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Deborah K. Chen   April 30, 2021

Appalachian School Districts' Responses to the Nutritional Needs of Students During the Early Months of the COVID-19 Pandemic

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Abstract

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In March 2020 all schools in the United States had closed their doors to in-person education and moved to virtual learning. While this nonpharmaceutical intervention was put in place as a way to combat the spread of COVID-19, it took away a vital safety net for families and students struggling with food insecurity. This evaluation looked at the responses of four different school districts across three different regions in Appalachia – Northern Appalachia, Central Appalachia, and Southern Appalachia – in order to better understand how school districts responded to meet the nutritional needs of students during the early months of the COVID-19 pandemic. Eight different participants were interviewed who held a variety of roles throughout the school systems. These interviews were analyzed through thematic analysis as well as case studies. The overall theme which emerged from the data was that school are more integral in students' lives than just serving as a place to learn. Three subthemes were identified which were as follows: tying education and nutrition together appears to positively influence learning of students, understanding the community is vital to shaping the response, and partnering with other organizations can strengthen the reach of the response. While the responses varied by district, each district had a response. Responses that were successful found ways to tie the nutrition response to education, tailored the response to the community and found ways to make meals accessible and decrease as many barriers as possible so students and their families could easily participate in the response. Knowing how school districts responded to the needs of students reliant on the Free and Reduced Lunch Program during the COVID-19 pandemic is vital for any future planning of other responses that may occur.

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Chapter 1

Food Insecurity

Food insecurity encompasses a wide array of experiences ranging from not being able to obtain food, uncertainty of where one's food will come from, modifying one's diet because they do not have the means necessary to purchase food, and relying on federal assistance programs or community resources to have enough to eat (U. Agriculture, 2020a, 2020b; Silva, 2020). Food insecurity may be a permanent or temporary experience (Jones, Ngure, Pelto, & Young, 2013; Nord, Andrews, & Winicki, 2002). Food insecurity has been strongly linked with poverty and low income, as when individuals have limited means, they may be forced to make decisions which may impact their ability to have enough to eat (Wight, Kaushal, Waldfogel, & Garfinkel, 2014). For those experiencing food insecurity, it may carry with it social stigma and shame which may influence the choices a person makes as they deal with food insecurity (Bernal, Frongillo, & Jaffe, 2016; Martin, 2019; Purdam, Garratt, & Esmail, 2016).

Prevalence of Food Insecurity in American Households

In 2019, over 13.6 million or 10.5% of US households experienced some form of food insecurity (U. Agriculture, 2020a). Compared to the prevalence of food insecurity in 2018, during which 11.1% of households experienced some form of food insecurity, the prevalence of food insecurity did decrease in 2019 (U. Agriculture, 2020a). However, 35.3 million people still reported having experienced food insecurity in 2019 (U. Agriculture, 2020a). When focusing specifically on households with children, the USDA reports that 13.6% of households with children experienced some form of food insecurity during 2019 (U. Agriculture, 2020a). This equates to over 5 million children who experienced food insecurity (U. Agriculture, 2020a).

Effects of Food Insecurity on Health

Food insecurity is strongly linked with unhealthy eating which is one of the leading causes of death in the United States (Morales & Berkowitz, 2016). An unhealthy diet increases the risks for many chronic diseases in adults and increases the risk of obesity in children (Asif, 2014; Casas, Castro-Barquero, Estruch, & Sacanella, 2018; Interest, 2015; Kuźbicka & Rachoń, 2013; Mokdad et al., 2018; Roblin, 2007; Zhang et al., 2019). Children who come from food insecure homes are more likely to be obese than their peers who come from food secure homes (Kral, Chittams, & Moore, 2017). Experiencing food insecurity during childhood may have additional negative health and social ramification beyond just that of increased risk of obesity. Food insecurity is associated with higher levels of aggression, poor oral health, and decreased ability to handle stress (Howard, 2011; Huang, Matta Oshima, & Kim, 2010; Kirkpatrick, McIntyre, & Potestio, 2010; Muirhead, Quiñonez, Figueiredo, & Locker, 2009; Whitaker, Phillips, & Orzol, 2006).

Ways Food Insecurity is Addressed

As food security is a challenge for a large percentage of Americans and as food security is an upstream factor for many chronic diseases in adults and health concerns in children, the United States government supports a variety of food assistance programs created to increase access to healthy foods. These programs include, but are not limited to, the Supplemental Nutrition Assistance Program (SNAP, which was formerly called the "Food Stamp Program"), the National School Lunch Program (NSLP), the School Breakfast Program, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (Aussenberg & Bilings, 2019; Bhattarai, Duffy, & Raymond, 2005; Huang & Barnidge, 2016; Kreider, Pepper,

& Roy, 2016; Ratcliffe, McKernan, & Zhang, 2011). These programs are housed under the U.S. Department of Agriculture who, during the 2019 fiscal year, received over $103 billion to run all of the domestic food assistance programs (Aussenberg & Bilings, 2019). These programs have been shown to reduce food insecurity both for children and adults and are vital players in many families' fight against food insecurity (Huang & Barnidge, 2016; Kreider et al., 2016; Ratcliffe et al., 2011).

Impact of COVID-19 on Food Insecurity

On January 20, 2020, the first laboratory confirmed case of the Coronavirus Disease 2019 (COVID-19) was confirmed in the United States and reported to CDC on January 22, 2020 (Stokes et al., 2020). As of April 30, 2021, over 32 million cases have been confirmed and 572,000 deaths have occurred in the United States (Prevention, 2021). As a cure has yet to be found and the COVID-19 vaccines were not given emergency approval until early December 2020, in order to attempt to control the spread of disease and reduce transmission, social distancing measures were put in place across the country beginning in March 2020 (Wang et al., 2020). These measures included limits on mass gatherings, mandatory shelter-in-place orders, restrictions on nonessential travel, and school closures (Wang et al., 2020).

During the summer when children are not in school and no longer have access to the meals provided by the NSLP, food insecurity and hunger among children increases because fewer children have access to the summer feeding programs than they do to the free and reduced lunch program during the school year (Center, 2019; F. a. N. Service, 2020a). Many families rely on the NSLP as a way to ensure that their children have at least one guaranteed meal during the day, which is particularly pertinent in families who experience very low food security and are

forced to skip meals. So, when schools closed suddenly in March 2020 as a response to the COVID-19 pandemic, many families lost the safety net they had been relying on to provide food for their children (Poole, Fleischhacker, & Bleich, 2021).

Prior to the pandemic, in 2019 only 13.6% of households with children experienced some form of food insecurity. However, data from June 2020 shows that food insecurity in households with children more than doubled as a result of the pandemic (Bauer, 2020; Schanzebach & Pitts, 2020; Silva, 2020). As food insecurity is related to poverty and likewise unemployment, these rates of food insecurity fall in line with the rising unemployment rate caused by the pandemic (Falk, Carter, Nicchitta, Nyhof, & Romero, 2020; Wight et al., 2014). In April 2020 the unemployment rate peaked at 14.7%, and while it has declined since then, as of September 2020, it is still at 7.9% (Falk et al., 2020). Prior to the pandemic, in February 2020, the unemployment rate was 3.8% (Kochhar, 2020).

In order to address the needs of students reliant on the meals provided by the free and reduced lunch program and to combat food insecurity, many school districts created plans and policies to provided school-based meals to their students. These programs were supported by funding from the Families First Coronavirus Response Act which expanded SNAP benefits and the Coronavirus Aid, Relief, and Economic Security (CARES) Act which included an appropriation of $15.8 billion for SNAP and $8.8 billion for child nutrition programs such as the National School Lunch Program and the Summer Feeding Program (Dunn, Kenney, Fleischhacker, & Bleich, 2020). While many families benefited from these programs and the meals provided by schools, not every child who participated in the NSLP in school received these meals while schools were closed (Waxman, Gupta, & Karpman, 2020). Indeed, one study indicates that while 30.9% of school aged children received school provided meals, only 60.9%

of children who participate in the NSLP while school is in session received those meals (Waxman et al., 2020). In other words, 39.1% of children who receive nutritional assistance from the government and may have been experiencing food insecurity as a result of the COVID-19 pandemic did not participate or benefit from meals provided by the school during the Spring of 2020 (Waxman et al., 2020).

Purpose and Aims

This study aims to understand how school districts in Appalachia responded to the nutritional needs of students, particularly those participating in the Free and Reduced Lunch Program, during the COVID-19 pandemic. Appalachia is both at-risk for food insecurity and is an overstudied and understudied region of the United States as studies exist examining food insecurity in specific populations and locations in Appalachia but not all regions and not all populations. Additionally, there exist studies examining barriers to the implementation of the Healthy Hunger Free Kid Act. However, given the pandemic is so new, there is a dearth of literature examining the response school districts took to meet the needs of their students, let alone an evaluation of the response or examining three different geographical locations. This qualitative study involved semi-structured interviews via Zoom with school staff and administrators from Upstate South Carolina; Knox County, Kentucky; and Johnstown, Pennsylvania. These sites were chosen as they represent three different geographical locations in Appalachia and a mix or urban and rural areas. While public health practitioners have been anticipating the "next epidemic" for many years, very few imagined the novelness of the disease or that non-pharmaceutical interventions – such as social distancing – would be the tools used to combat and slow its spread. Understanding how school districts worked to meet the needs of

their food insecure students, as well as aspects of their programs that worked well and those that did not, is vital for the creation of future emergency preparedness plans. With the profound effects that food insecurity has on the health of children, this study aims to highlight the responses of school districts in Appalachia working to address the needs of food insecure students.

This study explored the following aims:

- To describe the responses of Appalachian school districts working to meet the needs of their students during the COVID-19 pandemic.

- To identify key barriers and facilitators that influenced the response and participation of families and students.

Theoretical Framework

The social ecological model was used to examine the response of school districts in Appalachia in addressing the needs of their students reliant on the free and reduced school lunch program during the COVID-19 pandemic. The social ecological model is often used to examine and understand health behaviors and decisions individuals make (Sallis, Owen, & Fisher, 2015). This model proposes the idea that individual behavior is shaped by a variety of factors such as the intrapersonal, interpersonal, institutional, community, and policy level (Sallis et al., 2015). While the choice to benefit from the meals provided by the school is the choice of the individual, thus occurring at the individual level, there are many factors which may influence that choice. These factors, which may fall along the interpersonal, institutional, and policy level and thus are the factors examined in this thesis.

Chapter 2

What is Food Insecurity?

