

DISSERTATION

COPING STRATEGIES AMONG FOOD INSECURE HOUSEHOLDS ABOVE AND BELOW
SNAP ELIGIBILITY GUIDELINES IN A HIGH COST OF LIVING REGION

Submitted by

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In partial fulfillment of the requirements

For the Degree of Doctor of Philosophy

Colorado State University

Fort Collins, Colorado

Spring 2025

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ABSTRACT

COPING STRATEGIES AMONG FOOD INSECURE HOUSEHOLDS ABOVE AND BELOW SNAP ELIGIBILITY GUIDELINES IN A HIGH COST OF LIVING REGION

This study explores how households in a high cost-of-living rural region navigate food-insecurity. We examine differences in coping strategies among households with income above and below 130% Federal Poverty Level (FPL) and highlight factors influencing food access among Hispanic/Latino households using a community engaged research (CEnR) and multimethod approach.

First, a survey of 1,021 food-insecure adults above and below 130% FPL was conducted from December 2022 to March 2024, assessing the extent to which households relied on charitable food assistance and engaged in economic tradeoffs between food and other basic needs.

Generalized ordinal logistic regressions analyzed differences between income groups. Second, a photovoice study with six Hispanic/Latino participants used documentary photography and focus groups to document food insecurity experiences through participant narratives and photographs. Participatory content analysis identified key factors influencing food access and navigating food insecurity.

Survey findings indicated that participants above 130% FPL were more likely than those below to rely on food pantries (OR = 2.56), soup kitchens (OR = 2.00), and other charitable food sources (OR = 1.44) for the majority of their food. They also engaged in tradeoffs with medicine

(OR = 1.65), utilities (OR = 1.30), transportation (OR = 1.21), childcare (OR = 1.18), and education (OR = 1.43) more often. Photovoice findings revealed participants' perceptions around food insecurity including lack of affordable foods and disparities in food access, and local inequities prioritizing tourism over year-round residents. Participants relied heavily on food assistance to reduce hunger and provide additional financial support for food. They also engaged in acts of mutual aid such as volunteering and connecting others in need to food assistance resources as a way to give back to their own communities. The importance of family, culture, and health were also identified as important influences on food access.

Households in this high cost-of-living region cope with the experience of being food insecure through both structural and community-based strategies. Those above 130% FPL rely heavily on charitable food assistance and economic tradeoffs, while Hispanic/Latino households employ social networks and cultural resilience. These findings highlight the need for policies and interventions that address food insecurity holistically, considering economic constraints, cultural preferences, and systemic barriers to equitable food access.

ACKNOWLEDGEMENTS

What a ride! First and foremost, I would like to express my deepest gratitude to my advisor, Dr. Megan Mueller, for her unwavering support, guidance, and encouragement throughout this journey. Her mentorship has been invaluable, and I am incredibly grateful for the opportunities to learn and grow under her leadership. I would also like to extend my sincere appreciation to my committee members, Dr. Bellows, Dr. Cleary, and Dr. Chennault, for their thoughtful feedback, expertise, and time. I feel quite lucky to have this team with all of their collective experience and wisdom. Every conversation and bit of feedback have been invaluable throughout this process. I also want to thank you for challenging me in ways I couldn't have done myself. Your insights have strengthened my work and encouraged me to think more critically.

Next, I would like to thank all of our coalition partners at the Mountain Coalition for Food and Nutrition Security, particularly Sam Landercasper, Christine Dolan, Ivan Jackson, Namrata Shrestha, and Veyra Gamboa. To say this work could not have been done without them is an understatement. I learned so much from these individuals and organizations and feel truly honored to have gotten to work alongside them in this research. A special shout out to Dr. Judith Alvarez with the Safe and Abundant Nutrition Alliance for her positivity, engagement, and enduring commitment to improving the lives of residents across the Roaring Fork Valley. In addition, I want to express my thanks to the photovoice participants for their engagement in this research project and their patience with my 6th grade Spanish.

To my partner, Kyle—thank you for always believing in me, for reminding me that we can do hard things, and for being my constant source of support. Your constant grind and hard work

were always a source of motivation. It always felt a little more comforting and a little less lonely knowing we were both working late nights and weekends. I could not have done this without you. I am also deeply grateful to the STOP Lab team and my fellow FSHN buddies, many who have come and gone from CSU, for being an incredible support system. Your camaraderie, encouragement, and shared moments of struggle and success have made this journey all the more meaningful. Finally, to my family—thank you for standing by my side and cheering me on through every challenge and triumph. Your love, encouragement, and patience over the years is deeply appreciated.

DEDICATION

“Walk the proverbial mile and place a stone down. The stone is a metaphor as a designation of time and distance. A Diploma is this designation as well. As with milestones the interval’s purpose is reflection upon relationships between cause and its effects. A quest for desired outcomes; as such, a very personal matter. Diploma is a “mile marker” in the journey “to thine own self be true”. As the stone, this piece of paper has meaning that ascribes to possibilities for personal aspirations. The space between them manifests in what results in-between. As you garner them, take and give joy in the moment so that when you ponder the next milestone you will have a trail of warmhearted memories vacant of any regret. For these milestones will ultimately create the form of your life, more so than the distance traveled.”

- Dr. Theodore “Ted” Demuro, PhD., With The Four Milestones

I dedicate this dissertation to my late godfather, Uncle Ted. You’ve always been one of my most fierce supporters. These words you wrote for my high school graduation still ring true today and

I will continue to take them with me through life.

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CHAPTER 1. INTRODUCTION

1. Statement of the Problem and Significance

Food insecurity—defined as limited access to enough nutritious food for an active, healthy life¹—is often linked to poverty.² However, since 2014, USDA estimates have shown a surprising trend: households earning above 130% of the federal poverty level (FPL) experience food insecurity at higher rates than those below this threshold.^{2,3} In 2023, 48% of food insecure households reported income above 130% compared to 37% of households with income below 130% FPL.² The 130% FPL is significant as it is the national income guideline for the largest federal food assistance program, the Supplemental Nutrition Assistance Program (SNAP),⁴ as well as free meals for children through the National School Lunch Program (NSLP).⁵ For households earning incomes above this limit, the experience with food insecurity is particularly complex—they make too much to qualify for assistance yet still can't afford basic necessities.

Throughout this dissertation, we will refer to households reporting income above federal assistance guidelines but not enough to afford basic needs as living in a wage gap. How these individuals caught in this wage gap navigate food insecurity remains less understood, highlighting the need for deeper exploration into their coping strategies and challenges.

Food insecurity has numerous health and economic implications for households. Food insecurity has been linked to poor dietary quality,⁶⁻⁸ obesity,⁹ and increased risk for chronic disease¹⁰ among adults and older adults. Additionally, children living in households with food insecurity are more likely to report reduced academic performance and behavioral issues.¹¹ While a lack of financial resources, like income, may increase the risk of food insecurity, there is a cyclical effect

such that experiencing food insecurity may also impact financial security by leading to worsened health outcomes that may increase financial struggles for households.¹² Some of these poor outcomes are in part due to the coping strategies that individuals and households engage in, i.e., forgoing more expensive nutrient-rich foods for less-expensive calorie-dense, nutrient-poor foods, or delaying medical care to pay for food.¹²

These struggles and poor outcomes may be further amplified in high cost-of-living regions. Over 18 million Americans living in areas with a cost-of-living more than 40% of the US average.¹³ This estimate only includes metropolitan areas and therefore likely underestimates those living in suburban or rural areas with a higher cost of living. The Parachute to Aspen Corridor (PAC) region in the Roaring Fork Valley in Colorado is one such region with a high cost-of-living (see Figure 1.1.). This rural region is a prominent draw for tourists who come for world class ski resorts in Aspen and summer recreation in surrounding areas. The tourism industry along with oil and agriculture also draw many to this region seeking employment. Though among the 85,000 year-round residents, finding housing presents substantial challenges for many. In December 2024, the median home price in Aspen was \$3 million (range: \$26,000 - \$69 million).¹⁴ In order to find affordable housing, workers often have to travel up to two hours one-way between Aspen and the town of Parachute, CO. A family of four must report income below 130% FPL (\$41,000) or 200% FPL for broad-based categorical eligibility (\$62,000), meaning they are current recipients of other federal assistance programs.^{4,15} Yet, the estimated living wage, or the amount of income needed in this region to afford basic needs including food, housing, childcare, etc. is between \$127,977 - \$156,597.¹⁶ Households living in this \$65k-115k wage gap may have to turn

to other coping strategies to combat food insecurity as they lack access to federal assistance options.

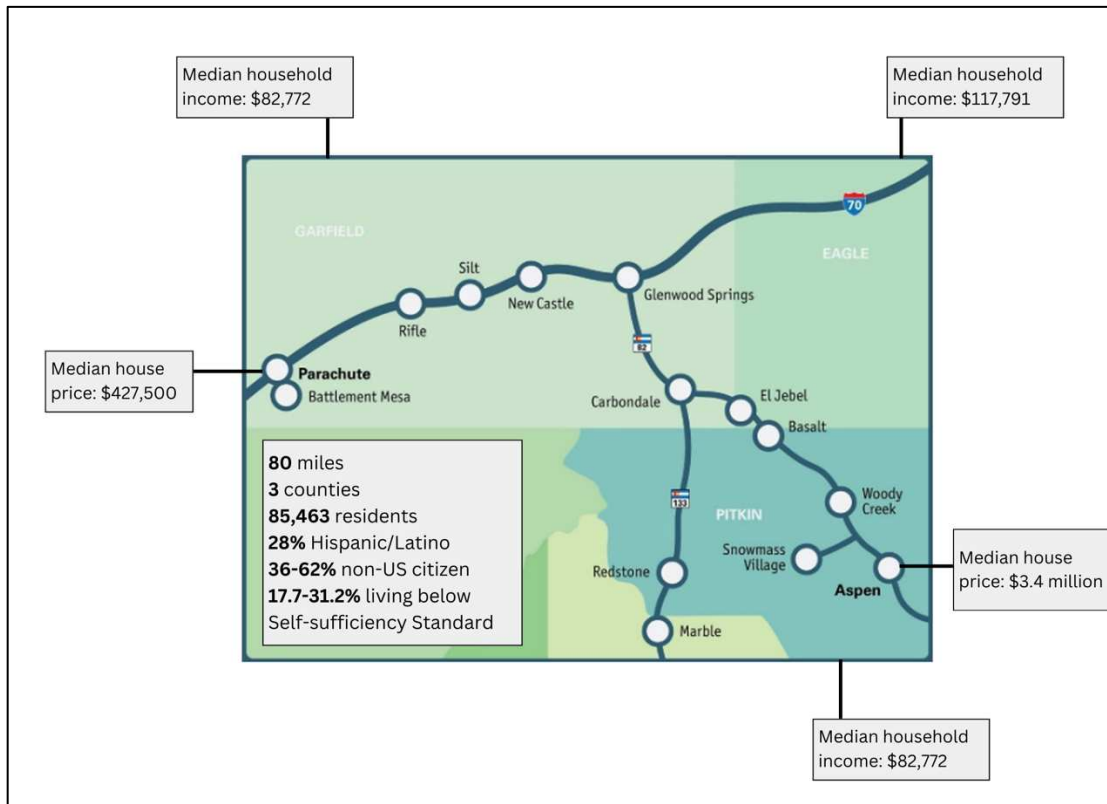


Figure 1.1. Map of the Parachute to Aspen Corridor (PAC) Region spanning Pitkin, Eagle, and Garfield counties in the Rocky Mountains and Roaring Fork Valley in Colorado. Source: Aspen Community Foundation and US Census Bureau.

In 2021, a partnership was formed between the STOP (Systems Thinking for Obesity Prevention) laboratory in the Food Science and Human Nutrition Department at Colorado State University and the Mountain Coalition for Food and Nutrition Security. This coalition includes regional food assistance partners, healthcare organizations, and public health departments across Pitkin, Eagle, and Garfield counties. In response to increasing rates of regional food insecurity, this coalition wanted to better understand food insecurity in the region and develop a strategic multi-year plan to end food insecurity in the PAC region. In addition to food insecurity, the coalition noted regional issues in accessing affordable housing, childcare, and transportation. This

dissertation research focuses on the work of this collaborative university-community partnership to both provide usable data for community partners and increase our understanding of the experiences and behaviors related to food insecurity in a high cost-of-living “resort-rural” region.

The overall objective of this research was to understand the experiences and coping strategies of food insecure households living in this high cost-of-living region, particularly those caught in this wage gap between being eligible for federal food assistance and being able to afford basic needs. As a newly formed partnership, our research team also sought to build context and gain a deeper understanding of the region’s unique challenges. Equally important, we aimed to honor our community partners’ priorities by ensuring that this work provides meaningful insights into regional food insecurity and supports local efforts to address it. To address our overarching research objective, we used a multi-method research approach to provide quantitative estimates of coping strategies (aims 1 and 2) and provide more nuanced qualitative insights into the lived experiences of how community members navigate food insecurity in this region (aim 3).

2. Research aims

Research Aim 1: Examine whether there are differences between households below and above income guidelines for SNAP (130% FPL) in how they access charitable food assistance.

Research Aim 2: Examine whether there are differences between households below and above income guidelines for SNAP (130% FPL) in how they engage in economic tradeoffs between food and other basic needs (i.e., medicine and housing).

Research Aim 3: Explore the lived experience of individuals facing food insecurity in a high cost-of-living region including what factors influence food access and how people navigate food insecurity in their community.

Since households caught in this wage gap may not be eligible to participate in federal food and nutrition assistance programs, we hypothesize that these households with gross incomes above 130% FPL will be more likely than those below 130% FPL to access charitable food assistance sources that do not have income requirements such as food pantries, soup kitchens, or other free food or meals services (aim 1). We also hypothesize that households with income above 130% FPL would be more likely than those below 130% FPL to engage in economic tradeoffs between food and other basic needs including medicine, housing, utilities, childcare, education, and transportation (aim 2). As our third aim is qualitative and exploratory in nature, we do not have specific hypotheses. However, the goal for this aim, rather, was to increase engagement in research activities among residents and empower them to further participate in research or advocacy efforts to promote food security for themselves and for this region.

There are two theoretical frameworks that guide this dissertation research. First, is the pillar of food insecurity framework developed by the Food and Agriculture Organization of the United Nations.¹⁷ Here, access is one of the key pillars of food security (availability, utilization, and stability the others). This dissertation work explicitly explores the factors that influence access to food, including economic (i.e. household income), environmental (i.e. food source availability), social (i.e. race, sex), and structural (i.e., federal assistance programs) factors. The other pillars of food insecurity included in this framework¹⁷—availability, utilization, and stability—were not explicitly explored as a part of this dissertation.

Second, this work explores the framework of coping strategies that individuals utilize to handle the stressors of food insecurity such as use of food assistance and engagement in economic tradeoffs developed by Seligman and Berkowitz.¹⁸ Coping strategies are the cognitive or behavioral mechanisms individuals use to minimize the impacts of stressors.¹⁹ The framework from Seligman and Berkowitz (2019) demonstrates coping strategies that individuals use when faced with food insecurity across multiple levels – at the individual-, household-, community-, and policy/systems-level. Two coping strategies that are explored here are use of charitable food assistance, defined here as food assistance that does not have income requirements (i.e., food pantries or soup kitchens) (Aim 1) and engagement in economic tradeoffs, or tradeoffs between food and other basic needs like medicine or housing (Aim 2). These frameworks will be detailed further in chapter 2.

Figure 1.2 is a conceptual model that illustrates the relationship between the research aims and integrates the frameworks. This model demonstrates the proposed relationship of household income with use of charitable food assistance (Aim 1) and engagement in economic tradeoffs (Aim 2), drawing directly from the Seligman and Berkowitz coping strategies framework.¹⁸ It also shows participant-identified factors that shape how individuals in this region navigate food insecurity and perceive food access in this region (Aim 3), which may offer insights into how they engage in coping strategies (thereby informing how the coping strategies framework is concordant or discordant with the lived experiences of residents). Aim 3 also helps us identify factors that may influence the food access pillar of food security within this community. Additionally, this work explores how income may influence the coping strategies that households utilize. The solid black arrows depict variables assessed in this research. The dotted black arrows

are covariates that were accounted for, and the blue dotted arrows are hypothesized, but not tested relationships.

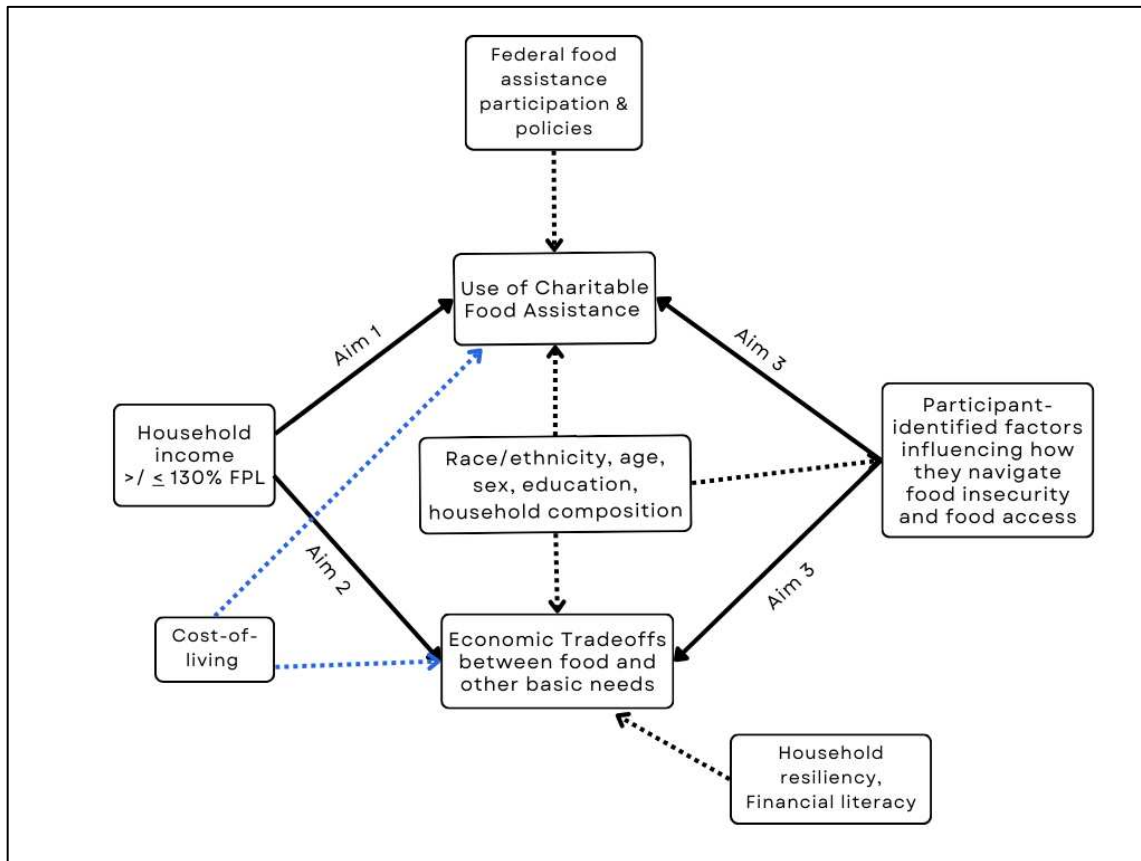


Figure 1.1. Conceptual Model illustrating the relationship between Research Aims 1, 2, and 3, and the independent variable (income) and covariates.

Note: Solid black arrows represent variables assessed. Dotted black arrows represent covariates that were assessed and adjusted for in analytic models. Dotted blue lines represent hypothesized relationships that were not directly measured in this research.

CHAPTER 2. LITERATURE REVIEW

The focus of this literature review is to provide an overview of food and nutrition insecurity in the United States, discuss limitations in our understanding of how households face food insecurity, and present existing evidence on how households cope with food insecurity. The review begins by defining and describing the current state of food insecurity within the United States. Two theoretical frameworks that underlie this dissertation research will be presented in depth. First, the factors that influence the access pillar of food security, including existing evidence on both the determinants and implications of food and nutrition security will be discussed. Second, the coping strategies individuals use to combat food insecurity, including federal and charitable food assistance and economic tradeoffs between food and other basic needs will be presented.

1. Food Insecurity

1.1 Defining Food Insecurity

Food security is defined as the uninterrupted access to enough food to support an active, healthy life.²⁰ Food security includes at least 1) the availability of nutritionally adequate and safe food and 2) the ability to acquire such foods in “socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).”²⁰ Food insecurity, then, is defined as limited access to nutritionally adequate and safe foods or limitations in the ability to access these foods in socially acceptable ways.²⁰

Food security is conceptualized based on four pillars; availability, access, utilization, and stability.²¹ Availability refers to the supply of food as determined by food production and trade

operations. Access to food is based on whether individuals have economic or physical access to the foods that are available. Utilization is described by the way the body makes use of the nutrients from foods and thus indicates the nutritional status of an individual. Lastly, stability is the occurrence of the previous three dimensions over time.¹⁷

1.2. Food Security and Food Access Framework

Food security and food access are related concepts, though as mentioned, food access is just one dimension of food security. Without adequate and consistent access to food, individuals may experience food insecurity.²² The concept of food access is determined by multiple factors including economic, environmental (physical), social, or structural factors. These factors include environmental aspects such as the physical access to food, which often evaluates distance and travel time to food retailers and access to cooking appliances that enable the capacity to prepare foods in the home environment.^{23,24} Economic access to affordable and healthy foods (e.g., fruits and vegetables) or less healthy foods (e.g., fast food), and consumer food consumption behaviors^{25,26} may be impacted by household income, employment status and cost-of-living.^{6,27} Social factors that may determine access to food include race/ethnicity, sex, ability, sexual orientation, and education.² Outlined in sections 1.3 and 1.4 below, some households may experience disparities in prevalence in of food insecurity, in part due to issues with access to food. In addition, social or support networks may impact access to foods through connecting to individuals to food resources.²⁸ Lastly, structural factors in food access include who has access to federal nutrition assistance programs such as SNAP.²⁹

It is important to point out that food security is a condition that can occur from inadequate food access, but also encompasses aspects of availability and utilization of foods, and stability of these previous aspects over time.²¹ The way in which food security is measured differs from how food access is measured. In section 1.6 of this chapter, I will outline how food security relies on economic measures of access. In this dissertation research, we measure food access through charitable food assistance (see Ch. 4) and explore factors that influence food access in the qualitative phase of this research (see Ch. 5) to better understand regional issues related to food security.

1.3. Prevalence and Trends of Food Insecurity

In 2023, food insecurity impacted 13.5% (18 million) of US households.² This represents an increase from 10.5% in 2019,³⁰ before the COVID-19 pandemic, and from rates in 1995 when food insecurity was first measured — 11.9%.³¹ Though, not all households are at equal risk for experiencing food insecurity. Households with children experience higher rates of food insecurity (17.9%) compared to households without children (11.9%), especially those headed by a single female or male (34.7%, 22.6%, respectively).² In 2023, Hispanic and Black households were more than twice as likely to experience food insecurity compared to White households (21.9% and 23.3%, respectively vs 9.9%).² Though current measurement of food security at the national level is not able to provide statistics on Indigenous populations, a recent systematic review estimates that 45.7% of American Indian and Alaska Native households experience food insecurity.³²

1.4. Determinants of Food Insecurity

The underlying causes of food insecurity are multifactorial, influenced by both economic and social factors.¹ Economic conditions include household income and assets available, home ownership,³³ and employment.³⁴ Income has been strongly linked to food insecurity. In 2023, 38.7% of households with income below the federal poverty line experienced food insecurity compared to 7.5% with income above 185% Federal Poverty Level (FPL).² However, income and food insecurity are not perfectly correlated, meaning that not all those living in poverty experience food insecurity and some living above poverty experience food insecurity.³³ For example, the USDA report on Food Security in the US in 2023 shows that 48.9% of households experiencing food insecurity reported income above 130% FPL while 34.5% reported income below 130% FPL (see Figure 2.1). Food security among lower income households may be in part due to federal nutrition assistance programs that target low-income households³⁵ or other conditions such as financial assets beyond salary or wages like payments from stocks or real estate³⁶ that may shield households from food insecurity. On the other hand, food insecurity among households living above poverty may be related to fluctuations in income throughout the year or changes in household composition.³⁷

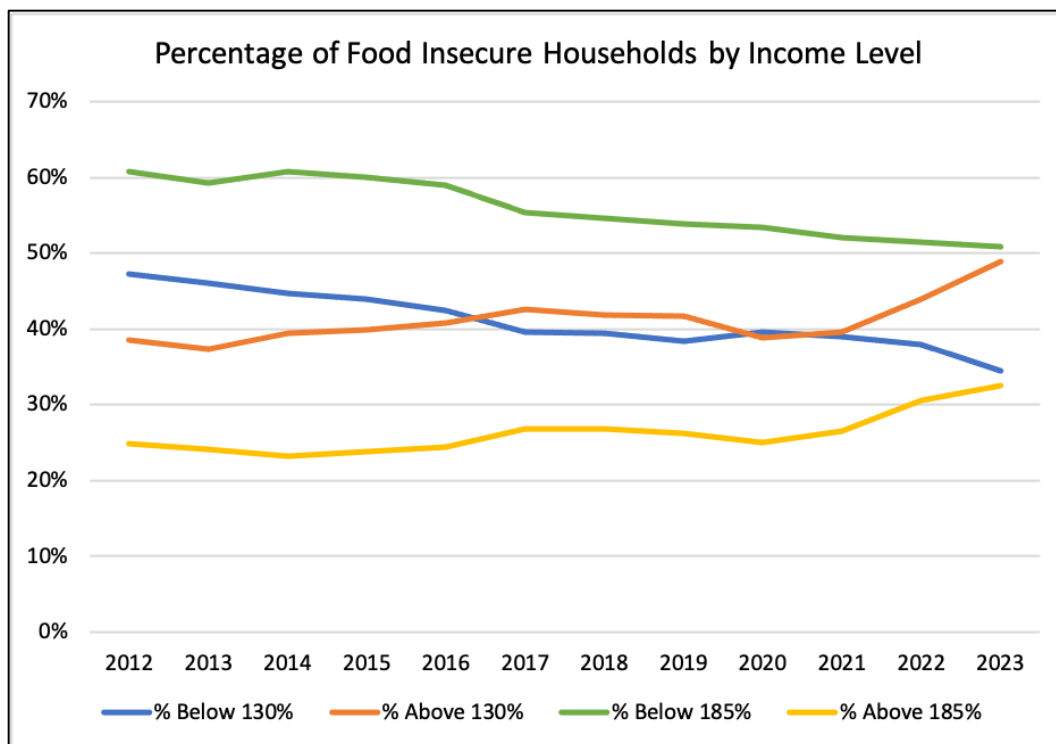


Figure 2.1. Percentage of Food Insecure Households by Household Income Level 2012-2023. *Note:* Income levels are percentages of the federal poverty level (FPL). 130% FPL is the national income guideline for the Supplemental Nutrition Assistance Program and free lunch from the National School Lunch Program (NSLP). 185% FPL is the national income guideline for the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and reduced lunch from the NSLP.

