School Lunch Participation: Evaluating Reimbursable Meals and A la Carte Sales in the School Setting

by

Ashley Krudop Powell

A dissertation submitted to the Graduate Faculty of
Auburn University
in partial fulfillment of the
requirements for the Degree of
Doctor of Philosophy

Auburn, Alabama
August 4, 2018

Keywords: school lunch, school breakfast, participation, eligibility

Approved by

Maria Witte, Chair, Professor of Educational Foundations, Leadership and Technology
Leslie Cordie, Assistant Professor of Educational Foundations, Leadership, and Technology
Jane Teel, Assistant Clinical Professor of Educational Foundations, Leadership, and Technology
James Witte, Professor of Educational Foundations, Leadership, and Technology

Abstract

The purpose of this study was to investigate student participation levels in the school nutrition program in a school district. Additionally, the study investigated reimbursable meal purchases compared to a la carte purchases. By investigating the relationships of school reimbursable meals, a la carte sales, and meal status, Child Nutrition Programs will be better able to assist in planning and proposing procedures for school programs under the Healthy, Hunger-Free Kids Act of 2010. The program design included the collection of historical data of school lunch and a la carte purchases for all high school students at the selected school during the 2016-2017 school year. Student purchases were evaluated by school meal status (free, reduced, paid) over the 180-day school year. The student population included 676 tenth grade students, 627 eleventh grade students, and 620 twelfth grade students for a total population of 1,923 students. The free and reduced rate for this school population was twenty percent. Based on the data collection and analysis, there are significant differences in lunch meal purchases and a la carte sales based on meal status. The more meal purchases made in the school meal program indicated increased a la carte purchases. The data revealed students with a paid lunch status had a higher rate of a la carte items. However, purchases made by students with a free or reduced lunch status were not eliminated.

Acknowledgements

It is with a grateful heart that I want to thank the individuals that have assisted me on this personal and professional journey. First, thank you to my committee chair, Dr. Maria Witte, for your personal commitment to my success in the program. You are the motivator and encourager for so many in the Adult Education department. To my committee, Dr. Leslie Cordie, Dr. Jane Teel, and Dr. James Witte, thank you for your commitment to enhancing the lives of those around us through supporting and polishing the adult educators in our communities. To Dr. James Linder, thank you for reviewing and assisting this dissertation to its place in the world of school nutrition and education.

To my husband, Kyle, thank you for assisting me and supporting me in my personal and professional dreams. Your love and encouragement during this process is priceless. To my children, Francie, Foster, and Addie, thank you for your patience while I completed my homework. I dream that one day you will complete this process too! To my parents, James and Hollace Krudop, thank you for always encouraging me to review the options, and to take the opportunities in each step of life. I am the luckiest daughter in the world. To my sister and her husband, Hadyn and Bart Swecker, thank you for going first and showing me the way to a PhD.

Finally, thank you, Lord Jesus, for Your divine power and goodness in life (2 Peter 1:3).

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Chapter I: Introduction

Providing meals for children in America has been a noble cause over multiple generations. Currently in a world consisting of four generations, meals complete with nutritional sustenance provide benefits for the future health and welfare of the country. Within the school setting, there is a specific department dedicated to feeding the children of America. Officially, school meal programs have been an ongoing and pertinent part of the educational system since 1946. Legislation creating this workforce fleet originated with the Richard B. Russell National School Lunch Act of 1946. The original National School Lunch Act of 1946 listed its purpose in section two by stating:

> 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. (U.S., 2017b, p. 1).

The original National School Lunch Program has been amended throughout time through legislative changes to broaden the availability of the program, financial services, commodity distributions, and general practices. The program functions under the United States Department of Agriculture (USDA) Food and Nutrition Services (FNS) in whose purpose is “to increase food security and reduce hunger by providing children and low-income people access to food, a healthful diet and nutrition education in a way that supports American agriculture and inspires public confidence” (USDA, 2017b, p. 1). Programs under the Food and Nutrition Services of USDA include Child Nutrition Programs (CNP), Supplemental Nutrition Assistance Programs

(SNAP), and emergency food assistance needs. Child Nutrition Programs include the National School Lunch Program (NSLP), School Breakfast Program (SBP), Child and Adult Food Program (CAFP), Summer Food Service Program (SFSP) and the Fresh Fruit and Vegetable Program (FFVP).

In 2010, the Healthy, Hunger-Free Kids Act (HHFKA) was introduced as new legislation and created new guidance and regulations for school lunch and breakfast programs across the United States. The program changes were multi-faceted, targeting core nutritional components of the program as well as direct certification, school wellness policies, reimbursement rates, school lunch pricing, professional standards, community eligibility, financial guidance, procurement, food safety, and administrative guidance (U.S. FNS, 2017b). The HHFKA final rule was issued in the federal register in January 2012.

As of the 2016 fiscal year, the number of students eating school lunches in the United States as reported by USDA was an average 30.4 million students a month (USDA, 2017b). The data were reported that 73% of these students were part of the free and reduced lunch program. For breakfast meals, there were a monthly average of 14.57 million students participating in the program thus reporting 85.1% of these students were on a free and reduced status (USDA, 2017a).

Under USDA, each state is given the authority to oversee the National School Lunch and Breakfast, as well as other programs for their state. The Alabama State Department of Education- Child Nutrition Program oversees the operations of the school sites and administrative reviews, including corrective actions for the program. Reporting of the school site participation, budgeting, capital planning, equipment purchases, commodity planning, and program reimbursement is through the state program (ALSDE, 2017).

Participation in the NSLP and SBP program allows schools to be reimbursed for meals served to their students through USDA funding. Student meal status is based on the federal poverty level and may be approved through direct certification or an income-based family application. Direct certification directly links a student lunch status to "free" through the school site student information system based on the SNAP database system. Families that apply and are within 130-185% of the poverty level receive a "reduced" lunch status. Family incomes that are more than 185% of the national poverty level are eligible for free lunch. Students with a reduced lunch status pay $.40 for lunch and $.30 for breakfast. All students in a school district will have a "free", "reduced", or "paid" lunch status (ALSDE, 2017). Schools must follow all guidance to meet administrative review standards to receive funding for the free and reduced meal program.

Participation rates for the Alabama School Lunch program for fiscal year 2016 was an average of 515,621 meals a month. The Alabama School breakfast program has an average of 272,928 meals a month. Based on March 2017 data, the Alabama school lunch program has had a 3.1% decrease in participation. In fiscal year 2012, the average monthly lunch participation rate was 562,959 meals a month and the breakfast participation was an average of 224,490 meals per month (ALSDE, 2017).

As with all federally funded programs, the school meal programs must comply with regulatory guidance. This includes administrative and operational services provided to students in the National School Lunch and National School Breakfast Program.

Statement of the Problem

There is a lack of research and investigation into the relationship of daily food sales and school meal status, particularly student reimbursable meals and a la carte sales. Investigating

relationships yields information for evaluating the overall effectiveness of the National School Lunch and National School Breakfast Programs.

Schools offer the school lunch programs to provide nutritionally integrated programs for students. Without student participation, particularly those participating with a low socioeconomic status, the National School Lunch Program would not be effective in its purpose to provide healthy and nutritionally sound meals to students. Additionally, purchases outside a reimbursable meal in a la carte sales determines a student's priority of school meals as well as their satisfaction of the quality of the program for the school and student population. School purchases determine the overall participation and is part of the national initiative to fight child hunger, childhood obesity, and the overall health and wellness of our nation.

Purpose of the Study

The purpose of this study was to investigate student participation levels in the school nutrition program in a school district. This research will additionally investigate reimbursable meal purchases compared to a la carte purchases. This research will identify participation levels in the program under Healthy, Hunger-Free Kids Act of 2010.

Research Questions

The following questions were used in this study:

1. What is the relationship of reimbursable meals and school meal status?
2. What is the relationship of a la carte sales and school meal status?
3. What is the relationship of reimbursable meals and a la carte sales?

Significance of the Study

Overall participation of students in the National School Lunch Program and School Breakfast Program determines the overall effectiveness of programs. School foodservice

programs are under critical review for use of federal funds to produce meals of nutritional integrity, reduced food waste, and being financially prudent programs. The program cooperates to provide socioeconomic data for other school-based programs and potential medical programs and are therefore dependent on successful foodservice operations. The highly regulated menus with stringent nutritional quotas have caused many foodservice programs to increase a la carte sales while spending increased dollars to meet menu regulations. Participation levels from this data will review trends based on strict and high-level nutritional regulations.

Assumptions

This study contained the following assumptions:

1. Data collection administrators performed in a manner that did not bias results.
2. Software used is accurate in processing and assessing data for results.
3. Statewide software, Chalkable, provided accurate student information.
4. Mosaic, a component of Heartland School Solutions, provided accurate tracking of student status and student purchases for daily sales.

Limitations

This study was conducted in one school district.

1. This study was conducted in a district with a low free and reduced student population.
2. Student attendance was not tracked to daily sales.
3. Menus on participation days were not collected and compared to daily purchases.
4. The location of meal services was not considered with daily sales.
5. The study did not evaluate outside indicators such as serving line wait times, staffing attitudes, or school day times.

Organization of the Study

The study is organized to provide a general background and reference point for the school meal programs in the United States in Chapter I. The second chapter provides information and studies related to school meal programs across America. Chapter III provides the method for the study and Chapter IV provides the results of the study following the research questions identified for the study. The final chapter, Chapter V, provides discussion on the findings and suggestions for future research.

Definition of Terms

1. A al carte sales- food sales outside of the USDA credited reimbursable meal
2. Direct Certification (DC)- students identified in the school system with a free lunch status based on the Alabama state SNAP program
3. Eligibility Status- relates to free ($0.00), reduced ($.40) or paid lunch ($2.50) status of the student. The status is determined by federal income eligible guidance through an application or by direct certification.
4. Food and Nutrition Services (FNS)- services related to nutrition and food under the United States Department of Agriculture
5. Healthy Hunger Free Kids Act of 2010 (HHFKA)- legislation providing guidance and regulations for school meal programs
6. National School Lunch Program (NSLP)- school lunch meal programs under the United States Department of Agriculture
7. National School Breakfast Program (NSBP)- school breakfast meal programs under the United States Department of Agriculture

8. Offer vs. Serve- determines if students choose all 5 meal components on the lunch tray or if they are allowed to have less than 5 (usually 3) meal components to meet a reimbursable meal
9. Participation- refers to students purchasing meals (particularly reimbursable meals) in the school foodservice setting
10. Reimbursable Meal- refers to federal guidance on what determines a school meal. The reimbursable meal must meet food components (grain, milk, protein, vegetable, and fruit) and nutritional analysis standards. Only reimbursable meals receive federal reimbursement rates.
11. Reimbursement Rates- refers to federal rates given to schools based on the number of reimbursable meals served at a school site. Rates vary depending on eligibility status.
12. Socioeconomic Status- refers to the eligibility status of students in the school system based on school lunch pricing
13. Smart Snacks- refers to foods sold to students outside of the reimbursable meal including any a la carte or vending products. All foods sold in the school system must meet specific nutritional components to be sold at school outside of the school lunch meal.
14. Supplemental Nutrition Assistance Program (SNAP)- refers to the USDA program to assist families with food. This was formerly known as the food stamp program.
15. Verification- refers to the federal process to validate student meal application status has been filed correctly

Chapter II: Literature Review

In this chapter, research in the area of school meal programs including nutrition standards, student perceptions, nutrition education, student preferences, student participation, free and reduced meal eligibility, health and wellness, and the general program regulations will be reviewed. This chapter will provide details supporting the operations as well as the struggles of the school meals programs that affect purchases and overall participation of students in the school lunch meal program.

Purpose of the Study

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Successful School Lunch Programs

For the National School Lunch and Breakfast Program to be successful, students must be participating and choosing to dine in cafeterias or in other dining areas supported by school food programs. Roseman and Niblock (2007) approached participation through a review of a culinary kitchen technique and presentation to prepare healthy menus. Through their findings they attributed the five key factors for participation as: 1) food tastes good 2) food looks good 3) how

hungry the student is 4) food is healthy and 5) the amount of food. Sacheck (2012) completed a case study reviewing three school districts and the districts' overall strategies for improving school nutrition. The authors documented the districts that have a "kids first commitment" and listed five strategies to improvements for a program with fresh fruits and vegetables, wholes grains, reduced processed food, and a farm to school program. The five strategies listed to improve the school were:

1. Cooking more
2. Serving fresh fruits and vegetables
3. Making changes in competitive foods
4. Creatively sourcing healthful foods
5. Connecting food with the environment and good health

Key factors that influenced the changes in the district to make healthful nutritional changes also influenced the financial status of the district. The changes for the districts were either revenue neutral or had to be countered with reductions in other areas of the school nutrition budget. The authors noted that the relationships with administration and all school nutrition staff were important factors for the changes within the three districts (2012).

In the Figure 1 below, USDA provides data for the average participation rates for the school lunch program beginning in 1969. The chart indicates the participation levels by the school meal status of free, reduced, paid, and the total of all students for the year. In Figure 2, the cost of the school meal programs since 1969 is documented for the school breakfast and the school lunch program. The total costs for the program operations continues to increase each year.

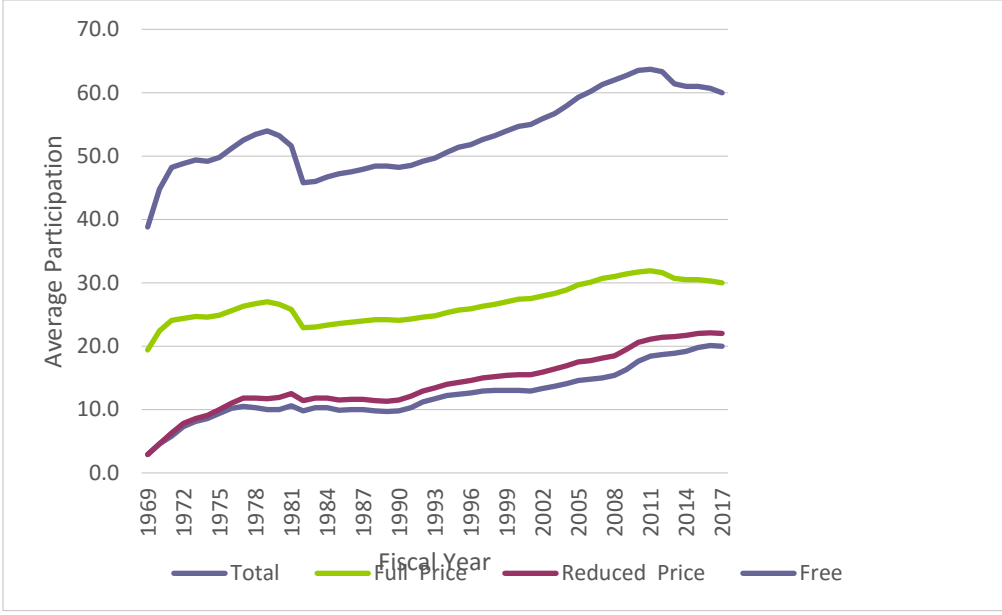

Figure 1. *Average participation rates for the School Lunch Program since 1969, broken down by Free, Reduced, and Paid status.*

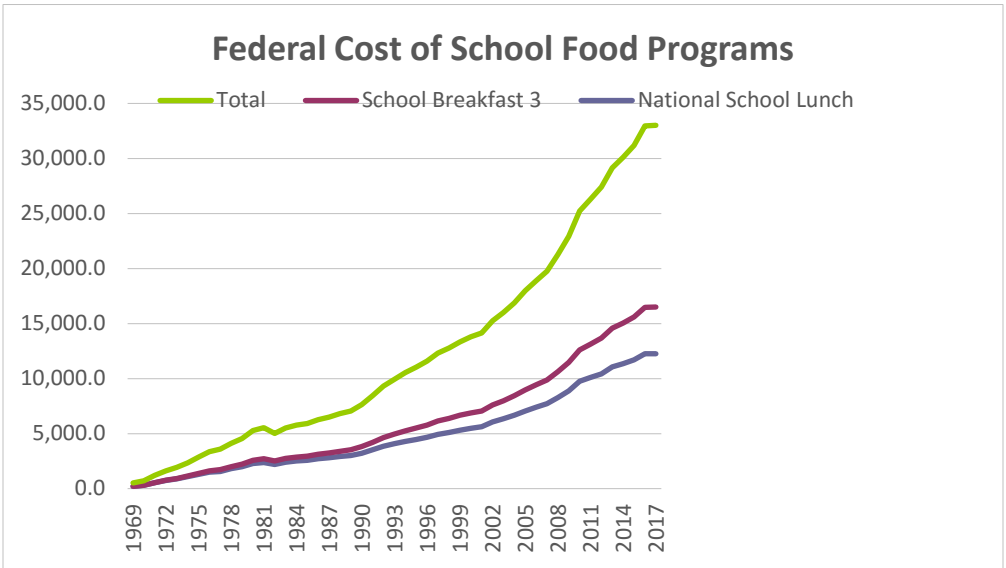

Figure 2. *Federal Cost of School Food Programs since 1969, broken down by School Breakfast, School Lunch, and Total.*

Brown, Bednar, DiMarco, and Connors (2012) assessed School Nutrition Director's perspectives on the changes in the National School Lunch Program in a study to evaluate the school environment of those receiving USDA Healthier US School Challenges awards. Through

a survey of 149 directors, 66 surveys were returned identifying the three most frequent challenges. The challenges included whole-grain product availability, increased food costs, and student acceptance. Other challenges listed per the directors surveyed were offering dark green and orange vegetables, coordination/collaboration, including legumes on the menu, physical education requirements, revising menus, time and paperwork. The results indicated the districts had a slight increase in lunch participation with significant increased food and labor cost. The study also displayed an increase in time for nutrition education. The top 3 indicators for success with the changes when applying for the Healthier US Schools Challenge were support from school staff/administrators, teamwork among foodservice and teaching staff, and changing menus to meet requirements. Participation in the program indicated there was an increase of sales of items that met the Dietary Guidelines for Americans 2010 (Brown et al., 2012).

