

**A PILOT EVALUATION INVESTIGATING WEEKEND FOOD PROGRAMS  
ADDRESSING FOOD INSECURITY IN PITTSBURGH, PA**

by

**Shannon Hughes**

BA in Psychology, University of Rochester, 2015

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This thesis was presented

by

**Shannon Hughes**

It was defended on

**April 11, 2017**

and approved by

**Thesis Advisor**

Elizabeth Felter, DrPH

Assistant Professor, Department of Behavioral and Community Health Sciences  
Graduate School of Public Health, University of Pittsburgh

**Committee Member**

Mary Hawk, DrPH

Assistant Professor, Department of Behavioral and Community Health Sciences  
Graduate School of Public Health, University of Pittsburgh

**Committee Member**

Jeremy Martinsen, PhD

Assistant Professor, Department of Infectious Diseases and Microbiology  
Graduate School of Public Health, University of Pittsburgh

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Elizabeth Felter, DrPH

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Shannon Hughes, MPH

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**ABSTRACT**

There is a significant gap in the literature regarding the effectiveness of weekend food programs aiming to decrease food insecurity among children and adolescents. In May 2016, we investigated the weekend food program implemented at different schools in the Pittsburgh area, referenced as Schools A, B and C.

A mixed-methods approach was utilized to combine descriptive information depicting the program processes along with a t-test analysis of student-based data. We analyzed 63 students' attendance rates, years of program enrollment and grades. The qualitative aspects of the study analyzed 134 students and 30 teachers. Methods included key informant interviews, survey distribution, and a community map. A paired samples t-test was conducted to compare the year of program enrollment with student grades and attendance rates. There was a significant difference in the attendance rates from students who were not enrolled in 2014-2015 ( $M=.93$ ,  $SD=.05$ ) and when they were enrolled in the year 2015-2016 ( $M=.94$ ,  $SD=.06$ );  $t(62)=-2.12$ ,  $p=.035$ ) Specifically, students who were not enrolled in the weekend food program in the year of 2014-2015 experienced a significant increase in attendance when enrolled in the program during the year of 2015-2016.

The qualitative arm of this study was collected at Schools A and B in the Greater Pittsburgh Community. Results suggested a significantly positive response to weekend food

program enrollment, and revealed the bags were very likely to be shared with at least one other member in the household. The findings suggested high levels of satisfaction associated with enrollment in weekend food programs. The boost in attendance serves as the foundation to explore more long-term outcomes that have yet to be addressed.

The public health significance of this paper is that it illustrates the need to address the social inequities children in low socioeconomic status disproportionately experience, it supplements the limited existent literature surrounding the evaluation of weekend food programs, and may allow future improvements for cost effectiveness and student-based outcomes. The statistical and descriptive support from this pilot evaluation strongly encourages the further analysis of weekend food programs addressing food insecurity.

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## **PREFACE**

The author would like to thank her advisor, Dr. Elizabeth Felter, as well as her committee members, Dr. Mary Hawk and Dr. Jeremy Martinson, for the support and insights throughout the development of the thesis. The collaboration and guidance from the key stakeholders of the project was greatly appreciated. She would also like to thank Joanne Pegher for the patient and critically important technical support.

## 1.0 INTRODUCTION

Approximately 15.4% of families with children in the United States experience food insecurity (USDA, 2015). Food insecurity leads to disrupted eating patterns, reduced food intake, and reduced quality of diet (USDA, 2016) and directly effects development throughout childhood and adolescents, which can lead to worse behavioral and academic outcomes than those achieved by students who do not experience food insecurity (Shankar et al., 2017). The federal government has attempted to decrease the prevalence of food insecurity by funding food assistance programs for economically qualified students. The National School Lunch Program, the School Breakfast Program (SBP), as well as Summer Food Service Program suggest significant positive effects on health and cognitive achievement for children (USDA, 2016). There is ample evidence surrounding the positive correlations of nutrition interventions with cognitive achievement and educational attainment on an international level (Pollitt et al., 1995; Maluccio et al., 2006), yet there are limited findings within the United States. Recent findings in support of the availability of the SBP across schools suggested that persistent access to nutritional food in the SBP yields significant effects on achievement. In addition, it further supplemented the current findings on the positive influence on childhood health and nutrition on cognitive achievement (Frisvold, 2015).

Based on current findings that significantly illustrate the positive benefits of food assistance programming for children and adolescents, it could be predicted that weekend food

program initiatives are similarly important. There is a significant gap in the literature investigating the systematic study of needs assessment, planning, implementation, and evaluation of school-based programs addressing food access over the weekend. These programs, which will be referenced throughout the paper as “weekend backpack programs” are implemented through various methods throughout the country. Although the federal government has provided assistance to children and adolescents to be food secure through school-based environments, there is an opportunity to stimulate greater consistency and expand the impact of these programs by analyzing how weekend backpack programs are being implemented across the country.

In efforts to understand the effects of weekend backpack programs, this thesis presents recent findings from three schools within the Pittsburgh area. We will present an academic paper in publishable format in a peer-reviewed public health journal. The thesis and paper have four main objectives: (1) To examine the connections among poverty, food insecurity, and academic achievement in the published literature. (2) To illustrate the current structural interventions being implemented to decrease childhood food insecurity. (3) To give a summary of how weekend food programs are organized within the Pittsburgh community and to assess the relationship between program enrollment and student-based outcomes in one neighborhood setting. (4) We will make recommendations for a research agenda moving forward to investigate the most critical questions that must be answered for optimal delivery of services to vulnerable populations.

## **2.0 POVERTY, FOOD INSECURITY, AND STUDENT ACADEMIC ACHIEVEMENT**

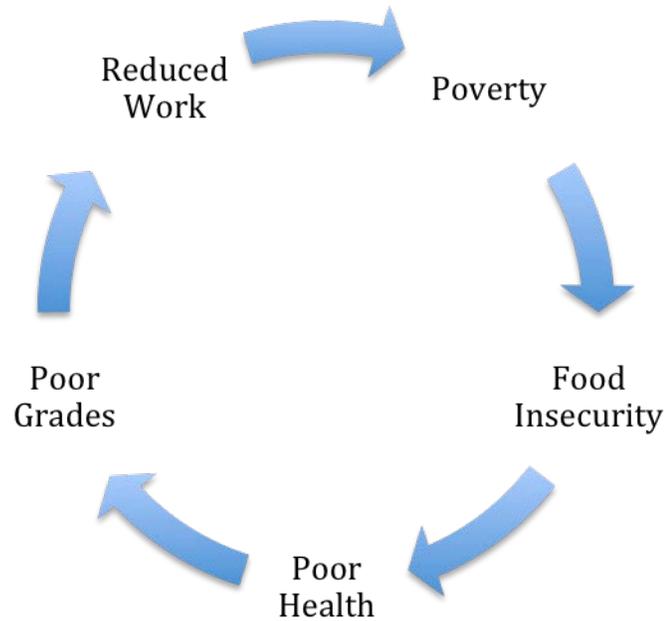
The prevalence of childhood hunger in the United States is a pertinent issue that needs to be addressed. The interrelated nature of poverty, food insecurity, and its impact on academic achievement can lead to repetitive vicious cycles for those born into households living at or below the poverty level (WIC, 2017). Various strategies intending to mitigate the maladaptive outcomes associated with food insecurity have been implemented through policy interventions (CDC, 2017), such as Supplemental Nutrition Assistance Program (SNAP) and Supplemental Nutrition Program for Women, Infants and Children (WIC) made attempts at targeting the issue of food insecurity on this level. A major weakness of these interventions is the definition of poverty thresholds, which are outdated and incomprehensive (Short, 2011). These interventions may not be adequate, as they do not account for expenses that reduce disposable income, medical costs, nor changes in family situations, and thus may leave those in need underserved.

