n=5)
Provide opportunities for on-going professional training and development for food service staff and teachers in the areas of nutrition and physical activity	100%	100%	32.3% (n=10)	50% (n=3)	66.7% (n=6)
Recommendations to encourage parents, teachers, school administrators, staff, and community members to serve as role models in practicing healthy behavior	100%	0%	32.3% (n=10)	16.7% (n=1)	66.7% (n=6)
Encourage families to apply for free and reduced lunch services through NSLP	100%	100%	42.4% (n=15)	66.6% (n=4)	55.6% (n=5)
Implementation and Monitoring	100%	100%	90.3% (n=28)	66.6% (n=4)	88.9% (n=8)
Employment of a food service director, who is properly qualified and credentialed to administer the school food service program	100%	100%	51.6% (n=16)	50% (n=3)	88.9% (n=8)
Include a plan for the development of periodic reports on progress	100%	100%	61.3% (n=19)	50% (n=3)	66.7% (n=6)
Designation of a person at each school who ensures that each school fulfills the policy	100%	100%	74.2% (n=23)	66.6% (n=4)	77.8% (n=7)
Inclusion of parents and community	100%	100%	67.7% (n=21)	100% (n=6)	88.9% (n=8)
Total number of policy requirements met.	93.1%	58.6%	54.5%*	52%*	68.5%*

*These percentages represent the average number of policy statements.

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