

**Mitigating Food Insecurity During a National Crisis: Describing Food Banks' Resilience
During the Covid-19 Pandemic**

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ABSTRACT

Food banks were established to address hunger in the U.S. because of an instability in government laws, federal programs, and community need. Food banks are front-line resources for many populations, especially during catastrophic events. The SARS-CoV-2 (COVID-19) pandemic is no exception. Federal, state, and local laws and guidelines to slow down the transmission of COVID-19, generated national economic instability and a sharp increase in all human welfare issues. Using Community Resilience Theory, this thesis aims to describe food banks' experiences and resilience during the SARS-CoV-2 pandemic. The author contacted over 25 food banks out of 200 in the Feeding America network for interviews using a stratified design then convenience sampling method. Seven committed to interviews. Community Resilience Theory informed interview questions and coded themes. The author used deductive coding for each transcript using the following themes: initial determinants of program change, persistent pandemic challenges, assets, and program change. The author used inductive coding for subthemes. Policy changes to mitigate the SARS-CoV-2 virus at the local, state, and national levels in the way of "lock down" measures, social distancing procedures, personal protective equipment (PPE), and limitations on the number of people in enclosed spaces, created significant operational challenges for food banks and an increase in community need. Food banks felt they were resilient by overcoming the operational challenges and community need by creating new partnerships and utilizing the abundance of financial resources during the pandemic.

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Preface

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1.0 Literature Review

1.1 Introduction

Food banks (nonprofits that store/warehouse food goods, mostly non-perishables, for future distribution by other agencies) are essential organizations that address the public health issue of food insecurity especially during periods of local, state, and national crisis.¹ Defined by the United States Department of Agriculture (USDA), food security is a “household-level economic and social condition of limited or uncertain access to adequate food.”² Food insecurity affects millions of people each year; in the United States alone, it affected about 37.2 million people in 2019.³ Populations at the highest risk include low-income households, African American households, and women headed households with children.³ These populations suffer health issues linked to food insecurity at higher rates than other people; some of these negative health outcomes are obesity, Type 2 Diabetes, cardiovascular disease, depression, anxiety, and slow cognitive development among children.^{4,5,6,7,8,9} The prevalence rate of food insecurity varies based on contributing factors such as employment rate, human service benefits, and catastrophic events (natural or human-caused events causing sudden harm or destruction to human resources, social/community structures, and/or government systems) such as the 2020 pandemic. Fluctuation in employment rates and human service benefits, outside of catastrophic events, can cause mild disturbances in the prevalence of food insecurity, whereas catastrophic events cause severe increases.^{10,11}

Catastrophic events cause disturbances in community infrastructures and disruptions in the relationships between communities.¹¹ Common direct effects of these adverse events are the

availability of income, lack of adequate housing, instability of health care, and the flow of goods and services such as food products.¹¹ The current SARS-CoV-2 outbreak has had a substantial effect on all economic structures across the United States, especially food systems and caused food insecurity to increase rapidly. All states had food insecurity increases in 2020 ranging from 18% to 59%, according to Feeding America's projections reported in October of 2020.¹² Financial projections (pre-pandemic) per state ranged from \$30,000,000 to over a billion dollars to alleviate food insecurity.^{13,a} These financial projections have only increased due to the pandemic. Food banks and the pantries (non-profit direct food distribution centers) that they supply, saw increases in community need by the hundreds and thousands every day.¹ Media coverage in 2020 of food banks, highlighted car lines at drive-through distributions that were miles long, with people queuing up hours ahead of a distribution event, in addition to the hundreds of phone calls made daily to individual food banks by those in need.^{14,15,16,17} The numbers of those that are food insecure, since the pandemic declaration, has not significantly declined over time.

Food banks are a heavily relied upon community asset during catastrophic events. As such, a food bank's resilience during these events is essential to the resilience of the communities they serve. Community resilience, "the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise" defines resilience for food banks.¹⁸ Community resilience has four adaptable components: information and communication, community capacity, social capital, and economic development.¹⁹ When applied to food banks as part of the overarching

^a Financial needs reflect the projected cost of one meal and the projected meals needed for a state for a given amount of time (calendar year).

food system, these four components provide a framework to describe the food banks' experiences during this global pandemic.

Much of the current research on food security has been defining the public health issue, the affected populations, access issues, and health outcomes with extraordinarily little focus on the organizations such as food banks, and their programs that assist in mitigating food insecurity. Learning how such programming responds to long term national crises and on what they focus and evaluate could aid in future national emergencies and help develop stronger long term programs.

This thesis has three goals: first, to identify the food banks in selected states with various levels of food insecurity increase during the pandemic; second, to describe the initial determinants of program change, persistent pandemic challenges, assets, and the program changes food banks employed during the pandemic; and finally, to identify strategic program points for resilience evaluation.

A history of food insecurity provides a base understanding of hunger issues in the United States, how food banks developed to alleviate hunger, measurements used by food banks to define food security, populations affected, and health outcomes. An academic literature review shows the magnitude of effects of the SARS-CoV-2 outbreak on the United States population, considering that food insecurity is a co-human welfare issues along with lack of adequate income, lack of appropriate housing, and a lack of appropriate health care.

1.2 History of Food Insecurity in the U.S.

Food insecurity has always been a global issue, with nearly one billion people currently identified as food insecure.^{20,21} Although hunger (depletion of food in the body resulting in body

discomfort and/or distress) and malnutrition (the insufficient intake of nutrients that assist with normal body functions) issues have always been acknowledged in the United States, they have not been widely researched in population-based health, and mainly confined to clinical discussions of malnutrition. The recent adoption of the term “food security,” a nuanced term to include hunger and contextual measurements such as food access and perceived food availability, has elicited more focused population-based research than the term hunger.² The adoption of the term food security and its definition have allowed researchers to develop a quantifiable measurement tool to assess food security along a spectrum. These current and constant measurements help to assess the amount of food insecurity in each region and allow food programs such as food banks to take swift and decisive action, especially with vulnerable populations, to help mitigate this persistent problem. Historical hunger trends show that food security decreases during times punctuated by economic downturns, national job loss, and natural disasters.^{3,20,22} These early historical moments would give way to some of the first food programs, such as food banks, as well as the globally recognized term “food security”, and its measurements.

1.2.1 Hunger in the U.S.

Hunger has been ever present in the United States. However, in 1929, the U.S. and the world would experience an economic downturn, the Great Depression, that would be the catalyst for putting hunger issues front and center in the U.S.^{20,22} This was the most significant economic downturn of the 20th century and was a period of worldwide economic recession, which consisted of widespread job loss that increased the number of people who struggled with hunger.^{20,22} Local and national efforts such as soup kitchens and the first government funded food stamp program

were some of the first responses to the hunger crisis.^{20,b} The effects of the Great Depression on job loss, homelessness, lack of medical care, and hunger continued well past the point of economic mending.^{20,22} Gender, racial/ethnic, income, and medical care disparities between population groups widened in the years following the Great Depression.²² The government acknowledged these disparities and began focusing on them by creating and amending laws as more information about disparities came to light.^c

By the 1960's, hunger issues were gaining more attention, and the “face” of hunger was more widespread. Early attempts at defining and measuring hunger reduced it to an individual medical issue with no thought of the community/social context in which hunger issues arise.²⁵ Despite the presence of soup kitchens and the food stamp program, individuals, households, and communities still experienced hunger. Ultimately, they resorted to additional coping strategies such as skipping meals, borrowing money, and opting for lesser quality food.²⁶

1.2.2 Development of Food Banks

In 1967, in response to witnessing these coping strategies, John van Hengel, conceptualized and created the first food ‘bank,’ a food storage and distribution center to reduce unnecessary food

^b The government created the first food stamp program in 1939 in response to getting surplus food to those who did not have access. Program participants could buy orange stamps and receive, for every dollar spent, \$0.50 of blue stamps to “purchase” selected foods. Today, it is the Supplemental Nutrition Assistance Program (SNAP).²³

^c The Child Nutrition Act of 1966, enacted by the Senate and the House of Representatives, was to “strengthen and expand food service and programs for children.” This was after the political recognition of food and its importance in the physical and mental development of children.²⁴

waste and to redistribute unused food to those in need.²⁷ Located in Phoenix, Arizona, St. Mary's Food Bank gathered unsold food from grocery stores and distributed 275,000 pounds of food within their first year.²⁷ This sparked a nationwide recognition of the need for food banks and the deployment of other storage facilities. Other states followed in Van Hengel's footsteps and created their own food banks.²⁷ Van Hengel wanted unity within the food bank system across the United States, so he created a partnership organization, Second Harvest, that would ultimately assist in the security of resources, such as procurement of food and government funds.²⁷ He established this organization, in 1979, and it would later become Feeding America.^{27,d}

Food banks today operate as nonprofits that safely warehouse excess food and distribute it to pantries in their service area, as well provide direct distribution to the public.¹ As of 2020, Feeding America partners with 200 food banks, with one or more food banks serving all 50 states.²⁷ Its mission is to “feed America’s hungry through a nationwide network of member food banks and engage our country in the fight to end hunger.”²⁷

1.2.3 From Hunger to Food Insecurity

Food banks’ mission to is end hunger, however, the term hunger, from the early 1900’s through and past the development of food banks, was often synonymous with malnutrition, making it a complicated issue to measure.²⁰ Caloric intake, income status, and the number of food program participants served as proxies for hunger data.²⁰ All these methods presented accuracy issues, and

^d At around the same time Van Hengel established the first food bank and Second Harvest, the government created the program Women, Infants, and Children (WIC) in 1974, after the development of the Child Nutrition Act of 1966. WIC’s purpose was to nutritionally stabilize mothers, expecting mother, and children.²⁸

by the time hunger issues were diagnosed or medically identified, many individuals who experienced insufficient food resources had already suffered irreversible health effects.²⁵ Professional and political competition for data on population groups that were “hungry”, created multiple definitions for the health issue nationally and globally.²⁰ This ultimately postponed a singular and globally recognized definition of food security until the mid-1970’s.