This paper investigates the intervention of weekend food programs that function at both the community and organizational levels of the social ecological framework (CDC, 2017). With the foundational understanding that poverty, food insecurity and academic achievement are all intricately related (Marmot, 2012; Coleman, 2016; Fletcher, 2014), we will further explore these relationships and how the evaluation of weekend food programs may function to further decrease the prevalence of food insecurity among children and adolescents.

## 2.1 POVERTY

Households that are at or below the poverty line experience an increase in food insecurity (Barrett, 2010). According to the U.S. Census Bureau, approximately 23% of children are living in households below the poverty level (United States Census Bureau). Based on data collected from the National Center for Education Statistics, 51% of students across public schools in the United States were from low-income families (Suitts et al., 2015). A vast body of literature strongly documents the relationship between poverty, school readiness and academic achievement (Duncan, 1997; Haveman, 1995). Furthermore, the maladaptive outcomes of childhood poverty can be traced throughout the life span, thus creating vicious cycles of poverty, poorer school grades, lower educational attainment, lower wages and income which then impacts future generations (Restuccia, 2004; Duncan, 2012; Fletcher, 2014). Significant findings were reported in a systematic review analyzing the relationships between child and adolescent chronic conditions, occupational and educational outcomes. The results suggested that individuals who had maladaptive adolescent health conditions experienced poorer employment and educational outcomes (Hale, 2015).

Research not only shows that poverty is a strong causal factor in the prevalence of food insecurity, but illustrates the deleterious effects of poverty on multiple outcomes (Cook et al., 2004).



**Figure 1. Cycle of Food Insecurity**

For the scope of this section, we will be analyzing the interrelatedness of poverty, food insecurity, child and adolescent health, and academic achievement.

### **2.1.1 SES and Childhood Development**

Parental educational attainment, occupation and income are associated with cognitive function in children. Noble et al., 2015, found that neuroanatomical development, such as cortical surface area, cortical thickness, and subcortical volumes was predicted to be associated with socioeconomic disparities. More specifically, the study predicted that children living in low-income households would be negatively correlated with neuroanatomical development. These facets of neuroanatomical development include the cognitive functioning processes associated with language, self-regulation, memory, and socio-emotional processing (Noble et al., 2006;

Raizada et al., 2008; Stevens et al., 2009; Sheridan et al., 2012; Tomalski et al., 2013; Kim et al., 2013). The results suggested the higher the socioeconomic status (SES) of one's parents, the higher chance that their cortical surface area, cortical thickness and subcortical volumes will be greater in size. In consequence, children from lower income families showed a significant difference in these aspects of neuroanatomical development, suggesting the strong effect of childhood SES on structural brain development. These findings suggest severe disadvantages for positive cognitive development among children living in poverty. The connection between disparities in SES and cognitive development presents strong evidence for programming in order to combat the social injustices children in our country are facing.

### **2.1.2 SES and Child Mental Health**

Various studies have discovered an inverse relationship between SES and mental health problems. More specifically, research suggests that adolescents who may be socioeconomically disadvantaged experience a higher likelihood of developing mental health problems (Belle, 1990; Qi & Kaiser, 2003; Dashiff et al., 2009; Reiss et al., 2013). In a systematic review of research articles published in English or German between the years of 1990-2011, 52 studies indicated that socioeconomically disadvantaged children were more likely to have mental health problems. Furthermore, children with low SES were two-to-three times more likely to develop mental health issues (Qi & Kaiser, 2003).

The systematic review outlined theoretical approaches to understanding the differences in prevalence of mental health disorders. Eaton (1980) posited that individuals with mental health problems might be in lower socioeconomic positions due to their inability to fulfill social and economic expectations. This theory puts emphasis on the individual responsibility to become a

functioning citizen in society without the acknowledgement of structural barriers that may be present in one's life circumstances. An alternative theory, the social causation hypothesis, proposes that mental health problems are due to levels of economic deprivation (Dohrenwend & Dohrenwend, 1969).

With the baseline understanding that approximately one-in-five children and adolescents suffer from psychiatric disorders, the current literature reveals serious disparities among differences in the social determinants of health (WHO, 2012). Kessler et al., (2005) reported that approximately half of all lifetime mental health disorders develop by the age of 14. Furthermore, various studies illustrated negative impacts of low socioeconomic status on children's mental health. An evaluation of over 40,500 health care records of children receiving welfare revealed that they were twice as likely to develop mental health problems than the rest of the population (Spady et al., 2001).

### **2.1.3 SES and Child Physical Health**

In addition to addressing the deleterious effects of SES with childhood cognitive development and mental health, it is critical to acknowledge the impact of these social conditions in relation to physical health and well-being. Over the past two decades, researchers and public health experts have begun to prioritize of addressing the social determinants of health in order to improve the health and well-being of populations. Approximately five-times as many adults living in poverty report fair-to-poor overall health in comparison to adults with high SES (Braveman, 2008). Food insecurity is highly correlated with maladaptive physical health outcomes (Alvarez, 2015). People who are food insecure face unmet needs for chronic disease prevention such as diabetes and hypertension (Cook, 2013; Seligman, 2007; Stuff, 2004; Gunderson, 2015). Kaur et al.,

2015 suggested that rates of obesity among adolescents aged 6-to-11 years were significantly positively correlated with food insecurity. Other findings suggest that children who live in food insecure households have poor health-related quality of life in comparison to those living in food secure households (Casey et al., 2005).

The effects of food insecurity on physical health, especially through the life course perspective, demands solutions to ensure equal opportunity of health and well-being for all populations. The evidence highlights the current state of food insecurity in the country. In the next section, we will discuss the current definitions of food insecurity and the current literature surrounding the impact of school-based food assistance programs.

## **2.2 FOOD INSECURITY**

Access to sufficient and healthy food is a social determinant of health and is a serious public health concern. Household food security is defined by the federal government as all people in a household having enough food for an active, healthy life at all times (Hunger in America, 2016). Four levels of food security are described, including high food security, marginal food security, low food security, and very low food security. The status of a household experiencing very low food security would indicate disrupted eating patterns and reduced food intake (USDA, 2016). Compromising portion sizes, skipping meals, or eating the same foods over a period of time are also indicators of food insecurity (Laraia, 2013).

The lack of consistent, dependable access to food for a healthy and active lifestyle is related to negative outcomes such as increased risk of stress, obesity, hypertension, and type-2 diabetes (Bruening et al., 2012). Particularly for children, food insecurity leads to a higher

likelihood of insecure relationships, delayed cognitive development, and increased rates of anxiety and depression (Kessler et al., 2010). The experience of food insecurity, especially among children, establishes an unstable foundation for the future. Without consistent access to food sources, healthy development is impaired and hurts the opportunity to achieve long-term outcomes such as education, employment, positive health and well-being.

In Allegheny County, Pennsylvania, 14.4% of households experience food insecurity (Feeding America, 2015). When examining the percentage of food insecurity among children specifically, the rate increases to 18.8%, with 19.1% of children under the age of 18 living in poverty (Feeding America, 2017). Due to the limited scope of this project, we will address the current food assistance programs offered to students in the Pittsburgh area.