Beyond income, social factors such as household composition, race/ethnicity, sex, marital status, sexual orientation, education, housing status, geographic location and the built environment can also impact whether a household experiences food insecurity. The disparate rates in food insecurity mentioned previously demonstrate the impact of social factors on food security status. Geographic location (i.e. urban vs. rural) and the built environment (or the spaces that make up our surrounding including our home, buildings, workplaces, schools, streets and sidewalks, green spaces, and transportation)³⁸ also play a substantial role in how people access foods and therefore, the food security status of households and the larger community. Both rural and urban areas experience higher rates of food insecurity compared to suburban areas.² In urban areas,

food insecurity may be exacerbated by lack of affordable and nutritious food options for disadvantaged households of lower income, Black, Indigenous, Hispanic and other People of Color.³⁹ In rural areas, issues of food insecurity are tied to having limited access to food retailers, lower wages, and limited transportation and childcare options.⁴⁰ In addition, people experiencing chronic disease and disabilities also have an increased risk of food insecurity.^{12,41}

Yet, there are also further upstream structural factors that may lead to food insecurity. Structural racism and discrimination have been tied to persistent disparities in rates of food insecurity between white and other racial groups. Structural racism is defined as the facilitation of racial discrimination at a societal level through policies and systems that perpetuate disparities in socioeconomic status including inadequate access to food, healthcare, education, housing, employment.⁴² Racial disparities in food insecurity rates are products of the upstream systems and policies such as residential segregation that affects education opportunities by permitting segregated schools, and employment opportunities through limited higher paying jobs in communities of color.⁴³ There is also a large body of evidence⁴³ that highlights racial disparities in neighborhood access to affordable, nutritious, and culturally relevant foods for communities of color. Studies by Powell et al (2007) and Zenk et al (2004) both found that Black and Hispanic neighborhoods had less access to supermarkets compared to white neighborhoods.^{44,45} A more recent study of 2020 Census data showed that predominantly low-income Black and Hispanic neighborhoods have lower access to high quality food stores compared to predominantly low-income Non-Hispanic White neighborhoods.⁴⁶ In addition, higher concentration fast food restaurants that may contribute to lower diet qualities have been reported in neighborhoods that are predominantly people of color compared to predominantly white neighborhoods.^{44,47-49}

Addressing these structural factors is critical in identifying viable solutions to reducing racial and ethnic disparities in food insecurity and overall food insecurity rates.

1.5. Consequences of Food Insecurity across the Lifespan

As a social and economic condition, food insecurity itself is a social determinant of health and therefore has implications for other aspects of well-being.⁵⁰ The consequences of food insecurity are far reaching, including physical and mental health outcomes for individuals and economic costs at both the individual level and larger societal scale. Food insecurity also affects individuals across the lifespan from childhood through older adulthood.

Food insecurity implications for children

Food insecurity has multiple implications for physical and mental health outcomes among children. A recent longitudinal study demonstrated that high risk of food insecurity was related to reduced dietary quality including higher intake of sugar sweetened beverages, non-whole grain cereals, processed meat, food away from home, and ultimately increased risk for obesity by age 22.⁵¹ Household food insecurity has also been associated with numerous medical concerns for children including higher rates of asthma, emergency room visits, and delayed treatment due to cost.⁵² Negative mental health, behavioral, and academic outcomes may also greatly impact children living in food insecure households.¹¹ A systematic review by Shankar et al (2017) found that food insecurity among children (even at marginal food security levels) had adverse physical, cognitive, emotional, and behavioral impacts across age ranges. Infants and toddlers showed developmental delays, insecure child attachment, and reduced scores on cognitive assessments. Among preschoolers, there was greater risk of internalizing and externalizing behaviors,

aggression, anxiety and depression. School age children were more likely to miss school, experience mental health issues, and worsened academic performance. Adolescents were also more likely to experience mental health issues including anxiety, depression and suicidal ideation.¹¹

Food insecurity implications for adults

Consequences among adults living in food insecure households include increased risk for chronic disease such as type 2 diabetes and hypertension,¹⁰ and being overweight or obesity (particularly among women).⁵³ These poor health outcomes are likely related to poor dietary intake including increased consumption of energy dense foods and beverages that tend to cost less money and decreased consumption of fresh fruit and vegetables. Households experiencing food insecurity may opt for a higher calorie per dollar food options⁵⁴ that also require little or no preparation time⁵⁵ and may be easier to access than fresh fruits and vegetables in areas of low food access.⁵⁶

Food insecurity implications for older adults

Older adults experiencing food insecurity are also at risk for poor health outcomes. Older adults are more likely to have nutrient deficiencies associated with poor dietary intake and poor health outcomes including depression, hypertension, heart disease and limitations in activities of daily life.⁵⁷ In one study of older adults in Portugal, food insecurity was associated with increased likelihood of diabetes, pulmonary and cardiac disease, and obesity. This study also found that older adults experiencing food insecurity were more likely to avoid medical treatment or forego medicine due to financial constraints.⁵⁸ Older adults experiencing food insecurity were found to

have 20% increased risk of limitations in mobility which may impact their overall quality of life.⁵⁹

Broader implications from experiencing food insecurity

These negative consequences among children, adults, and older adults impacted by food insecurity have broader societal consequences. Poor health and educational progress can lead to reduced productivity among the US workforce and potential for reduced military readiness. On an economic scale, households that experience food insecurity have been shown to have 20% higher annual health care expenditures.⁶⁰ With 36% of the population covered by public health insurance,⁶¹ this increased cost of health care among food insecure households has larger implications for the amount of federal funding spent on health care. In 2010, hunger was estimated to cost the US \$167.5 billion, before accounting for expenditures on federal food and nutrition programs.⁶²

1.6 Measurement of Food Insecurity

Many tools exist to measure food insecurity including the Food Insecurity Experiences Scale from the Food and Agriculture Organization (FAO),⁶³ the US Agency for International Development Household Food Insecurity Access Scale,⁶⁴ and the Household Food Security Survey Module (HFSSM) administered in the Food Security Supplement on the Current Population Survey (CPS-FSS) from the US Census Bureau.⁶⁵ For the purposes of this review, focus will be on the US Household Food Security Survey Module.

The Food Security Supplement is a survey provided within the Current Population Survey every year in December to reflect the food security status of households over the past 12 months. In 2023, it was administered to a random sample of 30,863 US households.² The HFSSM was first administered in 1995 in response to proposals for increased assessment of food security and nutritional status from the National Nutrition Monitoring and Related Research Act of 1990.⁶⁶ The full core module is based on household composition; all households respond to 10 items and those with children respond to an additional 8 items for 18 total items. The items on the core module address situations and behaviors such as concerns of meeting needs with insufficient resources, running out of food, reducing food consumption, and feeling unable to eat adequately. It is designed in a 3-stage screening process with less severe indications of food insecurity in the beginning with more severe indications later in the module. See Appendix 1 for the full HFSSM. A key component of the HFSSM is that all items are associated with financial constraint as the reason for the food insecure situation or behavior.⁶⁷ When the 10/18-item survey cannot be administered, a 6-item short form is available. This short form helps to reduce participant burden; however, it is less reliable and precise than the full core module.⁶⁸

While the HFSSM has been essential in providing prevalence and severity of food security status of the US population over the past 30 years, some limitations should be noted. Food insecurity is acknowledged as both an economic and social condition. Yet, the HFSSM only measures food security based on economic conditions and does not measure tenets of food security such as food safety, nutrition, and ways of accessing food in socially acceptable ways.⁶⁷ The Current Population Survey also does not include any households that are institutionalized or unhoused and there is limited representation of several populations including Indigenous, LGBTQ+

(Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, and other non-straight, non-cisgender identities not previously recognized)⁶⁹ and persons with disabilities. This lack of representation from population groups that have been shown to have high rates of food insecurity in other studies^{32,70,71} may bias estimates downward. However, the survey has been a reliable and comprehensive tool that is easy to administer, taking on average, less than four minutes to complete.⁶⁷

When application of the full 10/18-item or the 6-item subset is not possible, screening tools may be used to assess risk for food insecurity. The Hunger Vital Sign is a 2-item screening tool that can be used in a variety of settings and applications to quickly identify households that may be at risk for food insecurity.⁷² The two items, taken directly from the HFSSM, ask “Within the past 12 months we worried whether our food would run out before we got money to buy more” and “Within the past 12 months the food we bought just didn’t last and we didn’t have money to get more”. If respondents answer “often true” or “sometimes true” to either or both of these statements, they are screened at risk for food insecurity.

Developed by Hager et al (2010), the Hunger Vital Sign was determined to have a 97% sensitivity (ability to correctly identify food insecurity) and 83% specificity (ability to correctly identify food security). Convergent validity was also confirmed through regression analysis demonstrating similar associations of food insecurity using the screener with negative health outcomes to food insecurity using the 18-item HFSSM.⁷² Although the screener was initially only validated among children,⁷² further testing confirmed sensitivity and specificity among a more diverse population including households below 200% FPL, with children or older adults

over 60 years, with Black, Hispanic, and those with a disability.⁷³ The benefits of the Hunger Vital Sign include the capacity for rapid clinical screening of food insecurity risk that reduces administration barriers. This can allow health care practitioners to recommend food access resources to patients experiencing food insecurity and other comorbidities. While this screener has been validated across many populations, its' use may be limited among households above 200% FPL or those living in rural or high cost of living regions.

1.7 Integrating Efforts in Food and Nutrition Security

Nutrition security is defined as "having consistent access, availability, and affordability of foods and beverages that promote well-being and prevent (and if needed, treat) disease."⁷⁴ While nutrition security is not a new concept,⁷⁵ it is receiving considerable attention recently. This attention is partly in response to continued deficits in the nutritional status of US individuals,⁷⁶ which have been linked to increased risk for diet-related chronic disease and death.⁷⁷ Though poor nutrition may exist throughout the US, the COVID-19 pandemic highlighted stark disparities across sex, race, and income.⁷⁸ Thus, the recent calls to action from the USDA expands upon the tenets of food security to emphasize health equity and acknowledge and dismantle the structural inequities that make access to healthy, safe, affordable, nutritious, and culturally relevant more challenging for populations who have historically experienced greater risk of food insecurity.⁷⁹

2. Federal Food and Nutrition Assistance Programs and Food Insecurity

2.1. Overview of Federal Food and Nutrition Assistance Programs

One of the key strategies for combatting food insecurity (and poverty) in the US is the federal food and nutrition assistance programs.⁸⁰ The USDA Food and Nutrition Service branch oversees 16 federal food and nutrition assistance programs. Their mission is “to increase food security and reduce hunger by providing children and people with low-income access to food, a healthy diet, and nutrition education.”⁸⁰ Nutrition assistance programs include the Supplemental Nutrition Assistance Program (SNAP), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and Farmers market nutrition programs. Child nutrition programs include the National School Lunch Program (NSLP), and the Child and Adult Care Food Program (CACFP), among others. Other programs involve food distribution such as the Food Distribution Program on Indian Reservations (FDPIR) and The Emergency Food Assistance Program (TEFAP).⁸⁰ While all programs are designed to combat food insecurity among different populations, the following section will focus on SNAP as it is the largest federal nutrition assistance program in the US. In 2023, SNAP served over 42 million recipients, about 12.6% of the US population.⁸¹ Eligibility for SNAP is primarily limited to households with incomes at or below 130% FPL. As a result, some food-insecure households with incomes just above this threshold do not qualify for SNAP benefits. This dissertation focuses on SNAP because of its central role in addressing food insecurity and the potential gap in assistance for those who exceed the eligibility criteria.

2.2. Overview of The Supplemental Nutrition Assistance Program (SNAP)

Formerly known as Food Stamps, SNAP works to provide financial support to low-income households facing challenges with food insecurity. SNAP is authorized by the Nutrition Title

(IV) of the Farm Bill and housed within the US Department of Agriculture (USDA) Food and Nutrition Services, which sets federal guidelines for eligibility, administration, and benefit levels. There are several eligibility guidelines that determine whether an individual is able to receive SNAP benefits. As a means-tested program, SNAP households must meet the following national income limits: gross income, meaning household income before taxes and deductions, must be no more than 130% of the federal poverty level (FPL) and net income, meaning income after taxes and deductions, must be no more than 100% FPL.⁴ Deductions may include a 20% deduction from earned income, standard deductions, dependent care, shelter and medical care deductions. Current national asset limits for SNAP are set at \$3,000 (money in a bank account) for households (\$4,500 for adults over 60 years or with disabilities).⁴ There are additional work requirements for able bodied adults without dependents that state recipients must work at least 20 hours each week to receive SNAP. If this requirement is not met, their benefits may terminate after 3 months within a 36-month period.

Though national income levels exist for SNAP, it is at the state level that eligibility is determined, and benefits are administered.⁸² For example, several states, including Colorado, set gross income guidelines to 200% FPL for those that may be categorically eligible for SNAP.⁸³ This broad-based categorical eligibility is for households that are already eligible for other federal assistance programs such as Temporary Assistance for Needy Families (TANF) and is designed to expand access to food assistance for households in need.⁸⁴ Many other states operate at national income guidelines set to 130% FPL. All states require that recipients meet national net income guidelines at 100% FPL. Other variability in eligibility determination at the state level includes asset limits. The standard federal asset limit is \$3,000, though states can use Broad-

Based Categorical Eligibility (BBCE) to align the asset test for SNAP with TANF (Temporary Assistance for Needy Families), which may increase asset limits (i.e., \$5,000 in Texas) or eliminate them altogether.⁸⁵ In addition, states have authority over recertification periods, which can be lengthened to reduce administrative burden and improve access to SNAP benefits for families.⁸⁶

Once a household has been deemed eligible for SNAP benefits, they receive benefits via electronic benefits transfer (EBT) card. Households are able to use this EBT card at any food retailers that accept SNAP. Though most food and many beverage options are allowed for purchase using SNAP, items that cannot be purchased with SNAP include alcohol, tobacco, supplements, vitamins, medications, hygienic products, cleaning supplies, and ready-to-eat meals.⁸⁷ Although states also have authority over ready-to-eat meals, and in some cases, like Arizona and California allow ready-to-eat meals to be purchased through SNAP and Restaurant Meals Program, expanding access to individuals (i.e., older adults, people with disabilities, unhoused) who may not have access to cooking equipment or the ability to prepare meals for themselves.⁸⁸

2.3. The Role of The Thrifty Food Plan in SNAP Benefit Determinations

Monthly benefit amounts are calculated based off household size, income, and the cost of foods as determined by the Thrifty Food Plan (TFP). The Thrifty Food Plan is one of four dietary plans created by the USDA that consists of amounts of foods and beverages that make up a nutritious diet at a low cost. The total cost amount is calculated by an equation which considers age- and sex-based variations for Dietary Reference Intakes for nutrients, *Dietary Guidelines for*

Americans food-group recommendations, current consumption patterns, calories needed for activity levels, current food prices, and market basket cost limits. Current consumption patterns are based on data collected from the dietary component of the National Health and Nutrition Examination Survey (NHANES), What We Eat in America, which collects 24-hour dietary recall data. These consumption data are then evaluated for nutrition composition and food-group make-up using the USDA Food and Nutrient Database for Dietary Studies and the USDA Food Patterns Equivalents Database. Then, the USDA Purchase to Plate Price Tool estimates the prices of food observed in the consumption pattern data. Next modeling categories are created using an optimization model that consider these above inputs and constraints to create a market basket amount.⁸⁹

Monthly updates to the TFP reflect changes in the consumer price index. Prior to 2021, monthly changes to the TFP were cost-neutral, but the 2021 update removed this restriction of cost-neutrality to better reflect current food prices and food consumption behaviors. The Thrifty Food Plan sets the maximum SNAP benefit allotment that a household can receive.⁸⁹ The 2021 update led to a 21% increase in SNAP benefits for households.⁹⁰ For fiscal year 2025, the TFP was set to \$975.70 for a month for a reference family of 4 (two parents, 20-50 years, and two children, one 6-8 years and one 9-11 years).⁹¹ Benefits are determined by first accounting for all applicable deductions such as shelter, childcare, and earnings deductions from a household's gross income. This net income is then used to determine an assumed value for how much a household contributes from their own income to purchase food (30% of net income). Benefits are calculated by subtracting that contribution towards food from the maximum allotment or the TFP for each

household size.⁹² Figure 2.2 provides an example from the USDA on how benefits may be calculated for a family of four.

Benefit Computation	Example
Multiply net income by 30%... (round up)	\$1,056.50 net monthly income from above calculation x 0.3 = \$317
Subtract 30% of net income from the maximum allotment for the household size...	\$975 maximum allotment for 4-person household - \$317 (30% of net income) = \$658, SNAP Allotment for a full month

Figure 2.2. Example calculation of SNAP benefits for a family of four. (Source: USDA Food and Nutrition Service)

Some limitations of the Thrifty Food Plan are worth noting. Some have pointed out the time and skills needed to prepare foods at home as outlined by the TFP. Davis and You (2010) used economic modeling to determine that the time outlined to prepare recipes within TFP guidelines was far greater (14 hours) compared to the estimated time needed to maintain TFP at an efficient labor cost to prepare meals (6.4 hours).⁹³ Although, updates to the TFP in 2021 aim to include more convenience items (e.g., pasta sauce in a jar and canned beans) that may reduce food preparation time.⁸⁹ Others have debated the practicality of the Thrifty Food Plan. Zhao et al. (2025) demonstrates how the TFP models are largely dependent on cost and food groups, but do not accurately reflect consumer preferences or consumption patterns.⁹⁴ Lastly, the TFP states that geographic differences in food prices are considered, though there is scant documentation of this and ultimately no regional variation of the TFP for the 48 contiguous states.⁸⁹ This may underestimate the cost of a low-budget, nutritious diet in high cost of living regions across the continental US, though more research is necessary to investigate this claim.

2.4. Overview of Other Federal Food and Nutrition Assistance Programs

Though SNAP is the largest federal nutrition assistance program in the US, others are worth briefly noting as a part of this dissertation, since they are also available to families that are low-income and/or experiencing food insecurity. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) serves people who are pregnant or breastfeeding, postpartum moms up to six months, infants, and families with children up to five years old. In 2024, 6.8 million individuals were served through WIC, which is only about 54% of the eligible population across the US.⁹⁵ Additional requirements for WIC include that an individual is at nutritional risk (e.g., underweight, poor diet, anemia) and meets income limits that do not exceed 185% FPL. Similar to SNAP, WIC recipients receive benefits via EBT card. However, these benefits are only to be used on foods within the WIC food package, a list of foods and amounts that aim to support the dietary needs of the individuals receiving WIC (e.g., infant formula or baby food). In addition to food benefits, WIC recipients also receive nutrition counseling, education, and breastfeeding support.⁹⁶ the National School Lunch program, the 2nd largest federal assistance program, provides nutritious lunch at no cost to children of households with income less than 130% FPL, and reduced cost to for those with income less than 185% FPL.⁵ In fiscal year 2024, almost 30 million students participated in the NSLP with 20.4 million students receiving free lunches and 900,000 students receiving reduced price lunches.⁹⁷

2.5 Other Federal Assistance Programs Targeting Low-Income Households

In addition to programs that target food and nutrition for low-income households, several federal programs exist that provide additional financial assistance for these households. Households that are eligible for one program may often qualify for another federal assistance program, adding to

their over assistance benefits. In fact, about 12% of adults and 33% of children participated in more than one federally funded assistance programs in 2019.⁹⁸ This section highlights the benefits that are available to lower income households, but also represents the numerous benefits that may not be available to households making just over income eligibility guidelines, especially in higher cost-of-living regions.

Programs such as TANF (Temporary Assistance for Needy Families) provide cash assistance for families with children. In an average month in 2023, TANF served about 497,500 adults and 1.5 million children across the US, providing an average of \$650 assistance each month.⁹⁹ The Supplemental Security Income (SSI) program provides monthly benefits to lower income older adults and people with disabilities. In 2023, the SSI program reported 7.4 million recipients (4 million ages 18-64, 2.4 million 65 years +, 1 million under 18 years).¹⁰⁰ Medicare and Medicaid are two federally funded health insurance programs that serve individuals 65 years and older or with disabilities and those with limited income, respectively. Most states set income eligibility for Medicaid to 138% FPL, although some states differ from this (i.e. Connecticut – 160% FPL, New York – 140% FPL).¹⁰¹ Over 47 million Americans received Medicare (14.7% of US population) and 69 million received Medicaid (21%) in 2023.¹⁰² Additional programs include public housing programs for low-income households with income at 80% local median income¹⁰³ and low-income energy assistance program (LIHEAP) to assist with utilities for households with income below 150% FPL.¹⁰⁴

2.6. Poverty, Income, and Cost of Living

As discussed earlier, federal assistance programs are means-tested programs and therefore have eligibility requirements which include monthly income limits. Income guidelines for federal food and nutrition assistance programs use poverty guidelines, informally referred to as the federal poverty level (FPL), which are based off of federal poverty thresholds. Poverty thresholds are measured on an annual basis through the Census Bureau. The poverty threshold then takes into consideration annual changes in the consumer price index to determine the federal poverty guideline or level. The federal poverty level for a household of four in 2025 is \$32,150.¹⁰⁵ The original poverty threshold was developed by Molly Orshansky of the Social Security Administration in 1964. This measure was based off findings from the 1955 Household Food Consumption Survey that estimated households spent about one third of their net income (after taxes) on food. She used what was then called “the Economy Food Plan” (now the Thrifty Food Plan) and multiplied the cost of the economy food plan by a factor of three to arrive at the poverty threshold. Importantly, Orshansky made clear that poverty thresholds were a measure of income inadequacy, and that the economy food plan was designed for “temporary or emergency use.”¹⁰⁶ These standards, developed more than a century ago, are still used to determine who is considered in poverty and who is eligible for federal assistance programs.

In addition, similar to the thrifty food plan, there is no regional variation for the poverty guidelines across the 48 contiguous states. This may present issues for regions across the continental US that experience higher cost of living. Households living in higher cost of living regions pay more for basic needs including food, housing, utilities, and transportation. While some may have opportunities for higher paying jobs in high cost of living regions, their purchasing power may be reduced by the higher cost of basic needs.¹⁰⁷ Indeed, the actual cost of

living may be much higher than average wages for many. The living wage calculator by the Massachusetts Institute of Technology (MIT) provides county-level estimates of a living wage, or how much income (at full-time) is needed to meet basic needs for different household levels.¹⁶ Unlike the Official Poverty Measure, the living wage considers not just the number of individuals in the household, but the composition, for instance, a family of four with 1 working adult and 3 children.

Another measure, the Self Sufficiency Standard (SSS) estimates how much income is needed to meet basic needs without the help of public assistance (e.g., SNAP or WIC) or private assistance (e.g., food pantries or soup kitchens). The basic needs considered by the SSS include housing, food, utilities, health care, childcare, transportation, and other items like clothing or household items. Similar to the Living Wage estimate from MIT, the SSS considers household composition, but also considers the age of children as the cost of basic needs changes based on a child's age.¹⁰⁸ Both the MIT Living Wage Calculator and SSS also provide county level estimates that vary based on regional changes in the cost-of-living unlike the nationwide estimate for the official poverty measure.

These wages far surpass the income needed to be eligible for federal food assistance programs like SNAP and minimum wages for the state of Colorado. Figure 2.3 shows the varying levels of income across the PAC region (the area in and around Aspen, CO that was the focus of this dissertation). Figure 2.3 also illustrates the income gap between being eligible for programs like SNAP and being able to afford basic needs.

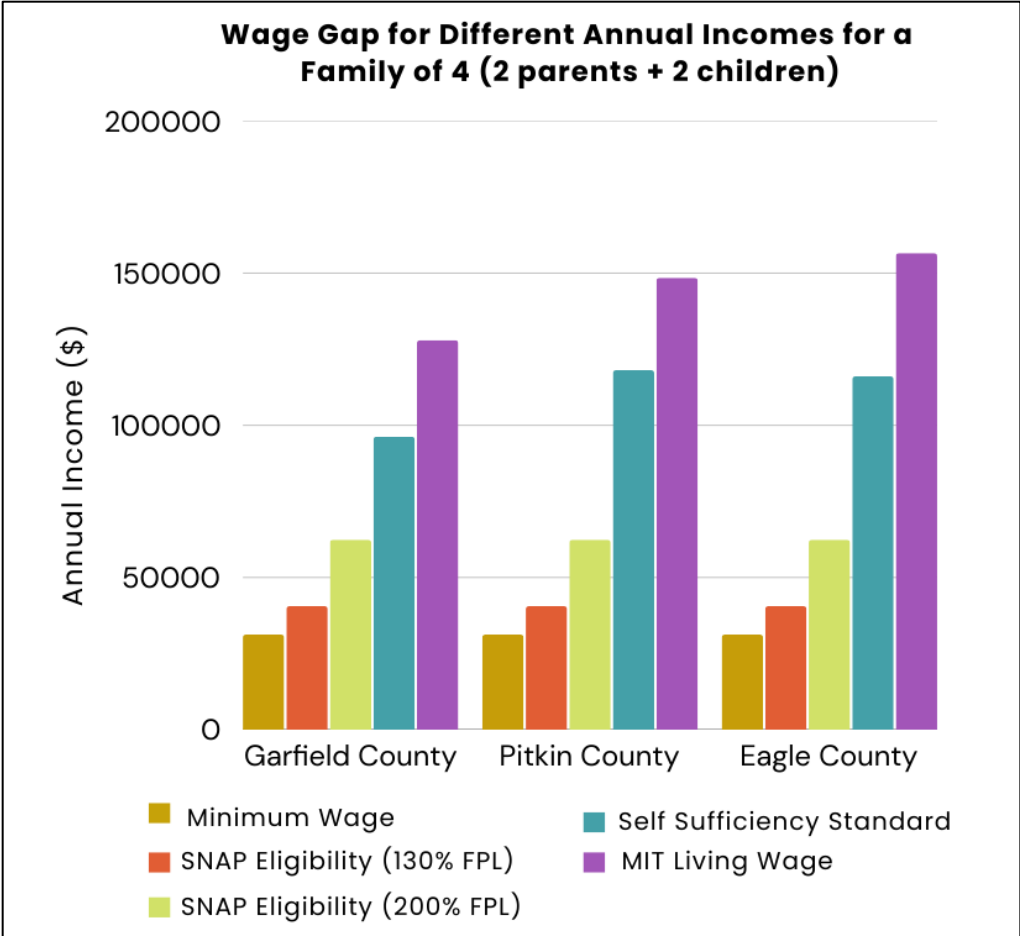


Figure 2.3. Wage Gap for Different Annual Incomes for a Family of 4 (2 parents + 2 children) across the PAC region.

Note: FPL = Federal Poverty Level. MIT = Massachusetts Institute of Technology. Garfield, Pitkin, and Eagle County are located in Colorado.

2.7. Barriers to Federal Food and Nutrition Assistance

In 2022, SNAP reached a record number of eligible individuals (88%),¹⁰⁹ compared to 82% in 2019¹¹⁰, illustrating, in part, a heightened demand for food assistance. Still, many eligible households do not participate. Understanding the reasons that eligible households do not participate in SNAP or other federal nutrition assistance programs is complex. A complicated and lengthy application process and issues with recertification have been noted barriers for households.¹¹¹⁻¹¹³ Some households facing food insecurity often express feeling shame or stigma in using federal food assistance.¹¹⁴ For many Hispanic/Latino households, concerns for

repercussions related to public charge, or decisions on whether someone gains access to the US (via green card, visa, etc.) based on their potential dependence on government assistance,¹¹⁵ have been substantial barriers to participation.^{112,114} Another critical issue in federal food assistance is the “benefits cliff”. The benefits cliff occurs when households facing food insecurity or other economic constraints have income above income eligibility guidelines. Though these households declare too much income for federal food assistance, they often do not make enough income to meet basic needs.^{116,117} This benefits cliff highlights the tradeoffs that households experience when faced with the potential for higher earning jobs but reduced overall income. Overcoming the barriers to participating in federal food assistance programs has the potential for improving health outcomes for individuals and strengthening the economy through increased work productivity and consumer spending.