With the addition of local school wellness policies, Litchfield and Wenz (2011) studied the impact these legislative policies had on National School Lunch Program participation. Through an evaluation of 24 schools from 16 school districts of middle and high schools, the researchers conducted a survey, interviews, and observations. This research did not find any significant changes in school lunch participation or competitive food sales. The research indicated that the physical environment and free/reduced lunch meal status were the most influential factors affecting sales in the school lunch program and competitive foods. Ishdorj, Jensen, and Crepinsek (2012) acknowledged the characteristics of families participating in the school programs and worked to identify the effects on participation through the legislative policy. Determining factors of household size, geographic location, school enrollment affected participation. Students that were more likely to participate in the NSLP were in smaller school districts, lived in the southeast, families did not have college degrees, and were from black or

Hispanic families. Families with high school and middle school aged children had a lower participation in the school meals program. Families with two parents employed participated in the program and participation was higher for families that were eligible for free and reduced lunches. In the parental survey, none of the food policies or variables were indicators for participation in the school meal program (Ishdorj et al., 2012).

The school environment has a powerful influence over a child's eating behavior. In a study measuring eating behaviors of students at school including school vending and a la carte sales, researchers measured the amounts of a la carte, vending, and total fats available compared nutrient component intake (Kubik, Lytle, Hannan, Perry, & Story, 2003). Kubik et al. (2003), stated:

> A la carte availability was inversely associated with fruit and fruit/vegetable consumption and positively associated with total and saturated fat intake. Snack vending machines were negatively correlated with fruit consumption. Fried potatoes' being served at school lunch was positively associated with vegetable and fruit/vegetable intake. (p.1)

Nutrition Standards

In an article titled "New NSLP Guidelines: Challenges and Opportunities for Nutrition Education Practitioners and Researchers" in the *Journal of Nutrition Education and Behavior,* the authors stated "This is a critical time for nutrition education professionals, researchers, and policy makers to assist with the implementation, measurement, and evaluation of such a broad-reaching policy" (Byker, Pinard, Yaroch, & Serrano, 2013, p. 2). The authors noted that the task of implementing the Healthy Hunger-Free Kids Act regulations for school food authorities is challenging and is undergoing adaptations and interpretation. As indicated through the article, the authors explained: "With these opportunities, challenges, and questions, it is vital that policy

makers, researchers, and practitioners work together to assess the implementation of the National School Lunch Program, to promote policies and strategies that positively affect student health and the future of our nation" (Byker et al., 2013, p. 9). The authors recommended nutrition education will assist in overall policy support when parents, teachers, and foodservice personnel have had interventions to create a better understanding on nutrition standards in the school setting.

The American Dietetic Association supports nutritional integrity within the school environment and uses the National School Lunch and Breakfast Programs foundations for nutrition services and education in school districts across America. In the American Dietetic Association position statement, it uses the Dietary Guidelines for Americans as the foundation for nutritional guidance in schools. Briggs (2010) lists these components of nutrition integrity for school meals below:

1. Only high quality, wholesome foods and beverages are available during school meals.
2. Only high quality, wholesome foods and beverages are available in competitive foods including a la carte, vending machines, fundraising, school stores, parties, and celebrations.
3. Students have quick and easy access to school meals and snacks
4. The school environment supports the consumption of healthy, nutrition foods.
5. Nutrition education is incorporated into the curricula
6. Physical activity has been integrated into the school day

In 2010, the American Dietetic Association, School Nutrition Association, and Society for Nutrition Education worked together to form a position statement on the overall comprehensive services of school food programs. The position states;

> It is the position of the American Dietetic Association, School Nutrition, Association, and Society for Nutrition Education that comprehensive, integrated nutrition services in schools, kindergarten through grade 12, are an essential component of coordinated school health programs that will improve the nutritional status, health, and academic performance of our nation's children. Local school wellness policies may strengthen comprehensive nutrition services in schools by providing opportunities for multidisciplinary teas to identify and address local school needs (Briggs, 2010, p. 1).

The Healthy Hunger Free Kids Act of 2010 implemented new changes and updates for programs under USDA Food and Nutrition Services, particularly the school meal programs. The HHFKA final rule was issued in the federal register in January 2012. Schools began to work to address nutritional component changes for the program that addressed items such as sodium levels, whole wheat and grain requirements, and caloric requirements. These nutritional standards were alongside changes for free and reduced application processing, direct certification, procurement standards, and wellness policies.

Echon (2014) studied the changes of the HHFKA and reviewed two years from menus in 39 districts with over 600,000 menus and productions records of sixty-one schools. Through this review of menus, a school food image analysis system provided quantitative assessments of meal patterns and nutrient compositions of the menus. The data from 2010-2011 and 2011-2012 was compared to the HHFKA standards and guidelines to determine changes in school districts to comply with the meal standards. The results from this review indicated that the menus did not always meet standards for fruit, vegetable, whole grain, meal, milk, and caloric servings.

With the policies in place, Lyson's (2017) research in "Food Fight! National Policy, Local Dynamics, and the Consequences for School Food in the U.S." evaluated systems in

operations for school programs. Lyson (2017) suggests six policy recommendations for the program as listed below.

- Policy Recommendation 1- Significantly increase federal and state reimbursements for school meals that meet federal nutrition requirements
- Policy Recommendation 2- Update federal school food procurement regulations so as to require schools to source fresh foods from local farms.
- Policy Recommendation 3- Significantly increase federal funding to all school districts for professional development training to teach school foodservice workers the technical skills needed to cook fresh foods from scratch.
- Policy Recommendation 4- Enact a one-time federal investment to all school districts to subsidize the cost of cafeteria and kitchen renovations.
- Policy Recommendation 5- Make nutrition education a mandatory component of K-12 national science education standards
- Policy Recommendation 6- Enact and enforce stricter federal regulations for food service management companies surrounding accountability and transparency.

Student Perceptions

With the nutritional changes and requirements to school menus, Alcaraz and Cullen (2014) reviewed the perceptions of cafeteria staff in twelve schools in Houston, Texas. In this large district of 37,000 students, the cafeteria staff were given a questionnaire to assess overall quality, nutrition, variety, presentation and the taste of the food provided through the school meals. The questionnaire provided additional questions related to food preferences, workload, school staff/student feedback, and the worker's statements for why students make meal choices. Frequencies in responses were analyzed by school grade levels and then a chi square analysis

was completed to compare the grade levels. The overall applications per the study were that a combination of interventions is the most effective way to assist students in choosing healthy foods and influencing eating choices. The combination of interventions includes offering healthy food options, nutrition education materials, marketing, verbal encouragement, and creating opportunities for students to try new or healthy choices in the school (Alcaraz & Cullen, 2014).

Pucciarelli, McNeany, and Frieson (2013) conducted a study among adolescent teens to identify nutrition knowledge. Through a 25-question survey, 287 students were surveyed on nutrition knowledge. Additionally, student meal purchases for one week were followed using the Meal Tracker programming. Results indicated low nutrition knowledge with no relationship between nutrition knowledge and dietary choice.

As a major influencer for student perceptions may in fact be parental perceptions of the school meals programs. Ohri-Vachaspati (2013) reviewed parental perceptions of school lunch programs after the implementation of the Healthy Hunger-Free Kids Act of 2010. This analysis specifically reviewed low-income families and the correlation between perception of healthier meals and student participation in the program. The researchers concluded that parents can be key stakeholders for student involvement and that partnering with parents will influence participation in the program.

In 2010, Asperin and Castillo, reported in the *Journal of Child Nutrition & Management,* the development of a best practice guide for school nutrition programs under the National School Lunch Program. Through a best practice program model, the research panel created four practice areas for school nutrition directors to evaluate and work with their programs. The four areas for evaluation include food quality, staff, program reliability, and marketing & communications.

In a group of elementary students, grades 2nd-5th, researchers (Cashman, Tripurana, Englund, & Bergman, 2010) studied the food preferences of students through a plate waste study over a 40 day period of 5,400 student plates. The school was compiled of a culturally diverse group with the majority of the students participating in the free and reduced lunch program. Student plates were measured before and after the meal time and the difference indicated that the majority of students failed to meet the nutrition standards of the food guide pyramid. Recommendations suggested by the author improve plate waste included 1) Surveying student families; 2) Gathering recipes from parents and modifying for home; 3) Standardizing recipes for industrial quantities; 4) Allowing students to be involved in menu selection through taste testing; 5) Including students in the roll-out of new menu items; 6) Increasing meal flexibility during service; 7) Scheduling lunch periods after recess; 8) Providing esthetically pleasing environment; 9) Nutrition education in the classroom that is extended into the cafeteria; 10) Cultural lessons in the classroom that extend to the cafeteria; 11) History lessons that celebrate historical cuisine in cafeteria; 12) Geography lessons that include the types of food grown and consumed in the different parts of the world.

Connors and Bednar (2015) also completed a food choice and plate waste study in the 2010-2011 academic year using digital photography to record student consumption and plate waste. Their study indicated that entrees with meat or cheese provided little waste while students rarely consumed vegetables categorized as dark green, red-orange, or legumes. The report indicated half of the students discarded other vegetable items with moderate waste to bread/grain items which were normally part of the school entrée. Students selected fruit one-third of the time and chose canned fruit verses fresh fruit. Students selected chocolate milk over white milk.

In a study by Smith, Cunningham-Sabo, and Auld, (2015) of middle school students in three schools in Northern Colorado, students reviewed 24 statements about the school lunch program in the participation survey prepared by the National Foodservice Management Institute. The study completed a Likert scale survey regarding food quality, menu choices, variety, service, and the dining area of the students that make purchases in the school meal program and then of the student that do not make purchases in the school meal program. The first survey, completed by students that do not eat school lunch, provided a Likert scale to rate their level of agreement on reasons they do not participate in the school lunch program. The survey completed by the group of students that make school meal purchases, determined students highly agreed that food preferences were healthy, food has variety, and food is properly cooked. This group also rated high levels of staff service and staff friendliness. Students strongly indicated they wanted to socialize during lunch, change food choices daily, and have the ability to purchase other items if they do not choose lunch. The student survey of those students not making school meal purchases indicated that the food did not look appealing, food did not look fresh, food did not look healthy, and that the food did not look like it tasted good. This portion of the study also indicated the cafeteria lines were long, students preferred food from home, parents bought food for them to take to school, and that the food runs out on the cafeteria line.

In contrast to consumption and analysis of plate waste, a study to review the nutrients selected and consumed during the school lunch at four elementary schools after the implementation of the HHFKA was completed by Bergman et al. (2014). This study revealed that there were significant improvements in nutrient selection and consumption when comparing meals prior changes made to the school meal program in with the regulations of the HHFKA.

The nutrient changes included a reduction in sodium, calories, and fat with an increase in fiber. The study also saw a reduction in calcium level.

Cohen et al. (2014) reviewed the impact of the Healthy Hunger-Free Kids Act of 2010 and determined that the meal selection and consumption of the meals had a positive impact for the student. Positive impact included a higher consumption of fruits, vegetables and a total decrease in plate waste for 1030 elementary and middle school students in an urban, low-income school district. Students with less than twenty-five minutes for lunch verses students with extended lunch periods had a significantly decreased consumption in nutrient-dense foods in a student evaluated lunch study (Cohen, et al. 2014).

In a review of kindergarten and pre-kindergarten classes with a total of 304 students, food waste was measured to evaluate meal components by waste (Byker, Farris, Marcenelle, Davis, & Serrano, 2014). Of the total 4,988 ounces of food and beverages served, 2,261 ounces were wasted in a one-week period. Food waste was indicated in all meal components with the majority from vegetables, entrée, and milk. Cohen et (2016) completed another study evaluating food waste with comparisons among varied lunch periods in 1001 students in grades third though eighth grade. The schools in this study all implemented offer vs. serve systems for lunch service times and had lunch periods varying from 20-30 minutes for a lunch period. This school did not have other foods available during the lunch period. The study cited significantly lower consumption of food components in those with shorter lunch periods.

Using a questionnaire to review customer service and preferences for middle school students in Houston, Texas, Kjosoen, Moore, and Cullen (2015) completed a study documented in the *Journal of Child Nutrition & Management.* The study listed the top five reasons students participate in the school lunch program as: 1) I am hungry; 2) I didn't bring anything to eat; 3)

It's convenient; 4) I have no choice; 5) I can afford the price. Schools with higher free and reduced students reported less satisfaction with meals. Sixth grade students reported the highest satisfaction with NSLP meals compared to other grades. Sixth grade students and boys reported selecting foods identified with higher nutrient content such as fruits, vegetables, and whole grains.

Many food recalls and surveys list student self-reporting data of documented information. A study of fourth grade students measuring accuracy of dietary recall using rate of omission and intrusions was conducted in South Carolina. The study concluded that reducing the target period for reporting diet recalls to a 24-hour period provided better accuracy than previous day recalls (Baxter, et al. 2009). The Los Angeles Unified School District, one of the larger districts in the United States, was the district evaluated for plate waste of fruits and vegetables in middle school aged children (Gase, McCarthy, Robles, & Kuo, 2014). In this study, the food prepared for service and the food left after service (production waste) along with the food taken by students and the portions not eaten by the students (plate waste) were reported. One proposed strategy to decrease food waste among the students was to provide complementary interventions to increase selection and consumption of fruits and vegetables.

In contrast to increased plate waste, researchers working to collect data on plate waste of middle school students in twelve schools in an urban, low-income school district, determined that the changes in the Healthy Hunger-Free Kids Act of 2010 did not increase plate waste (Schwartz, Henderson, Read, Danna, & Ickovics, 2015). The students participating in this study increased fruit consumption, vegetables, and milk with an overall decrease in plate waste and a positive response to school lunches.

Timing of the lunch period may affect the student food choices and consumption of school lunch during the school day. A longer lunch period, greater than thirty-four minutes, was documented as a potential benefit to better consumption of fruits and vegetables among middle and high school students (Gosliner, 2014). Gosliner also discovered that including students in food service decisions, providing a salad bar, and better food quality might be other factors to improve fruit and vegetable consumption for students in these upper grade levels. Gosliner concluded that changing student patterns for food consumption requires support from a variety of avenues include school administrators, teachers, parents, and students. Gosliner further credited necessary pattern changes must be supported by national, state, and local policy makers. He argued that students with a sound nutrition practices and behaviors provide an improved population of health.

Items sold outside of the school lunch reimbursable meal are termed a la carte foods or competitive foods. All foods sold in the school must meet a la carte standards termed "smart snack standards" (USDA, 2017 b, p. 3). These standards are set as part of the USDA guidance for foods and details are listed in the smart snack standards chart. A calculator by the Alliance of a Healthier Generation can be used to assist school sites in the evaluation of products for sales and is available for use on their website.

In a unique study using a stoplight style tagging system, researchers coded meal and a la carte foods in the cafeteria using nutritional value as the basis for the coding (Snelling, Korba, & Burkey, 2007). The stoplight tagging system indicated foods with green as highly nutritional value, yellow as average nutritional value, and red as minimal nutritional value. Through this tagging system at three high schools, the student daily purchases were measured over a four-week cycle. Results indicated that 77% of offerings in the school lunch program were green and

yellow coded items. Seventy-three percent of the purchases of the school meals were in the green and yellow category. Of the a la carte foods, sometimes termed competitive foods, 61% of the foods were coded with a red tag and were comprised of 83% of the a la carte food sales (Snelling et al., 2007).

Templeton, Marlette, and Panemangalore, (2005) reviewed competitive foods and their effect on student nutrition and energy and determined that students consumed lower amounts of nutrients and energy than the recommended levels. Students that purchased competitive foods had increased plate waste and a lower intake of school lunch servings meeting the school meal standards. Students purchasing competitive foods had reduced calcium, and vitamin A intake. School lunch energy intake decreased while the competitive foods provided 1/3 of the total energy intake.