The United Nations (U.N.), formed to address and maintain international cooperation that focuses on peace and security for all nations, recognized the need to address global hunger. At the World Food Conference in 1974, the United Nations introduced the term “food security” to reflect the concerns of hunger across the world.²⁰ The definition focused on the consistency and quantity of food resources and removed words such as “hunger” and “malnutrition” from its definition.^{25,29} The definition was the “availability at all times of adequate world food supplies of basic food stuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices.”²⁹ The conference encouraged individual countries to assess hunger on their own soil.

After the World Food Conference, U.S. media coverage of this public health issue placed hunger front and center. The exposure placed pressure on the government to investigate the national severity of hunger. President Ronald Regan, in 1980, led a task force to investigate the proposed resurgence of hunger in the United States.²⁰ The task force found that hunger was not as straightforward as previous medical descriptions suggested. They came up with two new working definitions for hunger, apart from the United Nations definition of food security:

- (1) Hunger is the actual physiological effects of extended nutritional deprivations.
- (2) Hunger is the inability, even occasionally, to obtain adequate food and nourishment.²⁰

Ronald Regan’s very particular definition of hunger, not food security, focused on extreme cases of hunger that resulted in physical health issues. His task force concluded that although

hunger exists, it was not a widespread major health concern as the media portrayed.²⁰ As a result of these “findings,” the president reduced government budgets that supplied food assistance programs.³⁰ This spurred a boom in grassroot approaches to end food insecurity, as defined by the U.N., especially in the construction of additional food banks, pantries, and other nonprofits that supply food resources to those who need it.^{20,30}

The American Institute of Nutrition and the U.S. Department of Health and Human services adopted the term food security and defined it for the United States, in 1990, as “access by all people at all times enough for an active, healthy life, and includes, at a minimum:

- (a) the ready availability of nutritionally adequate and safe food and
- (b) an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies)”.²⁰

Today the global definition of food security is “when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”³¹ National leaders and the Food and Agriculture Organization of the United Nations (FAO) formed this definition during the World Food Summit in Rome, Italy in 1996.³¹ Here, national leaders recommitted their attention and resources to ensure food security for all peoples, acknowledging the fundamental right of every human. Focus on food security nationally as well as globally, assisted in defining standard measurements, improving food laws, food programs, and general food access in the following years.³¹

1.2.4 Measuring Food Insecurity and Trends

At the same time the U.S. adopted the term food security, President George Bush signed into law the National Nutrition Monitoring and Related Research (NNMRR) Act.³² The Act

contained a ten-year plan (the U.S. Food Security Measurement Project) to develop a standard measurement tool for food security and population descriptive demographics.³² It would be the measurement that defines the public health issue for food banks and other food programs such as WIC, and SNAP.^{20,32} The measurement (Food Security Supplement) quantifies households rather than individuals and is distributed annually along with the Current Population Survey.³³

Researchers at the USDA measure food security on a continuum ranging from very low food security to high food security.³³ Very low food security describes a lack of financial or other resources that disrupts the eating patterns of at least one member of a households more than once a year.³³ Low food security is a reduction in quality and quantity of food for members of a household without significant disruptions.³³ Marginal food security is no significant reduction in the quantity and quality of food for members of a household, but there have been problems or concerns about accessing enough food.³³ High food security is households that have no reduction in quality and quantity of food for members of a household and no concerns about accessing enough food.³³

A series of 18 questions places households into one of these four continuum categories based on the respondent's behaviors and experiences in the last 12 months.³³ The first 10 questions address adults and the final eight questions address children in the household.³³ As a part of the Census Bureau's Population survey, this food security survey reaches 45,000 out of 128.451 million households in the United States.³³ Researchers calculate the percentages of the four different food security categories, then apply them to the whole population. The marginal food security and high food security groups qualify as food secure, while the low food security and very low food security groups qualify as food insecure.³³

Data collected from the Food Security Supplement shows trends in food security from 1995 to present. Food security data shows slight fluctuations in the number of those who were food insecure between 1995 and 2000 in Figure 1.³ After 2000, the number of those who were food insecure in the United States began to rise.³ Food insecurity declined from 2004-2005 and plateaued.³ The rise in the early 2000's was due to a slight economic downturn.³⁴ This downturn pales in comparison to the economic downturn three years later. Full recovery from the rise in the early 2000's could not be achieved before the numbers of those who were food insecure began to rise again.³

In 2008, the Great Recession marked the last significant economic downturn and the last substantial increase in food insecurity prior to the SARS-CoV-2 pandemic. The Great Recession in 2008 stemmed from an unstable mortgage landscape and risky loan practices.³⁵ This led to heavy and unmanageable debt loads for many Americans.³⁵ Households faced the choice of how to use financial resources. Some chose to allocate funds to the debt load, with less resources designated for food. Lack of financial resources for food left many in the nation food insecure. The food insecurity trends published by the USDA show this dramatic increase in food insecurity (Figure 1).³ Food insecurity remained at this increased rate for four years before numbers started to decline.³

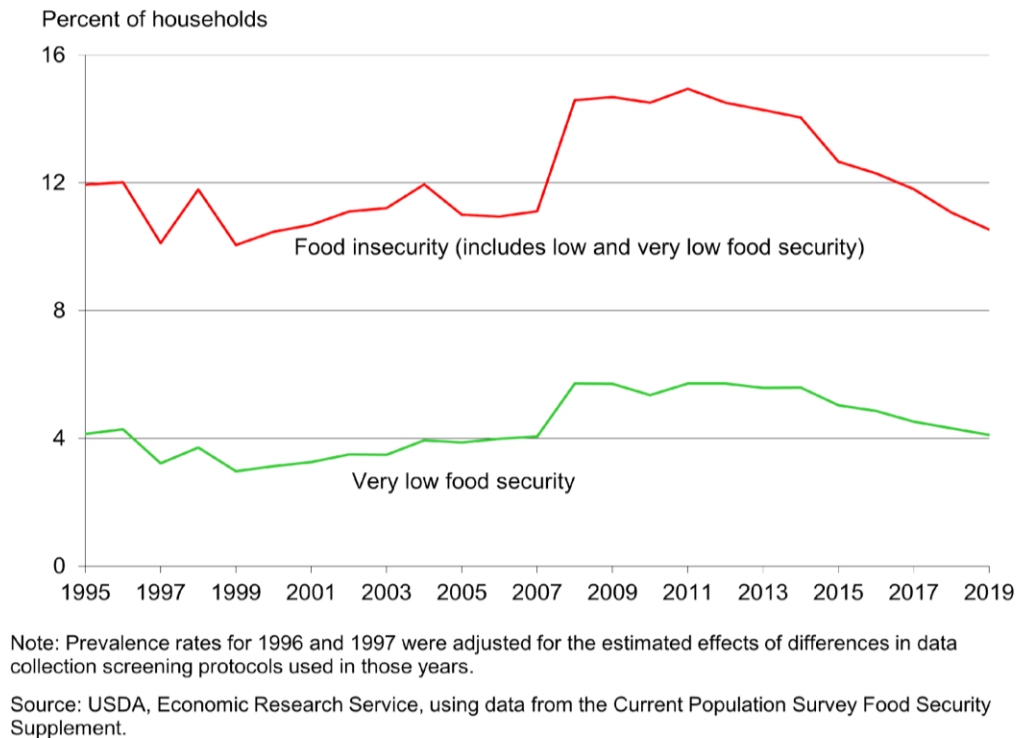


Figure 1 Trends in Prevalence Rates of Food Insecurity and Very Low Food Security in U.S. Households, 1995-2019

Much like past recessions, during the economic downturn of the COVID-19 pandemic, the United States has seen an increase in food insecurity. Unlike past recessions, the current pandemic had an unprecedented fallout on all human welfare issues in the United States and the world. The national government continues to use current measurements to quantify the populations affected by food insecurity and other human welfare issues. They amended measurements in 2020 to include an additional food security survey reflecting the unique global circumstances of the pandemic.³⁶ The Household Pulse Survey is an online survey, measuring the social and economic effects of the SARS-CoV-2 pandemic on U.S. households, which included, food insufficiency, among other human welfare issues such as employment, housing, and medical care.³⁶ During early survey deployment, the USDA collected data weekly; later in the pandemic they collected data

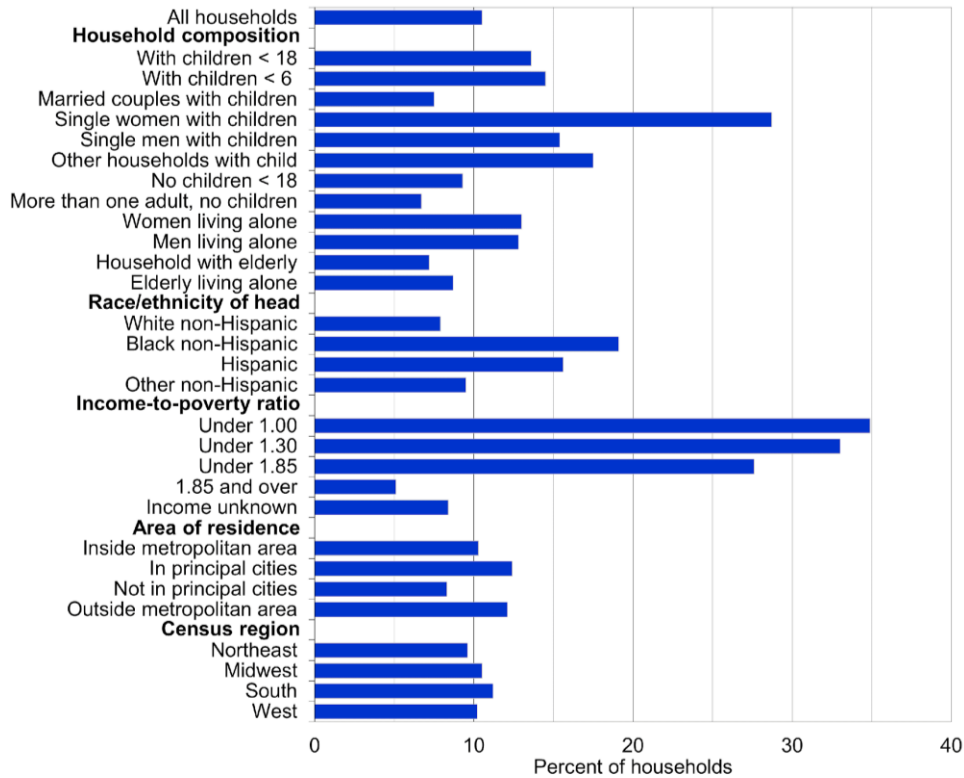
every two weeks.³⁷ This ensured as close to real-time data as possible to inform federal, state, and local risk management procedures and programs.³⁷

1.2.5 Vulnerable Populations

Food security measurements also collect descriptive demographics and outline vulnerable populations. There are just over 330 million people living in the United States as of July 2021, in 128.451 million households with an average of 2.62 people per household.^{38,39,40} Of those, 76.3% are white, 13.4% are African American, 5.9% are Asian, and 4.4% are other.⁴⁰ Twenty-eight percent of the population consists of children 18 years of age and under, with 6% of the population age 5 and under. About 10.5 % of the US population is at or under the poverty line.^{40,e}

Food insecurity, as reported by the USDA, is most prevalent in households with the following characteristics: with children (specifically single women with children), Black non-Hispanic, and with an income-to-poverty ratio under 1.00 (Figure 2).³

^e The Census Bureau uses the following household metrics to determine whether a household falls below the poverty line or cannot meet basic needs for all peoples in the household: the collective financial resource, the number of people in the household, and the household composition.⁴¹



Source: USDA, Economic Research Service, using data from the December 2019 Current Population Survey Food Security Supplement.