3. Coping Strategies Framework for Food Insecurity

While federal food and nutrition assistance programs are a critical support for households experiencing food insecurity, they are not always the first or only coping strategy households use. Coping strategies can be cognitive or behavioral mechanisms used to minimize the impacts of stressors individuals are impacted by.¹⁹ Seligman and Berkowitz (2019) provide a framework for multilevel coping strategies that individuals use when faced with food insecurity at the individual-, household-, community-, and policy/systems-level. For many adults, the first strategy occurs at an individual level and is often associated with restricted food consumption, reduced dietary quality, taking on additional jobs, or high-risk behaviors. These strategies may provide food in the short term, but this increased focus on acquiring food and reliance on less healthy foods may have long term impacts on individuals such as reduced capacity for other activities such as caring for children or job security.¹⁸

Household strategies also include a reliance on less healthy foods, as well as tradeoffs with other basic needs such as medicine, financial behaviors like pawning personal items or seeking out short-term loans. These strategies can impact both health outcomes if medical treatment is delayed but also increase risk of debt for households. Other household strategies may include shielding children from food insecurity by reducing intake among adults. While young children may be shielded from reduced food intake, research shows that children in households experiencing food insecurity or even marginal food security may still have poor health outcomes,¹¹⁸ possibly due to the stress associated with food insecurity, or household factors that caused reduced food security status in the first place (i.e., poor health or socioeconomic status).¹¹⁹

Once resources have been drained at the individual and household level, individuals may cope with food insecurity by turning towards community level strategies. These may include relying on family or friends for food or obtaining food from charitable food assistance like food pantries, soup kitchens, and other free meal programs. Further details on use of the charitable food assistance network are detailed in section 5 of this chapter. Finally, policy and systems-level strategies include federal food and nutrition assistance programs as well as other safety-net programs that provide financial support for other basic needs like the Low-Income Home Energy Assistance Program (LIHEAP).¹⁸ These programs play a pivotal role in alleviating food security. However, as noted above, there are barriers to these programs and not all who experience food insecurity are eligible for such programs.

While the Seligman and Berkowitz framework provides an ordered approach to coping strategies, some households may use multiple strategies at the same time and perhaps not in this ordered approach. For instance, Harper et al (2022) found that SNAP and WIC participants were three times more likely to be food pantry users compared to non-participants.¹²⁰ Similarly, data from the 2014 Feeding America Hunger in America reports showed that 66% of charitable food assistance clients engaged in tradeoffs between food and other basic needs.¹²¹ Overall, understanding coping strategies individuals use can help us better understand mechanisms for poor health outcomes, but also to identify intervention strategies to promote healthier coping mechanisms of food insecurity. In this dissertation, coping strategies are operationalized against food insecurity as the behaviors individuals engage in to combat food insecurity including use of charitable food assistance through how much of household food is obtained from charitable food assistance resources and engagement in economic tradeoffs through frequency of tradeoffs between food and other basic needs.

4. Charitable Food Assistance

4.1. Overview of the Charitable Food Assistance System

Programs such as SNAP, NSLP, and WIC make up the public sector of food assistance. Additional food security efforts are made possible through a private network of charitable food assistance (CFA) operations such as food banks, food pantries, soup kitchens, food rescue, and other community food programs. Charitable food assistance in the US reportedly started as an emergency response to the Great Depression of the 1930s though other undocumented sources of food assistance is likely to have occurred prior to this.¹²² Today, charitable food assistance has grown substantially to provide another source of hunger relief alongside federal food assistance programs. The largest CFA network, Feeding America, is made up of over 200 food banks and

60,000 meal programs, and served over 50 million people in 2023.^{123,124} The CFA network food is mostly sourced from donated foods from producers or individuals, then foods rescued or purchased. Lastly, USDA commodity food programs provide around 22% of foods.¹²⁵

4.2. The Need for Charitable Food Assistance

Federal food assistance serves a critical role in the front line of defense against food insecurity, though not all who face food insecurity have access to (*or choose to access*) these programs. For instance, WIC reaches about 54% of eligible individuals¹²⁶ and SNAP reaches about 88% of eligible participants.¹⁰⁹ Charitable food assistance offers another option for households that may be (*or feel*) excluded from federal assistance programs. Households that may not seek out federal assistance include those without citizenship documentation, households with income or assets above guidelines, or some college students.¹²⁷ Other qualitative research suggests barriers such as difficulties with recertification, feeling that benefits were not worth the effort, transportation barriers, and issues redeeming benefits.¹¹³

Many of the reasons why individuals may choose to use charitable food assistance are in relation to issues faced with federal food assistance. A study by Kicinski (2012) on food pantry users suggests that for unemployed individuals, food pantries are critical in supplementing unemployment benefits. This study also found that 14.4% of food pantry users are also recipients of both SNAP and WIC, which highlights the multiple federal and charitable food assistance resources people often must rely on.¹²⁸ Beyond issues faced with federal assistance, individuals may turn to the charitable food assistance network because they are experiencing other financial hardships such as being unhoused or disruptions in utilities.¹²⁹ In addition, some individuals may

choose charitable food assistance as they are more rooted in the community and may feel a greater sense of social support when utilizing these community-based resources.^{130,131}

In 2023, 48% of food insecure households had income above national income guidelines for SNAP.² Although it is not known whether all these households were SNAP eligible, as multiple other factors determine eligibility, it indicates a large portion of households with income above national guidelines still experience food insecurity. Though some food banks may require documentation of income-status, many are not means-tested. For TEFAP (the Emergency Food Assistance Program) food pantries, an initial application is required to ensure household income meets statewide income eligibility requirements (200% FPL in Colorado).¹³² Lack of documentation requirements may increase access to charitable food assistance for those who fear retribution related to public charge or exclusion due to income from such programs.⁹²

In addition, the majority of SNAP recipients are considered inframarginal, meaning they often need to spend more money on food than they receive in SNAP benefits.¹³³ For households that do not have income beyond SNAP benefits to spend on food, they may rely on charitable food assistance as an additional source of food.¹³⁴ Some studies have been published on regional food pantry use among SNAP recipients and use of food pantries among non-SNAP recipients, though national data is limited. Martin et al. (2003) showed demographic differences between households that preferred public versus private assistance; Hispanic households were more likely to prefer public assistance whereas older adults preferred private assistance.¹³⁵ The 2014 Hunger in America Report from Feeding America found that 71.6% of charitable food assistance clients reported monthly income below 130% FPL and 55% of clients were SNAP recipients.¹²¹

Previous research from Fan et al (2021) may partly explain the use of charitable food assistance among SNAP recipients when SNAP benefits begin to run out before their next allotment.¹³⁶ One study found that additional factors may explain inframarginal SNAP recipients' use of food pantries including lack of full-time employment, lower education, having a disability, and being a prior SNAP recipient.¹³⁷ These data highlight the demand for charitable food assistance both when public assistance may be available and when it is not available for households facing food insecurity with income levels above federal guidelines.

Interestingly, 84% of clients surveyed in the 2014 Hunger In America study, which evaluates clients of Feeding America food banks, reported food insecurity. This leaves about 16% of food pantry clients claiming food security, even though the definition of food *security* includes “assured ability to acquire acceptable foods in socially acceptable ways (that is *without* resorting to emergency food supplies, scavenging, stealing, or other coping strategies).”¹³⁸ This raises questions for how food security is measured compared to how it is defined as some households receiving food from charitable food assistance are not considering themselves food insecure. For example, there are no questions on the HFSSM regarding how or whether foods are accessed in socially acceptable ways. These and other limitations of the food security survey, previously discussed in more detail in section 1.6, may lead to misclassifying some households as food secure when they may in fact be food insecure.

5. Economic Tradeoffs Between Food and Other Basic Needs

When households experience food insecurity, they likely are also struggling to meet other basic needs like housing, utilities, health care and childcare. For example, Lee et al. (2021) found that there was a high correlation between food and housing instability, or issues related to not being

able to afford rent, spending most of household income on housing, frequent moving, or overcrowding.^{139,140} In another study, Berkowitz et al. (2014) showed that food insecurity was related to underuse of medication.¹⁴¹ The 2014 Hunger in America report identified that the majority of households utilizing charitable food assistance reported tradeoffs between food and housing, utilities, transportation, and medical care, and some (30.5%) reported tradeoffs with education costs.¹²¹ For households with children, those using informal non-relative care experienced greater childcare constraints and had higher odds of food insecurity compared to households utilizing public assistance childcare programs.¹⁴² This overlap of food and other basic needs insecurity may increase the burden on households and warrants interventions that target all aspects of basic needs.

6. Photovoice as a Participatory Research Approach

This dissertation research utilized photovoice to complement our survey findings by adding depth and context to the complex issues that face households experiencing food insecurity. While our survey data may quantify coping strategies among households above and below 130% FPL, photovoice allows us to capture nuanced experiences of food insecurity through participant photos and storytelling. Photovoice is described as a participatory research tool as it emphasizes the participant's role in research activities.¹⁴³ Photovoice has three main goals: 1) provide opportunity for individuals to reflect on and record their experience with or perceptions of community strengths and barriers, 2) to encourage critical dialogue about key issues with others, and 3) to share findings with community leaders and policymakers.¹⁴³

Contrary to traditional research methods such as surveys or interviews, where data is being extracted from participants, participatory research invites participants to actively participate in

research design and question development, data collection, analysis and interpretation.

Photovoice has been used in public health nutrition to highlight community strengths and barriers to food access and physical activity,¹⁴⁴ improve Maternal and Child Health assessments,¹⁴⁵ and understand parent struggles with food insecurity.¹⁴⁶ Below, the theoretical perspectives on which photovoice is based are outlined.

6.1. Critical consciousness

First introduced by Paulo Freire, critical consciousness aimed to educate oppressed peoples in an effort to raise awareness of the social dispossession they face.¹⁴⁷ This conscious awareness could then be used to free themselves from this systemic oppression. Critical consciousness manifests through three main tenets; critical reflection- critiques of how systems oppress certain peoples, critical motivation- self-efficacy to advocate for change, and critical action- actions to effect change.^{147,148} Photovoice uses photography and storytelling, practices that are both approachable and appropriate for diverse audiences that may have limited education. Participants of photovoice are educated through reflections of their daily lives illustrated via photos, the voice they provide to those photos, as well as group discussions and analysis of participant photos and narratives. This process has the potential to empower participants to become aware of their situations, to become capable of producing knowledge, and to advocate for change.¹⁴⁹ The use of critical consciousness theory can be particularly useful in public health and community nutrition among communities that have been disadvantaged for decades, and oppression has become embodied among residents as status quo. For example, one study highlighted the potential for educating to improve individual outcomes. This study found that a food systems education

intervention among middle school students improved both vegetable consumption and reduce food waste among study participants.¹⁵⁰

6.2. Expanding Individual Capacity in Knowledge Production

Another tenet of photovoice is to challenge traditional ways of knowing.^{151,152} This shift allows for issues to be understood from the perspective of the persons experiencing injustice and oppression.¹⁴⁹ Within photovoice, this concept assumes that the research participants are, in fact, the true experts and knowledge producers, as they are the ones directly impacted by the issues being explored. Wang and Burris intended photovoice to empower participants by increasing their power *to* accomplish tasks, power to work *with* others on common goals, and power *over* influencing others in creating change.¹⁴⁹ As researchers may often move onto other projects once objectives have been met, this process of empowerment can operate to leave photovoice participants in much stronger positions to continue work in effecting change.

6.3. Documentary Photography

The ‘social conscience presented in visual imagery’,¹⁵³ documentary photography is simply defined as photography which documents historical events or everyday life. Documentary photography has the potential to capture situations that otherwise may be unknown to those who are not present or have not experienced similar issues. Photovoice invites participants to reflect on and document their perceptions and experiences through photography.¹⁴⁹ Documentary photography offers a *literal* lens into the lives of individuals that researchers are unable to observe. This provides unique perspectives on issues that are important to community members.

Photos also provide powerful messages which can be useful in communicating issues to policymakers.¹⁵⁴

7. Conclusion

Food insecurity is still a critical issue affecting many households across the US. Understanding the coping strategies of food insecure households and how these individuals navigate food insecurity using participatory tools like photovoice is essential for identifying gaps in assistance, informing policy solutions, and leveraging existing community assets to ensure more equitable access to food. Food security research often focuses on households that are low-income and eligible for federal food assistance programs. However, there is persistent food insecurity among households that live above income guidelines for federal food assistance programs, yet thorough investigations among these households is limited. In addition, those living in high cost of living regions may be at greater risk for experiencing food and nutrition insecurity and may experience a more extreme “benefits cliff” where the gap between eligibility for federal assistance and being able to afford basic needs is exacerbated. The objective of this dissertation is to bridge the gap in knowledge of how individuals in this wage gap (between federal assistance eligibility and self-sufficiency) navigate food insecurity by exploring coping strategies and food access among households across the income spectrum facing food insecurity in a high cost of living region. This will be accomplished using a community engaged research approach, integrating both quantitative survey measures to capture coping strategies and the participatory research method, photovoice, to provide a more nuanced understanding of how individuals navigate food insecurity and the factors that influence food access in the PAC region.

CHAPTER 3. METHODOLOGY

This chapter focuses on the methodology used for this dissertation research. The overall objective of this research is to better understand experiences and coping strategies of households facing food insecurity across income levels in a high cost of living region. The experiences of food insecurity are complex and the coping strategies of food insecure households in high cost of living regions is not widely understood. Therefore, a multi-method research design was considered appropriate to: 1) use quantitative methods to assess the degree of coping strategies used by food insecure households and 2) use qualitative methods to explore the lived experience of households facing food insecurity in a high cost of living region. Quantitative data was collected and analyzed to address research aims 1 and 2. Qualitative data was collected and analyzed to address research aim 3. As this dissertation research was exploratory in nature, the use of a multimethod research approach allowed us to provide a broader, more comprehensive understanding of food insecurity in this high cost of living region.

Research Aim 1: Examine whether there are differences between households below and above income guidelines for SNAP (130% FPL) in how they access charitable food assistance.

Research Aim 2: Examine whether there are differences between households below and above income guidelines for SNAP (130% FPL) in how they engage in economic tradeoffs between food and other basic needs (i.e., medicine and housing).

Research Aim 3: Explore the lived experience of food insecurity including what factors influence food access and how people navigate food insecurity in their community.

First, the overarching research philosophies will then be presented. Next, the research design will be discussed including an explanation for the use of multi-methods research. Sampling strategy, data collection and analysis methods will be presented, followed by research limitations. Further details on methods will be presented in subsequent chapters (chapter 4 - Research Aims 1 and 2; chapter 5- Research Aim 3).

1. Methodology

1.1. Research Philosophies

This research uses a dialectical pluralism perspective that incorporates both postpositivist and constructivist worldviews. Within a dialectical pluralistic perspective, the research intends to build on the strengths, limitations, and differences of various disciplines and methodologies to then combine research findings in productive ways that benefit society.¹⁵⁵ The two worldviews, postpositivism and constructivism, align with the two different branches of research within this project, quantitative and qualitative. The quantitative portion of this research follows a postpositivist worldview, which focuses on a deductive approach framing research questions based on existing theory and collecting objective, empirical evidence through survey data. This approach will provide us and our coalition partners with measurable data from surveys to identify patterns in what coping strategies households utilize when faced with food insecurity. The qualitative portion then follows a constructivist worldview, which emphasizes inductive approaches to research, working from the bottom up from participant data to theory, subjectivity of findings, and multiple realities that may differ individually.¹⁵⁶ Gathering personal stories and experiences directly from individuals facing food insecurity provides us with novel insights into the realities of food insecurity that may not be garnered from quantitative methods or data alone.

1.2. Community Engaged Research

This project uses a collaborative community engaged research (CEnR) approach to investigate the research aims. Contrary to top-down approaches that often have limited input from community members, community engaged research is a process of working together with people on issues that are relevant to the communities they live in and work to promote the well-being of the people in that community.¹⁵⁷ As a social determinant of health, food insecurity may be best addressed by working alongside the communities and individuals that are directly affected by this issue. As such, community engaged research was chosen to honor and reflect the needs of the community we are working with and to foster an equitable and long-lasting partnership in research between the university and the community.¹⁵⁸

In the Spring of 2021, members of our research team first connected with the Health and Human Serviced department in Pitkin County to discuss evaluation of food insecurity in the Parachute to Aspen Corridor (PAC) region. The next several meetings provided our research team an opportunity to meet with community partners working in the food security space. Together these partners make up the Mountain Coalition for Food and Nutrition Security (MCFNS), which includes Food Bank of the Rockies, LIFT-UP, West Mountain Regional Health Alliance, Safe and Abundant Nutrition Alliance (SANA), Harvest for Hunger, UpRoot, public health departments in Garfield and Eagle counties, and others. Of growing concern among our MCFNS partners was the need to better understand food and nutrition insecurity in this region and to create a 5-year strategic plan aimed at promoting regional food and nutrition security.

The partners from MCFNS were active throughout decisions on research design, what items were to be measured, recruitment strategies, and data collection. First, we proposed the research design, including surveys and photovoice methods, the research questions to be asked and how these questions would be addressed through measures on the survey and through photovoice. We received feedback on the survey measures and made adjustments based on partner feedback. For example, some partners were interested in the use of SNAP for community-supported agriculture (CSA) boxes, so a question was added to assess awareness and use of the program. There was also concern for seasonal changes in food insecurity, so questions were added to assess whether some seasons (i.e., winter or summer) were more difficult to find the foods households needed.

Community partners from MCFNS were also critical in assisting with recruitment and data collection. Several partners distributed flyers through their respective channels, allowed us to hold in-person recruitment events, and some even were directly involved in recruiting participants for research activities. After data analysis and interpretation, we engaged our community partners in ground-truthing, or validating and confirming, our findings with their experience and expertise in their community.¹⁵⁹ This process helped ensure our interpretations accurately reflected the realities and challenges of food insecurity in the PAC region. These findings were also used to support the MCFNS coalition's regional strategic plan for food and nutrition security.

2. Quantitative Research Phase (Aims 1 and 2)

2.2. Survey Design & Development

A survey was designed to address research aims 1 (differences in use of charitable food assistance) and 2 (differences in engagement of economic tradeoffs). The survey was developed

using a combination of previously validated measures, new questions to address research aims, and questions recommended by our MCFNS partners. Researchers met regularly with MCFNS partners throughout the research design and survey development phase to learn about issues relevant in the PAC region and receive feedback on survey items and recruitment. This CEnR approach emphasized the importance of meeting community priorities as well as addressing researcher questions.

The survey (found in Appendix 2) included a range of 62-86 items, dependent upon whether an item was applicable for a respondent. For instance, participants without children were not asked questions pertaining to children, yielding less questions these participants responded to. The Flesch-Kincaid test was assessed in Microsoft Word to determine readability for the survey based on word and sentence length. The Flesch Kincaid Grade level was determined to be 6.8, which is considered an “average” reading level or middle school level. This may be appropriate for the general population (suggested 8th grade or below), but may be high for more low-income populations (suggested 5th grade or below).¹⁶⁰ Due to a high number of Spanish-speaking residents in the region, the survey was developed in English and translated to Spanish by Spanish-speaking research assistants. The Flesch Kincaid Grade level for the Spanish version was determined to be 8.3. This may influence the readability of the survey for the Spanish-speaking participants.

Before being administered to our target population, we did preliminary testing with a convenience sample (n=7) to assess question wording, survey flow, and technical performance (i.e., does skip logic work as intended). The Spanish version was tested among a sample of

Bilingual (Spanish and English) speakers (n=3). This preliminary testing allowed us to assess the readability, clarity, and functionality of the survey before the implementation with our target population.¹⁶¹ While this group did not represent the target population, this testing provided valuable feedback on the wording of questions, clarifications on instructions, and overall flow of the survey.

Since this was not a previously validated tool, we conducted cognitive interviews with 20 survey participants (n=10 in English, n=10 in Spanish) at a community food pantry to assess if what we were asking was an adequate measure of the variable, use of charitable food assistance. We used a verbal probing technique for cognitive interviews to evaluate whether participants were able to comprehend the question and recall information needed to answer the question.¹⁶² For example, “Can you read the question and tell me in your own words what the question is asking you?” or “How did you come up with your response for each food source?” The full cognitive interview guide is available in Appendix 3. Cognitive interviews took on average 10 minutes (range =6:54 - 14:42) to complete. Participants were compensated with \$5 for their participation.

2.3. Measures

Use of Charitable Food Assistance

For research aim 1, we wanted to understand to what extent households were using charitable food assistance sources to obtain food. Though there are current measures that ask about use of charitable food assistance, these only ask whether a household used these resources (yes or no). For example, the Food Security Supplement on the annual US Current Population Survey asks “In the last 12 months, did you or anyone in your household ever get free groceries from a food

pantry, food bank, church, or other place that helps with free food?”¹⁶³ To our knowledge, there is no validated measure to understand how much households are relying on charitable food assistance sources for their household food. Thus, a measure was developed based off of food sources outlined by the USDA’s 2012-2013 National Household Food Acquisition and Purchase Survey (FoodAPS) and the ADePT-Food Security Module which includes grocery stores, specialty food stores, convenience and dollar stores, restaurants, family and friends, food banks or pantries, soup kitchens, gardening, hunting, or fishing.^{164,165} The item was measured by asking how much of the household’s food came from each source on a 7-pt Likert scale (see Figure 3.1).

In the past month, how much of your household's food, meaning food to be consumed by members of your household, has come from the following food sources							
	None at all	Only a little	Less than half	About half	More than half	Almost all	All
Grocery store or supermarket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Convenience store	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restaurant, food court, or canteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Street vendors or food trucks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Backyard garden or farm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food at workplaces	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fishing, hunting, or gathering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food stocks (food acquired more than one month ago)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food pantries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soup kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food given to you (for free) from family/friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other community food assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 3.1. PAC Food Insecurity Survey item addressing Research Aim 1, use of charitable food assistance, using a 7-pt Likert scale.

Based on cognitive interviewing for the charitable food assistance scale, overall, participants understood what the question was asking. Some participants had trouble identifying or explaining what soup kitchens were and were more familiar with hot meals served for free at churches as “church dinners”. All other charitable food assistance sources were well understood

by participants. These cognitive interviews were not conducted until October 2023, well into data collection and therefore we were not able to make changes to the existing survey. However, due to varied understanding of soup kitchens, this food source may have been underestimated as a food source for participants.

Economic Tradeoffs

For research aim 2, engagement in economic tradeoffs, we used a measure from Feeding America¹²¹ and validated by Pinard et al (2016).¹⁶⁶ The original measure used by Feeding America asked “How often in the past 12 months, did you or your household have to choose between paying for food and paying for medicine/medical care, utilities, housing, transportation, and education expenses?” Response options included “Never”, “1 or 2 times a year”, “Some months during the year”, and “Every month”. Pinard et al. modified this scale to reference the past month instead of the past year and adjusted Likert scale options from a 4-pt to 5-pt scale: “Never”, “Rarely”, “Sometimes”, “Often”, “Always”. It was determined the scale had high internal validity ($\alpha = 0.85$), content validity with food security ($r_s=0.52, p < 0.001$), and construct validity with other financial coping strategies like asking friends for money ($r_s=0.56, p < 0.001$) and rationing coping strategies like locking up or hiding food to save it ($r_s = 0.60, p < 0.001$).¹⁶⁶ In addition to the basic needs measured in the original measures, we added childcare as another potential tradeoff measure as our MCFNS partners expressed challenges facing accessing childcare for residents. The final measure is pictured below in Figure 3.2.

In the past month, how often did you or your household have to choose between paying for food and paying for medicine/medical care?

- Never
- Rarely
- Sometimes
- Often
- Always

Figure 3.2. PAC Food Insecurity Survey item addressing Research Aim 2, engagement in economic tradeoffs, using a 5-pt Likert scale.

Household Income

Our primary indicator variable was based on household income. Participants were asked to select an income range based on their household size. Income ranges were presented based on federal poverty guidelines during fiscal year 2022.¹⁰⁵ Both monthly and annual income ranges were provided to help respondent's accuracy. Income ranges were 1) below 100% FPL, 2) 101-130% FPL, 3) 131 – 165% FPL, 4) 166 – 185% FPL, 5) 186 – 200% FPL, and 6) above 200% FPL. For primary analyses, income was dichotomized to 0 = incomes below 130% FPL and 1 = incomes above 130% FPL.

Covariates

Several covariates were measured in the survey, which can be found in the full survey in Appendix 2. Sociodemographic characteristics included age, sex, race/ethnicity, education level, primary language spoken, household size, marital, housing, and employment status. Age was reported as a number typed or written by participants. Race and ethnicity were combined on the same item to reduce participants selecting “Some Other Race”.¹⁶⁷ Options included White/Caucasian, Black/African American, Hispanic/Latino, American Indian/Alaska Native,

Asian/South Asian/Pacific Islander, other-open response option, and prefer not to say. Education level was reported from 8th grade or less to Graduate/Professional degree. Participants were asked to select what primary language (out of 15 options) they spoke and to select all that applied for those that spoke more than one language fluently.

Other covariates included level of food security, barriers to utilizing both federal and charitable food assistance, stigma and shame associated with using food assistance, household resilience, and financial behaviors, outlined below. Additional items on the survey included those of interest to our MCFNS partners which can be found on the full survey in Appendix 2. These items included seasonality of food insecurity, use of Community Supported Agriculture boxes through SNAP, and perceptions of the local food environment such as availability of high quality and affordable fruits and vegetables, dairy products, or animal meat.

Food security. Level of food security was measured using the USDA 10/18 item Food Security Survey Module.⁶⁵ For households without children, respondents answered the 10-item version. For households with children, respondents answered the 18-item version. In-depth details on measures included on the Food Security Survey are outlined in Chapter 2. Food security is scored by increasing severity on a linear scale from 0 – 10 for households without children and 0 – 18 for households with children. Items are dichotomized as either *affirmative* when responses are equal to “yes”, “sometimes true”, “often true”, “almost every month”, and “some months but not every month”, or *negative* when responses are equal to “no”, “never true”, and “only one or two months”. Food security status is then determined on a continuum over 4 levels as outlined in Table 3.1.¹⁶⁸

Table 3.1. Food Security Level and Scores. Source: USDA Economic Research Service

	Definition	Raw Score	
		HH w/children	HH w/no children
Food Secure			
High food security	Did not indicate any problems with food access	0	0
Marginal food security	Indicated one or two situations such as anxiety over food access Typically, no reduced food intake	1 – 2	1 – 2
Food Insecure			
Low food security	Indicated reduced quality, variety, or desirability in diet Typically, no reduced food intake	3 – 7	3 – 5
Very low food security	Indicated reduced food intake	8 – 18	6 – 10

Barriers to charitable food assistance. Since households may make decision to utilize charitable food assistance based on their perceived barriers to utilizing these resources, we decided to evaluate what barriers respondents experienced when choosing to access charitable food assistance. Barriers to utilizing charitable food assistance (defined in section 5.1 of Ch. 2) were measured based on barriers previously outlined by Fong et al. (2016), Martin et al. (2003), and Ginsburg (2019).^{135,169,170} There were 11 total items assessing respondent’s barriers to using charitable food assistance such as not knowing when food pantries were open, the time it takes to use food pantries or meal services and sacrificing quality of food when utilizing charitable food assistance. Participants responded on a 7-point Likert scale from “Strongly Disagree” to “Strongly Agree”. Responses were then dichotomized to 1 for any responses including “Strongly Agree”, “Agree”, or “Somewhat Agree”. All other responses were scored as 0. A Charitable Food

Assistance Barrier score was created based on these 11 items ranging from 0-11, with a score of 0 indicating no barriers and a score of 11 indicating a respondent experienced all 11 barriers.

Stigma and shame using charitable food assistance. Stigma and shame associated with using charitable food assistance was measured based off a tool by Kindle, et al. (2019).¹⁷¹ Internal consistency for this scale was adequate ($\alpha= 0.869$). Validity was not assessed.¹⁷¹ Scale responses were presented on a 5-point Likert scale from “Strongly disagree” to “Strongly agree”. The ten items on the scale were then dichotomized to 1 = “Strongly Agree” or “Agree” and 0 = all other responses. A Stigma/Shame score was then calculated based on these scored responses from 0-10, with a score of 0 indicating no reports of stigma or shame and a score of 10 indicating all items related to stigma and shame were reported.

