Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____	04/21/2022
Jeffery Lee Hendrix	Date

A Program Evaluation of Cartersville City Schools' Summer Meal Program

By

Jeffery Lee Hendrix

MPH

Hubert Department of Global Health

_____

Amy Webb-Girard, PhD

Committee Chair

_____

Christina Nichols, MPH

Committee Member

A Program Evaluation of Cartersville City Schools' Summer Meal Program

By

Jeffery Lee Hendrix

B.S., Georgia Institute of Technology, 2016

Thesis Committee Chair: Amy Webb-Girard, PhD

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
In Global Health
2022

Abstract

A Program Evaluation of Cartersville City Schools' Summer Meal Program

By Jeffery Lee Hendrix

Background: Youth food insecurity remains a prevalent public health issue. Inadequate diets among children can lead to health outcomes such as poorer mental health, reduce cognitive performance, and a greater risk of future chronic diseases. School meal programs are one intervention strategy to combat youth food insecurity via provision of fully or partially subsided meals. Due to food inaccessibility in summer months, the Summer Meal Program has recently gained traction in combatting this seasonal youth food insecurity. With a 50% utilization rate of free and reduced school meals and a sponsor of the Summer Meal Program, Cartersville Georgia's school system is primed for public health evaluation of their implementation strategy effectiveness.

Methods: A program evaluation was conducted using process and outcome evaluation design components to determine reach, barriers and facilitators of program participation, and effect of the program on families with children. The mixed methods evaluation included qualitative interviews with 18 purposively sampled participating caregivers and an online survey targeting 178 households of which 25 responded, representing 69 participating children. Feedback from Cartersville City Schools' Nutrition Director was also incorporated to provide program specific data and potential explanatory data.

Results: Cartersville serves about 25% of its student population during the summer months. Key themes from interview data included importance of multi-contact communication methods and stakeholder engagement to increase awareness of program; temporality, route adequacy, and use of stakeholders as an implementation strategy to encourage greater reach and accessibility; use of social strategies to improve utilization of program; and impact of program beyond nutrition. Summer meals were perceived as a benefit to the local community in both datasets.

Conclusions: Cartersville's multi-modal implementation strategy for meal dissemination makes it a strong Summer Meal Program sponsor school by effective use of school and delivery locations, mobile vans, and church distribution sites. Recommendations to mitigate program participation barriers are designed to address inadequate communication, encourage program acceptability, increase reach, and increase utilization efficiency.

A Program Evaluation of Cartersville's City Schools' Summer Meal Program

By

Jeffery Lee Hendrix

B.S., Georgia Institute of Technology, 2016

Thesis Committee Chair: Amy Webb-Girard, PhD

A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
In Global Health
2022

Acknowledgements

I wanted to thank Amy Webb Girard, my thesis chair and advisor, on my persistent requests for edits and her unwavering support and flexibility as I undertook a rather complex thesis study. I also want to thank Christina Nichols, Cartersville's Nutrition Director, for acting as not only a community partner but as a mentor. It was her guidance, assistance, and faith that I was able to undertake such a thesis, and collect such interesting data. I hope to continue working with her to make her summer program the best it can be.

I also wanted to thank my friends Samantha Daisy, Kendra Tellis, Liris Berra for being constant motivators and sources of confidence in my ability to not only complete my thesis, but make it great. I want to give a special shout out to my best friend, Mary Helen Bowen, who took hours out of her week as a teacher during the final week of thesis edits to address Dr. Girard edits, while also providing her own. She centered my focus on gave me direction during the final stretch. A second special shout-out also goes to my amazing friend, Mason Frost, for bearing with me as I attempted to address so many editorial issues at the last minute.

I also wanted to thank my grandma, my lifelong support center, and the source of thesis venting despite her not fully comprehending what a thesis is. Bless her.

Table of Contents

Introduction……..…1
Problem Statement……3
Purpose Statement……3
Objectives…….….3
Significance……...3
Comprehensive Literature Review…….....4
United States Food Security…….....4
Youth Food Insecurity…….....4
Understanding youth food insecurity etiology……..….6
Community-based youth food insecurity interventions……..…..…9
School Meal Programs…….....11
Summer Food Service Programs…….14
Mobile Meals Strategy……16
Cartersville Summer Meals Program ……..…..17
Methods…….…….. 19
Introduction……..……19
Population…….……19
Research Design…….…..20
Procedures and Data Analysis Plans…….…….21
Instruments……...……25
Limitations……..……..25
Results…….…….27
Introduction……...…27
Qualitative Findings…….……27
Program Awareness…….……...27
Acceptability …….28
Program Accessibility ……..…..…28
Delivery Route Adequacy……..……28
Transportation and Work……....29
Faith-Based support……...….29
Staff Environment……..…..…30
Social Strategies to Improve Program Utilization……..30
Preventing Food Waste……...…30
Social Media……31
Phone Calendars……..31
Impact of Program Beyond Nutrition……..31
Quantitative Findings……33
Demographics……..33
Food Security Status……....34
Reach……...34
Program Adequacy…….….35

Program Outcomes on Child Diet……...38
Discussion, Conclusions, and Recommendations…….....39
Introduction ……39
Reach……39
Barriers and Facilitators ……..40
Program Outcomes……43
Strengths and limitations……...43
Public Health Implications……44
Conclusion……...45
Appendices……..46
Appendix A……46
Appendix B……48
Appendix C……49
References…… .56

Introduction

Problem Statement

As increases in chronic disease prevalence represent a major epidemiological shift from infectious disease, one rising focus in mitigation tactics is the effect of food insecurity on lifelong chronic disease risk and other health outcomes. Food insecurity is defined by the United States Department of Agriculture (USDA) as "lack of access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al., 2021). As of 2020 nationally representative survey data collected by the USDA, food insecurity affects 10.5% of the American population. This prevalence increase dramatically to 35.3% as household income drops below the federal poverty line. Additionally, this food insecurity disproportionally affects BIPOC families, Hispanic immigrants, and single parent households. It also increases significantly among rural southern and Appalachian states, making food security a persistent and pressing social determinant of public health concern (USDA, 2021).

These social inequities are a result of social determinants of heath, or "conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks." These food insecurity-based health disparities specifically can be founded upon several socio-contextual or environmental factors, including availability of healthy affordable food options, socioeconomic opportunity, home dietary behaviors and education, and access to healthy foods determined by distance or affordability that result from aforementioned social determinants of health (Bernazzani, 2016). Concerns of high levels of food insecurity, reach far beyond just the social aspects, as those experiencing insufficient access to adequate diets often experience poorer health outcomes. Greater risk of diabetes, poor sleep outcomes, and worsening feeling of health were all shown to be associated with food insecurity (Gunderson & Ziliak, 2015). A recent

literature review also discovered a robust association between food insecurity and cardiometabolic disorders (Vasquez et al., 2021). Another literature review and meta-analysis found that increasing prevalence of food insecurity was associated with worsening mental health outcomes, specifically higher levels of stress and depression (Pourmotabbed et al., 2020).

Additional research into the intersectionality of food insecurity and child development yielded similar results. Specifically, food insecurity among youth and adolescents has been shown to influence academic achievement. According to the CDC, "Research shows that school health programs reduce the prevalence of health risk behaviors among youth and have a positive effect on academic performance" (CDC, 2019). An analysis of school meals and youth health programs show they encourage likelihood of secondary school completion and tertiary education achievement, as well as improved mental and physical health (Lanford et al., 2014, Littlecot et al., 2018). Low-education levels were more associated with the increase in risk taking behaviors and low incomes were more closely associated with earlier and more prevalent chronic disease development (Oates et al., 2017). Consequentially, earlier onset of chronic diseases in these populations and the long-term costs of managing these diseases become detrimental to the work force and, ultimately, economic stability (World Economic Forum, Harvard School of Public Health, 2011). This establishes a negative feedback loop of poverty, food insecurity, and poor health, making youth food insecurity a valuable lever to break generational poverty.

Food insecurity among youth has major detriments to society, and intervention strategies can vary. The United States School Meals Program is one of such strategy. First implemented in 1968, the program addresses both food insecurity and child nutrition through provision of free and/or reduced price breakfast and lunch during the school day in participating schools. Because food insecurity can have seasonality as seen with spikes during summer months due to loss of free and reduced meals, the Summer Meal Service Program, also known as the Summer Meals

Program, can meet the needs during these potentially financially difficult months, but there are limited data related to rural Georgia summer meal programs. The lack of data baseline data for Summer Meal Program effectiveness warrants more evaluation studies to determine best practices and encourage program reach and viability.

Purpose Statement:

This Master's thesis purpose is to evaluation Cartersville City Schools' Summer meal program to assess barriers to program effectiveness and propose recommendation adaptations to improve reach and encourage program participation.

Objectives:

1. Determine the reach of Cartersville's Summer Meal Program
2. Assess barriers and facilitators of program participation
3. Analyze data for short-term outcomes of participation

Significance:

A program evaluation of Cartersville's Summer Meal Program can provide data relevant to rural Georgia. An assessment of the program via process and outcome design components can yield data that improve program function and foster positive dietary impact. This evaluation can also create a platform that can inform Georgia and nearby state legislature aimed at combatting youth food insecurity.

Comprehensive Literature Review

Impact of food insecurity and child health outcomes

Food insecurity is a complex health issue that is interdependent with many social determinants of health that are systemically retrained by flawed and prejudiced laws and policies. As both a health indicator and health outcome, it acts as a lever to induce social and health changes. Exploring food insecurity with the purpose of this literature review, one major public health concern is how a lack of an adequate diet affects child health. Food insecurity rate among households with children are particularly at risk of food insecurity with 14.8% of these households experiencing food insecurity. Of these households, about 50% of them reported children also being food insecure, with parents generally shielding their children from most of the burden of inadequate food intake (USDA, 2021). These statistics were significantly higher than the 13.6% prevalence of 2019, likely due to the impact of COVID-19 on supply chains, food prices, and job availability (Coleman-Jensen et al., 2021). This significant increase in food insecurity indicates that millions of households, while considered food secure most of the time, are still at great risk of food insecurity in the presence of economic volatility.

Similar to food insecurity among adults, an inadequate diet can have many physiological and developmental outcomes on youth. One studied utilizing nationally representative sampling of NHIS data and propensity score matching yielded some concerning findings (Thomas et al., 2019).

1. Worse overall health or less likely to report good health, a 2.5% difference
2. Worse immune development and functioning leading to increase incidence of acute health conditions such as colds with a 21.8% increase and gut issues with a 41.2% increase

3. A 146.5% decrease healthcare seeking behaviors
4. A 16.3% increase in risk of asthma and a 27.9% risk increase for depression

As mentioned before, they utilized propensity score matching to determine the effect of nearly three dozen covariates that are included in the NHIS data, as well as model the covariates with food insecurity (cause) to estimate the effect of these putative causes on health outcomes. The authors state that their utilization of propensity score matching enhanced validity by separating assessment of confounding from covariate impact, as well as being able to directly balance the measured covariate between the control and treatment arms. These results show the detrimental effect of food insecurity on general well-being of children, both as an acute and chronic risk. Causal pathways of these risks include nutrition deficiencies, hesitancy to utilize unaffordable care, and stress. The authors did note limitations to the study, including potential threats to causal inferences originating from unobserved differences between food-insecure and food-secure children, the cross-sectional design of the study making determination of causal pathways difficult, and the relatively short 30-day data window of the NHIS food insecurity screener.

The effects of youth food insecurity, however, go far beyond the physiological components. An extensive literature review published in 2021 Carrillo-Alvarez et al. analyzed data from nearly ten years of research to examine the psychosocial, behavioral, and developmental impacts of food insecurity on adolescents and teenagers. This review, besides it being extremely recent, was unique in its utilization of the socio-ecological model to assess different protective or degenerative factors of food insecurity on child development, providing a robust ability to analyze these factors across systems. The studies they reviewed were extensive, represented by both cross-sectional and longitudinal studies. They found that many of the studies usually supported the wide-held belief that food insecurity impacts psychosocial development, with a

few caveats. Several studies found limited significance depending on the causal factor and developmental component. The authors determined that the causal pathway between food insecurity and child development is therefore a complex issue, with longevity and severity of food insecurity, presence of social buffers such as SNAP, and home behaviors all acting as mediating factors (Carrillo-Alvarez et al., 2021).

Understanding youth food insecurity etiology

In a review of current community-based approaches to combat youth food insecurity, many address how household norms and dietary behaviors within the home and among caretakers can play important roles in the development of youth food insecurity. Often these norms and behaviors are influenced by several factors such as the built environment near the home and school, poverty, or culture. Regardless, these factors can play a role in a child's access and security of healthy foods, and how these factors and behaviors affect pediatric health.

