LOCAL WELLNESS POLICY DEVELOPMENT COMMITTEE COMPOSITION
AND POLICY CHARACTERISTICS INFLUENCE ON NUTRITION
EDUCATION COMPREHENSIVENESS AND RIGOR OF PENNSYLVANIA
LOCAL EDUCATION AGENCIES’ WELLNESS POLICIES

A Thesis in
Nutrition
by
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ABSTRACT

Background

Childhood obesity and complicating co-morbid health problems are increasing worldwide. In the United States over the past 30 years, childhood obesity rates have increased almost three-fold. School environments are seen as an important location to model healthy lifestyle practices and teach our nation’s youth nutrition education. In an effort to help schools improve children’s nutrition and physical activity habits, The Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108-265) was established. This act requires all local education agencies (LEAs) that sponsor school meals programs to develop local wellness policies (LWPs) to address the issue of childhood obesity. Among the mandated requirements of the LWP were nutrition education, physical activity goals, nutritional guidelines to address foods offered on the school campus, and the inclusion of six mandatory committee members in the development process: school board member, school administrator, food service representative, student, parent, and public member.

Objective

Nutrition education is effective as a prevention and intervention method to address childhood obesity. The objective of this study was two-fold. The first objective was to observe which PSBA template nutrition education goals were included in the LEA’s LWPs and the strength of these goals. The second objective was to examine what predicts the strength (rigor) and number (comprehensiveness) of the nutrition education (NE) goal component in each LEA’s LWP.
We described the relationship of the demographic (includes LEA type, locale, and socioeconomic status) characteristics of LEAs, resources and assistance received by LEAs, the composition of the mandatory development committees, and the LWP overall policy comprehensiveness and rigor (strength) scores, excluding the NE goals, as predictors of number (comprehensiveness) and strength (rigor) of nutrition education (NE) goals.

**Methods**

LWPs were abstracted and analyzed from LEAs in Pennsylvania. Only LEAs that followed a traditional school day format were included in the analysis (n=721; including 539 public LEAs and 182 private LEAs). An example template policy developed by Pennsylvania School Board Association (PSBA) and The Pennsylvania Department of Education (PDE) was used as the standard policy to which all Pennsylvania LEA’s LWP were compared. A 15-item Local Wellness Policy Checklist (LWPC), developed by PDE and containing the LEAs’ responses to questions related to the LEA and the LWP development process, was also utilized. Information about LEA sponsor type, committee member composition, and assistance resources were abstracted from the checklist for this study. Variables used for multiple linear regression models in this study were abstracted from the LWPs and LWPCs of 721 LEAs. SPSS17.0 statistical software package was used for all data analysis.
Results

A descriptive analysis of the 721 Pennsylvania LEAs show that 539 (74.8%) were public LEAs and 182 (25.2%) were private LEAs. Public LEAs were mainly school districts (92.6%), and private LEAs were predominately Catholic religious LEAs (76.4%). Public LEAs serve a mixture of elementary, middle, and high school students in numerous buildings, whereas private LEAs are mostly elementary schools located in one building only.

In a descriptive analysis of the PSBA template nutrition education goals, we found that for both public and private LEAs the most commonly included NE goals were general and broad in policy language. The least commonly chosen NE goals were specific goals; these goals were also most likely to be weakened in policy language when compared to the PSBA template goals. Public and private LEAs chose similar PSBA NE goals to weaken in their policies, such as integrating nutrition education throughout the curriculum and disseminating nutrition education consistently throughout the school, family, community, and media. Private LEAs were more likely than public LEAs to weaken NE goals.

We also found significant differences between public and private LEA’s development committee composition and their association with NE comprehensiveness and rigor in our analysis. An association between development committee members’ on the inclusion of NE goals and their strength (weaker or stronger than PSBA template goals) was only observed in private LEAs. In terms of the number (comprehensiveness) of NE goals included, student, school administrator,
and public member presence on the LWP development committee were associated with fewer NE goals; whereas, school board member and parent involvement were associated with more NE goals. The only LWP committee member with an observed association with the NE rigor score was the school board member, whose involvement was associated with less rigorous NE goals. School foodservice representative was not found to be associated with the number or strength of NE goals in our analysis.

We also found that overall policy factors were associated with NE comprehensiveness and rigor: LEAs with more comprehensive and rigorous overall policies were associated with more comprehensive and rigorous NE goals regardless of their LEA type (public or private), locale, socioeconomic status, or assessment tools utilized. This may be due to a halo effect.

In terms of demographic factors, locale and socioeconomic status factors were not associated with NE comprehensiveness or rigor scores for either public or private LEAs. However, the use of outside resources (such as government grants or assessment programs) was associated with NE comprehensiveness and rigor. We observed that public LEAs that received STEPS assistance was associated with fewer yet more rigorous NE goals. Finally, our research found that public LEAs that assessed the school environment prior to LWP development were associated with more comprehensive NE goal components, while using PANA assessment tool was associated with more rigorous NE goals.
Discussion

A federal mandate coupled with rigorous state policy review and the PSBA template policy was a successful strategy in Pennsylvania to help LEAs meet LWP wellness committee requirements and develop comprehensive and rigorous overall policy and nutrition education goals. Variables predictive of NE scores for private LEA’s LWPs were the development committee members involved in the LWP development, whereas public LEA’s LWPs were more associated with the sources of external assistance. Differences in how LEA types (public or private) approached the development of their local wellness policies and the strength of the NE goals included suggests that different approaches need to be made when informing public versus private LEAs of federal mandates and available resources of trainings, assessment tools, grants, and educational materials.
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CHAPTER 1

Introduction

1.1 Background

Public policy regarding the health and well-being of our nation’s youth and adolescents has been evolving since the mid-1800’s. Landmark legislation, the federally-funded National School Lunch Program (NSLP) of 1946, was passed out of concern for the nutrition and health of school-aged children, as commodities and food items were supplied to soldiers fighting World War II instead of school meals programs. The purpose of the National School Lunch Act was:

“It is hereby declared to be the policy of Congress, as a measure of national security, to safeguard the health and well-being of the nation’s children and to encourage the domestic consumption of nutritious agricultural commodities and other food by assisting the states, through grants-in-aid and other means, in providing an adequate supply of food and other facilities for the establishment, maintenance, operation and expansion of nonprofit school lunch programs” (emphasis added) (National School Lunch Act, Section 2).
This purpose to safeguard the health and well-being of our nation’s children can also be applied to the WIC Reauthorization Act of 2004 which was enacted to address the childhood obesity epidemic. This federal law mandates the development and implementation of a local wellness policy (LWP) that addresses nutrition education and physical activity by all NSLP-sponsoring local education agencies (LEAs).

While obesity is a personal and public health problem, it is a national security problem too. One of the leading reasons why prospective military recruits are rejected is being overweight. Military leaders in the report “Too Fat to Fight” are calling for Congress to pass new child nutrition legislation. They, like public policy makers, public health officials, and educational leaders view the school environment as an important location to reach, teach, and provide nutritional welfare to school-aged children. Proper nutrition education can safeguard “the health and well-being of our nation’s youth.”

1.1.1 Pediatric Obesity Prevalence Rates

In recent decades, pediatric obesity has become an epidemic problem. According to the Centers for Disease Control and Prevention, from 1999 – 2002, 16% of U.S. children ages 6-19 (over 9 million) were overweight, triple the percentage since the early mid 1970’s (figure 1-1). Although obesity prevalence rates reached a plateau around 2000, almost a third of the United States children and adolescents are either overweight or obese. Research conducted by Olshanskey and colleagues has projected that, “Today’s children may be the first generation of Americans to live shorter lives than their parents,” in large part due to the obesity epidemic. The prevalence of childhood obesity is three times greater than the
desired rate of 5% the Department of Health and Human Services set out in its Healthy People 2010 initiative. \(^{(13)}\)

**Figure 1-1**

*Prevalence of Overweight* Children and Adolescents Ages 2-19 Years of Age
from 1971-74 to 2003-06

---

* sex and age-specific BMI > 95th percentile on CDC growth charts

adapted from NHANES data, National Center for Health Statistics, April 2006. [www.cdc.gov/nchs](http://www.cdc.gov/nchs)

From 1976 to 1980 and 2003 to 2006 the prevalence of obesity among preschool-aged children (2-5 years), school-aged children (6-11 years) and adolescents (12 to 19 years) dramatically increased, from 5.0% to 12.4% for preschool-aged children, 6.5% to 17% for children, and 5.0% to 17.6% in adolescents.\(^{(20)}\)
1.1.2 Overweight and Obesity Measurement

The term “overweight” typically refers to an excess of body weight, whereas “obesity” is defined as excess of fat.\(^\text{(20, 24)}\) Direct body fat measurements are not available to assess obesity in children and adolescents, thus anthropometrics and other indirect estimates of body fat are the current common methods.\(^\text{(20, 24)}\)

The accepted measurement for overweight and obesity for children two-years-old and older is the body mass index (BMI).\(^\text{(24)}\) The body mass index calculation, developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease and Health Promotion (2000), measures the weight in relation to height and is equal to the body weight divided by the height squared.\(^\text{(24)}\) Unlike adults, the norms for BMI in children vary with age and sex because children grow in height and weight. “Overweight” refers to children with a BMI between the 85\(^{\text{th}}\) and 95\(^{\text{th}}\) percentile and “obese” \(\geq 95^{\text{th}}\) percentile for age and sex. Variability is still seen in distinguishing categories for adiposity; however, the large consensus follows the following definitions of BMI percentile interpretation: \(^\text{(24)}\)

**Table 1-1: Body Mass Index Categories**

<table>
<thead>
<tr>
<th>Category</th>
<th>Youth (2-20 years-old) AAP, CDC**, and IOM***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>BMI &lt; 5(^{\text{th}}) percentile for age</td>
</tr>
<tr>
<td>Normal weight</td>
<td>BMI 5(^{\text{th}}) to 85(^{\text{th}}) percentile</td>
</tr>
<tr>
<td>At risk of overweight</td>
<td>Not used</td>
</tr>
<tr>
<td>Overweight</td>
<td>BMI 85(^{\text{th}}) to 95(^{\text{th}}) percentile</td>
</tr>
<tr>
<td>Obese</td>
<td>BMI (\geq 95^{\text{th}}) percentile</td>
</tr>
</tbody>
</table>

*American Academy of Pediatrics (AAP) ** Center for Disease Control and Prevention *** Institute of Medicine (IOM)
1.1.3. Possible Causes and Consequences of Pediatric Obesity

Childhood obesity is a multi-faceted problem that is commonly attributed to an imbalance of excessive caloric intake compared to lower caloric usage.\(^{(21,25)}\) Today’s societal trends have made keeping an appropriate weight difficult for children and adolescents due to increasingly sedentary lifestyles; greater access to low-nutrient, energy-dense foods such as sugar-containing beverages and snacks; large portion sizes; and fast food services, all of which contribute to energy imbalance.\(^{(26,20)}\) The main contributing factor of children becoming and staying obese is a sedentary lifestyle combined with a high caloric intake.\(^{(26,20)}\)

Understanding the causes that have led to the increase of pediatric obesity has spurred much clinical and educational research. Although some genetic, physiological, and hormonal conditions play a permissive role and interact with environmental factors, environmental factors play the strongest role in childhood obesity rates.\(^{(20)}\) Environmental influences come from the cultural environment, parental lifestyle eating and physical activity examples, school and childcare settings, and media advertising.\(^{(41)}\) With the changes in societal settings and community structure, youth have become more sedentary and have developed unhealthy dietary patterns.\(^{(20,32)}\)

One key focus of research has been the contributions of specific environmental influences. Environmental factors of increased television viewing and video game use, in some longitudinal studies, are associated with an increased BMI. Video game use had a lower association than television viewing, perhaps due to the lack of food advertising and some games requiring interactive physical activity by the player.\(^{(20,32-36)}\)
Increasing childhood obesity brings with it serious consequences. Co-morbidities seen in adults are now seen in childhood. (25) The prevalence of co-morbidities associated with obesity increases as the prevalence of obesity increases. Co-morbidities related to childhood obesity include diabetes mellitus and cardiovascular disease, (29, 30) elevated glucose and insulin levels, hypertension, and increased respiratory and orthopedic problems. (27, 28) Additionally the prevalence of gall bladder disease has tripled in children and adolescents between 1979 to 1980 and 1997 to 1999. (20, 31) Results from a recent study indicates the association of children’s weight status to multiple inflammatory markers, C-reactive protein (CRP), absolute neutrophil count, and ferritin/transferin ratio, starting as young as the age of 3. (142)

Overweight children and adolescents are also more often susceptible to being socially isolated, more likely to have feelings of hopelessness and low self-esteem and have a higher rate of attempted suicide than average weight peers due to perceived “stigmas or bias.” (39, 40, 151) These “stigmas” or “bias” may label children and adolescents as being “lazy”, “overindulgent”, “unintelligent”, or “unsuccessful” by their peers, teachers, and other educators. (151) These weight “stigmas” can also negatively influence weight lose attempt and eating behaviors. (151)

Despite the multiplicity of studies from a variety of research fields (whether identifying specific dietary approaches, physical activity interventions, or social and biological components), the results and effects of childhood obesity are inconclusive and thus warrant future investigation. (20)
1.1.4 Legislative Action Through Policy

Governmental, educational, and community health-based groups have given attention to these environmental factors, which has led to the development of federal and state law and educational policies. These laws could potentially influence the built environment and affect the dietary intake and activity level of youth.\(^{(42)}\) Since children spend most of their day at school and in after-school settings, schools have opportunities to promote obesity prevention. U.S. children and adolescents consume 19 to 50% of their daily food intake at school and approximately 50% participate in National School Lunch Program (NSLP).\(^{(18,43)}\) A federal attempt to address childhood obesity through initiating changes in the school food environment, nutrition education and physical activity-related goals led to a mandate for wellness policies within local education agencies (LEA) that sponsor federally reimbursed school meal programs.\(^{(44)}\)

1.2 PL 108-265: A Solution to Address Childhood Obesity

As mandated by The Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108-265), all LEAs that sponsor school meal programs are required to have a Local Wellness Policy (LWP) by the start of the 2006-2007 school year.\(^{(44)}\) The LWPs are required to address nutrition education, physical activity, other school-based wellness activities, and nutrition guidelines for foods offered. Likewise the composition of the LWP development committee was mandated to include the minimum of a school board member, school administrator, school foodservice authority, student, parent/guardian, and member of the public community. The
combined collaborative effect of these members would ideally aid in the buy-in of policy goals, as well as utilize a variety of professional expertise for the development of effective policy that will bring healthy changes to the school environment.

Following the wellness policy mandate, expressed concerns regarding school health policies included weak policy enforcement of past policies related to foods offered in schools, lack of key stakeholder’s involvement in policy development and implementation, and miscommunication of existing policies. (54-57, 80)

The school environment has a powerful influence on educating and developing lifelong health practices. Peer influences and role modeling of school personnel and teachers contribute to health attitudes of children and adolescents. In order for LWPs to have a positive effect upon obesity rates, the policies need to be comprehensive in the breadth of the goal topics and strong in policy language. Specific policy goal language that clearly explains the purpose of the overall policy as well as particular goal component areas, such as goals addressing nutrition education, will provide LEAs with a direct plan to implement these policies.

1.3 Role of the Thesis

In an effort to address childhood obesity by emphasizing wellness, schools were mandated to develop a local wellness policy. The WIC Reauthorization Act of 2004 mandated that the local wellness policies were to be written by a committee that was approved by the local school board. This research was conducted to understand how Pennsylvania LEAs are addressing nutrition education mandates in the development of their local wellness policies. This
study also aims to better understand which variables help predict strong and comprehensive NE goals, so that future policy makers can draw on these strengths.

To our knowledge, no other study has provided results on the influence of a group of specific committee members on the comprehensiveness or strength of a school-based health policy. Wellness committee effectiveness in the development of a student wellness policy is unknown because mandated committees containing specific stakeholders have not been previously identified. Therefore, the effectiveness of a wellness committee warrants further investigation. This study will provide policymakers with a better understanding of the influence each member has in developing school health policies and its broader application for future school-based health policy development.

This study will also provide insight about possible relationships demographics, socioeconomic, and external resources and assistance characteristics of LEAs have that may promote or limit these policies. Additionally this study will provide knowledge about the differences between public and private LEAs in factors involved in policy development. Understanding how LEAs addressed the development of the LWPs, specifically the nutrition education goals, may indicate potential barriers and strengths that may influence the development and implementation of future school health policy. This information will be useful to aid educators, policymakers, and researchers in developing effective training resources and assistance programs to help LEAs implement LWPs so that school-based health interventions are more effective and sustainable in addressing childhood obesity.\(^{(145)}\)

To our knowledge, studies have not looked at the relationship of LEA demographic characteristics, LEA socioeconomic, assessment tools to assess the school environment prior to LWP development, the mandatory development committee members, and overall LWP
comprehensiveness and rigor scores as variables that predict the development of the content (comprehensiveness and rigor) of the nutrition education goals in local wellness policies. The objective of this research is two-fold:

Objective 1) How were nutrition education goals from the PSBA template represented in LEAs local wellness policies? Were they stronger, the same, or weaker in meaning from the template goal?

Objective 2) How do the following factors relate to the quality (rigor and comprehensiveness scores) of the nutrition education component of LWPs?

2a) What is the relationship of LEA type and LEA locale with nutrition education comprehensiveness and rigor scores?

2b) What is the relationship of the percentage of students eligible for free and reduced school meals (% Free and Reduced) of the LEA with nutrition education comprehensiveness and rigor scores?

2c) What is the relationship of environmental assessments and resources used prior to LWP development and the quality (rigor and comprehensiveness scores) of the nutrition education goal component?

2d) What is the relationship of the six mandatory committee members with the quality (rigor and comprehensiveness scores) of the nutrition education goals?

2e) What is the relationship of overall policy comprehensiveness and rigor to nutrition education comprehensiveness and rigor score?
CHAPTER 2

Literature Review

2.1 Background of Federal, State, and School Nutrition and Health Policies

In order to provide background information on extant federal and state policies for school nutrition, this section describes the most well-known federal and state nutrition policies, including the history of the school lunch program and current government obesity interventions. These previous effects have laid the groundwork to address childhood health and weight issues. However, these approaches have fallen short, but the federal local wellness policy mandate could correct many of their deficiencies.

2.1.1. History of the School Lunch Program

The national school lunch program was being pioneered and initiated in locales across the nation well before a federally funded program was implemented. The importance of caring for children’s nutritional welfare was first seen in 1853 when the first school meal program started by the Children’s Aid Society of New York City provided a hot noonday meal for students. However, it wasn’t until the late 1800’s and early 1900’s that school meal programs became more common. This rise in school meal programs may be due in part to the publication of Robert
Hunter’s book *Poverty* in 1904. His words capture the importance of a well-fed body in connection to a well-fed mind:

“…learning is difficult because hungry stomachs and languid bodies and thin blood are not able to feed the brain. The lack of learning among so many poor children is certainly due, to an important extent, to this cause. …It is utter folly, from the point of view of learning, to have a compulsory school law which compels children, in that weak physical and mental state which results from poverty, to drag themselves to school and sit at their desks, day in and day out, for several years, learning little or nothing. If it is a matter of principle in democratic America that every child shall be given a certain amount of instruction, let us render it possible for them to receive it, as monarchial countries have done, by making full and adequate provision for the physical needs of the children who come from the homes of poverty.” (37,38)

Hunter’s book seems to capture the prevailing beliefs about the connection between nutrition and learning. Thus, Hunter’s argument, that children learned better when they were well-fed, may have encouraged school programs to institute school meal programs as a means of better education.

In the early 1900’s cities such as Boston, New York, Milwaukee, Cleveland, and Chicago developed school meals programs. A 1914-15 survey of the school lunch program in Cleveland reported the aims of the program, which seem to be representative of similar programs: “The school lunch division should reach all children; it should provide wholesome and nutritious food for them at cost, train them in sane habits of eating, and teach them to choose wisely what food they buy.” (37,130) Most of the programs were sponsored through private clubs, individuals,
churches, and societies. Caterers served schools meals from “lunch wagons” or “basket lunches”. (37) As space and supplies became available, usually through philanthropic donations and later provided by city school boards, lunch rooms were established within the school building. In 1909, Philadelphia was the first city where the responsibility of a lunch program was transferred from charitable organizations to the school board. All school food programs were to be self-supporting, except for the kitchen equipment and cooking needs, which were supplied by the board. These school lunch programs were to sell the lunches at cost, and not for a profit, in which case some students were without means to purchase a warm meal. (37)

Rural schools had issues of their own for providing meals to their students. Most students lived far enough away that they could not travel home at the noon hour for lunch. In the winter, their cold sandwiches were frozen by the time they arrived at school. School administrators, Parent/Teacher Associations (PTA), and teachers were concerned by students’ lack of a hot noonday meal and devised creative solutions. Some teachers would create hot meals, such as soups and stews for everyone using the foods students brought to school or used “The Pint Jar Method” to provide students with hot meals. (37) In the “pint jar method” students would place their lunch, such as noodles, cocoa, soups, in a pint size jar and place it in a bucket of water on top of the stove heating the school. By the noon hour the students would have a hot lunch. University extension services agents also provided menu ideas for rural schools. (37)

However, it became evident that for the school lunch program to expand and gain momentum, it needed more aid, aid that could only come from the federal government. The earliest federal aid was provided to Missouri through The Reconstruction Finance Corporation in 1932 and 1933. Later the Civil Works Administration and the Federal Emergency Relief Administration provided resources to an addition 39 states. (37)
Although the Great Depression made the need for federal aid even more pressing, widespread federal aid didn’t happen until 1935, when Public Law 320 was passed, providing money for both agriculture and the school lunch program. Surplus commodities were purchased by the USDA and provided to needy families and school lunch programs. This was the first time that school lunch programs were to be provided to children who could not pay, with the provision that they could not be identified by their peers or segregated or discriminated against.\(^{(37)}\) Initially food was allotted based on the participation number of underprivileged children, which was later changed to base food allotment upon “the maximum quantity per child per month established by the USDA,” a provision that is still in operation today.\(^{(37)}\)

During World War II, changes in political climate illustrated the need for a constantly funded federal program: food supplies were being sent to support troops, diminishing the food supplies available for school lunch programs. In response to the growing need for food supplies, Public Law 129 was passed, amending the Agricultural Act of 1935 to provide cash subsidy for the purchase of food for school lunch programs. However, with the waning federal funding and the costs of maintaining a food program, many school boards abandoned school meals.\(^{(37)}\)

It was not until 1946 that the National School Lunch Act, Public Law S96, was passed, which mandates that school lunch programs are to be a “permanent and integral parts of their school systems…”\(^{(37, 131)}\) LEAs also receive reimbursement from the federal government for school meals sold that meet the established federal nutritional guidelines. The National School Lunch Act also states the benefits of a consistent school lunch program: “The educational features of a properly chosen diet served at school should not be underemphasized. Not only is that child taught what a good diet consists of, but his parents and family likewise are indirectly instructed.”\(^{(37, 132)}\)
Although the idea that the NSLP instructs students in a proper diet through example is a positive one in theory, it does not always work. The additional availability of competitive foods besides the federal reimbursable NSLP meals has left schools seeking other food-based nutrition and health intervention programs to educate students about healthy nutrition practices.

2.1.2 Background to School Nutrition Programs and Interventions

The Child Nutrition and WIC Reauthorization Act of 2004 was the first federal legislative effort to address obesity prevention and foods sold in schools. Currently, most schools address student nutrition by monitoring the provision food offerings that meet the reimbursable school meal requirements, while subsidizing operational costs by selling competitive food. Unfortunately, while these practices are good in theory, in practice they often fall short.

2.1.2.1 Food-based School Nutrition Programs and Interventions

The development of the school lunch program demonstrates the long concern educators have had for students’ nutritional needs. More recently, however, educators and other administrators have begun to recognize that those nutritional needs require more than just the provision of food—students also need to be taught to have an appropriate relationship with the food they eat.

According to the 1992 School Nutrition Dietary Assessment Study, students’ diets while at school are largely dependent upon the available sources of food, either school-provided
options or competitive foods, such as à la carte menu items or vending machine foods. Since “as much as 40 percent of children’s daily calorie intake occurs at school,” (1,138) the nutritional differences between school-provided meals and competitive options can have significant consequences for students.