### **2.2.1 Healthy, Hunger-Free Kids Act (HHFKA)**

The Healthy, Hunger-Free Kids Act (HHFKA) was signed on December 13, 2010 (USDA, 2017). The first legislation to invest in the school meal program for over 30 years, it aimed to improve nutrition for food served in schools, engage in stronger local school nutrition and physical activity policies, hold schools to a higher level of accountability for meeting nutrition standards, and to improve meal financing in order to support more nutritious school lunches (Wootan, 2011). In summation, the policy intended to stimulate healthier school environments for the school children across the country. The passage of the HHFKA stimulated the creation of a universal meal program titled, “Community Eligibility Provision.” Next, we will look at how this structural policy change was implemented on a local school district level.

### **2.2.2 Community Eligibility Provision (CEP)**

The community eligibility provision (CEP) was implemented as a product of the HHFKA in Pittsburgh Public Schools during the academic year of 2014-2015. It allows all students in the school district to eat breakfast and lunch for free, and establishes an alternative approach for school districts to offer free meals. Through this approach, it disregards students' financial standing and bypasses the process of individual applications for free or reduced meals. Instead, it offers free meals based on specific financial requirements of the school district (PPS). This provision allows an increase in breakfast and lunch participation, simplifies meal counting and claiming, and helps eliminate student debt from reduced and paid meals (USDA, 2015).

The universal school meal program intended to streamline the process of becoming eligible for school-based food programs and to increase the number of students reached in an effort to decrease food insecurity. Community eligibility schools use "direct certification" data in order to qualify for Federal cash reimbursement for school meals provided by the United States Department for Agriculture (USDA). Instead of relying on annual household applications to determine program eligibility for free and reduced-price meals, schools and licensed educational agencies (LEAs) become eligible if at least 40 percent of its students are "directly certified." In further detail, for a student to be "directly certified" would that they have been identified for free meals through other channels besides household applications (U.S. Department of Education, 2014). This would mean that schools identify their "directly certified" students based on whether they are enrolled in the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), or the Food Distribution Program on Indian Reservations.

The program eligibility requirements are based on income guidelines suggesting that a family of four would need an income less than \$41,348 to qualify for enrollment (USDA, 2012). As mentioned earlier, these income guidelines have been argued on their lack of inclusivity when considering other life costs and potential changes in family structures (Short, 2011). The policy integrated a method to account for low-income families who may not be represented in the direct certification data. The USDA established meal reimbursement levels for Community Eligibility schools by multiplying the identified students in the direct certification data by a multiplier of approximately 1.6.

The question of whether the program eligibility requirements are effective in encompassing students who may not be enrolled and serviced through food assistance programs is highlighted through the findings of this study. In addition, the implementation of a “universal school meal program” neglects to account for children’s access to food over the weekends, which impacts their well-being and academic performance throughout the week. The next section will describe the limited literature surrounding weekend food programs, which aim to account for this gap in food assistance support for children.

### **3.0 ADDRESSING FOOD INSECURITY OVER THE WEEKEND**

#### **3.1 BACKPACK FOOD PROGRAM**

A thesis published in May 2012 evaluated the effectiveness of a weekend food program, titled “BackPack Food Program” (Ecker, 2012). The evaluation assessed the program’s effect on student behavior in the classroom over the course of three semesters. Surveys measuring self-reported hunger levels were distributed to 82 students, and observational data on student behavior was collected for 52 students. Results suggested that self-reported levels of hunger didn’t decrease for students enrolled in the program, and that student behavioral outcomes didn’t increase. Significant limitations of the study included a lack of baseline data surrounding the student behavioral measures and a lack of reliability checks. Ecker (2012) suggested that future research should try to assess a longitudinal trend of behavior in terms of program enrollment in order to provide a more accurate representation of program effects. The next section aims to describe the project of a graduate student in efforts to add to the literature surrounding the impact of weekend food programs within the Pittsburgh, Pennsylvania area.

### **3.2 WEEKEND FOOD PROGRAMMING IN PITTSBURGH, PA**

There is a significant gap in the literature on the impact of weekend food programming across the United States. In addition, funding opportunities often heavily rely on impact evaluation in order to ensure positive and efficient programming. In order to understand best practices in programs addressing food insecurity, we conducted a study to describe the current climate of weekend food programming in a mid-size city in the Mid-Atlantic region of the United States. In the present section, we aim to document preliminary outcomes associated with these programs.

In effort to address the financial barriers of consistent and dependable food sources for children over the weekends, various community leaders initiated weekend food backpack programs. These programs aimed to ensure students throughout the Greater Pittsburgh Area do not go hungry on the weekends. In addition, these programs aim to alleviate parents' financial burdens, thus increasing the household's opportunity to sustain financial means for consistent food options. Various school administrators, parents, and community-based organizations across the Greater Pittsburgh Area aim to eliminate food insecurity and promote healthy adolescent development. A graduate student joined a collaborative unit to initiate a pilot evaluation of how programs were being implemented in the area. Three schools were involved in the study and will be identified as Schools "A", "B" and "C." The next section will discuss the foundational questions addressed to drive the project.

### **3.2.1 Evaluation Questions**

The main evaluation questions defined by key informants directly involved with Schools A, B and C were specific to the behavioral and academic outcomes at their respective schools. The following questions were highlighted to establish the outcome measures of the pilot evaluation.

- (1) Does program participation improve behavioral outcomes?
- (2) Does program participation improve academic performance?
- (3) What is the level of parent involvement?
- (4) Are the students satisfied with the food options included in the bags?

### **3.2.2 Program Methods: School A**

School A engaged in a four-step process to distribute food to eligible students for the weekend. First, the parent leader of School A's backpack initiative coordinated with the local food bank to order the food for the weekend bags. Previously, a parent leader would buy food from a local food club on a weekly basis, which was much less cost-effective and more time-consuming. The collaboration with the local food bank streamlined the process of getting food for the weekend bags. Secondly, the food bank collaborated with the school district to streamline the process of delivering the food to each school. There was a warehouse for the purchased weekend food, and a delivery service brought the food to School A every Thursday. The weekend food was delivered at the same time they delivered the school lunches.

Every Friday morning, from 9 AM to 9:30 AM, volunteers from School A convened in the front hall of the school to pack the bags. This part of the process involved a couple of

individuals putting each of the nine food items in approximately 90 individual bags. These food items included items such as canned beef stew, macaroni and cheese, fruit snacks, a fresh bakery item, cereal, and more. The food was typically stored in a cabinet that was located in the front hall of the school, and allowed transparency of the program's functioning in effort to gain community awareness and support.

During school time, the principle of School A, alongside parent volunteers, distributed the bags to the eligible students. Each student received a plastic bag filled with food and typically put it in his or her school backpack. The mission of the weekend food program at School A was to decrease food insecurity and provide social opportunities between youth and adults. The parent leader of the program quoted, "Be the adult you wish you had." She elaborated on this statement by explaining her feeling of being personally responsible to provide equal opportunities of food access for children in her community, regardless of socioeconomic status. With this moral foundation, the program aimed to benefit the students for healthy social, mental and physical adolescent development.

There were 90 students between the ages of five and ten at School A who were receiving the benefits of the weekend food program. School A reached youth who lived in sixteen different zip codes across the Greater Pittsburgh Area. The eligibility requirement for the weekend food program at School A was to qualify for free lunches at school. If a student was eligible, the student and guardian were able to qualify to fill out a form to participate in the program. The third step that established program eligibility was the confirmation from the school principle.

Due to limited funding sources, the program was not able to enroll all eligible students. About 72% of the eligible student body was being reached through these services. The primary goal of this program was to provide the opportunity to participate in the program for all eligible

students. The opportunity to provide outcome data illustrating the impacts of the weekend food program was a major priority in order to secure funding resources to enroll all eligible students.