Papers reviewed yielded a similar theme: social determinant factors such as food insecurity and housing opportunities, as well as behavioral norms and knowledge of healthy eating practices by parents all play key roles in determining child health outcomes. Sano et al. in 2019 aimed to gather mixed method data to assess the effect of the role of parental dietary behaviors on the family eating environment and pediatric health. They found was that there was a "lack of alignment between mothers' intent to promote healthy child eating habits and counterproductive food parenting behaviors" such as binge eating and unhealthy snacking (Sano et al., 2019). These results reinforce that parental behavior plays a much greater role in influencing youth behaviors that parental education of children. Another study conducted by Jackson et al. in 2017 had a similar aim looking at the effect of family homes on youth nutrition and their impact on pediatric food insecurity and obesity using self-reported survey data. These survey data were combined with child anthropometrics to determine any association between the

two. Results of study showed that food insecure families had an eleven times greater risk of having obese children than those who were food secure, which was determined to be tied to family eating behaviors (Jackson et al., 2017). A third study by Wang et al in 2019 aimed at examining the effects of the built environment on pediatric obesity across population density. They utilized US Early Childhood Longitudinal Study-Kindergarten Cohort data which collected information on exposure to and changes of the food built environments in the home. Their results show that a reduction of exposure to venues such as restaurants, bakeries, produce markets, and beverage store lead to an increase in obesity, while the same loss of exposure to dairy-based venues were obeso-protective. These significance of these findings, however, varied by urbanicity, gender, and specific type of food observed (Wang et al., 2019).

Community-based food security interventions possess many strengths, such as the novel on-the-ground data that are difficult to disaggregate from large databases. Longitudinal and mixed-methods studies representative of the studies such as reviewed yielded robust community-based data appropriate for the research objectives. These data were strong when they were combined with anthropometric data and multi-contact eating behavior survey data. Sano et al. localized their research to maternal dietary behaviors and its impact on youth nutrition is relatively under-researched, providing unique context to public health interventions in rural areas. These research studies also possessed limitations that potential impacted study validity reliability. Community-based work can often yield small sample sizes, as shown in Sano et al., leading to a lack of saturation of data and underrepresentation of experiences. Cross-sectional designs also make it difficult to determine causality or gain any deep insight into behavioral etiology or mechanisms. Dietary behaviors may also have an extremely complex etiology, and studies like Wang et al. that utilize these national data sources may not have the capacity to address confounding or validate results within their study population and objectives. Another

common limitation of community-based work lay in dependence on self-reported data on dietary behaviors, a potential venue for introducing social desirability and recall biases, as seen in Jackson et al.

Another theme that arose during review was how the built food environment proximal to schools can also play a key role in pediatric dietary patterns, with children spending a major portion of their days at school. Research by Findholt et al 2014 was conducted to analyze this component of the built environment and fill literary gaps in the topic of healthy snack availability near schools. They stratified by population density and socioeconomic status to further examine healthy snack food variability. Their methodology focuses strategically on audits of food stores at varying proximity to schools. These audits assessed single serving food items of nearly 50 foods, and recorded whether they were present in each food store. Cross-site availability results were significant, finding that many of the healthy snack items were much more readily available in the stores proximal to higher income and urban schools than low income schools, with some fruit exceptions. Healthy beverage and vegetable presence analyses found no significance across sites.

There were several strengths of this study, the first of which was its direct measure of availability. Many studies like these utilize store or chain documents and distribution logs, which may not always reflect true availability of fresh produce in stores. This study was also the first known study to examine the proximity of snack foods in relation to school, stratified by SES and population density, providing unique background knowledge to the scientific community. There were also several limitations. In addition to its small sample size, their measure of socioeconomic status was based solely on the density of provision of free and reduced meals. With some children not attending public schools and some not attending schools within their district, results could be biased.

The second paper being discussed is ‘Obesogenic Retail Food Environments Around New Zealand Schools: A National Study, by Vandevijevere et al in 2016. This study, similar to the study above, aimed at analyzing the impact of proximity of food and convenience stores to schools on youth food insecurity. They also payed close attention to both socioeconomic status as well as population density. Unlike Findholt et al, they utilized spatial analyses of fast food and convenience stores via geocoding. Their results show there was a significant variation in accessibility to unhealthy foods among the urban arm than the rural arm, with higher densities of convenience outlets being located among low-income students. The rural arm, however, was found to have the opposite effect.

There were a handful of strengths of this paper. One is that this was the first known spatial analysis of convenience and retail stores at a national scale, potentially providing protocol for other countries to follow. Second, they utilized spatial analyses to validate geocoding that had already been done, strengthening its external validity. There were some limitations however. The paper stated that, due to the sheer number of outlets and limited study resources, less than 1% of retail stores were utilized in the study. This can potentially impact study generalizability due to poor representation of store variability. Because retailers are often highly heterogeneous in the foods they carry as discussed in Findholt et al, accurate representation of healthy food distribution could be hampered and would make restrictive legislation or health promotion campaigns difficult. Additionally, because the study was conducted in New Zealand, the potential for variation in food and school policies may impacted external validity for this study.

Current community-based youth food insecurity interventions

A review of literature was conducted to determine effectiveness of current community-based intervention strategies to gather more robust understand of what is being done to mitigate youth food insecurity. This literature was localized to interventions not associated with the USDA to

garner a more holistic view of youth food insecurity interventions, as this thesis study was conducted within the scope of school-based summer meal.

One current approach is The Chickasaw Nation Packed Promise Project, which delivered protein and produce packed boxes for Chickasaw Nation households with children at risk or experiencing food insecurity, as determined by free school meal eligibility. In 2021, Heather Eicher-Miller aimed to assess the effectiveness of this food assistance project, to determine reliability of similar scalable interventions. Using a randomized and controlled evaluation design, they analyzed food insecurity using the US Household Food Security Survey Module at baseline, 12 months, and 18 months after project conclusion. She determined that the project did not have any significant impact on youth and household food insecurity, prompting an assessment of the Packed Promise Project limitations. The study concluded that robust analysis of food security status beyond the previous 30-day window, as well as stratification by all 4 food security classes would yield a greater understanding of program outcomes. Additionally, dose was included in monitoring data and therefore the evaluation team was unable to assess if the project has a dose-response effect. Finally, Echer-Miller stated that a stronger food security evaluation with more repetitive longitudinal components might gather richer data to better determine project effectiveness. The author did note dietary differences between intervention and control arms, but that resource intense food assistance programs such as the Packed Promise in poor infrastructure areas may not be a reliable approach to mitigating youth food insecurity (Eicher-Miller, 2021).

Another study by Collins et al. in 2018 analyzed the validity of monetary assistance to families during the summer who qualified for free and reduce meals. the Summer Electronic Benefits Transfer for Children (SEBTC) as it was called, aimed to bridge the fiscal gap that loss of school meals creates for low-income and food insecure families with children. The study

evaluated about 52,000 households over the 2011-2013 years, with an initial evaluation occurring in the spring with a final occurring during the summer months, and monitored for key outcomes revolved around food insecurity and diet quality. They found that the SEBTC program reduced food insecurity prevalence of the households studied by 33%, and improved child diet quality (assessed using dietary consumptions patterns of fruits, vegetables, whole grains, dairy, and sugar sweetened beverages). This is a very strong study in its large sample size, randomization, and longitudinal design, strengthening its internal validity and making it a case for determining causality. However, due to its localized sampling design, this study lacks external validity as it is only generalizable to the specific populations studied.

Healthcare can also act as a potential community-based mechanism to combat child-food insecurity. In 2014, Beck et al. analyzed the effectiveness of Keeping Infants Nourished and Developing (KIND), an intervention developing clinician and community collaboration aimed at linking nutrition and nutrition education resources to families with infants at risk of food insecurity and poor health outcomes. Beck et al. utilized a prospective evaluation design assessed social and clinical outcomes using time series analysis and compared to a control group using chi-squared statistics. While clinical outcomes were unchanged, the research team found that resource and clinician seeking behaviors such as screening an wellness visits were significantly increased. They determined that the intersectionality of healthcare and public health may yield promise for community-based youth insecurity interventions via preventative care treatments.

School Meal Programs

Despite the variety and extensiveness of the aforementioned youth food insecurity interventions in the United States, the National School Lunch Program remains the largest and most federally regulated dietary intervention for children, and the second largest for food and nutrition assistance, behind SNAP (USDA, 2022). Established in 1946 by Harry Truman under

the Richard B. Russell National School Lunch Act, the national School Lunch Program was designed to meet the dietary needs of the country's adolescent population, with further assistance and subsidization availability for families in need. The USDA currently reports a 76.9% utilization rate of the free and reduced meals, which are provided for families at or below the 185% federal poverty line using a staggered reimbursement protocol. In 1968, the Summer Food Service Program, known as Summer Meal Program, was established to address the rise in food accessibility and hunger during the summer meals due to loss of school meals. Currently, other similar school summer meal options are available such as the Seamless Summer Option which is the iteration Cartersville utilizes. The USDA currently reimbursed sponsor sites in low-income settings who disseminate free meals, available to children n18 and younger. Sponsor schools have great flexibility in their meal dissemination plans including mobile meal deliveries, community sites, partner sites such as churches, and stationary distribution centers at schools.

A study by Ralston et al. in 2017 was conducted by the USDA to assess the effectiveness of school meal programs in meeting the dietary needs of food insecure students to better inform program processes. They analyzed U.S. Census survey data on food security (CPS-FSS) to answer their special project's objectives for the 2014 and 2015 school years, as well as an extensive literature review. Census survey data gather information on food insecurity from the previous 12 months using standardized survey questions. The findings reported in this review are the ones most relevant to the assessment of the current impact of school meal programs on food insecurity (Ralston et al., 2017).

1. Households with teenagers were more than twice as likely to report food insecurity than households with only younger children under school age.
2. When controlling for socio-economic status, households reporting food insecurity were more likely to utilize school meal programs than those that were food secure.

3. Review on literature found that the National School Lunch Program was associated with reduced rate of youth food insecurity, as well as improved academic performance and better quality diets among those of lower socioeconomic status or food insecure youth.

This study's use of Census data acts as both a strength and weakness. Population-scaled survey provide the most representative data that can be found, as it eliminates and bias that can be introduce from sampling. However, census data are self-reported data which can introduce other forms of bias such as social desirability and recall biases. The study, in its literature review component, also varied how it weighed the importance of the studies reviewed. They did so by putting greater emphasis on longitudinal studies and causality, as well as focusing on studies that directly addressed selection bias.

Another literature review was conducted by Welker, Lott, and Story in 2016 to examine how the school meal environment such as dietary diversity and temporality of meal availability affects overall consumption patterns and its impact child health. They found that changes to policy and food programs have led to significant changes in overall child health and access to an adequate diet through both direct provision of produce and improvement of school standards (Welker et al., 2016). Micha et al. conducted a literature review in 2018 with an emphasis on dietary behaviors around consumption of variable dietary components. They had similar findings as Welker et al in that direct provision, as well as competitive beverage and meal standards all played beneficial roles in healthy child dietary consumption patterns. Both authors did note that their studies were revolved around behavior and its impact on child health and any analyses directly addresses the impact of these policies on youth health biomarkers were insignificant. Causality then has to be supported by proxy research, making this a major limitation of these two literature reviews. A strength of the Micha et al. paper, as compared the Welker paper, was that

Micha utilized an extensive quantitative analysis to encourage a more robust and statistically significant review of the effects of school environment policy on child health, making it not only a newer but stronger study to reference.

Summer Food Service Programs

Youth food insecurity is a public health crisis, but the details surrounding when and how it is a crisis are important for public health professional to design and improve current interventions. An often-overlooked component of youth food insecurity is that of its temporality. Many food insecure families are supported by free and reduced meals during the school year, which are then lost during the summer months, with these programs serving only a sixth of those same families (Collins et al., 2018). There are major gaps in the literature that analyze the effectiveness of various school and community provided summer meal programs (Bruce et al., 2019).

A narrative review was first assessed to obtain a general understanding of programmatic reach, characteristics, and impact on child health. This review analyzed 8 research studies and 10 reports on the School Summer Food Service Program. They found that due to the risk of food insecurity in the summer meals, presence of a summer meal program alleviated risk of food insecurity among household with children and other at risk demographics (Turner & Calvert, 2019). However, the authors stated that the literature reviewed did not examine the physiological impacts of these summer meal programs on children, but just the food insecurity component. They stated that a rigorous mixed methods approach would be best to differentiate how different summer meal program components provide significant impact on food insecurity.

One study, Bruce et al. in 2019, took a different approach analyzing mobile meal provision, with the purpose of mobile meal programs is to eliminate the barrier of transportation in suburban and urban households with kids, a major burden on accessibility of summer meals for low income and marginalized families. The authors conducted a mixed methods evaluation

(which used self-administered surveys and in depth interviews) of a mobile meals program in Silicon Valley that used purposive sampling of "hot spots" to serve the most underserved communities. Their quantitative component found that participants were more likely to reporting only receiving occasional meals (1-2 days per week) at 77% with only 5% of participants reporting daily reception. Participants also reported a wide range of communication methods detailing how they received information regarding the program, insinuating that a multi-model approach to communication is most effective. Additionally, only 17% of participants reported barriers to participation, providing transportation, provision timing, and dislike of foods as the three main barriers (Bruce et al., 2019). The qualitative component was broken into a few themes:

1. The utilization of central multi-purpose meal provision locations like parks encouraged diversity, appreciation, and accessibility of the program
2. Many parents reported community need for the summer meal program, with food insecurity acting as a strong motivating factor
3. Barriers to facilitation of the program include a demanding work schedule that prevented access to the meals due to timing and transportation during the work day, as well as immigration fears of deportation

They noted that this youth food insecurity interventions provided community wide benefits, as reported by participants, and aided in alleviating the burden of low socioeconomic status and its subsequent food insecurity. While its most notable limitation is its lack of external validity beyond Silicon Valley, they state that their purposive sampling design allowed them to gather a diverse sample of participant opinions. Regardless, more studies are needed across the United States for policymakers to make context and data-driven decisions.