For schools participating in the National School Lunch Program (NSLP), school-provided meals must meet dietary guidelines for Recommended Daily Allowances (RDA) for iron, protein, vitamin A, vitamin C, calcium, calories, and fats and saturated fat requirements. (16,110) However, an increasing number of schools provide competitive options in addition to the school lunch: between 2003 and 2006, more than 90% of schools offered an à la carte option at lunchtime. (138)

Competitive foods are foods and beverages in schools that are not part of the federally reimbursed school lunch or breakfast meals. They include à la carte food or beverages from the school cafeteria (sold separate from the school lunch or breakfast meal), vending, fundraisers, school stores, classroom parties, or food rewards. These foods are often low in nutrients and high in total fat, sugar, and calories. (16,17,111,112) Findings from the second School Nutrition Dietary Assessment Study states that vending machine use was available in 76% of high schools, 55% of middle schools, and 15% of elementary schools. Likewise, snack bars, canteens, and student stores also provide access to competitive foods in 41% of high schools, 35% of middle schools, and 9% of elementary schools. (152)

Study results show that in 2002, 31 states had no competitive food policies beyond the USDA requirements. In 2005, after the 2004 Reauthorization Act, state legislators submitted nearly 200 bills that addressed the nutritional quality of school foods. Legislation related to
nutritional quality of school food and beverages were considered or enacted by 39 states in 2006.\(^{89}\)

Nutrition experts and public health advocates have been prompted to examine changes in the school environment and question whether these current environments are promoting and supporting the development of healthy eating.\(^{92, 93, 98}\) Research demonstrates that students with access to competitive foods are less likely to eat nutritionally balanced meals. Elementary students who ate only NSLP meals were found to eat more fruit, juices, and vegetables than students who had access to snack bars.\(^{57}\) A cross-sectional designed Teens Eating for Energy and Nutrition at School study (TEENS) was designed to promote healthful dietary behaviors to reduce future cancer risk through a school-based dietary intervention trial.\(^{74, 95}\) Youth participating in the study who attended schools without à la carte programs met USDA dietary recommendations of daily calories from total fat compared to students who attended schools with à la carte programs who exceeded these recommendations. Similarly those youth also reported nearly an entire serving more of fruits and vegetables than students with à la carte programs. Among youth aged 12 to 17 years, diets low in fruit and vegetables and high in fats have been cited as the most common behavior contributing to chronic disease risk.\(^{94}\) Moreover, even school lunch programs can be improved: the TEENS study found that 84% of foods offered and 93% of foods sold to students as competitive and non-competitive foods were foods that should be limited.\(^{74, 95}\)

These findings suggest that food options offered in à la carte programs are displacing fruit and vegetable intake in the diet of teens and demonstrate the importance of school-based interventions that promote healthy eating among youth. Therefore, attention to school-level environmental factors is important for the effectiveness of school-based nutrition and physical
Schools can influence the eating habits of their students by creating healthy nutrition environments. A study conducted in Los Angeles, reported high school students stated that food and beverage choices consumed at school were influenced by school nutrition policies. A fifth of these students indicated it also influenced foods they consumed outside of school.

In fact, in 2004 the Institute of Medicine (IOM) reported that many school-based nutrition interventions were focused on improving nutritional quality and reducing portion sizes of food and beverages. Yet, a school-to-school comparison of the effectiveness of programs was hard to assess because of differences and diversity of resources and commitment to improvement.

2.1.2.2 Behavior-based School Nutrition Programs and Interventions

In addition to access to a healthy school food environment, student dietary behaviors can be positively influenced through the combination of behaviorally focused nutrition education and school nutrition policy. Many current health and education policies and interventions in schools target individual behavior change. These policies or interventions focus on issues such as tobacco usage, harassment, alcohol and illegal drugs, weapon possession, and physical fighting. Although much has been learned about improving health risk factors, school health policies also need to address food and nutrition education needs. Schools provide a critical environment optimal for children to acquire health-related knowledge and to develop healthy eating habits, while becoming physically active through before, during, and after school programs. The PSBA template states that “nutrition education shall provide all
students with the knowledge and skills needed to lead healthy lives,” “shall be behavior focused,” and “shall be integrated into other subjects.” (Appendix B) (100)

Integrating nutrition education across the curriculum has long been advocated as a way to improve nutrition education due to limited available time in the school day. (68, 91,121-122) This integration of nutrition education into diverse subjects is widely supported by food service directors. Survey results from North Carolina Food Service Directors (FSD) indicate their support for training classroom teachers and the integration of nutrition education into other subjects as a way to improve the nutrition curriculum. (75) Food service directors have strongly advocated the infusion of nutrition education goals with academic guidelines set forth in the No Child Left Behind Act of 2001. (58) The cafeteria, health and physical education, mathematics, and writing skills classes are such locations where nutrition education can be integrated. Through the innovative use of these settings and outlets, nutrition education can be delivered. (68)

School-based intervention programs to date have had mixed results. Some school-based intervention programs, including one that integrated nutrition education across the school curricula, (113) have succeeded in changing children’s eating behaviors and food choices but have had little success in reducing childhood obesity. More recently, some programs have had success in reducing obesity as well. (90) Unfortunately, many of these programs were three to six months in duration without long term follow-up. (57, 114-118)

Several of the PSBA example nutrition education template goals are exemplified in the results of the Planet Health project and surveys of North Carolina FSD. Planet Health, a behaviorally focused school-based intervention project, proved effective in reducing obesity in female students and modifying television viewing behaviors. Planet Health sessions were integrated into the existing school curricula for the four major subjects and physical education.
The focus was to decrease television viewing, increase fruit and vegetable consumption, decrease high-fat food consumption, and increase moderate and vigorous physical activity. The results of this two year intervention study were a reduction in television viewing hours by 40 minutes and 58 minutes among boys and girls, respectively, and higher fruit and vegetable consumption, (0.32 servings/day), and smaller total energy intake by 575 calories per day among girls.

Likewise, in intervention schools the prevalence of obesity among girls was reduced from 23.6% to 20.3% compared to the increase in the control group, 21.5% to 23.7%. This study proved that school-based integrated nutrition education programs are promising in reducing obesity among youth. \(^{(90)}\)

A study conducted in Philadelphia with fourth- through sixth-grade students, showed that nutrition education intervention can reduce the number of students becoming overweight. \(^{(139)}\) In this study, teachers were trained in nutrition education and exercise. Students were rewarded with raffle tickets when they made healthy food choices from foods purchased at school or brought to school. The study results showed a reported 10.3 percent decrease in the total number of students who were overweight or became overweight. \(^{(139)}\) A related study found that involving students in taste testing and voting for school meals has been a successful strategy to get students to eat more healthful meals at school. \(^{(67)}\)

A study conducted with Head Start students also proved successful in reducing childhood weight gain and teaching healthy eating habits. \(^{(140)}\) Intervention children were provided with increased opportunity for physical activity and nutrition education lessons from puppets. The parents were also targeted through newsletters and “homework”, such as logging fruit and vegetable consumption. The study found that non-intervention children gained 16 percent more weight than intervention students in a two year follow-up. \(^{(140)}\)
As supported by research, role modeling of healthy lifestyle behaviors by school staff is another way of educating youth and promoting healthy eating and physical activity practices. A study comparing policy practices before and after the Child Nutrition and WIC Reauthorization Act of 2004 showed that before legislation only 20.4% of staff wellness programs encouraged staff to be role models. This dramatically changed after the legislation, with 70.8% encouraging staff to display healthy lifestyle practices. This study’s results do not provide insight into the affect staff role modeling has on student behaviors.

Role modeling of healthy behaviors also needs to occur in the home and community. The Child and Adolescent Trial for Cardiovascular Health (CATCH) is an example of a large, effective nationally-based, longitudinal research study that bridged family and school-based intervention together. The study’s focus was to reduce the risk of cardiovascular disease later in life through a school- and family-based intervention to promote healthful behaviors in children and adolescents. This was accomplished through family and schools working together to lower fat and sodium intake. The Eat Smart Program, used in the CATCH study, likewise met all the requirements for reimbursable meals in the National School Lunch and Breakfast programs. Incorporating programs like the CATCH and The Eat Smart Program can minimize additional funding for new nutrition education programs while providing healthy meal options that meet federal meal standards for reimbursable meals for schools.

The IOM report “Preventing Childhood Obesity, Health in the Balance” suggests that school environments are the optimal location for children to learn about energy expenditure and healthy living lifestyles through good nutrition and physical activity. The previously mentioned studies demonstrate that schools can educate and teach these practices
through various means. Thus it is important that our schools are structured to promote healthy
eating and physical activity practices since children spend a large part of their day there.

Because of the importance of school environments to student nutrition, insight can be
gained through the analysis of the nutrition education goals of the LWPs of Pennsylvania LEAs.
Such analysis can help researchers and policy makers understand how the LEAs plan to address
nutrition education and may indicate possible assistance needed to improve the school
environment so that it can educate and “promote healthy eating and physical activities”
behaviors of its students.

2.1.2.3 Interventions Through Nutrition Education Prior to LWP Development

Prior to the development of the LWP, national and state organizations sought to intervene
in the obesity epidemic through a variety of means. In addition to the behavioral interventions
and improvements of the school food environment, discussed above, some of these interventions
focused on nutrition education. This section addresses the important characteristics of nutrition
education programs implemented through two key programs, Project PA and Team Nutrition,
which have influenced nutrition education in Pennsylvania.

In 2006, the School Nutrition Association (SNA) analyzed the local wellness policies of a
random sample of 140 school districts from 49 states and 7 regions in the United States. The
characteristics of these local wellness policies were outlined in their report A Foundation for the
Future II. Ninety-five percent (95%) required nutrition education for at least some grade levels.
The most common goals relating to nutrition education were: providing nutrition education for
parents, integrating nutrition education into other courses across the curriculum, integrating
nutrition education in the school cafeteria and menu, and providing professional development for those who teach nutrition education. (120)

While these goals are significant, they miss an important component of nutrition education: effective nutrition education programs should extend into and beyond the school classroom and eating environments, as suggested by the PSBA template policy, (100) by integrating family and community agencies that provide knowledge and skills for children and adolescents to lead healthy lives. (63,91) In other words, school-based nutrition education programs should involve parents and community and include physical activity. (68) However, the American Dietetic Association stresses that nutrition policies need to reinforce classroom nutrition education, regardless of parental involvement, so children learn early healthy lifestyle choices. (68) Lastly, school-based food and nutrition programs need to be sustainable if one expects to see continual adoption of healthy behavior changes in their students. (62)

The integration of school programs with community agencies has been partially accomplished through Team Nutrition, a USDA nutrition education program that integrates school representatives with representatives of health and education organizations, food industry, and nutrition experts. Together these professionals create settings for critical thinking skills through demonstrations, role playing, and scenarios that teach nutrition education to children and their parents. (68) Some of the efforts of the Team Nutrition programs in Pennsylvania can be seen through programs and activities promoted and carried out by Project PA.

Project PA, a collaborative program between nutrition researchers from Penn State University Department of Nutritional Sciences and PDE, is an important education resource for Pennsylvania schools and their communities. This program provides resources, trainings, instructional packets, and grant opportunities to aid the schools in Pennsylvania and their
communities to educate students in healthy eating practices. Through grant projects, such as the Team Nutrition grant project “Environmental Nutrition Strategies,” Project PA has developed instructional packets that provide activity ideas and materials to assist schools in starting and developing nutrition education activities and improving access to and prices of healthy food options in the school meals program. This research based team has also provided technical training and resources to assist foodservice directors and LEAs in other school food and nutrition related programs as well as the LWP. (143)

Outcomes of previous nutrition education intervention programs and of Project PA demonstrate that change can occur within the school environment. As illustrated above, after the local wellness policy mandate more specific nutrition education goals were being incorporated into school health policies. Coupled with these results, assessing the nutrition education goals of Pennsylvania LEA’s LWPs will aid in furthering the integration of nutrition education throughout the school environment and increase the potential for change. Through the guidance of federal and state level government, a policy-based nutrition intervention may provide a consistent and sustainable approach to address childhood obesity.

2.1.3 Current Federal and State Legislative Actions

Some new legislation on the state and federal level has begun to address behavioral intervention for food related issues. Recently, policy makers have viewed the increasing prevalence of childhood obesity as a critical public health threat of the 21st century. (59,97) In response to this growing threat, lawmakers have begun revising outdated nutritional policies and
have initiated measures to address childhood obesity through individual behavioral interventions and environmental changes in school settings.\textsuperscript{(60-63, 96)}

Despite the childhood obesity epidemic, nutritional policies, however, have not always been the top priority.\textsuperscript{(65)} Historically, meeting the food and nutrition needs for children has been met by local, state, and federal governments. Implementation of nutrition policies in schools whose aim is to promote healthy diets and tackle childhood obesity have been promoted by policymakers, researchers, and the media.\textsuperscript{(62)} However, many of the nutrition programs are federally funded and under constant threat of alteration or elimination due to uncertain financial and political climates.\textsuperscript{(68, 109)} These nutrition programs need to respond to the new emerging nutritional concerns while keeping in mind the quality and level of funding available.\textsuperscript{(68, 109)} While there are some programs that support the implementation of school health programs, such as the Center for Disease Control and Prevention guidelines for school health programs (CDC 1997) and the World Health Organization Nutrition-Friendly Schools Initiative (WHO, 2006), much remains to be done to combat the obesity epidemic. Developing and implementing these recommendations for nutrition interventions to tackle childhood overweight and obesity will be challenging for schools, communities, and researchers.\textsuperscript{(62, 72)} Understanding the best channels and resources to reach and educate children about healthy lifestyle practices is thus vital for policy makers.\textsuperscript{(68, 98)}

In the fall of 2006, Pennsylvania legislators voted for the program, “Healthy Farms and Healthy Schools,” whose aim was to increase kindergarten age children’s knowledge of agriculture and encourage healthy eating habits. The purpose of the grant program was to address childhood overweight and obesity in Pennsylvania. The program provided LEAs with grant monies to support nutrition and agriculture education with higher priority given to LEAs
with a greater proportion of free or reduced meals. This program also provided LEAs with locally grown produce to be used in the school meals program. (www.pahouse.com/Casorio) (69)

Farm to school programs are currently in progress and have not be evaluated.

In addition to the “Healthy Farms and Healthy Schools” program described above, Pennsylvania lawmakers have taken steps to ensure healthy school environments. On June 3, 2009, Pennsylvania House Representative Mike Gerber (D-Montgomery) proposed a new “Healthy Schools” nutrition legislation, geared towards enhancing the nutritional standards in PA schools. (69) Gerber’s bill focuses on reducing fat, sugar, and calories from the foods offered in the school environment. The bill, if passed, will also prohibit the sale of snacks containing more than 100 calories and restrict beverage vending machines to the sale of milk, water, and 100% fruit juice. The end goal, Gerber states, “is to turn healthy kids into healthy adults.” (69)

Most recently, at the federal level, First Lady Michelle Obama has made it her personal agenda to lead an initiative to reduce childhood obesity, called “Let’s Move”. (144) Possible new legislation will ban candy and sugary beverages from schools and require schools to provide more nutritious food offerings. (6)

Federal and state governments have introduced and passed new legislation and projects to encourage healthier eating and physical activity practices while addressing childhood obesity. These projects range from the introducing locally grown produce into schools, limiting and changing food offerings, and improving opportunities for physical activity. All of these projects support the efforts and goals of the local wellness policy to improve childhood obesity prevalence by improving nutrition education and physical activity.
2.1.4 Applications of Nutrition and Health Policy

Aspects of the IOM reports and other studies are encouraging, yet they also illustrate that schools need a more consistent approach to address childhood obesity. Although few nutrition policies were established prior to the federal mandate, this section addresses the importance of utilizing a school nutrition and health policy as a consistent approach for schools to address childhood health issues. Likewise this section identifies key characteristics of effective policies, as well as barriers that need to be overcome for maximum policy effectiveness.

The federally mandated wellness policies have already had a demonstrable effect on school wellness policies. Findings from a study of a national sample of 363 policies before and after the wellness policy legislation illustrates the promising influence of the wellness policies. The study found that 56.5% of policies integrated nutrition education into current curriculum before the mandatory wellness policies and 81.3% after. A little more than 33.6% of the sample policies offered nutrition education for each grade level before legislation and 61.2% after. Likewise, of the surveyed schools, 52.1% utilized the food service department for nutrition education before wellness policy legislation and 75.8% afterwards.

In both previous and current legislation, policy makers have recognized the need to create policies that shape the school environment in ways that promote healthy behaviors and active lifestyles to prevent and control childhood obesity. A Healthy People 2010 nutrition objective “to increase the proportion of children and adolescents aged 6 to 19 years whose intake of meals and snacks at school contribute to good overall dietary quality” states the national need for healthy school environments. The Center for Disease Control and Prevention (CDC)’s Guidelines for School Health Programs to Promote Lifelong Healthy Eating calls for policies
that support school environments that promote healthful eating in which students can make healthy food choices.\(^{(71)}\) Similarly, Wechsler and Masse hypothesized that school food and nutrition policies that change the school food environment will improve opportunities for healthy food options.\(^{(63,64,96,98)}\)

Despite the clear importance of wellness policies, these policies need to be carefully crafted for maximum effectiveness. Among other important characteristics, the nutrition policies and programs need to meet the nutritional needs of children and adolescents by serving as a laboratory for applying nutrition information and providing a safe setting to positively contribute to emotional and social development of the child.\(^{(68,100)}\) Likewise policies should help schools in identifying and utilizing “teachable moments” to reach out to students and parents to provide support for developing healthier life-long eating habits.\(^{(1,138)}\) Therefore, “schools must lead by example,”\(^{(1)}\) removing vending machines full of high-calorie, low nutrient items and unhealthy food options from the school setting so as to not undermine nutrition education efforts in the classroom.\(^{(1)}\)

Potential barriers to effective nutrition education, such as competitive foods and media advertising, need to be identified and addressed in order for the programs to meet the needs of our children and adolescents.\(^{(68)}\) Military leaders have admonished Congress to develop new nutrition guidelines that remove junk foods from schools, implement proven effective school-based health programs, and increase funding for improved access to and higher quality school meals, through the reauthorization of the Child Nutrition Act.\(^{(1)}\)

School environments have been identified as a primary location to reach the children of the United States.\(^{(63,91)}\) Schools can be the ideal location to fight childhood obesity through policies and practices that are helpful to the school environment, ensure comprehensive nutrition
education programs, and gain the support of community partners.\textsuperscript{(52, 54, 5, 63, 91)} The Child Nutrition and WIC Reauthorization Act of 2004 might standardize this approach.

\section*{2.2 Federal Law: The Local Wellness Policy}

On June 30, 2004, President George W. Bush signed Public Law 108-265, the Child Nutrition and WIC Reauthorization Act of 2004.\textsuperscript{(44)} Within this public law, section 204 requires all local school agencies (LEAs) sponsoring the National School Lunch Program (NSLP), authorized by the Richard B. Russell National School Lunch Act (42 U.S.C. 1751 et seq.) or the Child Nutrition Act of 1966 (42 U.S.C. 1771 et seq.), to have a local wellness policy (LWP) established no later than the first day of school after June 30, 2006. These local wellness policies are to address goals for nutrition education, physical activity, and other school-based wellness activities and to also set nutrition guidelines for foods sold and offered on the school campus during the school day.\textsuperscript{(44)}

Section 204 of The Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108-265) directly states the minimum requirements that LEAs must incorporate into their local wellness policies:

1) Includes goals for nutrition education, physical activity and other school-based activities that are designed to promote student wellness in a manner that the local educational agency determines is appropriate;
2) Includes nutrition guidelines selected by the local educational agency for all foods available on each school campus by the local educational agency during the school day with the objectives of promoting student health and reducing childhood obesity;

3) Provides assurance that guidelines for reimbursable school meals shall not be less restrictive than regulations and guidance issued by the Secretary of Agriculture pursuant to subsections (a) and (b) of section 10 of the Child Nutrition Act (42 U.S.C. 1779) and section 9(f)(1) and 17(a) of the Richard B Russell National School Lunch Act (42 U.S.C. 1758(f)(1), 1766(a)0, as those regulations and guidance apply to schools;

4) Establishes a plan for measuring implementation of the local wellness policy, including designation of one or more persons within the local educational agency or at each school, as appropriate, charged with operational responsibility for ensuring that the school meets the local wellness policy; and

5) Involves parents, students, and representatives of the school food authority, the school board, school administrators, and the public in the development of the school wellness policy. (44)

Upon request, the Secretary of Education and Health and Human Services will provide guidance in the LWP development process to school food authorities, state education agencies, and local education agencies, through information and technical assistance. Technical assistance aims are to promote and establish healthy school and nutrition practices by providing requesting agencies with relevant and pertinent examples of other LEAs or schools that have already incorporated healthy food options and practices in their educational environments. (44) This information and assistance can help LEAs understand how to use existing resources, school
programs, facilities and personnel, that would allow for the integration of nutritional and physical education throughout the curriculum. (75, 79, 91, 119)

There are concerns surrounding the development of a nutrition and health policy. Such concerns include how these policies are enforced and perceived, the need for significant changes in current policy and practices, (54) financial and time constraints, and the need for ongoing communication and follow-up of policy implementation. In Pennsylvania, researchers suggest that compliance with the legislation may require significant changes in current policies and practices, (54) such as foods offered as competitive foods, classroom rewards, parties and celebrations, and fundraising and booster club events. Once developed, enforcement of the policies will be an important step to an effective LWP. (54)

The remainder of this section will address how PA has addressed the local wellness policy, resources available to PA schools, background on the development committee members, and the responsibilities of these committee members in the LWP development and implementation process.

2.2.1. Pennsylvania’s Actions Towards Local Wellness Policy

Before the Child Nutrition and WIC Reauthorization Act of 2004, few nutrition policies were in existence nationally, (56) although their development has long been promoted and advocated by government and education organizations. (75, 56) A survey sent to Minnesota secondary school principals found that before the Reauthorization Act of 2004, only 32% of principals reported their school having a food and nutrition policy, although 65% believed it was important to have a district or school-wide food and nutrition policy. (56)
This lack of school nutrition policies, particularly comprehensive policies, provided a challenge for many LEAs and school districts throughout the nation to fulfill the local wellness policy requirement. \(^{54, 56, 63, 75, 93}\) Therefore, in response to Public Law 108-205, The Pennsylvania School Boards Association (PSBA) and The Pennsylvania Department of Education (PDE) collaborated to develop a local wellness policy template. This template provided example policies goals that address the federal regulations and mandates for the wellness policies. Example nutrition education goal themes provided to the LEAs may include: integrating nutrition education into other subjects; developing nutrition education that meets curriculum regulations and academic standards; creating behavior-focused nutrition education; linking nutrition education with foodservice, families, and community for student projects; addressing the benefits of nutrition education and physical activity as healthy lifestyle practices; and providing age-appropriate lessons and activities from trained and prepared staff. \(^{100}\)

In addition to providing the sample template, the PSBA and PDE also provided schools with a 15-item Local Wellness Policy Checklist (LWPC) \(^{101}\) that included information about the LWP development process, individuals responsible for implementing the policy, and nutrition guidelines for competitive foods that will be implemented by the LEA. \(^{100, 101, 107}\) The purpose of the LWPC was to provide PDE with assurance that LEAs were meeting federal mandates by disclosing information about the LEA, nutritional guidelines, and LWP development process.

This template was available and recommended for Pennsylvania LEAs to use as a model when developing their LWP and became the major template used for policy development. \(^{100}\) When each LEA submitted their policy, they also submitted their LWPC to the PDE.
2.2.2 Resources To Assist Nutrition Education Policy Development

In order to assist school administrators, wellness committees, and LEAs to develop education policies, other governmental (both local and national) and non-governmental organizations have also provided helpful resources for LEAs during the development process. Pennsylvania Advocates for Nutrition and Activity (PANA), CDC, Team Nutrition, National Association for Sports and Physical Education, provide resources which include tools for stakeholders to develop and put local wellness policies into effect, sample policies illustrating policy language, guidelines to develop and put policies into effect, and federal and state nutrition and physical education regulations. Other resources provided to LEAs were assessment tools for conducting an assessment of the school environment prior to LWP development, such as PANA, USDA, CDC or other, and grants and assistance programs, such as STEPS and PANA grants.

2.2.2.1 Conducting an Assessment of School Environment

Before developing their LWP, many LEAs conducted a baseline assessment of current physical activity and nutrition education practices. An assortment of different assessment tools available from governmental, national, and state health agencies include: Keystone Healthy Zone from the Pennsylvania Advocates for Nutrition and Activity (PANA), The School Health Index from the Centers for Disease Control, Changing the Scene from the Team Nutrition Programs of the United States Department of Agriculture, and Opportunity to Learn Standards for
Elementary, Middle, and High School Physical Education from the National Association for
Sport and Physical Education. (106)

The CDC’s School Health Index is a customizable packet of trainings and presentations
on how to conduct a school health assessment. LEAs can tailor the training and planning
sections to meet the specific needs of their LEA. (149) Changing the Scene - Improving the
School Nutrition Environment was developed by Food and Nutrition Services (FNS), part of
USDA, to be used on the local level to raise awareness of the school health environment. In
collaboration with education, health, and nutrition organizations this tool kit was developed to
assess the school health environment through addressing nutrition education, physical activity,
and healthy school meal options. (148) The National Association for Sport and Physical
Education’s Opportunity to Learn Standards, is an online resource developed by over 300 health,
safety, and education professionals, whose aim is to ensure that LEAs policies are meeting
current federal, state, and local regulations for health and safety. Guidelines are presented that
address the following areas, physical education, health and nutrition services, nutrition and food
services, and family and community involvement, to name a few. (150) The description of another
assessment tool PANA’s Keystone Healthy Zone follows below.