Figure 2 Prevalence of Food Insecurity by Selected Household Characteristics, 2019

1.2.6 Health Outcomes

Food insecurity is a significant public health issue and linked with many negative physical and mental health outcomes. Some of these health outcomes continue even after an individual becomes food secure. Negative health outcomes linked to food insecurity differ between youth (under the age of 18), non-senior adults, and seniors (over the age of 65). Current research is more focused on vulnerable age groups such as youths and seniors, and less so on non-senior adults.⁴²

Across all age groups, food insecure individuals have lower nutrient intake than those who are food secure, which can cause a suppressed immune system.⁴² Suppressed immune systems lead to a greater susceptibility to viruses that cause illness such as influenza. Poor general health in

food insecure individuals is linked to higher rates of hospitalizations, compared to those who are food secure.⁴² Poor oral health across all age groups is also connected to food insecurity.⁴² Those who are food insecure also suffer higher rates of mental health outcomes such as depression/anxiety and poor or reduced cognitive reasoning.⁴²

Youth who are food insecure have higher rates of anemia, asthma, and obesity compared to those youth who are food secure.⁴² Food insecure youth also have higher incidence rates of behavioral problems (aggression and anxiety) and suicide.⁴²

Non-senior adults who are food insecure have higher incidence rates of diabetes, hypertension, and hyperlipidemia leading to cardiovascular disease.⁴² Non-senior adults also suffer higher rates of mental health problems and poor sleep.⁴²

Seniors who suffer food insecurity have higher rates of poor overall health, as well as limitations with the physical capabilities of day-to-day activities.⁴²

Researchers have found the category marginal food security and short term food insecurity can yield similar mental and physical health outcomes as the categories low or very low food security and long term food insecurity. Those who are marginally food secure can have health outcomes linked to food security such as depression/anxiety. Anxiety and/or other mental health issues decrease the natural immune response and allow for a higher risk of viral transmissions.⁴³ Those who suffer short term food insecurity can experience physical health outcomes linked with food security, such as a suppressed immune system. A suppressed immune system creates a higher susceptibility to viruses.⁴⁴ Short term food insecurity can also agitate and worsen preexisting chronic illnesses such as asthma.⁴⁴ Youth who suffer short term food insecurity can have the same significant nutritional deficiencies that lead to physical health outcomes such as anemia as those that suffer long term food insecurity.⁴⁴

1.3 The SARS-CoV-2 Pandemic

Medical professionals diagnosed the first SARS-CoV-2 case in the United States in January of 2020. The rapid transmission of the COVID-19 virus caused a sharp surge in those seeking medical resources. Lack of adequate first line treatment and the rapid rate of transmission of SARS-CoV-2 overwhelmed hospitals, virus testing sites, and medical professionals who worked quickly to develop a vaccine. The World Health Organization declared COVID-19, a global pandemic on March 11, 2020. Shortly thereafter, state governments issued “stay-at-home” orders and issued lockdown measures to slow down the transmission of COVID-19. While these measures proved to slow virus transmission over time, they prohibited many individuals from day-to-day activities such as going to work, purchasing food and household goods, and seeking routine medical care.

The national and global economies halted with significant consequences on human welfare issues such as employment, housing, medical care, and food production/accessibility. The state mandates and national social distancing guidelines restricted food production, transportation, and accessibility for the nation. The number of those who became food insecure rose sharply.

Food insecurity does not manifest in a vacuum. Many who suffer food insecurity also face other human welfare issues such as employment, housing, and medical care issues.⁴⁵ These significant human welfare issues can create or exacerbate already existing hunger issues. During catastrophic events, such as the COVID-19 pandemic, unexpected burdens jeopardize human welfare and hunger issues rise; food banks are a critical part of that front line defense to mitigate these issues. Acknowledging and addressing these coexisting human welfare issues in tandem, gives context to the severity of food insecurity due to the pandemic, and demonstrates the need to

focus on this public health issue long after employment, housing, and medical care issues resolve, as well as the critical part food banks have in creating stability for the communities they serve.

1.3.1 Effects of the SARS CoV-2 Pandemic

1.3.1.1 Employment

State governments quickly expanded stay-at-home orders to include limitations on travel and the temporary shutdown of “non-essential” businesses as a response to the SARS-CoV-2 pandemic. These state measures, including the national safety guidelines, proved difficult for businesses and ultimately employers to navigate. Laws forced employers to rethink operational procedures and gave employers limited options if they couldn’t comply with state mandates and national guidelines. While some employers allowed for a flexible work environment, other employers had no remote work option for employees, and either cut back employee hours, terminated employees and/or closed businesses altogether. Job loss was imminent for many.

Unemployment claims rose sharply in 2020, totaling over 30 million claims, and the unemployment rate was at its highest in about 100 years, at 14.7%.^{46,47} The magnitude of this unemployment rate is greater than any other economic downturn since 1929.^{47,48} The unemployment fallout of the Great Depression affected households for many years, even after the U.S. economy was on the mend.^{20,22} Predictions are that the unemployment fallout from the pandemic will mirror that of the Great Depression, and workforce instability will leave millions unemployed, even after health and state guidelines of social distancing have relaxed.^{47,48}

Prior to the pandemic, the Federal Reserve reported that more than 35% of all American households lack the disposable funds to pay for a \$400 emergency bill, let alone recover from a prolonged reduction in work hours or job loss.⁴⁹ The percentages are higher among Black and

Hispanic households, 53% and 55% respectively, compared to White households at 28%.⁴⁹ Those percentages are also higher among households where education level is less than a high school degree (71%), compared to those who hold a college degree (17%).⁴⁹ These statistics support the prediction that financial recovery will be difficult and long for those who saw a cut in financial resources during the pandemic.

Job loss precipitates food insecurity. Lack of adequate financial means can decrease food access for those households. Those with insufficient financial means must choose where to allocate money and often face other human welfare issues, such as lack of proper housing, medical care, and food insecurity.

1.3.1.2 Housing

Nationwide job loss lowered financial resources for many individuals. Households that suffered job loss or even a reduction in hours may have found that allocating funds to routine life-sustaining costs proved to be difficult, forcing the choice on what bills they paid.

The forced choice on where to designate limited funds during the pandemic, increased the number of people who were incapable of fully or partially making rent or mortgage. Concerns of evictions and foreclosures increased.⁵⁰

Local governments, out of concern of the rise in unemployment, put in place filing bans and hearing bans on evictions to help ease the burden of those who struggled with rent and other human welfare issues.^{50,f} As some of the bans expired, a steep increase in filings and hearings took

^f Filing bans are bans on landlords to formally file and eviction hearing. Hearing bans are bans on the court from hearing new eviction cases until a specified date.⁵⁰

place.⁵⁰ Hearing and filings in some areas where there were bans, eventually returned to pre-pandemic levels about five weeks after the expired ban.⁵⁰ Hearings and filings, however, steadily increased in areas where no bans were placed.⁵⁰

As of October 2020, the United States Census Bureau reported that about 17.08% of households were behind on rent payments and 6.61% of mortgage owners behind on mortgage payments.^{51,52} As of June 2021, the reports decreased slightly to 14.80% of households that rent and 4.80% of mortgage owners were behind on payments.^{53,54}

During the pandemic, individuals prioritized urgent housing costs like utilities, medical costs, and food resources over rent and mortgages.⁵⁵ Landlords' response to delayed rent payments were threats of eviction hearings and filings and raising the cost of rent.⁵⁶ Medical and food resource costs also rose during the pandemic, increasing the burden of those with financial strain and creating a 360° pressure on those households. Burdens forced people into further choices on where to allocate funds. Some of the coping strategies by those who were food insecure, were to buy lesser quality and/or quantity of food, travel longer distances for lower priced goods, sign up for state assistance, or seek out alternative food sources such as food banks.⁴⁴

1.3.1.3 Medical Care

Economic impact in previous recessions left medical care largely unaffected.⁵⁷ Individuals continue to prioritize medical care even with monetary loss and do not reduce health care visits.⁵⁷ While individuals still prioritized health during this pandemic, it has proven to be a difficult landscape to navigate with national and state restrictions. The SARS-CoV-2 pandemic changed the face of medical care; telemedicine rose while there has been fewer outpatient, non-emergent, and elective health care visits.⁵⁸

Not only has the way people receive treatment changed during the pandemic, but people have also had to resort to more out of pocket expenses.⁵⁹ Medical coverage during the pandemic was cumbersome for many, leaving households in significant debt over unforeseen medical bills due to the virus.⁵⁹ Some individuals and households that lost employment due to the pandemic, temporarily lost medical insurance.⁵⁹ Some of these households turned to government funded health care such as Medicaid for health insurance; those who could not turn to Medicaid had to purchase health insurance out-of-pocket or go without. Medical bills during the pandemic were significant for many and caused a financial deficit in many households.⁵⁹

1.3.1.4 Food Access

The food environment during the COVID-19 pandemic has been fraught with many access concerns. Some concerns led to panic buying, perceived food shortages, the shutdowns of school food programs, and other programs having to readjust to national and state-wide measures or not being able to adjust altogether.