A qualitative study of 20 participants in New York City aimed to determine specific barriers and facilitators of School Food Service found three facilitators and two barriers to program participation, all of which seemingly overlap with the previous mobile meals program in Silicon Valley. The barriers they found included reduced parental stress, community engagement, and fostering of healthy eating habits (Kannam et al., 2019). This is a small ethnographically specific program, making it difficult to generalize to other populations.

Another study was conducted to assess the feasibility of summer meals as a valid food security intervention strategy. In 2004, the USDA conducted an evaluation of The Summer Food Service Program across 14 states to determine sponsor and household participation, meal quality, and program integrity. Data were collected used mailed questionnaires for a randomly sampled sponsor (school) list to estimate participation and scalable. A team was sent to conduct monitoring visits and analyze program fidelity. They found that there was limited expansion effort among sponsor location, and that sponsor had consistent concerns regarding financial feasibility of summer meal programs due to inadequate reimbursement rates. The study also found a range of barriers to program participation as reported by sponsors including but not limited to transportation, community involvement, program marketing, and inadequate staffing (USDA, 2004).

In 2016, the Center for Governmental Research (CGR) also conducted a feasibility study at the request of Rochester's Community Foundation to assess the viability of their mobile summer meal program component. Mobile meals have arisen in recent years to combat transportation barriers according to the study. Their methods included reach analyses, key stakeholder interviews, protocol reviews, and brief parent surveys. Similar to USDA's project in 2004, stakeholders maintained a perception that summer meals provide considerable impact in reducing hunger and food insecurity. A major barrier revolved around the feasibility of summer

meals due to inconstant and inadequate reimbursement protocols, as mobile components incur greater staffing and implementation costs. Utilization of central fixed sites was reported to provided numerous benefits for the community such as circumvention of transportation barriers and increased communal cohesion among them.

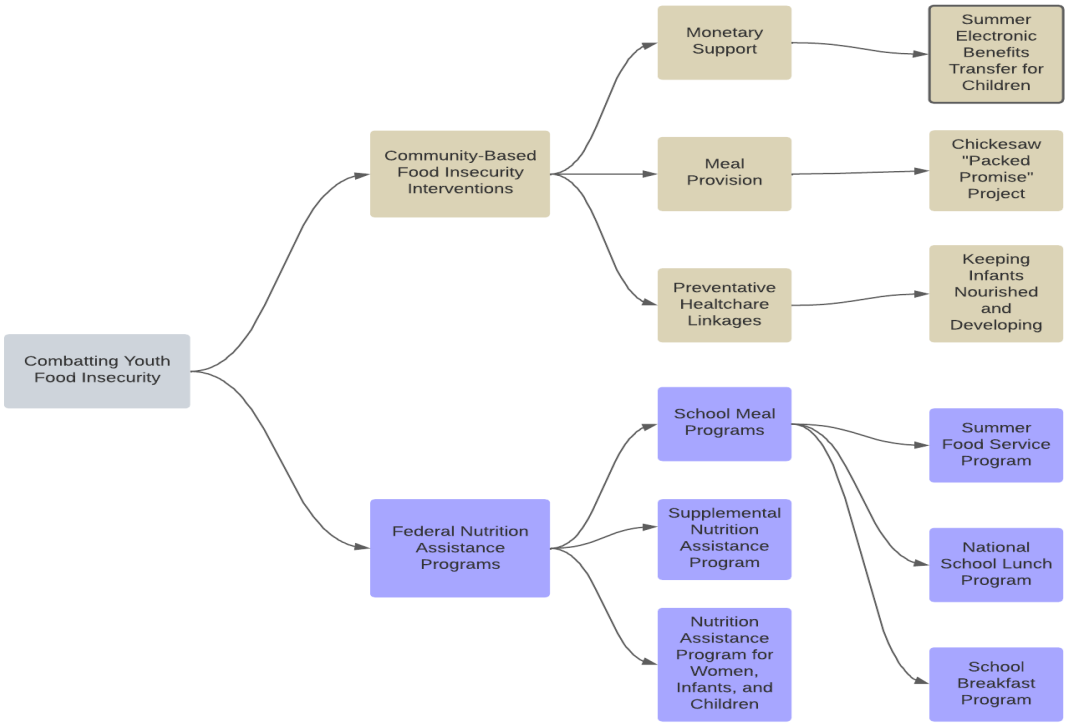
Cartersville Summer Meals Program and the gap

Students, specifically, face many challenges including food insecurities and homelessness within Cartersville City School System. During the 2019-2020 school year, half of the student population qualified for free or reduced cost meals, and 251 students were identified as homeless under the McKinney-Vento Homeless Assistance Act. These students typically have limited food options and access to consistent nutritious meals (C. Nichols, personal communication, 2022). Historical poverty has left systematic gaps in poor access to nutritious foods and healthy behavior skills. Nearly one quarter of Georgian children are affected by food insecurity, more than 150% of the national average of 15.2%. Cartersville city experiences 21.6% food insecurity among its youth, which is a 42% increase of food insecurity since 2018, making it a marginalized community abnormally sensitive to economic stability and dietary deficiencies (Atlanta Community Food Bank, 2020).

Even before COVID-19 demanded meal delivery across the country, Cartersville City Schools utilized a complex stationary, mobile, and partner stakeholder meals intervention strategy to disseminate meals and meet the needs of its students during the summer months. With limited ethnographic and relevant research papers found in reviews of scholarly databases on rural school-based mobile meal programs, it became clear that a notable gap emerged for data relevant to the Southeast United States, rural America, and to rural Georgia specifically. Therefore, a program evaluation incorporating process and outcome evaluation designs was

completed to adequately determine effectiveness of the program in meetings the dietary needs of its constituents and to gather relevant data for the rural southern demographic.

Figure 1: Youth Food Insecurity Intervention Concept Map



METHODS

Introduction:

A multi-modal process and outcome evaluation was utilized to assess barriers and facilitators to Carterville City Schools' Summer Meals Program. Process evaluations are useful tools in determining program reach and outcome evaluations are necessary in determining effectiveness of a program in meetings its objectives. Therefore, they serve as tools for professionals to analyze what processes are meeting program goals, and to the extent that they are meeting the needs of the intended population. They also serve to identify other contextual factors that may influence implementation and program outcomes (Moore et al., 2014). Results of process and outcome evaluations may be employed by program directors and stakeholders to improve effectiveness of a program by making constructive changes to shortcomings highlighted in the evaluation. Within programs such a school meal programs in which funding is limited and highly regulated, process and outcome evaluations are practical instruments in enhancing program efficiency and potential impact, without having to conduct a full impact evaluation.

Population:

Cartersville, Ga is a small city located approximately 45 miles northwest of Atlanta, Ga with a population of 21,760 as of 2019 of which 64.8% identify as white, 18.9% black, 11.4% Hispanic, 0.5 % Asian, 3.6% mixed, 0.1% Native American, and 0.3% other. With an estimated per capita income of $28,746, nearly 20% of residents of Cartersville live in poverty. However, poverty levels are not equitably distributed among the different races. Poverty rates are stratified as followed: 14.4% among those identifying as White Non-Hispanic residents, 22.0% for Black residents, 37.4% for Hispanic or Latino residents, 42.6%

for other race residents, 46.8% for mixed race residents (US Census Bureau, 2021).

The children of Cartersville School System have over a 50% utilization rate for the school meals program, making them particularly susceptible to food insecurity during the COVID-19 pandemic. The nutrition director prioritizes meal provisions for these students, especially during the summer break when students no longer have easy access to school meals. The Summer Meals Program was expanded during the summer of 2020 due to the detrimental effects of COVID-19 on socioeconomic disparities.

Research Design:

A process evaluation was the predominant research design used due to the needs expressed by the Nutrition Director of Cartersville City Schools. Her desire for the project was to determine reach, participant satisfaction, barriers and facilitators of the program, and food security descriptive statistics of the target population. Reach of a program is defined as "the extent to which a program attracts its intended audience" and can be used to monitor program effectiveness across time intervals (Jillcott et al., 2007). It identifies participant satisfaction to be described as the extent to which participants were satisfied with program implementation or their satisfaction of program components. This is usually assessed using survey feedback or interviews (Saunders, Evans, and Joshi, 2005). Barriers and facilitators of a program are components of a program that, upon data collection, are deemed beneficial or detrimental aspects of program functioning. Mrs. Nichols also wanted a direct quantitative measurement of food security among the households that her summer meal program is intended to reach, allowing her to make social determinant-driven decisions in the coming years.

Additionally, the research design contains components of an outcome evaluation. An outcome evaluation describes methodology that is used to determine whether the program is

having the intended effect on the population of interest, such as access to school meal programs or dietary behaviors. This evaluation is important as it collects data on whether the program is meeting its objective, and as a result, whether it should continue as is with major alterations or not at all. This varies from process evaluation in that process evaluations look at more immediate factors such as whether the program is doing what was designed to do, while outcome evaluations determine if the program design itself is flawed by detecting ineffectiveness of an intervention (CDC, 2011). Survey questions and interviews assessing determinates of practice and improved security of food from the program utilize this outcome evaluation approach. For both qualitative and quantitative evaluation components, any school-aged child currently enrolled in Grades K-12 in a public Cartersville City School is eligible to be sampled for the evaluation. However, the research design requires feedback from caregivers of children as we ask about means such as transportation, estimates of food insecurity, proximity to a grocery store, etc. This means that evaluation respondents would be the caregivers of the sampling units. In this program evaluation, the survey instrument contains specific questions collecting data on whether the Summer Meal Program is providing school meals in a manner that partially alleviates household hunger, a main objective of the program.

Procedures and Data Analysis Plans:

A dual process and outcome evaluation design can take many forms, and each form can be utilized effectively to answer the research question while meeting the needs of community partner/s. The mixed methods approach was important in addressing the variety of aims and question the community partner presented. The data gathered during the qualitative pilot study warranted a more comprehensive and diverse methodology that could effectively perform the evaluation.

Interviews: The evaluation utilized a small pilot interview component to determine the barriers and facilitators described above. The interviews were completed between June 21st, 2021 and July 28th, 2021. Five key school informants and 16 parents were interviewed in-person at the Carterville School Administration buildings while also adhering to social distancing guidelines. This sample size is based on guidance from Dr. Monique Hennink's work in qualitative data collection, with the lead interviewer and Mrs. Nichols regularly debriefing and evaluating whether saturation was met. The student and key informant participants were purposively sampled by Mrs. Nichols with the goal of selecting participants who can reflect on the program, demographics, and are information-rich. Parent participants were recruited using text and email chains sent out by Mrs. Nichols, and received a $50 gift card as an incentive to participate. These interviews took place in person at the school or predetermined locations and were conducted as a semi-structured interview using pre-approved interview guides. Data that was gathered in initial interviews aided in refining of the guides to encourage more robust and complete data.

Interviews were recorded with participant consent, transcribed using a transcription service and de-identified to ensure confidentiality was met. Only the lead implementer (myself) and Mrs. Nichols have access to the transcribed interviews and interviewer data, which is securely stored on an Emory-linked OneDrive folder. Data were analyzed with MAXQDA using a codebook that was drafted and agreed upon by both myself and Mrs. Nichols in order to maintain internal validity. Thick descriptions were drafted by each sub-code, followed by an in-depth thematic overview of the major codes. The data collected from the interviews were then used to inform the quantitative component of the evaluation to create a more robust instrument that could collect population-scale data.

Survey: The survey component was used to assess reach, participant satisfaction, and food security descriptive statistics. The online survey took place between March 17th and April 14th, 2022, allowing time for respondents to submit responses. Follow-up email reminders were sent twice to encourage survey response. This component was crucial in meeting the three quantitative objectives:

a. To estimate coverage of the Cartersville City Schools' 2021 Summer Meals Program in school-aged children currently registered in Grades K-12, in terms of percentage of kids who received at least one meal during the 2021 program.

b. To identify practices of the Cartersville City Schools' 2021 Summer Meals Program that encouraged participation and satisfaction in the program, as reported by caregivers of school-aged children currently registered in grades K-12.

c. To identify practices of the Cartersville City Schools' 2021 Summer Meals Program that discouraged participation and satisfaction in the program, as reported by caregivers of school-aged children currently registered in grades K-12.