2.2.2.2 Keystone Healthy Zone (PANA) Grants and STEPS Assistance

One prominent concern about implementing new wellness policies includes the cost. To
offset these costs, some state and federal programs offer money to participating programs.
Pennsylvania Advocates for Nutrition and Activity (PANA) developed an online assessment tool
known as Keystone Healthy Zone (KHZ). In addition to providing an online assessment tool
(KHZ), PANA runs a KHZ schools campaign that rewards and recognizes schools for making a commitment to improve nutrition and physical activity. Other KHZ grants support community or student groups who want to lead healthy changes in their schools and community environment. Recipients of KHZ (PANA) grants receive monies, awards, professional training opportunities, materials for improving nutrition and physical activity for the student, and recognition for their efforts in developing healthy school environments.

At the federal level, The Steps to a Healthier US, a 5-year cooperative agreement program funded through the CDC, provided funding for states, cities, and tribal entities to “implement chronic disease prevention efforts focused on reducing the burden of diabetes, overweight, obesity, and asthma and addressing three related risk factors: physical inactivity, poor nutrition, and tobacco use.” (22) STEPS had activity programs to affect media, policy, school, workplace, health care, and community. Proposed activities included: implementing the Color Me Healthy health promotion program, collaborating with communities to increase availability of physical activity resources, increasing availability of fruits and vegetables, and providing professional training to foodservice personnel to increase the variety of healthy foods options that meet USDA standards. A key activity that was to be implemented in schools was the development of school health councils to promote healthy lifestyles, through proper nutrition and physical activity. (22)

Additional results of these projects’ effectiveness in influencing student health and nutrition in the school environment will be discussed further in the results and discussion section. The STEPS program was discontinued due to lack of additional funding.
2.2.3 Background of Key Local Wellness Policy Development Committee Members

The Wellness Committee has been known by different names, depending on the state and governmental organization. These names include, but are not limited to, school nutrition advisory councils (SNAC or NAC), school nutrition advisory group, and School Health Advisory Boards (SHABs). Despite the different names and committee composition, they all have the same purpose and function: to develop health and nutrition policies that will foster healthy lifestyle choices and behaviors among youth, through offering healthy food options and promoting physical activity. (68,84)

The Centers for Disease Control’s Guidelines for School Health Programs to Promote Lifelong Healthy Eating advocates the establishment of a SNAC. (7) These school health advisory councils have a theoretical basis in Social Cognitive Theory, which explains three levels of efficacy in nutrition education projects: cognitive level, behavioral level, and environmental level. In the cognitive level, councils provide individual participation in school policy making by increasing self-confidence in the ability to affect change in the school environment; councils also increase the knowledge of school policy for individual members. The behavioral level is the mechanism for policy development and implementation. This level provides skill building opportunities and rewards to individuals for contributing to healthy school change. Lastly, the environmental level advances healthful food choices, such as increasing fruits and vegetables and providing lower fat snacks in à la carte menus, vending machines, and extramural events. (85)

In the past many individuals involved in school-based nutrition policy development were self-selected, had an interest in nutritional issues, and may have had little prior experience in
developing school nutrition policy. French, et al. suggest that health councils are the best way to facilitate school-level policy development. An advantage of an effective health council is their ability to affect the school nutrition environment. However, The School Health Policies and Program study found that only two-thirds of LEAs had pre-existing health councils to develop policies or coordinate activities on health issues.

Currently, however, wide disparity exists in the composition (even the existence) of nutrition advisory councils. Of the 8 Minnesota schools participating in the TEENS intervention, none of them had a nutrition advisory council. Health councils in the School Health Policies and Programs Study 2000 (SHPPS) were comprised typically of school staff, parents, and community members. In Virginia SHABs, common stakeholders include school nutrition directors, physical education coordinators, school nurses, assistant superintendents and superintendents, wellness coordinators, directors of student services, parents, parent-teacher associations (PTAs), local health educators, and food stamp nutrition educators.

Federal legislation mandates the inclusion of the following stakeholders in local wellness policy development committees: school board member, school administrator, food service representative, student, parent, and public member. Research regarding stakeholders involved in school food operations and food choices and other school policy development supports the inclusion of many of these mandated development policy members. Various researchers have conducted surveys, focus groups, and interviews to understand the current school nutrition environments to determine who are or should be involved in setting health and nutrition policies. Probart, et al. used the stakeholder theory to examine groups’ salience in à la carte offerings. Stakeholder theory can be used to identify social, political, legal, ethical, and/or economic relationships among individuals involved in management decisions. Salience is defined as
“the degree to which managers give priority to competing stakeholders claims in the decision-making process” (78, 135-136) Saliency could be applied to understanding the composition of the local Wellness Committee and the decision-making process in the local wellness policy goal composition. The relationship of particular mandated committee members to one another may explain ranking order in their influence on specific goals identified and included in the wellness policy. A working understanding of the local wellness policy by these committee members may also be important for the support and therefore implementation of an effective policy. Likewise, saliency may explain which combination of committee members has the most influential impact on how certain goals were developed and included within the wellness policy.

In 2006, researchers suggested that parents, students, administrators, school board, school representatives, and the public need to be involved in the development of nutrition guidelines. (54) The North Carolina Child Nutrition Directors (CNDs) recognized the need for the active participation of parents, teachers, and the community alike in offering healthier food options for children. (55) Other studies recommend school nutrition advisory councils to incorporate the input of all relevant constituents of the school community, which include students, teachers, coaches, staff administrators, food service personnel, nurses, counselors, public health professionals and parents. (74, 85, 91, 109) Although the LWP mandate does not require the incorporation of teachers, nurses, or public health professionals, the mandated members of the development committee all appear frequently in the recommendations from the studies cited here.

The involvement and support of school administration is also important in setting nutrition policies. Survey results from principals and food service directors of Texas schools about their experience with the Texas Nutrition policy development stated that both principals and food service directors need to be more included in policy development. (86) French, et al.
reported the perceptions of school principals on school food and nutrition policy. Although principals were not statistically associated with school food policies and practices, those with more positive attitudes were more likely to report greater number of school food policies. Of the high school principals surveyed, 65% stated that it was somewhat or very important to have a nutrition policy, 52% stated it was very important to provide an environment to encourage healthful food choices, and 36% reported that schools should provide healthful and less healthful food options and let the students choose.\textsuperscript{(111)} The majority of North Carolina CNDs felt that administrative support for offering healthy food options would increase the availability of these food options.\textsuperscript{(55)} In another study, the perception of school food service directors placed the highest priority and salience in the decision-making process about à la carte offerings upon school administrators.\textsuperscript{(78)} Administrators, although supportive of nutrition policy, have been found to have minimal familiarity in establishing and writing these policies.\textsuperscript{(85)} Therefore, they may not be as influential in developing comprehensive nutritional policies.

Food service directors (FSD) are also key stakeholders in setting nutritional policy in schools. Although FSDs are a potential agent for change and should be supported and educated in policy development,\textsuperscript{(55)} few policy development teams include them.\textsuperscript{(93, 54, 80)} Several research findings support those of French et al., who found that only 21.1% of FSDs were involved in the development of previous nutrition policy.\textsuperscript{(56)} Although FSDs are important committee members in policy development, they have expressed having limited knowledge of the curriculum used for nutrition education.\textsuperscript{(54, 80)} Focus groups and surveys have shown that school administrators recognize the importance of FSDs in the development and implementation of nutrition education practices in the schools. Likewise FSDs see themselves as playing lead roles in LWP policy development, despite a perceived lack of authority in relation to school
policy and a lack of knowledge in the policy-writing and curriculum issues.\(^{(54, 80)}\) A California-based study showed statistically a significant positive relationship between the existence of school nutrition policies and supportive FSDs.\(^{(86, 137)}\)

Many food service directors (FSD) are registered dietitians or have nutrition education backgrounds. In a small national sample of food service directors, 21.7% of the sample are RDs and 55.2% have an educational background in nutrition. In this same national sample of policies before the LWP legislation, few wellness components (37.4%) utilize foodservice beyond federally regulated programs; however, after the legislation 72.4% of the wellness components utilize foodservice personnel.\(^{(58)}\) Given the inclusion of food service directors on the policy committee, the educational and professional training of FSDs would greatly enhance the quality of school health policies.

Student involvement is likewise important in setting school-based nutrition policy. The combined collaboration of school staff and students in the development process allows them the opportunity to shape and affect their own school’s environment.\(^{(85)}\) Communication between students and parents with their school administrators and school boards can also influence policy development.\(^{(75, 85)}\) School foodservice directors have identified students as their main source of input for food offerings.\(^{(78)}\) This input could be accomplished through students taste testing and voting on school meal options which could increase student participation in school meal programs and healthy eating options.\(^{(67)}\) Student involvement on a school wellness committee would prove effective as they have power and saliency to influence the establishment of nutrition-friendly school environments through their interactions with parents, school administrators, and foodservice directors.\(^{(78)}\)
Other individuals needing a greater presence in the policy development should be parents and community representatives.\(^{(86)}\) Parents have generally been perceived as uninvolved or lacking power (unless their children complain)\(^{(54)}\) by PA foodservice directors when it comes to food options in the cafeteria.\(^{(78)}\) However, it is important that school policy is not only communicated to administrators but also to parents.\(^{(86)}\) When parents and students are effectively involved in policy development, they are better able to communicate with the school board and school administration.\(^{(75)}\) Studies of Texas foodservice directors and principals indicate that they believed their nutrition policy only applied to the students during the school day, thus emphasizing the need for students to learn how to eat at home first.\(^{(86)}\) This indicates the need for educating the parents and getting parental buy-in of the local wellness policy.

Community members could also be an important component of wellness committees. In 1990 the Virginia General Assembly established a mandate for School Health Advisory Boards (SHABs) stating that the advisory boards should represent a broad-based segment of the community.\(^{(77)}\) These SHABs were to “assist with the development of health policies in the school division.”\(^{(77)}\) The use of public members in the local wellness policy development processes would allow for health organizations, state, local or national, or health professionals, such as registered dietitians (RDs), to step forward and contribute positively in shaping the nutritional quality of school policy.\(^{(54, 84, 122)}\)

Health professionals, particularly registered dietitians (RDs) would be valued members of the broad-based community to create a school-community partnership because of their professional training and interest in nutrition policy. Other health professionals and dietitians are optimally positioned to enhance the decision and policymaking process of food and nutrition policy because of their experience with nutrition issues and other food-related policies.\(^{(85)}\)
Qualified and trained nutrition professionals should be involved in effective nutrition education programs where schools are unable to provide them.\(^{(68)}\) The President of the American Dietetic Association\(^{(84)}\) states the top priority of the association for 2006 and beyond is “the nutrition and health of our nation’s children.” This can be accomplished as dietetic professionals are also encouraged to support public policy and legislations that promote nutrition programs and environments conducive to healthful eating behaviors.\(^{(68)}\) The local wellness policy provides a place for ADA members to serve and improve child nutrition resulting in children choosing healthful options from a profitable and inviting school meals programs.\(^{(84)}\) Likewise, dietetic professionals in collaboration with school staff, parents, and students can provide leadership in the development and implementation of comprehensive school nutrition policy.\(^{(56, 75, 84)}\) Successful nutritional standards can be developed and implemented through these school-community partnerships.\(^{(84)}\)

Although school policy development is complex and time-intensive, advancing policies that support the establishment of healthful eating environments should be the ultimate aim of the wellness committee or school nutrition advisory council. When key stakeholders are involved in the policy development process, unnecessary problems are avoided.\(^{(86)}\)

### 2.2.4 Local Wellness Policy Development Committee Responsibilities

A central feature of the WIC Reauthorization Act is the mandatory committee of key stakeholders who normally work separately to develop the wellness policy.\(^{(58)}\) This Act is the first federal law to specifically specify the composition of the committee members who would be developing a wellness based policy. In the past many individuals involved in nutrition-based
policy development were self-selected, had an interest in nutritional issues, and may have had little prior experience in developing school nutrition policy.\(^{(85)}\) The Child Nutrition and WIC Reauthorization Act of 2004 dictated that the local wellness policies were to be written by a committee, containing the following stakeholders: school board member, school administrator, food service representative, student, parent, and public member, that was approved by the local school board.

The initial role of this wellness committee was the development of the local wellness policy. Later responsibilities of each LEA’s wellness committee were likewise specified within their corresponding wellness policy. (Appendix B, PSBA template)\(^{(100)}\) The mandate and inclusion of various stakeholders in the policy development process provides opportunities to develop a common vision and direction within the school environment that promote and advocate student health issues. It was also thought that LWP development committees would provide opportunities for school food administrators and health related professionals, particularly nutrition professionals, to help shape LWPs to influence the nutritional quality of foods offered in schools.\(^{(42, 68, 122)}\)

An advantage of an effective health council is their ability to affect the school nutrition environment.\(^{(85)}\) However, the effect of a wellness committee in the development and implementation of a student wellness policy is unknown because mandated policy committees containing specific stakeholders have not been identified in the past. Therefore, the effect of a wellness committee warrants further investigation. Through the analysis of the mandatory LWP development committee composition, the study described in this thesis can provide policymakers with a better understanding of the influence each member has in developing school health-policies, with application for future school-based health policy committee composition.
Food-based and behavior-based intervention programs have been coined as a “down-stream” approach to addressing childhood obesity. The previous “down-stream” health intervention approaches in schools have focused on making food and behavior changes that have provided mix reports of effectiveness and sustainability. The new “up-stream” policy approach of school-based health intervention may provide a more effective and sustainable approach to address childhood obesity. This study will aid policymakers in understanding how LEAs addressed nutrition education in their LWPs to meet the federal mandate. This information can then provide better resources to aid LEAs to meet these LWP goals, along with improving future policies that address nutrition education and physical activity.
CHAPTER 3

Research Methods

The objective of this project was two-fold. First, how were nutrition education goals from the PSBA template represented in LEAs local wellness policies? Were they stronger, the same, or weaker in meaning from the template goal? Second, how do the following factors relate the quality (comprehensiveness and rigor scores) of the included nutrition education goals of LWPs of the 721 public and private Pennsylvania LEAs: demographic characteristics (including LEA type, locale, and socioeconomic status of students) external assistances and assessment tools, mandatory development committee members, and the comprehensiveness and rigor of the overall policy goals (excluding the nutrition education goals).

This chapter will describe the PSBA template, scoring procedures of the NE template goals, data entry procedures, description of NE template goals, predictive variable and statistical model development used in this study to assess nutrition education goal inclusion (comprehensiveness) and strength (rigor) scores.

3.1 Local Wellness Policy Template Characteristics

In response to Public Law 108-205, The Child Nutrition and WIC Reauthorization Act of 2004, The Pennsylvania School Boards Association (PSBA) and The Pennsylvania Department of Education (PDE) (103) collaborated to develop a local wellness policy template to assist LEAs
in developing their LWPs.\(^{(100)}\) The template policy was organized in specific sections providing information about policy goals, i.e. nutrition education, physical activity, and other school-based wellness activities, as well as nutrition guidelines for foods offered on the school campus. In addition, the template policy offers a list of personnel who should be involved in the development as well as suggestions for how these individuals should use their expertise to assess the effectiveness of the LWP plan.\(^{(100)}\) PDE provided this to all public and private Pennsylvania local education agencies (LEAs) and recommended its use as a tool for developing their own local wellness policy (LWP). Pennsylvania LEAs could use, modify, or write their own nutrition education goals to include in their LWP.

The Pennsylvania Department of Education (PDE) also developed a mandatory 15-item Local Wellness Policy Checklist (LWPC), to be completed by a representative from each LEA.\(^{(101)}\) The LWPC provided PDE with assurance that LEAs were meeting federal mandates by disclosing information about the LWP development process, development committee, individuals responsible for implementing the policy and nutrition guidelines for competitive foods that will be implemented by the LEA.\(^{(100, 101, 107)}\) Each checklist was signed by the lead person responsible for the LWP implementation and the district superintendent. Collection of all LWPs and LWPCs from LEAs occurred during a 5 month period in 2006. A total of 859 checklists and LWPs were collected.

Our research team had access to and permission to analyze this data for this project. All 859 LWPs were coded and entered into a Microsoft Access Database; however, only the 721 LWPs from school districts (SD), charter schools (CS), intermediate units (IUs), and private schools were used, as they represented the traditional school day format. Career and Technical/Vo-tech schools and residential childcare institutions (RCCI) were excluded because
their LWPs included special programs and agendas which our research team, after discussion, determined made them different from the 721 LWPs from more traditional schools. Goals from LWPs for Pennsylvania public and private LEAs were compared to the PSBA template goals to calculate Strength/Rigor and Comprehensive scores for each policy and policy component.

3.1.1 PSBA Nutrition Education Template Goals

The local wellness policy is composed of goals from various component areas, such as nutrition education, physical activity, nutritional guidelines, safe routes to school, and so forth. To address childhood obesity using school policy, many areas of the school environment needs to be addressed, nutrition education being one of them. This study’s first objective was to analyze and report on the nutrition education (NE) goals included in the LWPs of LEAs from Pennsylvania. The NE comprehensiveness (number of goals) and rigor (strength of the goals) scores were derived from comparing the LEAs NE goals to the PSBA template goals, listed below. Identification of trends in the inclusion and strength of the goals may provide insight about resources used or needed and barriers and strengths LEAs have in developing stronger and more comprehensive nutrition education goals.

The Pennsylvania School Board Association (PSBA) template policy included 12 nutrition education goals, as follows:

1. The goal of nutrition education is to teach, encourage and support healthy eating by students. Promoting student health and nutrition enhances readiness for learning and increases student achievement.
2. Nutrition education will be provided within the sequential, comprehensive health education program in accordance with State Board of Education curriculum regulations and the academic standards for Health, Safety and Physical Education, and Family and Consumer Sciences.

3. Nutrition education shall provide all students with the knowledge and skills needed to lead healthy lives.

4. Nutrition education lessons and activities shall be age-appropriate.

5. Nutrition curriculum shall be behavior focused.

6. School food service and nutrition education classes shall cooperate to create a learning laboratory.

7. Nutrition education shall be integrated into other subjects to complement but not replace academic standards based on nutrition education.

8. Lifelong lifestyle balance shall be reinforced by linking nutrition education and physical activity.

9. The staff responsible for providing nutrition education shall be properly trained and prepared and shall participate in appropriate professional development.

10. District staff shall cooperate with agencies and community organizations to provide opportunities for appropriate student projects related to nutrition.

11. Consistent nutrition messages shall be disseminated throughout the district, schools, classrooms, cafeterias, homes, community and media.

12. Nutrition education shall extend beyond the school environment by engaging and involving families and communities. (See PSBA template, appendix B)
3.1.2 Policy Scoring

Since the majority of LEAs adopted the PSBA policy as their template policy when developing their policies, the PSBA template was considered the “standard” to which all submitted policies were compared. The template was organized into sections with each section given an alphabetical designation: Policy (P), Authority (A), Delegation (D), Wellness Guidelines (WG), Nutrition Education (NE), Physical Education (PE), Physical Activity (PA), Other School Based Activities (O), Nutrition Guidelines (NG), and Safe Routes to School (S).

Comprehensiveness (quantity) and rigor (strength) scores were calculated from the goals for each policy goal component section and the overall policy, minus the nutrition education goals. Comprehensiveness is defined as the total number of goals, minus the nutrition education goals, included in an LWP, calculated by adding of the number of PSBA-based goals plus the goals added by the individual LEA. The total number (comprehensiveness scores) of possible policy goals based on the number of goals included in the PSBA template, can range from 0 to 103, but overall policy scores could be higher (overall range= 0-114) depending upon the number of added goals in each corresponding LWP.

“Strength” (rigor) scores were determined by comparing the LEA’s policy language for a particular goal to the policy language of its corresponding PSBA template goal. Every LEA policy goals in each section (nutrition education, wellness guidelines, physical activity, etc.) were categorized as neutral, strengthened, or weaker in policy language compared to the PSBA template goal. LEA goals were categorized according to the following criteria:
• “Strengthened”: the meaning of the LEA goal exceeded goal content from the template goal.

• “Neutral”: the meaning of the goal was the same as the template goal.

• “Weaker”: the meaning of the goal was changed to weaken the template goal, such as using words that modify to suggest ambiguity, such as “may” or “when possible”, instead of “will” or “shall” or omitting part of the goal statement.

• “0” if the goal was omitted.

Rigor was calculated by adding together the number of neutral goals (PSBA template and added neutral goals) (NG) and the number of strengthened goals (PSBA template and added strong goals) (SG) divided by the total number (PSBA template and added goals) (TG) of goals \[NG+SG/TG\], excluding all nutrition education goals. Rigor scores can range from 0 to 1.

Goals that were not found in the PSBA template were scored as AS (added stronger), AW (added weaker), and AN (added neutral) if they strengthened, weakened or did not change the policy as a whole. Added neutral and strong goals would increase the rigor score of both the nutrition education goal component area and the overall policy.

3.1.3 Data Entry Procedures

Five research assistants, trained in policy abstraction, performed data entry. A primary abstractor scored (based on the scoring procedures mentioned above) the strength of all policy goals from all submitted LWPs using the PSBA template policy as a scoring guide. These scores were recorded in a database using Microsoft Access. Five times during the policy abstraction process, scoring reliability tests were conducted where another research assistant randomly
selected 7-12 policies and rescored them. Strong inter-rater agreement was found in policy scores of the other research assistants when compared to the primary abstractor’s scores. The research team met regularly to discuss discrepancies and questions about scoring that were identified during the abstraction process. Corrections in goal “strength” (weak, neutral, or strong) categorizations were made as needed to all the previously abstracted scores. A second research assistant entered data about the added goals, while another research assistant entered LEA’s responses to the questions from the LWPCs. Two additional research assistants checked the accuracy of the LWPC data by comparing thirty printouts of entered data to the LWPCs. The accuracy rate was 99.7%.

Data clean-up procedures were conducted after all the policy goals were abstracted and entered and the added goals and LWPC data were entered into the database. Printouts of specific template policy goals were double-checked against the actual LEA’s policy goal. Identified discrepancies were corrected. All discrepancies and corrections were made before final analyses were conducted.

Study procedures and scoring categorizations were approved and monitored by The Institutional Review Board of The Pennsylvania State University. All project investigators and staff completed all mandatory trainings set forth by The Institutional Review Board of The Pennsylvania State University for conducting research.

3.2 Analysis of Dependent and Predictor Variables

The second objective of this project was to assess the association of the LWP development committee composition and other LEA characteristics (e.g. demographic
characteristics including LEA type, locale, and socioeconomic status; assessment tools; and assistance resources received) with the total number (comprehensiveness) and strength (rigor) of the nutrition education goals of LWPs.

### 3.2.1 Dependent Variables: Nutrition Education Comprehensiveness and Rigor Scores

A specific aim of the study was to understand what factors predicted the comprehensiveness (number) and strength (rigor) of the nutrition education goals included by LEAs in their LWPs. A nutrition education comprehensiveness score is a count of the total number of goals related to nutrition education included in the LWP. The NE comprehensiveness score for each LEA’s policy is calculated by adding the number of PSBA-based NE goals plus the NE goals added by the individual LEA. The NE rigor score for each LEA’s policy is calculated by adding the total number of neutral NE goals plus strong NE goals divided by the total number of NE goals included in the LWP.

Multiple Linear Regression analysis was used to determine if NE strength (rigor) (public range=0.17-1, private range=0-1) and NE comprehensiveness scores (public goal range=0-17, private goal range=0-17) of the LWPs were related to the 6 LWP development committee members (School Board Member, Student, Parent/Guardian, School Administrator, School Foodservice Representative, and Member of the Public); overall LWP comprehensiveness and rigor score, excluding the NE goals; and other LEA characteristics (e.g. socioeconomic, demographic, financial descriptors, and sources of external assistance). Separate regression analysis was used to explore the relationship of nutrition education comprehensiveness score
against each of the predictor variables, along with nutrition education rigor scores with each of the predictor variables. These statistical methods will be described in more detail below.