### **3.2.3 Program Methods: School B**

Similar to the weekend food program at School A, there was a strong collaborative partnership between School B and the local food bank. It was cost-effective and a positively functioning partnership for both parties involved. With the help of the school district, the food would be dropped off at a loading dock located at the side of the school, and could be easily transported inside to the packing area. This was another comparable aspect to the programming at School A. The main difference was quantity of food being delivered and the number of students being served, since the non-profit funding School B's weekend program served over 24 different schools across the area. This difference in size was primarily due to funding opportunities, as well as the difference in capacity between a parent volunteer and a non-profit organization.

In terms of the process of packing and delivering the weekend bags, volunteers would meet in the lunchroom of the high school every Thursday. They conducted an efficient method of unwrapping the food items, placing them in the bags, and then organizing them to be distributed to different schools. When conducting a participant observation, there was a corporate volunteering event occurring in tandem with volunteers from the non-profit. With further investigating, it became known from the key stakeholder from the non-profit that large businesses across Pittsburgh often get involved in the packing and distribution of these bags. The scope of the non-profit's programming expanded from reaching 50 students, to over 2,500 students across the Greater Pittsburgh Area. These students qualified for the program by receiving free and reduced lunch.

### **3.2.4 The Competition of Funding Resources**

With this brief illustration of two weekend food programs functioning in the Greater Pittsburgh Area, a key issue of the availability of funding resources is highlighted. One program had a higher likelihood of feeding children across the area due to the better procurement of funding resources over another program. One of the driving factors of this injustice is the lack of evidence behind these programs addressing childhood food insecurity experienced outside of school-settings, and over the weekend. There are over 100 weekend days in a year, translating to over 100 days that food insecure children do not have access to food. The mission of this study was to contribute to the limited literature surrounding the impact of weekend food programs, in hopes of securing more funding opportunities to reach more children in our community who do not have consistent, dependable access to food. The following paper describes in full this effort.

#### **4.0 JOURNAL ARTICLE**

### **A PILOT EVALUATION OF WEEKEND FOOD PROGRAMS ADDRESSING FOOD INSECURITY IN PITTSBURGH, PA**

Shannon M. Hughes, MPH

Elizabeth M. Felter, DrPH, \*MCHES

Department of Behavioral and Community Health Sciences, University of Pittsburgh Graduate  
School of Public Health, Pittsburgh, PA

\*Corresponding Author

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## 4.1 ABSTRACT

Approximately 15.4% of families with children in the United States experience food insecurity (Feeding America, 2016). Weekend food programs are one intervention designed to reduce food insecurity over the weekend. There is limited understanding of how weekend food programs addressing food insecurity are efficiently operationalized and how they impact children. The purpose of this study was to investigate and evaluate three weekend food programs based on their model of approach, participant experience, and effects on student attendance rates and grades. The evaluation was designed in collaboration with key stakeholders from each project and was driven by each program's prioritized objectives.

Utilizing a mixed-methods approach, key informant interviews, survey distribution and a data set of student attendance rates and grades were collected. The qualitative results included key quotes from students, parents and teachers describing their experiences in the program. In addition, critical feedback was provided for stakeholders to integrate into more efficient and impactful program methods. The quantitative analysis involved a paired samples t-test that showed a significant difference in the means between program enrollment and student attendance rates ( $p = .035$ ).

Recognizing this strong connection between an increase in access to food through weekend food programming, which resulted in an increase in student attendance rates, strongly supports the positive impact of weekend food programming for children. It is important to recognize the social responsibility to provide equal access to food, thus increasing the equal opportunities for achieving higher education, employment and positive long-term health and well-being. Future research needs to build upon these findings and investigate ways to improve programming, in order to decrease disparities in food access, education, and health.

## 4.2 INTRODUCTION

Approximately 15.4% of families with children in the United States experience food insecurity (USDA, 2015). This means that children report disrupted eating patterns, reduced food intake, and reduced quality of diet (USDA, 2016). The status of a household experiencing very low food security would indicate disrupted eating patterns and reduced food intake (USDA, 2017). Compromising portion sizes, skipping meals, or eating the same foods over a period of time are also indicators of food insecurity (Laraia, 2013). This lack of sustainability of food sources directly impacts childhood development, which can often be illustrated through poorer behavioral and academic outcomes in the school setting as compared to their peers who do not experience food insecurity (Shankar et al., 2017). In addition, the health and social inequalities related to food insecurity present severe disadvantages for children for positive academic performance (Duncan, 1997; Haveman, 1995). Furthermore, the maladaptive outcomes of childhood poverty can be traced throughout the life span, thus creating vicious cycles of poverty, poorer school grades, lower educational attainment, lower wages and income which then impacts future generations (Restuccia, 2004; Duncan, 2012; Fletcher, 2014). Not only are students who are food insecure report difficulties in concentration and overall well-being, the long-term implications of this experience are detrimental. Given the maladaptive outcomes associated with food insecure children and the long-term health disparities experienced among children in low socioeconomic status, it is important to address the effectiveness of programs that target these issues.

In Allegheny County, Pennsylvania, 14.4% of households experience food insecurity (Feeding America, 2015). When examining the percentage of food insecurity among children specifically, the rate increases to 18.8%, with 19.1% of children under the age of 18 living in

poverty (Feeding America, 2017). Within the Pittsburgh, PA area, as well as nationally, there is limited understanding of how different schools and neighborhoods operationalize their weekend food programs.

In May 2016, a group of key stakeholders in various weekend backpack programs convened to discuss health-messaging strategies for specific backpack programs. Out of these discussions came the realization that evaluation of the weekend backpack programs was necessary. Within the study area, it was apparent that many different program structures existed. Initially, there was no source of information to identify the number or location of each backpack program, let alone structure, objectives, and any outcomes that might be collected. Upon initial assessment, it became clear that there were substantial differences in leadership structure, food sourcing, specific aims and intentions behind programming. While some programs solely focus on addressing the issue of weekend food insecurity, other programs had weekend backpack programs integrated into a larger set of interventions. Educational materials, community-wide events, and the effort to increase parental involvement in programs varied significantly across sites.

Given the lack of cohesiveness and availability of information about the various programs across the county, the group of key stakeholders representing local social service agencies and universities requested an evaluation be performed to help understand the breadth and scope of weekend backpack programs in the area. Due to the lack of funding for the project, the author led the pilot evaluation, under the supervision of her academic advisor, in order to fulfill the practicum work required for the partial completion of her degree.

### 4.3 METHODS

In this mixed-method pilot evaluation, representatives from key organizations involved in the delivery of weekend food programs collaborated to establish a descriptive understanding of the program's operations. The evaluation questions developed investigated process and impact questions included, "Does program enrollment have an effect of attendance rates and grades?" "What are the student's food preferences?" "With whom do the children share their weekend food bags?" "Do students feel stigmatized for being a part of the weekend food program?" "What are the views and opinions of teachers at schools where weekend food programs occur?" and "What kind of feedback do teachers and parents suggest?" Each stakeholder had a series of questions that were relevant to their organization's mission.

These questions were investigated through the methods of key informant interviews, survey distribution, community mapping, and a paired samples t-test analysis. Community mapping utilizing Arc\_QGIS was performed to illustrate the location of weekend food programs in relationship to poverty and levels of educational attainment. In addition, the visual prompt was used in the survey distribution to account for the age-range of students participating in the program. Three schools were identified as the sites of the pilot study due to their diversity and motivation of interest in programming within the Pittsburgh area, as well as the relationships the evaluators had with social service agencies that could provide entrée to the programs. The following sections will describe the differences in program methods and role of involvement of each specific school.