Briefel, Wilson, and Gleason (2009) completed a cross-sectional study on the 2004-2005 School Nutrition Dietary Assessment Study. Findings from the study indicated that students consumed more energy-dense foods with a lower nutrient value at home than at school. They suggested schools implementing wellness policies and reducing a la carte sales reduces the consumption of energy-dense, low nutrient foods.

In response to data linked to low fruit and vegetable intake of children, a study interviewed and recorded 103 fourth-sixth-grade students on their fruit and vegetable consumption (Robinson-Obrien, Burgess-Champoux, Haines, Hannan, & Neumark-Sztainer, 2010). The study determined that student consumption of fruits and vegetables is lower than the Dietary Guidelines for Americans 2005 and that students in the study consumed half of their fruits and vegetables through school meal programs.

Providing nutrition education and information to students has been discussed as an important way to assist in overall health and wellness for students and their meal selections. Rainville, Choi, Ragg, King, and Carr (2010) completed a study to review the effects of posting nutrition information in high schools at the place the student makes a purchase. In the school setting, the place of purchase is referred to as the point of sale. In this study, 73 high-school students participated in a focus group to determine if they thought nutrition labels at point of sale systems would affect their meal purchases. Nutrition labels and information were posted at nine school sites while eleven sites did not post nutritional information at the point of sale system. The study used ANOVA and stepwise regression to contrast the schools with and without nutritional information and determined the posting of the materials at purchasing did not influence purchases. However, the authors did note a decrease in caloric and fat intake of one control group and concluded that administrative control significantly influences healthy choices available and therefore affects the amount of food purchased by the students. The authors identified the influence of professionally trained staff such as registered dietitians to assist in the development of menus to provide healthy meal options to students.

The National Coordinating Committee on School Health and Safety completed a project linking school performance and overall health. Through a review of the literature, the project divided the study into health- related sections categorized by 1) nutritional supplements and micronutrients; 2) iron deficiency and supplementation; 3) food insufficiency; and 4) effect of eating breakfast (Taras, 2005). The review concluded that vitamin and mineral supplementation may not lead to academic benefits in the United States. However, it did determine that food insufficiency does affect students' academic performance and that the consumption of breakfast for undernourished children improves academic performance standards.

Academic achievement was associated with breakfast consumption in a student test of 698 students in Texas (Ptomey et al. 2016). This study compared students based on gender, ethnicity, race, meal status, parent education, household income during the standardized test of based on their consumption of breakfast on the morning on the test.

Howard (2011) concluded that reducing food insecurity for children improves interpersonal relations, self-control, and approaches to learning. These findings support the school meals program and supports benefits of spending to support public assistance to reduce food insecurity.

School Meal Participation

Lopez-Neyman and Warren (2016) completed a review of barriers and advantages based on a literature review using the Social Ecological Model (SEM). The SEM model provided a framework for identifying and understanding participation levels in the school breakfast program based on human behaviors in the areas of intrapersonal, interpersonal, institutional, and public policy. Twenty-four articles met the criteria and were used to identity advantages and barriers to the school breakfast program. Results from the study indicated the barrier at the intrapersonal level was the stigma of the school breakfast program. Food insecurity, age, race, and lack of time to eat were also identified as intrapersonal barriers. Interpersonal barriers/advantages included social network and social support system such as dislike for governmental interference, regional values, school staff influence as well as parental influence. Institutional influences as barriers/advantages included school grade level, school scheduling, geographic regions, school staff (including cafeteria staff), cafeteria issues such as long lines, and time for meals scheduled. Public policy level barriers/advantages were determined at the policy level of application including income level and household size.

In a school lunch and breakfast participation study (Guinn, Baxter, Finney, & Hitchcock, 2013) fourth grade students' meal habits were examined by weekday, month, socioeconomic status, absenteeism, gender, and school breakfast location. This study demonstrated differences in all listed categories except for gender. Authors indicated the need for administrative records of children's daily participation in meals provided while at school to assist in continued research and analysis of school-based dietary reporting.

In assessing a la carte sales and participation, Probart, McDonnell, Hartman, Weirich, and Bailey-Davis (2004) found the strongest predictor of a la carte sales was indicated by the free and reduced percentage at the school site. In addition, the time of the lunch period indicated more a la carte purchases. Enrollment and the number of vending machines were found to affect a la carte sales as well as policy enforcement of prohibiting foods from local food establishments to be brought in by parents or students. However, the study did not find any association in school meal participation and a la carte sales. The study calculated the percentage of sales of a la carte purchases and vending purchases by using enrollment and then the average of student purchases. Actual purchases were not identified by the meal status of the individual student (2004).

In two school settings, fourth and fifth grade student food consumption was assessed after the introduction of a school snack bar over a two-year period (Cullen & Zakeri, 2011). Students completed food records for five days, four times over a two-year period to reveal trends. In the middle school, the study revealed 35-40% of student meals were exclusively purchased at the snack bar. Fruits, vegetables, and milk decreased in the second year while high-fat vegetables and sweetened beverages increased in the fourth to fifth grade level. In the fifth to sixth grade

level, vegetables and sweetened beverages decreased while high-fat vegetable and milk increased. School meal food categories did not report a change in the food category sales.

Pricing of a la carte items is part of the evaluation of participation and sales. Twelve schools in Minneapolis-St. Paul, Minnesota examined low-fat snack sales placed in vending by analyzing pricing and promotional effects (French et al., 2001). Through the study, the researchers discovered price reductions increased sales in low-fat items while not changing the overall profit margins in vending sales. Promotions at the point of sale of the vending were weakly associated with the low-fat sales. Therefore, the study indicated that pricing healthy food choices at attractive and affordable prices while still covering costs for profitability margins.

In a California school district with school site data collection at seven middle and high schools, a la carte offerings were reduced which in turn generated more school meal sales (Bhatia, Jones, & Reicker, 2011). This particular study also indicated that the relationship of these actions, including the removal of competitive a la carte offerings, may remove stigma and potential discrimination for low-income students.

When comparing school lunches to home lunches, Hur, Burgess-Champous, and Reicks, (2011) discovered that school lunches have a higher nutrient quality. School lunches included a higher intake of protein, Vitamin A, Vitamin D, Vitamin K, and calcium while reducing caloric, fat, Vitamin E, and sugar intake. Home lunches had a higher caloric value with less vegetables, fruits, and whole grains.

In a review of 626 home lunch and snacks in schools in Minnesota, twenty seven percent of the home lunches and four percent of the snacks met USDA's National School lunch Program or Child & Adult Care Food Program standards (Hubbard, Must, Eliasziw, Folta, & Goldberg, 2014). The study used digital photography with a food checklist to report categorized snacks and

foods in the packed lunch. The study also reviewed snacks the students planned to consume during the school day. The author noted he was unaware of any other studies using this type of analysis and also included the snacks for the school day. The study did not list the individuals that packed the lunches, only the components of the lunches. The study included self-reported items that students intended to purchase in the cafeteria such as milk or reusable packed items.

A study by Caruso and Cullen (2015) agreed with the Hubbard, et al. findings in the 2014 research as they completed a study of home lunches and evaluated nutritional content in 12 schools in Houston, Texas. In their study, they found that home lunches had increased sodium, desserts, snacks, and chips with decreased fruit, vegetables, whole grains, and milk when compared to school lunches following the National School Lunch regulations. Caruso and Cullen (2015) also identified the cost of home lunches with an average price of $1.93 for elementary students and $1.76 intermediate students. The authors indicated more research is needed in demographic and regional areas to evaluate student home lunches. They suggested studies to include comparisons of home and school lunch as well as parental attitudes toward lunch components as compared for nutritional content. To conclude, the authors suggested home lunches need nutrition interventions and guidance while including a cost analysis.

Discussion over the effects of the implementation of the Healthy Hunger-Free Kids Act led researchers Johnson, Podrabsky, Rocha, and Otten (2016) to assess the nutritional changes among the program. Their findings found that school meal participation rates were not negatively impacted by the nutritional updates and changes in the program. The nutritional implications were successful when measured by nutritional quality improving nutrient value and energy assessments.

Free and Reduced Meal Eligibility

Fourteen states were represented in a study by Kwon, Lee, Park, Wang, and Rushing, (2017) surveying 1,500 school nutrition personnel regarding the processing and verification of free and reduced applications for the meal benefits in the School Lunch and Breakfast Programs. Through this study, the authors concluded that using Supplemental Nutrition Assistance Program (SNAP) assists in providing qualification for meals and reduces labor to verify applications. The study also concluded that the process requires significant labor sources and that online application processes reduced labor for school sites. Verification of free and reduced applications using specific documents may be credited to over-certification and additional labor for school sites. Free and reduced applications must complete a verification process to verify family income levels and resources. The verification process is regulated by the standards set by legislation under USDA. When systems allow free and reduced applications to include online applications, the processing time is reduced and assists in accuracy in approval of free and reduced applications (Kwon, et al. 2017).

While the free and reduced programs assist families with financial boundaries for their families, school programs must continue to evaluate the success of a program using financial analysis. Participation is a portion of this analysis but school districts must create a systematic analysis of the program to determine continued participation in the National School Lunch Program. Arbogast (2014) suggested that the analysis must be completed over a year and is a difficult process for determining the process. The process must be a financial decision as well as a customer satisfaction decision. To determine the best financial decision in regards to the program, Arbogast (2014), suggested using the listed questions during the overall review:

1. What is the district's percentage of students receiving free and reduced-price lunches?

2. What is the total overall participation rate in the National School Lunch Program?
3. What is the overall number of students consuming a la carte items?
4. What percentage do state and federal reimbursements contribute to the district's overall food service revenue?
5. Is the district willing to sell additional entrée only item at a reduced price to students?
6. What is the total percentage of revenue obtained from a la carte annually?
7. How much is the overall product cost going to increase or decrease with the discontinuation of the National School Lunch Program?
8. What would the final student, adult, and visitor paid price be to assist in covering the lost revenues, and will students pay the cost for a meal?
9. How much does daily participation need to increase to cover the lost federal and state reimbursements? Is that required increase in participation achievable and sustainable?
10. Should outside consulting company be retained to assist the district in guiding the evaluation and decision making process?

Arbogast (2014) indicated that nutritional regulations are affecting overall participation rates. He suggested that the program evaluation must include participation rates, federal and state reimbursements, customer satisfaction, and profits of the department. In his closing remarks, he suggested that continued research efforts must be made to provide meals that provide high quality but are cost effective (Arbogast, 2014). Huang and Barnidge (2015) reviewed the National School Lunch Program and food insufficiency by accessing data from longitudinal panels from the Survey of Income and Program participation. In their review, they determined that children from low-income families that participated in the NSLP had a 14% reduction in the risk of household food insufficiency thus protecting low income families from

food insufficiency. Data from this study also supports summer food assistance programs to reduce food insecurity during times that school is out of session.

School lunch prices are determined through a formula designated from the Healthy Hunger-Free Kids Meal Act of 2010 called Paid Lunch Equity. Girard (2013) questioned the effectiveness of the formula calling for more local and district control for it to be beneficial for school populations. Through her analysis, she evaluated the effectiveness of required pricing formulas as they affect the program efficiency, effectiveness or best practice. With the evaluation, it was expected that there would be unintended consequences for NSLP programs, especially for the paid meal status participant. Peterson (2011) reviewed the school commodity funding in review of school policies for districts. Funding fluctuations in commodities may negatively affect the financial outcomes and potentially the nutrition outcomes district programs and required more investigation for the effectiveness of commodity distribution for school programs.

USDA (Hanson & Oliveira, 2012) reports that economic conditions affect the number of students participating in the free and reduced meal programs. USDA reports that with the implementation of direct certification, free and reduced meal applications increased under the review, even during strong economic times. Along with economic changes, authors noted that participation levels are affected by overall program policy changes or administrative practices. Areas for nutrition assistance programs that are affected include eligibility rules, benefit levels, application-certification processes, outreach, funding levels, program availability, demographics, and the unemployment rate.

Health and Wellness

With the obesity epidemic at hand in the United States, school meal programs have been criticized as contributing to childhood obesity. The Center for Disease Control (CDC, 2017) reports the prevalence of obesity among children ages two to nineteen to be 18.5% or 13.7 million children in America. Of these children and adolescents, 13.9% are ages 2-5 years old, 18.4% are 6-11 years old, and 20.9% are 12-19 years old. Obesity in children and adolescents is a body mass index, BMI, at or above the 95th percentile using sex and age specific growth charts. The Center for Disease Control studied socioeconomic status as related to obesity rates. Data revealed obesity decreases with an increased level of education in households. Obesity was discovered in 18.9% of children and adolescents aged two to nineteen in low-income families, 19.9% in middle-income families, and 10.9% in high-income households. The lowest prevalence of obesity was in the highest income level of non-Hispanic Asian and Hispanic boys. Lower levels of obesity were also in high-income levels for non-Hispanic, Asian, and Hispanic girls.

In 2014, the CDC conducted study with USDA among children involved in the WIC food assistance programs across the United States. This study revealed that 14.5% of children aged two to four years participating in the food assistance program were obese. The levels of obesity varied among the state for children ranging from 8.2% (Utah) to 20%(Virginia). Obesity levels for the listed populations were 17.3% for Hispanic, 18.0% American Indian/Alaska Native, 12.2% non-Hispanic white, 11.9% non-Hispanic black, and 11.1% Asian/Pacific Island.

In Alabama, the overall levels of obesity and overweight are high for the state (CDC, 2017). Obesity is levels of BMI greater than thirty. Overweight levels are BMI ratings greater than or equal to twenty-five but less than thirty. Thirty-six percent of Alabama ages 18 years or older are obese. Thirty-four percent of the Alabama population is overweight. For children in

grades 9-12, sixteen percent were considered obese and 17% considered overweight. From 2014 data, sixteen percent of children ages two to four were considered obese and sixteen percent were considered overweight. For children three to twenty-three months, thirteen percent had a high weight for length ratio.

With an investigation into the topic of obesity compared to body mass index, data were collected from 8 schools over a three-year period from fourth grade students to evaluate the relationship of school meals and obesity. Student body mass index (BMI) was calculated as well as school breakfast and lunch participation. Analysis of the data indicated a positive relationship of BMI and observed energy intake as well as BMI and school breakfast in the classroom but there was no significant relationship for BMI and participation in school meals. The study was completed over three years and included an analysis of 1,780 students in fourth grade (Baxter et al. 2010). Evidence from a cross sectional study completed by Gleason and Dodd (2009) found no evidence concerning any connection between school lunch participation and student BMI (Body Mass Index). Gleason and Dodd did find that those that participated in breakfast meals had a significantly lower BMI, particularly non-Hispanic, white students. The study reviewed 24 hour dietary recalls along with parent and student surveys. BMI was determined by actual height and weight measurements on site (2009).

School-wide practices have an influential place on the overall health of a child. In a review of the relationship of BMI and school-wide food practices outside of the scheduled meal times, it was determined that frequent snacking and consumption of nutrient-poor foods with high caloric density adversely associated body mass index of students (Kubik, Lytle, & Story, 2005). Each food practice outside the allotted meal times associated with a 10% increase in BMI. Outside food practices in the school setting adversely affecting BMI included food and

beverages in hallways or classrooms, high caloric foods/low nutrient dense foods in vending or school stores, and food in school reward programs. Authors described that childhood measures of obesity and instances of overweight children must include the promotion of healthy practices in school sites with attention to nutrition integrity. School policies must follow the practices and consistently support school related nutrition policies.

In a study that evaluated the consumption of fruits and vegetables of students receiving free and reduced lunch, termed subsidies for this study, it was determined that fruit and vegetable consumption is higher in those not participating in subsidized programs (Howard & Prakash, 2012). The study used data from a collection of models to determine the outcomes and suggested more research in areas to review the barriers of the subsidized programs (particularly the reduced meal price) as a barrier to low-income households. The study data included 5,140 students in fifth grade in public school. In the conclusion of the study, the authors recommended more research in the barriers associated with access to meals even with the cost assistance for the National School Lunch Program as well as other food assistance programs.

Because of the obesity crisis, researchers have continually tried to identify the relationship of food insecurity and obesity. Larson and Story (2011) suggested more research in six particular areas: 1) Longitudinal studies of food insecurity and weight status, particularly in youth and adult men; 2) Qualitative and quantitative studies reviewing mechanisms that affect food insecurity such as food shopping, feeding, and parenting practices; 3) Standard assessment tool for determining food insecurity; 4) Longitudinal studies examining Supplemental Nutrition Assistance Program and weight status; 5) Analytic methods to evaluate those that participate in the assistance programs verses those that are eligible but do not participate; and, 6) Evaluate changes to assistance programs that may assist in reducing obesity. In Crawford and Webb's

review of food insecurity and obesity they stated, “The food programs are not likely to be the problem, but rather an effective part of the solution” (2011, p. 274). They further suggested that food intake is affected by economic and psychological factors that are rooted in the environment or culture, particularly for those with long-term poverty. The National Health and Nutrition Examination Survey evaluated data from 9,701 participants from 2001-2010. Kaur, Lamb, and Ogden (2015) evaluated the relationship of food insecurity and obesity in children aging from 2-11 years of age through the U.S. Department of Agriculture’s Food Security Survey Module. In this assessment, obesity was associated with food insecurity in students aged 6-11 years of age. The prevalence of obesity among children was reviewed by Ogden, Carroll, Kit and Flegal (2014) evaluating the changes from 2003 to 2012. The review indicated that obesity continues to be an issue and that there have been no significant changes from 2003 to 2012 when the review was completed.