3.2.2 Predictor Variables

To assess the second objective of this study, the predictor variables included were the demographics, LEA type of the schools, locale, and socio-economics (%F/R); the assessments and external assistance resources; the wellness policy development committee composition; and policy characteristics; overall policy comprehensiveness and rigor scores, excluding the nutrition education goals.

3.2.2.1 LEA Demographics: Sponsor Type, Locale, and Socioeconomic Characteristics

The relationship of LEA demographics (including socioeconomic characteristics, LEA sponsor type, and locale) with nutrition education comprehensiveness and rigor scores were also considered in this study. Information was collected from various sources for each of the variables.

Public data on sponsor type was accessed through the Pennsylvania Department of Education website and its online sources. Sponsor types of LEA were condensed from eight into two categories (see table 3.1). Public LEAs (N=539, 74.6%) include: 1) School Districts, 2) Intermediate Units (IU), and 3) Charter Schools. Private LEA (N=182, 25.1%) include: 4) Private-non religious, 5) Private religious-Catholic, 6) Private religious:-Jewish, 7) Private religious-Protestant, 8) Private religious-Other. Because significant differences were observed
between private and public LEAs for demographic and policy characteristics, separate statistical analyses were run for each LEA sponsor type.

Table 3.1: Description of Local Education Agency Sponsor Type

<table>
<thead>
<tr>
<th>LEA Type</th>
<th>Description</th>
</tr>
</thead>
</table>
| Public    | 1) School District  
            | 2) Intermediate Unit (IU)  
            | 3) Charter School          |
| Private   | 4) Private non-religious  
            | 5) Private religious-Catholic  
            | 6) Private religious-Jewish  
            | 7) Private religious-Protestant  
            | 8) Private religious-Other      |

Locale data, the geographical location of each LEA, was obtained through the National Center for Education Statistics (NCES) (102) database for the 2005-2006 school years. The eight school locale categories based on the NCES website (www.nces.ed.gov) for urbanicity designations (see table 3.2) were condensed into three: Urban, Suburban, and Rural. Each LEA fell into one of the three categories for inferential statistical purposes: locale 1, Urban (Large city and mid-size city); locale 2, Suburban (urban fringe of large city, urban fringe of mid-size city, and large town); locale 3, Rural, (small towns and rural areas).
Table 3.2: Description of Urbanicity for LEAs in Pennsylvania

<table>
<thead>
<tr>
<th>Locale</th>
<th>Description (description of the categories was found on the NCES website)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>All LEAs that were included in:</td>
</tr>
<tr>
<td></td>
<td>Large City</td>
</tr>
<tr>
<td></td>
<td>Mid-Size City</td>
</tr>
<tr>
<td>Suburban</td>
<td>All LEAs that were included in:</td>
</tr>
<tr>
<td></td>
<td>Urban Fringe of a Large City</td>
</tr>
<tr>
<td></td>
<td>Urban Fringe of Mid-Size City</td>
</tr>
<tr>
<td></td>
<td>Large Town</td>
</tr>
<tr>
<td>Rural</td>
<td>All LEAs that were included in:</td>
</tr>
<tr>
<td></td>
<td>Small Town</td>
</tr>
<tr>
<td></td>
<td>Rural</td>
</tr>
</tbody>
</table>

Like sponsor type, public data on percentage of students eligible for free and reduced meals were accessed through the Pennsylvania Department of Education website and its online sources. Free and Reduced rates were used in the models as an indicator of the socioeconomic status of students and community. The percentage of students eligible for Free and Reduced price meals (%F/R) was categorized to three subgroups: 1) “low” (less than or equal to 14.9%); 2) “middle” (15.0–49.9%); and 3) “high” (reference), (greater than or equal to 50%). Correlations were run to analyze the relationship of socioeconomic status with NE comprehensiveness and NE rigor scores.
3.2.2.2 Resources Used Prior to Local Wellness Policy Development

This study also examined the role of resources—specifically assessment tools and monetary grants—in wellness policy development. Local education agencies (LEAs) provided data about resources used for conducting an assessment of the school environment prior to policy development on the local wellness policy checklist (LWPC). Several assessment resources were available to the LEAs, such as The Centers for Disease and Control (CDC) The School Health Index, a customizable training packet that provides materials and resources on school assessment; Pennsylvania Nutrition Advocates (PANA)’s Keystone Healthy Zone online assessment, a program to mobilize school health through training for teachers and faculty, mini-grants, and school initiatives; and United States Department of Agriculture (USDA) School Improvement Checklist, comprised of 7 component areas with questions that address current nutrition and physical activity practices in the school. All resource variables were binary coded for “1,” “yes” the LEA conducted an assessment and used an assessment tool, or “0,” “no” did not conduct an assessment or use an assessment tool.

Information about grants was also provided by the LWPC, as each LEA was asked to indicate if they had received PANA Keystone Healthy Zone (KHZ) grants during either the 2004-2005 or 2005-2006 school year. When an LEA completes the online KHZ assessment, they are eligible for a grant. The LWPC also indicated whether the LEA had received STEPS assistance, a CDC funded program administered through the PA Department of Health, during either the 2004-2005 or 2005-2006 school year. The program existed in three counties, rural Tioga (North Central region), urban Fayette (Southwest region), and urban Luzerne (Northeast region), in PA. The demographics of PA recipients of STEPS assistance were: 126 public
schools, 58 private schools, 15 insurance carriers, and 13 hospitals. Recipients of both KHZ and STEPS assistance receive grants, awards, professional training opportunities, materials for improving nutrition and physical activity among the student, and are recognized for their efforts in developing healthy school environments. These binary variables were coded “1,” “received grant assistance” and “0,” “did not receive grant assistance.”

3.2.2.3 Wellness Policy Development Committee Composition

Development committee membership composition data was obtained from the LWP checklist. Each LEA identified committee members that were involved in the wellness policy development by checking off the mandatory members included and writing in any additional members involved. In our study we were interested in the 6 mandatory committee members and their influence upon the nutrition education goals included within each LEA’s wellness policy. According to the federal mandate that accompanied The WIC Reauthorization Act of 2004, LWP Development Committees should be composed of a minimum of six representatives from the following groups: students, parents, school board, school administrator, food service administrator, and public member. The initial multiple linear regression models were run with the six individual members who make up the mandatory committee (parent, student, school board member, administrator, school food administrator, and public member) grouped as “1,” “met the mandatory committee membership” and “0,” “didn’t meet the mandatory committee membership” against the dependent variable. The final regression models used in this study, LWP Development Committee membership was coded as “1” (“yes” the committee had this member), and “0” (“no” the committee did not have this member) and models were run with the
six individual members that make up the mandatory committee individually against the dependent variables. Additional committee members included on the development committee were not analyzed in this study due to the missing data and lack of complete data to verify the inclusion of these members.

3.2.2.4 Overall LWP Comprehensiveness and Rigor Score

Policy abstraction “strength” scores of all the goals obtained from each LEA’s local wellness policy were used to assign overall comprehensiveness scores (the count of the total number of goals) and overall strength (rigor) (the number of weak, neutral and strong policy goals). Overall total comprehensiveness score was calculated for each LWP. An overall total comprehensiveness score addresses the total inclusion of goals related to physical education and activity, safe routes to school, and other school-based activities that promote a healthy school environment. The overall comprehensiveness score for each LEA’s policy is calculated by adding of the number of PSBA-based goals plus the goals added by the individual LEA, minus the number of NE goals included in the nutrition education goal section. The overall comprehensiveness scores for public LEAs (range= 3-101) and private LEAs (range= 10-90) were also transformed from scale to a two categorical variables: 1) less than the mean 2) equal or greater than the mean, with the mean being 58 total policy goals for both public and private LEAs.

In addition to an overall comprehensiveness score, overall rigor scores for each LEA’s respective policy were determined by using the PSBA template. The overall total policy rigor scores are from the calculation of the ratio of the total number of neutral goals (NG) plus the
total number of strong goals (SG) compared to the PSBA template, divided by the total number of goals (TG) in the policy, excluding the NE goals (NEG) included in the nutrition education goal section, \([(NG\text{-}NE\ NG)+(SG\text{-}NE\ SG)/(TG\text{-}NEG)]\). Rigor scores tell us the strength of the goals included in each LEA’s local wellness policy, excluding the NE rigor score. Overall policy rigor scores were negatively skewed for public LEAs (range=0.36-1.00) and private LEAs (range=0.47-1.00), therefore this variable was transformed from a scale to a two categorical variable: 1) less than the mean and 2) equal or greater than the mean, with the mean being 0.92 for public LEAs and 0.87 for private LEAs.

3.3 Statistical Methodology

This project considered the relationship of nutrition education policy goals comprehensiveness (number) and rigor (strength) to various predictor variables, including mandatory development committee membership and their involvement in the development of the local wellness policy, LEA demographics (socioeconomics, sponsor type, and locale), and available assessment and assistance resources. Multiple regression models were developed to measure the relationship of the independent variables considered in our analysis and their influence on nutrition education comprehensiveness and rigor score for the nutrition education goals included in each LEA’s LWP. SPSS 17.0 statistical software package (SPSS Inc., Chicago, IL, USA) was used for all descriptive statistics and multiple linear regression data analysis. Continuous and categorical variables analyzed for this project are listed in Table 3-3, by name and description.
As a result of significant differences in policy and demographic characteristics, separate multiple linear regression analyses were run for private and public LEAs. Before statistical models were run, continuous variables were tested for normality. Variables that did not have a normal distribution were transformed using natural logarithm. Results for frequencies are presented as number (percentage) and normally distributed continuous variables as mean ± standard deviation. For each regression model, Beta (B) values with ± 95% confidence intervals (CI) and the R-square change for each variable were reported. All p-values were two-tailed and p≤0.05 was considered statistically significant.

Forward and Backward Multiple Linear Regression models were run to test for the “best-fit” model to predict nutrition education component development. Variables predictive of the strength and number of nutrition education goals were the same for both models. Backward Stepwise Regression was used in determining the final models for factors predictive of nutrition education goals comprehensiveness and rigor. All factors hypothesized to be associated with nutrition education goal inclusion and strength were included; then one by one the least significant factors were removed, until only the factors significantly (p<0.1) associated were left. The variables accounting for the most amount of variability, largest R-square, for nutrition education strength and comprehensiveness are displayed first. All other factors are presented by R-square change as contribute to the overall variation in the model.
Table 3-3: List of Independent Variables Included in the Analysis

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Descriptions</th>
<th>Categorization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Development Committee Composition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Met Mandatory Committee Composition</strong></td>
<td>If the LEA has on the LWP development committee the minimum 6 mandated committee members (Student, Parent/Guardian, School Administrator, School Board Member, and Member of the Public).</td>
<td>Binary Coded: 0- “did not meet mandatory committee composition” 1- “met mandatory committee composition”</td>
</tr>
<tr>
<td><strong>Demographic Characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Locale</strong></td>
<td>Type of location of each LEA. Categorization was made from the 8 categories in the NCES. (See table 3-1)</td>
<td>Categorized as: 1- Urban 2- Suburban 3- rural (reference)</td>
</tr>
<tr>
<td><strong>LEA Type (Sponsor Type)</strong></td>
<td>Private and Public LEAs</td>
<td>Categorized as: 1- <strong>Public</strong> (public school districts, charter schools, and intermediate units) 2- <strong>Private</strong> (religious, non-religious, and others)</td>
</tr>
<tr>
<td><strong>% F/R ratio</strong></td>
<td>Percentage of students eligible for free and reduced price meals</td>
<td>Categorized as: 1- low ≤14.9%</td>
</tr>
<tr>
<td>Resources and Assistsances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td><strong>PANA/KHZ</strong></td>
<td>Schools that received grants from Pennsylvania Advocates for Nutrition and Activity during either of the 2004-2005 or 2005-2006 school years</td>
<td></td>
</tr>
<tr>
<td><strong>STEPS Assistance</strong></td>
<td>A CDC funded program, administered through the PA Department of Health, during either of the 2004-2005 or 2005-2006 school years</td>
<td></td>
</tr>
<tr>
<td><strong>Conducted an Assessment</strong></td>
<td>Conducted an assessment of the school environment prior to the development of the LWP.</td>
<td></td>
</tr>
<tr>
<td><strong>Assessment Resource Used</strong></td>
<td>Used one of the following resources for assessment: CDC resource, PANA resource, PDE resource, PSBA resource, USDA resource</td>
<td></td>
</tr>
<tr>
<td><strong>Policy Scores</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall Policy Comprehensiveness</strong></td>
<td>Total number of PSBA-template and added goals in a policy,</td>
<td></td>
</tr>
</tbody>
</table>

| 2- middle 15-49.9% |
| 3- high ≥50% |

**Binary coded as:**

- 0- “did not receive grant assistance”
- 1- “received grant assistance”

**Binary coded as:**

- 0- “did not receive assistance”
- 1- “received assistance”

**Binary coded:**

- 0- “did not conduct an assessment”
- 1- “conducted an assessment”

**Binary coded for each assessment tool separately:**

- 0- “did not use the assessment tool”
- 1- “used the assessment tool”

**For public LEAs:**

1. <Mean
| **Overall Policy Rigor** | A measure of the strength of the goals within a LWP, excluding the nutrition education goals included in the NE component. The ratio of the total number of neutral goals (NG) + total number of strong goals (SG)/ total number of goals (TG) in the policy, excluding the NE goals (NEG) (NG - NE NG)/(SG - NE SG) (TG - NEG). | 2. $\geq$ Mean Mean= 58  
**For private LEAs:**  
1. <Mean  
2. $\geq$ Mean Mean= 58  
**For public LEAs:**  
1. <Mean  
2. $\geq$ Mean Mean= 0.92  
3. <Mean Mean=0.87 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>excluding the nutrition education goals included in the NE component.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 4

Results

This chapter will provide an overview of the description of PSBA template NE goals inclusion and strength, followed by descriptive statistics of the independent predictor variables (demographic characteristics of LEAs, the socioeconomics, mandatory development committees members, and NE and overall policy comprehensiveness and rigor scores) and then provide the results for the multiple linear regression analyses to explain what predicts the quality (rigor) and quantity (comprehensiveness) of the nutrition education goal component in each LEAs LWP. Significant differences were observed between public and private LEAs for LEA locale, percentage of students eligible for free and reduced meals, utilization of sources of external assistance, mandatory committee membership, and overall policy rigor and nutrition education rigor scores. Therefore, the results of the variables involved in the analysis will be provided separately for public and private LEAs.

4.1 PSBA Template Nutrition Education Goal Characteristics

The first objective of this study was to analyze and report on the nutrition education (NE) goals included in the LWPs of LEAs from Pennsylvania, although the LWPs contained various additional goal component areas. Identification of trends in the inclusion and strength of the
goals may provide insight about resources used or needed and barriers LEAs have in developing stronger and more comprehensive nutrition education goals.

The WIC Reauthorization Act specified that LWPs must have at least one nutrition education goal. Almost all public (98.5%) and private (98.9%) LEAs met this mandate. Likewise, 98.1% of public and 98.4% of private LEAs included at least one NE goal from the PSBA template policy in their LWP.

Over a third (34.3%) of public and half (53.3%) of private LEAs added additional NE goals not found in the PSBA template LWP. Public LEAs added 211 NE goals and private LEAs added 139 NE goals. While the majority of these added NE goals were neutral in policy language, 80 (37.9%) public LEA’s and 64 (46%) private LEA’s added goals were stronger goals. Only one weaker goal was added, by a public LEA. Unlike added goals, included goals were seldom strengthened but frequently weakened by both public and private LEAs. Private LEAs (48.9%) were more likely to include weakened PSBA template goals than public (40.1%) schools.

PSBA template policy NE goals that were general in scope were more often included in both public and private LEA’s LWPs. The three general goals were among the most commonly included goals in public and private LEA’s LWPs (table 4-1).

In public LEA’s LWPs, the least often included PSBA template NE goals were: link nutrition education with foodservice to create a learning laboratory (32.5%), be a behavior-focused curriculum (39.6%), and cooperate with the community to provide opportunities for student nutrition projects (46.3%). For private schools, PSBA template NE goals least frequently included were: link nutrition education with foodservice to create a learning laboratory (33%),
cooperate with the community to provide opportunities for student nutrition projects (37.4%) and engage and involve families and communities (42.3%).

The most common weakened PSBA template NE goals for public schools were: provide consistent nutrition messages within and beyond the school environment (26%), integrate nutrition education into other subjects (20.8%), and provide training and professional development for staff (19.1%). The most common weakened PSBA template NE goals for private schools were: provide consistent nutrition messages within and beyond the school environment (56.8%), link with physical activity (36.7%), provide training and professional development for staff (24.8%), and integrate NE into other subjects (21.1%). Integrating nutrition education into other subjects was one of the most common included and weakened goals in private LEA’s LWPs (Table 4-1).

Within the LWPC, LEAs were to check “yes” or “no” if the NE goals applied to all buildings and grade levels within the LEA. All public and private LEAs indicated “yes” except for one public LEA that indicated “no.”
Table 4-1: Nutrition Education Goals in Public and Private LEA’s LWPs

<table>
<thead>
<tr>
<th>Nutrition Education Goal</th>
<th>Public LEA N (%)</th>
<th>Private LEA N (%)</th>
<th>Public LEA N (%)*</th>
<th>Private LEA N (%)*</th>
<th>Public LEA N (%)</th>
<th>Private LEA N (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Included Goal</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Included Goal</td>
<td>211</td>
<td>139</td>
<td>80 (37.9)</td>
<td>64 (46.0)</td>
<td>1 (0.5)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td><strong>PSBA Template LWP NE Goals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General Goals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teach, encourage and support healthy eating</td>
<td>452 (84)</td>
<td>123 (67.6)</td>
<td>12 (2.7)</td>
<td>1 (0.8)</td>
<td>28 (6.2)</td>
<td>23 (18.7)</td>
</tr>
<tr>
<td>Meet curriculum regulations and academic standards</td>
<td>456 (84.8)</td>
<td>121 (66.5)</td>
<td>6 (1.3)</td>
<td>4 (3.3)</td>
<td>34 (7.5)</td>
<td>25 (20.7)</td>
</tr>
<tr>
<td>Provide knowledge and skills to lead healthy lives</td>
<td>344 (63.9)</td>
<td>129 (70.9)</td>
<td>6 (1.7)</td>
<td>0 (0.0)</td>
<td>23 (6.7)</td>
<td>13 (10.1)</td>
</tr>
<tr>
<td><strong>Specific Goals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age-appropriate</td>
<td>360 (66.9)</td>
<td>145 (79.7)</td>
<td>7 (1.9)</td>
<td>1 (0.7)</td>
<td>12 (3.3)</td>
<td>11 (7.6)</td>
</tr>
<tr>
<td>Behavior-focused curriculum</td>
<td>213 (39.6)</td>
<td>105 (57.7)</td>
<td>3 (1.4)</td>
<td>1 (1.0)</td>
<td>8 (3.8)</td>
<td>11 (10.5)</td>
</tr>
<tr>
<td>Food service create a learning laboratory</td>
<td>175 (32.5)</td>
<td>60 (33)</td>
<td>1 (0.6)</td>
<td>1 (1.7)</td>
<td>25 (14.3)</td>
<td>1 (1.7)</td>
</tr>
<tr>
<td>Integrated into other subjects</td>
<td>327 (60.8)</td>
<td>123 (67.6)</td>
<td>5 (1.5)</td>
<td>1 (0.8)</td>
<td>68 (20.8)</td>
<td>26 (21.1)</td>
</tr>
<tr>
<td>Linked with physical activity</td>
<td>319 (59.3)</td>
<td>79 (43.4)</td>
<td>2 (0.6)</td>
<td>0 (0.0)</td>
<td>20 (6.3)</td>
<td>29 (36.7)</td>
</tr>
<tr>
<td>Training and professional development for staff</td>
<td>304 (56.5)</td>
<td>113 (62.1)</td>
<td>9 (3.0)</td>
<td>1 (0.9)</td>
<td>58 (19.1)</td>
<td>28 (24.8)</td>
</tr>
<tr>
<td>Cooperation with agencies and community organizations for student projects</td>
<td>249 (46.3)</td>
<td>68 (37.4)</td>
<td>5 (2.0)</td>
<td>0 (0.0)</td>
<td>24 (9.6)</td>
<td>3 (4.4)</td>
</tr>
<tr>
<td>Consistent nutrition messages</td>
<td>334 (62.1)</td>
<td>81 (44.5)</td>
<td>3 (0.9)</td>
<td>0 (0.0)</td>
<td>87 (26.0)</td>
<td>46 (56.8)</td>
</tr>
<tr>
<td>Engage and involve families and communities</td>
<td>269 (50)</td>
<td>77 (42.3)</td>
<td>3 (1.1)</td>
<td>0 (0.0)</td>
<td>42 (15.6)</td>
<td>5 (6.5)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>539</td>
<td>182</td>
<td>54 (10.0)</td>
<td>8 (4.4)</td>
<td>216 (40.1)</td>
<td>89 (48.9)</td>
</tr>
</tbody>
</table>

530 (98.5%) public and 180 (98.9%) private LEAs met federal mandate of at least one NE goal
529 (98.1%) public and 179 (98.4%) private LEAs included at least one PSBA template LWP NE goal
*% for strengthened and weakened goals is based on the number of included goals not LEA total
** 185 public and 97 private LEAs added NE goals not found in PSBA template LWP
4.2 Demographic Characteristics: LEA Type, Locale and Socio-economics of LEAs

To address the second objective this study investigated the following demographic characteristics of LEAs: LEA sponsor type, locale, and socioeconomic levels to predict the quality (rigor) and quantity (comprehensiveness) of the nutrition education goals in each LEA's LWP. The Pennsylvania Department of Education (PDE) provided LWPs from 539 (74.8%) public LEAs, mainly school districts (92.6%), and 182 (25.2%) private LEAs, predominately Catholic religious LEAs (76.4%) (Table 4-2).

**Table 4-2: Types and Locale of Pennsylvania LEAs Providing LWPs**

<table>
<thead>
<tr>
<th>Type</th>
<th>Public N (%)</th>
<th>Private N (%)</th>
<th>All N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate Units</td>
<td>7 (1.3)</td>
<td>7 (0.9)</td>
<td>14 (0.9)</td>
</tr>
<tr>
<td>Charter Schools</td>
<td>33 (6.1)</td>
<td>33 (4.6)</td>
<td>66 (4.5)</td>
</tr>
<tr>
<td>School Districts</td>
<td>499 (92.6)</td>
<td>499 (69.2)</td>
<td>1001 (75.2)</td>
</tr>
<tr>
<td>Religious</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catholic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Catholic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Religious</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>539 (74.8)</td>
<td>182 (25.2)</td>
<td>721</td>
</tr>
</tbody>
</table>

**Locale**

<table>
<thead>
<tr>
<th>Type</th>
<th>Public N (%)</th>
<th>Private N (%)</th>
<th>All N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>244 (45.3)</td>
<td>41 (22.5)</td>
<td>285 (39.5)</td>
</tr>
<tr>
<td>Urban</td>
<td>37 (6.9)</td>
<td>41 (22.5)</td>
<td>78 (10.8)</td>
</tr>
<tr>
<td>Suburban</td>
<td>258 (47.9)</td>
<td>100 (54.9)</td>
<td>358 (49.7)</td>
</tr>
<tr>
<td>Total</td>
<td>539 (74.8)</td>
<td>182 (25.2)</td>
<td>721</td>
</tr>
</tbody>
</table>
4.2.1 Locale

Overall, the majority of LEAs (49.7%) were in suburban locales. Public LEAs were almost equally distributed between suburban (47.9%) and rural (45.3%) locales, with a smaller percentage (6.9%) located in urban locales. The majority of private LEAs were in suburban locales (54.9%) with the remainder evenly divided between rural (22.5%) and urban (22.5%) locales (table 4-1).

4.2.2 Building Levels by LEA type

A description of building level composition by LEA type is described as follows. Building level information was added to explain the differences between Public and Private LEA’s school structure and the possible impact it may have on the LWP development and the inclusion of development committee members. Private LEAs are commonly contained within one building (82.4%) (mean =1.9 ± 10.3) and serve elementary grade level students (73.1%). They usually have ≤ 7 total buildings (99.5%) and ≤ 3 secondary buildings (99.5%). Public LEAs have more buildings (mean=5.7 ± 12.7) and serve a mixture of high/senior, middle/junior high and elementary grade level students. Fifty (9.3%) public LEAs had one building and 55 (10.2%) had no secondary building (table 4-3).