The sample frame was a de-identified roster of all Cartersville City Schools student ID numbers. ID numbers often correlate with grade, with IDs with smaller numerical value representing students in the system longer and therefore in higher grades. Sampling was done from the ID numbers with students corresponding to the ID numbers acting as the primary sampling unit. The caregivers of the school children were contacted as respondents due to the nature of the data that needs to be collected such as assistance in meal provision, with the caregivers acting as a proxy sampling unit. A sample size was determined as 178 based on a finite population correction and an estimated prevalence of summer meal program utilization based on counterpart documentation reviews. Schilzand et al. estimated non-response rate of parents in school-based research utilizing a survey to be between 24% for advanced multi-

level methods to 31% for standard paper-based survey method. Cartersville uses a complex method of automated call reminders, text reminders, physical paper reminders, and social media to relay messages. This evaluation utilized a 25% non-response rate (n.r.r.), closer to the advanced multi-level survey method estimation, resulting in a n.r.r adjusted sample size of 238 (Schilpzand et al, 2015).

The sampling design utilized systematic random sampling of the student roster (sampling frame). Systematic random sampling was deemed more reliable than simple random sampling alone to ensure that students from different grade levels had greater likelihood of not being missed should one school have a larger student body. Upon determining the random sample, an online survey tool was utilized due to time and budget constraints as well as to shift some of the burden away from the main interviewer. Following the online component, telephone interviews are planned to reach an adequate sample size due to their higher response rate and to allow for potential for probing to encouraging complete datasets. Due to time constraints, this component will continue after submission of this thesis and as such these data cannot be incorporated into this thesis. A simple randomization of the remaining non-respondents will be done prior to the telephone interviews to ensure that data collection by contacting respondents top to bottom did not result in bias towards a specific school due to population imbalances alone. However, it is important to note that this is a single city school system, and the focus on reach and barriers and facilitators to programmatic effectiveness devalue the importance of stratification by school as there is only one school per age range that encompasses the entire city.

The quantitative portion of the study first utilized descriptive statistics to describe demographic data. Descriptive statistics were estimated to assess “the extent to which a program attracts its intended audience”, also known as reach, as well as overall satisfaction

with varying program components (Jillcott et al., 2007). Analysis utilized SAS and Excel statistical software to store and analyze data. Survey data are stored under the same Emory OneDrive folder as the qualitative interview data, with access restricted to Mrs. Nichols and myself, to ensure data security and confidentiality.

Instruments:

Interviews: Interviews were recorded on cellular devices, before being sent to a transcription service for verbatim transcription. Upon completion of transcription, transcripts were de-identified before being stored on Emory's Microsoft OneDrive system. After verification of transcript upload, recordings were deleted to maintain confidentiality. The finalized interview guides can be found in Appendices A and B.

Surveys: Findings from the qualitative study component were then used to inform survey design and content to improve validity and cohesion between datasets. Two USDA standardized food insecurity screener questions were incorporated that have been independently validated, as well as proxy measures of food insecurity that address barriers to the program such as internet and transportation access (Hager et al., 2010). Mass caregiver communication tools including emails and texts were used to sample interview respondents. An undetermined online survey builder was used for the design of the online survey component, followed by personal cell-phone use to collected remaining sample respondent data. SAS, Excel, and Microsoft outlook were used for data storage, cleaning, and analyses. See Appendix C for survey instrument.

Limitations:

Interviews: Qualitative data are robust forms of data that take a deep dive into determining causal mechanisms, such as how and why a program is ineffective. However, lack of standardization of study instruments and the heavy reliance on the interviewer as the form of

data collection increases potential for biases. Lack of reflexivity between study implementers and stakeholders influencing the evaluations can lead to data collection methods that do not serve all stakeholders' interests. This qualitative component of the evaluation was conducted almost solely by myself, with Mrs. Nichols providing guidance and support, so my personal interests and investments in public health would have a potential of impacting both reliability and validity of these data.

Survey: One major challenge was the possibility of incomplete responses for the online tool. Online tools often have much higher non-response rates, prompting the potential for interviewers having to go back and gather data. Online tools also lack the capacity for probing, increasing the potential of incomplete data. However, the anonymity of online surveys can encourage data not biased by social desirability. Both phone and online surveys still have worse response rates than in-person interviews and make it harder to build survey rapport. Due to time restraints, the telephone interview component did not occur by the time this thesis was submitted which led to a smaller than anticipated sample size.

RESULTS

This chapter will present relevant qualitative and quantitative findings of the study. The qualitative data will be presented first using thematic analysis methods, followed by descriptive statistics of the quantitative survey component. Results will be assessed for reach, barriers and facilitators of program participation/utilization, and outcomes of the program. Program participants, when asked what they most liked about the program, consistently responded that its existence was the most notable importance of Cartersville's Summer Meal Program. Some parents spoke in the theoretical about how important school meal provisions are for families in need, as well as any household with kids in community who wants the meals. This importance was also emphasized by two parents who expressed appreciation of the program workers for continuing to work during the summer break for the benefit of the families with children.

> *"Honestly, just the fact that it's open to everybody and that it's not just-- It's great that it's there for those that need it, but I think I just liked the idea that it's just open to everybody, that "Hey, if you feel like going today, go." ~Parent IDI 7*

Importance of Multi-Contact Communication Methods and Stakeholder Engagement to Increase Awareness of Program

Among participants, awareness of the program and its specifications was a theme that frequently arose across interviews. Most parents knew of its existence, but more than half of the participants had some confusion regarding a specific aspect. Interviewees provides extensive feedback on current approaches, preferred approaches, and theoretical impact of various potential communication mechanisms to improve programmatic clarity and bolster program participation. There was variable feedback on effective communication methods to raise program aware, ranging from text, automated calls, and social media. Other organizational support options discussed by parents included use of community organization signage and flyer

distribution for logo marketing, GDOT banners, and regular church announcements as other options to reach the community. It was noted that an effective strategy would therefore require multiple contact point to maximize program awareness at a community scale.

> *"In actual reality, individual have to see six to eight times in order for it to get implanted and be like "Okay, summer meals is available." If you've seen something on the school website, then you see something on probably social media, that's two…. You need about six or seven touches for it to sink, that's why advertising because companies are making so much money they know that…With our attention span, it takes us multiple times to see something and then—" ~Parent IDI 8*

Acceptability

There was a persistent perception that the meals were only for the neediest families who could not afford the meals. Even parents who reported living paycheck to paycheck stated that they were making it by and handouts such as the summer meals could be forgone. These parents described that so much of the communication revolved around programmatic specifics that it did a poor job at letting people know that it was not only safe for individuals who doubt the public system (such as immigrants as mentioned above), as well as those whose don't qualify as food insecure. Clarity of the purpose of the program is important in expansion of the program and its community outreach.

Temporality, Route Adequacy, and Use of Stakeholders as an Implementation Strategy to Encourage Greater Reach and Accessibility

Delivery Route Adequacy:

With the inclusion of a mobile meal component of the summer meal program, it became apparent that the delivery route need to be adequate and meet the needs of all its constituents. Parents described a scenario in which delivery adequacy is highly reliant on variety and quantity of stops at community-favored locations such as school and non-profits to encourage accessibility. These publicly available locations and services were reported as conduits of the

summer meals, and delivery of meals there would encourage larger uptake during the summer months when families aren't always in the home during neighborhood deliveries.

Transportation and Work:

Among the participants interviewed, availability due to work played a major role in collecting mobile meals. Some parents mentioned having the flexibility to grab the meals due to working from home or having flexible responsibility at work. However, some parents describe the difficulty of their situation, as many jobs do not stop when schools do. This means that parents are responsible for obtaining childcare, while also relaying information about the summer meals to the caregiver, who are often grandparents or family that have their own barriers to program utilization.

"Even now they still participate when they're there. I worked in Rome, so it's hard for me to catch the bus on those days but my mom usually is there with the kids on some of the days. Like today she had dialysis so after I leave here I got to pick her up from dialysis, on Tuesdays, and then on Thursdays. She usually misses the bus on Thursday, but try to help catch the bus on Monday." ~Parent IDI 5

Faith-Based support:

Faith based organizations (FBO) were also brought up multiple times by several parents and staff as a meaningful and impactful summer meal component, and garnering more church involvement specifically was important. They reported churches acting as a nexus point for communities, offering a beneficial linkage to unaware marginalized demographics such as Hispanic immigrants who might fear public pick-up or delivery locations. It was also noted that training and insurance of church site manager commitment was key to success of FBO utilization. The superintendent was brought up by one parent as an influential individual who could prime organizations such as churches for participation and dissemination

"There was a way that I could see these students because they're stuck at home. I knew how hard it was for me, just the emotional. We're stuck here. Who knows what's happening. Then they live under a fear anyway. Many of these students though they were born in the United

States, their parents may not have been, so there's a fear of authority for these students. Most of them are Hispanic. Not all, they don't have to be, but many." ~Staff IDI 3

Staff Environment:

Three individuals were also interviewed who participated in summer meal program functioning in some capacity. These individuals were interviewed to determine fidelity to the program processes by the staff, and how the behind-the-scenes environment encouraged or discouraged program efficiency. Staff reported finding satisfaction in the program itself and felt that it was extremely important to give it their all. Those that interacted with families reported greater satisfaction with their purpose.

Use of Social Strategies to Improve Utilization of Program

Parents offered feedback on ways they themselves and their families maximized utilization of the program and the food they received. These social strategies had different functions based on the temporality of the program upon which the strategy was being used.

Preventing Food Waste:

Parent interviews yielded data on how parents used received summer meals with minimal waste. Food waste discussions yielded three different subthemes for mitigating waste: donating, bartering, and repurposing. Two parents discussed the use of donations as a way to reduce food waste. With excess foods, one parent would give excess to a family down the road that was not always able to get the summer meal program, while another discussed the theoretical donation of meals to food pantries.

Many parents also discussed a barter system that proved beneficial in food waste prevention. Two parents discussed trading with other families when they had excess of food. Two more parents also discussed an innate bartering system set up by the children themselves to maximize use of foods based on taste preferences.

The major discussion around food waste came in the form of repurposing of food within the household. Veggies were stated as a major potential for food waste and several parents mentioned stir fries, casseroles, and dips to encourage consumption among the children. Some of the vegetable heavy juices were consistently disliked by children and two parents conceptualized use of smoothies and slushes to utilize the juice. Another two parents also discussed the possibility of recipe cards to encourage parents and children alike to use food in inventive ways. Finally, food that was not used after attempts were made were often eaten by one of the parents to prevent waste, which still provided household level food security benefits.

"Most of the time, my kids love broccoli, so the broccoli always go on, the carrot, they really don't want them. I utilize whatever they didn't eat like the fresh-- A little I will make like stir fry, you take some chicken and throw it together and make a stir, then they would eat it if it was cooked, so we were able to utilize what wasn't in another way." ~Parent IDI 11

Social Media:

In initial phases of the program implementation, one parent brought up a potential improvement to social media to expand proper program utilization. The parent had an experience with another parent posting on a neighborhood page that increased utilization of the program in that neighborhood from one parent up to 10 parents, many of which were already aware of the program but lacked motivation to claim meals.

Phone Calendars:

Despite all the varied forms of communication, remembering can often be a barrier as parents are extremely busy during summer months. Having calendar-syncing options attached to communications such as text, email, and the website offer a reliable method to reaching these busy families who are aware but need reminders.

Impact of Program Beyond Nutrition

Among the parents interviewed, three distinguishable subthemes of the impact of the program arose. First, parents brought up how the mobile meal programs were a source of

excitement for their children. As the vans delivered meals into the neighborhood, the children would have a reason to wake up early, go outside, and interact with school staff.

Second, a few parents reported a relaxation in stress of meal preparation for their kids. Because the meals come pre-packaged and ready to eat, cooking and prepping was a relief for parents who have other household and work demands. This relief in stress was reported with a favorable view of the program, as it also aided in reducing desire for takeout.

Third, the majority of the parents interviewed discussed the financial and food security impact of the program. Many of the parents reported financial hardships and the burden of bills on free income. The provision of school meals into the summer provided immediate and personally significant relief in the stress of providing for their children, of which they expressed gratitude. Some of the parents who were not struggling financially still stated appreciation for the program because of perceived alleviation the program provided for families in need.

"it was just the one less thing to have to-- like a meal, just a meal being provided, the simplicity of it. I know for a lot of people that it made a big difference, or just from the people in my circle that I've talked to, I think it was just the-- Even if I was wanting to go to the grocery store, you know what I mean? It was just that-- It's kind of the same mentality of where we got into wanting to get takeout all the time. It was just, here's the meal, it's done, and we don't have to worry about it." ~Parent IDI 3

Quantitative (Online Survey)

Demographics: The Cartersville Summer Meal Program Evaluation Online Survey was conducted between March 17th and open through April 14th, 2022. Respondents reported on their children's (Table 1) and household (table 2) demographics.