In a call for future studies, Sallis and Glanz (2006) indicated a need for evaluating the overall environments that assist in the physical activity, eating, and obesity of the youth. Changing the overall environment should assist in the improvement of physical activity, healthful foods for youth and thus reflecting change in the overall obesity epidemic. In 2013, a study examining whole grain consumption and overweight and obesity in children determined whole grain may be beneficial to maintaining a healthy weight and therefore assisting in obesity issues among children ranging from 2-17 years old (Choumekovitch, et al. 2013). The author suggested that increasing nutrition education on whole grains as well as increasing whole grain availability in low-income families should be implemented to improve healthy weights for individuals.

School foodservice directors have indicated that they have an important part of the school wellness and a responsibility for promoting healthy lifestyles in the school setting based on a survey of 462 school nutrition professionals (Stinson & Lofton, 2009). Factors influencing behaviors for wellness programs were cited as financial support, time, and support of other individuals outside of the program. Stinson and Lofton suggested more research is needed to determine best practices in gaining support among the school nutrition directors and managers in a school district. Additionally, the authors suggested more research is needed in the development of successful wellness programs among the school foodservice staff that can identify the relationship of personal interests of behavior and health and how it related to the school wellness environment and wellness programs.

In another study, implementation issues for wellness policies in districts were listed as cost, stakeholder support, and overall enforcement (McDonnell & Probart, 2008). Health and academic achievement related to the implementation of the wellness policies were cited as ways to solicit support from the school district stakeholders. The researchers admitted that more state and national data is needed to document the association of wellness policy implementation strategies and the related results tin overall health and academic achievement.

Workforce Development and Training

Desirable skills for the school meal programs workforce are areas that continue to require development and training but build environment for the administration of school meals and the general school meal setting. The range of skills for individuals working in school foodservice programs varies from food preparation, equipment operation, point of sale services, customer service, bookkeeping, marketing, among other items depending on the school setting. Customer service was identified as the most important qualification of individuals in programs, particularly

at the point of service for students (Lee, Kwon, Park, Wang, & Rushing, 2017). Nettles, Carr, Carter, and Federico (2009) identified the six key areas for program operation including food production; sanitation, safety, security; customer service; program regulations and accountability; equipment use and care; and professional excellence. In a panel of school nutrition directors from seven large school districts, operational issues were key areas for issues for the school districts. Among the comments, the development of an effective team was a key area for successful program operations and suggested educational training for employees for the foundation of successful programs. At the time of the study, the survey indicated that meetings and conferences were the preference for training or education. The study indicated the knowledge and skill statements defined among the panels will assist in preparing job descriptions as well as performance appraisals for the school nutrition industry (Nettles, Car, Johnson, & Federico, 2008). Over 700 Californian child nutrition professionals responded to a survey addressing training needs for staff. The respondents indicated the largest needs for training in areas related to program management, Healthy Hunger-Free Kids Act of 2010, Nutrition/Health/Wellness, and Communication/Marketing (Jones, Punia, Shannon-Young, Hurgli, & Zidenberg-Cherr, 2013). Training has traditionally involved onsite interaction with the instructor, however, school nutrition directors recognized the benefits of webinar training for their school programs in a survey of 210 responses (Zoeller & Carr, 2009). The benefits of webinars for school nutrition directors included flexibility in timing for the training, self-directed learning, decreased expenses, and decreased travel. Barriers included technology issues or computer related problems and the lack or interaction with an instructor (Zoeller & Carr, 2009).

Stinson, Carr, Nettles, and Johnson (2011) evaluated implementation methods of food safety programs, including Hazard Analysis and Critical Control Points (HACCP). Of the 2,716

respondents to the survey addressing implementation of the HACCP program and training issues, the areas that require additional training included sick policies, food role modeling, role expectations, and providing training materials, employee buy in, and training with practical application. Strohbehn, Jun, and Arendt (2014) listed barriers and motivators from a study of 879 responses of foodservice employees. Of the responses on the bilingual survey, employee age and the number of hours worked affected the perceptions of motivators or barriers in the foodservice industry. The authors suggested that part-time employees might be less engaged and accountable to training habits and priorities in the foodservice industry.

With the increased identification of special diets for students, the Dietary Guidelines for Americans support an overall healthy diet that is evident in the legislation of the Healthy Hunger-Free Act of 2010 meal standards. Recommendations for providing support, particularly diabetes support for students, was addressed in an article titled "Diabetes Preparedness in Schools; What do Foodservice Personnel Need to Know to Respond?" (Grenci, 2016). This article suggested schools follow three recommendations:

1. Ensure that school meals and snacks meet USDA requirements and Dietary Guidelines for Americans.
2. Support and implement provisions of local school wellness policies to improve nutrition education, food choices, and physical activity in schools.
3. Understand basic meal planning and other concepts of effective diabetes management in children.

A food safety practices survey evaluating the importance of food safety perceptions and trainings put emphasis on the training of food safety, providing resources for employees, and building a culture to promote HACCP in food safety (Strohbehn, Jun, & Arendt, 2014). In a

nutrition literacy survey of school nutrition managers with 728 participants, it indicated 22.7% had low nutrition knowledge, 45% with limited nutrition knowledge, and 32.3% with adequate nutrition knowledge (Zoeller & Carr, 2010). The study did not link nutrition literacy or knowledge of onsite cafeteria managers to barriers of child nutrition information, role in the wellness policy, or confidence in school nutrition decision scenarios. For further recommendations, the study indicated local school districts should increase professional development opportunities for school nutrition managers and therefore influence production, delivery, and education of nutrition related information. They study recommended that local districts should review training opportunities outside of the regularly scheduled workday.

Evaluations of foodservice employees can be a critical part of maintaining the culture in the cafeteria and creating a successful foodservice team. Cross, Asperin, and Nettles (2009) interviewed an expert panel and discovered an evaluation or assessment of an employee should have five criteria including:

1. Criteria clearly defining expected performance
2. Rating scale appropriately reflecting criteria
3. Clear instructions
4. User-friendly format
5. Space for comments
6. Plan for improvement

Additionally, performance should be rated based on the overall competencies development for employees at the site. The study provided a revised web-based resource with a template to supplement development for evaluations or performance appraisals. The template

prepared gives space for key actions, measurements, resources needed, time frame, and priority listing for targets (2009).

Summary

Chapter II provides a review of literature including research related to school meal programs across America. Specific articles provide information on the guidelines and regulations of the Healthy, Hunger-Free Kids Act of 2010, nutritional standards in the school meal program, student lunch participation, health and wellness polices, nutrition education, and school meal status. The defines areas of research in the areas of successful school lunch programs, nutrition standards, student perceptions, school meal participation, free and reduced meal eligibility, as well as workforce development and training in the school setting.

Chapter III: Methods

In this chapter, the research methods will be identified through the purpose, a description of the population, project design and data collection procedures.

Purpose of the Study

The purpose of this study was to investigate student participation levels in the school nutrition program in a school district. This research will additionally investigate reimbursable meal purchases compared to a la carte purchases. This research will identify participation levels in the program under Healthy, Hunger-Free Kids Act of 2010.

Research Questions

The following questions were used in this study:

1. What is the relationship of reimbursable meals and school meal status?
2. What is the relationship of a la carte sales and school meal status?
3. What is the relationship of reimbursable meals and a la carte sales?

Population

All public education facilities in Alabama offer school meals to students on site. The National School Lunch and Breakfast Program operating through the legislation of the Healthy Hunger-Free Kids Act of 2010 is the mode of program and services for the majority of schools in Alabama. Through the meal program, students may purchase breakfast and lunch at the school site. Student families may apply for meal assistance through the program based on income and family size or through direct certification of the family through data provided to the school systems from the state agency SNAP and TANF programs. Upon completion of the application process or direct certification, all students within the public school are given a lunch status. The lunch status is a free meal, reduced meal, or a paid meal. All first meals are served and charged

to the student based on the lunch status. Any second meals or separate items purchased during a meal period are considered a la carte purchases. Free and reduced meal status does not apply to the second meals or any other a la carte purchases.

Direct certification for students is an automated process working with the USDA Food Assistance Program, SNAP, to identify students in the school system that are receiving food assistance outside of the school setting. The overall population of direct certification in the state of Alabama is 39.8% of the population. This population is composed of 26.3% white, 62.2% black, and 47.6% Hispanic students (Alabama Kids Count, 2017).

Students eligible for free and reduced meals based on income using the application process must report household size and annual income. The eligibility guidance for income varies based on household size. For a household family of two in the 2016-2017 school year, a student is eligible for free meals with a household income of $20,826 and eligible for reduced meals with a household income of $29,637 (USDA).

For the school district, there were eleven schools in the 2016-2017 school year hosting grades kindergarten through twelfth grade. The total enrollment for the district included 8,283 students, 409 classified employees, and 616 certified employees. Of the teachers for the district, there were 170 that held a bachelor's degree, 376 that held a masters' degree, 44 that held a specialist degree, and 28 that held a doctorate degree. There are 42 languages spoken within the school district. The district mission includes educating the whole child for college and career readiness. The district spends an average of $8,983 per student each school year and has a student teacher ration of 3.5:1 compared to the national average of 5:1. The average teacher salary in the district is $53,794.

The high school offers a variety of academic classes including classes in the fine arts, career and technical education, and academics. The graduating class for the 2016-2017 year had a graduating class of 615 with an average ACT score of 23 compared to the national ACT rate of 20.8. The graduating class was awarded 16.7 million dollars in scholarships. Additionally, 115 students were credentialed in one of the 12 career and technical education programs.

Data Collection

For this study, one high school site was selected for data collection. The high school houses students in tenth through the twelfth grade with a total population of 1,874 students. The high school is the only one in the city and therefore was the only school with high-school aged students. The city population consists of 63,118 members. The city has seen a twenty percent growth in the overall city population since April 2010. It remains one of the fastest growing cities in the state with high economic growth and development.

The free and reduced rate is twenty percent of the school population. The overall poverty level for the city is thirty percent as well as the overall percentage for the school district. For the state of Alabama, the free and reduced population would be considered low when compared to other high school communities. High schools around the United States typically have a lower free and reduced rate at the high school level compared to the overall district level. State mandated calendars require schools to ensure there are 180 days in a school year thus providing 180 days of meals available for students.

Data is maintained with the school district through two software systems that work together to compile student information and meal services. The first software system, Chalkable, is the student information system and is integrated across the state of Alabama. This software houses information such as demographic information, parental contacts, attendance, and grades

for the school district and is the required software for the state of Alabama. Chalkable is the software system required by all Alabama schools for building the school database and general school office related processing functions.

Student's demographic information from Chalkable is submitted into the Heartland's Mosaic system. The Heartland Mosaic system completes lunch application meal status, compiles point of sale information or cashiering, tracks lunch account activity, and monitors meal account balances. Through this system, student account purchases are collected per student. The Heartland school solutions software is one of the federally approved software applications for school systems in the United States to use in school meal programs at the school district level. Additionally, Mosaic is an approved software for free and reduced application processing for school foodservice systems in coding meal status.

At the high school, the school houses one kitchen and one cafeteria. There are no school stores or vending machines available to students during the school day. Therefore, all food purchases are made within the school foodservice program at the point of sale computers. The high school has three point of sale positions for cashiering. All cashier stations are operation by a foodservice employee that is trained in the computer software and regulations for school purchases. The facility houses four serving lines for hot meal service and a center area to collect cold boxes such as sandwiches and salads. Additional items such as Gatorade, water, and crackers are available at the cashier stations for purchase. Milk coolers are available on the serving line with the meals. A la carte items are any items that are not part of the reimbursable menu items prepared for the day using USDA guidance.

The menu planning approach for the high school includes hosting a different menu option on each of the serving lines. The menu will meet specific nutrition standards evaluated using a

nutritional analysis program. The menu for each serving line evaluates overall calories, saturated fat, trans fat, and sodium. The menu analysis evaluated specific menu components including milk, whole grains, red/orange vegetables, dark green vegetables, beans/peas/legumes, starchy vegetables, meats/meat alternates, and fruit.

Menu pricing for the reimbursable lunch meals for a paid student meal status was $2.50 and $.40 for a reduced price student. All meals were identified using the system so no identification of the student meal status was available during the meal line.

The cafeteria staff is made of eight individuals functioning in all parts of the kitchen and cafeteria. The staff members are trained for cashiering purchases and sales. Students enter a specific ID number on a pin pad to make the student account available to the cashier. The cashier identifies items for purchase on the school tray and enters it on the student account using a touchscreen computer. The system automates total sales amounts based on the items identified in the purchase including meals or a la carte items. The ID number is specific to the student and their meal status. Therefore, the computer system identifies student discounts based on the meal status while keeping the student meal status confidential. Students may purchase items using money on their account or by paying with cash at the point of service. Students are able to add money to their specific account with online methods or at the cashier stand in the cafeteria. The school participates in a no charging policy, specifically to a la carte sales. However, a student participating in the free and reduced meal program will not be denied a meal based on USDA guidance and school policy.

The kitchen facility operates standardized and industrial equipment for foodservice preparation. The kitchen holds four combination ovens, four convection ovens, two steam jacketed kettles, one tilt skillet, one steamer, and a full commercial dish machine. The facility

supports temperature-holding equipment for all serving lines, a walk-in cooler, walk-in freezer, and a storage room.

All food purchases are managed through the school district's central office of child nutrition. Food is purchased following strict USDA guidance and bidding procedures. The school district purchases the majority of food items through the Alabama statewide procurement program. They also participate in the Alabama commodity program funded through USDA. Additional bid contracts are made each year for milk, ice cream, bread, and produce.

Procedures

A research request was submitted to the school district requesting student purchase history, demographics, and meal status for all high school students during the 2016-1017 school year. Paperwork request was completed using the Application for External Research Approval. The most recent school year was selected as it had the most current information for student purchases in the district. The high school aged student level was selected as they make meal purchases and a la carte purchases with no restrictions in the serving line. All requested data was to include removing any identifiable student information. Upon approval from the local school district, a request to Auburn University Institutional Research Board was requested and approved in the fall of 2017.

The school was selected due to the large volume of students in the three grade levels and the number student school days (180) available to select lunch over an entire school year. Additionally, the school represents the entire city population, as there is only one public high school in the district in which students are eligible to attend. The district is one of the largest school districts in the state of Alabama.

Data provided for the research study was collected using the Mosaic software program hosted by Heartland Solutions. Mosaic software functioned as the point of sale system and the overall data for the child nutrition program in the school district. The child nutrition software received daily imports from the district student information system, Chalkable. Chalkable provided student names, ethnicity, grade level, and gender into the Mosaic software. The Mosaic software matched all of the student information with applications requested for all special meal status. Free and reduced meal status applications were completed at the onsite of the school year, processed in the system and matched for all students in the district. If a student did not complete a meal application, the student remains with a paid lunch status. All applications are processed through the software analysis and identified for meal status based on household size and income level for the household. Students that had family participation in the state food assistance program such as SNAP were automatically loaded into the Mosaic system with a free meal status. This automation from related food assistance programs is a required import for all child nutrition programs under USDA and is called direct certification.

The Mosaic software system also synchronizes with student accounts and monetary balances. Students may add money at the school site cafeteria to update meal accounts. An online system is also available in the software program be updated to provide updates to the system. The system allows parents to participate in online monitoring of meal accounts and student meal balances for school purchases. Systems are automated in real-time and therefore allow accounts to be available quickly for meal services. Student account balances can be reviewed online or at the point of service in the cafeteria line.

Students participating in school meals, complete checkout services at the point of sale computer system with the Mosaic software. Students entered a confidential pin pad number to

pull up the student meal accounts. Cashiers reviewed meal trays and purchases and then select student meal choices on the computer screen. Items selected were totaled and the student would be eligible to pay for items at the point of service or use account balances made prior to purchases. Student meal prices for a reimbursable meal were $2.50 for paid meal status students and $.40 for reduced meal status. There were no charges for students with a free meal status. A reimbursable meal includes 3-5 meal components as defined by USDA guidelines in the Healthy, Hunger-Free Kids Act. Any purchases outside of a reimbursable meal are considered a la carte purchases. A la carte purchases included any additional snack items or extra meal components from the meal service line. A la carte items vary in pricing from $.25 to $2.00.

All purchases during the school day are updated to the Mosaic software. Purchases are collected by student and kept in the system until a rollover for the upcoming school year is completed. Student data archived for the school district and can be retrieved upon request.