### **4.3.1 Participants and Setting**

#### **4.3.1.1 School A**

The weekend food program at School A was evaluated through key informant interviews, survey distribution, and a visual voice prompt. The collaboration with this program allowed for a descriptive analysis of their method and impact of their approach. The program at School A prioritized the following evaluation questions:

- 1) Are the students satisfied with the food options included in the bags?
- 2) How do students feel when receiving their “backpacks”?
- 3) Who do the students share their “backpacks” with at home?
- 4) Does program participation improve academic performance and student attendance rates?

Surveys were distributed to the 30 teachers employed at the school, and the 90 elementary-aged schoolchildren enrolled in the program. Parent-based surveys were delivered home in the bags as well.

#### **4.3.1.2 School B**

Key informant interviews, survey distribution and a visual voice prompt were implemented to gather qualitative data the program at School B. The main evaluation questions defined by the key informant from this school were specific to the behavioral and academic outcomes at their school. The school population at School B was transient and often students would be outsourced to this school in order to cope with behavioral issues. 60 surveys were distributed to the students aged 5-13. The evaluation questions reflect this site-specific characteristic in comparison to the other schools involved in the pilot investigation:

- (1) Does program participation improve behavioral outcomes?

- (2) Does program participation improve academic performance?
- (3) How can we increase parent involvement?
- (4) Are the students satisfied with the food options included in the bags?

#### **4.3.1.3 School C**

For School C, surveys had already been distributed to households who were enrolled in their programming for the past few years. These surveys provided critical information that was highly specific to their organization’s weekend food program. The key evaluation question identified by this organization was “How does program enrollment impact attendance and grades?” This collaboration allowed insight into the relationship between weekend food program enrollment and student-based outcomes. Student-based data was collected and shared with the graduate student. This data set included dates of program enrollment, attendance rates, age and student grades for over 200 elementary school aged children. The quantitative arm of this study solely focused on School C. Since School C’s program was independent and uniquely implemented in the Pittsburgh community, there was a request to explore the feelings and attitudes of other weekend food programs from other pioneers in the realm of weekend food programming within Pittsburgh.

### **4.3.2 Qualitative Arm**

#### **4.3.2.1 Key Informant Interviews**

Key informant interviews were used to establish the foundational understanding and questions of the evaluation design. They were utilized to gather a descriptive analysis of how each program

was implemented. Through School C, interviews were conducted with school site directors and individuals from the office of research and evaluation. School A interviewed the parent leader in charge of the program as well as the school principal. For School B, a representative from the affiliated non-profit and a special education teacher were interviewed. Key questions asked across all sites included perceived models of the program, basic descriptive information about the program, and the key informants' roles and responsibilities within each program.

#### **4.3.2.2 Student Surveys**

The student surveys were short and more visual in comparison to the teacher and parent surveys. The use of a visual prompt was incorporated into the survey in efforts to allow students an opportunity to represent their preferences of what they receive in their bag. The prompt included an image of a replica of the bag they received every Friday and asked the students to draw what they liked to see in their bags. On the bottom of the page, it read, "My weekend bag makes me feel..." and "I would like to have \_\_\_\_\_ in my weekend bag." Student surveys were distributed in the weekend bags and collected from the school principal.

#### **4.3.2.3 Parent and Teacher Surveys**

Surveys were disseminated among participating parents and teachers. These surveys included measures relating to satisfaction, food preferences, perceived impact of program, and overall program feedback. At School A, the teacher surveys were distributed in teacher mailboxes, and retrieved from the school principal. As for teachers at School B, the special education teacher distributed and collected the surveys. The parent surveys at School A were distributed inside the weekend food bags along with the student surveys. Survey examples can be found in appendix.

#### **4.3.2.4 Community Mapping**

A visual map was created in Arc\_QGIS to represent the levels of poverty, levels of educational attainment, location of weekend food programs and grocery stores across the Pittsburgh area. This method was utilized to gather an understanding of where current programs exist across the area. In addition, it aimed to better understand if areas of high need are being reached. In essence, this method was integrated to display potential disparities in access to food and educational attainment (Data Sources: American FactFinder, Pittsburgh Schools).

#### **4.3.3 Quantitative Arm**

School C's collection of student outcome data was shared with a graduate student intern in order to analyze the relationship between program enrollment, attendance rates and grade point averages. Attendance rates and grade point averages from two school years were analyzed using SPSS to look for differences in students who did not participate in the backpack program Year 1 (2014-2015) but did in Year 2 (2015-2016) using a paired samples t-test.

### **4.4 RESULTS**

#### **4.4.1 Qualitative Results**

Rich qualitative data were gathered from the key informant interviews, surveys depicting student, parent and teacher experiences of their affiliated weekend food program, as well as a community map.

#### 4.4.1.1 School A: Survey Results

There was a 33% survey response rate of the 90 student-based surveys distributed. A few responses from the student survey question, “My weekend bag makes me feel...” included

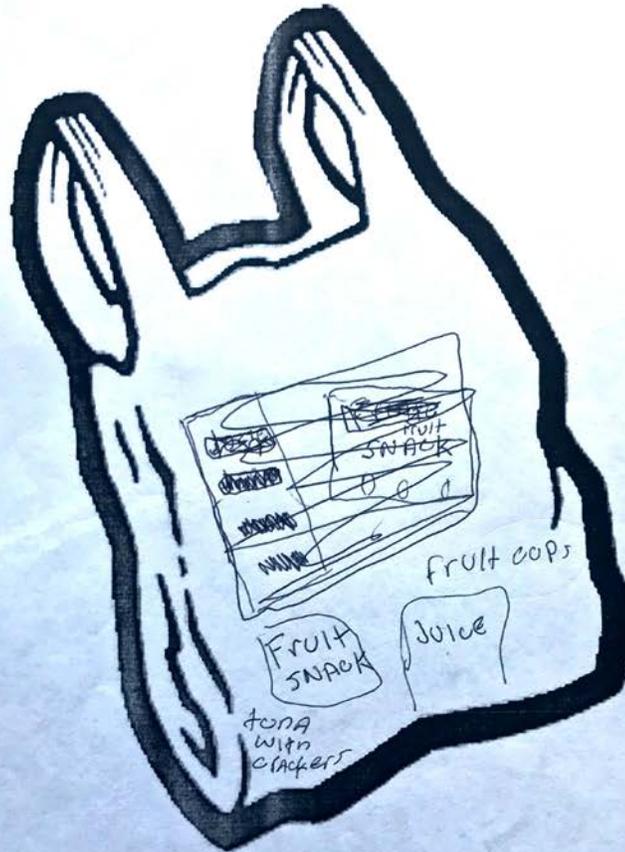
- “My weekend bag makes me feel full.”
- “My weekend bag makes me feel blessed.”

Student responses from the survey question asking, “My weekend bag helps me...” included:

- “My weekend bag helps me have more food so my mom doesn’t have to spend as much money as she does.”
- “My weekend bag helps me play a lot,”
- “My weekend bag helps me feel great.”
- “My weekend bag helps me feel full on the weekends.”

91% of students reported sharing their weekend bags with at least one other member of their family. Polling results of the preferred food items of students at each program were delivered to the key stakeholders, and had a high response of preferring macaroni and cheese, fruit snacks, and cereal. Attached below are a few images from the visual voice prompt.

Draw what you would like to see in your weekend bags.