Table 1: Age and Attending School for Children as Reported by Parents in the 2021 Cartersville Summer Meal Program Evaluation Survey

	N	%
Child Demographic	69	100
Child's Age (yrs)		
0-4	0	0
5-10	21	30.43
11-13	13	18.84
14-18	11	15.94
N/A	14	20.29
School Attended		
Kids & Co Pre-K	2	2.90
Gingerbread House (Pre-K)	1	1.45
Cartersville Primary School	15	21.74
Cartersville Elementary School	14	20.29
Cartersville Middle School	19	27.54
Cartersville High School	5	7.25
N/A	13	18.84

Age of reported children was relatively split evenly across age groups, with the larger reported age group being ages 5-10 (30%). The average number of children in respondent households was 2 (40% of families reported) with range of 1-6 children. Nearly half of participants self-reported Caucasian/White (48%) with Hispanic/Latin American (20%) and Black/African Americans representing the most populous minorities. The typical household also reported owning (64%) or renting their own home (24%), with a personal vehicle (92%) and within 15 minutes of a supermarket (95.65%). Social media usage was questioned to determine viability of social media program communication efforts, with a majority of participants (60%) stating they utilized social media a few times a day and another 20% reporting they only use it once a day. Work schedule was also reported to determine viability of the meal dissemination schedule. Besides the weekend, availability is split relatively evenly with Wednesday being noticeably the least available day to disseminate meals.

Table 2: Socio-demographics for the 2021 Cartersville Summer Meal Program Evaluation Survey		
	N	**%**
Demographic Characteristic	25	100
Race & Ethnicity		
Caucasian/White	12	48
Black or African American	4	16
Asian or Asian American	1	4
Hispanic or Latin American	5	20
Native Hawaiian or Pacific Islander	0	0
American Indian or Alaskan Native	2	8
Mixed	1	4
Don't Know	0	0
Number of Children in the Household		
1	6	24
2	10	40
3	4	16
4	3	12
5	1	4
6	1	4
Place of Residence Description		
Own my home	16	64
Renting a home	6	24
Living with someone else	3	12
Average Commute Time to Supermarket		*Missing 2
5 Min or Less	11	47.83
6-15 min	11	47.83
Greater than 15 min	1	4.35
Form of Transportation		
Personal Vehicle	23	92
Borrowed Vehicle	2	8
Social Media Usage Frequency		
Every hour	2	8
A few times a day	15	60
Once a day	5	20
A few times a week	1	4
Never	2	8
Summer Work Day Availability		*Missing 4
Monday	7	33.33
Tuesday	8	38.10
Wednesday	4	19.05
Thursday	7	33.33
Friday	7	33.33
Saturday	20	95.24
Sunday	19	90.48

Food Security Status:

Incorporation of a rapid standardized food security screener aided the research team to assess potential community need, as well as provide a baseline for future impact evaluations of Cartersville's Summer Meals Program. Hager et al. places anyone with an "affirmative response on either" question as food insecure, placing the food insecurity of this sample at 48% (Table 3).

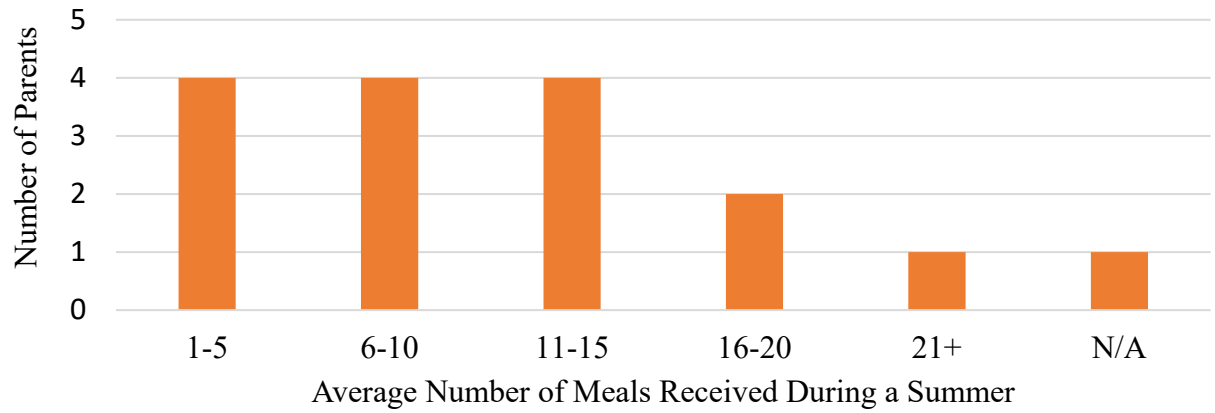
Table 3: Survey participant responses to the Two-Item USDA Rapid Food Security Screener Results (n=25)		
	N	**%**
Respondent Demographic	25	100
Within the past 12 months, we worried whether our food would run out before we got money to buy more.		
Never	13	52
Rarely True	4	16
Sometimes True	8	32
Often True	0	0
Within the past 12 months the food we bought just didn't last and we didn't have money to get more.		
Never	15	60
Rarely True	4	16
Sometimes True	6	24
Often True	0	0

Reach:

Summer Meal Program utilization nationwide is low (16%) relative to School

Lunch utilization, so determination of Cartersville's summer meal program reach is necessary to assess effectiveness. A random sample of 69 students did not meet the 178-requirement sample size, so determining reach was difficult. Monitoring data provided by Cartersville's School Nutrition Director places approximate reach at 25% of the student population, while survey results estimate reach at 65%, a major discrepancy likely due to sampling biases. Of those that stated they received summer meals, frequency of meals received were asked to gather information on program dose (Figure 2).

Figure 2: Summer Meals Reception Frequency (N=16)

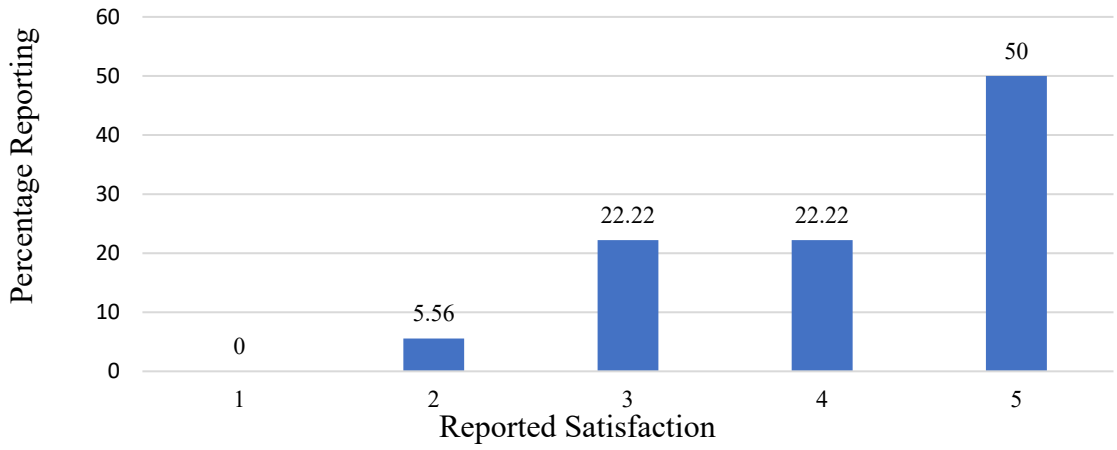


Program Adequacy

Parents were also surveyed on overall satisfaction of the program, satisfaction its individual components, comfortability with the program, and communication methods. A large majority of parents reported favorable responses to the program by their children (Figure 3). All parents reported either neutral or favorable responses to both the adequacy of the healthy options (Figure 4) as well as variability in foods provided in the summer meals (Figure 5). Parents also reported on the adequacy of packaging in maintaining meal freshness (Figure 5), with nearly 2/3 of respondents stating packaging kept food fresh extremely well. Parents were asked how they received meals about the summer meal program, where respondents reported diversity in

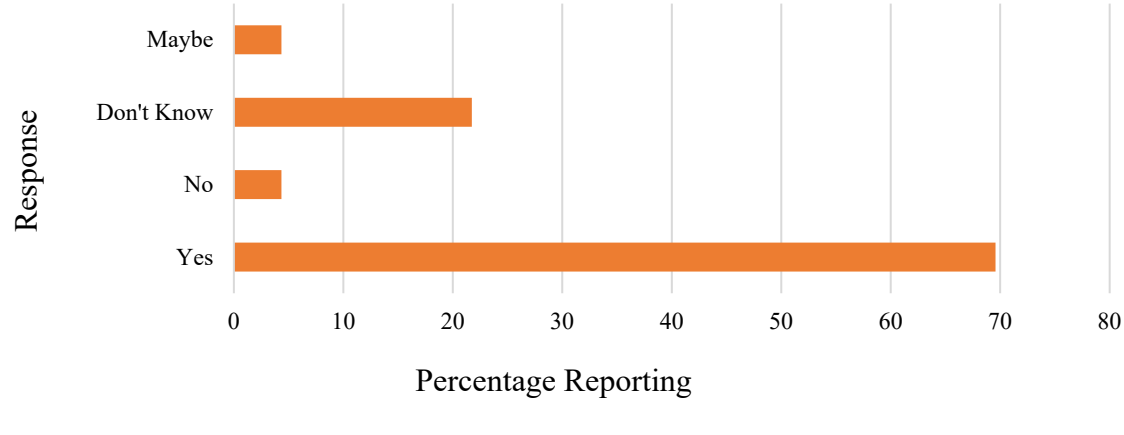
communication methods with a nearly even split between 6 of the 9 reported messaging conduits (6). A majority of parents also reported some comfortability in receiving free summer meals (76%) with another 12% reporting some discomfort (Figure 7).

Figure 3: Child Enjoyment of Summer Meal Quality (N=18)



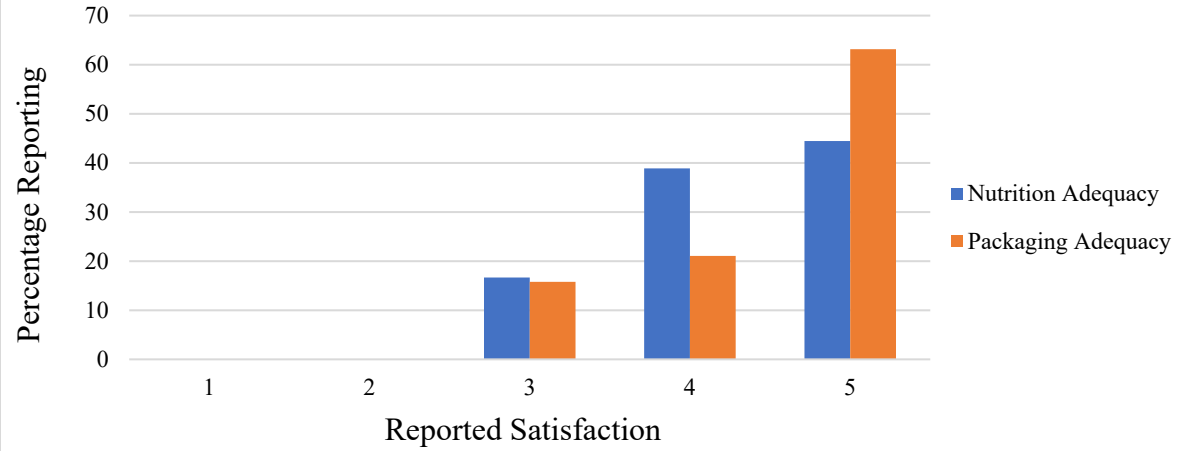
*Scaled from 1-5 with 5 being extreme satisfaction and 1 being extreme dissatisfaction

Figure 4: Reported Provision of adequate healthy summer meals (N=23)



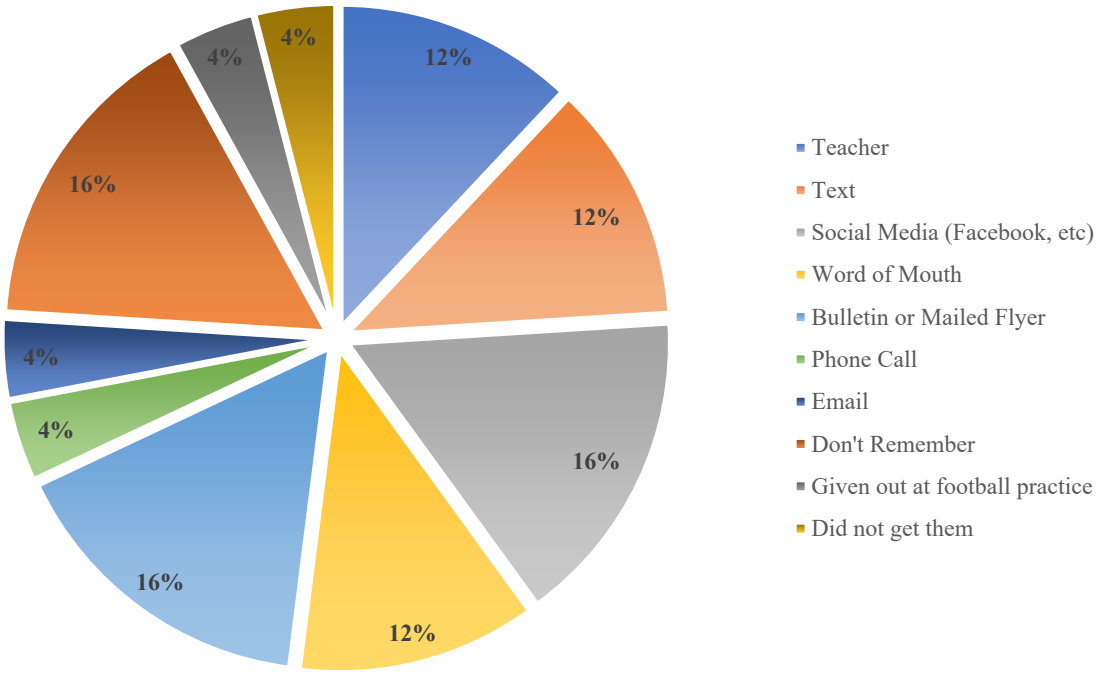
* Lean meat, whole grains, fruits, or veggies were references for healthy