Initial mentions of potential “lock-down” procedures led to the suggestion that households have on hand two weeks’ worth of groceries. This triggered a risk on the household’s ability to cope with restrictions caused by the pandemic.⁶⁰ With 680 billion dollars spent in 2018 alone at restaurants that were shutdown down early during the pandemic, many households that relied on restaurants, turned to grocery stores to “stock up” to cope with long term lockdowns.^{44,61} These stocking up measures created panic-induced purchasing on cleaning products and nonperishables.⁴⁴ This panic buying disrupted the supply chain early on in the pandemic, leaving non-bulk packaging of cleaning products and nonperishables scarce.⁶¹ Some store shelves were completely bare of these items for months. Those who could not buy in bulk or comply with recommendations of stocking up on two weeks’ worth of food, mainly low-income households

who qualify as very low food security and low food security, often had to travel farther distances for these items or go without.⁴⁴ Those individuals that rely on preidentified food goods by state programs such as WIC and SNAP also found shelves bare of WIC and SNAP designated foods.⁴⁴ Some program participants found their benefits expiring before they were able to use them.⁴⁴ Those who were marginally food secure also struggled with the stocking up recommendations and purchased less than two weeks' worth of food because they either could not afford it, or it wasn't available.⁶² When food supplies were scarce in grocery stores, many individuals turned to food banks to supplement.

Many schools across the nation provide students of low-income families with reduced price or free lunches. Some schools take it a step farther and provide these children with an additional breakfast. Low-income households who rely on various coping strategies to obtain food, also depend on schools to reliably support food security. Lockdown procedures halted in person academics across the board, creating financial strain on those who rely on school food programs. To mitigate food access issues with schools, the USDA, through waivers, granted the school districts the ability to provide emergency meals to students.⁶³ Schools were exempt from previous nutrition and eligibility restrictions set forth by the USDA, and many schools were creative pairing with food banks to ensure a steady food supply.⁶³

In response to the pandemic, the 116th U.S. Congress passed the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) which was signed into law by President Donald Trump in March of 2020.⁶⁴ This act provided, families with additional financial resources depending on income and household size and provided state funding to assist with the economic fallout.⁶⁴ Many states allotted funds to food banks, schools, and hospitals to keep up with the demands of the pandemic. The Health and Economic Recovery Omnibus Emergency Solutions Act (HEROES

Act) followed in May of 2020.⁶⁵ Passed by the United States House of Representatives, this act again, placed financial resources into the hands of households, needed resources in the hands of food banks, and expanded benefits for those who were food insecure and utilized programs such as SNAP.⁵⁷

While these laws were helpful, the magnitude of the food insecurity problem in the U.S. during the pandemic surpassed these initial measures, and many programs faced challenges to be resilient and promote resilience during the pandemic.

1.4 Community Resilience in Food Banks

Community resilience is “the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise”.¹⁸ Resilience is not an outcome of a catastrophic event, it is the active process. For example, change of one component can be the catalyst for change in other components.¹⁹ The active change determines resilience. The capacity for resilience increases when resources are continuously present and robust.¹⁹ Three important indicators of resilience is the robustness, quickness, and repeatability of resources.¹⁹ Another important indicator of resilience and ultimately crisis adaptation, is the psychological wellbeing of the community.¹⁹ Assessing for the psychological wellbeing of the community during a catastrophic event allows community insight to the perceptions of the crisis, perceptions of the adaptations to the crisis, and perceptions of success if/when another catastrophic event happens. These perceptions if positive leaning will lead to action as opposed to negative perceptions which lead to resistance.¹⁹

The four components of community resilience theory, information and communication, community capacity, social capital, and economic development, when applied to the food systems framework, gives a model for food banks to self-evaluate for resilience.¹⁹ The food systems framework is a holistic framework, including everything from the production of food to the people who consume it.^{45,66} This whole-body approach pays close attention to the dynamics and interdependency of each part of the food system.^{45,66} Catastrophic events tend to disrupt one part of the food system initially, and what follows is a domino effect for the system, affecting all parts to some degree. The breakdown of the food system during the pandemic, calls attention to the importance of interdependency and how organizational self-evaluations for resilience should incorporate the dynamics and interdependency of food systems components. These factors should be viewed as a holistic evaluation approach, not favoring any one factor.^{45,66}

Community Resilience Theory supports the evaluation of community programs during the time of crisis to understand the overall community/program health at times of catastrophic events. It is a theory that focuses on positive factors that bring about change, factors that grow strengths, mental wellness, and the ability to transition from “deficit” to “competence-based” models of operation.¹⁹

Evaluations, whether formal or informal, are the impetus for informing action and change. They can be useful to determine whether the crisis warrants program change. The process of evaluation can be slow, methodical, and time-consuming; time is critical during a catastrophic event. The current pandemic highlights the need for fast-acting and efficient program changes within the food banking system.

1.5 Literature Review Conclusion and Further Research

The instability in government laws, food programs, and community need, during the early part of the 20th century created the demand for food banks. Warehousing unused food filled a gap in the food system. The redistribution of warehoused food goods by food banks and pantries promoted food access for many U.S. households and assisted in alleviating the hunger and malnutrition issues that occur within food insecurity.

Food insecurity continues to be a public health issue. Past and current research defined the problem by identifying its determinants, vulnerable populations, and health outcomes. Food insecurity increases during catastrophic events, and persists even after human welfare issues of employment, housing, and inadequate medical care resolve. For those that are food insecure, food banks have been essential to mitigate the short and long term health effects of food insecurity.

Catastrophic events, such as the SARS-CoV-2 pandemic, have unprecedented effects on human welfare issues. Food bank reliance significantly rose during the pandemic. There is currently a gap in research looking at how food banks respond to food insecurity increases due to catastrophic events. There is specifically a lack of research on the reasons, methods, and evaluations of food bank program change in response to sharp increases in food insecurity like the SARS-CoV-2 pandemic. To complete the picture of food insecurity in the U.S., it is as important that we research food programs such as food banks for resiliency and successfulness. It is necessary to understand the challenges food banks face as well as the assets they have and gained during catastrophic events. Such research would inform Feeding America to the resources that food banks need as well as create stronger national crisis management plans for mitigating this public health issue.

2.0 Food Insecurity Mitigation Strategies Among Food Banks Study

2.1 Methods

The purpose of this study is to describe resiliency in food banks through assets and program changes due to the increase in food insecurity as a direct result of the SARS-CoV-2 pandemic.

The author used a stratified design to select participants to interview from the 200 food banks in the United States in a partnership with Feeding America. Interviews were to understand how the SARS-CoV-2 pandemic affected food banks in the Feeding America network, including the effects of federal/state/local health guidelines, resources (material, financial, human), as well as persistent pandemic challenges, assets, and formal and informal program evaluation tools.

All states reported an increase in food insecurity during the year 2020. The state range of percent increase in food insecurity was 18% (Arkansas) - 59% (Massachusetts). Feeding America used 2020 unemployment rates and previous food security reports to estimate the percent increase of food insecurity in each state. A state-by-state map of projected percent increase in food insecurity reported by Feeding America in October 2020 is in Appendix A, Figure 1.

The author stratified states by the percent increase of food insecurity at the state level as reported by Feeding America in October of 2020. Dramatic increases in food insecurity may cause a decrease in resources and an increase in burdens for food banks compared to those with less of an increase in food insecurity. The author assigned four categories of increase for this evaluation: low, 18-29.99% food insecurity increase; medium, 30%-39.99% increase; high, 40%-49.99% increase; and extreme, 50%-59.99%. The number of states in each category were 23, 14, 9, and 4 respectively (Figure 3). The number of food banks serving each tier were 93, 69, 59, and 10,

respectively.^g The author selected at least one state from each of the four categories and convenience sampled food banks within each state for further interviews.

The author made cold calls and sent emails to over 25 different food banks from January 1, 2021, to February 21, 2021. Once an interview was scheduled for a food bank in a state, no other calls were made to other food banks serving that state. All participants that agreed to schedule an interview participated in interviews. The author scheduled seven food banks for interviews and one interview with Feeding America.

Community Resilience Theory (four capacities to determine adaptive capabilities during crisis: information and communication, community capacity, social capital, and economic development) informed the interview questions. Community engagement at the local, state, and federal levels aid in creating a thriving environment despite the effects of catastrophic events and can help mitigate any long term effects. The author applied community resilience theory to the food bank structures and programs. Interview questions focused on what predicated change and the positive factors that assisted change.^{FSR2}

The questionnaire for interviews consisted of 11 open ended questions. Three questions were pertaining to pre- and post- pandemic programs, six questions pertained to the process of program change including food bank assets, and three questions pertained to challenges and resources needed/used to maintain operations during the COVID-19 pandemic. The remaining questions were about the process of reporting meals or pounds of food to Feeding America. The interview questionnaire and project proposal were submitted for IRB approval and received an exempt status. The questionnaire is in Appendix B.

^g Food banks may serve one or more than one state.

Interviews were semi structured lasting from 35 minutes to 50 minutes and were conducted from January 6, 2021, to March 1, 2021. The author transcribed each interview either by hand or by Transcribe transcription software. The author reviewed interviews transcribed by transcription software and corrected for completion and accuracy. The author used deductive coding for broad-based, predetermined themes based on Community Resilience Theory: initial determinants of program change, persistent pandemic challenges, assets, and program change. Initial determinants of program change are the first food bank operational challenges within one month of state lockdowns. Persistent pandemic challenges were the challenges that occurred after the first month of state lockdowns that could jeopardize day-to-day food bank operations/programs. Assets were partnerships and resources (food, financial, human, etc.) that aided in the success of operational/program changes due to the pandemic. Program changes were any change to food bank operations/programs that were due to the pandemic that otherwise would not have occurred in a non-pandemic year. The author coded all transcripts in NVivo for qualitative analysis. The author used inductive coding for subthemes within the predetermined themes, persistent pandemic challenges, and assets. The transcript codebook is in Appendix C.