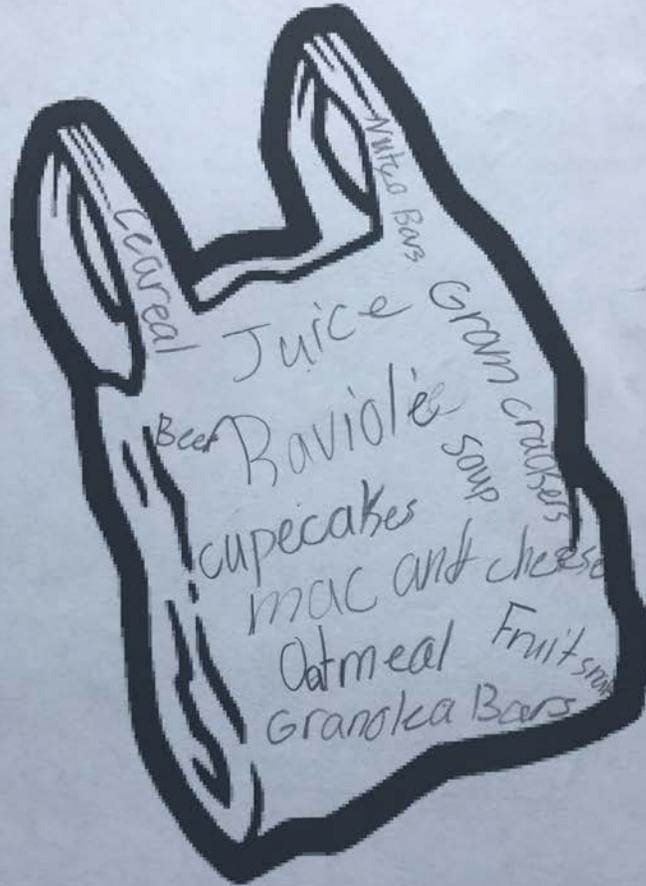
My weekend bag helps me ~~to~~ \_\_\_\_\_

It helps me get through the ~~week~~ WEEKEND

My weekend bag makes me feel good happy Great thank for

Figure 2. Student Visual Response 1

Draw what you would like to see in your weekend bags.



My weekend bag helps me Have more food so my

mom doesn't have to spend as  
much money as she does.

My weekend bag makes me feel Happy.

Figure 3. Student Visual Response 2

The teacher-based surveys had a 50% response rate, whereas no parent-based surveys were returned. There was a 100% awareness of the program among the teachers. 95% of teachers said the weekend food program is important, needed and beneficial for students. There was a positive majority response of having the program available for their students. Critical feedback included more educational materials around cooking, food items, and community resources to be in the weekend bags.

#### **4.4.1.2 School B: Survey Results**

44 of the 60 student-based surveys were collected, resulting in a 73% response rate. Key quotes and illustrations from the student-based surveys are listed below: A few responses from the student survey question, “My weekend bag makes me feel...” included:

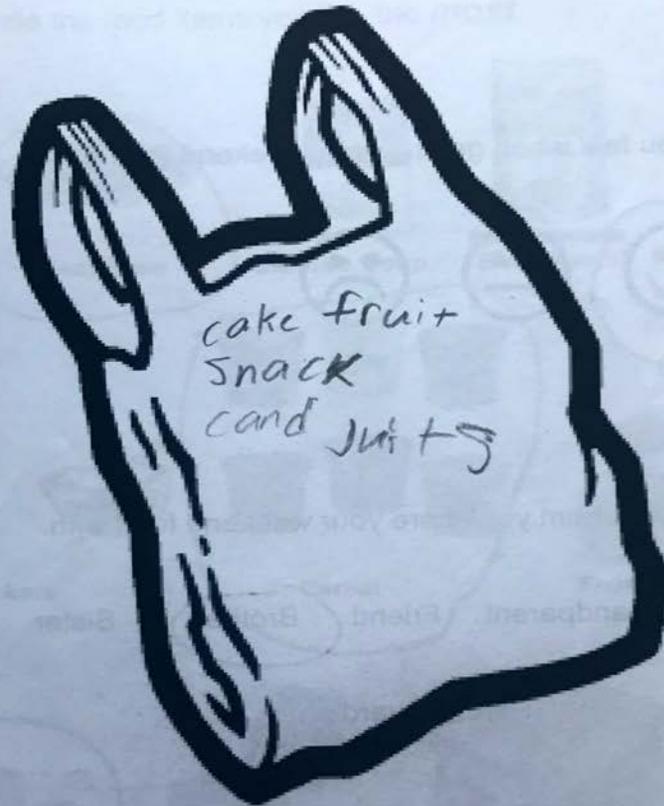
- “My weekend bag makes me feel happy.”
- “My weekend bag makes me feel good.”

Student responses from the survey question asking, “My weekend bag helps me...” included:

- “My weekend bag helps me not be hungry.”
- “My weekend bag helps me because my mom and my family need it.”
- “My weekend bag helps me make food with mom.”

87% of students reported sharing their weekend bags with at least one other member of their family. Polling results of the preferred food items of students at each program were delivered to the key stakeholders, and had a high response of preferring macaroni and cheese, fruit snacks, and cereal. Attached below are a few images from the visual voice prompt.

Draw what you would like to see in your weekend bags.



My weekend bag helps me because my mom and my

family ride it

My weekend bag makes me feel happy

Figure 4. Student Visual Response 3

Draw what you would like to see in your weekend bags.



My weekend bag helps me get food when I  
don't have enough, t.

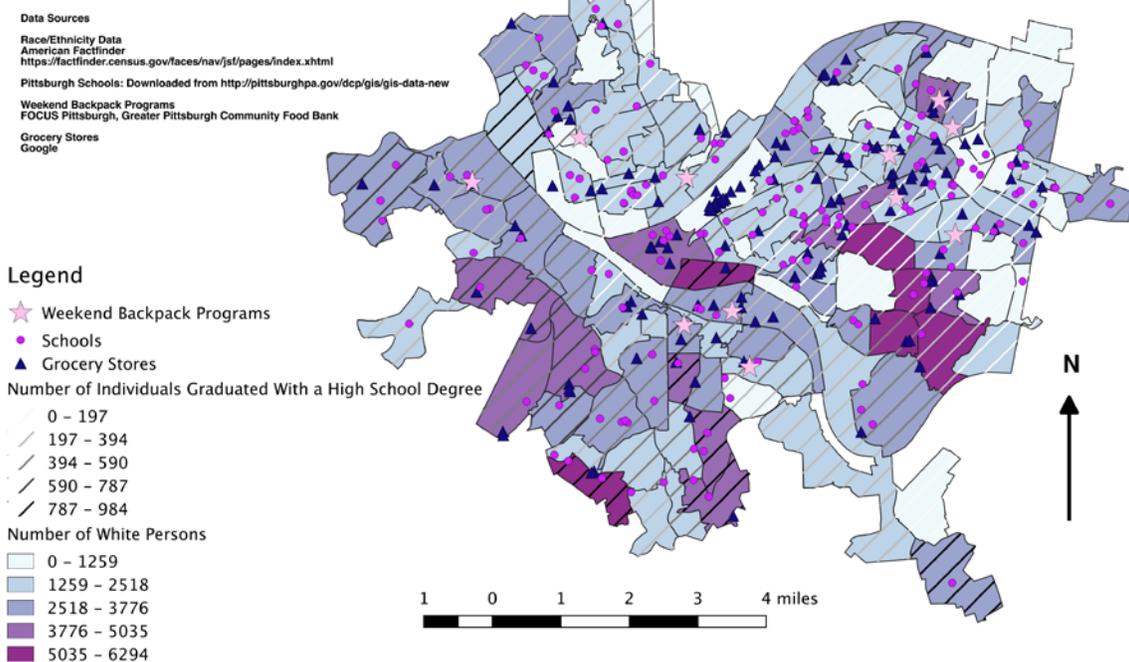
My weekend bag makes me feel happy because  
I am getting food.