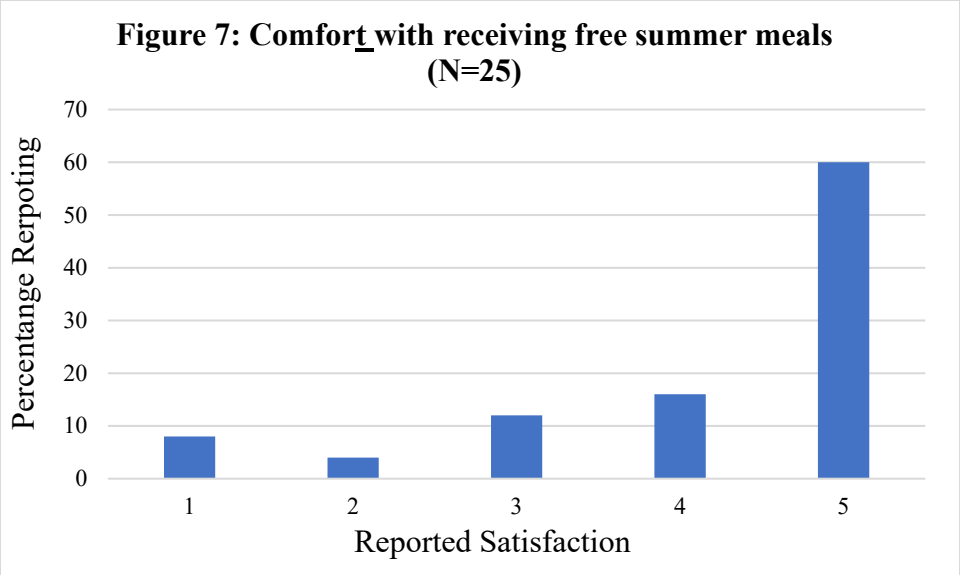
Figure 5: Reported Food Variability and Adequacy of Packaging Maintaining Food Quality



*Scaled from 1-5 with 5 being extreme satisfaction and 1 being extreme dissatisfaction

Figure 6: Reported Summer Meal Program information sources (N=25)

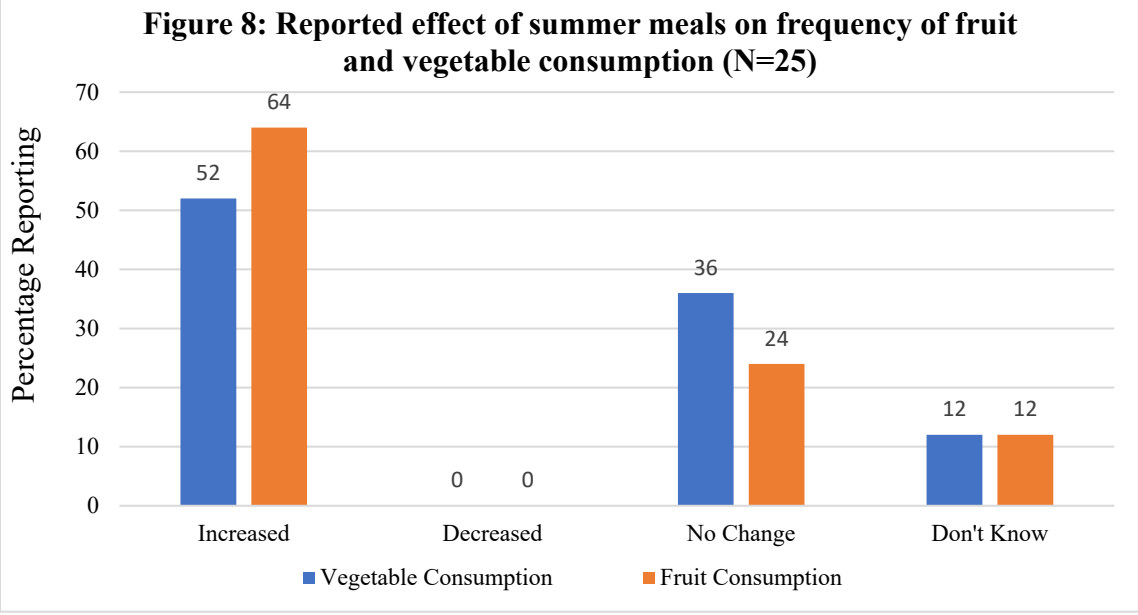




* Scaled from 1-5 with 5 being extremely comfortable and 1 being extremely uncomfortable

Program Outcomes on Child Diet

Part of the program evaluation was to determine whether the program was having its intended outcome of accessibility and dietary behaviors. Participants were questioned on capacity of the meals to affect fruit and vegetable consumption (Figure 8). Parents reported children being more likely to increase fruit consumption as a result of the summer meals (64%) as opposed to vegetable consumption (52%). No parents reported a decrease in fruit of vegetable consumption.



DISCUSSION

Introduction

This section will discuss major findings of the program evaluation. These findings will include reach, barriers and facilitators to program participation and utilization, and impact of the program. These findings will be assessed using previous literature, theory, and summer meal feasibility studies to determine alignment of program standards and potential beneficial program adaptations. Implications and recommendations for the Cartersville program will be discussed to encourage greater reach and program effectiveness. This will be followed by implications for the broader public health community vis a vis youth food insecurity via community outreach mechanisms.

The study found that reach of the program is nearly 10% greater than the national estimates. Both datasets confirmed the need for multi-contact publicity and communication to stimulates stronger program participation and adherence. Cartersville's incorporation of stakeholders in their implementation strategy encourages greater summer meal uptake, especially among immigrant populations, as reported my church staff interviews. Adaptations to program temporality may simplify the meal pick-up and delivery process for working families. The nutrition program can disseminate useful tips and strategies for caregivers to better utilize meal components to prevent food waste. Incorporation of summer meals into children's diet was reported as protective for fruit and vegetable consumption.

Reach

Despite the online survey sample size not being met, program director estimation of over 25% program utilization based on meal distribution monitoring data is higher compared to estimates from other similar programs (about 16% according to Collins et al., 2018). Further

assessment of barriers and facilitators of program participation may yield insight into this utilization discrepancy.

Barriers and Facilitators

Multi-modal communication

Changes in perception of summer meal acceptability and reported lack of program awareness demand a robust and continuous publicity campaign. A 2004 summer meal evaluation study found that program publicity was reported as a top 3 participation barrier by only 6% of sponsor schools, whereas pilot states attributed poor program publicity 29% of the time as a top 3 program barrier (USDA, 2004). Adequate communication also has great potential to foster greater program acceptability. Marketing theory supports what the data indicates: robust communication strategies provide multiple avenues to convey information and reinforce program messaging (Camacho-Ruiz, 2020).

It is of importance to note that implementation of more frequent communication was implemented in July after feedback from Parents 1-4. A few parents interviewed after this explicitly stated recognizing the influx of communication and responded favorably to the changes. These real-time reports imply that diversification of communication platform utilization has recognizable and rapid benefits for program publicity. It also implies that ongoing learning from program adaptions is important for expedient program implementation enhancement.

What is being expressed in the program communication also holds value. Consistent interview feedback yielded reports of discomfort with receiving school summer meals due to belief that these meals were intended solely for financial and food insecure families, which was partially supported by survey data on free meal reception comfort (Figure 7). Adequate marketing of program functions and objective can have significant impact on program acceptability. Recommendations would include distribution of program information across

multiple communication platforms to aid in greater summer meal awareness and utilization, as supported by integrated marketing theories (Camacho-Ruiz, 2020).

Use of stakeholders to disseminate meals

Cartersville's program utilizes churches to distribute approximately 20% of its summer meals (Christina Nichols, 2022), a summer meal implementation strategy sparingly incorporated or researched. Faith-based organizations remain as a nexus for community interaction and involvement (Schoenberg, 2017). As Georgia sits in what is known as the bible belt, church involvement offers a platform for community health outreach campaigns and meal dissemination for Summer Meal Programs. The use of churches to disseminate meals could partially explain discrepancy between the national summer meal utilization rate and Cartersville's higher rate. Churches provide an outlet for program messaging, manpower, safe and familiar space from government distrust, and central community distribution venues. It is recommended that investment in expansion of community outreach to gather more community partner distribution sites would not only improve program reach but also garner program acceptability.

Route adequacy and Temporality

Lack of transportation was not reported as a barrier during interviews, which supported by survey data where everyone had access to a personal vehicle despite that being a major barrier in the feasibility study discussed in the literature review (Rosenberg, 2017). Instead, temporality was a consistent barrier reported by parents in interviews, which was supported by survey data on work day availability (Table 2). Due to federal regulations, government employees are mandated to have weekends off due to the labor laws. And with a relatively even split of availability during summer week days (excluding Wednesdays which were mostly unavailable), adjustments to program implementation times are restricted by regulation and adaptations to program temporality would be difficult to address.

One plausible adaptation could be a shift in work hours towards later in the day, with deliveries taking place later in the evening after standard work hours have ended and parents are home. Mrs. Nichols did state that a double shift approach has been implemented before with limited success, due to structural and contextual barriers such as lack of afternoon managers, employee initiative, and cultural norms like working afterhours.

Social Strategies for Utilization

Efficient summer meal program utilization was also a consistent topic that arose during qualitative interviews. Residential food waste comprises 40% of all food waste excluding the industrial sector, whereas K-12 schools only represent 1% (EPA, 2020). Inefficient food utilization can play significant role in food insecurity, as families become unable to capitalize on meal purchases. A major concern is that despite overcoming the food accessibility barrier, food waste of the disseminated summer meals may reduce program impacts of food security. As discussed in the interviews, food waste reduction strategies would have meaningful outcomes. Plausible program adaptation to decrease food waste include recipe and idea cards to capitalize on unwanted produce, encouraging a barter system between children and families, and donations.

Social strategies by parents to encourage program uptake also play key roles in proper program utilization. Parenting requires constant multi-tasking with an onslaught on information overload, as reported by one parent. Even when parents knew about the program, recalling implementation details such as delivery times and locations become problematic. Using social strategies to mitigate poor recall may encourage greater participation, and foster a more robust program. Recommendations for program actions would include calendar syncing abilities for automatic reminders, physical miniature summer calendars with important meal delivery information, and fostering of local neighborhood social media pages for information relaying as recommended by one interviewee.

Program Outcomes

In addition to the process evaluation components, this program evaluation utilized components of outcome evaluation in both the qualitative and quantitative components. Participant interviews and surveys yielded data that aligned with current short- and long-term food accessibility theories, showing an uptake in fruit and vegetable produce as an outcome of the program. The Georgia Budget and Policy Institute in a fact review in 2018 states that nutrition assistance program such as SNAP have positive influences on produce consumption among children and other health dietary behaviors (Harker, 2018). Additionally, interview data concluded that summer meal reception has beneficial impacts on household financial stability. However, this study did not have the resources or capacity to assess for long term impact of summer meal programs on food insecurity, in which current studies are mixed on the subject.

Strengths and limitations

The consistent feedback and inclusion of community counterparts in every step of the study design is one major strength to this evaluation study. Community stakeholders have access to monitoring data and context that make studies richer and internally valid. Another strength was the use of purposive sampling for interviews. This approach allowed the interview team to include multi-generational caregivers and BIPOC mothers' input.

This program evaluation also has several limitations. First, there was no response or interest in the qualitative study by the Latino community and single fathers despite open-call sampling efforts. These efforts included reinforced messaging for the need of a diverse sample, and follow-up calls and emails for those who expressed interest. However, both qualitative and quantitative collection instruments were distributed in English and future inclusion of a Spanish iteration would likely encourage a greater response rate. Additionally, previous research into barriers to inclusion of immigrant and Latino populations in data collection concluded that fear

and distrust of government entities play a role in poor response rates (Bruce et al., 2019) . This incomplete demographic data set means that interview data lack the perspective of these missing subgroups. Second, a small survey sample size may impact validity and robustness of the quantitative data, as seen in the discrepancy between reach as reported by the nutrition director and survey data on reach. This could mean that an incomplete data set could bias the other question responses as well, and result in poor generalizability. Third, interview participants were selected from a call for interviewees placed during the summer qualitative study component. Due to a small respondent pool, the ability to purposively sample for participant variability and selection bias may be introduced. As a result, data that are collected are less generalizable to the population. Similarly, the poor response rate of the survey can also introduce selection bias and impact generalizability. Lastly, the program evaluation was implemented almost entirely by the thesis student, with the nutrition director having input but limited impact on design or data collection. This small research team of one can introduce implicit biases into the study design and data interpretation.