Household resilience. Household resilience, a newer measure developed by Calloway et al (2022), was used to assess a household’s capacity to handle financial shocks that may otherwise result in food insecurity.¹⁷² Household resilience is measured based on three pillars: absorptive capacity – ability to absorb financial shock in the short-term by using resources on hand; adaptive capacity – ability to use information and create intermediate solutions to financial shock; and transformative capacity – ability for a household to transform their situation based on community-level conditions.¹⁷² Adaptive and transformative capacity were measured on a 5-pt Likert scale of agreement and absorptive capacity was measured on a 5-pt Likert scale for frequency in saving money and number of household income earners. Participants were identified as low absorptive (scores between 0-1), adaptive (scores between 0-6), or transformative (scores between 0-4) capacity based on the resiliency screening tool guidelines.¹⁷²

Participants receiving a low absorptive capacity score are less likely to have savings and feel they are able to household expenses. Participants receiving a low adaptive score are less likely to be able to act on information that may shield them from financial shocks and create mid-term solutions like finding another job or accessing resources to deal with financial challenges. And, finally, participants receiving a low transformative score are less likely to perceive that they live in a community with access to job and educational opportunities, and community resources and services.¹⁷³

Financial Literacy. We were also interested in financial behaviors because higher financial literacy among even low-income individuals has been linked to reduced food insecurity.¹⁷⁴

Financial behaviors were measured based on a financial literacy tool from the Organization for Economic Co-operation and Development.¹⁷⁵ Participants were asked about engaging in financial decisions made to make ends meet such as borrowing money or food from friends/family or pawning something. Respondents were asked to select yes/no. A total score was created from 0-16. Higher scores indicated making more financial decisions to make ends meet.

2.4. Sampling Strategy

The target population was food insecure residents living in the PAC region across Pitkin, Eagle, and Garfield counties. The sample size was originally calculated in STATA using the powerlog command.¹⁷⁶ Calculations were based on previous probabilities of using charitable food assistance by Mabli and Worthington (2017), which detected a 5.2% decrease in food pantry use among households receiving SNAP for 6 months compared to households recently enrolled in SNAP.¹⁷⁷ Since this dissertation research is exploratory and the original study used new SNAP

participants compared to 6-month SNAP participants, we anticipated that use of CFAs between food insecure households above 130% FPL compared to those below 130% may be less than the original study. In addition, previous data shows that SNAP participants have less income and are more likely to be food insecure than eligible non-participants.^{35,178} Therefore, we reduced the probability to 3.12% in order to be able to detect small changes. This sample size calculation set at an $\alpha = .05$, indicated that 1,096 participants were needed to achieve a power of 0.8.

Quota sampling was used to obtain approximately half of the participants with income below 130% FPL and half with income above 130% FPL. This sampling strategy helped ensure that there was adequate representation of each income group within the sample. Since the food insecurity screener screens for a more severe form of food insecurity, we wanted to make sure there were enough participants from the above 130% FPL group. We exceeded our quota for the below 130% FPL group with approximately 800 participants so remaining participants had to report household income above 130% FPL. Convenience sampling was also used by recruiting through our MCFNS partners, many of whom work within the charitable food access space. While quota and convenience sampling provide non-random samples, these strategies were useful in obtaining both participants above and below 130% FPL and for reaching a large enough sample to be able to detect a statistically significant difference.

Inclusion criteria for the survey were that participants must be 1) 18 years or older, 2) live or work in the PAC region as defined as Garfield, Eagle, or Pitkin counties in Colorado, and 3) screen at-risk for food insecurity based on the 2-item Hunger Vital Signs Screener.⁷² More information on the Hunger Vital Signs Screener is provided in chapter 2, section 1.6. In addition,

participants must be able to read or understand English or Spanish language in order to complete the survey. All other applicants that did not meet this inclusion criteria were not able to participate in this study.

2.5 Recruitment & Data Collection

Participants were recruited through various channels. Our community partners distributed flyers in English (see Appendix 4) and Spanish (see Appendix 5) through their respective networks (i.e., posting on their websites or social media, sending emails). We also distributed flyers in-person at tabling events at food pantries and mobile food distributions, and posted flyers at several community locations including churches, childcare centers, cafes, recreation centers, restaurants, and schools. Another recruitment strategy included the use of social media.

Advertisements on Facebook and Instagram targeted users that were 1) 18 years or older and 2) were present in Pitkin, Eagle, and Garfield counties. Lastly, one of our MCFNS partners created a video advertisement for the survey in Spanish which was disseminated through a local Spanish radio station's social media account.

The survey was administered through various formats. Participants could screen and complete the survey anonymously online via the Qualtrics platform, in person using a tablet, or hard-copy format of the survey, and via telephone interview. While most participants completed the survey online using Qualtrics (95%), these other formats were utilized to increase participation from those with limited access to technology (e.g., cell phone, computer, or internet) or those with lower literacy. See Figure 3.3 for a diagram of survey participation.

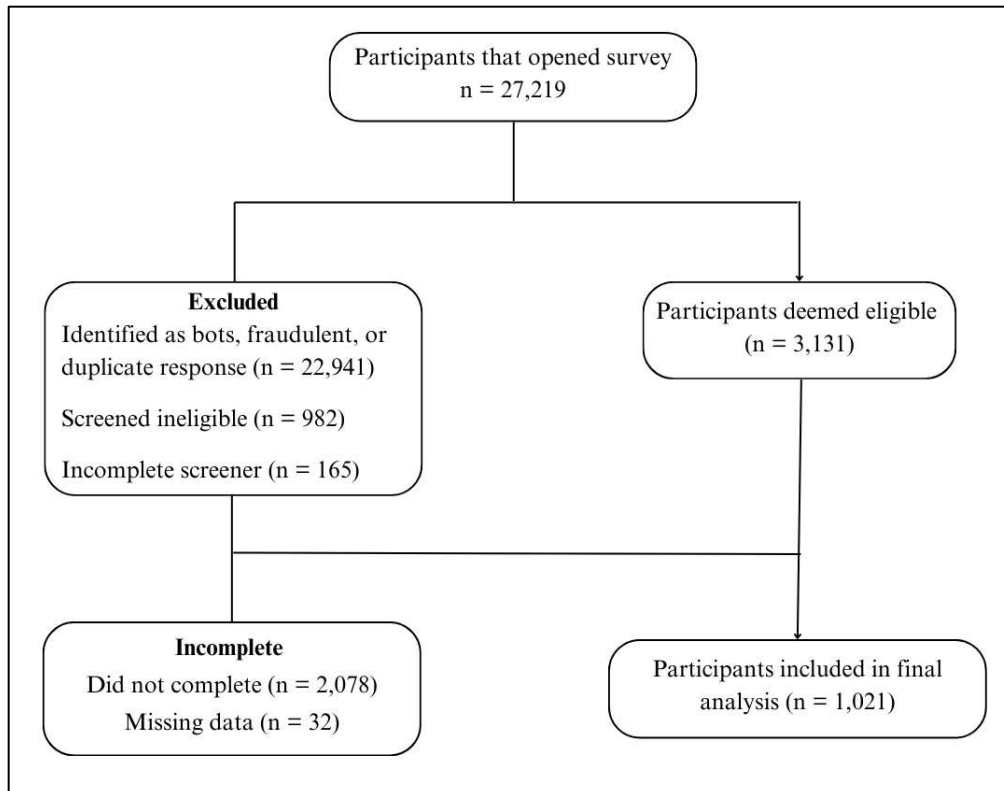


Figure 3.3. Participant flow chart for participation in the PAC Food Insecurity Survey

2.6 Data Analysis

All statistical analyses were conducted using STATA/SE 17.0 (StataCorp LP, College Station, TX). Participants that had missing data for questions around their relative use of community food assistance resources (n=32) and engagement in economic tradeoffs between food and other basic needs (n=5) were dropped from the final analytic sample (n=1,021). Descriptive statistics for sociodemographic variables were calculated. Descriptive differences between participants above and below 130% FPL were measured using Chi-square tests of independence for categorical variables and *t*-tests for continuous variables.

First, an ordinal logistic regression model was run to address both research aims 1 and 2. A post-estimation Brant test was then run to assess whether the assumption for proportional odds

held.¹⁷⁹ A significant Brant test indicated the assumption for proportional odds had been violated. Therefore, a generalized ordinal logistic regression was determined to be the best model as it relaxes the assumption for proportional odds.¹⁸⁰

3. Qualitative Research Strand

3.1 Community Engaged Research Approach and Participatory Research Methods

In line with our goals to keep this work rooted in the community, we used a community engaged research (CEnR) approach to address research aim 3. Considering this was a new partnership between the university research team and PAC coalitions partners, we felt that CEnR would be beneficial in both building trust with our partners and exploring community strengths and needs. Engagement with community members serves many purposes from creating a more equitable university-community partnership and knowledge production to practicing more translational research approaches that honor community needs.

In addition to a community engaged approach, we wanted to more actively involve community members in the research activities. As such, we selected participatory research method, known as photovoice, detailed in section 3.3 to engage with residents in a more participant-driven way. Contrary to conventional research methods, Cornwall and Jewkes assert that the priority in participatory research is to design and conduct research *with* and *for* local people and priorities rather than institutions, scientists and professional interests.¹⁸¹ Although CEnR takes time in order to develop relationships and gain entry into communities, it may be more efficient than conventional top-down approaches as CEnR has the potential to more realistically address community concerns and may be a more efficient use of time and resources to improve community well-being.

3.2. Lived Experience with and Navigating Food Insecurity

Research Aim 3 intends to explore the lived experience of food insecurity in the PAC region. In order to better understand this experience, we asked participants to reflect on what factors influenced how they accessed food and what foods they accessed. This section details how we aimed to answer these questions using a qualitative research approach.

3.3. Photovoice Method

Photovoice is a participatory research method developed by Wang and Burris (1997) which engages citizens to share their lived experiences through photography and narrative.¹⁴³

Photovoice asks participants to become active co-researchers throughout the research process.

Many researchers have adapted photovoice to meet their needs and as with participatory research. In practice, the format exists on a continuum from contractual (less participatory) to collegiate (most participatory).¹⁸¹ Here, we will describe a collaborative approach, where our research team designed the photovoice project in which community members participated.

Participants began by reflecting on relevant issues in their lives or in their community.

Participants then actively collect data by exploring their environments and photographing features related to their experience on this issue. Then, participants begin analysis by selecting photos to share and contextualizing these photos by adding *voice* or stories to the photos.

3.4. Sampling Strategy

We used purposive and snowball sampling to recruit participants for this photovoice project. Initially, we aimed to recruit 30 participants to participate in 3 cohorts of about 10 participants each. This initial estimate was proposed to have at least one Spanish-speaking cohort and 1-2 English-speaking cohorts, based on recruitment rates. In addition, the multiple cohorts would enable us to capture diverse experiences across the PAC region from ‘up-valley’ near Aspen to ‘down-valley’ near Parachute. A group of 10 also met guidelines for appropriate focus group size¹⁸² and recommendations from Wang (1999).¹⁵⁴ We started recruitment in February 2024 through outreach to our community partners networks, in-person tabling events and flyer distribution. The flyer was provided in both English and Spanish and can be found in appendix 6 and 7, respectively. Figure 3.4 shows a diagram of participants that signed up to participate in the photovoice project. After approximately four months of recruitment efforts, we adjusted our sample size goal to 10 after issues of slow recruitment and scheduling conflicts between potential participants. At this time, we had a total of 2 eligible English-speaking participants and 6 eligible Spanish-speaking participants. Since there were not enough English-speaking participants to hold a focus group, we did not conduct photovoice with an English-speaking group.

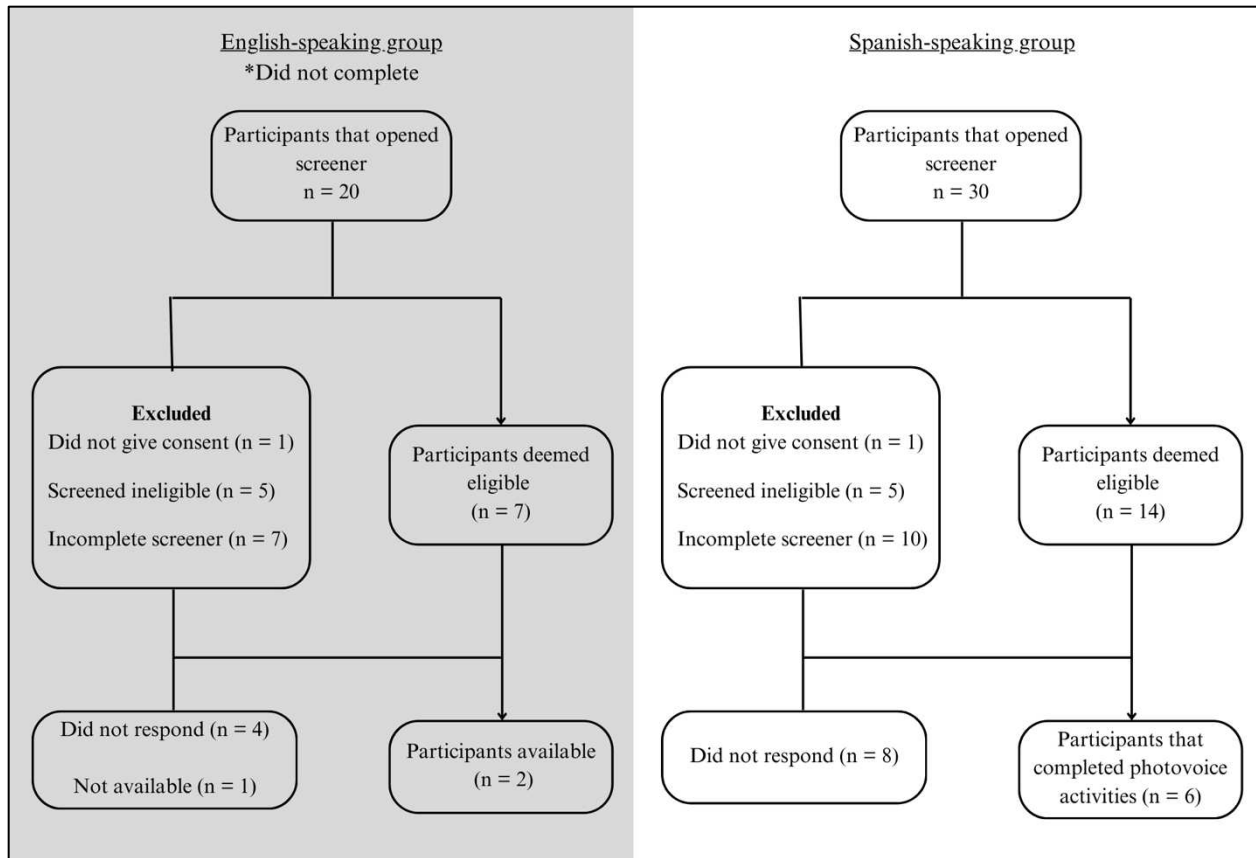


Figure 3.4. Participant flowchart for the PAC Food Insecurity Photovoice Project

3.5. Facilitation

A facilitator guide was developed based on photovoice methodology from Wang and Burris (1997)¹⁴³ and a guide by Rutgers International and the Youth Empowerment Alliance.¹⁸³ The principles of superior facilitation emphasize that a facilitator should champion collaborative group work, act as a source of information, and operate on the sidelines so that discussions are driven by the participants.¹⁸⁴ Wang and Burris maintain that the photovoice facilitator is not neutral, but rather should be aware of relevant community issues, show interest in addressing such issues, and understand the inherently political nature that photovoice may take in exploring inequities and power imbalances.¹⁴³

While the facilitator may not need be versed in Freire's critical consciousness, feminist theory, or documentary photography, (detailed in chapter 2), these are the theoretical underpinnings of photovoice. As such the facilitator would encourage participants to seek knowledge so that they may raise awareness of issues and perhaps liberate themselves from injustices (critical consciousness). The facilitator would also highlight that the participants are the true experts of their lived experience and therefore crucial in dismantling dominant ways of knowledge production (feminist theory). Lastly, the facilitator is aware of the power of messages through photography and encourages participants to share their experience and voice through photos (documentary photography).¹⁴³ See appendix 8 for the full facilitator guide.

A local leader was asked to act as a facilitator as she is well-known among the Spanish-speaking, Hispanic/Latino population in the PAC region and also is a staunch advocate of promoting equitable food access in the region. Other reasons for training someone from within the community to facilitate photovoice was to empower them with a valuable tool for future advocacy and storytelling as well as to ensure that the project was rooted in the perspectives and experiences of those directly affected. The facilitator was trained on the photovoice methodology by reviewing the facilitator guide and receiving instruction and guidance from the author. Since this group listed Spanish as their primary language, all material was created in English and translated to Spanish using Microsoft Word and then reviewed by fluent Spanish-speaking research assistants. The author also acted as an assistant facilitator and note taker during all photovoice workshops.

3.6. Workshops

Three workshops were held at a local community center in the PAC region during June 2024. Each workshop was two hours long. The workshops were held in a focus group format to encourage large and small group discussions.¹⁸² All workshops were conducted in Spanish and audio recorded. At the end of each workshop, participants were compensated with \$30 (workshop 1), \$30 (workshop 2), and \$40 (workshop 3) for a total of \$100.

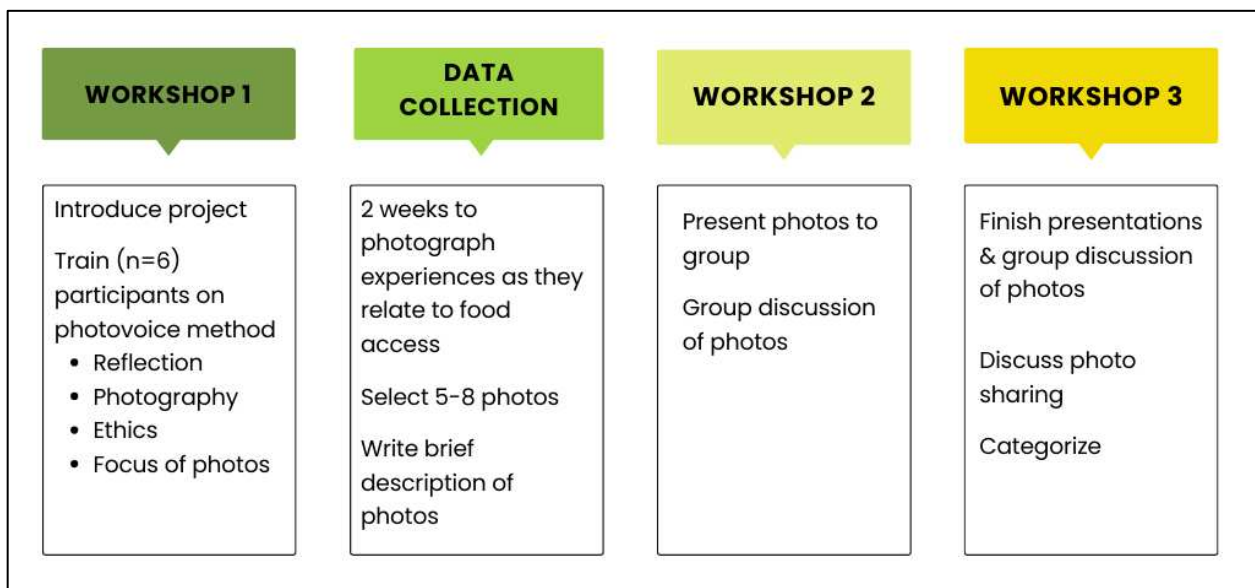


Figure 3.5. Overview of the PAC Food Insecurity Photovoice workshops and activities taking place over a 4-week period.

Workshop 1: The facilitator, assistant facilitator, and participants were present at the first workshop. The participants were read the consent form by the facilitator, and each provided their verbal consent. The consent form can be found in Appendix 8. Participants were reminded that the workshops would be audio recorded and to speak clearly, loudly, and one at a time. Although it appeared that some participants already knew each other through their comfortable

conversations, we asked everyone to participate in an icebreaker by introducing themselves and sharing a recent or childhood food memory with the group.

Once everyone was introduced, the facilitator provided an overview of what the project was including that researchers from the university and community organizations were interested in understanding local experiences related to food access. We purposefully kept this overview relatively broad and neutral so as not to lead participants in focusing directly on food insecurity or only considering negative features within the community. In addition, keeping a broader context allows for a more flexible and exploratory approach, ensuring that participants' experiences and perspectives shape the findings rather than being constrained by narrow predefined assumptions. This approach helps capture the complexity of social issues, uncover unexpected themes, and provide a more holistic understanding by shedding light on intersecting issues—such as housing instability, transportation barriers, or healthcare access—that also impact food-insecure individuals and shape their ability to access adequate nutrition. Next, the facilitator discussed what photovoice was, what the goals of the project were, and the activities that participants would be involved in.

Participants were then asked to engage in a *think, pair, share* activity. Participants were asked to think about “*How did food get to your table this week? Consider the physical steps you took to put food on your table or the thoughts and feelings you had along the way.*” These questions were intended to spur reflection on the research question ‘What factors influence how people access food and what foods they eat’. Participants were instructed to think about this question, discuss it with a partner and then share their thoughts with the group. This activity was the first

step for participants to reflect on how they accessed food, what influenced this, and how they navigated food access in this region. It also set the stage for what photos participants could take and share with the group. After group discussions, participants were given instructions for photovoice activities. Participants joined the smartphone messenger application, WhatsApp (Facebook, Inc., Menlo Park, CA), to connect with the author and the facilitator during the photovoice project. Guidelines on photography, research ethics, and safety were also provided during this workshop.

Data Collection: Participants were instructed to take two weeks to reflect on the questions asked during workshop 1 and features of their lives or their community that relate to these questions. They were encouraged to take as many photos as they like but only select 5 – 8 photos that they felt were most meaningful and that they wanted to share with the group. To provide *voice* to the images, participants were asked to provide a description of the photos by addressing the following questions adapted from the SHOWeD technique:¹⁵⁴

- 1) What does this photo show
- 2) What is the story behind this photo?
- 3) How does this influence how or what you eat?
- 4) Does this photo represent a strength or challenge? And why is it a strength or challenge?

Once photos and descriptions were submitted to the author, a slideshow was prepared to present photos during workshop 2.

Workshop 2: Present at this workshop were the participants, lead facilitator, author acting as a note taker, and a research assistant acting as an assistant facilitator. This research assistant was

asked to assist in note taking and facilitating conversations as she has prior experience in qualitative research and is a native Spanish speaker. Participants began sharing their photos and the stories associated with their picture. Most participants provided only short descriptions of their photos and so they were encouraged to expand on these descriptions by addressing the adapted SHOWeD questions. Participants took turns sharing their photos and stories while others listened. After each participant finished presenting, the discussion was opened to the group for questions or comments, facilitated by the lead facilitator and assistant facilitator. Due to time constraints, only four participants presented during workshop 2.

Workshop 3: The lead facilitator, author acting as an assistant facilitator, and participants were present along with a new note taker. This note taker was asked to assist as the previous research assistant was not available and this person was familiar with photovoice activities and local food assistance as a regional WIC program coordinator, and fluent in Spanish. At this workshop, the remaining two participants presented their photos and shared their stories with the group with time for discussion after each presentation.

Once presentations were done, participants were asked to begin identifying categories (themes) found across the photos, stories, and discussions. Participants worked as a group to physically categorize photos and descriptions on a wall. They were instructed to consider the question posed in the first workshop: *“How did food get to your table this week? Consider the physical steps you took to put food on your table or the thoughts and feelings you had along the way.”*

Participants created a visual map of the photos, placing them together on the wall and creating a label to identify each category or theme. We also asked participants to identify any issues they

felt were missing from the photos. Results on these categories will be discussed in chapter 5. Lastly, we discussed with participants what the next steps should be in sharing these photovoice findings. Many were interested in participating in sharing findings with local leaders and policymakers. As of this dissertation, reports are being developed to first share with the photovoice participants with feedback. Once reports have been finalized, these findings will be shared with local leaders and policymakers to discuss relevant issues regarding food insecurity in this region.

3.7. Unstructured Interviews

During my time spent in the Parachute to Aspen Corridor and throughout the photovoice workshops, questions arose which led to unstructured interviews with residents (n=2) and a MCFNS partner (n=1). These interviews helped provide clarity on topics discussed during photovoice workshops or provide greater context to the issues relevant in the PAC region. Informed consent was given by all individuals.

3.8. Field Observations

Throughout my time spent in the PAC region for recruitment and photovoice workshops, I conducted field observations. Most of these observations occurred at food pantries, though some were based off interactions between me and local residents at shops, cafes, and around town. Much of this data helped provide context for food pantry operations and food retail sources that albeit informative, were not specifically used in chapter 4 or 5 of this dissertation. Nonetheless, these observations offered valuable insights into and deepening my understanding of the regional food environment.

3.9. Data Analysis

Participatory content analysis was used as Wang and Burris note that people should be directly involved in “defining issues”.¹⁴³ Participatory content analysis is a three-stage process by which the participants are actively engaged in. The first stage involves selecting the photographs that participants feel are the most important and willing to share with the group and community stakeholders as the project evolves. The second stage involves contextualizing or adding *voice* (Voicing Our Individual and Collective Experience) to the images they have selected. This step is critical because it provides the stories behind the photos chosen to discuss and share. Lastly, participants codify issues, themes, or theories that were salient in photos, stories, and group discussions.¹⁴³

Due to the limited time with participants, a follow up analysis was conducted by the research team to further review participant categories. Upon review, we found that there were many themes present in discussions that were not explicitly present in participant categories. Therefore, a follow-up analysis was conducted to identify these themes that were not identified by participant categories. The research team consisted of three graduate students, all with previous experience in conducting and analyzing qualitative research. All photovoice workshops were transcribed verbatim in Spanish using Sonix software (Sonix, Inc., San Raul, CA). Transcripts were checked for accuracy and edited by two research assistants fluent in Spanish and English. The Spanish transcripts were then translated to English using Sonix and validated by the author and the two Spanish-speaking research assistants. We tried to maintain as close to the original wording as possible, except where the meaning was not understandable in English.¹⁸⁵

After translations were completed, all material including transcripts, field notes, photos, and data gathered from informal interviews with community members were uploaded to NVivo 14 (Lumivero, Denver, CO) for further analysis. The first author and a research assistant separately created a codebook in a first cycle of coding based on an initial review of photovoice transcripts and photos. These codebooks were reviewed, codes and definitions were refined, and combined into one codebook. This codebook was revised iteratively throughout the coding process and used by all three research assistants in subsequent analyses. In the second cycle of coding, patterns and themes were identified that connected discussion points missing from participant themes.

3.10. Reflexivity and Positionality

Reflexivity is defined as a continuous and iterative process of self-awareness among the researcher to acknowledge their beliefs, biases, perspectives, and impacts on the research process.¹⁸⁶ This also requires introspection into one's positionality. Positionality is defined as the social, political, and historical contexts that shape a researcher's worldview and their location in relation to others.¹⁸⁷ Defining one's positionality includes self-reflection around 1) how the researcher's position (i.e., race, sex, life-history) impact the research, 2) how the researcher views themselves and how the research participants may view the researcher, and 3) how the research questions, design, data analyses, and interpretation will be impacted by the researcher.¹⁸⁸

Holmes cautions early researchers that finding your positionality is a timely process and requires deep thought.¹⁸⁹ Recently, calls for increased reflexivity have been made beyond the social sciences, particularly in the natural sciences to solve wicked conservation issues.¹⁹⁰ I echo this call for the nutrition research field to exercise reflexivity in solving complex food systems issues. Below, I provide a working draft of a positionality statement, knowing this may change throughout the course of my career.

“I grew up in a working-class household. While I did not experience food insecurity as a child, acute experiences of food and nutrition insecurity occurred, somewhat surprisingly at the time, during my graduate school studies. However, I acknowledge that I have had the privilege of a strong support system to lean on during hard times and have not experienced extreme hardships such as homelessness, unemployment, disability, or disease. My experiences have influenced my interest in pursuing food insecurity and the research presented here. Although I view myself low in the hierarchy of academia, as a researcher coming from higher education, I recognize that the participants may see me as the ‘educated expert’, thus creating a power imbalance. I hope to minimize this imbalance by reaffirming that participants are, in fact, the true experts of their lives and experience with food insecurity. I also acknowledge that I come into this community as an outsider so I lack the experience of living in and navigating this community. This may pose challenges in gaining trust with participants. At the same time, it may allow me to probe further questions of participants on information that may seem ordinary to folks living within the community.”