Figure 5. Student Visual Response 4

#### **4.4.1.3 Community Mapping**

A descriptive picture of each program was explained through key informant interviews at each site. The map of the Greater Pittsburgh Area highlighted disproportionately affected areas in terms of educational attainment, access to grocery stores, poverty levels, and presence of a weekend food program. The results from mapping the levels of educational attainment, race, poverty rates, the location of weekend food programs and the location of grocery stores provided rich visual representation of areas in disparity across the Pittsburgh area. It was found that areas that have the highest level of poverty were also areas of low educational attainment. In addition, the accessibility of grocery stores and the presence of weekend food programs were limited in these areas.

### The Location of Weekend Food Backpack Programs, Schools, Grocery Stores in Relation to Levels of Educational Attainment and Estimate of White Population in Pittsburgh, PA



**Figure 6. Community Map of Weekend Food Programs**

This map illustrates the location of weekend food programs, schools and grocery stores across the Pittsburgh area. In relation to these locations, levels of educational attainment and the number of white persons were mapped. Results depict areas that are underserved in terms of food access and weekend food programming.

#### 4.4.2 Quantitative Results

In School C, a paired samples t-test was conducted to compare the year of program enrollment with student grades and attendance rates. There was a significant difference in the attendance rates from students who were not enrolled in 2014-2015 ( $M = .93$ ,  $SD = .05$ ) and when they were

enrolled in the year 2015-2016 ( $M=.94$ ,  $SD=.06$ );  $t(62) = -2.12$ ,  $p=.035$ . There was a positive significant relationship between student weekend food program enrollment and attendance rates. More specifically, the data illustrated an improvement of attendance during an academic year when enrolled in the program, in comparison to the year prior when they were not enrolled in the program. There wasn't a significant difference in grades of students who were not enrolled in 2014-2015 ( $M=2.47$ ,  $SD=.83$ ) and were enrolled in 2015-2016 ( $M=2.45$ ,  $SD=.76$ );  $t(62) = .27$ ,  $p=.79$ .

#### **4.5 DISCUSSION**

The implications of these findings suggest that students have a positive experience being enrolled in their weekend food programs, often share their bags with at least one household member, and have increased attendance. These results are critical when considering the relationships between poverty, school readiness and academic achievement (Duncan, 1997; Haveman, 1995). Furthermore, the maladaptive outcomes of childhood poverty can be traced throughout the life span, thus creating vicious cycles of poverty, poorer school grades, lower educational attainment, lower wages and income which then impacts future generations (Restuccia, 2004; Duncan, 2012; Fletcher, 2014). By illustrating evidence that food insecure students who are enrolled in weekend food programs are more likely to have better attendance rates, significant support for continuing the funding of these programs is exemplified.

In terms of the critical feedback measures, the key stakeholders involved in the project were informed of the results that may alter their method of programming. More specifically, the key informants may be able to integrate more educational materials based on teacher feedback

and may be able to include more of the favorable items in the weekend bags identified by the students.

The results from the Arc\_QGIS mapping illustrate significant disparities in access to grocery stores and weekend food programs in relation to poverty, race and levels of educational attainment. The visual representation of these disparities highlight areas of need, and provide a strong argument for where future weekend food programming should generate.

#### **4.6 LIMITATIONS**

Some limitations of this study design include threats to generalizability, selection bias, and residual-confounding factors. Due to the scope of this pilot investigation, only two schools were qualitatively assessed and response rates differed between schools. In addition, the quantitative data was sourced from a highly unique program that may not be generalizable to a majority of weekend food programs across the Pittsburgh area. Selection bias may have occurred in School A due to the process of program enrollment, where the principal ultimately decides who may be eligible and able to participate. This limitation disallows the broad representation of students across the Pittsburgh area. The fact that this study had a small sample size and utilized cross sectional data makes it difficult to support a strong causal relationship. The number of individuals in a household, the level of parent involvement, level of student engagement, predisposed health conditions, as well as differences in behavior could have interfered with understanding the true factors of program impact.

## 4.7 FUTURE CONSIDERATIONS

Despite the limitations of the study, the results present a compelling case to continue to support weekend food programs and continue program evaluation. The qualitative data provided by key stakeholders, parents, teachers and students provided significant positive results that suggested strong impacts on their well-being and access to food. In addition, the quotes enabled a greater understanding of how the accessibility and enrollment in weekend food programs helps to alleviate some degree of financial burden households may face. Through the quantitative analysis, the access to student-based data are highly unique in terms of the existing body of literature surrounding weekend food programs, and showed a significant impact on student attendance rates. The result showing that students enrolled in the program experiencing an increase in attendance argues multiple facets of impact. Potentially, these results could show a positive, comprehensive health impact on students that could ultimately lead to an improvement of long-term life and health outcomes.

The issue of food insecurity among children is a complex, multi-faceted issue that creates deleterious effects. Not only are children's futures at risk for maladaptive outcomes, this issue highlights fundamental causes of health disparities for a population of our society that does not have the means to fend for themselves. Supporting and improving the programming of weekend food programs through further evaluation is one of the main solutions to address food insecurity over the weekends, and to end child hunger. Fulfilling the basic needs of our young generations is paramount for ensuring a happy, healthy and prosperous future society.

## 5.0 CONCLUSION

Our results add to the limited literature surrounding the impact of weekend food programs addressing childhood food insecurity. This pilot evaluation enabled a greater understanding of how weekend food programs are functioning on a local level, and illustrated the overwhelming positive experiences of students enrolled in weekend food programs. It is agreed upon that more evidence is strongly needed to support the improvement of these programs, and to expand the reach of services to more children. In effort to synthesize the information presented throughout this paper, a pinnacle discussion point boils down to evidence, funding resources, and social justice.

The issue presented is the unequal distribution and access to food for all children in the United States. We addressed the wicked problem of poverty, food insecurity, academic achievement, and the cycles of structural barriers that marginalize populations and prohibit the escape from poverty-related conditions. The sheer tragedy of unequal opportunities for positive health, well-being and economic independence through career sustainability was thoroughly illustrated. Beginning in adolescence, where the structural development of our brain is heavily impacted by the social and cultural circumstances we are born into, establishes the foundation of how individuals cope with life experiences. These life experiences expand across social, behavioral and academic settings. These social and cultural determinants of health persist across

the stages of childhood develop and create a trajectory that may predict failure, survival, or success.

Living in a capitalist society heavily relies on individual academic achievement in order to qualify for employment opportunities. There is a high value placed on academic achievement, and as we have mentioned before, there are structural barriers that generate social and cultural determinants among various populations that may work in favor or in opposition of success. With the growing literature of acknowledging the social and cultural determinants of health, social programs have been targeting issues on various levels of intervention. As mentioned in the beginning of this paper, policy efforts target large organizations present across the country in effort to decrease the prevalence of detrimental issues. We noted the recent policy changes within the school systems of establishing a universal school meal program. Although these changes have been recent, evidence depicting the impact and effectiveness of these programs are still being developed.