2.2 Results

Seven food banks and Feeding America participated in interviews. One food bank, Feeding America Kentucky's Heartland, was from the low tier, with a 22% projected increase, two food banks, Food Bank of the Rockies and Food Bank of Delaware, were from the medium tier, with a 35% projected increase, two food banks, The Greater Pittsburgh Community Food Bank and Alameda County Food Bank, were from the high tier, with a 41% and 45% projected increase





respectively, and two food banks, Fulfill and The Greater Boston Food Bank, were from the extreme tier with a 56% and 59% projected increase respectively. Participating food banks, associated state, number of counties servicing, percent food insecurity increase, and warehouse locations are in Table 1.

The percent increase in food insecurity in each state is an average of all state counties. An overview map of each service area is in Appendix A, Figure 2. Service area demographics compared to state demographics is in Tables 2 & 3.³⁹ Food bank service area demographics were obtained to add additional context to this qualitative study.

Three food banks were non-direct distribution food banks (supplying food pantries and other direct distribution sites) prior to the pandemic. Two of these three food banks (Fulfill and Alameda County Food Bank) made operational changes to include direct distributions from the food bank during the pandemic. One food bank remained a non-direct distribution food bank during the pandemic. The remaining five food banks have direct distribution programs through the food bank as well as supplying a network of food pantries.

Table 1 State Percent Increase of Food Insecurity for Participating Food Bank Locataions

Food Bank	Counties Served	% Food Insecurity Increase Oct. 2020	Tier	Direct Distribution	Distribution Site Location
Feeding America Kentucky's Heartland	42	22	Low	Yes	Hardin County, Kentucky
Food Bank of the Rockies*	53 ^h	35	Medium	Yes	Denver County, Colorado Denver County, Colorado Mesa County, Colorado Natrona County, Wyoming
Food Bank of Delaware	3	35	Medium	Yes	New Castle County, Delaware Kent County, Delaware
The Greater Pittsburgh Community Food Bank	11	41	High	Yes	Allegheny County, Pennsylvania
Alameda County Food Bank	1	45	High	No	Alameda County, California
Fulfill	2	56	Extreme	No	Monmouth County, New Jersey
The Greater Boston Food Bank	9	59	Extreme	No	Suffolk County, Massachusetts

	Low, 18.00 - 29.99%
	Medium, 30.00 - 39.99%
	High, 40.00 -49.99%
	Extreme, 50.00 - 59.99%

^h Food Bank of the Rockies service area extends to all of Wyoming. Service area is 30 counties in Colorado and 23 counties in Wyoming. Service area % Food Insecurity Increase will reflect the total service area.

Table 2 Total Population and Demographics by Race for Both State and Food Bank Service Area

-----State-----						-----Service Area-----					
State	Total Population	% White	% Black or Afr. Am.	% Asian	% Other	Food Bank	Total Population	% White	% Black or Afr. Am.	% Asian	% Other
California	39,512,223	71.9	6.5	15.5	6.1	Alameda County Food Bank	1,671,329	49.3	11.0	32.3	7.4
Colorado	5,758,736	86.9	4.6	3.5	5.0	Food Bank of the Rockiesⁱ	4,103,842	92.6	2.2	1.9	3.4
Delaware	973,764	69.2	23.2	4.1	3.5	Food Bank of Delaware	973,764	71.1	22.0	3.2	3.8
Kentucky	4,467,673	87.5	8.5	1.6	2.4	Feeding America Kentucky's Heartland	1,091,995	92.0	5.1	0.7	2.3
Massachusetts	6,892,503	80.6	9	7.2	3.2	Greater Boston Food Bank	5,239,555	82.4	9.2	5.2	3.2
New Jersey	8,882,190	71.9	15.1	10	3.0	Fulfill	1,225,981	88.8	5.6	3.9	1.8
Pennsylvania	12,801,989	81.6	12	3.8	2.6	Greater Pittsburgh Community Food Bank	2,378,158	92.8	4.4	1.0	1.8

ⁱ Food Bank of the Rockies service area extends to all of Wyoming. Service area population will reflect the total service area.

Table 3 Total Population, Percent Population Under 18, and Percent in Poverty for State and Food Bank Service Area

State	-----State-----			Food Bank	-----Service Area-----		
	Total Population	% Under 18	% In poverty		Total Population	% Under 18	% In poverty
California	39,512,223	22.5	11.8	Alameda County Food Bank	1,671,329	20.3	8.9
Colorado	5,758,736	21.9	9.3	Food Bank of the Rockies^j	4,103,842	20.7	10.5
Delaware	973,764	20.9	11.3	Food Bank of Delaware	973,764	20.8	11.7
Kentucky	4,467,673	22.4	16.3	Feeding America Kentucky's Heartland	1,091,995	22.2	17.5
Massachusetts	6,892,503	19.6	9.4	Greater Boston Food Bank	5,239,555	19.2	8.5
New Jersey	8,882,190	21.8	9.2	Fulfill	1,225,981	22.6	7.6
Pennsylvania	12,801,989	20.6	12.0	Greater Pittsburgh Community Food Bank	2,378,158	19.0	12.4

^j Food Bank of the Rockies service area extends to all of Wyoming. Service area population and demographics will reflect the total service area.

The author structured interview questions to have participants discuss four broad-based themes: initial determinants of program change, persistent pandemic challenges, assets, and program change. Subthemes were present for two of the four main themes, persistent pandemic challenges, and assets. Subthemes for persistent pandemic challenges included community need, food/non-perishable sourcing, financial resources, network capabilities, and volunteer/staff. Subthemes for assets included community partnerships, food/non-perishable sourcing, financial resources, and network capabilities. Interview responses reflected a snapshot of the food bank at a single moment in time and are not all encompassing of all the challenges, assets, or program changes each food bank endured. Rich text quotes are provided for each theme/subtheme.

Theme 1. Initial Determinants of Program Change

The author defined initial determinants of program change as the first challenges for food banks that occurred within the first month of the COVID-19 pandemic nationwide declaration, resulting in food bank operational/program changes. These initial determinates include the state lockdown measures, social distancing recommendations, the restrictions on the number of people in enclosed spaces, the use of personal protective equipment (PPE), and the initial loss of volunteers/staff as a result of these measures. These drastic federal/state/local laws and recommendations ushered the first food bank operational and program changes due to the pandemic. The World Health Organization declared COVID-19 a global pandemic on March 11, 2020. Stay-at-home orders were issued state by state from March 19, 2020, through April 7, 2020. Stay-at-home and social distancing orders disrupted normal food bank and food pantry operations. All seven food banks interviewed, had to make operational and/or program changes due the

nationwide stay-at-home and social distancing orders. Food banks faced initial challenges such as a depletion in volunteers and/or staff.

“We lost our volunteer base. Went from about 22,000 volunteers a year to about 500 a week, to about 0” – Greater Boston Food Bank

“Before Covid, people would just stop in and come and fill out senior boxes; or our backpack program bags. [They would] come in on their break, but you know, when Covid hit, a lot of our volunteers were a little bit older, and they stopped coming in.”

– Feeding America Kentucky’s Heartland

They also faced difficulties of operating within the new federal/state/local laws and guidelines of no-contact, social distancing, and the use of personal protective equipment.

“It was really just lots of conversations with our emergency management agency, with our public health division, trying to understand exactly where we were. We just struggled with how to be able to continue to operate. – Food Bank of Delaware

Initial determinants of program change led to other persistent pandemic challenges in food banks. State lockdown measures, social distancing recommendations, and the restrictions on the number of people in enclosed spaces had a profound economic effect on the nation, as many people struggled to address human welfare issues such as the increase in food insecurity caused by the pandemic.

Theme 2. Persistent Pandemic Challenges

In addition to the initial determinants of program change, food banks frequently had to overcome other persistent pandemic challenges. The author defined persistent pandemic challenges as the instability of community need, resources, partnerships, and networks that jeopardize the day-to-day operations of the food bank to meet the community need. Food banks

discussed five distinct persistent pandemic challenges which became coded subthemes: community need, food/nonperishable sourcing, financial resources, network capabilities, and volunteer/staff. Food banks experienced persistent pandemic challenges on and off through the 2020 year and in the beginning of 2021. Seven out of seven food banks discussed the changes in community need, three discussed food/nonperishable sourcing, three discussed financial resources, all seven discussed adjusting to the capabilities of their networks, and six discussed adapting to challenges with volunteers and staff.

Subtheme A. Community Need

The author defined community need as the immediate need for food resources in the service area of a given food bank. All seven food banks discussed the need prior to the pandemic and the increase in community need as a result of the pandemic restrictions. Projected increases of food insecurity (community need) at the state level were anywhere from 22% (Kentucky) to 59% (Massachusetts). Community need increases were almost instantaneous following the federal/state/local health laws and recommendations to mitigate the SARS-CoV-2 virus. Food banks felt the effects of these laws and recommendations as they adjusted to meet the community need, sometimes distributing upwards of 50% more food resources to the public during the 2020 year as compared to 2019.

“And in 2020, when the pandemic came along, and of course the increase. The need increased. We calculated we distributed more than 100 million pounds of food through our distribution area. We right now are distributing 59% more food per month than we did before the pandemic.” – Food Bank of the Rockies

“So last year, that doesn’t include any of the COVID-19 time, we did about 8.6 million pounds of distribution. From March 16th, 2020, until roughly the middle of January [2021] we’ve done

about 15.6 [million].” – Food Bank of Delaware

“We went from about 35,000,000 pounds in the last fiscal year. We are on track to do maybe a little bit more than 50%, about 55,000,000 pounds this fiscal year.”

– Alameda County Community Food Bank

Food banks also had challenges reaching those in the community that relied on banks and pantries prior to the pandemic. Three food banks reported the need to serve groups that were “lost” during the pandemic, such as children in the service area who received free or reduced lunches from schools. Backpack programs that are part of regular food bank operations saw a decline in numbers at those three food banks.

The persistent pandemic challenge of addressing community need, presented the challenge of maintaining an adequate supply of food and non-perishable goods on hand for the food banks and pantries alike.

Subtheme B. Food/Non-Perishable Sourcing

The author defined food/non-perishable sourcing as the supply of food and other non-perishable items from preidentified sources. Three food banks discussed this persistent pandemic challenge. Food/non-perishable sourcing during the early months of the pandemic, was a problem for food banks, as global manufacturing in 2020 slowed due to country specific pandemic laws and regulations, disrupting the global flow of normal food systems. This, coupled with the panic buying (in the U.S.) of certain food and non-perishable resources, caused additional supply chain disruptions leaving shelves bare of food banks’ high valued items. When

food banks found high valued items, they faced the additional burden of increase costs to obtain the goods.