Food insecurity is not simply being unable to obtain the food required to meet one's needs; it also includes being uncertain where one's next meal will come from (Silva, 2020). The United States government has defined food insecurity as, "limited or uncertain availability of nutritionally adequate and safe foods, or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (U. Agriculture, 2020b). Food insecurity may be a permanent or temporary experience (Jones et al., 2013; Nord et al., 2002). The United States Government splits food insecurity into two categories: "Low Food Security" and "Very Low Food Security" (U. Agriculture, 2020a). Low Food Security occurs when food-insecure households are forced to rely on a variety of federal food assistance programs or community resources in order to obtain "enough food to avoid substantially disrupting their eating patterns or reducing food intake" (U. Agriculture, 2020a). Very low food security occurs when the normal eating patterns of at least one member of a household is disrupted and food intake is reduced due to insufficient money or other resources needed for food (U. Agriculture, 2020a).

Prevalence of Food Insecurity on American Households

In 2019, 13.6% of US households with children experienced some form of food insecurity (U. Agriculture, 2020a). For over half of these households, 7.1%, only the adults experienced food insecurity while the children were not affected. Children are often protected by the adults in their households from experiencing the effects of food insecurity, with parents and guardians often putting the children first when it comes to who is able to eat if resources are

limited. However, in 2019 5.3 million children experienced food-insecurity and 361,000 children experienced very low food security (U. Agriculture, 2020a).

Looking specifically at states in Appalachia, based on an average from 2017-2019, the prevalence of food insecurity was above the US average for Alabama, Kentucky, Mississippi, North Carolina, Ohio and West Virginia (U. Agriculture, 2020a). The prevalence of food insecurity was near the US average for Georgia, Pennsylvania, Maryland, New York, South Carolina, and Tennessee, while the prevalence of food insecurity was lower than the national average in Virginia (U. Agriculture, 2020a). While there are a handful of other states which experienced food insecurity above the U.S. average – New Mexico, Texas, Oklahoma, Arkansas, and Louisiana – all the others are located in Appalachia (U. Agriculture, 2020a).

Influences on Food Insecurity

Both low and very low food security can be influenced by numerous factors such as income, employment, location, and transportation (Alisha, Rabbitt, Gregory, & Singh, 2017; Nord, 2007; Nord, Andrews, & Carlson, 2009; Seefeldt, 2010; Sharkey, Johnson, & Dean, 2011; Ver Ploeg et al., 2009). Low-income households experience food insecurity at a higher rate compared to their high-income neighbors. In 2016, 12.3% of households experienced food insecurity in the United States, however, when broken down by income, 31.6% of low-income households were food insecure at least one time during the year (Alisha et al., 2017). As food insecurity encapsulates households who are forced to rely on federal food assistance programs or community resources in order to obtain "enough food to avoid substantially disrupting their eating patterns or reducing food intake" (U. Agriculture, 2020a), the fact that income can play a role in food insecurity is unsurprising. Likewise, employment status may also influence a

household's risk of food insecurity due to lack of income (Nord, 2007). Children from households with unemployed parents experience food insecurity at higher rates than their counterparts from households with parents who are employed (Nord, 2009). Location and access to transportation also play roles in food insecurity (Zenk et al., 2005). Rural areas are often food deserts where residents have a limited selection of food items to purchase, pay high prices for these items, and often times, these items may be lower quality as well (Morton & Blanchard, 2007).

Effects of Food insecurity on Health

Food insecurity is strongly linked with unhealthy eating because food insecurity reduces the variety and quality of food a person is able to consume (Morales & Berkowitz, 2016). Unhealthy eating is one of the leading causes of death in the United States and has been hypothesized to contribute to over 678,000 deaths per year (Interest, 2015). An unhealthy diet not only increases the risk for obesity and type 2 diabetes, but also cardiovascular disease and cancer (Asif, 2014; Casas et al., 2018; Interest, 2015; Kuźbicka & Rachoń, 2013; Mokdad et al., 2018; Zhang et al., 2019). Specifically for children, poor diet and unhealthy eating typically occurs when there is inadequate consumption of fruit, vegetables, and dairy products (Roblin, 2007). Often times, these healthier items have been replaced by high-calorie snacks and carbohydrate rich foods, which increase the risk of childhood obesity (Roblin, 2007). An estimated 20.6% of American children between the ages of 12-19 years old are considered obese. When broken down by food security status, a worrying trend appears; Kral et al. (2016) found that 77% of children who came from food insecure households were considered obese as compared to 41% of children who lived in food secure households (Control, 2019; Kral et al.,

2017). Not only does obesity increase the risk for high blood pressure, high cholesterol, and impaired glucose tolerance, which can become exacerbated and lead to worse health outcomes later in life, food insecurity itself increases the risk for anemia, cognitive problems, which may lead to poorer performance at school and asthma (Carmichael, Yang, Herring, Abrams, & Shaw, 2007; Cook et al., 2004; Cook et al., 2006; Eicher-Miller, Mason, Weaver, McCabe, & Boushey, 2009; Howard, 2011; Jia et al., 2019; Skalicky et al., 2006; Whitaker et al., 2006). Additionally, food insecurity may lead to higher levels of aggression and behavioral problems, decreased ability to handle stress, poorer oral health, and increased risk of hospitalization (Howard, 2011; Huang et al., 2010; Kirkpatrick et al., 2010; Muirhead et al., 2009; Whitaker et al., 2006). Children experience dramatic growth during their first 18 years of life and the brain continues to grow well into a child's 20s (Johnson, Blum, & Giedd, 2009). Not receiving adequate nutrition during development can increase the risk of poor health outcomes during childhood as well as adulthood.

Appalachia

Appalachia is a geographical region named after the Appalachian Mountain range which spans across 13 states, 420 counties, 205,000 square miles, and includes over 25 million residents (Commission, 2020). It includes parts of New York, Pennsylvania, Ohio, Maryland, Virginia, Kentucky, North Carolina, South Carolina, Tennessee, Georgia, Alabama, Mississippi, and all of West Virginia (Commission, 2020). Appalachia itself is broken into five different subregions: Northern, North Central, Central, South Central, and Southern (Commission, 2020). Culture, education, socioeconomic status, transportation, economy and a variety of other factors may vary from subregion to subregion. Major cities in Appalachia include: Pittsburgh,

Pennsylvania, Asheville, North Carolina, Knoxville and Chattanooga, Tennessee, Birmingham, Alabama, and Greenville, South Carolina.

Figure 1. Map of Appalachia and its 5 subregions (Commission, 2009)
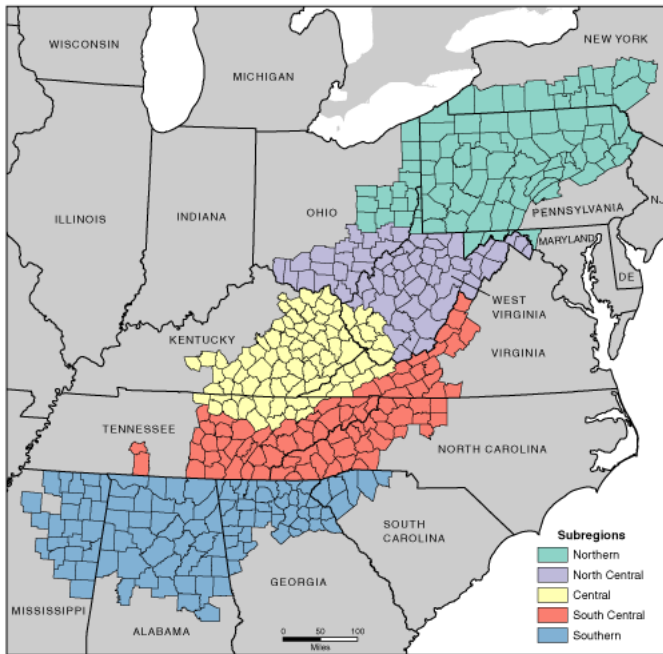
Food Insecurity in Appalachia

Within Appalachia, the median household income is just 82.5% of the national median household income ($49,747 as compared to $60,293) (Pollard & Jacobsen, 2020). Additionally, while poverty rate varies by subregion, the overall poverty rate for Appalachia was 15.8%, which is 1.7 percentage points? Or 1.7% (is the national rate 14.1%? If so the rate in Appalachia is 1.7 percentage points higher, translated to 11% higher) higher than that of the U.S. average (Pollard & Jacobsen, 2020). As poverty is linked with food insecurity, it is unsurprising that Appalachia has an overall higher rate of food insecurity as compared to the national average (America, 2020a). Looking specifically at participation in food assistance programs as another indicator of

food insecurity, within Appalachia there are high levels of participation in the National School Lunch Program (NSLP), SNAP and WIC, once again showing the high levels of need in the region (Marema, 2018; Rogus, Guthrie, & Ralston, 2018; F. a. N. Service, 2019).

Effects of COVID-19 on Food Security in Appalachia

For this project, three different geographical regions in Appalachia were examined. These included Northern Appalachia, Central Appalachia and Southern Appalachia. While the exact extent to which food security was impacted due to COVID-19 is not currently known, there are projections and estimations which exist. In Northern Appalachia, 17.8% of the population is projected to experience food insecurity in 2020 as compared to 12.8% of the population in 2018 (America, 2020b). In Central Appalachia, 25% of the population is estimated to experience food insecurity in 2020 as compared to 20% of the population in 2018 (America, 2020b). Finally, in Southern Appalachia, 14.2% of the population is expected to experience food insecurity in 2020 as compared to 9.1% of the population in 2018 (America, 2020b). Across the region, food insecurity is expected to rise by approximately 5% due to COVID-19.

Role of School in the Lives of Children

For many children who come from unstable households or food insecure homes, school is not merely a place they go to in order to learn. Rather, it is a place they go to in order to interact with their friends, receive guidance and care from their teachers and school staff, and eat one or two guaranteed hot meals. The school system is so engrained in American society that in many areas the schools serve as the hubs for the community and a way to care for those who might be struggling (Horn, Freeland, & Butler, 2015).

Many schools not only participate in the National School Lunch Program and School Breakfast Program, but they also have programs such as the Backpack program through which they are able to provide food for students who might not have much to eat during the weekend by putting together and distributing bags of food on Friday prior to dismissal from school (U. E. R. Service, 2020). Federal meal programs serve as safety nets for many students in the United States. In 2019, approximately 35 million children were served by the National School Lunch Program, School Breakfast Program, and the Child and Adult Care Food Program (Dunn et al., 2020; U. E. R. Service, 2020). It is estimated that meals and snacks received from schools make up to two-thirds of a child's daily nutritional needs (Dunn et al., 2020), including breakfast, lunch, and often times a snack as children are dismissed from school. These meals and snacks are often healthier than those brought from home or what the children may have access to at home (Dunn et al., 2020). Combined, the meals students receive are worth at least $30 a week (Dunn et al., 2020; U. F. a. N. Service, 2019). So, when schools are closed or out of session, this burden falls on the family to have to find what may be upwards of an additional $120 per month for each child to ensure that they are receiving the food and nutrition they need to grow and be healthy (Dunn et al., 2020; U. F. a. N. Service, 2019). Many schools also have family resource centers which may serve as a food pantry, clothing closet, or many other roles working to meet the needs of students no matter what they are. Across the United States, there are over 3,000 family resource centers (Network, N.D.).