There is a sense of need to address childhood food insecurity, given the recent policy implementations. It can be agreed that these programs aim to increase the everyday intake of food for children in school settings, understandably due to the amount of time spent in schools. We aimed to address the importance of expanding these food assistance support programs for over the weekend, and have analyzed a small region where these programs are being implemented. The key example of social injustice described in this paper was the fact that only 72% of eligible food insecure students at School A could be supported through the weekend food program. The competition in financial resources among various organizations aiming to address childhood food insecurity is ineffective, lacks cohesion, and ultimately is a disservice to the children who do not have consistent access to food. Whether this is a critique on the competition

of the non-profit realm, or the structures of society that organizations need to follow in order to reach at-risk populations, researchers and community-based workers are at a standstill in providing evidence that illustrates the impact of weekend food programs. In summary, it is critical to further elaborate on these findings through further research in order to address the significant, unjust issue of childhood food insecurity.

Given the array of limitations at play in this pilot investigation, there are many suggestions for future practice to strengthen the rigor of evidence-based research in this realm. The issue of accessing student-based data is a barrier in examining longitudinal effects of weekend food program enrollment on academic and behavioral outcomes. For future considerations, it could be suggested to collaborate with school districts to gain access to this data and analyze the variables of student grades, student attendance rates, number of visits to the nurses office, number of detentions, involvement in extracurricular activities, etc.

In addition, future research may broaden the scope of an evaluation to all key players in a region targeting children's access to food on the weekends. It would be interesting to examine the collaboration with food pantries and local food banks to see if these approaches overlap and how they may fuse together for greater levels of effectiveness. The key areas of improvement would be to expand the scope both in terms of program leadership in a specified region, as well as the obtainment of student-based data.

This paper is a success in the fact that it voiced the feelings, expressions and experiences of food insecure children who are enrolled in weekend food programs. Despite the small sample size, this study demonstrated a significant relationship between student attendance rates and weekend food program enrollment, which is an important and positive finding to contribute to the literature. What this study also exposed was the lack of cohesion and competition many

communities face when trying to obtain funding for supporting social services. Not only is the issue being addressed through these programs unjust and unfair, but the organizational and community-based structures are at the vulnerable hands of the structures in American society. Without political will and an agreed upon social responsibility, funding resources can be limited. These realizations are disheartening to acknowledge especially when we are considering the fragile years of childhood develop that establish their life course trajectories.

To quote former President Franklin D. Roosevelt, “In our personal ambitions we are individualists. But in our seeking for economic and political progress as a nation, we all go up or else all go down as one people.” If one were to argue how to maximize the capacity of our capitalist society in the United States, one could argue that we are socially responsible for creating equal opportunities for all populations. By preventing the experience of child food insecurity, research suggests that overall health, well-being and academic achievements are more likely to come to fruition. Thus, by establishing these equitable opportunities despite social and cultural circumstances, our society as a whole could benefit from more positive outcomes for health and well-being. We have made a significant step in the right direction towards illustrating how our current programs addressing food insecurity are performing, as well as how we can continue to improve upon our methods of approach. We need to prioritize the health and well-being of all children, to demand the expectation that everyone has a right to access food, in order for our society as a whole to flourish.

## 6.0 THESIS CONCLUSION

Conducting the first known pilot evaluation of weekend food programs across the Greater Pittsburgh Area provided great insight into who has the capacity, funding resources and interest in addressing this issue. Providing an illustration of two methods of approach implemented on a local level allows for a foundational understanding of what are the most effective methods of approach. There is a strong motivation to discover the impact of weekend food programs to increase program accessibility to all children, especially when considering the unjust competition of funding resources. The overwhelming positive response from students through personal quotes and illustrations inspires a sense of obligation to demonstrate how programs can improve to solve the issue of childhood insecurity. This paper proves the need to further investigate the impact of weekend food programs.

In terms of the most efficient method of programming, it was evident from the key stakeholders involved in the project that collaborating with the local food bank was essential in driving costs down for implementing programs. When considering the different methods of approach in the area, this study was able to investigate the utilization of one method. The method of utilizing volunteers and the local food bank under a focused leadership was what occurred at Schools A and B. Although each program functioned in a seamless fashion, it did take a few years of trial, error and financial burden to learn alternative methods. The question of sustainability was present at School A since parents were the ones providing the leadership.

Once a parent's child may move through the course of elementary school, a need to fill the leadership and program management position would arise. In contrast, School B was under the leadership of a large-scale non-profit in the Pittsburgh Community whose primary mission was to address food insecurity. The scope of their resources, community influence, and general workforce strength in their organization allowed the organization to serve so many schools.

The qualitative aspect of the study certainly illustrated the positive impacts of weekend food program enrollment, yet would have been an even stronger case given the opportunity to collect data from these particular students. Understanding the key methodological differences in approach between the schools participating in the qualitative arm, versus School C's method of programming is critical to address. Their comprehensiveness of their approach makes them unique in Pittsburgh among programs that provide weekend backpacks. It would be particularly interesting to build upon their students' results and pair the quantitative analysis with qualitative.

As briefly mentioned, significant barriers in understanding the impact of weekend food programs is the lack of access to student-based data. There is a large pool of funding resources being allocated across the city of Pittsburgh to serve children experiencing food insecurity, but it is appalling to realize how little is actually known about the effects of these programs. The teacher survey responses really highlighted the barrier of information that would be critical in implementing a rigorous evaluation study design. There are so many confounding factors at play in these children's lives that could affect their academic, behavioral and health outcomes. In addition, there is limited information regarding the specifics of each student's home life. Incorporating educational materials and encouraging higher levels of parental involvement may be the variables that are essential in implementing an effective community-based and interpersonally targeted intervention. By increasing access to communication through

community events and educational materials included in the bags, there is hope for establishing a comprehensive approach to reducing food insecurity among children and households.

On an organizational level, future considerations could include the collaboration with public school systems in trying to evaluate the impact of weekend food programs longitudinally. In addition, researchers could work to collaborate with key stakeholders in weekend food programming in trying to form a coalition. More specifically, with further evaluation efforts, an understanding of the most cost-effective and viewed most favorably among participants could become a universal approach, thus creating less competition for funding resources. With a universally effective approach, less competition would lead to an increase in accessibility and enrollment for affected students and children.

Viewing the issue of food insecurity on a structural level could lead to an exchange of ideas of how to reduce social and economic disparities in society, for example, an increase in federal support for schools to provide food to students over the weekend could be an effective policy solution. In addition, an impact evaluation of pre-existing programs could stimulate significant improvements in the cost and quality of weekend food programs. There is no reason why solving childhood hunger and food insecurity should not be a priority on the United States' political agenda.

The findings from this study are important in that they are among the first measurable outcomes of weekend food programs to be contributed to the literature. Due to financial and time restrictions of the study, the methods of approach utilized resources to the best of their ability. Yet, this body of literature has an incredible amount of room to grow and develop. Especially when the main purpose of the literature is to understand how children can more easily access food on a day-to-day basis. Considering the social, emotional and physical ramifications

vulnerable child populations are experiencing at such critical years of development is a despicable realization. Furthermore, to realize these conditions are in result of the social, economic and health inequities that exist on a national level is socially and morally unjust. Researchers have the responsibility to respond to this disparity and work to address improving access to food to disproportionately affected child populations.

The public health significance of this paper is that it illustrates the pertinent need for addressing the social inequities children in low socioeconomic status disproportionately experience, it supplements the limited existent literature surrounding the evaluation of weekend food programs, and may allow future improvements for cost effectiveness and student-based outcomes. This study calls to action the need to expand upon the investigation of these programs in order to support healthy development of our future generations.

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