4.2.3 LEA Financial Descriptor: % Free and Reduced Meals

Public LEAs had higher percentage of students eligible for free and reduced meals (p<0.001) than private LEAs (table 4-3).
### Table 4-3: Building Levels, % Free and Reduced Meals by Local Education Agencies in Pennsylvania

<table>
<thead>
<tr>
<th>Building Levels</th>
<th>Public N (%)</th>
<th>Private N (%)</th>
<th>P-value ∞</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total # of Buildings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>5.7 ± 12.7</td>
<td>1.9 ± 10.3</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>1-273</td>
<td>1-140 (99.5% had ≤ 7)</td>
<td></td>
</tr>
<tr>
<td># With 1 Building</td>
<td>50 (9.3%)</td>
<td>150 (82.4%)</td>
<td></td>
</tr>
<tr>
<td><strong>Total # of Secondary Buildings</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>2.1 ± 4.0</td>
<td>0.4 ± 0.9</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>0-87 (99.5% had ≤ 3)</td>
<td>0-10</td>
<td></td>
</tr>
<tr>
<td># With No Secondary Buildings</td>
<td>55 (10.2%)</td>
<td>133 (73.1%)</td>
<td></td>
</tr>
<tr>
<td><strong>Total N</strong></td>
<td>535*</td>
<td>182</td>
<td></td>
</tr>
</tbody>
</table>

*Building level data is missing for 4 LEAs

<table>
<thead>
<tr>
<th>% of Students Receiving Free and Reduced Meals</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Free/Reduced meals</td>
</tr>
</tbody>
</table>

∞ P-value is the bivariate correlation for LEA type with the descriptive variables: % free and reduced meals, resources and assistance.

#### 4.3 Resources and Assistance Received by LEA Type

##### 4.3.1 Resources Used Prior to LWP Development

Prior to developing a LWP, 463 (85.9%) public LEAs conducted an assessment of their school nutrition environment. The majority (71.9%) used PANA’s assessment tool. Other less
commonly used assessment tools were CDC’s (21.8%) and USDA’s (13.0%), and other (9.5%) (table 4-4).

By comparison, 104 (57.1%) private LEAs conducted an assessment of the school nutrition environment. A greater percentage used PANA’s (51.0%) assessment tool followed by USDA’s (18.3%), other (7.7%), and CDC’s (5.8%) assessment tools (table 4-4).

### 4.3.2 Assistance Received

Few public LEAs received PANA grants (4.8%) and STEPS assistance (3.7%) (table 4-4). Only one private LEA received a PANA grant. No private LEAs received STEPS assistance (table 4-4).

### Table 4-4: Assessment Resources Used and Assistance Received by Local Education Agencies in Pennsylvania

<table>
<thead>
<tr>
<th>Assessment Resources Used Prior to LWP Development</th>
<th>Public N (%)</th>
<th>Private N (%)</th>
<th>P-value ∞</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducted assessment</td>
<td>463 (85.9)</td>
<td>104 (57.1)</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Assessment tool**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANA</td>
<td>333 (71.9)</td>
<td>53 (51.0)</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>CDC</td>
<td>101 (21.8)</td>
<td>6 (5.8)</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>USDA</td>
<td>60 (13.0)</td>
<td>19 (18.3)</td>
<td>0.796</td>
</tr>
<tr>
<td>Other</td>
<td>44 (9.5)</td>
<td>8 (7.7)</td>
<td>0.089</td>
</tr>
<tr>
<td>Assistance Received</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANA grant</td>
<td>26 (4.8)</td>
<td>1 (0.5)</td>
<td>0.018</td>
</tr>
<tr>
<td>STEPS assistance</td>
<td>20 (3.7)</td>
<td>0 (0)</td>
<td>0.008</td>
</tr>
</tbody>
</table>

** Denominators for (N/%) are total by LEA type that used the assessment tool; some LEAs indicated the use of more than one.
∞ P-value is the bivariate correlation for LEA type with the descriptive variables: % free and reduced meals, resources and assistance.
4.4 Descriptive Characteristics of LWP Development Committee Membership

The mandatory committee membership standard stipulates that the development committee include of a school board member, school administrator, food service administrator, student, parent, and public member. Table 4-5 summarizes the membership of the local wellness policy (LWP) development committees, as specified on each LEA’s local wellness policy checklist (LWPC). Public LEAs were more likely than private LEAs to meet the mandatory committee membership requirement (p<0.001) with 390 (72.4%) public LEAs compared to only 48 (26.4%) private LEAs meeting the requirement. Public LEA’s LWP development committees had a significantly higher percentage participation for all of the mandatory committee members except for the school administrator (all p<0.001). Inclusion of a school administrator was not significantly different for public and private LEA’s LWP development committees.

Table 4-5: LWP Development Committee Members by LEA type

<table>
<thead>
<tr>
<th>Committee Membership</th>
<th>Public N (%)</th>
<th>Private N (%)</th>
<th>P-Value N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Met Mandatory Requirement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Board Member</td>
<td>498 (92.4)</td>
<td>99 (54.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>District Administrator</td>
<td>535 (99.3)</td>
<td>178 (97.8)</td>
<td>0.105</td>
</tr>
<tr>
<td>Food Service Administrator</td>
<td>530 (98.3)</td>
<td>168 (92.3)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Student</td>
<td>472 (87.6)</td>
<td>94 (51.6)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Parent/Guardian</td>
<td>518 (96.1)</td>
<td>162 (89.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Public Member</td>
<td>441 (81.8)</td>
<td>76 (41.8)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
4.5 Policy and Nutrition Education Comprehensiveness and Rigor Scores

LWP overall comprehensiveness and rigor scores and distribution of these scores by LEA type are shown in table 4-6. To control for the nutrition education goals, NE goals were not included in the calculation of policy comprehensiveness and rigor scores. Overall policy comprehensiveness score is the total number of PSBA-template and added goals in a policy, excluding the NE comprehensiveness score. Overall policy rigor score is a measure of the strength of the goals within a LWP, excluding the NE rigor score.

The PSBA template policy had 103 total example goals. The range of total goals in the LWPs was 3 to 114. Eight LWPs (1.1%), all from public LEAs, exceeded 103 goals. One public LEA’s LWP had only 3 total goals.

There were 12 Nutrition Education (NE) goals in the PSBA template policy. The range of NE goals in the LWPs was 0 to 17. Sixty-eight LWPs (9.4%) exceeded 12 goals: 49 (9.1%) from public and 19 (10.4%) from private LEAs. Ten LWPs, 8 public and 2 private, had no NE goals.

Compared to private LEAs, public LEA’s LWPs had similar policy comprehensiveness score; lower, but not significant, NE comprehensiveness score; and significantly higher policy and NE rigor scores (both p<0.001). Both public (44.7%) and private (56%) LEA’s LWPs were likely to include 9 or more nutrition education goals. A higher percentage of high rigor and a lower percentage of low rigor NE goals characterize the distribution of NE goals for public compared to private LEA’s LWPs.
Table 4-6: Overall Policy and Nutrition Education Comprehensiveness and Rigor Scores by LEA type

<table>
<thead>
<tr>
<th>Comprehensiveness Scores (range= 0-114)</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Policy Comprehensiveness Score§ (Mean ± SD)**</td>
<td>58.4 ± 18.34</td>
<td>58.72 ± 17.47</td>
</tr>
<tr>
<td>&lt; Mean</td>
<td>235 (43.6%)</td>
<td>91 (50%)</td>
</tr>
<tr>
<td>≥ Mean</td>
<td>304 (56.4%)</td>
<td>91 (50%)</td>
</tr>
<tr>
<td>NE Comprehensiveness Score§ (Mean ± SD)** (range= 0-17)</td>
<td>7.6 ± 3.8</td>
<td>8.1 ± 4.3</td>
</tr>
<tr>
<td>&lt; Mean</td>
<td>285 (52.9%)</td>
<td>97 (53.3%)</td>
</tr>
<tr>
<td>≥ Mean</td>
<td>254 (47.1%)</td>
<td>85 (46.7%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rigor Scores (range= 0-1.0)</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Policy Rigor Score £ (Mean ± SD)**</td>
<td>0.92 ± 0.08*</td>
<td>0.87± 0.09*</td>
</tr>
<tr>
<td>&lt; Mean</td>
<td>188 (34.9%)</td>
<td>60 (33.0%)</td>
</tr>
<tr>
<td>≥ Mean</td>
<td>351 (65.1%)</td>
<td>122 (67.0%)</td>
</tr>
<tr>
<td>NE Rigor Score £ (Mean ± SD)**</td>
<td>0.89 ± 0.02*</td>
<td>0.86 ± 0.02*</td>
</tr>
<tr>
<td>&lt; Mean</td>
<td>163 (30.7%)</td>
<td>75 (41.7%)</td>
</tr>
<tr>
<td>≥ Mean</td>
<td>368 (69.3%)</td>
<td>105 (58.3%)</td>
</tr>
</tbody>
</table>

*Independent Sample T-Test was run to determine significance. NE Rigor scores for public versus private LEAs, t=2.6 = p<0.01, Overall Policy Rigor scores for public versus private LEAs, t=7.0, p<0.001.

** SD= Standard Deviation

§ Mean overall policy comprehensiveness for both public and private LEAs= 58 goals. Mean NE comprehensiveness score for both public and private LEAs= 8 goals.

£ Mean overall policy rigor score for public LEAs= 0.92, private LEAs= 0.87. Mean NE rigor score for public LEAs= 0.89, private LEAs= 0.86.

Overall policy comprehensiveness and rigor scores exclude NE goals.
4.6 Multiple Linear Regression Analysis for Nutrition Education

Comprehensiveness and Rigor

Tables 4-7 through 4-14 are the results of the multiple linear regression analyses defining the predictor variables for NE comprehensiveness and rigor scores for both public and private LEA’s LWPs. For each of the analyses, the first regression models include all predictor variables hypothesized to be associated with the nutrition education scores. The final regression models include only the statistically significant predictor variables for the nutrition scores. In the final model tables, variables are listed highest to lowest by \( R \) square change which indicates how much that variable contributes to the variance in the nutrition education scores. In each of the models, the nutrition education goals were not included in the calculation of policy comprehensiveness and rigor scores.

4.6.1 Multiple Linear Regression Analysis for Nutrition Education Comprehensiveness Score by Local Education Agency Type

Because significant differences were found between public and private schools in terms of demographic, socioeconomic, assessments and assistance resources utilized, LWP development committee members, and overall policy scores to NE comprehensiveness scores, the results will be discussed by LEA sponsor type.
4.6.1.1 Private LEAs

A mean of 8.1 ± 4.3 NE goals were included in private LEA’s LWPs. Table 4-7 includes the predictor variables hypothesized to be associated with NE comprehensiveness score for private LEA’s LWPs. The regression model explains 67% of the variance in NE comprehensiveness score (Model R= 0.816, R^2= 0.665, p<0.001). Of the listed variables, school foodservice representative, locale, % free and reduced meals, policy rigor score, conducted an assessment, PANA, USDA, and CDC assessment tools are not significant predictors of NE comprehensiveness score. Policy comprehensiveness score and development committee composition (with the exception of the foodservice representative) were found to be significant predictors of NE comprehensiveness scores.
Table 4-7: Variables Hypothesized to be Associated with Nutrition Education

Comprehensiveness Score for Private LEA’s Local Wellness Policies. N=181

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>B</th>
<th>CI (95%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory Development Committee Members</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent/Guardian</td>
<td>1.872</td>
<td>0.344, 3.399</td>
<td>0.017</td>
</tr>
<tr>
<td>Student</td>
<td>-1.126</td>
<td>-2.291, 0.040</td>
<td>0.058</td>
</tr>
<tr>
<td>School Foodservice Rep.</td>
<td>-1.208</td>
<td>-2.816, 0.400</td>
<td>0.140</td>
</tr>
<tr>
<td>School Administrator</td>
<td>-5.719</td>
<td>-8.649, -2.788</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>School Board Member</td>
<td>1.259</td>
<td>0.399, 2.118</td>
<td>0.004</td>
</tr>
<tr>
<td>Public Member</td>
<td>-1.169</td>
<td>-2.381, 0.043</td>
<td>0.059</td>
</tr>
<tr>
<td>Demographic Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>-0.234</td>
<td>-1.444, 0.976</td>
<td>0.703</td>
</tr>
<tr>
<td>Suburban</td>
<td>-0.616</td>
<td>-1.646, 0.414</td>
<td>0.240</td>
</tr>
<tr>
<td>Rural (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Free and Reduced Meals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>-0.148</td>
<td>-1.677, 1.400</td>
<td>0.850</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.963</td>
<td>-2.517, 0.592</td>
<td>0.223</td>
</tr>
<tr>
<td>High (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Rigor Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td>0.091</td>
<td>-0.845, 1.028</td>
<td>0.847</td>
</tr>
<tr>
<td>≥ Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Comprehensive Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Mean</td>
<td>5.983</td>
<td>5.085, 6.881</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Conducted an Assessment of School Environment</td>
<td>-0.343</td>
<td>-2.262, 1.575</td>
<td>0.724</td>
</tr>
<tr>
<td>PANA assessment tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USDA assessment tools</td>
<td>0.079</td>
<td>-2.045, 2.204</td>
<td>0.941</td>
</tr>
<tr>
<td>CDC assessment tools</td>
<td>0.045</td>
<td>-2.766, 2.856</td>
<td>0.975</td>
</tr>
<tr>
<td>Constant</td>
<td>11.612</td>
<td></td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 4-8 shows the final regression model with only significant predictive variables of NE comprehensiveness score for private LEA’s LWPs. Variables are listed highest to lowest by the R-square change, which indicates how much that variable explains the variance in NE comprehensiveness score. Overall policy comprehensiveness score (excluding the NE goals) and
five LWP development committee members account for 65% of the variation in NE comprehensiveness score (Model R= 0.805, R\(^2\) = 0.648, p<0.001).

Overall policy comprehensiveness score (excluding NE goals) was the strongest predictor of NE comprehensiveness accounting for 55% of the overall variability. A private LEA’s LWP with an overall policy comprehensiveness score of equal or greater than the mean number of policy goals (58 goals) was associated with a significantly higher NE comprehensiveness score by 6 goals (95% CI: 5.2, 6.8) (p<0.001) than policies containing less than the mean number of policy goals.

Five of the 6 mandatory LWP development committee members were significant predictors of NE comprehensiveness score in private LEA’s LWPs. For a LWP development committee containing each mandatory member compared to a committee without each of these members, the following relationships were found. Student is associated with a decrease of 1.25 NE goals (95% CI: -2.27, -0.23) (p=0.016) and explains 4% of the NE comprehensiveness score variance. School administrator is associated with a decreases of 6 NE goals (95% CI: -9, -3.3) (p<0.001) and explains only 2% of the NE comprehensiveness score variance. School board member is associated with an increase of 1.1 NE goals (95% CI: 0.33, 1.93) (p=0.004) and explains 1.5% of the NE comprehensiveness score variance. Parent/guardian is associated with an increase of 1.9 NE goals (95% CI: 0.48, 3.25) (p=0.009) and explains only 1.3% of the NE comprehensiveness score variance. The final variable in the model, public member, is associated with a decrease of 1.3 NE goals (95% CI: -2.4, -0.26) (p=0.029) and explains 1.2% of the NE comprehensiveness score variance.
Table 4-8: Variables Predictive of Nutrition Education Comprehensiveness Score for Private LEA’s Local Wellness Policies. N=182

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>B, CI (95%)</th>
<th>R-Square Change</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Policy Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Comprehensive Score &lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Comprehensive Score ≥ Mean</td>
<td>6.007 (5.242, 6.772)</td>
<td>0.548</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mandatory Development Committee Members</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>-1.249 (-2.265, -0.232)</td>
<td>0.041</td>
<td>0.016</td>
</tr>
<tr>
<td>School Administrator</td>
<td>-6.125 (-8.981, -3.269)</td>
<td>0.021</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>School Board Member</td>
<td>1.128 (0.325, 1.930)</td>
<td>0.014</td>
<td>0.006</td>
</tr>
<tr>
<td>Parent/Guardian</td>
<td>1.868 (0.483, 3.254)</td>
<td>0.013</td>
<td>0.009</td>
</tr>
<tr>
<td>Public Member</td>
<td>-1.315 (-2.372, -0.257)</td>
<td>0.012</td>
<td>0.029</td>
</tr>
<tr>
<td>Constant</td>
<td>10.059</td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Model R</td>
<td>0.805</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model R-square</td>
<td>0.648</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model P-value</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.6.1.2 Public LEAs

Public LEA’s LWPs included a mean of 7.6 ± 3.8 NE goals. Table 4-9 shows the multiple linear regression model for the variables hypothesized to be associated with NE comprehensiveness score for public LEA’s LWPs and explains 50% of the variability in NE comprehensiveness score (Model R=0.708, R²= 0.501, p<0.001). The 6 mandatory LWP development committee members; demographics of locale, % free and reduced meals; overall policy rigor score; and outside resources including PANA grants, PANA’s, CDC’s, and USDA’s assessment tools are not significant predictors of NE comprehensiveness score.
Table 4-9: Variables Hypothesized to be Associated with Nutrition Education

Comprehensiveness Score for Public LEA’s Local Wellness Policies. N=537

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>B</th>
<th>CI (95%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory Development Committee Members</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent/Guardian</td>
<td>-0.203</td>
<td>-1.670, 1.263</td>
<td>0.785</td>
</tr>
<tr>
<td>Student</td>
<td>0.281</td>
<td>-0.550, 1.112</td>
<td>0.507</td>
</tr>
<tr>
<td>School Foodservice Rep.</td>
<td>-0.856</td>
<td>-2.885, 1.172</td>
<td>0.407</td>
</tr>
<tr>
<td>School Administrator</td>
<td>0.632</td>
<td>-2.293, 3.558</td>
<td>0.671</td>
</tr>
<tr>
<td>School Board Member</td>
<td>-0.237</td>
<td>-1.214, 0.741</td>
<td>0.635</td>
</tr>
<tr>
<td>Public Member</td>
<td>0.296</td>
<td>-0.388, 0.979</td>
<td>0.396</td>
</tr>
<tr>
<td>Demographic Characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>0.013</td>
<td>-1.106, 1.133</td>
<td>0.981</td>
</tr>
<tr>
<td>Suburban</td>
<td>-0.015</td>
<td>-0.541, 0.510</td>
<td>0.954</td>
</tr>
<tr>
<td>Rural (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Free and Reduced Meals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>-0.487</td>
<td>-1.402, 0.427</td>
<td>0.296</td>
</tr>
<tr>
<td>Medium</td>
<td>-0.638</td>
<td>-1.420, 0.145</td>
<td>0.110</td>
</tr>
<tr>
<td>High (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Rigor Score &lt; Mean (reference)</td>
<td>0.203</td>
<td>-0.310, 0.716</td>
<td>0.437</td>
</tr>
<tr>
<td>Overall Policy Comprehensive Score &lt; Mean (reference)</td>
<td>5.387</td>
<td>4.890, 5.884</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Conducted an Assessment of School Environment</td>
<td>0.413</td>
<td>-0.507, 1.333</td>
<td>0.378</td>
</tr>
<tr>
<td>PANA assessment tools</td>
<td>0.122</td>
<td>-0.602, 0.845</td>
<td>0.741</td>
</tr>
<tr>
<td>USDA assessment tools</td>
<td>0.100</td>
<td>-0.734, 0.934</td>
<td>0.814</td>
</tr>
<tr>
<td>CDC assessment tools</td>
<td>0.318</td>
<td>-0.379, 1.015</td>
<td>0.370</td>
</tr>
<tr>
<td>PANA grants</td>
<td>-0.100</td>
<td>-0.980, 0.780</td>
<td>0.823</td>
</tr>
<tr>
<td>STEPS assistance</td>
<td>-1.432</td>
<td>-2.690, -0.175</td>
<td>0.026</td>
</tr>
<tr>
<td>Constant</td>
<td>4.648</td>
<td></td>
<td>0.006</td>
</tr>
<tr>
<td>Model R</td>
<td></td>
<td></td>
<td>0.708</td>
</tr>
<tr>
<td>Model R-square</td>
<td></td>
<td></td>
<td>0.501</td>
</tr>
<tr>
<td>Model P-value</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
The final multiple linear regression model is shown in table 4-10. Overall policy comprehensiveness score, STEPS assistance and conducting an assessment were the strongest predictors and account for 49% of the variability in NE comprehensiveness score in public LEAs LWPs (Model R=0.700, R^2 = 0.491, p<0.001).

Public LEA LWPs that have 58 or more overall policy goals were associated with 5.4 additional NE goals (95% CI: 3.5, 4.7) (p<0.001) than less comprehensive policies. This variable accounted for 48.2% of the variability in NE comprehensiveness score.

Public LEAs that received STEPS assistance prior to LWP development were associated with 1.357 fewer NE goals (95% CI: -2.6, -0.12) (p=0.032) than non-STEPS assistance recipients. STEPS assistance accounted for 0.5% of the total variability in NE comprehensiveness score.

The relationship of conducting an assessment to NE comprehensiveness score in public LEA’s LWPs was suppressed in the original model (table 4-9), possibly due to the presence of other variables in the model. In the final model (table 4-10), conducting an assessment of the school environment prior to LWP development approached significance and was associated with a higher NE comprehensiveness score by 0.577 NE goals (95% CI: -0.28, 1.18) (p=0.062) and accounts for 0.4% of the NE comprehensiveness score variance.
Table 4-10: Variables Predictive of Nutrition Education Comprehensiveness Score for Public LEA’s Local Wellness Policies. N=539

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>B, CI (95%)</th>
<th>R-Square Change</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Policy Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Comprehensive Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Median (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Median</td>
<td>5.422 (3.510, 4.722)</td>
<td>0.482</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>STEPS assistance</td>
<td>-1.357 (-2.597, -0.118)</td>
<td>0.005</td>
<td>0.032</td>
</tr>
<tr>
<td>Conducted an Assessment of School Environment</td>
<td>0.577 (-0.28, 1.182)</td>
<td>0.004</td>
<td>0.062</td>
</tr>
<tr>
<td>Constant</td>
<td>4.116</td>
<td></td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

4.6.2 Multiple Linear Regression Analysis for Nutrition Education Rigor Score by Local Education Agency Type

The relationships found between public and private schools using demographic, socioeconomic, assessments and assistances, LWP development committee members, and overall policy scores as predictor variables for NE rigor score will be discussed by LEA sponsor type.

4.6.2.1 Private LEAs

The mean NE rigor score for private LEAs was 0.86 ± 0.02. The multiple linear regression model for the hypothesized variables associated with NE rigor score explains 31.1% variability in NE rigor scores in private LEA’s LWPs (Model R=0.558, R²= 0.311,
p>0.001 (table 4-11). The following are not significant predictors of NE rigor score: committee members including parent, student, school administrator, school foodservice, and member of the public; demographic factors of locale, percentage of students eligible for free and reduced school meals; conducting an assessment and using PANA, USDA, or CDC assessment tools. Overall policy comprehensiveness and rigor scores were statistically significant predictors of NE rigor score.
Table 4-11: Variables Hypothesized to be Associated with Nutrition Education

Rigor Score for Private LEA’s Local Wellness Policies. N=179

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>B</th>
<th>CI (95%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mandatory Development Committee Members</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent/Guardian</td>
<td>-0.012</td>
<td>-0.111, 0.087</td>
<td>0.808</td>
</tr>
<tr>
<td>Student</td>
<td>-0.024</td>
<td>-0.101, 0.052</td>
<td>0.530</td>
</tr>
<tr>
<td>School Foodservice Rep.</td>
<td>0.035</td>
<td>-0.069, 0.140</td>
<td>0.507</td>
</tr>
<tr>
<td>School Administrator</td>
<td>-0.016</td>
<td>-0.206, 0.174</td>
<td>0.868</td>
</tr>
<tr>
<td>School Board Member</td>
<td>-0.048</td>
<td>-0.104, 0.008</td>
<td>0.091</td>
</tr>
<tr>
<td>Public Member</td>
<td>-0.021</td>
<td>-0.102, 0.059</td>
<td>0.598</td>
</tr>
<tr>
<td><strong>Demographic Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Locale</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>-0.012</td>
<td>-0.091, 0.066</td>
<td>0.754</td>
</tr>
<tr>
<td>Suburban</td>
<td>0.005</td>
<td>-0.062, 0.072</td>
<td>0.875</td>
</tr>
<tr>
<td>Rural (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>% Free and Reduced Meals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>-0.013</td>
<td>-0.166, 0.035</td>
<td>0.201</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td>-0.114, 0.088</td>
<td>0.804</td>
</tr>
<tr>
<td>High (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall Policy Scores</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Rigor Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Mean</td>
<td>0.211</td>
<td>0.150, 0.272</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Overall Policy Comprehensive Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Mean</td>
<td>-0.083</td>
<td>-0.142, -0.024</td>
<td>0.006</td>
</tr>
<tr>
<td>Conducted an Assessment of School Environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANA assessment tools</td>
<td>0.106</td>
<td>-0.028, 0.240</td>
<td>0.121</td>
</tr>
<tr>
<td>USDA assessment tools</td>
<td>0.075</td>
<td>-0.076, 0.226</td>
<td>0.328</td>
</tr>
<tr>
<td>CDC assessment tools</td>
<td>0.158</td>
<td>-0.029, 0.344</td>
<td>0.098</td>
</tr>
<tr>
<td>Constant</td>
<td>0.844</td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Model R</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model R-squared</td>
<td></td>
<td></td>
<td>0.311</td>
</tr>
<tr>
<td>Model P-value</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Table 4-12 shows the final multiple linear regression model explaining the relationship of NE rigor score in private LEAs LWPs with only the statistically significant variables. Overall policy comprehensiveness and rigor scores, controlling for NE goals, and school board member are the only significant predictor variables and explain 26% of the variability for private LEA’s LWPs NE rigor score (Model R=0.510, R²= 0.260, p>0.001).