CHAPTER 4. ASSOCIATION OF INCOME AND COPING STRATEGIES AMONG FOOD INSECURE HOUSEHOLDS IN A HIGH COST-OF-LIVING REGION

INTRODUCTION

Food insecurity, or the inconsistent access to foods that are available, affordable, safe and nutritious,¹ is often experienced by those in poverty.² Yet, as the cost-of-living increases across the United States,¹⁹¹ modest wage increases in recent decades¹⁹² fail to match the current cost-of-living for many US households. These households may find themselves in a wage gap between being eligible for federal assistance and affording basic needs. In the aftermath of a global pandemic and ongoing inflation,¹⁹¹ US rates of food insecurity increased from 10.2% in 2021¹⁹³ to 13.5% in 2023.² Furthermore, over the last decade, rates of food insecurity among households with income above 130% federal poverty level (FPL), the national income requirement for the Supplemental Nutrition Assistance Program (SNAP) the largest federal food assistance program,⁴ have increased from 37.3% (2013)¹⁹³ to 48.9% (2023).² Without federal food assistance, many households living in this wage gap are left to cope with food insecurity in ways not yet well understood.

Coping strategies are the cognitive or behavioral mechanisms used to minimize the impacts of stressors individuals are impacted by.¹⁹ Such strategies offer temporary solutions to crises such as food insecurity. By examining these coping strategies, we may be able to better support households turning to such strategies. Seligman and Berkowitz (2019) offer a framework of how individuals cope with food insecurity at different levels such as consuming lower-quality foods (individual), making tradeoffs between food and other expenses such as medical bills (household), utilizing food pantries (community), or enrolling in federal food assistance

programs like SNAP (policy).¹⁸ To date, much of the literature on coping strategies among households experiencing food insecurity that report income above 130% FPL remains limited. While national income guidelines for programs like SNAP are the same across the contiguous US, the cost-of-living is highly variable throughout the country.^{13,194} And though many states have broad-based categorical eligibility for SNAP that increases income guidelines (i.e., 200% FPL in Colorado) for some households eligible for other federal assistance programs Temporary Assistance for Needy Families (TANF), general guidelines remain at 130% FPL.¹⁹⁵ The wage gap between being eligible for federal assistance like SNAP and being able to afford basic needs in high cost-of-living regions may be exacerbated.

The Parachute to Aspen Corridor is a one such high cost-of-living region in Colorado. Aspen is home to world class ski resorts and outdoor recreation, attracting tourists year-round. With median house prices at \$2.4 million (June 2024), many residents that come to Aspen for job opportunities must drive up to two hours to Parachute to find affordable housing. As cost of living continues to increase and vary across the US, there is a need to understand how households caught in this wage gap cope with food insecurity. In 2021, a collaborative partnership was formed between the university research team and a regional coalition for food and nutrition security to evaluate food insecurity in the PAC region. This study seeks to address our coalition partners' priorities, in part, through exploring coping strategies of food insecure households living below 130% FPL and above 130% FPL (up to 200% FPL) in a high cost-of-living region. The objective of this research was to determine whether there were differences in how households above and below 130% FPL 1) utilized charitable food assistance and 2) engaged in economic tradeoffs between food and other basic needs.

METHODS

Survey Design

A cross-sectional survey was developed using questions based on existing literature and input from community partners to understand if there were differences in how households above and below 130% FPL cope with food insecurity. The survey consisted of between 62-86 items.

Details of the measures included in the survey are outlined below.

Measures

Primary Outcome Variables

Use of Charitable Food Assistance. To determine how much food participants obtained from charitable food assistance, respondents were asked about the portion of total household food that came from different sources of charitable food assistance within the last 30 days including food pantries, soup kitchens, free foods given by family or friends, and other charitable food assistance^{18,136} Other charitable food assistance included options entered freely by participants including food provided at church, cooking demos, or other assistance organizations.

Respondents reported the portion of their total household food that was obtained from each food source based on a 7-point Likert scale from “None” to “All”. This measure was based on food sources outlined by the USDA’s 2012-2013 National Household Food Acquisition and Purchase Survey (FoodAPS)¹⁶⁴ and the ADePT-Food Security Module by Moltedo, et al. (2019).¹⁶⁵ As this was a new measure, cognitive interviewing was conducted with 20 participants (n=10 in English & n=10 in Spanish) to assess comprehension and recallability of the measure.

Economic Tradeoffs. Engagement in economic tradeoffs was measured using an adapted version of the validated tool by Feeding America (2014).^{121,166,196} Participants selected how frequently they engaged in tradeoffs between food and other basic needs, including medicine, housing, utilities, childcare, transportation, and education within the last 30 days rather than the past 12 months in the original survey. For example, “In the past 30 days, how often did you or your household have to choose between paying for food and paying for utilities?” Although childcare was not in the original validated measures, community partners cited childcare as an issue for many residents. Items were measured on a 5-point Likert scale from “Never” to “Always”.

Predictor Variable

Household Income. Income level was based on national SNAP eligibility set at 130% FPL during the 2022 fiscal year. Based on household size, participants were asked to select their annual income range in dollar amounts based off percentages of 2022 poverty guidelines. Monthly income amounts were also included in the response options to help with response accuracy. The ranges were a) at/below 100% FPL b) 101-130% FPL c) 131-165% FPL d) 165-185% FPL and e) 186-200% FPL. From the six response options, the income variable was then dichotomized as 0 = income \leq 130% FPL and 1 = income $>$ 130% FPL.

Covariates

Level of food security. Food security was measured using the USDA 10-item (households without children) or 18-item (households with children) food security survey.⁶⁵ Scores were calculated using the Rasch Model¹⁶⁸ and categorized into three groups – marginal food security, low food security, and very low food security.

Barriers to utilizing charitable food assistance. Barriers to charitable food assistance were measured using 11 items based on previously published studies.^{135,169,170} All barriers to utilizing charitable and federal food assistance were measured on a 7-point Likert scale from “strongly disagree” to “strongly agree” and were dichotomized (0 = disagree or neutral, 1 = agree). A Food Assistance Barrier score was developed, and answers were summed, producing a score ranging from 0-11.

Stigma and shame around utilizing food assistance. Ten items addressing stigma and shame with charitable food assistance were measured using a previously tested tool from Kindle, et al. (2019).¹⁷¹ Internal consistency for this scale was adequate ($\alpha = 0.87$). Participants were asked to state to what extent they agreed or disagreed via a 5-point Likert scale with statements such as “I feel I’m not as good a person as others because I used a food pantry”. The stigma and shame items were dichotomized (0 = disagree or neutral, 1 = agree) and summed to create a Stigma-Shame score ranging from 0-10.

Household resilience. A 6-item validated screening tool was used to measure household resilience, the capacity for a household to handle financial shocks that may otherwise result in food insecurity.¹⁷² Household resilience is based on three pillars: absorptive capacity – the ability to absorb financial shock by using resources on hand, adaptive capacity – the use information and create intermediate solutions to financial shock, and transformative capacity – to transform their situation based on community-level conditions.¹⁷² Validity testing showed adequate scores for absorptive capacity ($\alpha = 0.70$), adaptive capacity (3 factors, $\alpha = 0.83-0.90$), and transformative capacity (3 factors, $\alpha = 0.87-0.95$).¹⁷² Items were measured on a 5-pt Likert scale and participants

were identified as low absorptive, adaptive, or transformative capacity based on the resiliency screening tool guidelines.¹⁷²

Financial behaviors. Financial literacy (16 items) was measured by assessing financial decisions made to make ends meet. These items were sourced from the Organisation for Economic Co-operation and Development International Network on Financial Education Toolkit.¹⁷⁵ For instance, borrowing money or food from friends/family, or pawning something. Respondents were asked to select yes/no. Psychometrics for these items were not provided by the authors of this toolkit. A total score was created from 0-16. Higher scores indicated making more financial decisions to make ends meet.¹⁷⁵

Sociodemographic characteristics. Sociodemographic variables (8 items) included age, sex, race/ethnicity, education, household size, marital, employment, and housing status. Race and ethnicity were combined to reduce responses of “Some Other Race” for questions of race alone, particularly among those who identify as Hispanic.¹⁶⁷ For statistical analyses, sociodemographic variables were condensed due to low frequency of responses for some categories. Sex was dichotomized to female or not, education was condensed to three levels (Less than high school, High school degree or some college, and College degree or more), and race/ethnicity was condensed to four categories (Black, Hispanic/Latino, White, and Other – combining Multiracial, “Other”, American Indian/Alaska Native, and Asian/South Asian/Pacific Islander).

Survey Administration

The survey was administered online via Qualtrics platform (Qualtrics XM, Seattle, WA) and in person via hard-copy format or tablets to reach participants with limited access to internet or technology. Convenience and quota sampling was used to ensure approximately half participants had income above and below 130% FPL. In person recruitment took place at tabling events at food pantries and health fairs and door knocking at local organizations including churches, daycares, cafes and community centers. Participants were also recruited through direct outreach from community partners and social media advertisements. Responses were collected from December 2022 to March 2024. Participants were compensated with a \$10 gift card.

Participants

To be eligible, participants needed to: 1) be 18 years or older, 2) live or work in the PAC region (Pitkin, Eagle, or Garfield counties) and 3) screen at risk for food insecurity using the Hunger Vital Signs screener.⁷² Out of 3,131 eligible participants that opened the survey, 2,078 did not complete the survey and 32 were removed due to missing data, resulting in a final total of n=1,021 participants that completed the survey (Figure 1).

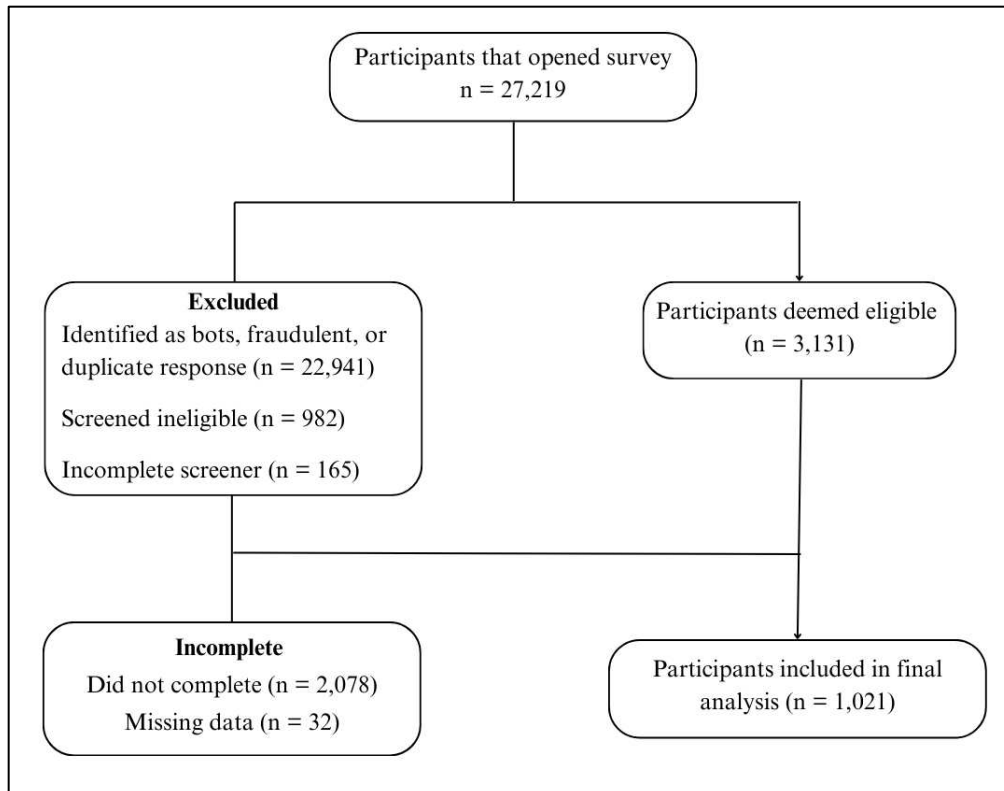


Figure 4.1. Flow diagram for participants of the PAC Food Insecurity Survey.

Note: Recruitment via social media elicited significant response volume from bots. Increased security measures were put in place in line with the Qualtrics platform security recommendations and additional screening protocols set by the research team (See supplemental figure 1 for protocol).

Data Analysis

All analyses were conducted using STATA/SE 17.0 (StataCorp LP, College Station, TX).

Participants that had missing data for community food assistance resources (n=32) and economic tradeoffs (n=5) were dropped from the final analytic sample (n=1,021). Descriptive statistics for the sociodemographic variables were calculated. Descriptive differences between participants above and below 130% FPL were measured using Chi-square tests of independence for categorical variables and *t*-tests for continuous variables. Ordinal logistic regression models were run to evaluate the odds of obtaining food from each charitable food assistance source and engaging in each economic tradeoff among participants above and below 130% FPL. A posthoc

likelihood ratio test produced significant results for at least some variables in all models ($p < .05$), indicating that the assumption for proportional odds had been violated.¹⁸⁰

Therefore, generalized ordinal logistic regression models, which allows for partial proportional odds, were run to determine any associations between income level (operationalized as below and above 130% FPL) on different food insecurity coping strategies 1) is income level associated with the use of charitable food assistance use and 2) is income level associated with engagement in economic tradeoffs. A single odds ratio is displayed where assumptions for proportional odds for the primary predictor variable, SNAP eligibility, were not violated. Variable odds ratios are presented where assumptions for proportional odds were violated. Generalized ordinal logistic regressions produce outcomes for multiple binary logistic regressions in which the lower level(s) of the dependent variable is compared to higher levels (i.e., 0 vs 1, 2, 3; 0,1 vs 2,3; and 0, 1, 2 vs 3). Models were adjusted for age, sex, education level, employment status, housing status, marital status, and race/ethnicity. Statistical significance was set to an $p < 0.05$ for all tests.

There was a low frequency of responses “Almost all” and “All” for use of charitable food assistance sources, and issues with model fit (i.e., negative predicted probabilities and not achieving convergence). Therefore, the categories were condensed from seven to four:^{179,197} The final categories are “None” (unchanged), “Only a little” and “Less than half” were combined into the new category “A small portion”, “About half” (unchanged), and “More than half” “Almost all”, or “All” were combined into the new category “The majority”. There were similar issues not reaching model convergence and negative predicted probabilities due to low frequency of various responses across the economic tradeoff items. Therefore, categories were condensed

from five to three as follows: “Never” (unchanged), “Rarely” and “Sometimes” were condensed to “Occasionally”, and “Often” and “Always” were condensed to “Frequently”.

Sensitivity analyses

Because only some households would likely have expenses for childcare and education, we ran sensitivity analyses evaluating the economic tradeoffs for households that likely had childcare expenses (only those who had children aged birth through 5 years)¹⁹⁸ and households that likely had education expenses (only those with education level of at least some college or more).¹⁹⁹

Moreover, eligibility guidelines for SNAP are complex and vary depending on household circumstances such as variable deductions that apply to different households and individual state-level eligibility guidelines (i.e., BBCE in Colorado is set to 200% FPL) Therefore, a sensitivity analysis was also performed to examine the relationship between income, treated as an ordinal variable (instead of dichotomous), and use of charitable food assistance and engagement in economic tradeoffs. All sensitivity analyses were adjusted for age, sex, education level, employment status, housing status, marital status, and race/ethnicity, and considered significant at $p < 0.05$.

RESULTS

A total of 1,021 participants completed the survey. Surveys were completed electronically via Qualtrics on their own device (n=969), electronically via Qualtrics on a provided tablet (n=40), via telephone interview (n=3) or hard-copy formats (n=9). In total, 20 participants required assistance due to limited technology skills or low literacy levels. Twenty-two percent of surveys (n=231) were completed in Spanish. The survey took an average of 26 minutes (range:10 – 98 minutes) to complete.

Sample Demographics

Table 4.1 presents sociodemographic variables by income level (above/below 130% FPL). The majority of the sample was female (57%) and included 37.3% White/Caucasian and 22.9% Latino/Hispanic participants. The mean age was 39.2 (SD = 9.6), most (87%) had a high school education or higher and almost half (43%) reported income below 100% FPL. Our sample was representative of regional demographics for sex, education, and Latino/Hispanic ethnicity. There were less White/Caucasian participants and more Black, Asian, Indigenous, and Multiracial participants and higher numbers of participants living in poverty in this sample compared to regional estimates. These could both be due to sampling for food insecurity which disproportionately impacts those of lower income and people of color.²

Table 4.1. Bivariate differences in sociodemographic characteristics and other covariates of food insecure residents in the Parachute to Aspen Corridor Region by all households and based on income below/above 130% FPL (n=1,021).

	Total % or Mean (SD)	Below 130% FPL (n=610), [% or mean (SD)]	Above 130% FPL (n=434), [% or mean (SD)]
Race/ethnicity			
White/Caucasian	37.3	37.9	36.5
Latino/Hispanic	22.9	22.0	24.3
Black/African American	14.7	18.4***	9.3***
Multiracial	18.0	13.1***	25.3***
AI/AN	2.8	3.8*	1.5*
Asian	2.4	2.6	2.0
Other	1.9	2.3	1.2
Sex			
Female	57	50.8***	66.2***
Male	40.9	47.1***	31.9***
Other	2.0	2.1	2.0
Age (years)	39.2 (9.6)	39.5 (9.4)	38.6 (9.9)
Education			
8 th grade or less	3.8	4.1	3.4
Some high school	9.2	11.5**	5.8**
High school graduate	16.9	14.4*	20.4*
Some college/tech school	29.5	32.5**	25.1*
College graduate	32.9	31.5	35.0
Grad school/ professional degree	7.7	6.1*	10.2*
Household Size	3.2 (1.4)	3.1 (1.4)	3.2 (1.4)
Married	51.8	49.5	55.1
Income Group (% FPL)			
Below 100% FPL	42.9	71.8	-
100 – 130% FPL	16.9	28.2	-

131 – 165% FPL	27.8	-	69.1
166 – 185% FPL	8.9	-	22.1
186 – 200% FPL	3.5	-	8.8
Unemployed	15.0	13.1*	17.8*
Temporary Housing	27.3	27.9	26.5
Language Spoken			
English	70.4	74.3**	64.7**
Spanish	18.7	17.9	20.0
Bi- or Multilingual	10.9	7.9***	15.3**
Food Insecurity (total household)			
Marginal Food Security	7.9	5.6**	11.4**
Low Food Security	16.3	14.3*	19.2*
Very Low Food Security	75.8	80.2***	69.3***
Federal Assistance Recipients			
SNAP	60.5	63.2*	56.5*
Any federal assistance ^a	76.0	78.8*	72.0*
Charitable Food Assistance Barrier Score	4.3 (3.6)	4.6 (3.8) **	3.9 (3.3) **
Stigma/shame Score	2.1 (2.4)	2.0 (2.3)	2.1 (2.5)
Financial Literacy Score	6.0 (4.0)	6.1 (4.0)	5.7 (4.1)

Note: SD – standard deviation. FPL = federal poverty level. AI/AN = American Indian/Alaska Native. Asian includes Asian, South Asian, and Pacific Islander identified participants. SNAP = Supplemental Nutrition Assistance Program. Categorical variables analyzed using chi-square test. Continuous variables analyzed using *t*-test. Charitable Food Assistance Barrier Score was based on a scale 0 – 11. Stigma/shame Score was based on a scale 0 – 10. Financial Literacy Score was based on a scale 0 – 16.

a. Any federal assistance included Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), meal services targeting older adults.

* $p < .05$; ** $p < .01$ ***; $p < .001$

Bivariate Analyses

Results for all bivariate analyses are presented in Table 4.1. The majority of participants below 130% FPL (80.2%) reported very low food security compared to 69.3% of participants above 130% FPL, $\chi^2(1, n=1,021) = 15.7, p<0.001$). Among those with income below 130% FPL, there were significantly more participants that identified as Black/African American (18.4%), $\chi^2(1, n=1,021) = 16.3, p<0.001$), and American Indian/Alaska Native (3.8%), $\chi^2(1, n=1,021) = 4.8, p<0.05$), but significantly less that identified as Multiracial (13.1%), $\chi^2(1, n=1,021) = 25.0, p<0.001$). There were also significantly more women (66.2%) among those with income above 130% FPL, $\chi^2(1, n=1,021) = 23.6, p<0.001$). For education, more participants with income above 130% reported a graduate school or professional degree (10.2%), $\chi^2(1, n=1,021) = 5.9, p<0.05$), whereas more participants with income below 130% FPL reported some high school (11.5%), $\chi^2(1, n=1,021) = 9.3, p<0.01$). In addition, there were significantly more participants with income above 130% FPL that reported unemployment (17.8%) compared to those with income below 130% FPL, $\chi^2(1, n=1,021) = 4.2, p<0.05$). Mean scores for barriers to using charitable food assistance were significantly higher among participants below 130% FPL ($x = 4.6 \pm 3.8; p<.01$) compared to participants above 130% FPL. Not surprising, more participants below 130% FPL than those above 130% FPL were current federal assistance recipients and SNAP recipients ((78.8% vs. 72%, 63.2% vs 56.5%, $p<.05$) respectively).

Charitable Food Assistance

Table 4.2 shows the individual odds ratios (ORs) for each level of food amount obtained from different charitable food assistance sources (“none”, “a small portion”, “about half”, or “the majority”). Overall, food insecure participants above 130% FPL had higher odds of receiving a

majority of their household food from food pantries and soup kitchens compared to participants below 130% FPL. More specifically, participants above 130% FPL were more likely to obtain more of their total food from food pantries (ORs = 1.84-2.43) and soup kitchens (ORs = 1.74 – 1.93) compared to participants below 130% FPL. Sensitivity analyses using income as an ordinal variable also showed similar findings—that as income increased, the reliance on charitable food assistance for more of their food increased—though the overall effect sizes were slightly attenuated (see Supplemental Table 3).

Table 4.2. Differences in the odds of obtaining none, a small portion, about half, or the majority of total household food from charitable food assistance sources for participants above 130% FPL compared to those below 130% FPL.

	GOLR Odds Ratios (95% Confidence Interval)		
	≥ 1 vs 0 A small portion or more vs None	≥ 2 vs ≤ 1 About half or more vs A small portion or less	3 vs ≤ 2 The majority vs About half or less
Charitable Food Assistance Source			
Food Pantries ^a	0.99 (0.69, 1.43)	1.84 (1.39, 2.43) ***	2.43 (1.71, 3.44) ***
Soup Kitchens ^a	0.75 (0.56, 1.00)	1.74 (1.21, 2.48) **	1.93 (1.12, 3.32) *
Free Food (Family/Friends)	1.18 (0.91, 1.54)	1.18 (0.91, 1.54)	1.18 (0.91, 1.54)
Other CFA	1.35 (0.99, 1.84)	1.35 (0.99, 1.84)	1.35 (0.99, 1.84)

Notes: GOLR = generalized ordinal logistic regression. CFA = charitable food assistance. Models were adjusted for age, sex, education level, employment status, housing status, marital status, race/ethnicity, recipient of federal assistance, charitable food assistance barrier score, and stigma-shame score.

a. The assumption for proportional odds for the primary variable, income above/below 130% FPL, were violated, yielding variable odds ratios for each level of the outcome variables food pantries and soup kitchens.

* $p < .05$; ** $p < .01$; *** $p < .001$

Economic Tradeoffs

Table 4.3 presents the odds ratios between households above and below 130% FPL for how often (“never”, “occasionally”, or “frequently”) they engaged in economic tradeoffs with medicine, housing, utilities, childcare, education, transportation and food. Compared to participants below 130% FPL, participants above 130% FPL were significantly more likely to engage in tradeoffs between food and medicine (OR = 1.56), childcare (OR = 1.18), and transportation (OR = 1.23). For tradeoffs with utilities, households above 130% were significantly more likely to engage in tradeoffs frequently or more (OR = 1.29). Lastly, households above 130% FPL were also significantly more likely to engage in tradeoffs between food and education (OR = 1.25-1.47). Sensitivity analyses for tradeoffs among households that likely had childcare expenses (only those who had children aged birth through 5 years)¹⁹⁸ and households that likely had education expenses (only those with education level of at least some college or more)¹⁹⁹ can be found in supplemental tables 6 and 7, respectively. Overall, odds ratios were stronger among households with children (aged birth through 5 years) and mixed for households more likely to have education expenses. Sensitivity analyses using income as an ordinal variable were consistent—as income increased the odds of making economic tradeoffs between food and medicine, utilities, childcare, education, an/or transportation increased (though some ORs were attenuated) (see Supplemental Table 5).

Table 4.3. Differences in the odds of never to always engaging in economic tradeoffs between food and other basic needs for participants above 130% FPL.

GOLR Odds Ratios, Adjusted (95% Confidence Interval)		
Economic Tradeoffs	≥ 1 vs 0, Occasionally or more vs Never	2 vs ≤ 1 , Frequently vs Occasionally or less
Medicine	1.56 (1.17, 2.08) **	1.56 (1.17, 2.08) **
Housing	0.96 (0.85, 1.08)	0.96 (0.85, 1.08)
Utilities ^a	0.86 (0.75, 0.99) *	1.29 (1.12, 1.50) **
Childcare	1.18 (1.04, 1.33) **	1.18 (1.04, 1.33) **
Education ^a	1.25 (1.10, 1.42) **	1.47 (1.25, 1.73) ***
Transportation ^b	1.23 (1.07, 1.41) **	1.23 (1.07, 1.41) **

Notes: GOLR = generalized ordinal logistic regression. The first column presents odds ratios for categories “Occasionally” or higher (in this case, “Frequently”) compared to “Never”.

“Occasionally” is a combined category of “Rarely” and “Sometimes”. The second column presents odds ratios for category “Frequently” compared to “Occasionally” or less (in this case, “Never”). “Frequently” is a combined category of “Often” and “Always”. Models adjusted for age, sex, education, employment status, housing status, marital status, race/ethnicity, federal assistance recipients, household resilience, and financial literacy.

a – The assumption for proportional odds were violated, yielding variable odds ratios for each level of the outcome variable, food vs. utilities.

b – Sample size for tradeoffs between food and transportation was limited to n=764 due to missing data.

* $p < .05$; ** $p < .01$, *** $p < .001$

DISCUSSION

Overall, these findings suggest that households above 130% FPL are more likely to cope with being food insecure by getting the majority of their food from charitable food assistance resources and utilizing economic tradeoffs between food and other basic needs more often compared to households below 130% FPL. More specifically, households above 130% FPL were one and a half to two and a half times more likely to receive the majority of household food from food pantries and soup kitchens. Compared to households below 130% FPL, those above 130% FPL were 18 – 56% more likely to engage in tradeoffs between food and medicine, utilities,

childcare, education, and transportation. Collectively, these findings demonstrate that in this high-cost-of-living region in Colorado, food insecure residents that make too much gross income to qualify for federal assistance (like SNAP) need to engage in coping strategies more often and for more of their food than those that would qualify for these programs based on income.