Maslow's hierarchy of needs argues that basic needs are required to be met before an individual has the ability to think about other needs they may have or other things they are interested in (Satter, 2007). At the very bottom of his hierarchy lies physiological needs such as air, water, food, shelter, sleep, and sex (Satter, 2007). For some students, particularly those who

are food insecure, schools play an important role in meeting the need they have for food. The next level includes safety which encompasses things such as security and order (Satter, 2007). For students whose home lives may be turbulent due to poverty or parental unemployment, schools also serve as structure and a safe place where they spend a decent portion of their time each day. After these two levels, the next levels focus on social affection, esteem and status, and self-actualization which schools may also influence, and for many students, they do (Satter, 2007). However, for food insecure children, school plays an important role in their ability to feel safe and secure as they need to in order to learn.

COVID-19 Effect on Schools

As there was no vaccine or cure for COVID-19 during spring 2020, states were forced to rely on nonpharmaceutical interventions as a way to mitigate and prevent the spread of the virus. Of these nonpharmaceutical interventions, school closures were one of the most consistently applied interventions as mask mandates and stay at home orders varied state by state (Donohue & Miller, 2020). Within the course of 10 days in March 2020, all 50 states in the United States had taken steps to close all elementary (including kindergarten), middle and high schools (Donohue & Miller, 2020). Over 57 million children were affected by these closures (Donohue & Miller, 2020). These closures have been associated with a preventing additional COVID-19 cases and deaths (Donohue & Miller, 2020).

Specifically, in Appalachia, schools followed the guidance that came from each state's governor. On March 12, 2020, Governor Andy Beshear recommended that all Kentucky schools suspend in-person classes for a period of at least two weeks as a way to help control the spread of COVID-19 in Kentucky (Staff, 2020). Schools moved to remote schooling starting Monday,

March 16 and continued until the end of the school year (Staff, 2020). Many school districts in Kentucky, 83 prior to school closures, already had a framework set up for virtual delivery of classes through something called the Non-Tradition Instruction (NTI) Program (Tatman, 2020a). The NTI program is used to continue academic instruction on days when schools would otherwise be closed for things such as illness or weather (Education, 2020). In South Carolina, Governor Henry McMaster ordered all schools, colleges and universities to close until March 31 as a response to COVID-19 on March 15, 2020 (Phillips & Pendrick, 2020). This was extended to April 30 on March 24 and continued until the end of the school year (Schools, 2020). Schools responded to the decision by moving their classes to virtual platforms and some districts amped up the WiFi at their schools to address broadband access (Mitchell & Gilreath, 2020). Pennsylvania's governor, Tom Wolf, announced on March 13, 2020 that all K-12 schools, would be closed for ten business says – two weeks – starting on March 16 (News, 2020). Schools pivoted to online instruction as well as paper packets and on March 23, these closures were extended until April 6 (Graham & Hanna, 2020). Finally, on April 9, Governor Wolf extended the closure until the end of the academic school year (Hanna & Graham, 2020). All of these states originally only closed the schools for two weeks, which was the standard across the country and according to initial guidance from a short-term closure would allow for a variety of benefits while mitigating harms (Control, 2020). These short-term closures would allow the country to better understand the local COVID-19 situation, those exposed could potentially develop symptoms and thus know they were sick, children would only be separated from peers for a shorter period of time, and schools were, in general, more experienced with short closures due to traditional breaks (Control, 2020). These closures, however, extended for far longer than the general public expected or planned.

With the decision to close schools came the question of how schools would continue to educate their students. Schools were unable to hold in person classes and thus had to move to remote or virtual schooling. Many teachers were caught off guard by the decision to close schools and many did not have time to prepare for the sudden move to virtual class. With virtual and online class being the only option to continue to educate students, school districts were forced to confront and address what is known as the digital "homework gap." Pew Research Center defines the homework gap as "school-age children lacking the connectivity they need to complete schoolwork at home." (Auxier & Anderson, 2020) This gap has been known to exist for a very long time; however, when students were able to attend school they were able to use the internet accessible at the school or other public areas (Auxier & Anderson, 2020). With the move to remote schooling and the closure of schools, students were no longer able to use that resource. The homework gap is more pronounced for lower-income households (Auxier & Anderson, 2020; Masonbrink & Hurley, 2020). Indeed, 35% of children whose household's whose annual income falls below $30,000 a year do not have access to high-speed internet at home and 24% of high school teenagers saying they are sometimes unable to complete their homework due unreliable access to a computer or the internet (Auxier & Anderson, 2020). So, the move to remote schooling and much higher reliance on electronic devices and the internet drastically affected the ability of some students to attend classes, turn in homework assignments and learn.

In order to mitigate the situation, many schools adopted pass/fail systems (Natanson & Strauss, 2020). This meant, that as long as students completed the work and turned it in, they would pass the assignment (Natanson & Strauss, 2020). Some schools still used letter grades, however teachers were not allowed to give students failing grades, essentially following the pass/fail system, but still "grading" students (Long, 2020). Additionally, during spring 2020,

current Secretary of Education at the time, Betsy Devos, gave school districts permission to skip federally mandated standardized testing in an attempt to remove some of the pressure schools and teachers feel in regard to educating their students and preparing them to perform well on those tests (Natanson & Strauss, 2020).

Looking specifically at computer and broadband access in Appalachia, 84.2% of households have access to a computer device (Pollard & Jacobsen, 2020). The national average, however, is 88.8% (Pollard & Jacobsen, 2020). This decreased percentage of access to computer devices coupled with the higher percentage of poverty suggests that more students in Appalachia may face the homework gap as compared to other regions in the United States. Additionally, 75.1% of households in Appalachia have broadband subscription as compared to the national average of 80.4% (Pollard & Jacobsen, 2020). These subscriptions do vary by region, however, with Northern and Southern Appalachia having much higher broadband subscriptions compared to Central Appalachia (76.6% in Northern and Southern Appalachia as compared to 67.0% in Central Appalachia) (Pollard & Jacobsen, 2020). So, not only do households have fewer devices they also have less access in general to broadband subscriptions and the internet which only increases the percentage of students who may have faced the homework gap in Appalachia. This forced school districts and teachers to find ways to work around the potential lack of internet access and inability to access resources and materials online.

COVID-19 Effect on Federal Meal Programs

When schools closed in Spring 2020, the USDA did not require schools to provide food service for their students (Dunn et al., 2020). Rather, they suggested school districts and local authorities view the response through the lens of summer feeding programs while working "to

ensure that the needs of low-income children are met during extended school dismissals" (U. S. D. o. Agriculture, 2020; Dunn et al., 2020). Summer feeding programs do not just take place at the schools, but are often located in accessible locations for families, thus viewing the response through the summer feeding program lens was needed due to social distancing (F. a. N. Service, 2020b). Additionally, summer feeding programs do not follow as strict nutritional guidelines as the National School Lunch Program or School Breakfast Program, thus allowing for flexibility of the type of food provided (Dunn et al., 2020). While placing the responsibility on school districts and local authorities to meet these needs of students, the CARES Act did include provisions for additional nutrition assistance (Dunn et al., 2020). These were mainly provided through SNAP EBT cards which could be used by families to purchase and supplement meals (Dunn et al., 2020). Additionally, as of August 31, 2020, the federal government expanded these provisions until December 31, 2020 in order to provide free meals for all children. These steps and policies were put in place to attempt to mitigate the impact COVID-19 had on food insecurity in children (F. a. N. Service, 2020b).

All three states, Kentucky, Pennsylvania, and South Carolina received the waiver from the U.S. Department of Agriculture to allow their schools to serve meals to low-income students (Levis, 2020; Phillips & Pendrick, 2020; Tatman, 2020b). The waivers allowed school districts to serve Summer Food Service Program and Seamless Summer Option meals all across the country at no cost to the students, allowed meals to be served outside of group-settings (as they historically have been required) and outside of traditional mealtimes, waived meal pattern requirements if those caused the districts difficulties, and allowed parents and guardians to pick up meals for their children as opposed to making the children pick up the meals (F. a. N. Service, 2020b). Based on these waivers, these programs were expanded beyond just low-income students

to serve any students who wanted to participate in the program and receive meals from the school.

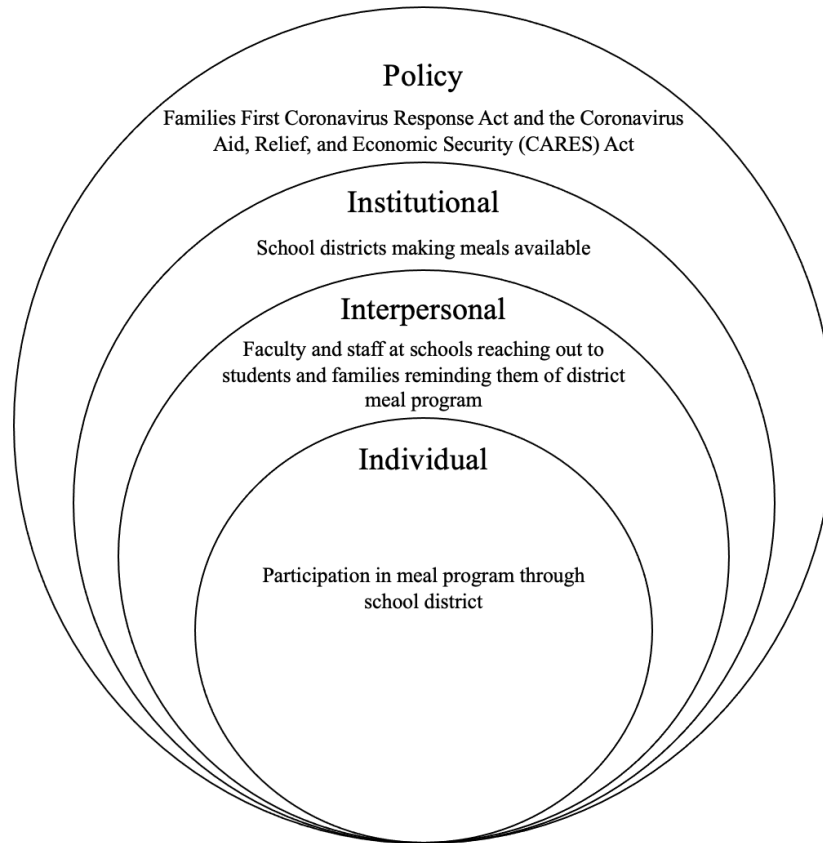**Study Purpose and Theoretical Framework**

The purpose of this study is to understand how school districts in Appalachia whose students faced high levels of food insecurity due to COVID-19 responded to this need and other needs their students may have faced. There is a dearth of literature and research on the response of schools in Appalachia during the COVID-19 Pandemic due to how novel it is. While there have been some studies examining the impact of COVID-19 on food insecurity, however, few studies have looked at how school districts responded to meet the needs of these students and their families (Larson et al.; Tester, Rosas, & Leung, 2020). Thus, this qualitative study aimed to fill the research gap by performing qualitative interviews with participants from three different geographical regions in Appalachia to understand and examine the response their school district had to the COVID-19 pandemic in order to meet the needs of their students.