“There were several disruptions in the supply chain that made it either, you know, cost-prohibitive or impossible to find the types of foods that we usually try to source. So that was definitely a challenge beyond the actual sourcing.” – Greater Pittsburgh Community Food Bank

Some food banks that faced increased costs of food and non-perishable goods, also met financial constraints as budgets had to increase to accommodate not only the community need, but the increased cost of food goods as well.

Subtheme C. Financial Resources

The author defined financial resources as the supply of monies from preidentified sources. This includes but is not limited to state and federal funding, in network financial resources, and direct financial contributions from the public. Three food banks discussed financial resources as a persistent pandemic challenge. Manufacturing slowdowns and a depletion of food goods created a surge in fresh and non-perishable food prices during the pandemic. In addition to the increased need, food banks felt the need for increased financial resources to purchase additional goods to meet the demand. The drastic and sustained increase in community need resulted in food banks suffering from budget deficits at times during the pandemic.

“In our first four months we raised 40 million dollars. So, we’re definitely getting the support, but we are also running on a deficit budget at the moment.”

– Greater Boston Food Bank

Subtheme D. Network Capabilities

Network partners also faced the same challenges that food banks endured through the pandemic. The author defined network capabilities as the capacity of the Feeding America network of food banks and food pantries. This includes only the institutions within the Feeding America network, established prior to the pandemic declaration, and does not include institutions created during the pandemic. All seven food banks discussed adapting to the capabilities of their network partners. Network pantries receive food goods from their network food banks as well as public donations. Pantries are often volunteer run and housed at faith-based centers or other institutions that were immediately closed due to pandemic restrictions. With many pantries closed during the early months of the pandemic, food banks worked to fill in the gaps.

“We couldn’t get it [crisis boxes] delivered through the pantries because a lot of them are churches. They closed down. A lot of them were in buildings that were going to close down.”

– Fulfill

Those network pantries that remained open, felt the increased community need and were burdened by the reduction of human, food, and financial resources needed to handle the crisis. Food banks acknowledged the burden and adapted through operational changes to meet pantries where they were.

“We had to wait for them [network food pantries]. We didn’t want to inundate them with a bunch of food. They were not equipped to handle it.” – Food Bank of the Rockies

Subtheme E. Volunteers/Staff

The author defined volunteers/staff as the fluctuation of volunteers and staff during the pandemic that created day-to-day operational challenges. This does not include the initial depletion of volunteers at the beginning of the pandemic due to the initial determinants of program change.

Six food banks discussed persistent pandemic challenges with volunteers and staff. Federal/state/local laws and guidelines limited the number of people in enclosed spaces reducing building capacity in some areas to 20% with at least 6 feet of space between individuals. These laws created a burden for food banks as they tried to ensure a safe and healthy environment for all volunteers and staff.

“A challenge on our end is figuring out how to utilize volunteer efforts safely. We don’t want to bring together 50 volunteers and have them in, you know, an enclosed space or standing shoulder to shoulders. So, there was a long time where we were not bringing volunteers into our Repack Center at all just because it was too much of a challenge to ensure everyone’s safety.”

– Greater Pittsburgh Community Food Bank

Pandemic laws and guidelines forced some food banks to suspend programs temporarily and created the need for either the expansion of, or creation of programs. Two food banks hired short term staff to replace the volunteers who were no longer active at the food bank. Food banks redeployed remaining staff to fill the need for personnel in other areas.

“We did have a lot of staff redeployed and I was tasked with helping to set up the largest direct distribution.” – Alameda County Community Food Bank

Despite the challenges that food banks faced during the pandemic, food banks reported having many assets that assisted with the continuation of programs and operations, as they continued to be present and serve their communities.

Theme 3. Assets

The author defined assets as any resource that assisted in food bank day-to-day goals, operations, and/or programs during the pandemic. Assets are a key component for resilience, and food banks were directly asked to discuss any assets during the pandemic. Food banks discussed

four main assets that became coded subthemes: community partnerships, food/non-perishable sourcing, financial resources, and network support. All food banks stressed the importance of forming new community partnerships or strengthening existing partnerships. Three out of the seven food banks talked about food/non-perishable sourcing as an asset, seven food banks discussed financial assets, and five food banks talked about network support.

Subtheme A. Community Partnerships

The author defined community partnerships as the pairing between food banks and other institutions/organizations/groups that increased the promotion of food security. Community partnerships included all partnerships outside of the immediate Feeding America network that formed to assist food distribution, including temporary distribution sites. Community partnerships did not include the new network food pantries formed post pandemic declaration, that will sustain after the pandemic ends. All seven food banks talked about the importance of forming new or strengthening existing partnerships. New community partnerships during the pandemic, aided in the success program and operational changes that resulted from the SARS-CoV-2 federal/state/local laws and guidelines. Many of these community partnerships discussed were first time partnerships with food banks.

“We now are in partnership with the three major hospital networks. We provide their employees hot meals every day and we provide them the services that we provide everybody here.”

– Fulfill

“We were able to bring on the Delaware Department of Transportation, who has now supported us at all of our, now over 30 distributions.” – Food Bank of Delaware

Some food banks sought out partnerships during the pandemic. Food banks that saw specific needs to boost operations such as transportation, reached out to partner with businesses/groups

that already provided transportation. Community organizations, businesses, or groups initiated other partnerships with food banks, wanting to assist in increasing food security.

“And so, what we find is individuals like a rotary club, boy scout troop, or anybody, they don’t want to reinvent the wheel, [they say] ‘Um, can we just plug in with you and help you get more food to the people?’ Absolutely. – Food Bank of the Rockies

All partnerships offered food banks the opportunity to increase the success of operations and programs by increasing community access to food and non-perishable goods by providing resources such as space, personnel, and transportation.

Subtheme B. Food/Non-perishable Sourcing

The author defined food/non-perishable sourcing as the supply of food and other non-perishable items from preidentified sources. Three out of seven food banks discussed food/non-perishable sourcing as an asset during the pandemic. Food banks needed a steady supply of food and non-perishables goods to meet the increased community need. Some food banks attributed food/nonperishable sourcing as an asset because of the increase in community giving during the pandemic.

“Seeing how people are able to adapt and change and put forth your best effort to provide food, you know at a time when more people than ever need it.”

– Feeding America Kentucky’s Heartland

For some, food/non-perishable sourcing was an asset as food banks reworked sourcing to include new partnerships. Some new partnerships were with restaurants and local farmers. These partnerships provided mutual benefits as restaurants and farmers could receive financial compensation for food goods donated to food banks.

Subtheme C. Financial Resources

All seven food banks saw increased financial giving's. The author defined financial resources as the supply of monies from preidentified and unidentified sources. Financial giving's from the public to Feeding America, food banks, and food pantries was up in 2020.

“Yes, the community has been extremely generous to the food bank, we are, I think operating at 116% of normal for foundation and corporate giving 167% for individual giving and overall, 150%. So that is amazing and that that's what's allowing us to serve the community.”

- Alameda County Community Food Bank

“I would say there has been, similar to volunteer support, an outpouring of support from donors and foundations and individuals who are able and willing to give to the food bank. So that's been wonderful.” – Greater Pittsburgh Community Food Bank

Financial contributions allow food banks to purchase food goods at a reduced cost due to sourcing and increased purchasing power. Food banks can purchase more food for one dollar through identified sourcing outlets than the average person.

Subtheme D. Network Capabilities

The author defined network capabilities as the capacity of the Feeding America network. This includes all institutions (Feeding America, food banks, and food pantries) within the Feeding America network established pre- and post- pandemic declaration (including new institutions formed as a result of the pandemic). Five food banks talked about network support as an asset during the pandemic. Not all network partners were affected negatively by the pandemic. Some network partners were able to adapt, based on their resources, to pandemic challenges. As some network pantries closed, other pantries opened during the pandemic to compensate for these shutdowns.

“We've been very fortunate that we've got an incredibly resilient and robust network on the ground. Never once during the pandemic did, we have any less than about 90% of our pantries open at any given time.” – Greater Boston Food Bank

Theme 4. Food Bank Program Changes

The author defined food bank program changes as operational and programmatic changes during the pandemic. This includes all operational changes during the pandemic that were caused either by the initial determinants of program change or by the persistent pandemic challenges. This does not include any operational or programmatic changes that would have otherwise occurred during a non-pandemic year. Food banks made initial programmatic changes at the early onset of the COVID-19 pandemic. State stay-at-home orders, federal safety guidelines of social distancing, and the necessity for wearing personal protective equipment were the driving factors of the changes. Shortly thereafter, the increase in community needs across the nation forced additional operational changes. Two food banks moved from non-direct-distribution centers to accommodating direct distributions. All six food banks doing direct distribution during the pandemic moved to a no-contact model. Some food banks dropped programs that were volunteer run to accommodate the reduction in labor. All food banks established additional asset-based programs to manage the increase in food insecurity, some of those programs were: crisis boxes, mobile pantries, mobile markets, call centers, and home deliveries.

“The week after the state was shut down, we started making crisis boxes, floor to family [food bank/pantry to family], shelf stable food. So, we have done here about 130,000 crisis boxes that we had never done before.” – Fulfill

Food banks also created new programs in addition to food outreach, that promote health and wellbeing in other areas. Many food banks have added helplines to address other human welfare issues beyond food security, such as helping those with utility bills, life skills, and signing up for states assistance.

“We were also thinking about other SMS [short message service] or text-based programs which we could add to a menu of nutrition wellness services. If people don’t want to take the time to go in person, they have an option of a care message.” – Alameda County Community Food Bank

All food banks, early in the pandemic, established teams to organize outreach efforts, to make decisions and effect change, maintain partner relationships, and evaluate the effectiveness of the programs. While all food banks reported that program changes happened quickly, from one to seven days, all food banks also reported that program changes were not without complications.