These data suggest that as income increases for food insecure households, so does the likelihood of receiving a larger portion of household food from food pantries and soup kitchens— from a small portion to the majority of household food. This could be in part due to the limited access to federal assistance like SNAP for households making more than the income limit. This is consistent with prior research evaluating SNAP recipients, which suggests recipients utilize food pantries more frequently once benefits have run out.²⁰⁰ Similarly, tradeoffs between food and education and utilities odds ratios were both higher for the more frequent category. This dose response finding is in line with previous findings showing a higher percentage of food assistance users making decisions between paying for food and paying for other basic needs more frequently compared to lower frequency responses.¹²¹ This could be due to the severity of food insecurity within this sample population as well, as the need for assistance with utilities or medical care has been associated with higher risk for food insecurity.²⁰¹

It may be unexpected that households with incomes above national SNAP income guidelines are more likely to utilize charitable food assistance and engage in economic tradeoffs compared to households that are eligible for SNAP. These findings may be in part due to the concept that households that do not qualify for SNAP or other federal assistance programs may have fewer resources to meet their basic needs, as they must rely more heavily on their own income, community resources, or informal support networks. Data from the Current Population Survey

2020 show that 48% of adults and 67% of children that receive any federal assistance participate in two or more programs, which highlights the multiple benefits that eligible households are potentially receiving.⁹⁸ Without these safety nets, they may face greater financial strain, making it more difficult to afford necessities like food, housing, and healthcare compared to households that receive assistance. This is most clearly illustrated in households experiencing benefits cliffs, where their household income becomes too high to be eligible for federal assistance benefits. However, this higher income ultimately results in a net negative loss of financial resources due to the loss of benefits.¹¹⁶

This higher use of charitable food assistance among higher income individuals may reflect fewer financial resources to spend as they may not have the financial assistance provided by federal assistance programs, thus households turn toward charitable foods more frequently. However, further investigation is warranted to substantiate this claim. Additionally, it could be that engaging in economic tradeoffs (e.g., paying for utilities rather than food) increases the likelihood of relying on charitable food assistance to meet household food needs as seen in previous literature.²⁰² More recently, Hernandez et al. (2024) highlighted the increased risk of food insecurity among food pantry clients that engaged in economic tradeoffs between food and utilities, childcare, medicine, and transportation.¹⁹⁶ This engagement in economic tradeoffs among food insecure households that also access food pantries is consistent with the simultaneous coping strategies that food insecure families are using in our study.

Limitations

Unpredicted challenges during recruitment included heavy traffic responses from bots via social media marketing efforts. Consistent with Griffin, et al. (2022), numerous protocols were put in

place to limit bots including CAPTCHAs (Completely Automated Public Turing Test to tell Computers and Humans Apart), attention checks, trap questions, and collecting GPS data.²⁰³ While time consuming, these more stringent bot detection and data cleaning protocols ensured that data were higher quality. In addition, much of our recruitment efforts were coordinated alongside community partners, many of whom are in the food assistance space, which may selection bias our sample to include more clients of food assistance programs. Although, our social media recruitment strategies may have helped reach households not utilizing food assistance. Social media advertisements began later in recruitment, therefore approximately 37% of our sample were recruited via in-person or partner recruitment strategies with the remaining 63% likely recruited via social media.

Citizenship status and history of imprisonment were intentionally left off to reduce hesitation in completing the survey among residents without documentation or those formerly incarcerated. However, this limits our understanding of who is truly eligible for SNAP benefits. Further, we used 130% FPL as this is the national SNAP income guideline. However, Colorado sets broad-based categorical eligibility for SNAP at 200% FPL, which means some households that receive other federal assistance with income between 130 - 200% FPL could still receive SNAP (as long as they meet the net income requirement of 100% FPL). To address this, we conducted sensitivity analyses that evaluated income as an ordinal measure (ranges of income) and adjusted for both current SNAP and other federal assistance program participation in regression models. Lastly, this study was cross-sectional, limiting our understanding of how food insecurity above SNAP income guidelines lead to various coping strategies.

Strengths

This study helps bridge the gap in our understanding of how SNAP eligible and ineligible households cope with food insecurity in a high cost of living region. Several strengths should be noted. The large sample size allowed us to better represent the study population for sex, ethnicity, and education. The sample was also representative of the national food insecurity statistics based on SNAP income eligibility (49% of SNAP-eligible households were food insecure in 2023 compared to 42% of our sample). Furthermore, our community engaged approach ensured that research activities were informed by our partners and enabled us to reach participants that may not have participated otherwise. Moreover, all surveys were distributed in Spanish or English; through different modalities like online via personal devices or in-person via tablets or hard-copy formats; individually or with assistance (if needed); or via phone interview, which enabled us to reach hard-to-reach populations like people experiencing low-literacy, older adults, etc.

Lastly, though the Parachute to Aspen Corridor is a specific region, it is not so unique. According to the Living Wage Calculator, an estimated income of \$144,360 is needed to sustain a family of four in the PAC region, similar to other high cost-of-living regions such as Los Angeles, CA (\$138,280), New York, NY (\$159,188), Lake Tahoe, CA (\$138,056), Jackson Hole, WY (\$155,730).¹⁶ The PAC region may serve as a model for other similar high cost-of-living regions that thrive off a tourism economy, yet residents and the workers that support regional industries struggle to make ends meet.

Implications

These findings suggest that households that live above national income guidelines for SNAP in a high cost-of-living region are utilizing various strategies such as increasing reliance on charitable food assistance and engaging in economic tradeoffs with other basic needs more than households with lower incomes. Often referred to as emergency food relief, food pantries may be the front line of defense against hunger for families that find themselves ineligible for federal food assistance. The growing demand put on charitable food assistance since the COVID-19 pandemic requires government support if they are to continue to be a substantial source of food for households above 130% FPL.²⁰⁴ This study also shows the implications of food insecurity on other basic needs security. Expanding programs aimed at providing assistance for basic needs expenses such as the Low-Income Energy Assistance Program and Child Tax Credit may help alleviate the burden of food insecurity.^{205,206} Similarly, expanding federal food assistance programs such as SNAP may also free up funds for other basic needs. Due to variable cost of living across the US, implementing more flexible and regional income eligibility requirements may reduce the income gap between SNAP eligibility and a living wage for households experiencing food insecurity.

This study highlights the need for more research to understand the increasing needs of food insecure households that make too much income to qualify for federal food assistance yet are far from making ends meet. Longitudinal studies following how households cope with food insecurity over time would allow us to capture both seasonal and economic fluctuations; this may be especially important in a high cost-of-living tourist area like the PAC region where employment opportunities are variable throughout the year. In addition, we may elucidate why

individuals use coping strategies as temporary or long-term solutions to food and other basic needs insecurity. Future longitudinal research could also evaluate how these coping strategies affect dietary intake and long-term health outcomes. Additionally, further research in other high cost of living regions would allow a more comprehensive look into how households above SNAP eligibility cope with food insecurity and what additional resources are necessary to help these families. Studies comparing these regions with lower cost of living regions could also help uncover whether some of these findings are the result of living in a high cost of living region versus other factors.

CHAPTER 5. NAVIGATING FOOD INSECURITY AMONG HISPANIC/LATINO HOUSEHOLDS IN A HIGH COST-OF-LIVING RURAL REGION

INTRODUCTION

Food insecurity, or the limited access to adequate foods, saw significant increases in the US from 10.5% in 2019³⁰ to 13.5% in 2023.² Along with rises in national food insecurity rates, significant racial disparities persist with more than twice as many Hispanic households (21.9%) experiencing food insecurity compared to White, non-Hispanic households (9.9%).² This higher risk of food insecurity may be due to barriers for Hispanic/Latino households such as language, administrative burdens of federal nutrition programs, uncertainty around public charge, lower levels of acculturation, transportation issues, and family demands.²⁰⁷ This increased risk of food insecurity has significant health implications for these populations including poor diet quality,²⁰⁸ weight gain,⁵³ chronic disease,²⁰⁹ and mental health issues.²¹⁰ In addition, higher rates of food insecurity have been associated with higher food²¹¹ and housing²¹² costs, and cost-related medication underuse¹⁴¹. As the cost-of-living continues to increase across the US, constraints on households meeting food and other basic needs may also increase.

Food insecurity is both a social and economic situation that is shaped in part by the environments individuals live and work in.⁵⁰ For example, food source availability (both retailers and charity) and physical access to these food sources (via roadways and infrastructure) help determine overall access to food.⁴⁰ As such, understanding the surrounding social and economic context within a community may provide critical insights to how food insecurity is experienced and manifests at an individual and community level. Community engaged research (CEnR), which begins with an issue relevant to the community (food insecurity here), and works to integrate

“knowledge with action and achieving social change to improve health outcomes and eliminate health disparities”, provides a useful approach as it allows researchers to engage with community partners and residents who have perspective, knowledge, and first-hand experiences of issues like food insecurity.¹⁵⁸

Furthermore, while there is considerable quantitative literature addressing the associations and implications of food insecurity among Hispanic/Latino households, there is limited qualitative research on the lived experience of these households in the context of high cost-of-living regions, particularly across the public health nutrition sector. Exploring the lived experience of individuals directly affected by food insecurity using community engaged research can provide a deeper understanding of the underlying factors that influence food access and dietary patterns and how these households cope with the challenges of food insecurity.

One such qualitative technique that aims to elicit more about the “lived experience” is photovoice, a participatory research strategy that invites participants to use photography and storytelling to identify and share issues they are facing in their communities.¹⁴³ Photovoice provides researchers an opportunity to gain access to differing perspectives and the lived experiences of community members they may not normally have access to.¹⁴³ Participatory research also challenges traditional knowledge production and power structures by emphasizing participation from community members and collaboration with researchers.¹⁸¹ Public health nutrition researchers have used photovoice to explore how the food environment influences dietary patterns and access to healthy foods and physical activity among youth.^{144,213} Photovoice has also been used to examine how parents navigate food insecurity like how Latina mothers

feed their children in a ‘food swamp’ (neighborhood with a high concentration of fast food or convenience stores),²¹⁴ how parents provide food for their family and impacts of food insecurity on parental well-being,¹⁴⁶ and how federal nutrition assistance participants experience food insecurity.²¹⁵ Though these studies highlight challenges food insecure households face, they are focused on metropolitan regions where issues of food access may be different from rural regions. Research using photovoice to understand the factors that influence food access among Hispanic/Latino households and their coping strategies with food insecurity in a high cost of living rural region is limited.

This study presents the efforts of community engaged research to foster relationships, increase outreach to underserved populations, and use photovoice as a way to engage with community residents in a more collaborative and transformative way. By sharing this work, we hope to emphasize the strengths that community partners and residents bring to research agendas and the benefits of honoring community priorities. The present study is part of a larger community engaged research project to explore food and nutrition insecurity in a high cost-of-living region in the US.

Community Context

The Parachute to Aspen Corridor (PAC) is a well-known tourist destination for skiers and summer recreationalists in the Roaring Fork Valley in Colorado. Though to year-round residents, including many Hispanic/Latinos (28%),²¹⁶ the rurality of the region and high cost-of-living have made food insecurity a salient issue. From 2019 to 2022, regional meal costs increased from \$3.62 to \$4.80 while rates of food insecurity also increased from 7.8% to 10.4%.²¹⁷ Yet, for

Hispanic and Latinos across Colorado, rates of food insecurity are twice that of non-Hispanic white counterparts (18.2% vs 8.8%, respectively).²¹⁸ And while tourism drives part of the economy in the PAC region, the effects of tourism on cost-of-living and food security among these residents is not well understood.

In 2021, a partnership was formed between researchers from the STOP (Systems Thinking for Obesity Prevention) Laboratory in the Department of Food Science and Human Nutrition at Colorado State University and the Mountain Coalition for Food and Nutrition Security (MCFNS). This coalition consisted of local organizations including a regional health alliance, food banks and pantries, and public health departments. Facing increasing food insecurity in light of the COVID-19 pandemic, this coalition aimed to create a strategic plan to end regional food insecurity. Our community partners' objectives also aligned with recent calls to action by the USDA focused on expanding research on food and nutrition security to ensure that not only is there *enough* food to feed everyone, but that the food available is also affordable, safe, nutritious, and culturally relevant.⁷⁹

The collaborative research process between the MCFNS coalition and STOP lab was grounded in ongoing dialogue and shared decision-making. During meetings, the STOP lab and MCFNS coalition discussed regional food security challenges, identified gaps in existing knowledge, and highlighted current community-led efforts to address food access. For instance, recent work done in the community involved a survey from The Food Bank of the Rockies to assess cultural food preferences, and interviews led by SANA (the Safe and Abundant Nutrition Alliance) with community residents on barriers and solutions to food access. This work helped inform our

efforts as well as ensured we did not duplicate or minimize the ongoing work of our coalition partners.

The first phase of this larger community engaged research project surveyed PAC residents on their coping strategies with food insecurity. Survey findings revealed that the majority of households utilized charitable food assistance and engaged in economic tradeoffs between food and other basic needs like medicine to cope with food insecurity. While this informed some of our understanding of how people face food insecurity, more nuanced insights such as the lived experience and perspective of food insecurity were still lacking. Data from this survey and communication with our coalition partners also highlighted the struggles that many Hispanic/Latino families were facing in the PAC region. Therefore, this study centers on the lived experience of low-income Hispanic/Latino residents facing food insecurity in the PAC region, a high cost-of-living tourist rural region in Colorado. Through photovoice, we explored what factors influenced how people access food in this community and how people navigated food insecurity in this region. These findings will be used to supplement our prior quantitative work by providing deeper meaning to the experiences behind food insecurity. This work also aims to illuminate the use of photovoice in public health nutrition as a means to engage and empower more residents in community engaged and participatory research and provide insight into the lived experiences of food insecurity.

METHODS

This CEnR began with MCFNS coalition partners asking questions regarding the state of food insecurity in the PAC region. Development of the research design and research questions being

asked here was based on these initial questions posed by MCFNS coalition partners. In addition, initial conversations covered what existing assessments MCFNS partners had done and what data would best serve to inform their strategic plans regarding regional food insecurity. Coalition partners and the STOP lab team agreed that the use of photovoice as another evaluation component would center the voices of food insecure residents and provide additional mediums through photos documenting the resident perspectives on food insecurity and food access.

Photovoice

Photovoice was conducted with a group of six Hispanic/Latino/a residents living with food insecurity in the PAC region. Those that completed the photovoice activities received \$100 compensation. To protect their identities, participants were asked if they would prefer using aliases for data sharing and all participants agreed. Therefore, all names that follow are aliases. All research activities were approved by the Colorado State University Institutional Review Board (Approval number 4223; exempt). Verbal consent was provided by all participants.

Recruitment and Screening

The MCFNS coalition partners, and in particular SANA, played a pivotal role in our recruitment efforts by identifying and engaging residents they recognized as outspoken and representative voices for those experiencing food insecurity. This was a key component as photovoice is most impactful when those participating are not only willing, but also eager to share their experience and voice with others to educate and raise awareness around relevant community issues.

Residents in the PAC region were recruited largely using snowball sampling via our coalition partner, SANA, whose work focuses on promoting food security, particularly among Hispanic/Latino residents in the PAC region.²¹⁹ Other recruitment efforts included in-person tabling events and social media campaigns. Potential participants were able to sign up to participate in the study online via Qualtrics platform or a hard copy survey. The original sample size goal was set to 30 in three groups of ten each. A cohort of ten was in line with recommendations from Wang (1999).¹⁵⁴ In addition, we aimed for three cohorts to be able to capture both English and Spanish-speaking residents' perspectives as well as perspectives across the PAC region, from 'up-valley' near Aspen to 'down-valley' near Parachute. However, after issues with slow or stalled recruitment and scheduling over a period of more than four months, the sample size goal was adjusted to 10. To be eligible participants had to meet all screening criteria, including: 1) be 18 years or older, 2) live in the PAC region (Pitkin, Eagle, or Garfield counties), 3) screen for food insecurity, and 4) identify as the primary household food shopper.

Facilitation

A photovoice facilitator guide was developed based on the photovoice methodology by Wang and Burris (1997)¹⁴³ and guide by Rutgers International and the Youth Empowerment Alliance.¹⁸³ Facilitation is based on the theoretical framework for photovoice; educating the oppressed to raise awareness and free the self from oppression, challenging dominant power structures, and using photos to convey powerful message.¹⁴³ In addition, our SANA partners' existing knowledge and connections among this population provided our research team with insights into how to shape the photovoice facilitation and workshops. Adjustments were made to reflect our coalition partners' insights and priorities and align with research questions and a focus group

format. The guide included principles of facilitation as outlined by Wang and Burris,¹⁴³ guidelines for recruitment and screening and the guides for each workshop. For workshops, the facilitator guide provided an overview of topics to cover, key points to discuss with participants such as objective of the overall study, group activity instructions, and helpful prompts for the facilitator to use as needed such as “How did you make the decision to get food from X place?” The full facilitator guide can be found in Appendix 8. Preliminary testing was done with a convenience sample (n=4) to assess the format and flow of the workshop and refine questions and activities.

A community leader from SANA was the lead facilitator for photovoice. The facilitator was chosen due to her knowledge of the region, established rapport among community members, particularly the Hispanic/Latino residents, involvement in food access efforts, and fluency in the Spanish language. Prior to facilitating all sessions, she was trained on photovoice methodology and facilitator principles according to Wang and Burris.¹⁴³ The lead author also acted as an assistant facilitator as needed. All material was translated to Spanish by fluent Spanish speakers on our research team. The material was also reviewed by the lead facilitator.

Photovoice Workshops

Three two-hour workshops were held at a local community center over a one-month period in the summer of 2024 (see Figure 1). The workshops were held in a facilitated group discussion to encourage discussion and collaboration among participants.¹⁸² Although titles such as facilitator and participant are used, both participants and facilitators played active roles in driving group discussions, and collecting, analyzing, and interpreting data. In addition to the facilitators and

participants, there was a third co-facilitator/note-taker for workshops 2 and 3. All workshops were audio recorded and conducted in Spanish as this was the primary language used by all participants.

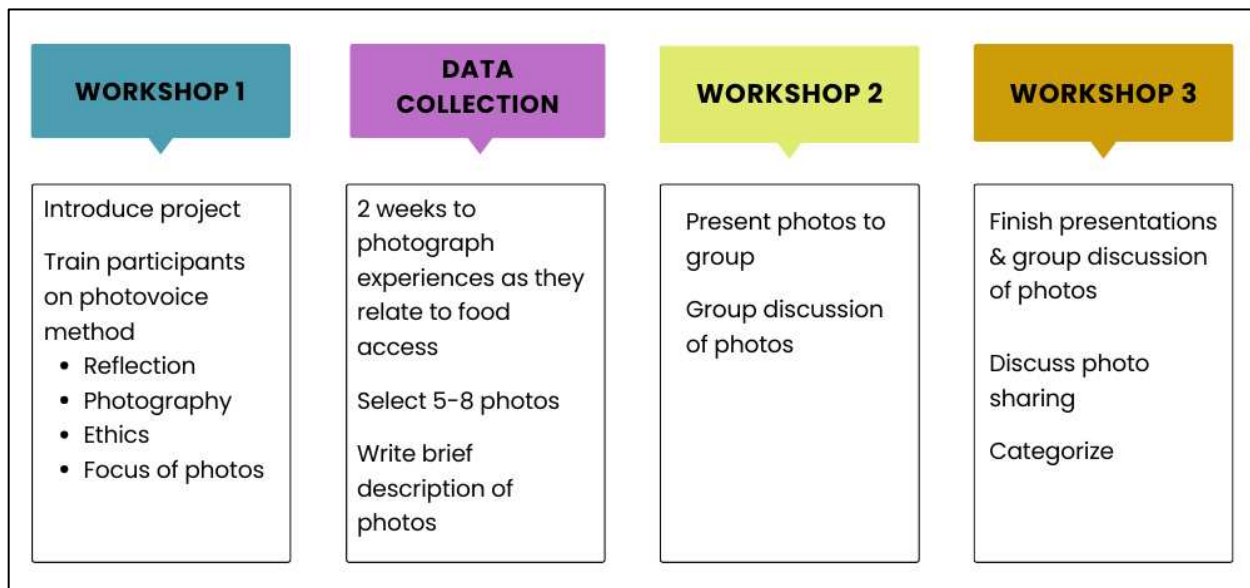


Figure 5.1. Diagram of Photovoice Workshop and Data Collection Activities for PAC Food Insecurity Evaluation

Workshop 1: Informed consent was given and photo release forms were signed by all participants (n=6). After group introductions, participants created expectations for the group such as “respecting each other” and “confidentiality and privacy” for what is discussed within workshops. The facilitator discussed what photovoice is and provided a general overview of the project. Information included that community leaders and research staff were interested in better understanding food access in the PAC region. It was emphasized that the workshops be driven by participants so that we can hear directly from residents as they are the true experts of their lives.

Next, participants were instructed on an activity to *think, pair, share*. For our research question on what factors that influenced food access, participants were asked “*How did food get to your table this week? Consider the physical steps you took to put food on your table or the thoughts*

and feelings you had along the way.” This activity encouraged participants to begin thinking about the ways in which they access food, what questions would drive the pictures they took and stories they shared, and what other questions they thought might be relevant to the project. The facilitator then provided detailed instructions on photovoice activities. Participants connected with the first author and facilitator via the smartphone messenger application, WhatsApp (Facebook, Inc., Menlo Park, CA) to submit photos and ask questions as needed. During this workshop, information on basic photography guidelines, safety protocols and ethics conducting photovoice were also discussed.

Data collection: Participants had two weeks to reflect and take photographs of things in their environment that relate to these questions. Participants were asked whether they would prefer taking photos on their own devices or a camera provided by the research staff. All preferred taking photos on their own devices (i.e. smartphones). Participants were encouraged to take as many photos as desired and then select 5-8 photos they felt were most meaningful to them. Then, participants wrote a description of each photo being submitted, answering the following questions, adapted from the SHOWeD technique:¹⁵⁴

- 1) What does this photo show
- 2) What is the story behind this photo?
- 3) How does this influence how or what you eat?
- 4) Does this photo represent a strength or challenge? And why is it a strength or challenge?

Photos and descriptions were submitted via Whatsapp and put into a slideshow to be shared with the group during workshop two.

Workshop 2: The goal for this workshop was to 1) contextualize photos by sharing one's experience of food access in the community and 2) listen to others' experiences. Participants presented their photos and descriptions, answering the adapted SHOWeD questions. Other participants asked questions or offered comments throughout the individual presentations. Four of the six participants shared during workshop two. Debriefs were held after the workshop between the facilitators and notetakers to review topics discussed and develop follow up questions for the next workshop.

Workshop 3:

The goal of this workshop was to begin codifying photovoice data with participants and consider next steps. At the beginning of this workshop, the remaining two participants presented and discussed their photos and stories with the group. Then, participants worked together to sort photos and descriptions into different themes. They discussed how photos and descriptions should be grouped together and came up with theme names. The participants then created a visual map of the themes, pinning photos and descriptions within corresponding themes on a board. Next, participants wrote down which three themes they each felt were most important to themselves and the way they access food. The workshop was concluded by discussing next steps in sharing findings with the community and local leaders.

Analysis

Given that the purpose of this study was to engage participants in the analyses of their photos, we first conducted a participatory content analysis as part of the photovoice process. This analysis involved participants first *selecting* photos that were most meaningful to them, then

contextualizing photos to provide *voice* to each photo, and lastly *codifying* issues, themes, and theories that emerged during group discussions.¹⁴³ After reviewing the participatory content analysis, it appeared that participants focused mainly on photos and descriptions for creating themes. However, much of the rich discussions that took place in focus groups were not captured by these initial participant themes. To ensure a more comprehensive analysis, a follow-up analysis of photovoice data was conducted to identify additional patterns and perspectives that appeared in discussions but were not explicitly present in participant themes. This secondary analysis was conducted by three research assistants (including the first author) with previous experience in qualitative research and photovoice. Research staff reached out to photovoice participants and the lead facilitator via Whatsapp twice after the workshops to clarify comments and ask questions that arose during analysis. Three participants responded to the first set of follow-up questions and no additional comments were provided for analyses.

All workshops were transcribed verbatim in Spanish and then translated to English using Sonix software (Sonix, Inc., San Raul, CA). Transcriptions were first edited and verified for accuracy by listening to the audio and reviewing the transcript. The English translations were then reviewed and verified by the author and two fluent Spanish/English speaking research assistants. Translations from Spanish to English were maintained as close to the original words as possible, although few changes were made to ensure understanding in the English language.¹⁸⁵

Transcriptions, photos and photo descriptions, field notes, and data gathered from community members were analyzed using NVivo 14 (Lumivero, Denver, CO).

The focus of this secondary analysis was to identify any themes that came up throughout focus group conversations but seemed missing from participant themes. The participant themes seemed to reflect the photos more directly, so the secondary analysis focused on themes present in other data (group discussions). The secondary analysis related themes present in group discussions and interviews to the participant themes (photos). First, an initial codebook was created individually by two research assistants (RAs) based on a review of all data including participant themes, photos, and transcripts. Review and revision of these initial codebooks was conducted by these two RAs and combined into one codebook. This codebook was then used by all three RAs to perform a second cycle of coding to refine existing codes and categorize codes in nodes. The codebook was revised iteratively throughout the analytic phase.

Dissemination of Photovoice Findings with Coalition Partners

At the time of this dissertation, plans are in process to host a coalition meeting to share photovoice findings with our coalition partners. The purpose of this meeting will be to share the results of the photovoice workshops as well as hear from our coalition partners as to how they perceive these findings. This meeting will allow us to assess the degree of concordance and discordance between resident experiences and perceptions of food insecurity and food access in the PAC region uncovered during the photovoice workshops and coalition partners' understanding of resident experiences. These discussions will help inform future community-driven strategies by serving as an opportunity to listen, reflect, and deepen our collective understanding of resident realities of food insecurity in the PAC region.

RESULTS

Out of 19 applicants that completed the screener, 14 were eligible, and 6 confirmed participation and completed the photovoice activities. All six photovoice participants identified as Hispanic/Latino and Spanish was their preferred language. Mean age was 43 years (range = 37 – 55 years). There were five female participants and one male participant. Three households reported income below 130% FPL and three reported household income between 131-185% FPL. Four households had children, and one household was expecting a child. Three participants were married. Two participants were employed part-time, two participants were unemployed and actively seeking work, and two were not employed and not seeking work. Three participants reported education level of 8th grade or less, one reported some high school, one reported high school graduate/GED certificate, and one was a university graduate. Participant characteristics can be found in Supplementary Table 8. A total of 38 photos were submitted by the group, ranging from 3 – 16 photos per participant.

Participant Themes

Participants identified seven themes during workshop 3, which are outlined in detail below. The three themes identified by photovoice participants as most important were: “Need and assistance”, “Quality time” (with family), and “Food insecurity”. Other themes identified were “Agricultural inactivity”, “Food culture”, “Local inequity”, and “Social action”. The themes participants identified largely reflected the photos they had taken. For example, the theme “Quality time” (with family) was illustrated in photos of family spending time together. Additionally, deeper discussions among participants were prompted by these images. I will present some of the narratives and topics that were discussed after participants shared their photos and themes.

The first theme, “*local inequity*”, was not a topic discussed by all participants, though it provides useful context for local perceptions. This theme captured participants’ views that tourism and maintaining a sense of luxury was prioritized over the well-being of year-round residents, particularly those that are unhoused. In a photo of a homeless person resting underneath a shopping center sign (figure 2), Raul, a single male recently unemployed, discussed how it seems that those that are unhoused are neglected and often hidden to uphold a certain appearance –

“Our valley must maintain a tourist reputation and that is why the local authorities and press constantly hide that we have homeless people . . . It encourages inequity, the discrimination, rejection of foreignness, right?”



Figure 5.2. Maintaining tourist appearances ignores the problem of homelessness.
Note: participant theme – “*Local inequity*” and secondary theme ‘*tourism*’

Another point made by many photovoice participants was the distinct disparities as you move from areas of wealth ‘up-valley’ (Aspen, CO) to lower-income areas ‘down-valley’ (Parachute, CO). Raul noted conditions worsen as you move down valley including poor infrastructure and water quality, and lower quality foods.

“Something is wrong with the structure here in the Valley, because if the quality of the water and the quality of the food changes, depending on where you are, and the closer you get to Aspen the better the quality of the nutrients and the further you get away from Aspen the lower the quality . . . it changes a lot because of the social class”

Although Raul led this discussion on local inequities, many were in agreement through nods or comments such as *“No, it is not the same”* in relation to quality of foods ‘up-valley’ versus ‘down-valley’ or Maria half joking how she drinks coffee instead of water in the trailer park down-valley where water quality is poor.

The next theme, *“Food insecurity”* represented both issues of accessibility and affordability of foods. Photos highlighted a receipt for groceries (see Figure 3a) and participants often discussed the high cost of food, housing, and medicine as common issues. Nina, a single mother of three, shared her images seen in Figure 3 and discussed how she spent \$180 on food and *“brings home nothing”*. By *“nothing”*, Nina explains how \$180 in groceries did not even include meat, a staple in Latino diets (see Figure 3b). Nina also described having trouble paying for medical and dental bills and that *“the high costs to buy food have affected me so much that we can't afford to buy*

meat at home”. Nina and Maria, another mother and food bank volunteer, also discussed going to multiple food stores to compare prices or buy in bulk when items were on sale.