The Social Ecological Model is useful in understanding health behaviors and decisions individuals make and how their choices are influenced by a variety of factors (Sallis et al., 2015). In Social Ecological Model, every level is influenced by the levels above it. This means that the intrapersonal level may be influenced by the interpersonal, institutional, community, and policy levels (Sallis et al., 2015). For this particular study, the interpersonal, institutional, and policy levels will be examined. The interpersonal level includes interactions between individuals which may act as facilitators or barriers to the decisions and choices individuals make (Health & Services, 2005). The institutional level encompasses different rules and regulations and structures which may influence an individual and their actions (Health & Services, 2005).

Finally, the policy level includes any local, state, or federal laws or policies which influence

health (Health & Services, 2005). While the choice to benefit from the meals provided by the

school is the choice of the individual, however, this decision may be influenced by the

interpersonal, institutional, and policy levels. One example of a policy level influence is the

Coronavirus Aid, Relief, and Economic Security (CARES) Act and the money it provided for

child nutrition programs (Dunn et al., 2020). An institutional level influence would be the

program the school itself put in place to meet the needs of students and an interpersonal level

influence would be hearing about the program from a teacher via social media or by word of

mouth. All of these aspects and factors that went into the response shaped the way that parents

and students responded and interacted with the programs themselves and it vital to understand

these different levels in order to understand the response itself.

Model

School District Meal Response to COVID-19 Pandemic and the Social Ecological Model

Policy

Families First Coronavirus Response Act and the Coronavirus
Aid, Relief, and Economic Security (CARES) Act

Institutional

School districts making meals available

Interpersonal

Faculty and staff at schools reaching out to
students and families reminding them of district
meal program

Individual

Participation in meal program through
school district

Chapter 3

Project Conceptualization

This project was originally conceptualized while the PI was reflecting on how COVID-19 may have influenced adolescent nutrition and health in Appalachia. The PI was working on a class project focused on the Free and Reduced Lunch Program in rural Appalachia in March 2020 when schools in the United States moved to virtual and remote schooling. Her project was not focused on the impacts of COVID-19; however, this topic was often mentioned by her participants, which made her interested in further pursuing the topic and understanding the various responses. Having spent most of her life in different regions of Appalachia, and knowing how unique each area is, the PI was interested in understanding how different regions responded to the pandemic and lessons learned from the response. As this pandemic is so new, there is a dearth in the literature regarding how school districts responded to meet the needs of their students and are what the best ways to respond.

Research design

This study employed qualitative in-depth zoom and phone interviews with eight school staff, administrators, and district employees across three different school districts in Appalachia. Qualitative research was chosen as it allows for the examination of people's experiences, to make meaning from those experiences, and to learn from them (Hennink, Hutter, & Bailey, 2011). This pandemic is novel and school districts had the double burden of not only educating their students, but also determining if they were going to provide meals for their students, and if so, how they were going to accomplish that.

Population and sample

Participants were eligible for the research study if they worked in the predetermined school districts in the selected geographical regions in Appalachia during the 2020 COVID-19 pandemic.

The recruitment methods consisted of the use of gatekeeping and purposive and snowball sampling. For two of the regions, the PI identified potential participants through the use of school websites and prior knowledge of the areas and directly emailed them asking if they would be willing to participate in the study. At the end of every interview, snowball sampling occurred when participants were asked for recommendations of other potential participants. These potential participants were then emailed and asked if they would be willing to be interviewed. For the last region, as the PI had no prior knowledge or experience with the area. She reached out to a potential gatekeeper who had previously worked in the school, and after explaining the study, asked her to identify the key individuals who she thought would be good participants. This gatekeeper also helped the PI connect with the principal at one of the schools in this region.

Procedures

Prior to the start of this study, the PI received an IRB determination that this study was not humans subject research, but rather an evaluation of the different responses school districts and regions had to the 2020 COVID-19 pandemic. Prior to recruitment, participants were pre-screened by the PI based on position at the school and if they had been employed by the school district during Spring, 2020. Participants were then recruited via email with an explanation of the goals of the study as well as the topics that were going to be discussed during the interview. In the recruitment email, participants were informed that, with their consent, the interview would be

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recorded. Prior to the start of the interview, participants were informed how confidentiality and anonymity would be maintained and verbal consent was obtained. Twenty-three potential participants were contacted, however only eight were available to be interviewed.

Interviews were conducted using a semi-structured interview guide the PI created which included questions about how school districts responded to the needs of their students in terms of education and nutrition during Spring, 2020 and how they addressed these needs during the 2020-2021 school year. Topics in the interview guide included: barriers and facilitators to responding to students' needs, perceived impact of COVID-10 on student nutrition and health, and recommendations and key considerations that should be considered in making plans to address the needs of students reliant on the Free and Reduced Lunch Program. These interviews were conducted over the phone or through Zoom. All the interviews were recorded using the record function within Zoom both for the interviews conducted through Zoom as well as those conducted over the phone. For phone interviews recorded through Zoom, the phone audio was set to speaker phone and captured through the record function on Zoom. These interviews ranged from 27 minutes to an hour and 14 minutes. Most interviews lasted approximately an hour, but these times varied due to the availability and time that the participants had to speak with the PI.

Audio recordings of the interviews were labeled with pseudonyms and stored in a secure folder in Emory Box. These recordings will be destroyed following the submission of this thesis.

Additionally, qualitative data was collected from state and school district websites, news articles, and social media posts to better understand meal availability, types of meals, meal access and policies. Some of this information was actively researched, however the vast majority of it came from social media posts over Facebook through teachers and the various school

districts pushing the information out to students and their families. This data was saved in the form of images for the social media posts and documents for the news articles for easy access.

Data analysis methodology

Data analysis was conducted using the software, MAXQDA. The data was securely stored on the PI's computer and Emory Box, both of which were password protected. The transcription service, Otter, was used to create initial transcriptions from the audio recordings, which the PI then reviewed to not only make sure that they were accurate, but to also immerse herself in the data once more. From this review, the PI developed codes based on reoccurring topics which would be used for thematic analysis. Thematic analysis is a method of analysis during which the research collects and analyzes the concurrently allowing both the analysis and collection to be influenced by each other (Tuckett, 2005). Combined with detailed memo writing, the PI created a detailed codebook which included both inductive and deductive codes based on literature, the interview guide, and reoccurring topics mentioned by participants during the interviews. Deductive codes were informed from the literature review, interview guide, and theory. An example of a deductive code for this study includes "nutrition" which was a code used to identify the impact COVID-19 and the move to remote education coupled with the closure of schools had on nutrition. Data being released from the early months of COVID-19 during Spring 2020 and the impact it had on Americans shows that food insecurity rose during those months, so this code was used to identify participant experiences or opinions regarding the impact on nutrition. The codebook initially only had deductive codes; however, it was revised to include inductive codes as the transcripts were being coded. Inductive codes are codes which originate in the data and are developed through reading and analyzing the data (Hennink et al.,

2011). These particular codes are especially meaningful as they come from the participants and are topics which are important to them (Hennink et al., 2011). An example of an inductive code for this study included "linked together." This code was created to identify when participants addressed how nutrition and education were connected and addressed together in the response. This was a finding that the PI did not expect to be as present in the response as it was.

After the codebook was completed in Excel, the PI imported the spreadsheet to MAXQDA and began to work through the transcripts coding line-by-line. The codebook was refined during the process. No codes were combined, but some codes were expanded. For example, the code "food insecurity" originally only had subcodes focused on the federal response, however a subcode of "student experience" was added in order to capture the experiences students, and their families, had during the early months of the pandemic.

Memos were used throughout the coding process to note potential themes, keep track of thoughts regarding the data, and summarize the data in a succinct manner. Memos were useful in practicing reflexivity and noting potential biases the PI had both during the analysis process and the interviews. For example, the PI had previously lived in and worked in one area in which she conducted interviews. She still has friends in the area who worked on the response, which influenced her initial expectations and assumptions about how the school district responded and how valuable the response was for students. Additionally, the PI attended school in another one of these areas and the familiarity of the area colored some of the probes and follow up questions. This familiarity with some of the participants was helpful in decreasing the time spent building rapport in the beginning of the interview and, in general, the participants were fairly open and honest in their responses. The main purpose for this qualitative study was to collect opinions and viewpoints of various responses in order to not only understand how school districts responded,

but what barriers and facilitators existed that may have affected the response as well as recommendations and additional considerations for future responses. In hearing participants' opinions, their lived experiences with the response created a clearer picture of the response and more helpful recommendations and considerations could be crafted. While there is always to concern about participants being able to be critical of their school district leadership, anonymity was promised to help participants feel like they could be critical with their responses. Furthermore, the interview guide was crafted to ask about challenges and barriers multiple times at different points in the interview in the hopes of addressing social desirability bias and truly learning from participants what they thought about the response.

Revisions to the codebook occurred early in the coding process so that the codebook more accurately reflected the research questions and could capture the segments of text that answered her research questions and aims. As the PI worked through the transcripts, she would create memos and reflect on the study aims in order to understand how she could compile all of the data, understand the response and decisions the school districts made and how they were influenced by the needs of their students, and create succinct recommendations for the future. The codebook revision happened as the PI spent time in the data and worked to thoughtfully and thoroughly code all of the transcripts. Additionally, double coding occurred as the PI shared an uncoded transcript and the codebook with another researcher who coded the transcript and provided feedback. Three differences were reconciled, and the codebook was refined.

In addition to thematic analysis, the use of case studies was also used to analyze the data. Each of the participant's individual interviews were treated as a single case. These case descriptions which included a case summary of the key details about the case, code summaries, or a list of the important codes specific to each case, themes and any important notes not

previously mentioned in the case. Cases were then combined based on location to better

understand similarities and differences within the three different geographic locations and across

Appalachia. This allowed the PI to gain a better understanding of the data set and construct

overarching themes. Additionally, once the transcripts were fully coded, the PI was able to use

MAXQDA to explore the data by activating specific codes to assess saturation of that specific

code within each individual case, the combined cases and across all participant transcripts. The

use of thematic analysis combined with the case study approach allowed the PI to highlight

similarities and commonalities in the coded data as well as organize the data in a manner that

allowed her to better understand how each area responded (Clarke, Braun, & Hayfield, 2015;

Hennink et al., 2011).