Table 4-12: Variables Predictive of Nutrition Education Rigor Score for Private LEA’s Local Wellness Policies. N=180

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>B, CI (95%)</th>
<th>R-Square Change</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Policy Scores</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Policy Rigor Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; Mean</td>
<td>0.204 (0.149, 0.258)</td>
<td>0.202</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Overall Policy Comprehensive Score</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; Mean</td>
<td>-0.073 (-0.125, -0.021)</td>
<td>0.045</td>
<td>0.006</td>
</tr>
<tr>
<td><strong>Mandatory Development Committee Members</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Board Member</td>
<td>-0.058 (-0.108, -0.008)</td>
<td>0.020</td>
<td>0.023</td>
</tr>
<tr>
<td>Constant</td>
<td>0.787</td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Model:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model R</td>
<td>0.510</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model R-square</td>
<td>0.260</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model P-value</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Private LEA’s LWPs with overall policy rigor scores equal to or higher than the mean (mean=0.87) was significantly associated with more rigorous NE goals by 0.204 points than policies with overall policy rigor scores below the mean (95% CI: 0.15, 0.26) (p<0.001). This variable explains 20% of the variance in NE rigor score.
In contrast, private LEA policies that had greater than the mean (mean=58 goals) overall policy comprehensiveness scores were associated with less rigorous NE goals by 0.073 points (95% CI: -0.13, -0.02) (p=0.006) than less comprehensive private LEA LWPs. This variable explains 4.5% of the variance in NE rigor score.

School board member was the only mandatory committee member that was a significant predictor of NE rigor scores for private LEAs. A private LEA LWP development committee that had a school board member was associated with less rigorous nutrition education goals by 0.058 points (95% CI: -0.11, -.0.08) (p=0.023). This variable explains 2% of the NE rigor score variance.

4.6.2.2 Public LEAs

The mean NE rigor score for public LEAs was 0.89 ± 0.02. Table 4-13 shows the multiple linear regression model for the hypothesized variables associated with NE rigor score for public LEA’s explains 19.3% variation in NE rigor score (Model R= 0.440, R² = 0.193, p<0.001). The following were not significant predictors of NE rigor scores in public schools: all of the development committee members, all demographic and socioeconomic factors (locale, % free and reduced meals), overall policy comprehensiveness score, conducting an assessment of the school environment prior to LWP development, and receiving PANA grants, and CDC and USDA assessment tools. Variables predictive of NE rigor score were overall policy rigor score and STEPS assistance.
Table 4-13: Variables Hypothesized to be Associated with Nutrition Education

Rigor Score for Public LEA’s Local Wellness Policies. N=529

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Public LEAs Rigor scores</th>
<th>B</th>
<th>CI (95%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mandatory Development Committee Members</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent/Guardian</td>
<td>0.011</td>
<td>-0.069, 0.092</td>
<td>0.780</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>0.006</td>
<td>-0.040, 0.052</td>
<td>0.809</td>
<td></td>
</tr>
<tr>
<td>School Foodservice Rep.</td>
<td>0.005</td>
<td>-0.106, 0.116</td>
<td>0.933</td>
<td></td>
</tr>
<tr>
<td>School Administrator</td>
<td>-0.126</td>
<td>-0.286, 0.035</td>
<td>0.598</td>
<td></td>
</tr>
<tr>
<td>School Board Member</td>
<td>0.015</td>
<td>-0.040, 0.070</td>
<td>0.989</td>
<td></td>
</tr>
<tr>
<td>Public Member</td>
<td>0.000</td>
<td>-0.037, 0.038</td>
<td>0.763</td>
<td></td>
</tr>
<tr>
<td><strong>Demographic Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locale</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>-0.036</td>
<td>-0.098, 0.026</td>
<td>0.221</td>
<td></td>
</tr>
<tr>
<td>Suburban</td>
<td>-0.023</td>
<td>-0.052, 0.006</td>
<td>0.254</td>
<td></td>
</tr>
<tr>
<td>Rural (reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Free and Reduced Meals</td>
<td></td>
<td>-0.010</td>
<td>-0.060, 0.041</td>
<td>0.742</td>
</tr>
<tr>
<td>Low</td>
<td>-0.016</td>
<td>-0.059, 0.027</td>
<td>0.703</td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall Policy Scores</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Rigor Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Mean</td>
<td>0.142</td>
<td>0.114, 0.171</td>
<td>&lt;0.001</td>
<td></td>
</tr>
<tr>
<td>Overall Comprehensive Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ Mean</td>
<td>-0.020</td>
<td>-0.048, 0.007</td>
<td>0.147</td>
<td></td>
</tr>
<tr>
<td>Conducted an Assessment of School Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANA Assessment Tools</td>
<td></td>
<td>0.027</td>
<td>-0.013, 0.067</td>
<td>0.188</td>
</tr>
<tr>
<td>USDA Assessment Tools</td>
<td></td>
<td>0.004</td>
<td>-0.042, 0.050</td>
<td>0.878</td>
</tr>
<tr>
<td>CDC Assessment Tools</td>
<td></td>
<td>-0.010</td>
<td>-0.049, 0.029</td>
<td>0.616</td>
</tr>
<tr>
<td>PANA Grants</td>
<td></td>
<td>0.016</td>
<td>-0.033, 0.067</td>
<td>0.516</td>
</tr>
<tr>
<td>STEPS Assistance</td>
<td></td>
<td>0.071</td>
<td>0.002, 0.140</td>
<td>0.044</td>
</tr>
<tr>
<td>Constant</td>
<td>0.916</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Model R</strong></td>
<td></td>
<td>0.440</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model R-square</strong></td>
<td></td>
<td>0.193</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model P-value</strong></td>
<td></td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The final multiple linear regression model explaining the relationship of NE rigor score in public LEAs LWPs with only the statistically significant predictor variables is shown in table 4-14. Overall policy rigor score, STEPS assistance and use of PANA
assessment tools are the only significant predictor variables and explain 17.9% variation in NE rigor score (Model R= 0.423, R² = 0.179, p<0.001).

**Table 4-14: Variables Predictive of Nutrition Education Rigor Score for Public LEA’s Local Wellness Policies.** N=531

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>B, CI (95%)</th>
<th>R-Square Change</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Policy Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Rigor Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; Mean (reference)</td>
<td>0.140 (0.113, 0.167)</td>
<td>0.170</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>≥ Mean</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PANA Assessment Tools</td>
<td>0.025 (0.000, 0.052)</td>
<td>0.003</td>
<td>0.059</td>
</tr>
<tr>
<td>STEPS Assistance</td>
<td>0.065 (-0.003, 0.133)</td>
<td>0.006</td>
<td>0.060</td>
</tr>
<tr>
<td>Constant</td>
<td>0.784</td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>531</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model R</strong></td>
<td>0.423</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model R-square</strong></td>
<td>0.179</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Model P-value</strong></td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Public LWPs that had overall policy rigor scores equal to or greater than the mean, controlling for NE goals (mean= 0.92), was significantly associated with more rigorous NE goals by 0.140 points (95% CI: 0.11, 0.17) (p<0.001) than those with a policy score less than the mean overall policy rigor score, controlling for NE goals. This variable explains 17% of the variability in NE rigor score.

STEPS assistance and the use of PANA assessment tools both approached significance. Public LEAs that received STEPS assistance were associated with more rigorous NE goals by 0.065 points (95% CI: -.003, 0.13) (p=0.06) than non-STEPS public LEAs. This variable explains only 0.6% variability in NE rigor scores.
A public LEA that used PANA assessments tools for conducting an assessment of the school environment prior to LWP development were associated with more rigorous NE goals by 0.03 goals (95% CI: 0.0, 0.05) (p=0.059). This variable explains 0.3% of the NE rigor score variance for public LEAs.
CHAPTER 5

Discussion and Conclusions

All LEAs participating in the schools meals programs were mandated by The Child Nutrition and WIC Reauthorization Act of 2004 to develop a local wellness policy (LWP) addressing issues involving physical activity, nutrition education, and food guidelines for foods offered on the school campus. Developing, implementing, and enforcing education policy such as a LWP could be challenging for LEAs. Potential challenges for LEAs included limited resources, time, involvement of various key stakeholders, and the general know how to write a wellness policy and implement the policy goals. Thus, understanding the positive and negative factors that affect these processes is important as it will aid policymakers and educators in developing programs, trainings, and materials that will be the most effective in developing and strengthening nutrition education in LEAs. To the best of our knowledge, studies have not looked at the relationship of the demographic characteristics, socioeconomic variables, assessment and assistance resources, mandatory development committee members, and overall policy comprehensiveness and rigor scores in the development of nutrition education goals. This study focused on policy content development.

Significant differences were observed between public and private LEAs for mandatory committee membership, overall policy rigor and nutrition education rigor
scores, percentage of students eligible for free and reduced meals, LEA locale, and utilization of sources of external assistance. Therefore, the discussion of the variables involved in the analysis will be discussed separately for public and private LEAs.

The discussion that follows will address the PSBA template nutrition education goal characteristics followed by the relationship of the following factors on NE scores: demographic factors (such as sponsor type, locale, and socioeconomic factors), the relationship of resources and assistance received by LEAs, the relationship of the mandatory committee members on NE, and overall policy comprehensiveness and rigor scores. The concluding sections address the strengths and weaknesses of this study followed by concluding thoughts and recommendations.

5.1 Nutrition Education Goal Characteristics and Scores of Pennsylvania Local Education Agency’s Wellness Policies

This section will discuss the inclusion and strength of the PSBA template nutrition education goals included in the LWPs of public and private LEAs. In this analysis, the characteristics of NE goals, in terms of goal inclusion and strength, were found to be similar for public and private LEAs. This section focuses on the trends in both public and private LEAs regarding the types of PSBA template goals most likely to be included and excluded, as well as the language used to frame the existing goals.

In the descriptive analysis of the NE goals, both public and private LEA’s LWPs were more likely to include the broad and less measureable NE goals from the PSBA template policy than the specific, measureable NE goals. This same trend was found in an analysis of all PSBA template goals for only 499 LWPs from Pennsylvania’s public
school districts (SD), the same SDs in this study, which states that LEAs were more apt to choose goals that were general in nature by choosing goals that were the least specific in language. Therefore, LEAs may choose more general goals as they provide the LEA more “wiggle room” to specialize the goals in the implementation action plan to meet their specific needs. Further studies would be necessary to more fully understand why LEAs choose more general goals.

The nutrition education goals that were least often chosen from the PSBA template policy by both public and private LEAs were goals that linked nutrition education with foodservice to create a learning laboratory, cooperate with the community to provide opportunities for student nutrition projects, and engage the involvement of families and communities. A separate study of just the public school districts’ LWPs in Pennsylvania by Probart et al. showed that nutrition education goals that extend beyond the classroom environment, such as engaging families, foodservice and the community, were the least selected NE goals. This is an unfortunate trend, as these omitted goals “represent strategies for reinforcing classroom nutrition education and provide opportunities for skill-building related to nutrition” as recommended by USDA Team Nutrition programs. Therefore, the omission of these goals may indicate that LEAs need support and buy-in from these stakeholders and training and education material to aid in connecting nutrition education to the family, community, and school environment.

In addition to omitting these community-oriented goals, private LEAs were also least likely to choose the NE goal that states that NE would be linked with physical activity and behavior-based. When the goal linking NE and physical activity was included, the majority were weaker than the PSBA template goal. This indicates that
private LEAs need resources and assistance to understand how to integrate nutrition education and physical activity together and provide behavior-based nutrition education to address childhood obesity issues.

In addition to omitting certain goals, both public and private LEAs showed a tendency to weaken the language of particular PSBA template goals. This finding echoes that of Probart, et al. which demonstrated that some LEAs choose to use qualifier words, such as “recommended,” “will encourage,” or “may,” rather than mandatory statements. These findings are also supported by the analysis of LWPs in Utah, in which 60% of nutrition education goals were recommendations and 40% were mandated. (76)

In this study, for public and private LEAs, the most commonly weakened nutrition education goal when compared to the PSBA template was keeping nutrition messages consistent within the district, school campus, media, community, and home. This goal was weakened in various ways. Some goals were weakened by making the goal a recommendation rather than a mandated goal or to omit locations in which nutrition education messages were to be kept consistent. LEAs may have omitted media, community or family locations from this goal as they were uncertain how to reach out into these areas. The language of the original template goal exemplifies the importance of support and buy-in from all key stakeholders in the development of school nutrition policies. When the school, family, and community work synergistically together to teach and model consistent healthy behaviors, positive changes can occur to improve childhood obesity rates and issues. A possible avenue to address LEAs’ weakening of this goal is to develop training and educational material that would help LEAs gain support from various stakeholders and aid in extending NE beyond the school environment.
Another commonly weakened PSBA NE goal for both public and private LEAs was providing training and professional development for staff teaching nutrition education. LEAs have often cited lack of funding as a reason for not implementing nutrition policy in the past. Therefore, public and private LEAs may have weakened this goal due to financial constraints of providing proper training and professional development for staff. Therefore further research may be needed to understand why LEAs do not include particular goals, along with technical assistance to provide cost-effective nutrition education training and professional development to staff.

Although the reason for weakening the goal about integrating NE into the curriculum is not fully understood, the integration of nutrition education into the curriculum was one of the most commonly weakened goals for both public and private LEAs. Nutrition education integrated into the school curriculum and provided through community efforts may be an effective way to address childhood obesity. Researchers have long advocated the integration of nutrition education into other subjects. These results are supported by findings in the Travis County CATCH Trial. In this trial intervention, it was reported that CATCH components were least likely to be implemented in the classroom due to testing requirements and other priorities. This trend may be similar for the development of NE goals, particularly the integration of NE into the curriculum.

Findings from this study do not support those reported from the analysis of Utah LWPs, which states that the most commonly included mandated nutrition education goal was to integrate nutrition as part of the core curriculum (n=15, 48%). The difference between Pennsylvania LEAs and those of other states, as seen in Utah, in the inclusion of
a NE goal to integrate nutrition education into the curriculum, may suggest a difference in resources and barriers to including mandatory nutrition education as part of the curriculum. These results show that there is need for improvement in addressing creative and innovative methods of integrating nutrition education into other subjects without replacing other academic standards.

In a related finding, 39.6% of public LEAs were also less likely to choose a nutrition education goal that states that NE will be a behavior-based curriculum. A study of LWPs from Pennsylvania public school districts, also included in this analysis, states that only 38.7% (n=193) of SD included this goal in their LWP. This tendency to downplay behavior-based curricula may indicate that public LEAs need assistance as to how to effectively teach and assess nutrition education lessons that will influence and change current behaviors to healthy behavior practices, particularly since nutrition education when integrated into the curriculum as a behaviorally-focused program has been found effective in other studies. (86, 87)

Although almost all public and private LEAs met the federal mandate to at least include one goal addressing nutrition education in their LWP, the characteristics of the goals included indicate areas of weakness for public and private LEAs. Resources and assistance are needed to aid LEAs in implementing the goals they have included in their policy, and this assistance needs to extend to provide proper professional training and creative curriculum ideas to integrate nutrition education into other subjects and the food service. Ideally LEAs need to be instructed as to how to engage the entire school environment, families, and communities so that nutrition education messages taught in
5.2 The Relationship of Demographic Characteristics, including LEA type, Locale, and Factors Predicting Socioeconomics, to Nutrition Education Comprehensiveness and Rigor Scores of Pennsylvania LEAs

A key demographic factor in this study was the LEA type, whether public or private. The urbanicity of the 721 Pennsylvania LEAs was also considered, as historically urban schools in Virginia, although not exclusively, typically have more resources allocated to them compared to rural schools for the development of school-initiated wellness programs. In addition to locale, this study explored the influence of socioeconomic status on NE goals, which was determined by the percentage of students eligible for free and reduced meal rates (%F/R). Therefore, locale (rural, urban, and suburban) and % free and reduced meals were variables of interest in the regression models.

5.2.1 Local Education Agency Sponsor Type

Although many of the predictor variables in this study differed according to LEA sponsor type (public or private), the sponsor type itself functioned as a predictor variable for the strength and comprehensiveness of NE goals. Thus, while the remainder of the discussion will address sponsor type to some degree, in this section the discussion
focuses on the relationship between sponsor type and NE scores. In the analysis, private LEAs had higher mean NE comprehensiveness scores than public LEAs, although they had significantly less rigorous NE goals than public LEAs. Explanation for these findings were found by analyzing variables associated with NE comprehensiveness and rigor scores. Differences in governance, state regulation mandates, and school day structure may account for the difference between LEA type with predictor variables for nutrition education comprehensiveness and rigor scores.

Public LEA’s nutrition education goal development was associated with the sources of external assistance. Public schools are held to more government regulations and are focused to meet these outside (e.g. government) regulations. This study’s findings of public LEA’s being impacted more by assistance programs and school assessments supports that idea that public LEAs may be more accustomed to measuring their school programs against criteria established by some external group.

In the analysis, private LEA’s nutrition education goal development was significantly associated with stakeholders involved in the LWP development. An association with stakeholders was not found for public LEAs, as public LEAs included most of the members on their LWP’s committee, so no variability for the statistical analysis. One may speculate that the differences for the association of committee membership with the number and strength of the nutrition education goals included by LEA type may be rooted in the culture of that educational institution. In general, private schools are not held to the same outside governmental regulations and are therefore more influenced by the school culture and the school community, in which the opinion, positive or negative, of development committee members had a greater association to the
quantity and strength NE goals. Additionally, private LEAs were most commonly contained in one building serving elementary students, compared to public LEAs serving a variety of school aged children in numerous buildings. The influence of key stakeholder inclusion on the LWP development committee, particularly students, may have been influenced by the type of school buildings, as private LEAs may have been less inclined to include an elementary age student on a wellness committee.

5.2.2 Locale of LEAs in Pennsylvania

LEAs in this study were found in one of three locations: urban, suburban, and rural. Overall, the majority of all the LEAs (49.7%) were in suburban locales. The majority of private LEAs were in suburban locales (54.9%) with the remainder evenly divided between rural (22.5%) and urban (22.5%) locales. However, for public LEAs, there was an almost equal percentage for suburban (47.9%) and rural (45.3%) locales, with a smaller percentage (6.9%) from urban locales.

In the analysis for both public and private LEAs, locale was not predictive of the number of (comprehensiveness) or strength (rigor) of LWP nutrition education goals. Therefore, regardless of locale, Pennsylvania LEAs have an equal chance of developing strong (rigorous) and comprehensive NE goals. Findings from Metos et al. analyzing Utah’s LWPs support these findings. The total number of nutrition education goals included in Utah’s LWPs were also reported to not be significantly related to LEA demographic location. (81)
The findings from our study do not support the findings of other previous studies which demonstrated differences between school locales. French et al. indicated that rural schools and smaller districts were found to report a greater number of positive school food practices. \(^{(56)}\) Reports from Virginia LWPs showed that non-rural school divisions (LEAs) had significantly higher LWP overall comprehensiveness scores compared to rural areas. \(^{(77)}\)

The reasons for the differences in these findings are not clear; however, the analysis of Virginia LWPs occurred during the LWP development process compared to after LWP development for Pennsylvania LEAs. Likewise the classification of urbanicity was different for Pennsylvania LEAs versus Virginia LEAs. Virginia school divisions that were in non-rural locations were defined as small town or greater in population size, which left 65% of Virginia school divisions as rural. \(^{(77)}\) In the analysis of Pennsylvania LWPs, LEAs located in a small town were defined as rural.

Pennsylvania is unique in geographic and demographic characteristics compared to other states. In the southeast and southwest corners of Pennsylvania are two very large metropolitan regions, with the rest of the state being classified as suburban and rural. The uniqueness of Pennsylvania’s demographics makes it difficult to make direct comparison with other states’ findings in regard to LEA locale and LWP nutrition education goal strength and inclusion.
5.2.3 Socioeconomic Status of LEAs

Percent of students having free and reduced meals is a reflection of the socioeconomic status of the student population, due to family income requirements. Public LEAs had a significantly higher free and reduced rate compared to private LEAs. Variability between private and public LEAs may be due to the type of students attending public and private LEAs. Private LEAs tend to have more affluent students as these students can more easily afford the higher tuition prices, hence private LEAs are more likely to have lower free and reduced rates than public LEAs.

In this study % F/R was not predictive of how many NE goals were included or the strength of these goals in the LWPs for public and private LEAs.

Findings from this study do not support those of earlier studies. Research results from the LWP analysis of Utah’s LWPs showed that LEAs with a higher number of low income students (represented by % F/R) were more likely to meet mandated wellness policy components; likewise, LEAs with higher % free and reduced rates (>45%) were significantly more likely to include more nutrition education goals (mean ± SD = 3.11± 2.42, p=0.06) than LEAs with a lower percentage of students eligible for free and reduced priced meals. While higher socioeconomic LEAs may have financial resources that promote healthier school environments through access to additional human and educational resources that would aid in providing nutrition education, LEAs of lower socioeconomic status may be more apt to apply for and seek additional resources and grants for developing and implementing the wellness policy. A possible explanation for the difference between these findings and those of others may be that PA LEAs had
access to a more comprehensive and rigorous template policy, as seen in the PSBA template.

These findings suggest that regardless of the LEAs financial and socioeconomic status, there is an equal chance for LEAs to develop comprehensive and rigorous NE policy goals. However, further studies are needed to explore whether there are specific financial resources available for LEAs that would promote more comprehensive and rigorous nutrition education goals, as not all financial resources were available for use in the analysis.

5.3 Differences in Resources Utilized by Public and Private LEAs for Nutrition Education Goal Development

Assistance programs and grants are made available to LEAs to help with the development of school health programs. Public and private LEAs utilize these external assistance programs differently. The use of external assistance programs in the LWP development was significantly associated with the quality of nutrition education goals for public LEAs. However, private LEAs that were included in this study did not seek or utilize the same sources of external assistance as public LEAs.

Findings reported in a report to PDE entitled “The School Breakfast Program in Pennsylvania: Barriers to Program Initiation and Resources Needed,” provides insight into the differences of public and private LEA’s utilization of external resources, as found in this study. The report states that private LEAs were less familiar with external resources than public LEAs, and were thus less likely to use those resources for
developing a school breakfast program (SBP). In the development of the local wellness policies, private LEAs may not have been aware of external resources available to them, nor were they aware of the recommendations to conduct an assessment. Some explanation for these differences in LWP development and initiating SBPs are as follows.

In addition to private schools’ lack of familiarity with resources, the nature of public and private schools may also account for some of the differences observed. Some private LEAs may not feel they meet eligibility criteria, as % free and reduced rate may be a qualifying factor, to receive external assistance resources. As mentioned above, private LEAs have significantly lower % free and reduced rates than public LEAs. Additionally since public schools are held to more government regulations than are private schools, public schools are more focused on meeting these outside (e.g. government) regulations and therefore may more readily seek access to additional information resources. The fact that public LEAs may be more accustomed to measuring their school programs against criteria established by some external group may account for this study’s finding that public LEAs are more affected by assistance programs and school assessments than private schools.

Because private schools so seldom sought outside aid, the discussion that follows addresses the role of external resources and assessments in public LEAs.

5.3.1. External Resources Utilized in Nutrition Education Goal Development

In the analysis of this study, public LEA’s nutrition education goal development was positively associated with the sources of external assistance. The sources of outside
assistance encountered in this study were the STEPS and PANA programs, as discussed below.

5.3.1.1 STEPS

One source of external assistance used in the analysis was The Steps to a Healthier U.S., a 5-year cooperative agreement program funded through the CDC. This program provided funding for states, cities, and tribal entities to “implement chronic disease prevention efforts focused on reducing the burden of diabetes, overweight, obesity, and asthma by addressing three related risk factors: physical inactivity, poor nutrition, and tobacco use.” Program activities were to reach out and influence media, policy, school, workplace, health care, and community. The STEPS assistance program proposed to achieve these efforts through as activities such as implementing the Color Me Healthy health promotion program, collaborating with communities to increase availability of physical activity resources, increasing availability of fruits and vegetables, and providing professional training to foodservice personnel to increase the variety of healthy foods options that meet USDA standards.