After the collection of the historical data of all student purchases for lunch and a la carte sales from the school district for this study, the information was exported into the SPSS statistical software. The data set included de-identified student purchase information including reimbursable meal counts and a la carte sales for the 180 day school year. Student purchase totals were identified and calculated. Through the statistical software, descriptive data was compiled and reported. Descriptive statistics analysis was completed to provide total participants, mean, mode, standard, deviation, and variance. Frequencies for the gender (meal/female), grade level (10^{th}, 11^{th}, 12^{th}), ethnicity (White, Black-African-American, American Indian-Alaskan Native, Asian, Native Hawaiian-Pacific Island), and meal status (free, reduced, paid) were collected. Additionally, ANOVA and MANOVA tests were run comparing meal status, reimbursable meals, and a la carte sales.

In the first portion of ANOVA tests, the quantity of purchases was analyzed. Through the SPSS software, the average number of purchases per meal status was completed. The quantity totals were run with a test of homogeneity of variances using the Levene statistic. Post hoc tests, Bonferroni, were completed to review multiple comparisons using the quantity of reimbursable meals as the dependent variable.

After the quantity of meal purchases was completed, the same tests for the a la carte purchases were completed. First, the average number of meal purchases per student based on meal status was completed. Next, a test of homogeneity of variances was completed using the Levene statistic. And finally, a post hoc test, Bonferroni, was completed to make multiple comparisons of the meal status groups and a la carte purchases.

After the quantity of meals was analyzed, the cost of the a la carte purchases per student was analyzed. Reimbursable meals were not analyzed as there is no cost associated with free meals and data was unable to be calculated with no values attached to the free meal status. A la carte purchases were analyzed using a dollar amount. The average dollar amount of purchases based on meal status was first analyzed. Next, the test of homogeneity of variances was tested using the Levene statistic. Finally, post hoc tests were completed to compare the meal status of purchases with the dependent variable being the a la carte cost or dollar amount spent per student.

Finally, a bivariate correlation was made using the Pearson Correlation for a la carte total quantity of items purchased and reimbursable meal totals.

Summary

Chapter III describes the method for the study to analyze school meal participation at the high school level over a period of 180 school days. The study evaluates and compares school

lunch meal purchases and a la carte sales per individual student of the described high school. This chapter defines the population, data collection, and procedures for the study.

By investigating the relationships of school reimbursable meals, a la carte sales, and meal status, Child Nutrition programs will be better able to assist in planning and proposing procedures for school programs under the Healthy, Hunger-Free Kids Act of 2010.

Chapter IV: Results

In the previous chapter, the methods for the research is described including the method of study, population, research design, and data analysis. This chapter, Chapter IV, will provide the compiled results from the research design and analysis. Demographics, frequencies, student lunch status, meal counts, a la carte counts will be reported with descriptive analysis, test of homogeneity of variances, ANOVA, and post Hoc Tests.

Purpose of the Study

The purpose of this study was to investigate student participation levels in the school nutrition program in a school district. This research will additionally investigate reimbursable meal purchases compared to a la carte purchases. This research will identify participation levels in the program under Healthy, Hunger-Free Kids Act of 2010.

Research Questions

The following questions were used in this study:

1. What is the relationship of reimbursable meals and school meal status?
2. What is the relationship of a la carte sales and school meal status?
3. What is the relationship of reimbursable meals and a la carte sales?

Demographic Profile

For this study, the research sample size included 1,923 students in grades tenth through twelfth, collected from the student information system, Chalkable. The sample included 676 tenth grade students, 627 eleventh grade students, and 620 twelfth grade students. The ethnicity of the student group was defined as 1205 white, 473 African American, 22 American Indian, 221 Asian, 2 Native Hawaiian/Pacific Island. The sample included 948 male and 975 female students. The sample population meal status for students included 1509 paid, 59 reduced, and

355 free meal statuses. All students have access to participate in the school meal program at the school site including breakfast and lunch over the 180-day school year.

Table 1

Student Population by Gender

		Frequency	Percent
Valid	Male	948	49.3
	Female	975	50.7
	Total	1923	100.0

Table 2

Student Population per Grade Level

		Frequency	Percent
Valid	10	676	35.2
	11	627	32.6
	12	620	32.2
	Total	1923	100.0

Table 3

Student Population by Race

		Frequency	Percent
Valid	White	1205	62.7
	African American	473	24.6
	American Indian & Alaskan Native	22	1.1
	Asian	221	11.5
	Native Hawaiian or Other Pacific Islander	2	.1
	Total	1923	100.0

Table 4

Student Population by Meal Status

		Frequency	Percent
Valid	Paid	1509	78.5
	Reduced	59	3.1
	Free	355	18.5
	Total	1923	100.0

Research Questions

The overall purpose of the study was to examine meal status and sales in the school meal programs. This next section will review data analysis of three specific questions in regard to meal status and participation in the school lunch program.

Research Question One: What is the relationship of reimbursable meals and school meal status? In order to examine student meals related to student meal status, the number of student lunches purchased by an individual student for the school year were reviewed. Reimbursable meals are the first meal served to students during the lunch period. The three categories of paid, reduced, and free meal status had varying averages of meal purchases from 40-138 meals/year (See Table 5). The average purchase of reimbursable meals per student was 60 meals. A test for homogeneity of variances using the Levene statistic identifies significant differences in the groups as listed below in Table 6. The Levene test was selected to assess the equality of variances among the free, reduced, and paid meal status groups. The data represents a significant difference (p= .000) between the free, reduced, and paid meal status groups. This indicates that the groups are not homogenous which could have been influenced by the small reduced meal status group. The ANOVA test was selected to determine the differences in the number of meals purchases per students based on their meal status. The differences in the number of meals purchases were significant (p= .000) as indicated in Table 7.

Multiple comparisons among the groups using Bonferroni testing identified significant differences of the quantity of meals purchased among paid to free (p= .000), paid to reduced (p= .000), and free to reduced (p= .14) (See Table 8). The Bonferroni test was selected to adjust for the potential for Type 1 errors in the statistical analysis.

Table 5

Student Purchases of Reimbursable Meals

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Paid	1509	40.10	57.96	1.49	37.17	43.02	.00	338.00
Reduced	59	112.32	65.61	8.54	95.22	129.42	.00	271.00
Free	355	138.24	89.18	4.73	128.93	147.55	.00	346.00
Total	1923	60.43	75.87	1.73	57.04	63.04	.00	346.00

Table 6

Reimbursable Meals Quantity Total

Levene Statistic	df1	df2	Sig.
53.718	2	1920	.00

Table 7

ANOVA by Reimbursable Meals Quantity Total

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2931825.69	2	1465912.84	346.08	.000
Within Groups	8132665.12	1920	4235.76		
Total	11064490.81	1922			

Table 8

MANOVA by Meal Status

Status	Status	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Paid	Reduced	-72.21*	8.63	.000	-92.91	-51.52
	Free	-98.139*	3.83	.000	-107.33	-88.94
Reduced	Paid	72.219*	8.63	.000	51.52	92.91
	Free	-25.920*	9.15	.014	-47.84	-3.99
Free	Paid	98.139*	3.83	.000	88.94	107.33
	Reduced	25.920*	9.15	.014	3.99	47.84

*. The mean difference is significant at the 0.05 level.
Dependent Variable: Reimbursable Meals Quantity Total
Bonferroni Testing

Research Question Two: What is the relationship of a la carte sales and school meal status? A la carte sales are identified as any item sold to a student beyond a reimbursable meal. Meal status does not relate to these items as pricing and purchasing applies to all students in the same manner. For this testing, the total number of a la carte purchases were reviewed as well as the total dollar spent for purchases for the students. The average quantity of a la carte items purchased among students was 53 items (See Table 9). For paid and reduced status students, the average a la cart purchase was 57 per year while the average for free students was 32 purchases per year (Table 9). The Levene statistic was selected to determine homogeneity of variances for the groups in a la carte sales. The totals were significant (p= .000) and do not pass the homogeneity of variance because of the varying groups (Table 10). The ANOVA testing (Table 11) indicates a significant different between the free, reduced, and paid groups (F (2,1920)= 11.585). The Bonferroni test was selected to identify the differences in the meal status purchasing groups. The statistical analysis data determined significant differences in the free and paid as well as the reduced and free meal status groups (p= .000 and p= .147) in Table 12. However, there were no significant differences in the paid and reduced meal status groups (p= 1.0).

The average dollar amount spent on a la carte purchases average at the high school was $58.88 per year (Table 13). Paid meal status students averaged $65.72 per year while reduced meal status students averaged $52.45 per year. Free meal status students averaged $30.90 per year. The Levene statistic was completed determining a statistical difference of (p=.000) in Table 14. A one way ANOVA was completed and reported a statistical difference (F (2,1920) = 16.085) in Table 15. reported a The total quantity of a la carte sales per group and the total dollar amount of the items spent was significantly different among groups as references in the

table 17 using the Bonferroni multiple comparisons**.** There is a significant difference in the dollar amount spent between the paid meal status group and the free meal status group (p=.000) as well as the reduced meal status and free meal status group (p=.427) (Table 17). However, there are no statistical differences in the paid and reduced meal status (p= 1.0).

Table 9

Student a la carte Purchases by Quantity

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Paid	1509	57.77	96.40	2.48	52.90	62.63	.00	729.00
Reduced	59	57.22	71.08	9.25	38.69	75.74	.00	277.00
Free	355	32.50	52.75	2.79	26.99	38.00	.00	422.00
Total	1923	53.08	89.73	2.046	49.07	57.10	.00	729.00

Table 10

Test of Homogeneity of Variances, a la carte Quantity Purchases

Levene Statistic	df1	df2	Sig.
54.59	2	1920	.00

Table 11

ANOVA, a la carte Quantity Total Purchases between Groups

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	184538.88	2	92269.44	11.585	.00
Within Groups	15292298.09	1920	7964.73		
Total	15476836.97	1922			

Table 12

MANOVA a la carte Quantity Purchases

Status	Status	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Paid	Reduced	.54	11.84	1.00	-27.82	28.92
	Free	25.26*	5.26	.00	12.65	37.88
Reduced	Paid	-.54	11.84	1.00	-28.92	27.82
	Free	24.71	12.54	.14	-5.34	54.78
Free	Paid	-25.26*	5.26	.000	-37.88	-12.65
	Reduced	-24.71	12.54	.14	-54.78	5.34

*. The mean difference is significant at the 0.05 level.
Dependent Variable: a la carte Quantity Purchases
Bonferroni

Table 13

Student a la carte Purchases by Dollar Amount

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Paid	1509	65.72	114.21	2.94	59.95	71.48	.00	727.50
Reduced	59	52.45	65.20	8.48	35.45	69.44	.00	241.75
Free	355	30.90	53.83	2.85	25.28	36.52	.00	413.25
Total	1923	58.88	105.25	2.40	54.17	63.59	.00	727.50

Table 14

Test of Homogeneity of Variances, Purchases by a la carte Dollar Amount

Levene Statistic	df1	df2	Sig.
65.83	2	1920	.00

Table 15

ANOVA, a la carte Dollar Amount between Groups

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	350903.50	2	175451.75	16.08	.000
Within Groups	20943000.94	1920	10907.81		
Total	21293904.44	1922			

Table 16

A la carte purchases by Dollar Amount

	Statistic[a]	df1	df2	Sig.
Welch	36.05	2	163.24	.000
Brown-Forsythe	37.76	2	275.15	.000

a. Asymptotically F distributed.

Table 17

Multiple Comparisons

Status	Status	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Paid	Reduced	13.26	13.86	1.00	-19.94	46.48
	Free	34.81*	6.16	.00	20.05	49.57
Reduced	Paid	-13.26	13.86	1.00	-46.48	19.94
	Free	21.54	14.68	.42	-13.63	56.73
Free	Paid	-34.81*	6.16	.00	-49.57	-20.05
	Reduced	-21.54	14.68	.42	-56.73	13.63

*. The mean difference is significant at the 0.05 level.
Dependent Variable: A la carte Purchases by Dollar Amount
Bonferroni

Research Question Three: What is the relationship of reimbursable meals and a la carte sales? In the final research question, a bivariate correlation using the Pearson Correlation was used to examine the quantity of reimbursable meals purchased by students to the quantity of a la carte purchases. The relation testing would be significant at the p= .01 level for the 2-tailed analysis. The data reported a significant level of p= .000 for both the quantity comparison (Table 18). The data suggests a positive relationship in that as more meals were purchased the more a la carte purchases were made by the student. A cost comparison of the two groups in the dollar amount category was not examined as the cost of meals were not comparable when analyzing totals for free or reduced students with paid meal status.

Table 18

Comparison of a la carte and Meal Purchases

		A la Carte Quantity	Meals Quantity
A la Carte Quantity Total	Pearson Correlation	1	.37**
	Sig. (2-tailed)		.00
	N	1923	1923
Reimbursable Meals Quantity Total	Pearson Correlation	.37**	1
	Sig. (2-tailed)	.00	
	N	1923	1923

**. Correlation is significant at the 0.01 level (2-tailed).

Summary

The purpose of this study was to investigate student's participation levels in the school nutrition program in a school district. With participation levels identified in school meal lunch purchases and a la carte purchases along with identifying student meal status, the overall trends for student participation can be identified for useful planning and production of school nutrition programs.

Collected data included student meal status, gender, ethnicity, and quantify of overall purchases in the school meal program. A cost analysis of the dollar amount of purchases spent in the school meal program was also collected.

Based on the data collection and analysis, there are significant differences in lunch meal purchases and a la carte sales based on meal status. The more meal purchases made in the school meal program indicated increased a la carte purchases. The data revealed students with a paid lunch status had a higher purchase rate of a la carte items. However, purchases made by students with a free or reduced lunch status were not eliminated.

Chapter V: Conclusion

Chapter I introduced the study while Chapter II provided a literature review of school meal programs, school meal program regulations and guidelines, and other influencing factors on the program dictated by the Healthy Hunger-Free Kids Act of 2010. Chapter III provided the methods for the research while Chapter IV included the collection of data and results for the project. The final chapter, Chapter V, will provide discussion, implications, limitations, and future recommendations gathered from the study.

Purpose of the Study

The purpose of this study was to investigate student participation levels in the school nutrition program in a school district. This research will additionally investigate reimbursable meal purchases compared to a la carte purchases. This research will identify participation levels in the program under Healthy, Hunger-Free Kids Act of 2010.

Research Questions

The following questions were used in this study:

1. What is the relationship of reimbursable meals and school meal status?
2. What is the relationship of a la carte sales and school meal status?
3. What is the relationship of reimbursable meals and a la carte sales?

Discussion

Under USDA, each state is given the authority to oversee the National School Lunch and Breakfast Program now the Healthy, Hunger-Free Kids Act of 2010, as well as other programs for their state. The Alabama State Department of Education- Child Nutrition Program oversees the operations of the school sites and administrative reviews, including corrective actions for the program. Reporting of the school site participation, budgeting, capital planning, equipment

purchases, commodity planning, and program reimbursement is through the state program (ALSDE, 2017).

There is a lack of research and investigation into the relationship of daily food sales and school meal status, particularly student reimbursable meals and a la carte sales. Investigating relationships of student purchases yields information for evaluating the overall effectiveness of the National School Lunch and National School Breakfast Programs. Though the data is critical to research and improving the quality of programs as well as overall student participation, purchasing records are highly confidential. The data may be difficult to release to researchers as school districts have strict requirements for maintaining the identity of student information. All data must be de-identified before information can be shared to groups outside of a district. School districts across the nation may not have the labor hours to divide the attention to preparing data to share outside of the district and others may not be aware of the need for this data to make improvements to the daily workforce in school foodservice. Purchasing data remains highly sensitive to groups as it may also be linked to personal banking information now that online meal payments are acceptable. The current research of this study assists in providing administrative documents for research factors affecting participation in the school nutrition program. Baxter et al (2013) suggested that administrative records within a school district of the participation levels of school provided meals would be beneficial in research, to provide insight into school meal participation. The authors encouraged school districts to share the information to assist the school nutrition and overall school community, as there are few documented studies that provide data from the school districts.

Schools offer the school lunch programs to provide nutritionally integrated programs for students. Without student participation, particularly those participating with a low

socioeconomic status, the National School Lunch Program would not be effective in its purpose to provide healthy and nutritionally sound meals to students. Additionally, purchases outside a reimbursable meal in a la carte sales determines a student's priority of school meals as well as their satisfaction of the quality of the program for the school and student population. School purchases determine the overall participation and is part of the national initiative to fight child hunger, childhood obesity, and the overall health and wellness of our nation.

This study was conducted in a school in which the student population includes a diverse student population with the majority of students assigned a paid lunch status. With the student populations and data, the study examined students' highest meal purchases and determined if all students purchase meals. It also identified which meal status students were making a la carte purchases along with the dollar amount for average purchases by individual students. This data is critical for future preparations of school meal programs. Throughout the nation, programs are reevaluating how to better serve the student population. Purchasing data is vital to the participation of the program as well as the overall success.