Finally, these themes and cases were analyzed in conjunction with the data collected from

social media and the school and state websites. This data was organized in an Excel spreadsheet

in order to see the span and scope of the various responses and helped to add additional context

to the different responses of the different districts.

Chapter 4

Eight interviews were conducted with school staff and administrators from 3 different counties in Northern, Central, and Southern Appalachia. These counties were chosen as they represent three different geographical locations in Appalachia and a mix or urban and rural areas. Additionally, the PI had connections with all three counties which assisted in securing interviews with participants. These interviews ranged from about 30 minutes to over an hour. Six of the participants were female and two of the participants were male. Two participants were from Northern Appalachia, two participants were from Central Appalachia, and four participants were from Southern Appalachia. Four different school districts were represented in this sample. Two different districts represented the response from Central Appalachia as that county has two different school systems which serve the students and the PI wanted to make sure both responses were represented in the evaluation. All of the participants were employed by their various school districts during the Spring of 2020 and were actively working during that time.

Participants' experiences with how the different school districts responded to the needs of students reliant on the free and reduced lunch program were varied. Some of the participants were directly involved in the creation and deployment of the various districts' responses whereas others were not directly involved but were knowledgeable on the subject as they may participated themselves or knew about the response. Additional information about the participants can be found in Appendix A.

For each of the districts, COVID-19 caused the schools to be closed for in-person classes and move to virtual instruction. This closure cut off access to the meals provided by the free and reduced lunch program for the students who rely on the program and schools for healthy, consistent meals. In order to address this, all of the schools put in place feeding programs. While

the logistics for each of these feeding programs varied district by district as did the timing as to when the response was rolled out, they were all created with the intention to meet the needs of students and work to reduce food insecurity. In order to be more accessible, all of these programs were open to anyone who wanted to participate, even if they did not participate in the free and reduced lunch program or were facing food insecurity.

Likewise, when the schools closed for in-person classes, all teaching moved virtual. Similar to the way the nutrition response varied district by district, the districts had quite diverse responses in terms of education. While every school district pivoted to online classes, the delay between the district closing the schools and classes resuming was not consistent throughout Northern, Central, and Southern Appalachia with one district pausing for two weeks and another only pausing for a few days.

Overall Description of Themes

The overall goal of this evaluation was to understand how school districts in Appalachia responded to the nutritional needs of students, particularly those participating in the Free and Reduced Lunch Program, during the COVID-19 pandemic. The overarching theme was that schools are more integral in students' lives than just serving as a place to learn. This was evident in the way that participants described the reasoning behind the response. For example, one of the participants from Southern Appalachia, SA4, said,

> *"we know that there's a certain subset of students that, you know, through the normal*
> *school year, and during a normal economy, when things have gone well, only have*
> *access to high quality nutrition when they're with us. We know that stopped on Sunday,*

... we know there's a good number of students that rely on us, we knew that that number

is going to be exasperated when everybody was at home…"

Districts were aware that students who participated in the Free and Reduced Lunch program were having this safety net taken from them. Ultimately, the districts wanted to ensure that their response *"provided enough opportunities for everybody who needed that food and that they were able to get it,"* as participant SA4 further detailed.

Another participant from Southern Appalachia, SA1, explained it best by using Maslow's hierarchy of needs as way to show why providing meals for students was something the school districts needed to consider.

"I say, start with Maslow. And you know, the Maslow's hierarchy of human needs, and

you've got to take care of those physical needs first. … So, you know, making sure that

students are safe and that they're fed, and that their… health is, is attended to is just first

and foremost. It's much more important than, than the academic piece, I think. And so

you got it, you gotta, you got to start there. And. and I think schools, you know, we've

been tasked with so much in American society, and, you know, but we accept it. And, and

I do think that, um, that you got to start with the basics, and that is taking care of taking

care of children and, and their physical needs first."

They argue that in order for students to learn, their physical needs must be met first. Schools meet these physical needs of nutrition, security, and a safe place to learn during in-person school. While schools were not able to provide security and a safe place to learn during remote learning in the spring of 2020, they were able to meet students' nutritional needs. By meeting these needs, it helps to show how schools are more integral in students' lives than just serving as a place to learn.

The overarching theme encompasses three major sub-themes. These include: 1) Tying education and nutrition together appears to positively influence learning of students, 2) Understanding the community is vital to shaping the response, 3) Partnering with other organizations can help strengthen the reach of the response.

A table containing additional information about the participant, including their participant ID, and their school districts' respective responses as well as barriers and facilitators to the response can be found in Appendix A.

Tying education and nutrition together appears to positively influence learning of students

Tying education and nutrition together appears to positively influence learning of students was one major theme to emerge from the data. School districts in Northern, Central and Southern Appalachia found ways to connect education with nutrition, which in turn had positive influences on student education and learning. However, the way that the four different school districts worked to do this, and the success they had in their attempt varied greatly from school district to school district.

In Central Appalachia, both school districts used meal pick-ups at the schools as a way for students to physically pick up or drop off their assignments. As a participant in Central Appalachia (CA1) explained, in their school district, meals could be picked up by families at all elementary schools in the district and homework could be picked up and dropped off simultaneously. Indeed, *"all of the elementary schools, were providing meals that they could drive in and pick up their meal, pick up homework drop off homework, so they tied it in with the, you know, the academic side of it."* In contrast, at participant CA2's school district, paper copies of assignments could be picked up at the school, however, organization was lacking.

> *"Again, hundreds of assignments just laying there unorganized all over the front area of the school all over... there's so much work just thrown on the tables... No one ever organized into that work. So, the work should have been organized by in mail crates or something – elementary work here and drop, drop off. There was no way to, there was no, it was, it was really, it was horrible. But I know my kids didn't pick-ups that... I couldn't find is a pile of papers from there."*

So, while both school districts worked to connect the meals that were being provided to the student's education, one school district saw far greater success than the other. This difference, however, may be in part due to how the community perceived the provision of meals which will be addressed in the next theme.

While the school district in Southern Appalachia also tied education and learning to the response, they deployed to ensure their students were being fed, instead of using physical hard copies of assignments they went fully virtual. While the initial response relied heavily on families picking up meals from the schools,

> *"we started opening up every single school, actually, not every school… there was maybe 30 to 40 slots that … the students could go pick up food. From breakfast to lunch, every school closed down at noon. And you would pick up a full day's worth of meals. And then on Friday, you would pick up a Friday and Saturday in a Sunday set of meals."*

Once the district realized that access to WIFI in order to participate in class and submit homework was a barrier for some students, they pivoted in their response and equipped school buses with WIFI and loaded meals onto the buses so that students could pick up their meals while also uploading or downloading their homework assignments and lessons.

In contrast to these two schools, all of the school district's learning in Northern Appalachia was done remotely via Google classroom so there was not the opportunity for students to pick up or drop off work while picking up meals or to upload or download their work. These meal pickups took place at four different locations around the community, but not at the school. Meal pickups, however, did serve as an opportunity for school staff to follow up with families whose students were not turning in their work and were refusing to answer phone calls. Participant from Northern Appalachia, NA2, explains,

"There were there are a few situations where we either were trying to get a hold of families because the kids weren't doing their remote work. And you know, there were some families that were really trying to dodge us and having excuses not answering the phone. But we knew they were coming to get the food. … So I feel like it was it was a way for us to connect with some of the families that we weren't able to connect with via email or on the phone."

Even though meals were not directly connected with education in Northern Appalachia, school staff still found ways to connect the two and use it to their advantage to benefit the learning of students.

For this theme, one of the main properties was location and its dimensions included whether the meal pick-up location was at the school or remote. Another property of the theme was how homework was handled and its dimensions included whether it was virtual or paper. These two properties interacted with each other and seemed to work in tandem. For example, when the location of the meal pick-ups was remote (e.g., the school buses), the homework assigned was virtual. Whereas when the location for the meal pick-ups was the school, the homework assigned to students was on paper. This seems to fit the associations students

naturally have with education and homework assignments. When they are physically in the building at school, their homework, naturally, is turned in on paper. Whereas, when education and learning is removed from the physical location of the school, homework cannot be handed physically to the teacher and must be turned in remotely.

Understanding the community is vital to shaping the response

A second theme that was observed in the data was that understanding the community is vital to shaping school districts' responses to COVID-19 and providing meals for students. In order to create a response that worked and saw a great percentage of the population benefit from it, understanding the community and tailoring the response to the community was extremely important. Three of the four districts saw great success in their response while one did not see as much success. These successes were not restricted by location as school districts in Northern, Central and Southern Appalachia were successful. Indeed, one of the interviewees from Southern Appalachia shared that her school district served over 1 million meals during their response in Spring 2020. Rather, the difference lies in whether or not the school district modified their response to best match their community.

For the schools that implemented successful responses, they understood their community and worked to either use existing factors to increase their success or modified their response to address barriers which in turn made them more successful. In Central Appalachia, the school district understood that *"the elementary schools are more community based"* and already naturally engrained in the culture of the area which made them a good place to pick up meals. Indeed, CA2 who had previously worked in that school district before moving to their new school district explained that,

"you got elementary schools that's their center or their hub... That's the center of

everything. So, everything goes in the school and you have no problem going to school...

You go to the school... so I think it's the smaller elementary schools helped make their

response better."

CA1's school district understood that as the hub of the community, families were already

used to visiting the elementary schools so, they used that to their advantage to make their

program successful in meeting the needs of students who were participating in the Free and

Reduced Lunch Program. Additionally, elementary schools are more centrally located in the

community. CA1 explained in their interview, "*so you've got families traveling seven to 10 miles*

versus 15 to 20 miles to come to the high school." So, by using the elementary schools as pick-up

locations, made it easier and more accessible for families to pick up meals and which, in turn,

allowed more students who were participating in the Free and Reduced Lunch Program to benefit

from the response.

In terms of Southern Appalachia, SA1, SA2, SA3, and SA4's district sent out district

personnel to check bandwidth throughout the county to make sure that students had adequate

access to internet in order to attend school and turn in their assignments. What they found was

that for some students, "*if they did have internet, there was a potentially a lag. And our lower*

economic status students didn't have it in their homes. And they couldn't do anything but pick-up

hotspots." They also understood that a lot of time lower income families did not have

transportation to go to the schools and pick-up meals and access school WIFI. So, in order to

address these needs, they enabled the buses with WIFI and sent them out into the community to

make both meals and education more accessible. Additionally, as SA4 explains in their district,

"there are pockets of students that are food insecure. I mean, we have some, we have some very affluent areas, and within those affluent schools, there's also some students that aren't as fortunate. So, we know that just because you're not in a kind of one area or [in a] 100% free and reduced school that there's need everywhere."