A key component of the STEPS program was to implement and develop school health councils that would promote healthy lifestyles, through proper nutrition and physical activity.

In this analysis, 20 public LEAs received STEPS assistance. Public LEAs that received STEPS assistance were associated with the inclusion of fewer (less comprehensive) nutrition education goals than non-STEPS public schools. At the same
time, the goals included within the policy were associated with more rigorous goals compared to non-STEPS recipients. Because the quality of the nutrition education goals chosen was more important than the number of goals included in the LWP, the overall quality of the NE goals was higher for STEPS public schools. It appears that access to additional human and educational resources improved the nutrition education goals for public LEAs receiving this assistance, although this has not yet been proven.

These assistance programs were associated with developing more rigorous nutrition education goals for public LEAs. This may indicate that LEAs that receive grants assistance have higher standards for nutrition education and encourage healthier school initiatives. This also suggests the continual need for access and availability of similar programs. Although the program was only implemented in 3 counties in PA, the effect was significant.

5.3.1.2 PANA Keystone Healthy Zone Grants

The second assistance program was the Pennsylvania Advocates for Nutrition and Activity (PANA) Keystone Healthy Zone (KHZ) schools campaign, which provides grants and rewards and recognizes schools for making a commitment to improve nutrition and physical activity. Other KHZ grants support community or student groups who want to lead healthy changes in their schools and community environment. Recipients of KHZ (PANA) grants receive monies, awards, professional training opportunities, materials for improving nutrition and physical activity among the students, and are recognized for their
efforts in developing healthy school environments, which would hypothetically aid in developing more comprehensive and stronger policies.

Few public LEAs, and only one private LEA indicated that they had received PANA grants for either the 2004-2005 or 2005-2006 school years. Receiving a PANA grant was not found to be a significant predictor of NE goal strength or comprehensiveness. The small number of LEAs that received these grants may have influenced the lack of significance associated with the development of nutrition education goals found in this study.

5.3.2 Conducting An Assessment and Assessment Tools

Conducting an assessment of the school’s existing nutrition and physical activity programs may have inclined educational agencies to include nutrition education, or other policy goals, if it was already being practiced. Although the correlation between using an assessment tool was not found to be highly significant in this analysis, it still may have been influential in the development of the nutrition education goals included in the LWP of public and private LEAs. Further studies would be necessary to confirm the relationship between conducting an assessment and NE goal development.

A little more than three-fourths of all LEAs in this analysis conducted an assessment of the school environment prior to drafting the LWP. Available online tools for conducting an assessment included PANA’s, CDC’s, and USDA’s resources. Of the assessment tools available for the LEAs, PANA was the most commonly used. Public schools were more likely to use an assessment than were private schools. This is in
keeping with other research findings.\(^{(76)}\) Again these findings suggest that public LEAs are more accustomed to comparing the school to some outside criteria than private LEAs.

For public LEAs in the study, conducting an assessment before LWP development was approaching significance to predict higher NE comprehensiveness scores. Supportive findings from another study indicate that LEAs that conducted an assessment had more comprehensive LWPs.\(^{(76)}\) In public LEA’s LWPs, the use of the PANA assessment tool was approaching significance to predict NE goals that were stronger than the original template goals. The fact that conducting an assessment was approaching significance in public LEAs suggests that it is a useful tool for LEAs to utilize. If more private LEAs had conducted an assessment, a correlation between conducting an assessment on NE scores may have been observed. Thus, additional research is appropriate to determine the role of assessments in private LEAs health and nutrition policy development and to understand why there are differences observed between public and private LEAs in conducting an assessment. Mandating an assessment before future health policies may also be considered by the federal government.

5.4 The Relationship of the Mandatory Local Wellness Policy Development Committee’s Involvement in Nutrition Education Comprehensiveness and Rigor Scores of LWP Development in Pennsylvania LEAs

Pennsylvania LWPs were analyzed to determine which (if any) mandatory LWP development committee members were predictive of the LWP’s nutrition education rigor and comprehensiveness scores.
LWP development committee membership was a federal mandate designed to include all school stakeholders. This mandate was part of the development of these policies. Mandatory stakeholders included, but were not limited to: students, parents/guardians, school board member, school administrator, school food service representative, and a public member. Several studies to date have analyzed the relationship of specific key stakeholders, particularly foodservice directors, school administrators, and principals in relation to policies for competitive food usage and the development and implementation of LEAs wellness policies within different states. However, none of these studies have examined all of the mandatory stakeholders.

The importance of a committee to develop school health policies was important to policymakers before the LWP mandate. Virginia legislators passed legislation in 1990 that mandated the development of a local School Health Advisory Board (SHAB). Although these SHABs were typically appointed by the school board and were to represent a broad-based community segment, specific individuals were not mandated for committee involvement as they were with LWP development. Serrano et al. reported the 69.5% of the existing SHABs served as the LWP development committees, although only 34.1% met the mandatory LWP development committee composition during the initial phase of policy development. The percentage of Virginia LEAs who met the mandatory requirement was similar to that of Pennsylvania private LEAs.

In Pennsylvania, almost three-fourth of public LEAs (72.4%, n=390) met the mandatory committee requirement compared to one-fourth of private LEAs (26.4%, n=48). Differences between public and private LEAs may be accounted for by school culture: as mentioned previously, public LEAs may be more accustomed to complying
with criteria set by governmental and state organizations. Therefore, public LEAs were more likely to meet the mandatory committee requirements.

Curiously, while private LEAs were less likely to meet mandatory committee composition requirements than public LEAs, the relationship of committee members to nutrition education goals comprehensiveness and rigor was more likely to be significantly associated in private LEAs than public LEAs. Development committee membership was not predictive of nutrition education rigor or comprehensiveness in the analysis for public LEAs. Thus, a discussion of the mandatory committee members on the development of the number of nutrition education goals (comprehensiveness) and rigor will be illustrated for private LEAs only. Again, some of these differences may stem from school culture: while private schools are less likely to be held to rigorous outside standards (e.g. governmental) than public schools, they are more likely to be influenced by internal influences, such as the school community and other private stakeholders. Therefore, private LEAs may be more susceptible to influence by the various stakeholders on the development committee.

5.4.1 Student Involvement

About half (n=94, 51.6%) of the development committees for private LEAs included students in the LWP development process. For private LEAs, student involvement was negatively associated with nutrition education comprehensiveness, thus a LWP development committee that included a student contained fewer NE goals.
However, student involvement was not associated with the strength (rigor) of these NE goals.

This negative association seems unfortunate, given that student involvement in making changes to the school environment has been effective in previous studies.\(^{(3, 4)}\)

Results from Jomaa, et al. show that when student groups or student governments are involved in changing the school environment, they are able to rally more youth and adults to get involved.\(^{(3)}\) Likewise, student involvement in developing and encouraging healthy school environments, such as through tasting testing and voting on school meals options\(^{(67)}\) or being supported as role-models, can promote healthy eating and physical activity behaviors.\(^{(3, 4)}\)

However, Auld, et al. points out that for behavior change to occur in students, they need ongoing, long-term contact with teachers trained in nutrition education.\(^{(23)}\)

With additional training for teachers, students benefit by learning the benefits of a healthy dietary and active lifestyle, which would positively influence future nutrition and health policies. Students are an important influence in school policy as they and their parents communicate with school board and school administrators.\(^{(75)}\) Thus as students receive nutrition education and learn the benefits of a healthy lifestyle, they can be an important influence on school nutrition policy through effective communication with school administration.

Study results from Serrano et al. expressed that the lack of technical assistance to LEAs in the LWP development process, particularly on how to engage students, may be one reason for only half of private LEAs including students on the development committee.\(^{(77)}\) In keeping with findings from Serrano et al., Jomaa et al. recommend that
school administrators need to be trained to view and develop partnerships with students as agents for positive change. Another reason for lower student participation may be that 73.1% of private LEAs do not have a secondary education building and serve mainly elementary aged youth, who may be deemed too young to effectively serve on development committees.

Students can be an important source to implement change and positively influence the health practices in the school environment. In the federal mandate for development committee membership, only one student was required. The inclusion of multiple students may have a greater impact to aid in making changes in the school environment. Through role-modeling, opinions in food options and rallying for change, students can be a vital member in the local wellness policy development committee.

5.4.2 School Foodservice Authority Involvement

In the analysis for both private and public LEAs, the inclusion of a school foodservice authority (SFA) on the development committee was not associated with the strength (rigor) or number (comprehensiveness) of nutrition education goals. This lack of association may stem from a lack of involvement on the part of SFA or their insecurities. School administrators felt that the wellness policy mandate was directed at school foodservice authority, but Probart, et al. reported that only 21.5% of public school foodservice authority had been involved in the school nutrition policy development prior to legislation mandating LWP. Results from a focus group of SFA reported that SFA saw themselves playing lead roles in the development of the LWP but felt
unqualified in policy development and curriculum issues and did not want to be seen as “food police.” (54)

Although the presence of a SFA was not found to be statistically predictive of nutrition education rigor or education, previous research supports the vital role they can play in the development and implementation of nutrition and health policies, as they are on the front line implementing these policies. (137) The involvement of SFA in school nutrition and health policies is important to the integration of nutrition education into the cafeteria environment. Studies have shown the benefit of nutrition education in improving eating behaviors in youth. (85) The availability of less healthy vending machine, à la carte, and competitive food options might negate nutrition education lessons taught in the classroom. (56) Involving SFA in these important policy developments can positively change food options and incorporate a creative and innovative way to support and implement nutrition education lessons in the cafeteria environment.

5.4.3. School Board Member Involvement

Half of private LEAs (54.4%) included a school board member on their LWP development committee; the fact that not all private LEAs have school boards may account for this low percentage. (51) However, having a school board member on the development committee in private LEAs was associated with including more NE template goals. However, the presence of a school board member was also correlated
with weaker NE goal language than the PSBA template goal language (or decreased rigor).

A representative from The National School Board Association said that school board members are aware of the importance of access to healthy and nutritious foods for youth to develop healthy dietary behaviors.\(^{(6)}\) Therefore, as school board members understand the importance of accessing and consuming a healthy diet, they would also likely see the benefit of teaching comprehensive nutrition education in the LEAs. This may account for the positive correlation between school board members and NE goal comprehensiveness. At the same time, incorporating less rigorous NE goals would leave the LEA more flexible in the implementation of the chosen goals.

Additionally as school board members understand the connection between positive school nutrition policy and the improvement of academic performance and student behavior, they can positively contribute to incorporating nutrition education into the school environment.\(^{(75)}\)

### 5.4.4 School Administrator Involvement

In the analysis, nearly all private LEAs included a school administrator on the LWP development committee. This administrator was significantly (p<0.001) associated with a decrease the number (comprehensiveness) of the nutrition education goals included in the LWP. The association of school administrator on NE rigor score was not found to be significant in these models.
The findings from the private LEAs analysis are reflected in many of the reactions by school administrators to the proposed new legislation directed by First Lady Michele Obama. These principals seem to resist heavy school involvement in nutrition programs. Some principals in the D.C. area planned on writing their congressman to express their opposition to the new bill and to petition them to ban the bill. These objections may be reflected in the opinions of other principals who feel that it is the responsibility of the parents to forbid their child to buy candy if they are at risk of obesity. (6, 86)

In addition to feeling that student nutrition is not their main responsibility, administrators may negatively influence NE comprehensiveness due to a misapprehension of existing nutrition policies. Likewise, principals with an overall positive attitude were more likely to report a greater number of school food policies. (56) In relation to competitive food policies, school principals were more likely to report the existence and implementation of a school policy versus a foodservice director. (79)

Lack of clear communication from administrators about previous existing policies and policy implementation has been a focus in several studies. (14,19,54,55,75,77,85) Miscommunications have occurred between those developing past policies and those implementing the policies. Some of these miscommunications are a result of individuals on the “front line” of policy implementation not being involved in previous policy development and thus not knowing all of the previous policies developed and conversely those individuals involved in policy development not knowing if the policy goals are feasible to implement as planned. This possible lack of clear communication between stakeholders during the LWP development may have affected the comprehensiveness of nutrition education goals.
The lack of involvement and support (financial and personal) of school administration in setting nutrition policies was a common trend in the literature and presents a problem that needs to be addressed. North Carolina FSD, when asked to identify ways to improve existing nutrition policies, responded that there was a need for support from school administration, teachers, and parents. Likewise the lack of support from school administrators and teachers was cited as an obstacle to integrating nutrition education into the curriculum and initiating a school breakfast program. This may be due to the fact that school nutrition policies are complex and time intensive to develop, thus school administrators are unfamiliar with establishing and implementing them. Symons et al. concluded that school administrators needed additional incentives to design and implement health programs in their schools, even if they saw a positive link between health programs and positive student behavior and academic performance. Thus administrators need to be educated on the importance of school nutrition policy and its positive relationship with improved academic performance and student behavior. This need for education also applies for integrating comprehensive nutrition education programs within the LEAs.

Although administrators’ association with less comprehensive nutrition education goals may indicate a lack of understanding and support, this is not the only possible explanation. A number of school-level variables may also influence the support and level of health based school policies. In the Travis County CATCH trial study, the authors suggest that principal support could be dependent upon many factors such as staff turnover, the school’s academic performance, and community involvement.
Likewise, in limiting the number of NE goals, administrators may have a realistic outlook on how much can be accomplished and may simply be keeping LEAs flexible in how they implement their LWP and meet mandated requirements.

5.4.5 Parent/Guardian Involvement

Of private LEAs, 89% included a parent on the development committee. The inclusion of a parent on this committee was significantly associated with a higher number of NE goals. An association of a parent with NE rigor was not found to be significant in these models.

Findings from previous studies have not exemplified similar results. Parents have generally been perceived by PA foodservice directors as uninvolved or lacking power, unless their children complain about food options in the cafeteria. However, the findings from this study suggest otherwise. The involvement of parents in school-based health policy is important as they contribute positively in the improvement of the school nutrition environment, as well as improve the home environment.

The differences in study findings may be accounted for by the difference in study sample characteristics. The before mentioned results were found in the analysis of public LEAs. Therefore, these findings may not be as applicable to private LEAs. Hypothetically, we may conclude that due to the differences in the structure of private schools and their financial resources, the influence from the local level (parents) has a greater influence on school programs. Therefore, parents may have a stronger voice in school occurrences. Additionally parents opt to send their children to private schools for
a number of reasons; one such reason may be programs or practices not found in public schools.

While parents are clearly an important stakeholder in terms of school nutrition policies, they have not always been fully informed about school policies. Studies have shown that school policy has not always been effectively communicated between stakeholders, particularly to parents. (86) The need for educating the parents and getting parental buy-in of the local wellness policy is important for policy effectiveness.

5.4.6 Community Member Involvement

Of private LEAs, 41.8% included a member of the public on the development committee. In this analysis, the presence of a member of the public was associated with a decrease in the number and strength of nutrition education goals.

These results are contrary to those found in several collaborative community-based participatory research studies, such as Shape Up Somerville, Healthy Living Cambridge Kids, and several CATCH trial studies. (145-147) In these studies, a collaborative effort of community partners (such as healthcare providers, restaurants, media, and city departments) with parents, children, and school staff members developed and implemented intervention projects that reached into all areas of the school and community. Results from these studies showed a significant decrease in BMI and less prevalence of “overweight” and a higher prevalence of “healthy-weight” children. (145-147) Success with the community may be due to a continuous relationship between community partners and research personnel. (146)
In this study, a representative of the public community was the most commonly excluded member of the LWP development committee for both public and private LEAs. Results from an assessment of PA public school districts (n=499) show that public members were the least represented LWP committee member, which may impact support for and buy-in of policy goals. \(^{(76)}\)

The importance of public involvement in school-based health policy was recognized before the LWP mandate as exemplified by the Virginia General Assembly mandated school health advisory boards to represent a broad-based segment of the community. \(^{(77)}\) Although we do not know the professional affiliation of those public members who were included on the LWP development committee, it is still recommended that members of the broad-based community should be involved in the setting of school based nutrition and health policy.

The use of public members in the local wellness policy development processes would allow for health organizations, state, local or national, or health professionals, such as registered dietitians (RDs), to step forward and contribute positively in shaping the nutritional quality of school policy. \(^{(54, 84, 122)}\) It would additionally increase community members’ ability to mobilize these policies \(^{(145)}\) by making changes in the community environment.

The use of community members to develop the LWP for Pennsylvania LEAs would ideally increase the community’s awareness of health and quality of life expectations for the children, \(^{(145)}\) as well as enhance the capacity for schools and communities to combine resources \(^{(145)}\) to increase access to healthy foods, promote
healthy lifestyles for families through nutrition education and physical activity, and address childhood obesity.

5.5 The Relationship of Overall Policy Comprehensiveness and Rigor Score to Nutrition Education Comprehensiveness and Rigor Scores of Pennsylvania LEAs

Overall policy comprehensiveness and policy rigor scores were the most predictive factors associated with NE comprehensiveness and rigor scores in the analysis for both private and public LEAs.

The relationship of overall policy comprehensiveness was highly significant in its association to nutrition education goal comprehensiveness for both public and private LEAs in this analysis. Public and private LEAs that wrote more comprehensive overall policies were associated with writing LWPs that included a higher number of nutrition education goals.

The strength (rigor) of the overall policy goals was significantly associated with predicting the strength of the nutrition education goals. The stronger (more rigorous) the overall policy goals compared to the PSBA template goals, the more rigorous the nutrition education goals were in policy language than the template goal.

A possible explanation for these findings may be the fact that the PSBA template policy used in the analysis of Pennsylvania LWPs was comprehensive and rigorous, containing 103 possible goals. Therefore, a comprehensive and rigorous template is likely to yield more comprehensive and rigorous policies and nutrition education goals by the LEAs. Additionally this well-structured PSBA template provided clear guidance for
LEAs to follow. All of these conditions would have been conducive to the creation of a strong and comprehensive policy.

A recent study demonstrates the strength of Pennsylvania policies. A national sample of researchers collaborated together to develop a template policy coding tool to abstract school wellness policies (83) which would allow researchers to analyze and compare wellness policies against other state’s policies. Policies from Connecticut, Washington, Minnesota, and Pennsylvania were abstracted by using this new coding tool. Results showed that Pennsylvania policies were significantly stronger than the three other states in more policy component areas. (83) This template policy proved to be a good standard to follow when compared to other states policies, thus influencing stronger and more comprehensive nutrition education goal inclusion.

It may also be concluded that LEAs who were able to write overall more comprehensive and rigorous local wellness policies were also able to write more comprehensive and rigorous nutrition education goals, possibly indicating a cluster effect relationship of overall policy comprehensiveness and rigor to the comprehensiveness and rigor of nutrition education goals.

5.6 Strengths and Limitations

Local wellness policies for 721 local education agencies in the state of Pennsylvania were used in this study. Predictor variables including LEA sponsor type, locale, socioeconomic status (financial predictors), assessment and assistances received (conducted assessment and tools, and grants), committee composition, and lastly the
overall policy comprehensiveness and rigor (excluding the NE goals) were examined to
determine the relationship of the number (comprehensiveness) and strength (rigor) of
nutrition education goals. To the best of our knowledge, no other study has collectively
done a statewide assessment of the variables associated with the development of the
nutrition education component in the LWPs. Multiple Linear Regression models were
run to test for the “best-fit” models to predict nutrition education component
development. Among the strengths of this project was the strong inter-rater agreement in
policy scores between the primary policy abstractor and additional abstractors who
scored all policies, along with additional data scoring reliability tests and clean up
procedures that identified and corrected for any scoring discrepancies between
abstractors.

A potential strength and weakness of this study is the reliance on the PBSA
template. At the beginning of this research project, the PSBA policy was established as
the template policy against which all policies submitted to PDE were compared.
Therefore, overall and component comprehensiveness and rigor scores are based on the
content and language of the PSBA template policy. The research team recognizes that
the PSBA template has its own limitations: for instance, some goals written in the PSBA
template were written using weak language or may suggest a recommendation but not a
requirement. LEAs could choose to copy, modify, omit PSBA template goals, use
another policy template, or develop their own policy goals. Therefore LEAs may have
included weak suggestive but not mandatory policy goals in their policy when including a
template goal. However, at the time of this study, there was no nationally approved
template to compare the PSBA template to. It is unproven whether the PSBA template, if
implemented, would reduce childhood obesity. However, as mentioned previously, a comparison of policies in Connecticut, Washington, Minnesota, and Pennsylvania found that Pennsylvania policies were significantly stronger than the three other states in more policy component areas. These findings suggest that although the PSBA template policy has limitations in its policy language, it may be more rigorous and a better example policy for LEAs to follow. This likewise may indicate that LEAs who used the PSBA template during the development of their policy may have more rigorous policies than LEAs of these other states.

There are several additional weaknesses regarding this study. This study was limited in scope. It focused on only one component (nutrition education) in Pennsylvania LWPs. The results of this study may not be generalizable to LWPs as a whole or to other LWP components. Likewise, although we grouped LEA sponsor type by public and private LEA, there may be some significant differences within sponsor types (i.e. a traditional public school might have different results than a charter school). This would need additional and future studies to examine the differences between school types within LEA categories.

A cluster effect may be seen in the development of the number and strength (rigor) of nutrition education goals for public and private LEAs. Therefore LEAs able to develop more comprehensive and rigorous overall policies were also able to develop more comprehensive and rigorous NE goals. Another possible explanation for this result is that the predictive variables in the model were directly associated with overall policy comprehensiveness and rigor, causing an indirect influence on nutrition education comprehensiveness and rigor scores. Caution should be taken in over interpreting these
results as most of the variance in NE comprehensiveness and rigor scores were associated with overall policy comprehensiveness and rigor score, with a small amount of variance explained by the other predictor variables.

Additionally, financial resources of LEAs that may or may not contribute to the presence or strength of nutrition education goals were not explored through this study, due to a lack of financial information from private LEAs, charter schools, and intermediate units. Likewise, the majority of private LEAs were religious schools, predominantly Catholic. Private LEAs in the same Catholic diocese utilized the same policy for all schools within a diocese, causing less variability in private LEAs compared to public LEAs.

### 5.7 Conclusions and Recommendations

Physical inactivity and over-consumption of high caloric foods contribute to obesity among school-aged youth. Many family, school and community influences promote these behaviors. LWPs are viewed as a possible solution to reduce childhood obesity by teaching nutrition education and promoting wellness. (122)

This study has several key findings:

1. Public and private LEAs had similar policy and nutritional education comprehensiveness scores but public LEAs had higher policy and nutrition education rigor scores. Private compared to public LEAs had a larger percentage of LWPs with low nutrition education rigor scores (47.3% vs. 35.3%), low policy rigor scores (55.5% vs. 33.6%) and a smaller percentage of high policy rigor
scores (15.4% vs. 23.6%). Therefore resources and effective avenues need to be determined to effectively influence private LEAs to aid them in the development of more rigorous future policies and the implementation of the LWP.

2. Only 60.7% of the 721 Pennsylvania LWP development committees (72.4% of public LEAs and a much smaller 26.4% of private LEAs) met the mandated LWP development committee membership requirement. Differences in public and private LEAs development committee composition may suggest that they view development committee composition differently in the LWP development process. Likewise, how these committees function and influence the implementation of the developed policies needs further investigation. The influence, relationship, and role of the wellness committee members to nutrition education may better be observed in the action plans and implementations of the policies. Action plans for policy implementation were not analyzed for this project and would need further investigation. To date others have not reported this finding.

3. The inclusion and strength of the nutrition education goals of the LWPs were influenced differently for private LEAs, who were more influenced by the stakeholders involved in the LWP development, whereas public LEAs who were more positively influenced by the sources of external assistance. Differences in how LEAs types approached the development of their local wellness policies, as exemplified in these findings, suggests that different approaches need to be made when informing public versus private LEAs of federal mandates and available resources of trainings, assessment tools, grants, and educational materials.
4. A federal mandate coupled with rigorous state policy review and the PSBA template policy was a successful strategy in Pennsylvania to help LEAs meet LWP wellness committee requirements and development more comprehensive and rigorous overall policy and nutrition education goals. Pennsylvania School Board Associations (PSBA) and the Pennsylvania Department of Education (PDE) subjected Pennsylvania LEA policies to more rigorous and prospective review processes than those of other states such as Virginia and Utah. After LWP approval by the LEA’s school board, PDE reviewed the submitted LWPs and provided feedback on areas for further consideration and on how they met mandatory requirements. Resources provided by PDE showing how to meet the mandate requirements and advocating the use of the PSBA template in the development process may have contributed to a larger proportion of Pennsylvania LEAs meeting the mandate than those of others states. A federal mandate coupled with rigorous state policy review was a successful strategy in Pennsylvania to help LEAs meet LWP wellness committee requirements and nutrition education goal component requirements.