Data from the 2016-2017 school year provided information on 1923 high school student accounts. These accounts were equally distributed by gender and grade level with the major ethnicity (64%) as white. The free and reduced meal status for student accounts was 21.6 percent of the total student population. Meal account data provided purchase history for all students for the 2016-2017 school year of 180 student days. The average number lunch purchases for a paid student was 40 lunches with 57 a la carte purchases averaging $65.00 over the school year. For a reduced meal status student, the number of reduced lunch purchases averaged 112 lunch meals with 57 a la carte purchases averaging $52.00 for the year. The free meal status average was 138 lunch meals and 32 a la carte purchases averaging $30.00 for the

year. With an opportunity for 180 school lunch purchases in a year, there was not a 100 percent participation rate for any meal status group.

Implications

School nutrition programs and operations in a school district can review the data to compare trends of purchases for their cafeterias. Probart et al. (2004) identified predictors of a la carte sales for meal programs including free and reduced meal status, length of lunch periods, and school food policies. As programs transform to meet nutritional standards under the Healthy Hunger-Free Kids Act of 2010 it is important to maintain participation levels to make meal programs available for all students. Roseman and Niblock (2012) suggested that there are five key factors for participation including food taste, food looks, student hunger, healthy foods, and the amount of foods. The study with these results included 947 middle school students in five middle schools in Kentucky completing a questionnaire addressing questions and opinions related to school lunch, healthy menu items, awareness of food benefits (health), items taste-tested, and overall factors affecting their school lunch choice (2012).

For students receiving meal benefits under the free and reduced meal status, the data in this study does not reflect that students with a free or reduced meal status are participating in the program daily. The range for meal participation for free meal status students ranged from 128-147 reimbursable meals per 180-day school year. While the meal account participation is higher among those that have the free and reduced meal status, there are days that the average student is not participating (mean= 60 meals/year). School meal operators may not find it surprising that students with a paid meal status are not participating in a school meal program. However, the question remains in why aren't students engaged in daily meal participation on the school site, particularly if they have a free and reduced meal status. It continues to be a question researchers

continue to address as child nutrition programs identify ongoing challenges facing participation and overall school programs (Brown, Bednar, DiMarco, & Connors 2012).

The school lunch model with lunchtime periods is changing across programs in America. The typical lunch period may now be in competition with other school activities, cost restraints, employee production constraints, meal locations, availability of kitchen facilities or other challenges. Kubik et al. (2003) reiterates the importance of the school environment and the influence on children. Part of the influencing factors for students today are eating behaviors of students including school vending or a la carte sales. The data in the study reiterates that there are multiple a la carte sales in the school setting, no matter the meal status. These trends should continue to be reviewed and discussed for overall program operations as well as student health. Litchfield and Wenz (2011) concluded that the physical environment and the school meal status were the most influential factors affecting school meal sales. The trends for this study agree with Litchfield and Wenze confirming the more meal benefits a student received, the higher the individual meal participation. The trends for this study also site average a la carte purchases for all meal status accounts (mean= 53 purchases/year). This is significant information for program operators as a la carte sales provide additional income to support overall program expenses. Additionally, it suggests it is important to offer and make available items other than reimbursable meals for students. A la carte sale purchases are made by all students including those with a meal assistance through the program.

By forecasting and addressing trends of service for child nutrition operators, the local employee can better provide choices for students, determine other potential sites for service, adjust timing of meal service, and continue to track participation to follow in line with student needs.

The study provided data that displayed that students do not track eating in the cafeteria everyday of the school year, even students receiving meal benefits. The study tracked that students make purchases in the cafeteria but there is a student group, particularly the paid meal status group that do not make purchases. Customer service was identified as the most important qualification of individuals in programs, particularly at the point of service for students (Lee, Kwon, Park, Wang, & Rushing, 2017). The data creates the discussion that cafeterias are not meeting the desires of the student population. Performance appraisals and assessments of the kitchen environment must be analyzed to assess the desires of the student customer and where there is a need to change the environment. Cross, Asperin, and Nettles (2009) provide a template available to assist cafeterias and school programs when creating appraisals and assessments.

With the need for the improvements to overall participation levels, staff members must be well equipped to meet the desired outcomes of the students and the management of the child nutrition program. The data represented that the need for training may be essential in changing the environment to meet the student wants and needs. The required areas of expertise cover many topics and are critical to the job and the daily tasks involved. Nettles, Carr, Carter, and Federico (2009) identified the six key areas for program operation including food production; sanitation, safety, security; customer service; program regulations and accountability; equipment use and care; and professional excellence.

Training for these key areas to improve the desired results for the environment to improve participation can be completed in a variety of ways. The benefits of webinars for school nutrition directors included flexibility in timing for the training, self-directed learning, decreased expenses, and decreased travel. Barriers included technology issues or computer related problems and the lack or interaction with an instructor (Zoeller & Carr, 2009).

With the low meal participation and yet high nutritional value of the reimbursable meals provided, nutrition education may be an area for training for students as well as the foodservice staff. The authors (Byker, et al 2013) recommended nutrition education would assist in overall policy support when parents, teachers, and foodservice personnel have had interventions to create a better understanding on nutrition standards in the school setting.

Limitations

Limitations for this particular study were identified and could involve a variety of factors that affect the overall data. The first limitation involved the free and reduced population for the study as a study with a higher free and reduced meal status population could affect purchasing information. Additionally, this study was completed at a single high school in which comparisons to multiple schools could add dimension to the purchasing data. Other limitations that could enhance the data collection could be purchasing data for items verses menu choices. Other factors affecting purchases could include lunch service wait times, meal locations, meal selections, and school wide events. The study strength included that all high school students that attend the selected high school had purchasing data that was reported and there were no excluded student groups. Purchasing data is difficult to recover from school districts as it is confidential student information to the school district and must be prepared before release to researchers outside of the school district.

Technology of data and reporting is pertinent to the maintenance of purchasing and tracking records for a school district. School districts have different technology abilities that affect the tracking and sharing of data. Child nutrition programs should work closely with technology departments for assistance of accurate record reporting, retention, and sharing of data for future research.

While researchers should acknowledge that some factors cannot be controlled by the program (Litchfield & Wenz, 2011), the data in this study suggests that purchasing patterns for reimbursable meals and a la carte sales continues to need evaluation to make provisions, changes, and recommendations to the school meal program. Furthermore, the evaluations provide data to support legislation and funding for the child nutrition programs in America.

Recommendations

The purpose of this research was to investigate student's participation levels in the school nutrition program in a school district. This research additionally investigated reimbursable meal purchases compared to a la carte purchases. Based on the findings from this study, future research might:

1. Compare student purchases at a high school with a higher percentage of free and reduced meal rate.
2. Evaluate student overall lunch participation with high schools of varying school sizes.
3. Explore potential ways to provide meals outside of the cafeteria for meal service to improve student participation in the school meal program.
4. Survey student reasons for meal participation, including menu choices verses meal purchases.
5. Evaluate student participation based on the nutritional standards interest of students as related to the Healthy, Hunger-Free Kids Act of 2010.
6. Expand training programs and professional development to foodservice employees in child nutrition programs.

As a program that affects over 30 million students each day in the United States, the general operations of food service management are affected by participation of students in meal

programs. Menu choices affect menu selections by the students therefore influencing if the student will purchase items outside of the reimbursable meal. Other influencing factors include competitive foods, school environment, nutrition education, parental guidance, meal service times, and class scheduling. Food service operators should closely evaluate participation trends in the local school district to address the student needs and wants for the daily provisions of the child in the school. Food service management teams in the school district should also evaluate the training and professional development needs for the school employee. The training areas for the employee include marketing, customer service, computer and technology skills, food safety, kitchen equipment use and safety, nutrition education, and health and wellness training and are among the array of topics necessary to building a strong child nutrition program with high participation levels.

There is also a significant financial portion of the student participation in the school meal program. With the budget for the school meal program over 13.6 billion in the 2016 school year, the federal budget is affected and contributes to the efficiency of operations in individual school districts across America. Student meal purchases and a la carte purchases strongly influence the school nutrition financial statements. Effective bidding for food and services provides efficient purchasing procedures for the district. The school district's plate waste as well as kitchen food waste influences menu costs for the district and maintenance of minimal school lunch prices though affected by the required paid lunch equity standards. Maintaining labor costs by stringent hiring and effective evaluations systems creates integrity with financial benefits. Consequently, all child nutrition programs must maintain financial stability to operate but the fact remains that participation of students will be the overall stabilizer for the continuation of the program.

Summary

The National School Lunch and National School Lunch Program have been affected by ongoing updates to regulations and standards. The Healthy, Hunger-Free Kids Act of 2010 created significant changes for school lunch programs across the United States. For continued success of these meal programs, schools must continue to evaluate program operations to be successful. Schools must evaluate participation, school environments, school staff, professional development, labor costs, food costs, nutritional significant, and student health needs as part of the total evaluation of the program. Participation in the program by purchasing meals as well as a la carte items continues to need updated research for the future and overall planning for effective child nutrition programs in the schools of America.

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Appendix A

Institutional Review Board Approval

AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS

REQUEST FOR EXEMPT CATEGORY RESEARCH

For Information or help completing this form, contact: **THE OFFICE OF RESEARCH COMPLIANCE**, 115 Ramsay Hall
Phone: 334-844-5966 **e-mail:** IRBAdmin@auburn.edu **Web Address:** http://www.auburn.edu/research/vpr/ohs/index.htm

Revised 2/1/2014 **Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.**

Form must be populated using Adobe Acrobat / Pro 9 or greater standalone program (do not fill out in browser). Hand written forms will not be accepted.

Project activities may not begin until you have received approval from the Auburn University IRB.

1. PROJECT PERSONNEL & TRAINING

PRINCIPAL INVESTIGATOR (PI):

Name Ashley K. Powell **Title** student **Dept./School** EFLT- College of Edu

Address 874 Tacoma Drive, Auburn, AL 36830 **AU Email** krudoaf@auburn.edu

Phone 706-540-1747 **Dept. Head** EFLT

FACULTY ADVISOR (if applicable):

Name Maria Witte **Title** Professor **Dept./School** EFLT- College of Edu

Address 3068 Haley Center

Phone 334-844-3078 **AU Email** wittemm@auburn.edu

KEY PERSONNEL: **List Key Personnel (other than PI and FA).** Additional personnel may be listed in an attachment.

Name	Title	Institution	Responsibilities

KEY PERSONNEL TRAINING: **Have all Key Personnel completed CITI Human Research Training (including elective modules related to this research) within the last 3 years?** ☑ **YES** ☐ **NO**

TRAINING CERTIFICATES: Please attach CITI completion certificates for all Key Personnel.

2. PROJECT INFORMATION

Title: School Lunch Participation: Evaluating Reimbursable Meals and A la Carte Sales

Source of Funding: ☑ **Investigator** ☐ **Internal** ☐ **External**

List External Agency & Grant Number:

List any contractors, sub-contractors, or other entities associate with this project.

List any other IRBs associated with this project (including those involved with reviewing, deferring, or determinations).

FOR ORC OFFICE USE ONLY

DATE RECEIVED IN ORC: _____ by _____ APPROVAL

DATE OF IRB REVIEW: _____ by _____ APPROVAL

DATE OF ORC REVIEW: _____ by _____ INTERVAL F

DATE OF APPROVAL: _____ by _____

COMMENTS:

The Auburn University Institutional Review Board has approved this Document for use from 01/22/2018 to ---
Protocol # 17-509 EX 1801

3. **PROJECT SUMMARY**

a. **Does the research involve any special populations?**

- ☐ YES ☑ NO **Minors (under age 19)**
- ☐ YES ☑ NO **Pregnant women, fetuses, or any products of conception**
- ☐ YES ☑ NO **Prisoners or Wards**
- ☐ YES ☑ NO **Individuals with compromised autonomy and/or decisional capacity**

b. **Does the research pose more than minimal risk to participants?** ☐ YES ☑ NO

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. 42 CFR 46.102(i)

c. **Does the study involve any of the following?**

- ☐ YES ☑ NO **Procedures subject to FDA Regulation** Ex. Drugs, biological products, medical devices, etc.
- ☐ YES ☑ NO **Use of school records of identifiable students or information from instructors about specific students**
- ☐ YES ☑ NO **Protected health or medical information when there is a direct or indirect link that could identify the participant**
- ☐ YES ☑ NO **Collection of sensitive aspects of the participant's own behavior, such as illegal conduct, drug use, sexual behavior or use of alcohol**
- ☐ YES ☑ NO **Deception of participants**

If you checked "YES" to any response in Question #3 STOP. It is likely that your study does not meet the "EXEMPT" requirements. Please complete a PROTOCOL FORM for Expedited or Full Board Review.
You may contact IRB Administration for more information. (Phone: 334-844-5966 or Email: IRBAdmin@auburn.edu)

4. **PROJECT DESCRIPTION**

a. **Subject Population** (Describe, include age, special population characteristics, etc.)

Project will review collected data from the school year 2016-2017 including student participation, student lunch status, and student sales history at a local high school.

b. **Describe, step by step, all procedures and methods that will be used to consent participants.**

☑ **N/A (Existing data will be used)**

c. **Brief summary of project.** (Include the research question(s) and a brief description of the methodology, including recruitment and how data will be collected and protected.)

The purpose of the research is to investigate participation levels in the school nutrition program in a school district. The research will investigate reimbursable meal purchases compared to a la carte purchases. The research will identify participation levels in the program under the Healthy Hunger-Free Kids Act of 2010. The following questions will be used in the study:

1. What is the relationship of reimbursable meals and lunch status?
2. What is the relationship of a la carte sales and lunch status?
3. What is the relationship of reimbursable meals and a la carte sales?

Pre-existing data will be evaluated evaluating high school students in a local school district. The methods for the data collection and available information has been approved by the Auburn City Schools External Research Approval process.

d. **Waivers. Check any waivers that apply and describe how the project meets the criteria for the waiver.**

- [x] **Waiver of Consent (Including existing de-identified data)**
- [ ] **Waiver of Documentation of Consent (Use of Information Letter)**
- [ ] **Waiver of Parental Permission (for college students)**

Existing data will be used.

e. **Attachments.** Please attach Informed Consents, Information Letters, data collection instrument(s), advertisements/recruiting materials, or permission letters/site authorizations as appropriate.

Signature of Investigator Ashley K. Powell Date 11-13-17

Signature of Faculty Advisor Maria M. Witte Date Dec 9, 2017

Signature of Department Head Sherida Downer Digitally signed by Sherida Downer Date: 2017.12.11 14:27:26 -06'00' Date

Form AERA-1

Auburn City Schools
Application for External Research Approval

For information or assistance contact The Office of the Associate Superintendent, 855 E. Samford Avenue, P.O. Box 3270, Auburn, AL 36831 Phone 334-887-1906

Part I-General Information

1. Proposed Start Date of Research Observation/Data Collection: School year 2016-2017 data
2. Anticipated Duration of the Study: Review of data to be complete by Spring 2018
3. Title of Research Project: School Lunch Participation: Evaluating Reimbursable Meals and A la Carte Sales in the School Setting
4. Researcher's Name: Ashley Powell
5. Name of Sponsoring Institution: Auburn University
6. Department or Division: EFLT- Adult Education
7. Address: 874 Tacoma Drive, Auburn, AL 36830
8. E-mail address: akpowell@auburnschools.org Office Phone: 887-1924 Cell Phone: 706-540-1747

PART II-Purpose

9. Clearly state the purpose of this project.

The purpose of this research is to investigate student's participation levels in the school nutrition program in a school district. This research will additionally investigate reimbrusable meal purchases compared to a la carte purchases. This research will identify participation levels in the program under the Healthy Hunger-Free Act of 2010.

10. Briefly describe the methodology to be used.

Methods for the study include ANOVA, MANOVA, and other bivariate correlation tests to determine general relationships and the significance of reimbursable meals and a la carte sales.

11. How will the results of this project be used? (Publication, Presentation, Dissertation, etc.)

Results for the study will be for dissertation purposes.

12. Will a summary of the findings be made available to Auburn City Schools? Yes ☑ No ☐
If no, please explain.

Part III-Subjects

13. Describe the participant population (include the number of participants needed) you are asking to include in this project.

The requested population for this study will include 10th-12th grade students at Auburn High School.

14. Describe why this participant population is being selected.

This population was selected for the availability of a la carte sales and purchases available for students.

15. What basis will you use to recruit/select those participants from the population to be included in the study (if not adequately explained in #13 above)?

Data of school meal sales from the school year 2016-1017 will be retrieved to compare purchases. All student names will be de-identified so that student information is unavailable for tracking.

16. Will any Auburn City Schools employee(s) be required to invest any time in distributing information, collecting data or in any other way contribute time and effort to this research project? **If yes, explain.**

Yes ☑ No ☐

Minimal assistance is requested in the pulling of reports and de-identifying of requested data.

Form AERA-1

Part IV.-Summary	Yes	No
17. Will all data collected be anonymous?	☑	☐
18. If data is not anonymous, will it be confidential?	☑	☐
19. Will there be any compensation or incentives for participants?	☐	☑
20. Has this study been approved by an Institutional Review Board?	☐	☐

Additional comments or questions from the researcher:

This study is in the process of submission for the IRB. I would like to include the ACS Request for Research as part of the IRB submission.