Public Health Implications

Mobile meal programs and stakeholder engagement are strong implementation strategies for meeting community dietary needs. A strategic communication plan can potentially ameliorate current low summer meal uptake. Additionally, incorporation of community partners such as FBO's in school summer meal implementation strategies via distribution sites and program marketing may also encourage program utilization. A robust communication and implementation summer meal strategy may aid summer meal utilization, provide access to adequate nutrition during summer months, and alleviate the financial burden that loss of school lunch meals place on food insecure families.

Conclusion

This program evaluation is one of few aimed at assessing viability of mobile school summer meal programs. There are limited studies aimed at analyzing the effectiveness of variable school summer meal program implementation strategies. Further research on best practices and impact modeling may yield quality data to support USDA policy and recommendations for more effective summer meals that better address youth food insecurity, as well as inform more robust community-based food security interventions.

APPENDICES

Appendix A: Parent Interview Guide

Introduction:
Hi, my name is Lee Hendrix. I'm a grad student at Emory and I'm interning here in Cartersville this summer with the School Nutrition Director. I'm here to figure out how well the School Nutrition Program meets your and your kids' needs during the summer and throughout the school year. We are very appreciative that you agreed to be a part of the study! The interview will take about 30 to 45 minutes to complete at most! We welcome any feedback you have and know that your opinions **are** accepted without judgment. I understand that some of the things we talk about today are sensitive so this interview will remain anonymous and your identifiable data will only be accessible by myself and the Nutrition Director herself, unless you decide otherwise. Do I have your consent to engage in an audio recording today? Great! Thank you again for being here today. You will be receiving a $50 gift card to Kroger as compensation to spend *however* you please.

Do you have any questions before we get started? Awesome!

We are going to start with a few warm-up questions.
Warm up:

1. Tell me a little bit about your children: what school/s do they go to, sports, etc.?
2. How about yourself? Tell me some about your job, housing situation etc.
3. What do you know about the Summer Meals Program?

Let's talk a little about your kids' likes and dislikes of the Nutrition Program
Children Views:

4. How well do your kids enjoy the food received during summer?
5. Do you find that the amount of food received during summer meals is sufficient?
6. To what extent do your children come home satisfied with school food during the school year?
    a. Would the possibility of school-provided snack food benefit you or your children?
        i. In what ways?

The next part of the interview is going to involve more personal information, so feel free to skip or not answer a question if you aren't comfortable.
Person Views:

7. How much do you struggle to get bills paid and provide food for your kids?
    a. Tell me a little more about that (if gaps or little data provided)
8. How much money due you spend on food per month?
    a. Do you receive financial assistance to help you?
    b. To what extent do the summer meals help with that, if any?
9. How do you feel about receiving free meals from the school during the summer?
    a. Probe about discomfort

10. Can you tell me some about how the Nutrition Program, especially the Summer Meals program, affects you?
11. What do you like most about the Summer Meals Program?
12. Do you find any challenges related to participating in the Summer Meals Program?
13. What ways do you make sure that none of the food you receive goes to waste?
    a. Probe: like stir fry veggies, etc.
14. Describe how easy it was to get information regarding the summer meals program.
    a. What are your preferred methods of communication from the school nutrition program?

Closing:

15. In what ways can the Nutrition Program best improve its Summer Meals to meet the needs of **your** family?
16. How can the Nutrition Program make any changes to its approach to best serve Cartersville as a whole?

Thank you for participating in this interview with me. Is there anything else on your mind regarding this interview that you did not get a chance to talk about? You have my email if you want to reach out with any information regarding the project and your interview. Again, this interview is **completely** confidential. Have a good day!

Appendix B: Staff and Expert Interview Guide

Introduction:

Hi, my name is Lee. I'm a student at Emory getting my master's in public health and I'm interning here in Cartersville this summer with the School Nutrition Director, Christina Nichols. I'm leading interviews to determine how well the summer meals program currently and in past summers have met the community's needs. We are very appreciative that you agreed to be a part of the study! The interview will take about an hour to complete at most! We welcome any feedback you have and know that your opinions **are** valid. I understand that some of the things we talk about today are sensitive so this interview will remain anonymous, and your identifiable data will only be accessible by those of us in Christina's office, unless you decide otherwise. Do I have your consent to engage in an audio recording today? Great! Thank you again for being here today.

Do you have any questions before we get started? Awesome!

We are going to start with a few warm-up questions.

Warm up:

1. Tell me a little about what you do within the school system.
2. What are some of the highlights of your job working with students?

Now we are going to talk a little bit about how you work with food-insecure students.

Build-Up Questions:

3. What are your connections to Cartersville's food insecure students?
    a. How have you worked with food insecure children in the past?
4. How do you see certain individuals/groups of people being more at risk to being hungry during the summer or during the school year?
    a. Why do you think this is the case?
5. What are some challenges you have experienced working with food insecure students?
    a. Are there any students you feel might be slipping through the cracks?

L*et's talk some more about the Nutrition Program itself.*

Key Questions:

6. How much do you know about the Summer Meals Program?
7. What do you like most about the current activities and approaches School Nutrition is taking to help feed children during the summer?

Awesome. Now we are going to start winding down the interview.

Closing:

8. What can School Nutrition do to better serve our students?
9. What are some potential actions the Nutrition Program can take to actively engage more students in the Summer Meals Program?

Thank you for participating in this interview with me. Is there anything else on your mind regarding this interview that you did not get a chance to talk about? You have my email if you want to reach out with any information regarding the project and your interview. Again, this interview is **completely** confidential. Have a good day!

Appendix C: Summer Meal Program Survey

Summer Lovin': A Cartersville City Schools Summer Meal Program Assessment

February-March 2022

Survey Conducted by the **Cartersville City Schools Nutrition Program**

INTERVIEWER INSTRUCTIONS:

1. ALL STATEMENTS IN **BOLD** ARE TO BE READ ALOUD TO EVERY RESPONDENT
2. NEVER READ ALOUD "REFUSE" OR "DON'T KNOW", BUT MAKE SURE TO CIRCLE IF INDICATED BEFORE MOVING FORWARD
3. SKIP PROMPTS WILL BE INDICATED WITH A '→'
4. ALWAYS CIRCLE THE CODE FOR THE CORRESPONDING QUESTION. WRITE-IN OPTIONS FOR "OTHER" WILL BE MADE AVAILABLE WHERE APPROPRIATE.
5. MARK ALL UNUSED SPACES WITH A ZERO

INTERVIEWER: READ TO RESPONDENT BEFORE INITIATING SCREENING

"My name is *Lee Hendrix*. I am a student at Emory working as a public health intern for Cartersville City Schools Nutrition Director. We are collecting responses for a survey to help us understand how well the 2021 Summer Meal Program reached families with students in order to make improvements for next summer's program.

S. SCREENING QUESTIONS		
I am going to ask you a couple screening questions to make sure you are eligible to complete the survey.		
S1	Are you the parent or caregiver of a child enrolled in the Cartersville City School District?	Yes No → End Survey
S2	Are you the main caretaker involved in decisions regarding the child's education and diet?	Yes No → End Survey

(INTERVIEWER CAN PROCEED IF 'YES' TO BOTH S1 & S2. IF NO FOR S2 BUT A PERSON IN THE RESIDENCE WHO CAN ANSWER 'YES' TO BOTH S1 & S2 IS AVAILABLE, READ PROMPT BELOW)

IF AVAILABLE: "**Can you please can get them so I ask if I can survey them?"**

IF UNAVAILABLE: "**When is the best time I can come back to survey them?"**

INTERVIEWER: READ TO RESPONDENT BEFORE INITIATING INTERVIEW

"As I said, this is a brief survey to help us understand how well the 2021 Summer Meal Program reached families with students in order to make improvements for next summer's program. Participation is voluntary, and any information or answers you share will be confidential among only myself and the Nutrition Director. The interview will last approximately 25-30 minutes and will cover a range of topics such as home life, and personal experiences with the program. You may stop at any point in time."

Would you like to participate? Yes [_]No [_]

(INTERVIEWER CHECK ANSWER AND ONLY PROCEED IF CHECKED YES)

INTERVIEWER: ENSURE TO LOG TIME AND DATE OF INTERVIEW START, INDICATED BELOW **SURVEY DATE** _ _ / _ _ / _ _ _ _ (MM/DD/YYYY) **TIME BEGUN** [_ _ : _ _] AM PM (12 HR TIME)

A. RESPONDENT'S BACKGROUND			
I'm going to ask you a few questions about yourself and your family			
NO.	**Question**	**Response**	**Code/Skip**
A1	What is your age in years?		_ _ Years
A2	What is your race and ethnicity? (ALLOW THEM TO TELL YOU. WRITE IN ANSWER IN 'OTHER' IF NONE APPLY)	Caucasian……..... Black or African American…….. Asian or Asian American…….. Native Hawaiian or Pacific Islander. American Indian or Native Alaskan. Hispanic or Latin American……. Mixed……. Refuse…… Don't Know…… Other_____	1 2 3 4 5 6 7 77 99 88

A3	How many children do you have?		_ _ children
A4	What is your relationship to the child/children you are a caregiver for? (ALLOW THEM TO TELL YOU. CAN BE MORE THAN ONE. WRITE IN ANSWER IN 'OTHER' IF NONE APPLY)	Parent…… Grandparent……. Non-Parental Family Member.. Foster Parent…… Non-Family State Guardian…… Refuse…… Other: _____ Don't Know……	1 1 1 1 1 77 88 99
A5	What Cartersville City School is your child/children enrolled in during the current school year? (CIRCLE MORE THAN ONE WHEN NECESSARY)	Cartersville Primary…….. Cartersville Elementary……. Cartersville Middle…… Cartersville High……. Refuse…… Other: _____	1 1 1 1 77 88
A6	In the last month, how often would you say you use social media such as twitter, Facebook, or Instagram? (READ OUT RESPONSE SELECTIONS)	Every hour A few times a day Once a day A few times a week Less than once a week Never Refuse…… Don't Know…… Other: _____	1 2 3 4 5 6 77 99 88

B. SUMMER MEAL PROGRAM PARTICIPATION			
Thank you! Now let's talk some about the summer meal program, how easy it was to be able to participate, and the things you liked or didn't like about it.			
NO.	**Question**	**Response**	**Code/Skip**
B1	Did you receive at least one meal delivery or pick-up during the 2021 Summer Meal Program?	Yes……..…… No…… Refuse…….. Don't' Know…….	1 2 →B5 77 →B5 99 →B5

B2	About how many times did you receive a meal delivery or pick-up during the 2021 Summer Meal Program?	Refuse……..	_ _ Meals 77
		Don't' Know…….	99
B3	Would you say the meals provided enough healthy food options for your child/children?	Yes……..……	1
		No……	2
		Refuse……..	77
		Don't' Know…….	99
B4	To what extent would you say your children enjoyed the summer meal food? (READ OUT RESPONSE SELECTIONS)	Very Satisfied……..	1
		Satisfied……..	2
		Neither Satisfied or Dissatisfied	3
		Dissatisfied……	4
		Very Dissatisfied……	5
		Refuse……..	77
		Don't Know……..	99
B5	What was your child(s) favorite meal or food from the summer meals?	_____ _____ _____	
B6	On a scale from 1-5 with 1 being very satisfied and 5 being very dissatisfied, how well did the meals offer a wide variety of foods? (READ OUT RESPONSE SELECTIONS)	Very Satisfied……..	1
		Satisfied……..	2
		Neither Satisfied or Dissatisfied……..	3
		Dissatisfied……	4
		Very Dissatisfied……	5
		Refuse……..	77
		Don't Know……..	99
B7	On a scale from 1-5 with 1 being excellent and 5 being terrible, how well did the packaging of the meals keep the food fresh and prevent damage?	Excellent…….	1
		Good…….	2
		Fair…….	3
		Poor……..	4
		Terrible……..	5
		Refuse……..	77
		Don't Know……..	99

B8	How did you get information regarding the 2021 Summer Meals program and van routes? (READ OUT RESPONSE SELECTIONS)	Social Media (Facebook, etc) Phone Call Text Word of Mouth Bulletin or Mailed Flyer Teacher Refuse…… Other: _____ Don't Know……	1 2 3 4 5 6 77 88 99
B9	How do you think receiving school-provided summer meals would affect the amount of vegetables your children ate during the summer? (READ OUT RESPONSE SELECTIONS)	It would increase……. It would decrease…… It wouldn't affect it …….. Refuse…….. Don't Know……..	1 2 3 77 99
B10	How do you think receiving school-provided summer meals would affect the amount of fruits your children ate during the summer? (READ OUT RESPONSE SELECTIONS)	It would increase……. It would decrease…… It wouldn't affect it …….. Refuse…….. Don't Know……..	1 2 3 77 99
B11	Are you comfortable receiving free summer meals?	Yes……..…… No…… Refuse…….. Don't' Know…….	1 2 77 99
B12	Do you think Cartersville City Schools had enough meals to feed all of its students during the 2021 Summer Meals Program?	Yes……..…… No…… Refuse…….. Don't' Know…….	1 2 77 99

C. SOCIOECONOMIC STATUS

Thanks for answering my questions. Finally, we are going to discuss a little bit about your work, things your household may have, and things your household spends money on.