In order for schools to integrate nutrition education, as well as other wellness activities across the curriculum, schools need to receive new resources that provide innovative and creative ideas. Likewise a successful strategy for linking nutrition education with school foodservice and the community that goes beyond the classroom is recommended. School boards, administrators and educators without the addition of adequate resources may have difficulty making the next step to implement and evaluate
the “new” policy mandates. The effectiveness of the LWPs in reducing childhood obesity rates among school-aged children and adolescents needs follow-up studies. (86-87)

Some recommendations are listed below for federal, state, and local policy-makers.

### 5.7.1 Recommendations at the Federal Level

Policy developments for educational agencies are influenced from different level of sources. For the federal level new mandates (such as including specific and measurable policy goals) and resources (such as assessment tools, assistance programs, funding, and training and educational material) are recommended. These federal recommendations are as follows:

- Mandate the inclusion of clear and specific goals that are measurable in future reauthorizations, as broad goals are harder to measure.

- Strongly encourage or mandate the use of well-designed assessments tools prior to future school policy development.

- Investigate and support additional research of the impact of a wide variety of committee members in school health policy development, such as health professionals (i.e., nurse, nutritionist/dietitian, physical education specialists, physicians), as different committee members play different roles in the development of nutrition education policies and programs.

- Encourage collaboration between federal agencies with nongovernmental organizations and private agencies to provide local education agencies and state agencies with useful nutrition education resources that can be integrated into the curriculum without needing additional time or financial support.
• Encourage the collaboration of multi-sector stakeholders involved in local wellness policy development and implementation by addressing nutrition education as a method to improve childhood obesity rates at the state and LEA level.

• Provide additional Federal assistance and funding for the Center for Disease Control and Prevention (CDC) *Steps to a Healthier US*, as the developed model is effective, intensive, and multi-factorial. This model is also successful in using key stakeholders, public sector, as well as mandated members, and has aided in making healthy school environment changes through teaching and implementing nutrition education practices.

• Develop appropriate assistance programs and resource materials that target specific LEA sponsor type, as private and public LEAs utilized different resources and methods in LWP development.

5.7.2 Recommendations at the State Level

The state level is another resource outlet that influences school policy development. State level agencies are encouraged to aid LEAs in utilizing all level of key stakeholders, developing nutrition education resources that are integrated into the curriculum and providing technical assistance and resources. These recommendations are as follows:

• Encourage the development of innovative and creative nutrition education resources which can be applied throughout the curriculum.
• Encourage the development of resources and technical assistance for LEAs, either through training workshops or documentation, which emphasizes the benefits and importance of involving all key stakeholders, public and educational sector, in school health and nutrition policy development and implementation. (86)

• Emphasizes the benefits of teaching comprehensive nutrition education curriculum as an effective way to address childhood obesity through trainings workshops and documentation.

• Clearly and effectively communicate policy mandates and resources developed for specific LEA sponsor type.

5.7.3 Recommendations at the Local Level

The local level develops and implements school policy. To improve their ability to develop effective nutrition goals and policies, LEAs are encouraged to seek the aid of a variety of key stakeholders, nutrition education resources and technical assistance and resources, and create ties with families and community. Recommendations for LEAs are as follows:

• Seek the aid of various key stakeholders, from the public and educational sector alike, to create a synergistic effort that promotes nutrition education in the development and implementation of wellness policies.

• Seek community outreach opportunities, through utilizing health related pertinent community resources (such as Cooperative Extension services, local farms and other agriculture programs, community service offices), while also providing
resources to the community (such as providing space for community meetings and recreation).

- Clearly communicate the benefits of teaching nutrition education and practicing healthful behaviors to all key stakeholders.
- Seek and implement innovative and creative methods of incorporating nutrition education across the curriculum, without challenging financial resources.
- Create a sharing environment for key stakeholders to provide resources and skills that contribute to effective school health and nutrition policies, school environment changes, and curricula which address childhood obesity. (55)

These recommendations for the federal, state, and local level can strengthen school health policies and meet the needs of addressing childhood obesity.

The national childhood obesity epidemic has recently garnered increased media attention. This increased public awareness, presented through newscasts, television programming, and most particularly, the agenda of First Lady Michele Obama has set the stage for the implementation of these recommendations. The timing is right to foster and implement effective nutrition education programs that will positively affect healthy eating and behavioral practices within our local education agencies and communities. This can be accomplished by applying the findings from this study which show that school policy development committees were associated with the development of nutrition education goals for private LEAs, whereas, using external resources, assessment tools and grant programs, were associated in public LEAs. Likewise more comprehensive and rigorous policies were influential on the development of nutrition education goals in public and private LEAs.
As Robert Hunter says in the foreword to John Spargo’s *The Bitter Cry of the Children*, “Few of us sufficiently realize the powerful effect upon life of adequate nutritious food. Few of us ever think of how much it is responsible for our physical and mental advancement or what a force it has been in forwarding our civilized life.” As health professionals, our mission is to further this physical and mental advancement by encouraging the best practices in health and nutrition education. Although the findings and recommendations of this study are by no means comprehensive, they provide a useful foundation for building stronger nutrition education policies in Pennsylvania.
References


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    community-based participatory effort to promote healthy weight and fitness. 
    Obesity. 2010; 18(S1): S45-S53.

    reduces BMI z-score in children: Shape Up Somerville first year results. 

    among disadvantaged school children with community involvement: The Travis 
    County CATCH Trial. Obesity. 2010; 18(S1): S36-S44.


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Appendix A: Glossary of Terms and Abbreviations

1. LEA: Local Education Agency
2. LWP: Local Wellness Policy
3. LWPC: Local Wellness Policy Checklist
4. PDE: Pennsylvania Department of Education
5. NSLP: National School Lunch Program
6. PSBA: Pennsylvania School Board Association
7. CDC: Centers for Disease Control and Prevention
8. USDA: United States Department of Agriculture
9. PANA: Pennsylvania Advocates for Nutrition and Activity
10. SNA: School Nutrition Association
11. Rigor: Is the number of neutral goals plus the number of strengthened goals divided by the total number of goals.
12. Competitive foods: Competitive foods are foods and beverages in schools that are not part of the federally reimbursed school lunch or breakfast meals. They include a la carte food or beverages from the school cafeteria (sold separate from the school lunch or breakfast meal), vending, fundraisers, school stores, classroom parties, or food rewards.
13. FSD: Food Service Director
14. SHAB: School Health Advisory Board
15. NE: Nutrition Education
16. SD: Standard Deviation
Appendix B

No. 246

SECTION: PUPILS

TITLE: STUDENT WELLNESS

ADOPTED:

REVISED:

### 246. STUDENT WELLNESS

<table>
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<tr>
<th>Purpose</th>
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<tr>
<td>School District recognizes that student wellness and proper nutrition are related to students' physical well-being, growth, development, and readiness to learn. The Board is committed to providing a school environment that promotes student wellness, proper nutrition, nutrition education, and regular physical activity as part of the total learning experience. In a healthy school environment, students will learn about and participate in positive dietary and lifestyle practices that can improve student achievement.</td>
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<tr>
<th>Authority</th>
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<tbody>
<tr>
<td>SC 1422.1</td>
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<td>42 U.S.C.</td>
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<td>Sec. 1751 nt</td>
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<td>Pol. 100</td>
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<tr>
<td>The Board adopts the Student Wellness Policy based on the recommendations of the appointed Wellness Committee and in accordance with federal and state laws. The policy shall be included in the district's Strategic Plan.</td>
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<tr>
<th>To ensure the health and well-being of all students, the Board establishes that the district shall provide to students:</th>
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<tr>
<td>{ \ } A comprehensive nutrition program consistent with federal and state requirements.</td>
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<td>{ \ } Access at reasonable cost to foods and beverages that meet established nutritional guidelines.</td>
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<tr>
<td>{ \ } Physical education courses and opportunities for developmentally appropriate physical activity during the school day.</td>
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<tr>
<td>{ \ } Curriculum and programs for grades K-12 that are designed to educate students about proper nutrition and lifelong physical activity, in accordance with State Board of Education curriculum regulations and academic standards.</td>
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<tr>
<th>Delegation of Responsibility Pol. 808</th>
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<tr>
<td>The (Superintendent or designee) shall be responsible to monitor district schools, programs, and curriculum to ensure compliance with this policy, related policies and established guidelines or administrative regulations.</td>
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</table>
Each building principal or designee shall report to the (Superintendent or designee) regarding compliance in his/her school.

Staff members responsible for programs related to student wellness shall report to the (Superintendent or designee) regarding the status of such programs.

The (Superintendent or designee) shall (annually) report to the Board on the district’s compliance with law and policies related to student wellness. The report may include:

- Assessment of school environment regarding student wellness issues.
- Evaluation of food services program.
- Review of all foods and beverages sold in schools for compliance with established nutrition guidelines.
- Listing of activities and programs conducted to promote nutrition and physical activity.
- Recommendations for policy and/or program revisions.
- Suggestions for improvement in specific areas.
- Feedback received from district staff, students, parents/guardians, community members and Wellness Committee.

An assurance that district guidelines for reimbursable meals are not less restrictive than regulations and guidelines issued for schools in accordance with federal law shall be provided (annually) by the:

- Food Service Director.
- Cafeteria Manager.
- Business Manager.
- Superintendent.
4. Guidelines

**Wellness Committee**

The Board shall appoint a Wellness Committee comprised of at least one (1) of each of the following: School Board member, district administrator, district food service representative, student, parent/guardian, member of the public.

- [ ] teacher
- [ ] school nurse
- [ ] school counselor
- [ ] coach
- [ ] classified staff
- [ ] dietician
- [ ] health professional
- [ ] representative of local or county agency
- [ ] representative of community organization
- [ ] food vendor
- [ ] other individuals chosen by the Board.

The Wellness Committee shall serve as an advisory committee regarding student health issues and shall be responsible for developing a Student Wellness Policy that complies with law to recommend to the Board for adoption.

**Advisory Health Council**

- [ ] An Advisory Health Council may be established by the Superintendent to study student health issues and to assist in organizing follow-up programs.

- [ ] The Advisory Health Committee may examine related research, assess student needs and the current school environment, review existing Board policies and administrative regulations, and raise awareness about student health issues.

- [ ] The Advisory Health Committee may make policy recommendations to the Board related to other health issues necessary to promote student wellness.
The Advisory Health Council may survey parents/guardians and/or students; conduct community forums or focus groups; collaborate with appropriate community agencies and organizations; and engage in similar activities, within the budget established for these purposes.

The Advisory Health Council shall provide periodic reports to the Superintendent or designee regarding the status of its work, as required.

Individuals who conduct student medical and dental examinations shall submit to the Advisory Health Council annual reports and later reports on the remedial work accomplished during the year.

Nutrition Education

The goal of nutrition education is to teach, encourage and support healthy eating by students. Promoting student health and nutrition enhances readiness for learning and increases student achievement.

Nutrition education will be provided within the sequential, comprehensive health education program in accordance with State Board of Education curriculum regulations and the academic standards for Health, Safety and Physical Education, and Family and Consumer Sciences.

Nutrition education shall provide all students with the knowledge and skills needed to lead healthy lives.

Nutrition education lessons and activities shall be age-appropriate.

Nutrition curriculum shall be behavior focused.

School food service and nutrition education classes shall cooperate to create a learning laboratory.

Nutrition education shall be integrated into other subjects to complement but not replace academic standards based on nutrition education.

Lifelong lifestyle balance shall be reinforced by linking nutrition education and physical activity.

The staff responsible for providing nutrition education shall be properly trained and prepared and shall participate in appropriate professional development. Criteria shall be developed to measure "properly" and "appropriate."
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<th></th>
<th>District staff shall cooperate with agencies and community organizations to provide opportunities for appropriate student projects related to nutrition.</th>
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<td>Consistent nutrition messages shall be disseminated throughout the district, schools, classrooms, cafeterias, homes, community and media.</td>
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<td>Nutrition education shall extend beyond the school environment by engaging and involving families and communities.</td>
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<td>other.</td>
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**Physical Activity**

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<tr>
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<th>District schools shall strive to provide opportunities for developmentally appropriate physical activity during the school day for all students.</th>
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<td>District schools shall determine how they will contribute to the effort to provide students opportunities to accumulate at least sixty (60) minutes of age-appropriate physical activity on all or most days of the week. That time will include physical activity outside the school environment, such as outdoor play at home, sports, etc.</td>
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<td>Students shall participate daily in a variety of age-appropriate physical activities designed to achieve optimal health, wellness, fitness, and performance benefits.</td>
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<td>Age-appropriate physical activity opportunities, such as recess; before and after school; during lunch; clubs; intramurals; and interscholastic athletics, shall be provided to meet the needs and interests of all students, in addition to planned physical education.</td>
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<td>A physical and social environment that encourages safe and enjoyable activity for all students shall be maintained.</td>
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<td></td>
<td>Extended periods of student inactivity, two (2) hours or more, shall be discouraged.</td>
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<td>Physical activity breaks shall be provided for elementary students during classroom hours.</td>
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<td>After-school programs shall provide developmentally appropriate physical activity for participating children.</td>
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</table>
} District schools shall partner with parents/guardians and community members to institute programs that support physical activity.

} Physical activity shall not be used as a form of punishment.

} Students and the community shall have access to physical activity facilities outside school hours.

} Other.

Physical Education

} Quality physical education instruction that promotes lifelong physical activity and provides instruction in the skills and knowledge necessary for lifelong participation shall be provided.

} Physical education classes shall be the means through which all students learn, practice and are assessed on developmentally appropriate skills and knowledge necessary for lifelong, health-enhancing physical activity.

} A comprehensive physical education course of study that focuses on providing students the skills, knowledge and confidence to participate in lifelong, health-enhancing physical activity shall be implemented.

} A varied and comprehensive curriculum that leads to students becoming and remaining physically active for a lifetime shall be provided in the physical education program.

} A sequential physical education program consistent with State Board of Education curriculum regulations and Health, Safety and Physical Education academic standards shall be developed and implemented. All district students must participate in physical education.

} Adequate amounts of planned instruction shall be provided in order for students to achieve the proficient level for the Health, Safety and Physical Education academic standards.

} A local assessment system shall be implemented to track student progress on the Health, Safety and Physical Education academic standards.

} Students shall be moderately to vigorously active as much time as possible during a physical education class. Documented medical conditions and disabilities shall be accommodated during class.
{ } Safe and adequate equipment, facilities and resources shall be provided for physical education courses.

{ } Physical education shall be taught by certified health and physical education teachers.

{ } Appropriate professional development shall be provided for physical education staff.

{ } Physical education classes shall have a teacher-student ratio comparable to those of other courses.

{ } Physical activity shall not be used as a form of punishment.

{ } _______________________________ other.

Other School Based Activities

{ } District schools shall provide adequate space, as defined by the district, for eating and serving school meals.

{ } Students shall be provided a clean and safe meal environment.

{ } Students shall be provided adequate time to eat: ten (10) minutes sit down time for breakfast; twenty (20) minutes sit down time for lunch.

{ } Meal periods shall be scheduled at appropriate hours, as defined by the district.

{ } Drinking water shall be available at all meal periods and throughout the school day.

{ } Students shall have access to hand washing or sanitizing before meals and snacks.

{ } Nutrition professionals who meet criteria established by the district shall administer the school meals program.

{ } Professional development shall be provided for district nutrition staff.

{ } Access to the food service operation shall be limited to authorized staff.
Nutrition content of school meals shall be available to students and parents/guardians.

Students and parents/guardians may be involved in menu selections through various means.

To the extent possible, the district shall utilize available funding and outside programs to enhance student wellness.

Food shall not be used in the schools as a reward or punishment.

The district shall provide appropriate training to all staff on the components of the Student Wellness Policy.

Goals of the Student Wellness Policy shall be considered in planning all school based activities.

Fundraising projects submitted for approval shall be supportive of healthy eating and student wellness.

Administrators, teachers, food service personnel, students, parents/guardians, and community members shall be encouraged to serve as positive role models through district programs, communications and outreach efforts.

The district shall support the efforts of parents/guardians to provide a healthy diet and daily physical activity for children by communicating relevant information through various methods.

Other.

Nutrition Guidelines

All foods available in district schools during the school day shall be offered to students with consideration for promoting student health and reducing childhood obesity.

Foods provided through the National School Lunch or School Breakfast Programs shall comply with federal nutrition standards under the School Meals Initiative.
<table>
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<tr>
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<th>Competitive Foods/Beverages</th>
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<tr>
<td>SC 504.1</td>
<td><strong>Competitive foods and beverages</strong> are defined as any food or beverage offered or sold at school in competition with reimbursable meals served through the National School Lunch or School Breakfast programs.</td>
</tr>
<tr>
<td>SC 1337.1</td>
<td>{ } All competitive foods and beverages available to students in district schools shall comply with the Nutrition Standards for Competitive Foods in Pennsylvania Schools.</td>
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<td>{ } All competitive foods available to students in district schools shall comply with the established nutrition guidelines, as listed in the</td>
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<td>{ } Student Wellness Plan.</td>
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<td>{ } administrative regulations.</td>
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<td>{ } guidelines.</td>
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<td>{ } procedures.</td>
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<tr>
<td>SC 504.1</td>
<td>Exclusive competitive food and/or beverage contracts shall be approved by the Board, in accordance with provisions of law.</td>
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**Safe Routes To School**

|   | The district shall assess and, to the extent possible, implement improvements to make walking and biking to school safer and easier for students. |
|   | The district shall cooperate with local municipalities, public safety agency, police departments, and community organizations to develop and maintain safe routes to school. |
|   | District administrators shall seek and utilize available federal and state funding for safe routes to school, when appropriate. |
References:

School Code – 24 P.S. Sec. 504.1, 1337.1, 1422, 1422.1, 1512.1, 1513

Child Nutrition and WIC Reauthorization Act of 2004 – 42 U.S.C. Sec. 1751

Board Policy – 100, 105, 808

PSBA Revision 9/07
Local Wellness Policy Checklist

Instructions

- Schools are required to implement their Local Wellness Policy no later than the first day of the school year beginning after June 30, 2006. The Pennsylvania Department of Education (PDE) will provide all Local Education Agencies (LEA) with a designated due date. Please do not submit the Wellness Policy prior to the designated due date. Policies will need to be submitted in hard copy using traditional mail delivery.
- Schools are required to complete the Local Wellness Policy Checklist in the areas designated as “To Be Completed By The Local Education Agency.” The LEA must submit this completed checklist along with their Local Wellness Policy. Signatures are required on page 3.
- This Checklist is designed as an electronic form. Please complete the required information in the “To Be Completed By The Local Education Agency” sections using a computer. Lines will expand as you type the required information. Please note the character limits in several of the questions.

To Be Completed By The Local Education Agency

1. Local Education Agency Name _____

2. Type of Sponsor:
   - Public School
   - Charter School
   - Career and Technical School/Vo-Tech
   - Intermediate Unit
   - Private School
   - RCCI
   - Other (please describe - 100 character limit) _____

3. PEARs Agreement Number (See School Food Service for this number) _____

4. Number of Buildings within this LEA:
   - High Schools/Senior Highs
   - Middle Schools/Junior Highs
   - Elementary Schools
   - K – 12 (one building)
   - Other (please describe)

5. Did the LEA assess the school environment prior to developing the policy?
   - Yes  [ ]  No  [ ]

   If yes, what assessment tool did you use:
   - School Health Index (CDC)
   - Keystone Healthy Zone (PANA)
   - School Improvement Checklist (USDA)
   - Other (please describe - 100 character limit) _____
Local Wellness Policy Checklist

To Be Completed By The Local Education Agency

6. If the LEA is already doing positive things to promote student wellness, did the LEA ensure that those activities are captured in the Local Wellness Policy? □ Yes □ No

7. Did the LEA use the Pennsylvania School Boards Association (PSBA) Model Wellness Policy Template? □ Yes □ No

8. Has the policy been adopted by the School Board, Joint Operating Committee, etc.? □ Yes □ No
   If no, please provide explanation (200 character limit) ______

9. Who has lead responsibility for ensuring that the Local Wellness Policy is being implemented (check all that apply)?
   □ Superintendent
   □ Assistant Superintendent
   □ Business Manager
   □ Curriculum Coordinator
   □ School Nurse
   □ Food Service Director
   □ Teacher (please describe-75 character limit) ______
   □ Other (please describe-75 character limit) ______

10. Did the following individuals participate in the development of the Local Wellness Policy (check all that apply)?
    □ Parents
    □ Students
    □ School Food Authority
    □ Administration
    □ School Board
    □ Public
    □ Other (please describe-75 character limit) ______

11. Do the goals for nutrition education apply to all buildings and grade levels within the LEA? □ Yes □ No

12. Do the goals for physical activity apply to all buildings and grade levels within the LEA? □ Yes □ No

13. Do the goals for other school-based activities apply to all buildings and grade levels within the LEA? □ Yes □ No

Wellness Policy Checklist
2/2/2006

Pennsylvania Department of Education
Division of Food and Nutrition
Local Wellness Policy Checklist

To Be Completed By The Local Education Agency

**General Comments from LEA (optional)**

General Comments regarding LEA's Local Wellness Policy (500 character limit): _____

<table>
<thead>
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<th>Signatures (required)</th>
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<tr>
<td><strong>Name of Lead Person Responsible for Implementation</strong></td>
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<td>Name (Print)</td>
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<tr>
<td><strong>District Superintendent or Chief Administrative Officer</strong></td>
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<tr>
<td>Name (Print)</td>
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Local Wellness Policy Checklist

To Be Completed By The Pennsylvania Department of Education

**Nutrition Guidelines**
1. Does the policy indicate the LEA is using the Nutrition Guidelines for Competitive Foods in Pennsylvania Schools?
   - Yes
   - If yes, select which year is being implemented (check all that apply)
     - A Place to Start
     - Better
     - Best
   - No, however the LEA only made minor modifications to the Nutrition Guidelines for Competitive Foods in Pennsylvania Schools. (Complete chart below.)
   - Did the LEA submit a copy of their nutrition guidelines?
     - Yes
     - No
   - No, the LEA made significant modifications to the Nutrition Guidelines for Competitive Foods in Pennsylvania Schools or developed its own nutrition guidelines. (Complete chart below.)
   - Did the LEA submit a copy of their nutrition guidelines?
     - Yes
     - No

<table>
<thead>
<tr>
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<th>Do these guidelines pertain to all buildings/grade levels within the LEA?</th>
<th>Do these nutrition guidelines promote student wellness and the reduction of childhood obesity?</th>
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<tr>
<td>Ala Carte Foods</td>
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<tr>
<td>Ala Carte Beverages</td>
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<tr>
<td>Vending Foods</td>
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<tr>
<td>Vending Beverages</td>
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<tr>
<td>Fundraisers (available during the school day)</td>
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<td>Classroom Parties/Holiday Celebrations</td>
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<tr>
<td>Rewards</td>
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<tr>
<td>School Store Foods</td>
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<tr>
<td>School Store Beverages</td>
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<tr>
<td>Faculty Lounges</td>
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</tbody>
</table>
Goals for Nutrition Education
2. Number of goals selected ___

3. Does each goal promote student wellness? □ Yes □ No

4. Do the goals apply to all buildings and grade levels within the LEA? □ Yes □ No

5. Is each goal measurable? In other words, will it be possible to determine if the goal is being achieved? □ Yes □ No

Goals for Physical Activity
6. Number of goals selected ___

7. Does each goal promote student wellness? □ Yes □ No

8. Do the goals apply to all buildings and grade levels within the LEA? □ Yes □ No

9. Is each goal measurable? In other words, will it be possible to determine if the goal is being achieved? □ Yes □ No

Goals for Other School Based Activities
10. Number of goals selected ___

11. Does each goal promote student wellness? □ Yes □ No

12. Do the goals apply to all buildings and grade levels within the LEA? □ Yes □ No

13. Is each goal measurable? In other words, will it be possible to determine if the goal is being achieved? □ Yes □ No

General Comments Regarding LEA’s Local Wellness Policy (500 character limit): ___

PDE Sign Off
Reviewed By: ___________ Date: ___________
□ Approved □ Corrective Action Plan Required (CAP)
CAP Due Date: ___________
Follow-Up Review By: ___________ Date: ___________
□ CAP Approved □ CAP Disapproved

Wellness Policy Checklist
5/2/2006

Pennsylvania Department of Education
Division of Food and Nutrition

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Goals for Nutrition Education
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10. Number of goals selected ___

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