“No, look at the prices. I look at the prices. And sometimes things are cheaper there [Walmart] than at the City Market [a full-size grocery store]”- Maria.



Figure 5.3. a. Receipt for groceries depicting the increasing cost of food. b. A grocery cart filled with many foods, but lacking cultural staples like meat.

Note: participant theme – “Food Insecurity” and secondary theme ‘affordability’

Other photos categorized as “food insecurity” were related to accessibility of high quality, nutritious foods. Raul presented photos of a local modern farm stand, marveling at the ingenuity, which provided fresh produce, animal meat, and other products 24 hours/day, 7 days/week (see Figure 4). However, Raul pointed out that not everyone has access to this farm stand. To access this farm stand, customers must have an annual membership, be 18 years and older, and have a valid government-issued ID. In addition, Raul mentioned customers need to have access to a cell phone with data to scan a QR code to search for items, a bank card as no cash or checks were

accepted, and a vehicle to get to the remote location. Even if these barriers were diminished, the price of products was not feasible for many, citing a bundle of radishes that cost nearly \$4.

“It’s a great strength in terms of this being . . . what we call in Mexico from the field to the table, in other words . . . what you buy there is harvested, maybe hours before, or a few days before. So, it’s a great strength when you have accessibility and economic mobility, right? And at the same time it is a huge challenge. Because out of the whole valley, only the people who have more purchasing power and who have a car can go . . . Many people don’t use banks, they can’t because of the documents and well, here there is no cash, you have to have a card and you have to have a cell phone with internet.”



Figure 5.4. Locally grown organic foods are only accessible by those that can afford it and have a personal vehicle, bank card, and cellular data.

Note: Participant theme – “Food insecurity” and secondary theme ‘accessibility’

Another prominent theme which many participants discussed was “*Quality time*” (*with family*). As a note, the participant theme was only identified as “Quality time”, though all photos were of family members, so this parenthetical phrase was added to provide additional context to this theme. This theme included pictures of spending time with family members. Participants such as Claudia noted how she quit working in response to her family’s concerns about working long hours and lengthy commutes, leaving little time to be spent with family.

“years ago, when I arrived here, I did not enjoy my children, I left them, I went to work because for almost a year worked seven days a week . . . I see the children going to school when I take them to school in the morning and I say, "I think my children are going to school on their own and I am always working.””

Working less allowed Claudia to spend time with her granddaughter, something she wasn’t able to do with her own daughter (see Figure 5.5). The desire, or possibly the pressure felt by family members, to spend more time with family was also felt by others including Elena and Maria who both moved to part time jobs to be more present with their children.



Figure 5.5. Claudia is able to spend time with her granddaughter and volunteer at her school now that she does not work full-time.

Note: Participant theme – “Quality time” (with family) and secondary theme ‘volunteerism’

Quality time with family also included pictures of preparing and sharing meals. These images prompted discussions around participants’ desire to meet their children’s needs by providing foods they wanted and the challenges of being a single mom. Nina, a single mother, says *“It gets a little complicated for me because there are four of us in the house and sometimes when my children go out, they ask me to buy this, buy that.”*

Elena, a mother and food bank volunteer, shared how it made her feel happy to be able to prepare ‘healthy’ foods for her son to eat to support him as a growing athlete at the same time encouraging herself to eat healthy.

“Well, I love cooking for him . . . And he likes to eat very, very healthy. This one really likes sport and is part of what. . . what makes me eat healthier, because I also have diabetes and it helps me and I help him to be healthier.”

Under this theme, images of family also led to conversations around *family as a support system* in accessing food. Here, Nina explains that “*My children help me with rent and supplies*” which helps take some pressure off the single mother (Figure 5.6).



Figure 5.6. Family is both a support system and a challenge to support children as a single mother.

Note: Participant theme – “*Quality time*” (with family)

“*Food culture*” was also a notable theme that seemed to have a substantial influence on how participants accessed foods and the foods they ate. Images showed traditional Mexican cuisine featuring rice and beans with mole sauce and tortillas provided by a volunteer at the food distribution (see Figure 5.7a). The participants noted the sense of community, connection, and gratitude volunteers felt being able to enjoy and share these foods with others. Participants also discussed how they often visited multiple food sources to find culturally relevant foods that fit

their budget including tomatoes, avocados, and chiles (Figure 5.7b). Maria discussed how she would buy multiple avocados when on sale and freeze them.



Figure 5.7. a. Traditional Mexican food served by a volunteer at the food bank. b. Tomatoes, at the food distribution, are a significant staple in Hispanic/Latino diets.

Note: participant theme – “Cultural foods” and “Need and assistance” and secondary theme ‘preference for healthy, fresh foods’

Several images of foods identified as ‘healthy’ or ‘fresh’ were included in this theme of *food culture*. Many discussed a desire to eat *healthy* foods and often dichotomized foods as *healthy* if they were fresh or natural or *not healthy* if they were canned or packaged. They discussed a desire to eat organic and *healthy* foods to promote their own and their family’s health. Maria said “*I’ve been taking care of my health for a long time, because I say I don’t want this disease [diabetes]*”. However, it was noted that eating healthy is not always easy, “*Sometimes fruits are more expensive than eating a hamburger... but we must make the effort to take care of ourselves*” – Laura (Figure 5.8).



Figure 5.8. Desire to eat healthy, fresh foods to promote health, but often at a cost.
Note: participant theme – “Cultural foods” and participant theme – ‘desire for healthy, fresh foods’

This topic of fresh food as healthy and canned or packaged as unhealthy came up in several discussions. They spoke about how, in Mexico and Latin America countries, access to fresh food is more abundant and there is an emphasis on using fresh ingredients in cooking. In response to being asked why they view canned foods as not healthy, one participant said

“Culturally, we do not like cans, and this is unlikely to change, in fact, I think it is almost impossible, no matter how much the food industry tries to promote the use of cans . . . because in our culture we are very proud of our gastronomy”.

Another participant theme, “Agricultural Inactivity” showed images of large fields growing grains. While not discussed by many of the participants, the main concern was that regional agriculture focused on production of grains for animal feed with a lack of production of consumer food crops, which could lead to higher food costs. The participants noted that although

they had not been living here for very long, there seemed to be a disconnect between a need for locally grown foods and the current agricultural production environment.

“farmers in the Valley decide not to produce anything. . . So we have to buy and import, eh? All the fruits, all the vegetables, everything has to come from outside and that is why it is so expensive.”

The next participant theme, *“Need and Assistance”* was identified as one of the more important themes portraying both a factor that influenced what foods participants ate as well as a way to navigate or cope with food insecurity. These images included participants at a local mobile food pantry and cooking education class provided through a local food assistance organization (see Figure 5.9b). Participants specifically mention the foods they were able to obtain from food assistance operations like fresh fruits, vegetables, and eggs which helped reduce hunger and the amount of money spent on food.

“You don't go hungry because they give good things and with that if it helps you just buy what you really need, because there are times when they give good things and you don't buy anything” – Maria

These sentiments around not going hungry were based on the fact that households may not get food from sources other than charitable food assistance. In one conversation, where participants were discussing the high cost of living, one participant cited a hierarchy of needs where participants first pay for bills like housing, utilities, cars, and whatever is left is used for food.



Figure 5.9. a. Fresh produce at the food distribution. b. Free cooking class that educates on cooking healthy recipes.

Note: participant themes – “Need and assistance” and “Social action” and secondary themes ‘mutual aid’, ‘volunteering’, and ‘desire for healthy, fresh foods’

The final participant theme, “*Social Action*”, overlapped with some of these food assistance event images, but focused more on the aspect of volunteering and giving back, rather than receiving. Volunteering at food pantries provided a sense of community and a sense of joy and pride to be able to give back to their community. Elena describes the photo of her smiling over fresh produce at the food distribution (Figure 5.9a) “*I am a volunteer at the food bank and I love to go to the food bank to help and, just like the little that they give, is very useful to me too*”. Maria discusses how her son accompanies her to volunteer at food pantries and the pride it brings to be a good role model to her son. Claudia and Laura also shared the importance of also expanding these networks to ensure anyone who is in need has access to these food assistance resources.

“Food is a right that all human beings have, but sometimes there are people who do not know that they have the right to eat well . . . that there are people who do not know that there are these distributions, that there are people who do not like them, but there are options. We need to know and learn a little more about food and that is why it is important to be in workshops like this one that help us to open our minds” -Laura

Claudia discusses bringing her sister-in-law and niece, who recently moved to the PAC region, to the food pantry to sign them up and show them how to get food. However, Claudia also discusses pushback sometimes in that people do not want to accept this aid, but she and others try to highlight the benefits of food assistance—that the food pantry provides food they would not have had.

A topic that was not categorized specifically by participants, but came up in discussions, was “resourcefulness”. This was demonstrated by participants’ ability to find additional work or use the resources they found in their community. Participants mentioned the informal job economies that they took part in either because they were out of work or wanted to bring home extra money to help pay bills. Claudia mentioned multiple jobs she has including making and selling traditional Mexican desserts to folks in the community or selling shoes and makeup through vendors as a way to earn income (figure 10). Similarly, Raul talked about making and selling tamales with his mother during his unemployment. Participants also often mentioned how they had to work with the ingredients they had. Claudia remarks *“you have to have the imagination to say, for example, when they give me cans of vegetables, I make a chicken salad”*. Similarly, Laura discussed using new ingredients like lentils from the food pantry in a recipe she found on

the internet. Finally, issues that participants felt were missing from photos, but should be addressed is the “lack of transportation” which influences how they access food as well as the desire for more “nutrition education” to learn more healthful eating and shopping habits.



Figure 5.10. Side jobs that bring extra income and provide culturally relevant foods
Note: participant theme – “Cultural foods” and secondary theme – ‘resourcefulness’

Overall theoretical framework developed by participants

The photos, narratives and group discussions that were shared throughout this photovoice project produce two key theories. The first theoretical framework is that food insecurity stems from issues with access to food. The participants covered multiple issues that influenced what foods they accessed and how they accessed the foods they ate. These factors included personal preferences such as eating fresh, ‘healthy’ foods to prevent chronic disease, or preferences for certain foods based on their cultural ties and background. Many participants prioritized providing for their families, often struggling to balance the high cost of food with limited financial resources. The burden of high costs also extended beyond food to housing, bills, and medical

care. Lastly, there was a noted disparity in access to food – those with greater purchasing power, including those living near wealthier Aspen, have greater access to higher quality foods compared to those in lower income areas further down valley.

The second theoretical framework is the multiple roles that charitable food assistance like food pantries plays in the community. While food pantries fulfill their primary purpose of providing emergency support, they also serve as a long-term food source that many households rely on, providing foods that are both culturally relevant and healthy. In addition, charitable food assistance functions as hubs for connection and a way to participate in social action via volunteering. These participants were not just clients of food pantries, but active volunteers at food pantries on a consistent basis. Volunteering enabled these participants to give back to their community as well as connect with one another in meaningful ways. In addition to their direct work with the food pantry, they also worked to connect individuals in need to resources through food assistance as well as other regional coalitions working to serve those in need.

DISCUSSION

This study used community engaged research practices and photovoice as a way to engage residents to contribute to an understanding for community stakeholders and researchers around what factors influence food access in this high cost of living tourist rural region. Participants were asked to reflect on what factors influenced the foods they ate and use this question to guide their photography. They identified several factors that provided both deeper understanding of the regional context and insight to key issues that impacted themselves on an individual level and their community. The next step involves sharing these photovoice findings with coalition partners to further align resident experiences with ongoing efforts to address food security needs in the PAC region.

Throughout the photovoice workshops, the facilitators never called out food insecurity directly, though participants had a deep understanding of the factors driving food insecurity and articulated their experiences throughout conversations and photo stories. Within the participant theme, “*food insecurity*”, images and corresponding narratives and discussions spoke to both the lack of affordability due to increasing cost-of-living and the lack of accessibility to high quality, nutritious foods. This lack of accessibility was also discussed in relation to ‘local inequity’, which highlighted disparities from the wealthier up-valley region near Aspen where median home prices are estimated at \$3 million¹⁴ and median salary is \$78,636²²⁰ to the lower income down-valley near Parachute where median house price is \$427,500²²¹ and median household income is \$58,910.²²²

This theme of “*food insecurity*” also reinforced the theory of food insecurity manifesting from issues with access. Access is one of the four pillars of food security²¹ and concerns issues not just related to physical access to food (i.e. distance to stores or food sources),²³ but also economic (i.e., affordability of foods),²⁷ social (i.e., systems of support),²⁸ and structural (i.e., eligibility for federal assistance)²⁹ access to food. Furthermore, participants felt local issues led to disparities in access to nutritious foods. Local issues stemmed in part from tourism which brought both economic opportunities to the region but was also perceived by residents as being prioritized over resident well-being. While disparities in food access have been previously investigated,²²³ the concept of tourism impacting food security status of year-round residents is not well understood. One study in Costa Rica found associations between food insecurity in a tourist

region,²²⁴ though more research is needed to understand the implications of tourism on food insecurity of year-round residents.

All participants mentioned using some form of charitable food assistance as a way of navigating food insecurity in this community. Several discussed how much they relied on the food pantries as a major source of food—many times this was the only source of food for families. In addition, participants discussed struggling between paying for food or medical treatment or foregoing paying for food before paying for other bills. This echoes findings from our previous study in this same region, which found that almost all food insecure survey respondents accessed some form of charitable food assistance (92%) or engaged in tradeoffs between food and other basic needs (91%) in the past 30 days.²²⁵ Use of charitable food assistance or tradeoffs between food and other bills have also been outlined as coping strategies by Seligman and Berkowitz (2019)¹⁸ and Shanks et al. (2022).²²⁶

This reliance on food pantries helped uncover a framework that highlights the multiple roles that charitable food assistance plays, not only as a source of immediate nourishment but also as a critical financial safety net, a resource for coping with economic trade-offs, and a means of connecting with and serving the community. Charitable food assistance acted not just as an emergency food source, but often the primary food source for many participants. These findings echo other research which demonstrate that food pantry usage among clientele is both long term and consistent.^{128,227} Food pantries alleviated hunger and helped reduce money spent on food. In this sense, food pantries also combatted other basic needs insecurities by saving money for other necessities such as bills or medical treatment among participants. While literature has highlighted

the intersection of food insecurity and other basic needs insecurity such as housing instability²²⁸ and delayed medical treatment,¹⁴¹ research is lacking as to how charitable food assistance may also mitigate other basic needs insecurities.

Furthermore, participants viewed their volunteerism in charitable food assistance as social action. Social action, first coined by Max Weber, is characterized here by individuals taking action in pursuit of some better outcome for society.^{229,230} Volunteering connected participants to each other and resources, allowed them to give back to their community, contribute their time in return for foods provided by the food distribution, and advocate for safe, nutritious, and culturally relevant foods for their community. In addition, volunteering seemed to transform food assistance into something that felt less like charity and more like an act of mutual aid, a network of existing community assets to build capacity and relationships that strengthen access and availability of necessary resources.²³¹ Some research has also suggested that transitioning from clients of a free food store to volunteers may help improve individuals' perception of themselves as they worked to give their time in exchange for food,²³² something that was also expressed by photovoice participants who were active volunteers. On the other hand, some literature has suggested a more transactional structure between workers or volunteers and the clients of food banks such that clients should express gratitude for the foods they receive and the work being done by staff to supply food.²³³

Although participants did not specifically identify what they were doing as mutual aid, their actions and intentions echoed some of the foundations of mutual aid outlined by Dean Spade.²³⁴ Participants *met survival needs* by receiving food assistance and connecting others to food

assistance. Participants *built an understanding of social injustices* through actively engaging in photovoice to reflect on, share, and listen to experiences of food insecurity. In a recent case study of mutual aid during the COVID-19 pandemic, free food cabinets provided a source of food with anonymity that was perceived as less stigmatizing by users than charity like food pantries where perhaps more information is collected.²³⁵ Another study of a farmers market incentive program highlighted how mutual aid, through meaningful social interactions among community residents, works to strengthen community resources and improve social infrastructures.²³⁶ These studies echo our findings and the work being done by residents and volunteers across the food space in the PAC region to connect with one another and connect each other to the resources they need. Perhaps by being more active in this charitable food space, they can also act as agents of change to advocate for themselves and their community to promote access to more nutritious and culturally diverse foods.

Other key factors included family and culture which influenced what foods were accessed. Of salience to these individuals were: the desire to satisfy children's wants and needs, provide healthy foods for their families, and seek out foods that were staples in Hispanic/Latino diets. Agricultural inactivity was seen as a contributing factor to the higher cost of food. More specifically, the high focus on producing grain and seed products in the region at the expense of fresh produce was cited as a reason for higher prices for fresh fruits and vegetables. These findings are supported by previous research including a photovoice study which highlighted parents' desire for healthy, fresh foods for their family¹⁴⁶ and other qualitative research showing culture as a significant influence in food access.²³⁷ These findings also reflect levels across the socio-ecological model which impact individual behaviors such as food access.²³⁸ The socio-

ecological model has been previously used as a framework to demonstrate the importance of family, culture, and health as household level factors that drive food access behaviors and food insecurity.^{214,239} Additional research has shown that food insecurity is also impacted by broader policy/societal level factors such as food prices,²¹¹ housing prices,²¹² and competing interests with other basic needs.^{196,226}

Throughout the photovoice workshops, it was evident that these participants did not just *experience* food insecurity but already had knowledge and meaningful insights into many of the underlying potential structural causes of food insecurity in this region. Photovoice provided a space for them to articulate how policies, economic circumstances, and structural inequities contribute to disparities in food security. Participants exhibited a resistance to food insecurity through their acts of mutual aid and *participation in* photovoice. They also contributed to a greater collective awareness around the issues of food insecurity.

This study aimed to explore the experiences of food insecurity of residents living in this high cost of living region and engage with coalition partners on deepening our collective understanding of regional food insecurity. Currently, we have plans to share these photovoice findings with both photovoice participants and coalition leaders. We hope to continue to engage participants to be a part of the sharing and advocacy part as they were the leaders in these research activities. In addition, we hope that sharing findings with our coalition partners reinforces our commitment to transparency in research processes, encourages mutual learning between our research team and coalition partners, and provides us with regional context to these findings. Though not specifically designed as an action project, this sharing has the potential to

produce action by leaders in hearing directly from residents on issues that impact them. Lastly, this sharing reinforces our commitment to engage in collaborative research projects that we hope to continue in this region.

Strengths and Limitations

The findings here represent the lived experience of the six individuals that participated in photovoice and therefore may not reflect the experience of all Hispanic/Latino/a individuals facing food insecurity in this region. In addition, this sample was recruited through snowball sampling which may recruit participants from the same or similar social networks and therefore may result in similar experiences and potentially limit diverse experiences, ultimately limiting data saturation. Issues in recruitment also led to a smaller cohort and may have further limited our capacity to reach data saturation. At the same time, the group appeared comfortable sharing with one another and the smaller size allowed for deep, rich context with significant contribution from all participants that may not have been possible with a larger group.

A strength of the study included the use of a facilitator that was a community insider, which may have encouraged more intimate and open sharing among participants. In addition, training a facilitator from the community in photovoice methodology lends to sustainability and capacity building as skills remain a part of the community and may be used in future community projects to empower other residents in advocacy and change efforts. While participants were quite active in the participatory analysis, more time could have been spent to more accurately uncover how participants decided on themes. To combat this limited time, we followed up with the facilitator and participants to add or edit any interpretations of findings by the research team. Lastly, our

plans to disseminate these findings alongside photovoice participants to coalition leaders promote the collaborative university-community relationship, has the potential to drive community-based change, and further empower participants.

Conclusion

This research adds to the body of literature in food insecurity, specifically the factors that influence food access and navigating food insecurity among Hispanic/Latino residents living in a high cost of living region. Yet further investigation is warranted. The use of photovoice within this larger community engaged research project allowed us to connect with and hear from residents that might not often be reached in more conventional research efforts. In addition, the use of photovoice with community residents provides firsthand perspectives for community partners to gain access to. In this sense, a community-engaged research approach was foundational to building trust with our coalition partners, and ensuring the research questions, design, and interpretation of findings were grounded in community-identified priorities.

While photovoice has been used to explore food insecurity¹⁴⁶ or food access issues,^{214,240} it is still an underutilized tool that may engage more residents to participate in research efforts on social issues they are directly impacted by. Resident photos, stories, and discussions also helped inform our quantitative research by providing first-hand accounts on the factors that influence food access and how some navigate food insecurity in this region. Through ongoing collaboration, community input shaped the direction of the project and helped ensure findings were relevant to regional goals. By centering community voices, this research contributes to a deeper understanding of the interplay between individual and societal factors shaping food insecurity

and how residents navigate food insecurity in a high cost of living region. Understanding these experiences and factors may help our coalition partners target regional efforts to promote food and nutrition security. Future research and policy efforts would benefit from adopting community engaged approaches that acknowledge resident and community stakeholder expertise, foster long-term partnerships, and build on community strengths to improve overall community well-being.

CHAPTER 6. DISCUSSION

1. Introduction

Although highly associated with poverty, food insecurity persists in households with income above 130% FPL.² These households may not be eligible for federal assistance programs such as SNAP yet are still unable to afford the cost of basic needs such as food, childcare, and medicine. Those living in a wage gap between federal assistance eligibility and being able to afford basic needs are left to cope with food insecurity in other ways. This may be further exacerbated in regions where the cost of living is much higher than the national average. The setting of this research is central to the focus of this dissertation. The Parachute to Aspen Corridor is a high cost of living region in the Rocky Mountains and Roaring Fork Valley in Colorado. Referred to as “resort-rural”, this area is a major tourist attraction for the elite for both winter and summer recreation and surrounded by rural and agricultural lands. Median house prices in Aspen, CO in December 2024 were estimated to be \$3 million,¹⁴ leaving many workers in Aspen to commute up to two hours one-way to find affordable housing down valley. Though the PAC region may be unique in some regards with its location, a former Aspen City Council member likened it to other elite communities found in Beverly Hills or Manhattan.²⁴¹ The objective of this research was to bridge the gap in our understanding of the experiences and coping strategies of food insecurity in a high cost of living region, particularly those caught in this wage gap. The specific aims, listed below, help to address this overarching objective.

Research Aim 1: Examine whether there are differences between households below and above income guidelines for SNAP (130% FPL) in how they access charitable food assistance.

Research Aim 2: Examine whether there are differences between households below and above income guidelines for SNAP (130% FPL) in how they engage in economic tradeoffs between food and other basic needs (i.e., medicine and housing).

Research Aim 3: Explore the lived experience of food insecurity including what factors influence food access and how people navigate food insecurity in their community.

2. Overview of Dissertation Research

This dissertation uses a community engaged research multimethod (quant + qual) approach to address the overarching research objective. In response to increasing rates of food insecurity and demand on the charitable food assistance network especially during COVID,²⁰⁴ community partners from the Mountain Coalition for Food and Nutrition Security (MCFNS) wanted to better understand food insecurity in this region and develop a strategic plan to end regional food insecurity. In Spring 2021, a collaborative relationship was formed between MCFNS partners and the Systems Thinking for Obesity Prevention (STOP) laboratory team at Colorado State University. Through this partnership we aimed to gain a better understanding of food insecurity in the PAC region by examining behaviors of food insecure households through quantitative surveys and engaging participants in qualitative participatory research to explore their lived experience of food insecurity.

In the quantitative chapter of this dissertation (Ch. 4), we developed a survey and used generalized ordinal logistic regression models to address Research Aims 1 and 2 and better understand differences in how households cope with being food insecure when living above or below 130% FPL. It was hypothesized that households with income above 130% FPL would be more likely to access charitable food assistance sources compared to households with income

below 130% FPL (Aim1). It was also hypothesized that households with income above 130% FPL would be more likely to engage in economic tradeoffs between food and other basic needs compared to households below 130% FPL (Aim 2). In the qualitative chapter of this dissertation (Ch. 5), we used a participatory research method known as photovoice to address Research Aim 3. As this was a qualitative and exploratory aim, we did not have specific hypotheses, however we aimed to engage and empower residents to become more active participants in research processes including reflecting on and sharing their experience with food insecurity.

3. Summary of Findings

This dissertation research increases our understanding of the coping strategies food insecure households engage in and the factors that influence food access within these same households. In a region where the cost-of-living is much higher, households caught in an income gap between being eligible for federal food assistance and making enough to afford basic needs may need to disproportionately turn to other coping strategies to alleviate the impacts of food insecurity. Our survey findings suggest that households with income above 130% FPL are more likely than households below 130% FPL to use charitable food assistance sources for their household food (Aim 1) and to engage in economic tradeoffs between food and other basic needs (Aim 2). In addition, experiences of Hispanic/Latino households told through photos and stories highlight the impact of high food prices and disparate access to high quality, nutritious foods and the importance of local food pantries in serving a critical food need (Aim 3). Findings from these Aims highlighted the importance of charitable food assistance, engaging in tradeoffs between food and other basic needs as coping strategies for food insecure households. These findings also demonstrate the Hispanic/Latino household experience navigating food insecurity. The expanded implications of these findings from each Aim are outlined below.

3.1. Use of Charitable Food Assistance

Our findings demonstrate that the charitable food assistance network provides much needed aid for households experiencing food insecurity, particularly those with income above eligibility guidelines for federal assistance programs like SNAP. This is consistent with previous research demonstrating increased use of CFAs with food insecurity.²⁴² However, our findings by household income are novel and have implications for both national policies and for local initiatives to address food insecurity. More specifically, households with income above 130% FPL are more likely to use charitable food assistance, even after adjusting for those that may access SNAP or other federal assistance programs. Further, income and SNAP benefits may not go as far in high cost-of-living regions and therefore may increase reliance on the charitable food assistance system. Understanding how people access these sources including frequency of visits, the amount and types of foods being accessed is also important, as these food sources may have a substantial impact on dietary patterns and therefore health outcomes.^{243,244}

Our survey findings showed that almost all (92%) food insecure households surveyed accessed some form of charitable food assistance in the past 30 days. We also found that households with income above 130% FPL were more likely than those below 130% to receive *the majority* of their household food from food pantries (OR = 2.56), soup kitchens (OR = 2.00), and ‘other’ charitable food assistance sources (OR = 1.44). Much of the literature shows an increased need for assistance or increased severity in food insecurity status as income decreases.⁶ However, many of these lower income households may be eligible for and potentially receiving federal assistance benefits that provide financial support to meet basic needs. The lack of access to

safety net programs among households above 130% FPL may, in part, explain the increased use of charitable food assistance to obtain food. Even for households that may be eligible for federal food assistance, some do not participate due to barriers beyond income, including complex application and recertification processes, or feelings that benefits are not worth it.¹¹³ The majority of our sample accessed some form of federal assistance (i.e., SNAP, WIC, SSI, etc.), yet still utilized charitable food assistance. This may speak to the inadequacies of benefits in how far they go in regions where the cost-of-living is substantially higher than the national average.

Since this study was cross-sectional, it cannot determine whether having a higher income is causing increased use of charitable food assistance networks. However, the association between income and use of charitable food assistance in the context of a high cost-of-living region begs the need for further investigation into this relationship. Given that higher income households are more likely to utilize charitable food assistance resources for more food (while also participating at high levels in federal food assistance programs—72% participated in at least one government assistance program), these findings indicate that these higher income food insecure households are still struggling in this region. Additional research is needed to uncover why these differences in charitable food assistance use exist between higher income households vs. lower income households. It is possible that lower income households need to utilize charitable food assistance less than higher income households because they are less familiar with economizing strategies often employed by lower income food shoppers such as buying food in bulk, purchasing generic brands, or purchasing overall less foods than higher income food shoppers.²⁴⁵ Lower income households may experience food insecurity on a more consistent basis and have other coping strategies they employ on a more regular basis other than reliance on food pantries. Whereas

higher income households may experience more episodic food insecurity that requires more emergency food assistance to cope.