This understanding shaped their response as they did not just target certain areas.

Additionally, knowing that transportation was a barrier for low-income families, they knew that the meals needed to be accessible in order for students to truly benefit from the response, which was additionally assisted through the use of the buses. As one participant explained,

"Every family knew where to go. And they didn't have to go to multiple sites, because we knew that would be an issue. Because a lot of times our low economic families don't have transportation, because they're using our buses to use. So, we wanted to make sure our buses went to them, instead of them having to try and track us down."

The accessibility of meals was something that colored their entire response and was one of the primary reasons why the used the buses as a way to reach as many students as possible.

Looking at Northern Appalachia's response, their meal response relied on the filling out a Google form to let the organizers know that participants were planning on picking up meals during the two days that they had the meals available during the week. These meals and the use of the Google form were advertised over social media. However, organizers knew that not all potential participants had access to the internet to find out about the meal response or fill out the form. So, with this understanding, organizers tailored the response for their community. NA1 who was instrumental in the creation their district's response said,

"We sent out mailers first, so like everybody, you know, got a letter... So, when the food, the thought of having the food or the meals and stuff, you know, came to fruition, a letter went out to every single household here in [location], and then indicated that if you, you know, just sign up online. If you did not have access to a computer to simply call the number below. And then that's how those calls were fielded."

In order to make sure that everyone knew about the program, paper announcements were sent via mail and if families did not have access to the internet to fill out the form required, they could simply call the number and someone else would fill out the form for them so that the lack of internet access did not act as a barrier for participating in the meal response. Additionally, they were more than willing to modify the standard response to meet the needs of participants if they were aware that there may have been certain barriers that participants were facing. For example, NA2 shared the story of a student who was the breadwinner in their family and due to work was unable to pick up the meals at the locations that they were offered, so they allowed them to pick up the meals from the main office instead of one of the four pickup locations. This was not restricted to just that student, however, as NA2 also shared another story about modifying the response so that another student was able to "*come outside the pickup window*" and participate in the program.

For the school district that was not as successful in having students and families participate in their response, as assessed from participant responses and photos of many meals left to be picked up on social media, while the school provided meals, they were also fighting family members' feelings of shame and stigma that came with being seen as needing to participate in the response. CA2 shared that many people did not go to the school to pick up meals because *"you don't want to look like you can't afford (it)."* In addition to this, CA2

explained that people felt that they would be judged and remembered for picking up meals and participating in the program, which deterred participation for many families and students. *"Everybody looking at you. Mm hmm. You know, [name]. She'd be like, looking at who's picking up the food up to do see they picked up the food."* Because nothing was done to combat these perceptions of shame and stigma, this district saw less participation and less success. While they did try to make the meals accessible through the use of buses to drop off meals for families, CA2 explained that *"They would go the same kids that they know were poor families [and drop off the meals]"* as opposed to everyone. Combined with the stigma and shame felt for participating in the response, while meals were available for students, the district did not seem to fully understand how the community was going to respond to the meal response.

For this theme, one property is the response that came about due to the understanding, or lack thereof, of the community. One of the dimensions of this property is universality or if the response was accessible to everyone. For the districts that saw success, they made sure that they understood the community and worked to make their response as accessible for everyone as possible whether it be location or how the response was communicated.

Partnering with other organizations can strengthen the reach of the response

A third theme which emerged from the data was that the school districts' meal responses were not siloed. This meant that those running the response partnered with other programs or groups within the district to augment and add to the response, although they were run by the school districts. This partnering allowed for the response to reach a wider audience. For example, CA2's district in Central Appalachia struggled in having students and families participate in their response because of the stigma and shame associated with needing aid from the school.

However, CA2 shared that their school began partnering with the program Save the Children which provided the school with free milk. They shared,

> *"We're doing the free milk through Save the Children… Oh, wow. Now I'll set the girls to get that. They didn't like to even go get that. But I might go pick up two gallons of free milk. And we've done that since June. And now it's acceptable, and everybody's getting it."*

While it may have only been a gallon of milk, by partnering with another organization, CA2's district saw more people stop by the school and this was considered acceptable, and everyone was participating. By reducing stigma and shame, families who might not participate in the meals, could pick free milk and also participate in the meal program.

Looking at Northern Appalachia, this particular district's response partnered with the Backpack Project. This program provides food for students who are low SES in a bag on Friday to tie them over through the weekend until they can return to school and participate in the Free and Reduced Lunch Program. This program was very established in the district and allowed the district to tackle both providing meals for all students during the weekdays and also making sure that the more vulnerable students had enough to eat during the weekends. NA1 explains their process,

> *"So, we partnered with the Backpack Project when this happened to make sure that distribution sites kind of aligned so the backpack food would come here, we take that backpack food, take it to those locations and then there's backpack families who again were you know, low SES compared anybody to get the regular meals, but they got their backpack food the same time. They've got their meals. So, we had that collaborative relationship… I think that that helped us with community engagement."*

Not only did this program help ensure students were fed, but tying back to the second theme, it also was tailored to the community they were serving.

Southern Appalachia was different from Central and Northern Appalachia in that they did not partner with an outside organization like Save the Children or a pre-existing program like the Backpack Project, but rather partnered with the Transportation Department and the Logistics Department of their district to *"determine where those high poverty areas were and where the highest concentration of students were within those areas,"* as SA4 elucidated in their interview. By working with other departments, their meal response was able to have a much wider reach than if they had not used the buses.

For this theme, one property is if the partnership was internal to the district (e.g., the Backpack Project or the Transportation Department and the Logistics Department) or external (Save the Children). One dimension of this property is if the partnership was providing something the district did not already have or if they were combining pre-existing programs or resources that the district already had access to. Partnering with another program allowed for greater success of the district meal response.

Chapter 5

During the spring of 2019, all of the school districts in this evaluation created and

deployed a response to address the nutritional needs of students in their district as a response to

the COVID-19 pandemic. Although the responses were originally created to ensure that students

reliant Free and Reduced Lunch Program had access to meals during the pandemic, any student

could receive meals from the response. School districts and officials opened up the response as

they were aware that everyone had been affected by the pandemic and wanted to make sure that

anyone who needed a meal had access to one. This desire to address food insecurity for all

students was similar across the three school districts in the evaluation across Northern, Central,

and Southern Appalachia.

The meal distribution responses were different in the three districts. Some districts, like

that in Southern Appalachia used buses throughout the community to make pick-up locations

more convenient, and others, like one of the school districts in Central Appalachia used buses to

deliver meals throughout the community. Other districts made use of preexisting foundations,

like one of the school districts in Central Appalachia who knew that the elementary schools

throughout the community were hubs for the community and based their nutrition response at the

elementary schools because families were already used to going to the elementary for other

programs and events. Finally, in Northern Appalachia, the school district was as flexible as

possible in order to allow families to participate in the programs. Without the response being as

tailored as possible to the communities in which the school districts served; the programs would

not have been as successful as they were. Almost all of the participants spoke about the

importance of understanding their community when asked what key lessons were learned, and it

shows in the ways the districts responded. This shows that there is no one size fits all response to

how school districts responded to meet the needs of students reliant on the Free and Reduced Lunch Program. There are some key take away points from the evaluation that can be applied to all COVID-19 meal response programs and future feeding programs that school districts may want to create.

The main finding of this evaluation was that schools are more integral in students' lives than just serving as a place to learn. If the COVID-19 meal response had been provided by a different organization such as a church or the health department, the response might not have been as successful as it was. One of the benefits that schools had in rolling out this response was that many students already rely on schools to provide them with consistent meals even during non-pandemic times. So, this finding merely shows what many school staff, teachers, students, and families already knew. Many of the participants expressed concern about the students' wellbeing. While this concern was partnered with a concern about learning, ultimately, they were more concerned about the students having enough to eat and their physical, mental, and emotional wellbeing. Schools were well suited to help organize this response because of the role they already played, and the trust and familiarity families had with the school district.

Additionally, by school districts connecting and tying education and nutrition together, they were, in essence, able to coordinate response to make sure that students were fed and educated. In a time where there is concern over retention of knowledge and how much students are truly learning during virtual school, this connection between learning and receiving something to eat, was not only important to health, but also education. It provided students with a reason to continue learning, as one school district used their meal response as a way to follow up with students and families if they were not responding to other means of communication and check on their progress for classes, as well as decreased barriers to education. Making WIFI

easily available at all of the meal sites in Appalachia allowed for students who might not have access at their home to easily download what needed and upload assignments. WiFi access is a known barrier in areas of Appalachia, so finding ways to address this barrier was vital for the students to continue learning. Furthermore, by partnering with an external program or program within the district, the district meal responses saw greater success. While the main meal response to COVID-19 came from the school districts, other programs such as Save the Children were working to also provide additional food for families who might need it. So, by working together and using what the schools had already created and established, these partnerships allowed for greater success of the responses.

Every school district responded in a different way with no overall standard response. However, as mentioned prior, the responses were tailored to their community in a way that would allow meals to be accessible and for the greatest percentage of the population to participate. There was no gatekeeping, with all students and families being eligible to participate, however, the responsibility to participate did fall on the family and the student to pick up the meals or reach out to the district if they needed assistance in picking up the meals. If they needed assistance, then further work would be done to help the families access the meals, however the families first needed to take the step to contact the school or school staff in order for meals to be dropped off at the family's home, times for pick up to be extended, or pick-up locations changed. This is partially why understanding the community is vital to shaping the response. Without understanding where the best places to hold the meal pick up locations are as well as any barriers that families may encounter, the response will not be as successful as it could be. When asked about key things to consider when planning a response, participants mentioned knowing the community and finding ways to use systems that were already in place to their benefit. By doing

this, meals are made more accessible, which when trying to meet the needs of students reliant on the on the Free and Reduced Lunch Program, accessibly is a key consideration, as some participants explained as well.

Overall, this study shows that school districts can respond, and respond quickly and well, to moments of crisis like the COVID-19 pandemic and that there are relationships and connections already formed between schools and their students which can be used to increase participation in the response.

Strengths

Due to the recency of the COVID-19 pandemic, this evaluation looking at the way school districts in Appalachia responded to the COVID-19 pandemic to meet the needs of students reliant on the Free and Reduced Lunch program has never been done before. To the best of the PI's knowledge, this is the first evaluation looking to examine districts' responses to food insecurity during the pandemic. Additionally, this evaluation looked at the responses from four different districts across Appalachia. By looking at three different regions in Appalachia, a better understanding of the diversity and similarities of the responses was able to be ascertained. This diversity is important because the different regions, while part of Appalachia, are not necessarily the same in terms of geography, demographics, degree of urbanization, or median income of the population or area. In terms of the participants, most of the participants interviewed directly participated in the responses, be it planning and making sure that students were able to participate and have their needs met or benefiting from the response itself. Finally, participants held a variety of positions within their school district and so a broad perspective of the response was able to be collected. Participants ranged from the director of food services for a district to a

social worker to a principal to a teacher and this wide range allowed for a better understanding of facilitators and barriers to both the education response and the nutrition response.