Researcher Signature: Ashley K. Powell Date Submitted: 10-24-17

For Auburn City School Use Only

Date Received: 10/24/17 Received by: K Tyler

Approved: √ Not Approved: _____ Date: 11/2/17

Comments: application shared with Drs. Pelano & Veronese 10/30/17

ACS Administrator Signature: Signature on collective approval
Cristen Herring

Appendix B

Health Hunger-Free Summary

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
SCHOOL MEAL PROGRAMS	
Sec. 101. Improving direct certification	• Provides performance bonus in no more than 15 States for "outstanding performance" and "substantial improvement" in direct certification for SY's beginning July 2011, 2012, 2013 • *Funding:* $4m per year mandatory funding. $2m for each category (Oct. 1, 2011 through Oct. 1, 2013) • Requires continuous improvement plans for States not meeting thresholds for direct certification with SNAP (80% in SY 2011; 90% in SY 2012; 95% SY 2013 and each year thereafter). Secretary must annually identify States that don't meet the threshold and approve their corrective action plan • Eliminates letter method as acceptable method for direct certification with SNAP
Sec. 103. Direct certification for children receiving Medicaid benefits	• Beginning July 2012, directs the Secretary to conduct a demonstration project to test the potential for direct certification with Medicaid in selected LEAs. (Multi-year phase in provided). • *Funding: $*5 million mandatory funding for study available until expended • Directs the Secretary to estimate the effect on meal program cost and participation for each of 2 years. • Interim Report to Congress due October 1, 2014; Final report due October 1, 2015. • Provides access to data for the purposes of conducting program monitoring, evaluations and performance measurements of States and LEAs participating in the CNPs.
Sec. 104. Eliminating individual applications through community eligibility	• Beginning July 1, 2011, "Provision 4" meal program claims based on percentage of enrolled students directly certified multiplied by a factor of 1.6; Participating schools must meet a threshold of students directly certified (initially 40%) and agree to serve all meals free; the Secretary and State agencies are required to annually notify eligible local educational agencies. Evaluation is required and funded, and a report to Congress is due December 2013. *Funding:* On October 1, 2010, mandatory funding, $5m, one-time funding for evaluation, available until 9/30/2014 • Census American Community Survey: Directs the Secretary to identify alternatives to annual applications and authorizes nationwide implementation or further pilot testing of recommendations from the Committee on National Statistics on use of ACS data for School Meal Claiming. *Funding:* None • Requires the Secretary to consider use of a socioeconomic survey for counting and claiming in not more than 3 school districts. Establishes parameters for conduct of the survey.
Sec. 143. Review of local policies on meal charges and provision of alternate meals	• The Secretary, in conjunction with State and LEAs, shall examine current policies and practices relating to providing children who are without funds a meal, and prepare a report with recommendations. USDA is provided the authority to act on appropriate solutions. *Funding:* None
Sec. 201. Performance based	• Requires USDA to publish proposed meal pattern regulations within 18 months of enactment, and to publish

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
reimbursement rate increases for new meal patterns	interim or final regulations within 18 months of proposal. Provides an additional 6 cents per lunch for schools that are certified to be in compliance with final meal pattern regulation. • *Funding:* Additional rate increases is 6 cents per meal, adjusted annually for changes in CPI; $50 million in mandatory funding for each of 2 years for State implementation, of which $3 million is available for each of 2 years for USDA administration. • 6 cents becomes available no earlier than 10/1/12. Administrative funding for States and USDA is available beginning the fiscal year the interim or final rule is published.
Sec. 202. Fluid milk (NSLP/SBP)	• Removes requirement that schools serve milk in a variety of fat contents and instead requires that schools offer a variety of fluid milk consistent with the Dietary Guidelines' recommendations. *Funding:* None
Sec. 203.Water (NSLP/SBP)	• Requires schools to make free potable water available where meals are served. • *Funding:* None
Sec. 204. Local wellness policy implementation	• Requires USDA to establish regulations for local wellness policies and to provide technical assistance to States/schools in consultation with ED & HHS (CDC). • *Funding:* None. Authorization to appropriate $3 million for FY 2011 for an implementation study, to remain available until expended
Sec. 205. Equity in school lunch pricing	• Effective SY beginning July 1, 2011, schools are required to charge students for paid meals at a price that is on average equal to the difference between free meal reimbursement and paid meal reimbursement; Schools that currently charge less are required to gradually increase their prices over time until they meet the requirement; Schools may choose to cover the difference in revenue with non-Federal funds instead of raising paid meal prices. Establishes a maximum annual increase in the required paid increases of 10 cents annually, but allows schools to establish a higher increase at their discretion. • Requires USDA to collect and publish prices LEAs charge for meals. • *Funding:* None
Sec. 206. Revenue from nonprogram food (NSLP)	• Requires all non-reimbursable meal foods sold by school food service to generate revenue at least equal to their cost. • Provision is effective July 1, 2011. • *Funding:* None
Sec. 207. Reporting and notification of school performance	• Requires USDA to consolidate the Coordinated Review Effort (CRE) and School Meal Initiative (SMI) monitoring systems. • Requires States to review all school food authorities on a 3 year cycle (Current cycle is 5 years) • Requires schools to post review final findings and make findings available to the public.

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
	• *Funding*: None
Sec. 208. Nutrition standards for all foods sold in schools	• Requires USDA to establish national nutrition standards for all food sold and served in *schools at any time during the school day*. Allows exemptions for school sponsored fundraisers if the fundraisers are approved by the school and are infrequent. • Requires USDA to publish proposed rule within 1 year of enactment. • *Funding:* None
Sec. 209. Information for the Public on the School Nutrition Environment	• Requires LEAs to report on the school nutrition environment to USDA and to the public, including information on food safety inspections, local wellness policies, school meal program participation, nutritional quality of program meals, etc. • *Funding:* None. Authorizes such sums as necessary for FY 2011 through 2015
Sec. 242. Procurement and processing of food service products and commodities	• Requires USDA to identify, develop and disseminate model product specs and practices for food offered in school programs • Within 1 year of enactment, USDA must analyze the quantity and quality of nutrition information available to schools about food products and commodities and submit a report to Congress on the results of the study and recommended legislative changes necessary to improve access to information • Directs the Secretary to purchase healthy commodities • *Funding:* None
Sec. 243. Access to Local Foods: Farm to School Program	• Requires USDA to provide technical assistance and competitive grants that do not exceed $100,000 to schools, State and local agencies, ITOs, etc for farm to school activities. Federal share cannot exceed 75% of total cost. • *Funding:* Provides $5 million in mandatory funding on October 1, 2012 and each October 1 thereafter, to remain available until expended. Also includes authorization for appropriation of additional funds.
Sec. 301. Privacy protection (NSLP)	• The individual signing the free and reduced price application is only required to provide the last 4 digits of the social security number; under current requirements they must provide the complete social security number. (The person signing the application may continue to indicate they don't have a social security number.) • *Funding:* None • Removes requirement to collect social security number for verification.
Sec. 302. Applicability of food safety program	• Applies the food safety requirements throughout the school campus where program foods are stored, prepared and served. • *Funding:* None

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
Sec. 304. Independent review of applications	• Requires error-prone local educational agencies to conduct a second-level, independent review of all free and reduced price applications prior to notifying households of their eligibility status • Establishes annual reporting requirements for each local educational agency required to conduct second-level review of applications. State agencies must also annually report results to USDA • *Funding:* None
Sec. 306. Professional standards for school food service	• Requires USDA to establish a program of required education, training and certification for school food service directors; criteria and standards for selection for State Directors; and required training and certification for local school food service personnel. • Requires USDA to set dates for compliance • USDA may provide funding to 1 or more professional food service management organizations to assist in establishing and maintaining certification and training. • *Funding:* October 1, 2010 - $5 million; on each October 1 thereafter - $1 million
Sec. 307. Indirect costs	• Requires USDA to issue guidance on indirect costs within 180 days of enactment • Authorizes and funds a study of indirect costs in the School Meal Programs. • *Funding:* $2 million in mandatory funding available until expended • Authorizes USDA to promulgate regulations to address deficiencies identified through the study. • Requires a Report to Congress by 10/1/13.
Sec. 308. Ensuring safety of school meals	Within 1 year of enactment, FNS must: • work with AMS and FSA must develop guidelines for administrative holds • work with States to increase timeliness of notification of recalls to SFAs • improve timeliness and completeness of direct communication between FNS and States on holds and recalls • establish a timeframe to improve hold and recall procedures and work to address role of processor and distributor • *Funding*: None
Sec. 443. Equipment assistance technical correction	• Technical fix to FY 2010 Appropriations language regarding NSLP equipment assistance grants.
Sec. 105. Grants for expansion of school breakfast program	• Authorizes appropriations for grants to State agencies for subgrants to local educational agencies to establish, maintain or expand the School Breakfast Program.
Sec. 210. Organic food pilot	• Requires the Secretary to establish an organic food pilot which provides competitive grants to SFAs for

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
program	programs that increase the quantity of organic food provided to school children. • *Funding:* None. Authorizes $10 million to be appropriated for FY 2011 through 2015.
SUMMER FOOD SERVICE PROGRAM	
Sec. 111. Alignment of eligibility rules for public and private sponsors (SFSP)	• Removes limits on the number of sites that private nonprofit organizations may operate in SFSP. • *Funding:* None
Sec. 112. Outreach to eligible families (SFSP & SBP)	• Requires each State agency administering the NSLP to ensure SFAs cooperate with participating SFSP service institutions to inform families of the availability and location of SFSP and the SBP. • If SFSP is administered by an alternate agency, that agency and the NSLP State agency must cooperate to ensure that families are informed. *Funding:* None
Sec. 321. SFSP Permanent Operating Agreements	• Requires permanent agreements; describes the conditions for updates or termination. *Funding*: None
Sec. 322. SFSP disqualification	• Directs USDA to establish disqualification requirements in SFSP. • USDA will implement with rules similar to those in CACFP. *Funding*: None
Sec. 113. Summer Food Service Support Grants	• Authorizes grants to State agencies to provide technical assistance, assistance with site improvement costs, or other activities to retain sponsor retention. • *Funding:* Authorization to appropriate $20 million for the period of fiscal years 2011 through 2015
CHILD AND ADULT CARE FOOD PROGRAM	
Sec. 121. Simplifying area eligibility determinations in CACFP	• Allows use of all levels of school data for tiering determinations (Currently only elementary data may be used). *Funding*: None
Sec. 122. Expansion of afterschool meals for at risk children	• Expands CACFP afterschool meals for at risk children to all states • Requires USDA to issue guidelines and publish a handbook within 180 days after enactment. • *Funding:* Mandatory funding, amount determined by meals x rate formula
Sec 221. Nutrition and wellness goals in CACFP	• Adds nutrition and wellness to program purpose statement • Requires USDA to review and update nutrition standards and meal costs, and to publish proposed rules within 18 months of review. • Allows for fluid milk substitutes; requires fluid milk substitutes for non-disabled children to be nutritionally equivalent to milk (same as existing requirement for schools). • Requires USDA to encourage physical activity and limit screen time

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
	• Requires institutions/homes to make water available • Requires USDA to provide guidance handbook improving meal quality and the child care wellness environment by 1/1/12, in coordination with DHHS • *Funding:* $10 million mandatory funding on October 1, 2010 available until expended
Sec. 222. CACFP interagency coordination to promote health and wellness in child care licensing	• Requires USDA, in cooperation with DHHS, to encourage state licensing entities to include criteria for nutrition and wellness standards in licensing determinations. • *Funding*: None
Sec. 223. Study on nutrition and wellness (CACFP)	• Requires a periodic study of nutrition and wellness quality in child care settings, in consultation with DHHS. *Funding:* on Oct. 1,2010, $5 million in mandatory funds for USDA to conduct study, available until expended
Sec. 331. Review of application material and permanent agreements (CACFP)	• Requires CACFP State agencies to enter into permanent agreements with institutions • Requires one-time application to CACFP, with annual updates of licensing and other information • Requires States to develop standard agreements between sponsoring organizations and sponsored centers. • Requires State agencies and sponsoring organizations to conduct announced and unannounced visits, and for sponsors to vary the timing of their facility reviews • Authorizes the Secretary to develop policies to detect, deter and recover erroneous claims but prohibits the Secretary from requiring site visits triggered by a block claim • *Funding:* None
Sec. 332. State liability for payments to aggrieved CACFP institutions	• Requires a State agency to pay, from non-Federal sources, all valid claims for reimbursement resulting from the failure of the State agency to meet regulatory timeframes for fair hearings. • *Funding:* None
Sec. 333. Transmission of income information (CACFP)	• Allows family day care homes to assist in transmitting household income information to sponsoring organizations. • Requires USDA to establish policies governing provider involvement in transmission, including requirement for written parental consent. • *Funding*: None
Sec. 334. Simplifying and enhancing administrative payments to sponsoring organizations (CACFP)	• Removes cost comparison as basis for sponsor administrative payments, making reimbursements based solely on the number of sponsored homes times the reimbursement rates. • Allows sponsors to carry over 10% of their administrative funds into the next fiscal year. • *Funding:* None

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
Sec. 336. Reducing paperwork and improving program administration (CACFP)	• Requires the Secretary to work with states and institutions to review and assess paperwork in CACFP and make recommendations • Requires a report to Congress on CACFP administrative and paperwork burdens within 4 years. • *Funding*: None
Sec. 337. Study of CACFP supper program	• Requires a study and Report to Congress. Report must address best practices for soliciting sponsors and any federal or state laws that may be a barrier to participation. • *Funding*: None
Sec. 335. CACFP audit funding	• Permits USDA, beginning in FY 2016, to increase the amount of audit funding made available to any State agency if the State demonstrates it can effectively utilize such funds to improve program, provided that the total amount of funds does not exceed specified levels. • *Funding:* None
ALL CN PROGRAMS	
Sec. 102. Categorical eligibility of foster child	• Expands categorical eligibility for free meals to a foster child who is the responsibility of the State or placed by a court
Sec. 303. Fines for violating program requirements	• Establishes criteria and sets the amount of fines that may be imposed upon States, SFAs, schools or service institutions for gross mismanagement • *Funding:* None
Sec. 305. Program evaluation	• Requires State and local cooperation in USDA studies. • *Funding:* None
Sec. 362. Disqualified schools and institutions	• Prohibits any school, institution, or individual terminated from the Child Nutrition Programs and on a list of institutions disqualified in CACFP or SFSP (also see sec. 322) from participating in the Child Nutrition Programs. *Funding:* None
Sec. 361. Full use of federal funds	• Requires Federal/State agreements to support full use of Federal funds and excludes such funds from State budget limitations. Includes all CN Programs and WIC. • *Funding*: None
MISCELLANEOUS PROVISIONS	
Sec. 141. Childhood Hunger Research	• Requires the Secretary to conduct research on the causes and consequences of hunger and food insecurity ○ *Funding:* On October 1, 2012, mandatory funding ($10 million, available until expended) • Requires the Secretary to conduct demonstration projects to test alternative models for service delivery and benefit levels.

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
	○ *Funding:* On October 1, 2012, mandatory funding ($40 million available until 9/30/17)
Sec. 406. Training, technical assistance, and food service management institute	• Provides National Food Service Management Institute with annual mandatory funding of $5 million. • *Funding:* On October 1, 2010 and each October 1 thereafter provides $5 million (increased from $4 million)
Sec. 407. Federal administrative support	• Increases annual Federal funding for technical assistance from $2 million to $4 million and makes permanent
Sec. 408. Compliance and accountability	• Extends authority for federal Coordinated Review Effort (CRE) funding through 2015 and increases amount. • *Funding:* Increased funding from $6 million to $10 million annually.
Sec. 142. State childhood hunger challenge grants	• Authorizes competitive grants to Governors to carry out strategies to end childhood hunger. • *Funding*: None, authorization to appropriate.
Sec. 244. Research on strategies to promote the selection and consumption of foods	• Directs the Secretary, in consultation with DHHS, to develop a research, demonstration and technical assistance program to promote healthy eating using behavioral research; Allows Secretary to use 5 percent of funding for administrative costs. • *Funding:* None, authorization for appropriations
WIC	
Sec. 131. WIC certification periods	• Provides State agencies the option of certifying participant children for up to one year [currently the certification period is 6 months]. • *Funding:* None (funds will be appropriated based, in part, on participation levels from previous year)
Sec. 231. Support for breastfeeding in WIC	• Requires a program to recognize exemplary breastfeeding practices at local agencies. *Funding:* Authorizes an appropriation of such sums as necessary. • Provides performance bonuses for States with highest and most improved breastfeeding rates. *Funding:* Increased the authorization for expenditure from appropriated funds for peer counseling program from $20 million to $90 million, of which not more than $10 million of any funding provided in excess of $50 million shall be used for performance bonuses. USDA is directed to provide the first bonuses not later than 1 year after enactment. • Requires data collection on the number of fully and partially breast fed infants at state and local level • Of the $35 million authorized for management information systems (MIS), up to $5 million may be used annually for federal administrative costs related to MIS.
Sec. 232. Review of available supplemental foods (WIC)	• Requires WIC food package review every 10 years. *Funding:* From research monies ($15 million authorized).