NO.	Question	Response	Code/Skip
C1	Which of these most applies to your place of residence? (READ OUT RESPONSE SELECTIONS SLOWLY AS THERE ARE SEVERAL SELECTIONS)	Own my home…… Renting a home……. Renting an apartment…….. Living with someone else…… Staying in temporary housing.. Staying in free/reduced living…… No place to stay……. Refuse…… Don't Know…… Other: _____	1 2 3 4 5 6 7 77 99 88
C2	Do you have reliable internet access in your place of residence?	Yes……..…… No…… Refuse…….. Don't' Know…….	1 2 77 99
C3	What is your main form of transportation for your day to day activities? (READ OUT RESPONSE SELECTIONS SLOWLY AS THERE ARE SEVERAL SELECTIONS)	Personal vehicle…… Borrowed vehicle…… Carpool/Given a ride……. Motorcycle…….. Bicycle…… Walking…….. Rideshare (i.e. Uber, Lyft)……. Public Transportation…….. Refuse…… Don't Know…… Other: _____	1 2 3 4 5 6 7 8 77 99 88

C4	How many minutes does it take you to commute to from your place of residence to the nearest place to buy groceries?	Refuse……..	_ _ Minutes 77
		Don't' Know…….	99
C5	During the summer months, which days of the week do you work, if any? (READ OUT RESPONSE SELECTIONS. REMIND THEM TO ANSWER ALL THAT APPLY)	Monday……..	1
		Tuesday……..	1
		Wednesday……..	1
		Thursday……	1
		Friday……..	1
		Saturday…….	1
		Sunday…….	1
		None…….	1
		Refuse……..	77
		Don't' Know…….	99
C6	**To what extent do you agree with the following two statements:** Within the past 12 months, we worried whether our food would run out before we got money to buy more?	Often True…….	1
		Sometimes True……	2
		Rarely True……	3
		Never…….	4
		Refuse……	77
		Don't Know……	99
C7	Within the past 12 months the food we bought just didn't last and we didn't have money to get more.	Often True…….	1
		Sometimes True……	2
		Rarely True……	3
		Never…….	4
		Refuse……	77
		Don't Know……	99

Thank you so much for taking the time to let me survey you. You are invaluable in improving the summer meal program. If you have any questions or concerns, you can reach out to the Nutrition director, Christina Nichols, at [insert email] or myself at [insert email]. Have a great day!

INTERVIEWER: ENSURE TO LOG TIME OF INTERVIEW CONCLUSION AND SIGN BELOW

TIME ENDED [_ _ : _ _] AM PM (12 HR TIME)

INTERVIEWER SIGNATURE: _____

References

Alisha Coleman-Jensen, Matthew P. Rabbitt, Christian A. Gregory, and Anita Singh. 2021. Household Food Security in the United States in 2020, ERR-298, U.S. Department of Agriculture, Economic Research Service.

Beck, A. F., Henize, A. W., Kahn, R. S., Reiber, K. L., Young, J. J., & Klein, M. D. (2014). Forging a Pediatric Primary Care–community partnership to support food-insecure families. *Pediatrics*, *134*(2). https://doi.org/10.1542/peds.2013-3845

Bernazzani, S. (2016, May 1). The Importance of Considering the Social Determinants of Health. AJMC. Retrieved March 25, 2022, from https://www.ajmc.com/view/the-importance-of-considering-the-social-determinants-of-health.

Bruce, J. S., De La Cruz, M. M., Lundberg, K., Vesom, N., Aguayo, J., & Merrell, S. B. (2019). Combating Child Summer Food Insecurity: Examination of a Community-Based Mobile Meal Program. Journal of community health, 44(5), 1009–1018. https://doi.org/10.1007/s10900-019-00675-0

Camacho-Ruiz, J. (2020, July 7). Council post: How to maximize value through integrated marketing. Forbes. Retrieved April 20, 2022, from https://www.forbes.com/sites/forbesbusinesscouncil/2020/07/08/how-to-maximize-value-through-integrated-marketing/?sh=62cb4b9318e1

Carrillo-Álvarez, E., Salinas-Roca, B., Costa-Tutusaus, L., Milà-Villarroel, R., & Shankar Krishnan, N. (2021). The Measurement of Food Insecurity in High-Income Countries: A Scoping Review. *International journal of environmental research and public health*, *18*(18), 9829. https://doi.org/10.3390/ijerph18189829

Center for Disease Control and Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention . (n.d.). *Types of evaluation*. Retrieved February 15, 2022, from https://www.cdc.gov/std/Program/pupestd/Types%20of%20Evaluation.pdf

Collins, A. M., Klerman, J. A., Briefel, R., Rowe, G., Gordon, A. R., Logan, C. W., Wolf, A., & Bell, S. H. (2018). A Summer Nutrition Benefit Pilot Program and Low-income Children's Food Security. Pediatrics, 141(4), e20171657. https://doi.org/10.1542/peds.2017-1657

Eicher-Miller, H. A. (2021). The need for investment in rigorous interventions to improve child food security. Journal of the Academy of Nutrition and Dietetics, 121(1). https://doi.org/10.1016/j.jand.2020.06.002

Environmental Protection Agency (2020). *2018 Wasted Food Report: Estimates of generation and management of wasted food in the United States in 2018* (EPA 530-R-20-004). Retrieved from https://www.epa.gov/sites/default/files/2020-11/documents/2018_wasted_food_report.pdf
Findholt NE, Izumi BT, Nguyen T, Pickus H, Chen Z. Availability of healthy snack foods and beverages in stores near high-income urban, low-income urban, and rural elementary and middle

schools in Oregon. Child Obes. 2014 Aug;10(4):342-8. doi: 10.1089/chi.2014.0020. Epub 2014 Jun 24. PMID: 24959741.
Food Insecurity: A Public Health Issue. (2016). Public health reports (Washington, D.C. : 1974), 131(5), 655–657. https://doi.org/10.1177/0033354916664154

Gallegos, D., Eivers, A., Sondergeld, P., & Pattinson, C. (2021). Food Insecurity and Child Development: A State-of-the-Art Review. International journal of environmental research and public health, 18(17), 8990. https://doi.org/10.3390/ijerph18178990

Gundersen, C., & Ziliak, J. P. (2015). Food Insecurity and Health Outcomes. Health affairs (Project Hope), 34(11), 1830–1839. https://doi.org/10.1377/hlthaff.2015.0645

Hager, E. R., Quigg, A. M., Black, M. M., Coleman, S. M., Heeren, T., Rose-Jacobs, R., Cook, J. T., de Cuba, S. A., Casey, P. H., Chilton, M., Cutts, D. B., Meyers, A. F., & Frank, D. A. (2010). Development and validity of a 2-item screen to identify families at risk for food insecurity. Pediatrics, 126(1). https://doi.org/10.1542/peds.2009-3146

Harker, L. (2018, June 20). *Food assistance helps promote a healthy Georgia*. Georgia Budget and Policy Institute. Retrieved April 18, 2022, from https://gbpi.org/food-assistance-helps-promote-a-healthy-georgia/#:~:text=This%20program%20is%20linked%20to,the%20U.S.%20Department%20of%20Agriculture.&text=A%202016%20study%20published%20in,and%20after%20the%20Great%20Recession.
https://www.who.int/gho/ncd/mortality_morbidity/en/. Accessed on November 9th, 2020.

Jillcott S., Ammerman A., Sommers J., Glasgow RE. Applying the RE-AIM framework to assess the public health impact of policy change. Ann Behav Med. 2007; 34(2):105–14.

Kannam, A., Wilson, N., Chomitz, V. R., & Ladin, K. (2019). Perceived Benefits and Barriers to Free Summer Meal Participation Among Parents in New York City. *Journal of nutrition education and behavior*, *51*(8), 976–984. https://doi.org/10.1016/j.jneb.2019.05.592

Ralston K., Treen K., Coleman-Jensen A., Guthrie J. (2017). Children's Food Security and USDA Child Nutrition Programs, U.S. Department of Agriculture, Economic Research Service.

Langford, R., Bonell, C. P., Jones, H. E., Pouliou, T., Murphy, S. M., Waters, E., . . . Campbell, R. (2014). The WHO Health Promoting School framework for improving the health and well-being of students and their academic achievement. Cochrane Database of Systematic Reviews, (4), CD008958.

Littlecott, H. J., Long, S., Hawkins, J., Murphy, S., Hewitt, G., Eccles, G., Fletcher, A., & Moore, G. F. (2018). Health Improvement and Educational Attainment in Secondary Schools: Complementary or Competing Priorities? Exploratory Analyses From the School Health Research Network in Wales. Health education & behavior: the official publication of the Society for Public Health Education, 45(4), 635–644. https://doi.org/10.1177/1090198117747659

Micha, R., Karageorgou, D., Bakogianni, I., Trichia, E., Whitsel, L. P., Story, M., Peñalvo, J. L., & Mozaffarian, D. (2018). Effectiveness of school food environment policies on children's dietary behaviors: A systematic review and meta-analysis. PloS one, 13(3), e0194555. https://doi.org/10.1371/journal.pone.0194555

Moore, G., Audrey, S., Barker, M., Bond, L., Bonell, C., Cooper, C., Hardeman, W., Moore, L., O'Cathain, A., Tinati, T., Wight, D., & Baird, J. (2014). Process evaluation in complex public health intervention studies: the need for guidance. Journal of epidemiology and community health, 68(2), 101–102. https://doi.org/10.1136/jech-2013-202869

Oates, G. R., Jackson, B. E., Partridge, E. E., Singh, K. P., Fouad, M. N., & Bae, S. (2017). Sociodemographic Patterns of Chronic Disease: How the Mid-South Region Compares to the Rest of the Country. American journal of preventive medicine, 52(1S1), S31–S39. https://doi.org/10.1016/j.amepre.2016.09.004

Pourmotabbed, A., Moradi, S., Babaei, A., Ghavami, A., Mohammadi, H., Jalili, C., Symonds, M. E., & Miraghajani, M. (2020). Food insecurity and mental health: a systematic review and meta-analysis. Public health nutrition, 23(10), 1778–1790. https://doi.org/10.1017/S136898001900435X

Rosenberg, E. (2016). *Going Mobile to Increase the Reach of Summer Meals: A Feasibility Study for the Rochester Community*. Retrieved April 16, 2022, from https://www.racf.org/wp-content/uploads/2019/10/Feasibility-Study-of-Mobile-Summer-Meals.pdf

Schilpzand, E. J., Sciberras, E., Efron, D., Anderson, V., & Nicholson, J. M. (2015). Improving survey response rates from parents in school-based research using a multi-level approach. *PloS one*, *10*(5), e0126950. https://doi.org/10.1371/journal.pone.0126950
Schoenberg N. E. (2017). Enhancing the role of faith-based organizations to improve health: a commentary. *Translational behavioral medicine*, *7*(3), 529–531. https://doi.org/10.1007/s13142-017-0485-1

Te Vazquez, J., Feng, S. N., Orr, C. J., & Berkowitz, S. A. (2021). Food Insecurity and Cardiometabolic Conditions: a Review of Recent Research. Current nutrition reports, 10(4), 243–254. https://doi.org/10.1007/s13668-021-00364-2

Thomas, Miller, & Morrissey. Food Insecurity and Child Health Pediatrics Oct 2019, 144 (4) e20190397; DOI: 10.1542/peds.2019-0397

Turner, L., & Calvert, H. G. (2019). The Academic, Behavioral, and Health Influence of Summer Child Nutrition Programs: A Narrative Review and Proposed Research and Policy Agenda. *Journal of the Academy of Nutrition and Dietetics*, *119*(6), 972–983. https://doi.org/10.1016/j.jand.2019.02.006

U.S. Census Bureau (2021). *Quick Facts: Cartersville city, Georgia*. Retrieved from https://www.census.gov/quickfacts/cartersvillecitygeorgia

US Department of Agriculture, Economic Research Service (January 13th, 2022). National School Lunch Program. https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/national-school-lunch-program/. Accessed March 27th, 2022.

US Department of Agriculture, Economic Research Service (November 8th, 2021). Food security and nutrition assistance. https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-security-and-nutrition-assistance/. Accessed March 25th, 2022.

Vandevijvere S, Sushil Z, Exeter DJ, Swinburn B. Obesogenic Retail Food Environments Around New Zealand Schools: A National Study. Am J Prev Med. 2016 Sep;51(3):e57-66. doi: 10.1016/j.amepre.2016.03.013. Epub 2016 Apr 26. PMID:27130865.

Welker, E., Lott, M., & Story, M. (2016). The School Food Environment and Obesity Prevention: Progress Over the Last Decade. Current obesity reports, 5(2), 145–155. https://doi.org/10.1007/s13679-016-0204-0

World Economic Forum, Harvard School of Public Health (2011). *The Global Economic Burden of Non- communicable Diseases*. Retrieved from: http://www3.weforum.org/docs/WEF_Harvard_HE_GlobalEconomicBurdenNonCommunicableDiseases_2011.pdf on November 9th, 2020.