Limitations

In terms of weaknesses, there are a variety of limitations to this evaluation. This evaluation had a very small sample size; only 8 participants were able to be interviewed. While the PI reached out to over 20 potential participants, only 12 responded and only 8 were available to be interviewed. This evaluation exists because of the COVID-19 pandemic and its impact on students and the school systems in the United States; however, COVID-19 was a limitation due to its influence on recruitment as school staff and faculty were very busy and often times did not have an hour to spend being interviewed as they worked to adapt to a constantly changing situation. Furthermore, participants only represented 4 different school districts in Appalachia and only 3 different regions in Appalachia. There are 5 different regions in Appalachia and hundreds more school districts, so it is impossible to say that this sample is representative of all of Appalachia as schools in North Central Appalachia and South-Central Appalachia were not included in this study. Regarding biases, social desirability bias is a concern as participants often spoke quite highly of their district's response and seemingly wanted to paint it in the best light possible. Only a few participants were critical about the shortcomings of the response as compared to the majority who mainly had positive thoughts about the response. That said, when asked about challenges, all of the participants shared challenges to the response, so while most were not critical, they were willing to share challenges at the very end of the interview. Question placement may have helped in this regard as rapport between the interviewer and the participant. Additionally, a protocol was not created for the data collection from the various school websites.

While the method of collecting data was systematic across the three sites, this aspect of the evaluation derived from a suggestion from one of the participants to verify what they were sharing based on information from their district's website. Finally, as this evaluation analyzed qualitative data, that, in and of itself, limits the ability to generalize findings across all Appalachia.

Implications

Food insecurity for students is a real concern with potentially devastating short-term and long-term consequences (Carmichael et al., 2007; Cook et al., 2004; Cook et al., 2006; Eicher-Miller et al., 2009; Howard, 2011; Jia et al., 2019; Roblin, 2007; Skalicky et al., 2006; Whitaker et al., 2006). Finding ways to address food insecurity during a global pandemic is vital to ensuring the health of students and future generations. This evaluation found how quickly school districts can mobilize their response, but also best practices and key concepts to keep in mind while planning a response. These responses and the adaptions that were made show that the response cannot simply be expected to go smoothly and that there is a need to adapt the response to the community and their needs. There is no one size fits all response as all of the districts had different responses. However, the responses did show that schools play an integral role in the lives of students. In many areas, they are the hub of the community and the place that families and students rely on for support. So, another implication is that schools should respond to needs that students and families may have in moments of crisis like this. Thinking about Marlow's hierarchy of needs, without the basic needs of food being met, students will not be able to fully participate or focus on the lessons they are being taught. As the school plays such an important role in the lives of students, it makes sense that they would be the ones to respond. That said,

schools and districts cannot respond to crises like this without additional support, and it was the aid from the federal government that allowed for the response to be available for all students. Additionally, one of the challenges that many school districts have faced during the COVID-19 pandemic is how to ensure that students are able to continue learning. This evaluation found that when nutrition and education were tied together, it had benefits both in terms of nutrition and making sure that students were eating, but also education in being able to pick up or drop off work, download or upload homework and lessons, and provided another means to connect with students and families and ensure they were participating in school. This connection between education and nutrition is vital for any future response.

When the findings of this evaluation are looked at through the social ecological model, it is easy to see how all the different levels influence an individual's decision to participate in the meal response provided by the schools. On the policy level, the Families First Coronavirus Response Act and the Coronavirus Aid, Relief, and Economic Security (CARES) Act made it possible through funding for school districts to respond the way they did and provide meals for students. At the institutional level, school districts decided that they were going to respond to the food insecurity crisis some of their students were facing by providing and making meals available for students. This decision to provide meals then led to faculty and staff reaching out to students and families reminding them of the district meal program as well as working to understand barriers students and their families might be facing. These barriers were then addressed at the institutional level by the school districts changing and modifying their programs to try and make meals more accessible. Through understanding the community, participation in the meal program provided by the school districts was increased. These findings show that the school districts' meal responses did not occur in a silo nor was the decision for students and

families to participate an isolated decision. Rather, various factors in the different levels of the social ecological model influenced both the response and the decision to participate.

Future Research

This evaluation would benefit from being expanded to additional school districts beyond the four that were included in the original evaluation as well as including the two additional regions in Appalachia which were not included. It would be interesting to perform a qualitative study among students and their families to better understand if they benefited from their school district responding to the pandemic by providing meals, and if so, what their experiences were like. This study was focused on the response itself and the experiences from the viewpoint of the districts rather than how students and their families experienced the response. By conducting a study where students and their parents are interviewed it would allow for a greater and more holistic understanding of the response itself as well as barriers and facilitators to participation. Tailoring the response to the community was found to be very beneficial to the success of the response, so knowing exactly what students and their families experienced would allow for greater tailoring and high participation if a response like this were to be needed again in the future.

Conclusions

In Northern, Central, and Southern Appalachia, during the spring of 2019 at the beginning of the COVID-19 pandemic, school districts closed to in person teaching and moved solely to virtual and remote teaching. As some students, such as those who participate in the Free and Reduced Lunch Program and experience food insecurity, are reliant on the school for

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consistent and healthy meals, this closure could have had devastating consequences for health. However, school staff, both in the schools and at the district level, were aware of this and created responses to address this need. The responses were not restricted to just students reliant on the Free and Reduced Lunch Program, but rather open to anyone who wanted to participate. The responses varied by district, but each district had a response. Responses that were successful found ways to tie the nutrition response to education, tailored the response to the community and found ways to make meals accessible and decrease as many barriers as possible so students and their families could easily participate in the response. Knowing how school districts responded to the needs of students reliant on the Free and Reduced Lunch Program during the COVID-19 pandemic is vital for any future planning of other responses that may occur. So much work, time and effort has been put into these responses and it would truly benefit others in the future to know what the responses were and best practices from those responses so that future students can benefit from them.

Appendix

Appendix A: Interview Guide

Hello! My name is Deborah Chen and I am a graduate student in the department of Behavioral, Social, and Health Education Sciences at the Emory University Rollins School of Public Health. Thank you so much for taking the time to talk with me today for my study, I truly appreciate it. During our conversation I will be asking you some questions about your school's response to the COVID-19 pandemic, its influence on your students, and the way your school worked to address the needs of students participating in the free and reduced lunch program of the National School Lunch Program when schools went remote as a response to the pandemic. As a reminder, this interview is completely voluntary and if there are any questions that you do not want to answer or discuss, please let me know and we will skip them. Additionally, your responses will be kept confidential and anonymous. This interview should take about 45 minutes. However, if at any time you become uncomfortable with the interview, we can take a break or stop.

Before we start, do you have any questions? *(Allow response)*

Also, to be sure, are you willing to participate in this study? *(Allow response)*

Great, thank you! With your permission, I'd like to record this interview so that I can transcribe it and summarize it with others. Your name will not be linked with your responses. Would that be alright? *(Allow response)*

Thank you. Okay, let's begin.

Build Rapport Type Questions:
1. How long have you worked at *(school name)*?
   a. Tell me about your experience there.
   b. What drew you to *(School name)*?
   c. Please describe the culture at *(school name)*.
      i. What is it like working at *(school name)*?
      ii. Please describe the make-up of the student body.

Focused questions
2. How did your school respond to COVID-19 this past spring?
   a. When did your school decide to move to remote schooling?
   b. What considerations went into how your school district responded to COVID-19?
   c. What barriers did you face during the move to remote schooling?
      i. What were your feelings towards these barriers at the end of the school year?
   d. What helped the shift to online learning?

3. How do you think COVID-19 and the move to remote schooling has impacted student health?
   a. How do you think it has impacted student nutrition?

4. How did *(school name)* work to provide meals for students reliant on the Free and Reduced Lunch Program?
   a. Please describe the process. *(If need more details about the process)*
   b. How did it work?
   c. Who was in charge of coordinating the response?
   d. Why did *(school name)* choose to respond in that manner?
   e. What sort of feedback did you receive about your response?
      i. What sort of feedback did you receive from parents?
      ii. What sort of feedback did you receive from students?
   f. What concerns did you have in regard to providing meals for students this way?
      i. What were your feelings towards these concerns at the end of the school year?
   g. What went well in regard to providing meals for students?
      i. What resources were helpful?
      ii. What resources were needed?

5. Was your school's response in providing meals for students reliant on the Free and Reduced Lunch Program different from that of your school district?
   a. In what ways did it differ from the response of your school district?
      i. What prompted your school to choose to use a different response?

6. What successes have you seen in your response to ensure that students reliant on the Free and Reduced Lunch Program continued to receive meals?
   a. How so? Please elaborate.

7. What challenges have you experienced in your response to provide students reliant on the Free and Reduced Lunch Program with meals?
   a. How so? Please elaborate.

8. Knowing what you know now, what would you change about the way *(school name)* worked to provide students with meals?
   a. What would you keep the same?

9. What are *(school name)'s* plans for course delivery for this upcoming year? (E.g. online, in-person, mixture)

10. With those plans in mind, how is *(school name)* planning on meeting the needs of students reliant on the Free and Reduced Lunch Program?
    a. Is this different from last year's response?
    b. How is it similar?
    c. What additional resources would be helpful?

11. What recommendations do you have for other schools for meeting the needs of students reliant on the Free and Reduced Lunch Program?

12. What are key things that schools need to consider when making a plan to meet the needs of students reliant on the Free and Reduced Lunch Program?

Closing question
13. Is there anything you would like to add before we conclude?

Thank you so much for talking with me and sharing your opinions and experiences. I know that this situation is so new to everyone and is constantly changing. Do you have any final questions you'd like to ask? Lastly, are there any additional people you would suggest I reach out to for this study?

Thank you again for your openness and willingness to participate in my research.