All food banks reported that they use at least one method to evaluate programs. Evaluations were not standard across all food banks and were a mix of formal and informal methods. Most food banks reported that informal methods were use more frequently than formal. Food bank program evaluation strategies ranged from in-network and pantry surveys, community feedback from call centers, reports on the lbs. or meals distributed, as well as in person feedback from distribution sites. Evaluation methods used by food banks benefit the specific food bank using them based on their capacity to do evaluations. Evaluation methods used by food banks continue to highlight the uniqueness of food banks structures and operations within the Feeding America network.

2.3 Discussion

All food banks interviewed faced the same challenges at the onset of the COVID-19 pandemic, which resulted in initial program change due to state mandates and federal recommendations to mitigate the spread of the SARS-CoV-2 virus. The “stay-at-home” measures and “social distancing” disrupted food bank operations to feed those in need. Food banks reported that programs prior to the pandemic required contact and large groups of people in enclosed spaces. All food banks said they couldn’t continue operations without change, and change was necessary to continue the mission and keep staff, volunteers, and the public physically safe.

As volunteers declined, food banks switched operations to accommodate the lack of labor. Some food banks cut volunteer run programs and hired temporary or redeployed staff to adjust for the loss. Despite quickly adjusting to a reduction in volunteers, food banks reported staff strain even after terminating certain temporary and permanent volunteer run programs. Mental health evaluations, as suggested by Community Resilience Theory, can help identify the mental strain on food bank workers and network partners. Staff and network partners are both necessary resources for food banks to achieve resilience during times of catastrophic events. Identifying and addressing mental strain early can help prevent worker burnout and the depletion of additional resources. The author suggests that Feeding America and food banks in the network employ routine mental wellness checks, especially during catastrophic events. Mental wellness checks during periods of non-crisis would provide a critical baseline for comparison to the mental wellness of food bank workers and network partners during periods of catastrophic events. This would identify and inform Feeding America and the overall network of mental strain and help strengthen programs during catastrophic events by signaling that additional resources are needed.

All food banks reported that operations changed rapidly. Food banks took, at most, seven days to make changes. To comply with state mandates and federal guidelines, food banks opted for drive through distributions (of those who did direct distribution). Some of the food banks added an additional no-contact home delivery model for those individuals without transportation. Food banks only opted for these models if resources were available. Food banks that lacked the resources were not able to incorporate this model of distribution, despite the need. Food banks also reported other forms of no-contact distributions such as mobile pantries; these methods of distribution were specific to food banks with existing assets or new community partnerships. Food banks stated that these no-contact models were efficient, quick, and could handle the increase in food insecurity during the pandemic. Food banks reported that many program changes implemented during the pandemic would continue after the restrictions eased. Quick and crucial decisions, coupled with the willingness to be flexible about operations, helped to minimize further disruptions to food bank functions. Food banks relied on team meetings to assess and change programs. Interdependency and communication between staff and volunteers promoted resiliency among the interviewed organizations. These steps formed cohesion within the food bank and moved them away from a deficit, which food banks found themselves at early in the pandemic.

All food banks felt an increased need in food sourcing during the pandemic. Many food banks reported that food distributions in 2020 were, on average, 50% higher than “normal.” Food banks adjusted outreach methods to increase food security by leveraging available resources and seeking additional resources to fill the gaps. The evaluation process for program changes within each food bank relied on identifying the need for program change, discussing options with a team based on food bank assets, then implementing changes. Informal feedback through call centers, Facebook posts, and word of mouth at distribution sites, provided food banks with critical review

of services. Some food banks had formal evaluation methods to quantify program success through reporting. Evaluation methods ranged from food pantry surveys, collecting demographics of those served, and the success of other food banks to inform their network success after program changes. What lacked in the evaluation methods food banks used was formal evaluations of assets (community partnerships, food/non-perishable sourcing, financial resources, and network support) for robustness, repeatability, and quickness. Disaster evaluation research stresses the importance of evaluating assets during catastrophic events. Such assessments greatly inform program change by allowing food banks to know the durability and dependability of resources and if they need more resources.

All food banks reported new community partnerships. These partnerships provided needed resources for the food banks, including physical space, vehicles, refrigeration, packaging for crisis boxes, financial resources, food/non-perishable sourcing, and general labor. Some food banks reported pairing with the YMCA during the pandemic to increase distribution locations. Some food banks worked with companies that provided transportation. Others partnered with local restaurants to take unused food while the restaurants were closed to the public. These community partnerships are essential for community resiliency, expand the reach of assistance, and lessen the burden on a single organization. Including community partnerships as an asset for evaluation for robustness, repeatability, and quickness can identify partnership breakdowns in advance and ease the burdens created by unforeseen, rapid depletion of resources. For example, this approach could identify a shift in community partnerships prior to the partnership dissolving and requiring food banks to readjust on the fly.

Evaluation of mental health and assets would only strengthen programs and alert food bank staff of possible challenges before they force program change. Current informal food bank

evaluations loosely follow formal disaster evaluation logic models, with the food bank identifying stakeholders, assets, activities to conduct, and projected outcomes. Informal evaluations of food banks during the pandemic have addressed food banks' response to the pandemic as well as outcome assessments of program change. Including formal disaster evaluation logic models need not be burdensome. Food banks can incorporate formal evaluations in steps overtime. Formal evaluation methods can be succinct and still yield valuable information about programs and resources within a food bank network.

Feeding America and the associated food banks and pantries operate as a network. Network systems are interdependent, relying on the full function of all network components. The disruption of one component often leads to the disruption of others. Network systems are at a disadvantage during catastrophic events such as the SARS-CoV-2 pandemic, due to increased burdens leading to the bidirectional nature of network breakdowns. During the pandemic, food banks reorganized operations due to local/state/federal laws and regulations. New food bank operations affected Feeding America as food banks required more operating funds and new food/non-perishable sourcing outlets. Food banks also affected network pantries as some lacked food and financial resources. Pantries that closed placed additional challenges on food banks to reorganize operations to accommodate the loss of these pantries.

Despite networks being at a disadvantage during times of crisis, the Feeding America network does promote a semi-autonomous relationship. In-network food banks are a part of the larger Feeding America network and are a self-contained smaller network made up of the food bank and supported pantries. This semi-autonomous relationship allows food banks to have resources that are independent of the greater Feeding America Network. Food banks that have greater flexibility in resources can see resilience faster than those who have less flexibility.

Network systems do have advantages. Network systems promote a unified network goal, flexibility in operations, increased communications, and lower costs. These advantages, along with the semi-autonomous relationship with Feeding America, allowed individual food banks to leverage community assets that promoted resilience while receiving internal support from the larger network.

Community Resilience Theory was the framework for this study, focusing on the positives that allowed program change in response to the COVID-19 pandemic. This theory highlights assets, resources, and the mental health of communities that support the process of change and resilience. This theory does not include duration and magnitude of catastrophic events or the limits of resources and assets. Resources and assets are not infinite and can eventually dry up during prolonged catastrophic events, stalling the process of change and resilience. Financial and food resources, volunteers/staff, as well as community partnerships for food banks can deplete over time if catastrophic events persist long enough, leaving food banks unable to be resilient, even if they wanted to, according to Community Resilience Theory. This theory would benefit from addressing the limits of resources during prolonged catastrophic events and including other markers of resilience, if current factors of resilience are absent or not in the control of the community.

2.3.1 Limitations

A limitation of this analysis was the number of participants in this study. Seven food banks participated in interviews. Data collection did not contain rigorous food bank descriptive data, which would give context and support to food bank answers. Generalizing about food banks'

operations/programs to give resilience evaluation recommendations proved to be difficult due to the vast differences in operating procedures and assets (financial, partnerships, etc.) going into the pandemic, as well as contact and support to their network.

Another limitation was the lack of consistency with the job role of the interviewee. Some participants were employed only a short term at the food bank while others were employed for many years. Some interviewees have administration roles while others have public relationship positions. While the interview questions pertained to food bank operating procedures, participants completed the interviews with their own knowledge and experiences. The lack of consistency across organizations and the single point of view within each organization may have provided an incomplete picture of operations during the pandemic.

Another limitation was the time frame and conditions of the pandemic, which made collecting data challenging. Not all participants completed the full 14 question interview. Incomplete data sets made describing community resilience difficult. For example, participants noted that program changes may have occurred within 1-3 days and fail to mention who was involved in making program change decisions.

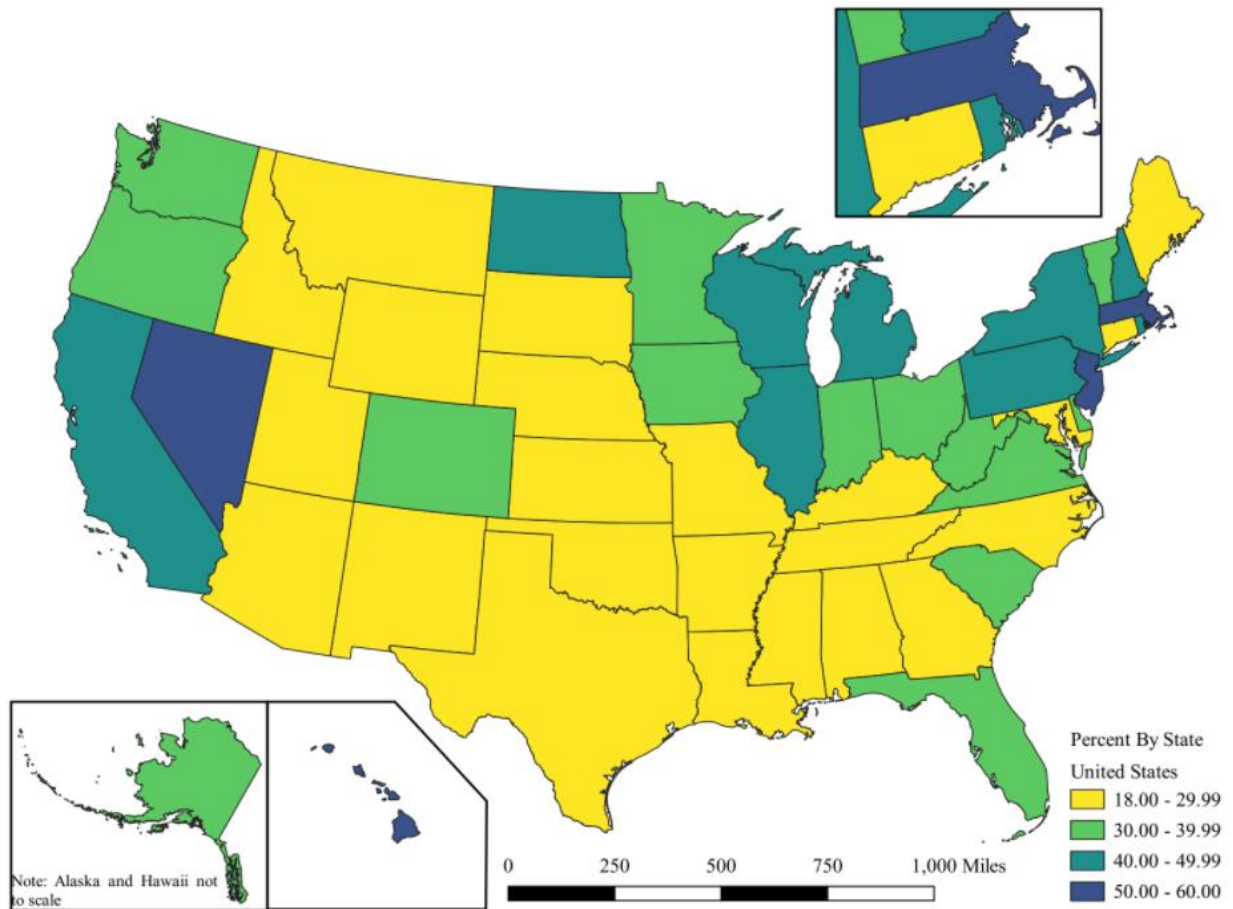
Lastly, the author created the codebook and coded all the transcripts. One coder gives a very narrow viewpoint to the data. Having multiple coders for a qualitative data set permits multiple viewpoints. Coders can discuss viewpoints, and then refine themes, definitions, and inclusion and exclusion criteria. Resources and time constraints limited the ability for the author to have and use multiple coders.