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
Sec. 351. Sharing of materials (WIC)	• Allows USDA to provide materials developed for WIC to CSFP and CACFP. • *Funding*: None
Sec. 352. WIC program management	• Increases WIC research funding from $5 to $15m • Requires recording of WIC rebate payments in the month received • Establishes new bid solicitation requirements when seeking rebates for infant formula and other foods • Allows infrastructure and MIS funding to be annually inflated for adjustment • Provides technical changes to WIC EBT requirements, including requiring the Secretary to establish national technical standards, minimum lane coverage requirements and limitations on the imposition of costs on vendors • Mandates EBT by October 1, 2020; requires States to report annually to USDA on EBT implementation status • Funds UPC Data base; requires completion in 2 years • *Funding:* On October 1, 2010 and each October 1 thereafter, $1 million in mandatory funding to remain available until expended
Sec. 423. Special supplemental nutrition program for women, infants, and children	• Extends the WIC Program through 2015
Sec. 424. Farmers market nutrition program	• Extends the WIC Farmers Market Nutrition Program through 2015
SNAP	
Sec. 241. Nutrition Education and Obesity prevention grant program	• Allows States to implement nutrition education and obesity prevention programs through a State plan approved by the Secretary; Formula funding adjusted annually for inflation after 2011. Replaces 50% match with capped grants. • *Funding:* Mandatory funding for FY 2011 of $375 million; subsequent years adjusted for inflation
EXTENSIONS AND OTHER MISC. PROVISIONS	
Sec. 401. Commodity support	• Extends 12% bonus commodity provision through 2020
Sec. 402. Food safety audits and reports by states	• Extends food safety audit and reporting requirement by states (sec. 9(h) of the NSLA) through 2015
Sec. 403. Procurement Training	• Extend authority for procurement training (sec. 12(m) of the NSLA) through 2015. No funding.

SUMMARY OF THE HEALTHY, HUNGER-FREE KIDS ACT OF 2010
(BY PROGRAM)

SECTION AND TITLE	SUMMARY OF PROVISION
Sec. 404. Authorization of SFSP	• Extends SFSP through 2015
Sec. 405. Year round services for eligible entities. (CA)	• Extends existing year-round SFSP pilot program in California through 2015
Sec. 409. Information clearinghouse	• Extends clearinghouse through 2015.
Sec. 421. Technology infrastructure improvement	• Extends authority for technology infrastructure grants to local educational agencies through 2015. • *Funding:* None
Sec. 422. State administrative expenses (SAE)	• Extends authority for State administrative expense funds through 2015
Sec. 441. Technical amendments	• Makes technical changes to section 9 (f) NSLA to accommodate new meal pattern changes • Eliminates several obsolete provisions from NSLA • Makes area eligibility in SFSP very similar to area eligibility for CACFP tiering and at-risk afterschool snacks.
Sec. 442. Use of unspent future funds from the American Recovery and Reinvestment Act of 2009	• Provides an offset for the bill by reducing the increased allotment in future years provided for SNAP recipients through ARRA.
Sec. 444. Budgetary effects	• PAYGO requirements of the Act have been met.
Sec. 445. Effective date	• Unless otherwise noted in the Act, the provisions are effective October 1, 2010.

Appendix C

Meal Requirements

	Breakfast Meal Pattern			Lunch Meal Pattern		
	Grades K-5[a]	Grades 6-8[a]	Grades 9-12[a]	Grades K-5	Grades 6-8	Grades 9-12
Meal Pattern	Amount of Food[b] Per Week (Minimum Per Day)					
Fruits (cups)[c,d]	5 (1) [e]	5 (1) [e]	5 (1) [e]	2½ (½)	2½ (½)	5 (1)
Vegetables (cups)[c,d]	0	0	0	3¾ (¾)	3¾ (¾)	5 (1)
Dark green [f]	0	0	0	½	½	½
Red/Orange [f]	0	0	0	¾	¾	1¼
Beans/Peas (Legumes) [f]	0	0	0	½	½	½
Starchy [f]	0	0	0	½	½	½
Other [f,g]	0	0	0	½	½	¾
Additional Veg to Reach Total[h]	0	0	0	1	1	1½
Grains (oz eq) [i]	7-10 (1) [j]	8-10 (1) [j]	9-10 (1) [j]	8-9 (1)	8-10 (1)	10-12 (2)
Meats/Meat Alternates (oz eq)	0 [k]	0 [k]	0 [k]	8-10 (1)	9-10 (1)	10-12 (2)
Fluid milk (cups)[l]	5 (1)	5 (1)	5 (1)	5 (1)	5 (1)	5 (1)
Other Specifications: Daily Amount Based on the Average for a 5-Day Week						
Min-max calories (kcal)[m,n,o]	350-500	400-550	450-600	550-650	600-700	750-850
Saturated fat (% of total calories)[n,o]	< 10	< 10	< 10	< 10	< 10	< 10
Sodium (mg)[n, p]	≤ 430	≤ 470	≤ 500	≤ 640	≤ 710	≤ 740
Trans fat[n,o]	Nutrition label or manufacturer specifications must indicate zero grams of trans fat per serving.					

[a]In the SBP, the above age-grade groups are required beginning July 1, 2013 (SY 2013-14). In SY 2012-2013 only, schools may continue to use the meal pattern for grades K-12 (see § 220.23).

[b] Food items included in each food group and subgroup and amount equivalents. Minimum creditable serving is ⅛ cup.

[c]One quarter-cup of dried fruit counts as ½ cup of fruit; 1 cup of leafy greens counts as ½ cup of vegetables. No more than half of the fruit or vegetable offerings may be in the form of juice. All juice must be 100% full-strength.

[d]For breakfast, vegetables may be substituted for fruits, but the first two cups per week of any such substitution must be from the dark green, red/orange, beans and peas (legumes) or "Other vegetables" subgroups as defined in §210.10(c)(2)(iii).

[e]The fruit quantity requirement for the SBP (5 cups/week and a minimum of 1 cup/day) is effective July 1, 2014 (SY 2014-2015).

[f]Larger amounts of these vegetables may be served.

[g] This category consists of "Other vegetables" as defined in §210.10(c)(2)(iii)(E). For the purposes of the NSLP, "Other vegetables" requirement may be met with any additional amounts from the dark green, red/orange, and beans/peas (legumes) vegetable subgroups as defined in §210.10(c)(2)(iii).

[h]Any vegetable subgroup may be offered to meet the total weekly vegetable requirement.

[i]At least half of the grains offered must be whole grain-rich in the NSLP beginning July 1, 2012 (SY 2012-2013), and in the SBP beginning July 1, 2013 (SY 2013-2014). All grains must be whole grain-rich in both the NSLP and the SBP beginning July 1, 2014 (SY 2014-15).

[j]In the SBP, the grain ranges must be offered beginning July 1, 2013 (SY 2013-2014).

[k]There is no separate meat/meat alternate component in the SBP. Beginning July 1, 2013 (SY 2013-2014), schools may substitute 1 oz. eq. of meat/meat alternate for 1 oz. eq. of grains after the minimum daily grains requirement is met.

[l]Fluid milk must be low-fat (1 percent milk fat or less, unflavored) or fat-free (unflavored or flavored).

[m]The average daily amount of calories for a 5-day school week must be within the range (at least the minimum and no more than the maximum values).

[n]Discretionary sources of calories (solid fats and added sugars) may be added to the meal pattern if within the specifications for calories, saturated fat, trans fat, and sodium. Foods of minimal nutritional value and fluid milk with fat content greater than 1 percent milk fat are not allowed.

[o]In the SBP, calories and trans fat specifications take effect beginning July 1, 2013 (SY 2013-2014).

[p]Final sodium specifications are to be reached by SY 2022-2023 or July 1, 2022. Intermediate sodium specifications are established for SY 2014-2015 and 2017-2018. See required intermediate specifications in § 210.10(f)(3) for lunches and § 220.8(f)(3) for breakfast

Appendix D

Reimbursement Chart

SCHOOL PROGRAMS
MEAL, SNACK AND MILK PAYMENTS TO STATES AND SCHOOL FOOD AUTHORITIES
Expressed in Dollars or Fractions Thereof
Effective from: July 1, 2016 - June 30, 2017

NATIONAL SCHOOL LUNCH PROGRAM [1]		LESS THAN 60%	LESS THAN 60% + 6 cents [2]	60% OR MORE	60% or MORE + 6 cents [2]	MAXIMUM RATE	MAXIMUM RATE + 6 cents [2]
CONTIGUOUS STATES	PAID	0.30	0.36	0.32	0.38	0.38	0.44
	REDUCED PRICE	2.76	2.82	2.78	2.84	2.93	2.99
	FREE	3.16	3.22	3.18	3.24	3.33	3.39
ALASKA	PAID	0.49	0.55	0.51	0.57	0.60	0.66
	REDUCED PRICE	4.72	4.78	4.74	4.80	4.98	5.04
	FREE	5.12	5.18	5.14	5.20	5.38	5.44
HAWAII	PAID	0.35	0.41	0.37	0.43	0.44	0.50
	REDUCED PRICE	3.29	3.35	3.31	3.37	3.49	3.55
	FREE	3.69	3.75	3.71	3.77	3.89	3.95
PUERTO RICO [3]	PAID	0.35	0.41	0.37	0.43	0.44	0.50
	REDUCED PRICE	3.29	3.35	3.31	3.37	3.49	3.55
	FREE	3.69	3.75	3.71	3.77	3.89	3.95

SCHOOL BREAKFAST PROGRAM		NON-SEVERE NEED	SEVERE NEED
CONTIGUOUS STATES	PAID	0.29	0.29
	REDUCED PRICE	1.41	1.74
	FREE	1.71	2.04
ALASKA	PAID	0.44	0.44
	REDUCED PRICE	2.43	2.97
	FREE	2.73	3.27
HAWAII	PAID	0.33	0.33
	REDUCED PRICE	1.69	2.08
	FREE	1.99	2.38
PUERTO RICO [3]	PAID	0.33	0.33
	REDUCED PRICE	1.69	2.08
	FREE	1.99	2.38

SPECIAL MILK PROGRAM	ALL MILK	PAID MILK	FREE MILK

PRICING PROGRAMS WITHOUT FREE OPTION	0.1975	N/A	N/A
PRICING PROGRAMS WITH FREE OPTION	N/A	0.1975	Average Cost Per 1/2 Pint of Milk
NONPRICING PROGRAMS	0.1975	N/A	N/A

AFTERSCHOOL SNACKS SERVED IN AFTERSCHOOL CARE PROGRAMS		
CONTIGUOUS STATES	PAID	0.07
	REDUCED PRICE	0.43
	FREE	0.86
ALASKA	PAID	0.12
	REDUCED PRICE	0.70
	FREE	1.40
HAWAII	PAID	0.09
	REDUCED PRICE	0.50
	FREE	1.01
PUERTO RICO [3]	PAID	0.09
	REDUCED PRICE	0.50
	FREE	1.01

[1] Payment listed for Free and Reduced Price Lunches include both section 4 and section 11 funds

[2] Performance-based cash reimbursement (adjusted annually for inflation)

[3] Beginning July 1, 2016, FNS approved Puerto Rico to receive a 17-percent increase in school meal reimbursement rates

Appendix E

Smart Snacks Chart

Nutrition Standards for All Foods Sold in School

Food/Nutrient	Standard	Exemptions to the Standard
General Standard for Competitive Food.	To be allowable, a competitive FOOD item must: (1) meet all of the competitive food nutrient standards; and (2) be a grain product that contains 50% or more whole grains by weight or have whole grains as the first ingredient*; *or* (3) have as the first ingredient* one of the non-grain main food groups: fruits, vegetables, dairy, or protein foods (meat, beans, poultry, seafood, eggs, nuts, seeds, etc.); *or* (4) be a combination food that contains at least ¼ cup fruit and/or vegetable. *If water is the first ingredient, the second ingredient must be one of items 2, 3 or 4 above.	• Fresh and frozen fruits and vegetables with no added ingredients except water are exempt from all nutrient standards. • Canned fruits with no added ingredients except water, which are packed in 100% juice, extra light syrup, or light syrup are exempt from all nutrient standards. • Low sodium/No salt added canned vegetables with no added fats are exempt from all nutrient standards.
NSLP/SBP Entrée Items Sold A la Carte.	Any entrée item offered as part of the lunch program or the breakfast program is exempt from all competitive food standards if it is sold as a competitive food on the day of service or the day after service in the lunch or breakfast program.	
Sugar-Free Chewing Gum	Sugar-free chewing gum is exempt from all competitive food standards.	
Grain Items	Acceptable grain items must include 50% or more whole grains by weight, or have whole grains as the first ingredient.	
Total Fats	Acceptable food items must have ≤ 35% calories from total fat as served.	• Reduced fat cheese (including part-skim mozzarella) is exempt from the total fat standard. • Nuts and seeds and nut/seed butters are exempt from the total fat standard.

Food/Nutrient	Standard	Exemptions to the Standard
		• Products consisting of only dried fruit with nuts and/or seeds with no added nutritive sweeteners or fats are exempt from the total fat standard. • Seafood with no added fat is exempt from the total fat standard. • Whole eggs with no added fat are exempt from the total fat standard. • Combination products other than paired exempt foods are not exempt and must meet all the nutrient standards.
Saturated Fats	Acceptable food items must have < 10% calories from saturated fat as served.	• Reduced fat cheese (including part-skim mozzarella) is exempt from the saturated fat standard. • Nuts and seeds and nut/seed butters are exempt from the saturated fat standard. • Products consisting of only dried fruit with nuts and/or seeds with no added nutritive sweeteners or fats are exempt from the saturated fat standard. • Whole eggs with no added fat are exempt from the saturated fat standard. Combination products other than paired exempt foods are not exempt and must meet all nutrient standards.
Trans Fats	Zero grams of trans fat as served (≤ 0.5 g per portion).	

Sugar	Acceptable food items must have ≤ 35% of weight from total sugar as served.	• Dried whole fruits or vegetables; dried whole fruit or vegetable pieces; and dehydrated fruits or vegetables with no added nutritive sweeteners are exempt from the sugar standard. • Dried whole fruits, or pieces, with nutritive sweeteners that are required for processing and/or palatability purposes (i.e., cranberries, tart cherries, or blueberries) are exempt from the sugar standard.

Food/Nutrient	Standard	Exemptions to the Standard
		• Products consisting of only exempt dried fruit with nuts and/or seeds with no added nutritive sweeteners or fats are exempt from the sugar standard.
Sodium	Snack items and side dishes sold a la carte: ≤200 mg sodium per item as served, including any added accompaniments. Entrée items sold a la carte: ≤480 mg sodium per item as served, including any added accompaniments.	
Calories	Snack items and side dishes sold a la carte: ≤ 200 calories per item as served, including any added accompaniments. Entrée items sold a la carte: ≤350 calories per item as served including any added accompaniments.	• Entrée items served as an NSLP or SBP entrée are exempt on the day of and the day after service in the program meal.
Accompaniments	Use of accompaniments is limited when competitive food is sold to students in school. The accompaniment must be included in the nutrient profile as part of the food item served and meet all standards.	
Caffeine	Elementary and Middle School: foods and beverages must be caffeine-free with the exception of trace amounts of naturally occurring caffeine substances. High School: foods and beverages may contain caffeine.	
Beverages		
Beverages	Elementary School • Plain water or plain carbonated water (no size limit); • Low fat milk, unflavored (≤8 fl oz); • Non fat milk, flavored or unflavored (≤8 fl oz), including nutritionally equivalent milk alternatives as permitted by the	

Food/Nutrient	Standard	Exemptions to the Standard
	school meal requirements; • 100% fruit/vegetable juice (≤8 fl oz); and • 100% fruit/vegetable juice diluted with water (with or without carbonation), and no added sweeteners (≤8 fl oz). Middle School • Plain water or plain carbonated water (no size limit); • Low-fat milk, unflavored (≤12 fl oz); • Non-fat milk, flavored or unflavored (≤12 fl oz), including nutritionally equivalent milk alternatives as permitted by the school meal requirements; • 100% fruit/vegetable juice (≤12 fl oz); and • 100% fruit/vegetable juice diluted with water (with or without carbonation), and no added sweeteners (≤12 fl oz). High School • Plain water or plain carbonated water (no size limit); • Low-fat milk, unflavored (≤12 fl oz); • Non-fat milk, flavored or unflavored (≤12 fl oz), including nutritionally equivalent milk alternatives as permitted by the school meal requirements; • 100% fruit/vegetable juice (≤12 fl oz); • 100% fruit/vegetable juice diluted with water (with or without carbonation), and no added sweeteners (≤12 fl oz); • Other flavored and/or carbonated beverages (≤20 fl oz) that are labeled to contain ≤5 calories per 8 fl oz, or ≤10 calories per 20 fl oz; and • Other flavored and/or carbonated beverages (≤12 fl oz) that are labeled to contain ≤40 calories per 8 fl oz, or ≤60 calories per 12 fl oz.	