Appendix B: Participant Data and Individual Case Summaries by Region

	Individual Case Summaries	
	Central Appalachia	
	CA1	CA2
Background	Principal with 15 years of experience	Educator with 12 years of domestic experience
Environment	County has between 30 – 40 thousand residents. School district contains two of three high schools in the area. About 70-80% of students qualify for free and reduced lunch. Very white population, evenly divided between male and female	County has between 30 – 40 thousand residents. School district contains one of three high schools in the area. Small school district. Population split between those who are economically well off and those who are not. Very white population, evenly divided between male and female
Response	Nutrition: Meals available to be picked up at all elementary schools in the districts during certain days of week. Buses were intially used to deliver meals along bus route. Education: Homework could be picked up and dropped off at all elementary schools in district in conjunction with meal pick-up. At the beginning of response, NTI (Non-Traditional Instruction) day format was used. Meals were advertised through phone calls and social media.	Nutrition: Meals available to be picked up at school every day. Buses used to deliver meals to familes who needed meals three days a week, although advertised as being accessible for everyone, only delivered to families who school knew needed meals. Education: At the beginning of response, NTI (Non-Traditional Instruction) day format was used. Paper copies of assignments could be picked up at school, however, vrirtual assignments were predominantly used. Meals were advertised on social media and through word of mouth.
Facilitators	Meals were available for pick up at the elementary schools which traditionally serve as the community hubs. Meals were also originally delivered along bus route. School district office organized the response.	Directly dropped off meals to families who needed them and meals were available to anyone who came to the school.
Barriers	None mentioned	Stigma if participate in meal program, meals were not always great, not knowing what meals were ahead of time.

	Individual Case Summaries			
	Southern Appalachia			
	SA1	SA2	SA3	SA4
Background	Educator with 38 years of experience, 33 years in the class toom and 5 as an instructional coach	Educator with 31 years of experience	Educator with 10 years of experience as Assistant Principal and 2 years of experience as an accademic specialist	Director of food service for district
Environment	Very diverse population - different cultures and different backgrounds. Faculty is not very diverse but student body is. This school has lowest poverty index of any high school in the county, however, students come from diverse homes and many parents choose to live in area because of school and education.	Very diverse population within county, serve over 76,000 students in district. Large hispanic population. This particular school serves over 1,100 students and is extremely diverse due to international companies in area. Poverty Index quadrupled in past 10 years, but majority of students come from two parent, professional working families.	Very diverse population within county, serve over 76,000 students in district. Large hispanic population. Very large county that takes into account multiple towns and cities. Economically diverse - certain schools and areas are wealthier than other areas.	101 schools and special centers, often served in excess of 82,000 meals a day prior to pandemic.
Response	Nutrition: At first kid required to be in vehicle, but changed so open to anyone & child not required to be present. On Fridays would give meals for weekends. Originally, only lunch being given, but then breakfast and lunch. Used buses around district to make more assessible along with schools. Education: Went virtual and teachers worked for 2 days prepping lessons for two weeks of plans. Students were assigned Chromebooks. The first 2 weeks only do review before pivoting and said can learn new materials. Mandated only participation grades only. Expanded WiFi at schools, and WiFi hotspots on buses and made them available in areas where schools were not close by. Elementary school kids did packet work (not virtual). District wide response.	Nutrition: Meals were available to anyone who wanted one. Response started the early after schools went virtual. Buses were parked at central locations throughout the county and families could pick up breakfast and lunch. Schools were used to cook meals. Education: Pivoted virtually, all materials electronically available. Buses were enabled with WiFi so students could download or upload homework while picking up meals. Meals were advertised on social media, phone calls, education app used by district, and news stations.	Nutrition: Response started the second week after schools were closed. Originally, meals could be picked up from schools (slots of 30-40 that had to be signed up for). Breakfast and lunch were provided by the school. Once realized WiFi problem, buses were loaded with meals and parked at central locations throughout the county so families could pick up meals. Education: Students not given failing grade, all material electronic, teachers prepared some lessons while district prepared others for use. Buses were enabled with WiFi so students could download or upload homework while picking up meals. Meals were advertised on social media, phone calls, education app used by district, and news stations.	Nutrition: Opened sites the first day schools were closed and ramped up to meet needs of the community. Used buses and both schools - 70 or 71 buses and 9 or 10 schools at one point. Made sure had buses at strategic points throughout high poverty areas. Had at least one pick up point in every community. Originally was only going to use schools, but then included buses for greater coverage. Education: Did not discuss education
Facilitators	Buses were used to make sure meals were assessible for the community and made it easier for students to upload their work. Social media, cell phones, school website, news outlets, and newspapers were used to push information out about meal program. District reached out and contacted all students to know if they needed food or were having difficulty accessing homework.	Buses were used to make meals easily assessible for community. Information about meals was readily available and effort was made to tell community about meals.	Buses were used to make meals easily assessible for community. Information about meals was readily available and effort was made to tell community about meals. District worked to understand what barriers families were facing and address them.	Made sure response was representative for district - at least one school and site in every community. Buses were added to this response to increase access
Barriers	None for meals. In terms of education, students not used to being being at home, difficulty with personalized interactions on screen, and transition between in person and virtual for staff	None mentioned	Potential language barrier for Hispanic families	Ensuring the district received the food and material they needed in order to carry out the response. Due to pandemic the supply chain was broken and national shortages occurred.

	Individual Case Summaries	
	Northern Appalachia	
	NA1	NA2
Background	Social worker in the district high school	School psychologist who has worked at school for 5 years and participates in many teams at the school providing support
Environment	District made up of one elementry school (kindergarten to 6th grade) and one high school (7th grade to 12th grade) with roughtly 1600 students	District has about 1600 students. Previously more families had higher SES but more recently families from lower SES have been moving into district. Faculty and staff and learning to adjust to this shift.
Response	Nutrition: 4 Meal pick up locations on Monday and Thursdays with multiple meals included in order to last until next pick up day that contained hot and cold food. Anyone could participate, but needed to fill out Google form so district knew they were coming and had a bag for them. Times to pick up meals were from between 11 am and 1 pm. Both breakfast and lunch were included. Education: School went completely virtual with everything turned in online. Meals advertised on website, facebook, and Instagram.	Nutrition: Pick up locations spread throughout district with a google form filled out prior to picking up meals. Provision of meals started in April 2020. Education: School closed for two weeks before moving completely virtual. Teachers are trained in Google Classroom and had classrooms set up.
Facilitators	Partnering with the Backpack Program which already provided meals for families who qualified for them. Allowing people to call and "place an order" if they didn't have internet access to fill out Google form. Sending mailers to families and staff and faculty dropping off meals for families who could not pick them up themselves.	Teachers are trained in Google Classroom so were familiar with system and could easily pivot. Students were familiar with system as well. Flexibility in when people could pick up meals and where they could pick up meals if they asked and spoke with those organizing program.
Barriers	Transportation and how to get meals to some families who weren't able to get to the school. Not everyone signing up for meals at first which caused them to run out. Not everyone had computer internet access to fill out google form.	Transportation - many families who are food insecure do not have reliable transportation. Original roll out of google form had some confusion over what day the form was for. Technology and accessing the form

Appendix C: Case Summaries by Region

	Case Summaries		
	Northern Appalachia	Central Appalachia	Southern Appalachia
Environment	District is made up of one elementary school (kindergarten to 6th grade) and one high school (7th grade to 12 grade) with about 1600 students. Population has been changing as more families from lower SES have moved into the district.	County has between 30-40 thousand residents. There are three high schools in area and two school districts. One school district is much larger than the other. Very white population in area and evenly distributed between males and females. In the larger district, 70-80% of students qualify for free and reduced lunch. In the smaller district, population is split between those who are economically well off and those who are not.	Very large and diverse district that takes into account multiple towns and cities. Composed of c. 101 schools and special centers that serve over 76,000 students. Large hispanic population within the district. Economically diverse area - certain schools and areas are wealthier than other areas.
Response	Nutrition: 4 Meal pick up locations on Monday and Thursdays with multiple meals included in order to last until next pick up day that contained hot and cold food. Anyone could participate, but needed to fill out Google form so District knew they were coming and had meals for them. Times to pick up meals were from between 11 am and 1 pm. Both breakfast and lunch were included. Meal response started in April 2020 Education: School closed for two weeks before moving completely virtual. Teachers are trained in Google Classroom and had classrooms set up so were ready for the pivot to virtual school. Meals were advertised on school/district website, Facebook and Instagram.	Larger District: Nutrition: Meals available to be picked up at all elementary schools in the districts during certain days of week. Buses were intially used to deliver meals along bus route. Education: Homework could be picked up and dropped off at all elementary schools in district in conjunction with meal pick-up. At the beginning of response, NTI format was used. Meals were advertised through phone calls and social media. Smaller District: Nutrition: Meals available to be picked up at school every day. Buses used to deliver meals to familes who needed meals three days a week, although advertised as being accessible for everyone, only delivered to families who school knew needed meals. Education: At the beginning of response, NTI format was used. Paper copies of assignments could be picked up at school, however, vritual assignments were predominantly used. Meals were advertised on social media and through word of mouth.	Nutrition: Opened sites the first day schools were closed and ramped up to meet needs of the community. Used buses and both schools - 70 or 71 buses and 9 or 10 schools at one point. Buses were placed at strategic points throughout high poverty areas. Had at least one pick up point in every community. Originally was only going to use schools, but then included buses for greater coverage. Meals available to anyone who wanted them, however at first a child was required to be in vehicle which was later changed. Education: Students not given failing grade. All material electronic for middle school and high school Teachers prepared some lessons while district prepared others for use. Buses were enabled with WiFi hotspots so students could download or upload homework while picking up meals. Wifi at schools was expanded to increase access. Elementary school kids did packet/paper work (not virtual work). Meals were advertised on social media, phone calls, education app, and news stations.
Facilitators	Partnered with Backpack program which already provided meals on the weekends for families that qualified for them. For families without internet access, allowed people to call and "place an order" rather than filling out Google form. Sent mailers to families to let them know about program and staff and faculty dropped off meals for families who could not make it to a pick up location.	Large District: Meals were available for pick up at the elementary schools which traditionally serve as the community hubs. Meals were also originally delivered along bus route. School district office organized the response. Smaller District: Meals were available to be picked up at the school and directly dropped off at homes of families who district was aware needed them.	Bueses were used to make meals assessible throughout the district. Information about meals was readily available and Social media, cell phones, school website, news outlets, and newspapers were used to push information out about meal program. Locations were representative of the different areas with at least one school and bus site in every community with additional locations added to increase access. District reached out and contacted all students to know if they needed food or were having difficulty accessing homework.
Barriers	Not all families who were food insecure had access to reliable transportation and were not able to get to sites to pick up meals. During the original roll out of the google form, there was some confusion over what day the form was for causing sites to run out. Not everyone had ready computer internet access in order to access and fill out the form.	Potential stigma if participate in meal program, meals were not always great, not knowing what meals were being served ahead of time.	Meals: Potential language barrier for Hispanic families and ensuring the district received food and materials they needed in order toe adequately provide meals for families. Due to supply chain being broken, national shortages occurred. Education: Students were not used to being at home, hard to have personalized interaction over a screen, difficult for teachers to transition between in person and virtual school.

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