3.0 Conclusions

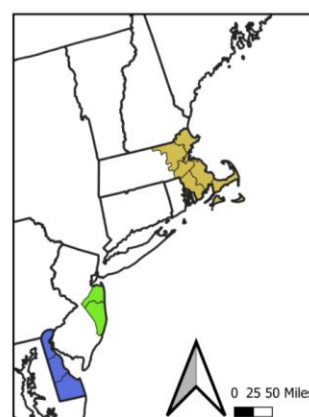
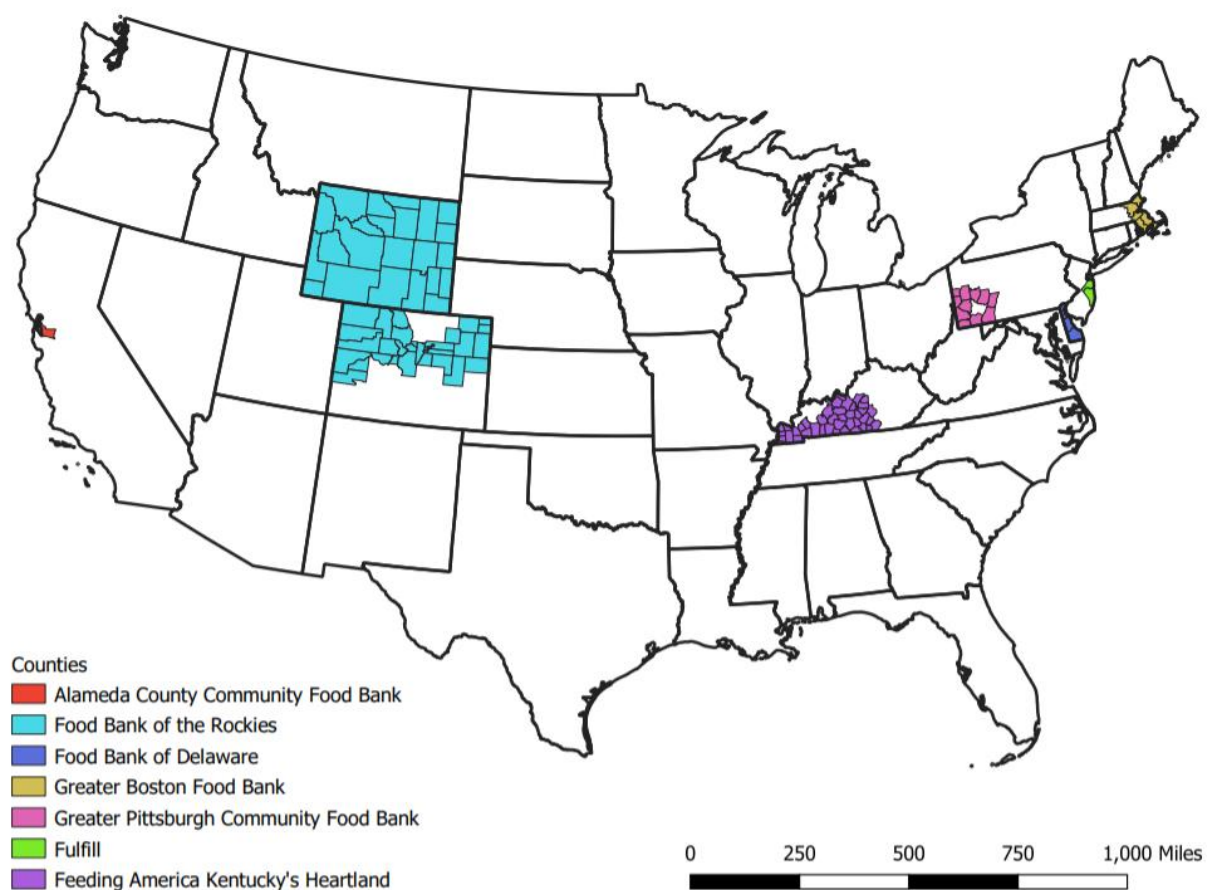
Further research is necessary with U.S. food bank responses to the SARS-CoV-2 pandemic. As measurements to collect food security data improve, the picture of food insecurity in the United States needs to expand with an examination of food bank challenges, assets, and program changes during catastrophic events. Catastrophic events will continue to occur, at either a local or national level, and continue to change the face of food programs that help mitigate food insecurity. Capturing this institutional memory will only help food banks and their network partners in strengthening both programs and partnerships.

Evaluating for resiliency during catastrophic events may lead to better food bank programs, better allocation of financial and food resources, and healthier staff and volunteers. However, food banks need tools (and training) to evaluate community resiliency. Food banks operate across a diversity of service areas distribution models, number of network partners, community partnerships, assets, populations served, and programs available. These differences make it difficult to standardize evaluations for community resiliency. Outlining themes that can be evaluated, at the individual food bank level and giving food banks evaluation tools, will allow for a prompt assessment of resiliency at times when it is most needed. Feeding America will also benefit from this food bank self-evaluation by helping allocate needed resources to strengthen food banks in preparation of the next catastrophic event.

Appendix A Maps



Appendix Figure 1 Map of the State Projected Percent Increase in Food Insecurity, October 2020



Appendix Figure 2 Map of Participating Food Bank Service Areas

Appendix B Questionnaire

1. Please tell me about the food bank, your service area and current list of programs.
2. How is the administration and staff organized at the food bank and how does your position fit into that structure?
3. Describe the food programs that were offered in 2019 (Pre-pandemic)?
Probe (Are there other services that the food bank provided?)
4. How many lbs. of food did the food bank distribute in 2019? How does this compare to the food bank's target goal?
5. Please explain how the target goal is calculated and where it comes from?
6. Described the challenges the COVID-19 pandemic has had on the food bank?
7. Please describe the program changes or new programs as a result of the pandemic.
8. How were these changes decided upon?
Probe (Who was involved?)

Probe (How does the food bank receive feedback on programs to make changes?)

Probe (Does the food bank use formal evaluation tools?)
9. How quickly have these changes been implemented?
10. Have there been challenges to implementing the new programs or program changes? If so, can you please elaborate on these changes and how the food bank overcame them.
11. How does the food bank communicate program changes to stakeholders?
Prompt: to the community, to funders, to partners?
12. Are the program changes and new programs temporary relief or are they going to sustain well beyond the pandemic?
13. Despite the challenges of the COVID-19 pandemic, has there been anything surprising that has helped the food bank through the 2020 year?
14. Is there anything else you want to discuss today in regards with the pandemic or the programs created because of the pandemic?

Appendix C Code Book

Themes	Subtheme	Definitions	Inclusion Criteria	Exclusion Criteria
Initial Determinants of Program Change		the first challenges for food banks that occurred within the first month of the pandemic declaration resulting in operational changes	state lockdowns, social distancing measures, and restrictions on the number of personnel in enclosed spaces, initial loss of volunteers/staff, PPE measures	any other challenges that were new post lockdowns or fluctuated during the 2020 year
Persistent Pandemic Challenges	Community Need	the immediate need for food resources by the service are of a given food bank		
	Food/Non-Perishable Sourcing	the supply of food and other non-perishable items from preidentified sources		
	Financial Resources	the supply of monies from preidentified sources		
	Network Capabilities	the capacity of the Feeding America network	only institutions within the Feeding America network, food banks, food pantries established prior to pandemic declaration	institutions within the Feeding America network that were established post pandemic declaration
	Volunteers/Staff	the fluctuation of volunteers/staff that created day-to-day operational challenges		the immediate loss of volunteers to due initial determinants of program change
Assets	Community Partnership	the pairing of food banks with other institutions/organizations/groups that increased the promotion of food security	partnerships outside of the network that formed to assist in food distribution, including temporary distribution sites	new network food pantries, post pandemic declaration, that will sustain after pandemic has ended
	Food/Non-Perishable Sourcing	the supply of food and other non-perishable items from preidentified sources		
	Financial Resources	the supply of monies from both preidentified sources as well as unidentified sources	including any additional government funding resulting from the pandemic (etc. HEROS Act, CARES Act, etc.)	
	Networks Capabilities	the capacity of the Feeding America network	all institutions within the Feeding America network established pre and post pandemic declaration	
Program Change		operational changes during the pandemic	all operational changes during the pandemic that were caused either by initial determinants of program change or ongoing pandemic challenges	any operational changes that would have occurred regardless of the pandemic

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