Regional differences may also address these survey findings as lower income individuals more often live in urban or rural regions where food prices are higher compared to suburban regions where higher income individuals more often live.²⁴⁵ Rurality may also limit frequent access to food pantries for those of lower income. Lastly, data from the FoodAPS survey show that SNAP may not go as far for higher income households as SNAP benefits cover only 53% of higher income food expenditures compared to 72% of lower income food expenditures, thus encouraging higher income households to turn to alternative food sources like food pantries.²⁴⁶

Future research efforts should evaluate the use of multiple coping strategies including use of federal and charitable food assistance across various cost-of-living regions to better understand the impact that cost-of-living has on food security and coping strategies. Further, mixed methods or multi-method research approaches could use surveys and GIS mapping to quantify reliance on coping strategies and access to resources such as charitable food assistance, but also other basic needs assistance. In-depth interviews could be used to uncover some of the motivations or cognitive processes underlying these coping strategies and behaviors. In addition, pre/post studies on policy evaluation could help elucidate how changes in federal assistance eligibility guidelines and income impact household coping strategies and food security status.

In this survey, we did not assess the length of time households were accessing charitable food assistance or their reasons for accessing them. However, data from our photovoice workshops

showed that some households have been using food pantries more long-term (and even before the COVID-19 pandemic). All photovoice participants mentioned using charitable food assistance and helped identify reasons for why they use charitable food assistance including decreasing hunger and saving money to spend on other bills. Future longitudinal research should consider whether using charitable food assistance over time provides more financial stability for households to pay for other basic needs.

Our survey findings did not show a difference in accessing free food from friends or family based on income, however 75% of survey respondents did report receiving some free food from friends or family. One photovoice participant did express their gratitude for being able to receive a meal from an extended family member. While other studies have reported receiving food from others,²⁴⁷ it may not make up a large portion of food or be the first strategy employed by some. In an older study, they highlighted that some households hesitated in depending on social networks for food.²⁴⁸ Other literature suggests that food sharing is not solely done for economic purposes, but as a way to connect with others or share cultural ties or reducing food waste can be other reasons that households across income levels engage in food sharing.^{249,250} It also may be that individuals in higher income brackets are concerned with the stigma of asking for help from friends and family because of their income, though research is needed to substantiate this claim. Previous survey research among food pantry clients have highlighted issues of stigma including trying to hide that they use a pantry or feeling guilty for using a pantry.¹⁷¹ Additional qualitative research has demonstrated food pantry user's experiences with stigma and shame like feeling humiliated to "prove financial hardship", balancing feelings of embarrassment and gratitude with

food pantry workers/volunteers and feeling isolated even from others experiencing food insecurity.²⁵¹

To date, the literature around charitable food assistance use is somewhat limited. Many studies focus specifically on whether an individual or household accessed charitable food assistance; however, these studies have evaluated how much of the diet actually came from charitable food assistance resources less often.^{121,136,163,164} For instance, the CPS-FSS asks whether anyone in the household ever got food from a church, food pantry, food bank, or meal at a soup kitchen or shelter in the last 12 months.¹⁶³ The most comprehensive national data set— the 2012-2013 FoodAPS survey¹⁶⁴ -is somewhat outdated and measures uses of charitable food assistance as a percentage of all household food acquired.¹³⁶ Other research most often assesses only *whether* households access charitable food assistance, often a “yes” or “no” survey response.^{124,136} Although one study did evaluate how much food was obtained from food pantries in the past month and found that survey respondents that used food pantries more were more likely to be older, have heart disease and engage in tradeoffs with medicine.²⁵²

While we did conduct cognitive testing on this scale, more validation is necessary to better evaluate this use of charitable food assistance. Additional items could be developed that also aim to understand the use of charitable food assistance (i.e., frequency of visits and or asking amount of food obtained from charitable food assistance in multiple ways). These items would then be tested alongside the current measure with a subsample of the target population to identify the best items to proceed with. Further testing could include assessing criterion validity by observing dietary recall data that collects food source information from an ongoing study in the PAC

region. This testing would allow us to measure how well the charitable food assistance use measure corresponds to this food source data from the dietary recall data.

This dissertation research provided insight into the extent that people experiencing food insecurity across the income spectrum were accessing charitable food assistance in one rural region. Collectively, these findings highlight the need for charitable food assistance among households caught in this wage gap between federal assistance eligibility and self-sufficiency, particularly in a high cost-of-living region.

3.2. Engagement in Economic Tradeoffs

Food insecurity often does not exist in isolation. Indeed, individuals experiencing food insecurity may also experience greater risks of housing insecurity,²¹² delayed medical treatment,²⁰¹ or challenges paying bills.²⁵³ These compounding hardships can cause further economic strain on households and result in worsened health outcomes for these populations.^{9,10,12} Investigation to better understand the multiple pieces of basic needs insecurity is needed to target basic needs more holistically. Therefore, identifying households' engagement in economic tradeoffs between food and other basic needs can help inform efforts to improve access to all basic needs. Among our survey respondents, almost all (92%) reported that they had engaged in at least one economic tradeoff between food and medicine, housing, utilities, transportation, education, or childcare. Further, we found that households above 130% FPL were more likely than those below 130% FPL to *frequently* engage in economic tradeoffs between food and medicine (OR = 1.65), utilities (OR = 1.30), childcare (OR = 1.18), education (OR = 1.43), and transportation (OR = 1.21). We did not see a difference in tradeoffs between food and housing in regression or chi2 test of

independence between households above and below 130% FPL. This may be explained in part by the high housing costs in the area that are felt across income groups, but further investigation into this is needed. In addition, housing expenses are often less flexible than other expenses like food (i.e., leases and mortgages are contractual). Therefore, households may fear repercussions such as eviction or homelessness and avoid any tradeoffs between food and housing.

In addition, because the survey question was worded such that participants were to respond about whether they traded of food for another basic need (or vice versa), we are not able to determine the direction of a tradeoff (i.e. a participant may forgo food so they can pay for medicine or they may forgo medicine so they can pay for food). It is also not known whether this direction changes over time or remains the same for households. Our group discussions throughout photovoice did provide some perspectives on how the different households approach these tradeoffs. Photovoice participants discussed a hierarchy of needs, where they prioritize bills, housing, and other necessities, before spending any money on food. Given these insights, it is likely that participants forgo food to pay for other needs. This hierarchy of needs may also explain the increased use of charitable food assistance as families knew they could rely on food pantries to meet, at least some, of their food needs. In a recent study of food pantry clients, Hernandez et al (2025) found that economic tradeoffs between food and other basic needs increased the risk of experiencing food insecurity,¹⁹⁶ which also suggests that these households are sacrificing food to pay for other basic needs. Collectively, these findings suggest that food insecure households with higher incomes may need to utilize charitable food assistance more because they are using all their available funds to pay for other basic needs instead of food. Though we asked about participation in some federal assistance programs that are more targeted

towards food security (SNAP, WIC, TANF), we don't know about participation in programs related to other basic needs security such as affordable housing, utilities, or childcare assistance. Further research may be needed to understand awareness of, access to, and participation in these programs. Overall, these findings highlight the financial or resource constraints of households having to choose between basic needs.

3.3. Navigating Food Insecurity among Hispanic/Latino Households

In Colorado and across the United States, food insecurity rates among Hispanic/Latino households are twice as high as those of non-Hispanic white households.^{2,218} Reaching these communities is especially critical in the PAC region, where 28% of the population is Hispanic or Latino,²⁵⁴ to better understand their lived experience of food insecurity. Photovoice as a participatory research method, not only works to increase understanding of issues facing community members, but it also works to engage, educate, and empower community members on issues they face.¹⁴³ Beyond the pictures that participants took, it is important to note this role of participation. Although, we did not measure outcomes such as perceived empowerment or knowledge of constructs such as food insecurity, participants were actively engaged throughout the photovoice process. In addition, we hope to continue to engage with them through our dissemination process. This use of community engaged research is a useful approach to understanding community issues and creating relevant strategies to improve the lives of community members and their environment.

The photos, stories, and discussions during photovoice activities highlighted several key themes. Photovoice participants were keenly aware of food insecurity and challenges in the lack of

affordability of foods in this high cost of living region and the disparities in access to high quality, nutritious foods. These disparities were apparent across the wealth gap with those in wealthier areas ‘up-valley’ having greater access than those in lower income areas ‘down-valley’. There was a perception that luxury and tourism were priorities over the well-being of year-round residents. Culture and family were major influences participants by seeking foods that were considered healthy (fresh vs. packaged) for themselves and their family and foods that were staples in Hispanic/Latino diets. Food assistance was a consistent topic of photos and discussions, where participants both acknowledged it as a way to reduce hunger and money spent on food, which could increase money available for other bills. Lastly, the idea of social action through volunteering was a prominent topic. Many participants were volunteers at local food pantries or schools and spoke about increasing awareness around food insecurity and food access issues and connecting others in need to community resources.

4. Discussion

This dissertation research provides more understanding of the experiences and behaviors of households facing food insecurity in a high cost-of-living region across the income spectrum. We formed a new university-community relationship with partners from the Mountain Coalition for Food and Nutrition Security to evaluate regional food insecurity. Through survey research, we found that higher income households were more likely to engage in coping strategies like forgoing food for medicine or getting more of their food from food pantries compared to households below 130% FPL that may have access to safety net programs. We also explored the use of participatory research methods by inviting community members to participate in photovoice to reflect and share their lived experiences related to food access in the PAC community. Participants emphasized the importance of family and culture in how they accessed

food and engaging in acts of mutual aid as volunteers at food pantries and connecting others in need to food resources. This work also highlighted various coping strategies including a reliance on charitable food assistance and needing to engage in economic tradeoff (usually forgoing food so they could pay for other basic needs) but also demonstrated participants knowledge of and dismay over regional disparities in wealth and access to nutritious foods.

5. Implications

5.1 Research Implications

This research suggests that additional support is needed among households experiencing food insecurity, and especially those that are caught in a wage gap between being eligible for federal assistance and being able to afford basic needs. These findings suggest households unable to access federal food assistance programs (because they make too much money at least in many parts of the country) might need to turn to other coping strategies more often or for more resources to combat food insecurity. Our survey found that households above 130% FPL are accessing charitable food assistance for more of their household food compared to those below 130% FPL. As mentioned above in section 3.1, this finding is novel and warrants further investigation. Future work exploring whether these findings are consistent in other locations across the US or over time are needed. Additionally, it is important to understand underlying factors that may help explain this finding including economizing strategies that lower income households utilize to combat food insecurity or geographic differences in access to affordable foods.

This preliminary research relied on measures only validated through cognitive interviewing to explore this coping strategy. This warrants further measurement testing alongside other similar measures with our target population and validation including testing for criterion validity to ensure this use of charitable food assistance scale is accurately measuring to what extent households are relying on charitable foods. Developing a validated tool to assess the quantity of food coming from charitable food assistance would enable us to better understand how much households are relying on the charitable food assistance network, which could then be used in future studies to evaluate the impact this has on their physical and mental health outcomes as well as household finances.

Since some food banks are working to increase the availability of foods that represent the diverse food preferences of clients,²⁵⁵ future efforts could investigate how culturally relevant foods can be made more available at food pantries. Additionally, future research should evaluate whether increases in the availability of culturally relevant foods also improve client perceptions and reduce stigma around charitable food assistance. In addition, the nutrition profiles of foods at food pantries are often poor and may have adverse consequences for households who rely heavily on pantries as a primary food source.²⁵⁶ In a system that relies heavily on donations and volunteers, strategies to improve the nutritional quality of foods available must also emphasize feasibility for food banks and pantries. Community-engaged research that prioritizes community needs and the voices of those directly working with or accessing charitable foods is the key to conducting translational research that leads to change.

While this research highlights the tradeoffs that households make between food and other basic needs, we don't know the direction of these tradeoffs or the extent to which these tradeoffs are made episodically versus consistently. It is important to get a comprehensive picture of how households are making these tradeoffs and when to better understand what policies and programs can best support their needs. Future research should look at communities that implement additional assistance efforts to support households in need versus those that do not, especially within high cost-of-living regions. This may provide insight as to how community-based initiatives can support all basic needs insecurities.

5.2 Community-Level Implications

Many of the participants from photovoice were avid volunteers in the food assistance space. Referred to as social action by participants, they went beyond simply showing up for volunteer shifts but connected others in the community to resources and advocated for improvements to food access for their community. This mutual aid not only provided food for families but mobilized these community members to promote their well-being. Previous studies have shown how mutual aid can operate to reduce food insecurity,²³¹ as well as improve the social infrastructure – the social capital, trust building, and networks— that are critical for developing and maintaining a sense of community.²³⁶ These mutual aid efforts are rooted in community priorities and rely on commitments of neighbors helping neighbors, whether that be free food cabinets that allow for anonymity²³⁵ or other community-based programs that aid those that may not have access to purchase fresh produce (while also connecting farmers to consumers).²³⁶ Future research should investigate whether acts of mutual aid can also alleviate the effects of

folks living in this wage gap or benefits cliff by connecting them to resources for food, but also opportunities to improve their financial capacity to meet all basic needs.

Households facing food insecurity are at risk of other basic needs security. While resources are available at the county or municipal level to provide assistance to these needs such as utilities assistance and SNAP or WIC benefits, many barriers to accessing such resources. One promising strategy is the use of promotoras or community health workers that act as liaisons in the community, particularly among Hispanic/Latino communities. Promotoras are often females who work with community members to connect them with resources in the community that may improve overall well-being.²⁵⁷ Collaborating with promotoras in community engaged research is a promising strategy to provide additional resources in connecting community members to nutrition, housing, and medical treatment while fostering sustainable community progress.

5.3 Policy Level Implications

This research also underscores the importance of considering the high variability of cost-of-living across the United States and how it may influence coping strategies among food insecure households. For higher income food insecure families, collective coping strategies—such as reliance of charitable food assistance and economic tradeoffs between food and other basic needs—highlight gaps in existing safety net policies. This may be especially true in high cost-of-living regions, though additional research is warranted. Addressing these challenges requires a nuanced approach that not only strengthens resources for households in poverty but also expands support to those navigating food insecurity with higher incomes.

This study found high participation rates in federal assistance programs such as SNAP, WIC, TANF, and SSI across income levels, highlighting their role as a key coping strategy for food insecure households. However, the simultaneous reliance on these programs alongside use of charitable food assistance and engagement in economic tradeoffs suggests that federal aid alone may not be sufficient to meet all basic needs, particularly in high cost-of-living regions. In addition, the use of multiple coping strategies demonstrates the need for cohesive and comprehensive approaches that bridge gaps between federal assistance, charitable assistance, economic tradeoffs and self-sufficiency. While states have some autonomy over setting income thresholds for programs like SNAP, further conversations may be warranted to discuss differences in state-by-state eligibility guidelines and perhaps more tailored guidelines that address steep increases in cost-of-living within states.

This research also highlights the benefits cliff effect that occurs when households are not eligible to receive federal assistance based on their income. Households living in this wage gap are clearly still experiencing food insecurity along with other basic needs insecurity. This effect also has an implication for hindering economic mobility as households choose not to pursue higher paying jobs at the expense of critical benefits.²⁵⁸ Some states have implemented policies to reduce the impacts of benefits cliffs, such as increasing broad-based categorical eligibility for SNAP to 200% FPL, providing tax credits, or reducing other barriers to benefits.¹¹⁶ Future research could investigate how policy changes such as gradual phase outs for benefits as a household's income increases could reduce more severe impacts of benefits cliffs. Other strategies could include varying deduction caps for things like housing or childcare as well as varying benefit allotments based on regional cost-of-living. Furthermore, increasing awareness

around the benefits cliff and working directly with households trying to improve their financial standing is critical to move people away from the benefits cliff.

6. Conclusion

This dissertation research offers valuable perspectives on the coping strategies and experiences of food insecure households living in a high cost-of-living resort rural region. We show that households living above 130% FPL are still experiencing food insecurity and are more likely than households below 130% FPL to access charitable food assistance and engage in economic tradeoffs between food and other basic needs. Although our measurement for assessing the use of charitable food assistance requires further validation, our findings provide foundational work for future research to build upon. Further, the necessity of future strategies addressing *all* basic needs is underscored by this sample of food insecure households' engagement in tradeoffs between food and other needs. This research also emphasizes the benefits of using community engaged research approaches like photovoice to provide a more nuanced understanding of the lived experience of food insecurity and what influences food access. Further, CEnR can be used to engage with community partners and empower participants to increase awareness of and advocate for social issues like food insecurity.

Food insecurity has numerous health and economic implications for households and broader society. As food insecurity rates have increased, among all households, and particularly among households above 130% FPL,² attention is needed to understand these increasing trends and how policies and strategies can better support these households. Future research is needed to better understand regional variations in cost-of-living and the impacts on food insecurity and food insecurity coping strategies, particularly among households living in this wage gap.

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APPENDICES

Appendix 1. US Household Food Security Module: Three-Stage Design with Screeners

Optional USDA Food Sufficiency Question/Screeners: Question HH1 (This question is optional. It is not used to calculate any of the food security scales. It may be used in conjunction with income as a preliminary screener to reduce respondent burden for high income households).

HH1. [IF ONE PERSON IN HOUSEHOLD, USE "I" IN PARENTHETICALS, OTHERWISE, USE "WE."]

Which of these statements best describes the food eaten in your household in the last 12 months: —enough of the kinds of food (I/we) want to eat; —enough, but not always the kinds of food (I/we) want; —sometimes not enough to eat; or, —often not enough to eat?

- [1] Enough of the kinds of food we want to eat
- [2] Enough but not always the kinds of food we want
- [3] Sometimes not enough to eat
- [4] Often not enough to eat
- [] DK or Refused

Household Stage 1: Questions HH2-HH4 (asked of all households; begin scale items).

[IF SINGLE ADULT IN HOUSEHOLD, USE "I," "MY," AND "YOU" IN PARENTHETICALS; OTHERWISE, USE "WE," "OUR," AND "YOUR HOUSEHOLD."]

HH2. Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?

- [] Often true
- [] Sometimes true
- [] Never true
- [] DK or Refused

HH3. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

HH4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

Screener for Stage 2 Adult-Referenced Questions: If affirmative response (i.e., "often true" or "sometimes true") to one or more of Questions HH2-HH4, OR, response [3] or [4] to question HH1 (if administered), then continue to ***Adult Stage 2***; otherwise, if children under age 18 are present in the household, skip to ***Child Stage 1***, otherwise skip to ***End of Food Security Module***.

NOTE: In a sample similar to that of the general U.S. population, about 20 percent of households (45 percent of households with incomes less than 185 percent of poverty line) will pass this screen and continue to Adult Stage 2.

Adult Stage 2: Questions AD1-AD4 (asked of households passing the screener for Stage 2 adult-referenced questions).

AD1. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes
- No (Skip AD1a)
- DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

- Yes
- No

DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?

Yes

No

DK

AD4. In the last 12 months, did you lose weight because there wasn't enough money for food?

Yes

No

DK

Screener for Stage 3 Adult-Referenced Questions: If affirmative response to one or more of questions AD1 through AD4, then continue to *Adult Stage 3*; otherwise, if children under age 18 are present in the household, skip to *Child Stage 1*, otherwise skip to *End of Food Security Module*.

NOTE: In a sample similar to that of the general U.S. population, about 8 percent of households (20 percent of households with incomes less than 185 percent of poverty line) will pass this screen and continue to Adult Stage 3.

Adult Stage 3: Questions AD5-AD5a (asked of households passing screener for Stage 3 adult-referenced questions).

AD5. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

Yes

No (Skip AD5a)

DK (Skip AD5a)

AD5a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK

Child Stage 1: Questions CH1-CH3 (Transitions and questions CH1 and CH2 are administered to all households with children under age 18) Households with no child under age 18, skip to *End of Food Security Module*.

SELECT APPROPRIATE FILLS DEPENDING ON NUMBER OF ADULTS AND NUMBER OF CHILDREN IN THE HOUSEHOLD.

Transition into Child-Referenced Questions:

Now I'm going to read you several statements that people have made about the food situation of their children. For these statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true in the last 12 months for (your child/children living in the household who are under 18 years old).

CH1. "(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children) because (I was/we were) running out of money to buy food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

CH2. "(I/We) couldn't feed (my/our) child/the children) a balanced meal, because (I/we) couldn't afford that." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

CH3. "(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

Screener for Stage 2 Child Referenced Questions: If affirmative response (i.e., "often true" or "sometimes true") to one or more of questions CH1-CH3, then continue to ***Child Stage 2***; otherwise skip to ***End of Food Security Module***.

NOTE: In a sample similar to that of the general U.S. population, about 16 percent of households with children (35 percent of households with children with incomes less than 185 percent of poverty line) will pass this screen and continue to Child Stage 2.

Child Stage 2: Questions CH4-CH7 (asked of households passing the screener for stage 2 child-referenced questions).

NOTE: In Current Population Survey Food Security Supplements, question CH6 precedes question CH5.

CH4. In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?

- Yes
- No
- DK

CH5. In the last 12 months, did (CHILD'S NAME/any of the children) ever skip meals because there wasn't enough money for food?

- Yes
- No (Skip CH5a)
- DK (Skip CH5a)

CH5a. [IF YES ABOVE ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK

CH6. In the last 12 months, (was your child/were the children) ever hungry but you just couldn't afford more food?

- Yes
- No
- DK

CH7. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No
- DK

Appendix 2. Full Survey

Dear Participant,

My name is Dr. Megan Mueller and I am a researcher from Colorado State University in the Food Science and Human Nutrition department. We are conducting a research study on how people access food in their community. The title of our project is Exploring Food and Daily Life in the PAC Region.

We would like you to take an online survey. **In order to receive a gift card compensation of \$10, an email address must be provided after completion of the survey. For in-person surveys only, if an email address is not provided, a signature must be provided for receipt of gift card.** Participation will take approximately 20 minutes. Your participation in this research is voluntary. If you decide to stop participating in the study, you may withdraw your consent and stop participation at any time without penalty. If there is suspicious activity (including, but not limited to, fraudulent responses or multiple submissions) or bots used in the completion of the survey, you will be disqualified from participating, and payment will not be made.

By completing this survey, you may also choose to be entered into a drawing for a chance to win a \$100 gift card. The odds of winning the \$100 gift card are approximately 1%. Ten participants will be chosen at random for a gift card once all surveys have been completed. The email address you share with us will be kept separate from data. This email will not be shared with anyone or used to contact you, unless given permission by the participant. Network IP addresses will be processed during the survey. This information will be kept separate from survey data and we will not use this information to identify participants. When we report and share the data to others, we will combine the data from all participants.

While there are no direct benefits to you, we hope to gain more knowledge on how and where people access food in this region. There are no known risks to participating in this study. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential (but unknown) risks. **To indicate your consent to participate in this research and to continue on to the survey, please select "I consent".** If you have any questions about the research, please contact Dr. Megan Mueller or Ana Altares at (stop-lab@colostate.edu). If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: CSU_IRB@colostate.edu; 970-491-1553.

Megan Mueller, PhD
Assistant Professor

Ana Altares, MS
PhD Student

I consent

I do not consent

Skip To: End of Survey If = I do not consent

Select the county that you live in. If you work in a different county from the one that you live in, select that county as well. (If you work in multiple counties, please select the one you work in the most).

- Adams County
- Alamosa County
- Ashley County
- Barbour County
- Boone County
- Calhoun County
- Chaffee County
- Cleveland County
- Cochise County
- Del Norte County
- Denver County

- Douglas County
- Eagle County
- El Paso County
- Fresno County
- Garfield County
- Gilpin County
- Glenn County
- Hinsdale County
- Lake County
- Larimer County
- Mesa County
- Montrose County
- Orange County
- Ouray County
- Park County

- Pitkin County
- Pueblo County
- Richland County
- Routt County
- San Juan County
- Seminole County
- Summit County
- Taylor County
- Tolland County
- Union County
- Valley County
- Walker County
- Washington County
- Weld County
- Wilcox County

How old are you? _____

Thinking about your household, please state whether the following statement was often true, sometimes true, or never true. Within the past 12 months, I/we worried whether our food would run out before I/we got money to buy more.

- Often true
- Sometimes true
- Never true

Thinking about your household, please state whether the following statement was often true, sometimes true, or never true.

Within the past 12 months, the food I/we bought just didn't last, and I/we didn't have the money to get more.

- Often true
- Sometimes true
- Never true

How many persons, including yourself, are in your household?



Display This Question:

If How many persons, including yourself, are in your household? = 1

What was your household's gross annual income (total income before taxes) last year?

- \$13,596 or less (\$1,133 per month or less)
- \$13,597 - \$17,675 (\$1,134 - \$1,473 per month)
- \$17,676 - \$22,433 (\$1,474 - \$1,869 per month)
- \$22,434 - \$25,153 (\$1,870 - \$2,096 per month)
- \$25,154 - \$27,192 (\$2,097 - \$2,266 per month)
- More than \$27,192 (More than \$2,266 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 2

What was your household's gross annual income (total income before taxes) last year?

- \$18,312 or less (\$1,526 per month or less)
- \$18,313 - \$23,806 (\$1,527 - \$1,984 per month)
- \$23,807 - \$30,215 (\$1,985 - \$2,518 per month)
- \$30,216 - \$33,877 (\$2,519 - \$2,823 per month)
- \$33,878 - \$36,624 (\$2,824 - \$3,052 per month)
- More than \$36,624 (More than \$3,052 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 3

What was your household's gross annual income (total income before taxes) last year?

- \$23,040 or less (\$1,920 per month or less)
- \$23,041 - \$29,952 (\$1,921 - \$2,496 per month)
- \$29,953 - \$38,016 (\$2,497 - \$3,168 per month)

- \$38,017 - \$42,624 (\$3,169 - \$3,552 per month)
- \$42,625 - \$46,080 (\$3,553 - \$3,840 per month)
- More than \$46,080 (More than \$3,840 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 4

What was your household's gross annual income (total income before taxes) last year?

- \$27,755 or less (\$2,313 per month or less)
- \$27,756 - \$36,083 (\$2,314 - \$3,007 per month)
- \$36,084 - \$45,797 (\$3,008 - \$3,816 per month)
- \$41,626 - \$51,349 (\$3,817 - \$4,279 per month)
- \$51,350 - \$55,512 (\$4,280 - \$4,626 per month)
- More than \$55,512 (More than \$4,626 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 5

What was your household's gross annual income (total income before taxes) last year?

- \$32,472 or less (\$2,706 per month or less)
- \$32,473 - \$42,214 (\$2,707 - \$3,518 per month)
- \$42,215 - \$53,579 (\$3,519 - \$4,465 per month)
- \$53,580 - \$60,073 (\$4,466 - \$5,006 per month)
- \$60,074 - \$64,944 (\$5,007 - \$5,412 per month)
- More than \$64,944 (More than \$5,412 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 6

What was your household's gross annual income (total income before taxes) last year?

- \$37,200 or less (\$3,100 per month or less)
- \$37,201 - \$48,360 (\$3,101 - \$4,030 per month)
- \$48,361 - \$61,389 (\$4,031 - \$5,115 per month)
- \$61,390 - \$68,820 (\$5,116 - \$5,735 per month)
- \$68,821 - \$74,400 (\$5,736 - \$6,200 per month)
- More than \$74,400 (More than \$6,200 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 7

What was your household's gross annual income (total income before taxes) last year?

- \$41,916 or less (\$3,493 per month or less)
- \$41,917 - \$54,491 (\$3,494 - \$4,541 per month)
- \$54,492 - \$69,161 (\$4,542 - \$5,763 per month)
- \$69,162 - \$77,545 (\$5,764 - \$6,462 per month)
- \$77,546 - \$83,832 (\$6,463 - \$6,986 per month)
- More than \$83,832 (More than \$6,986 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 8

What was your household's gross annual income (total income before taxes) last year?

- \$46,632 or less (\$3,886 per month or less)
- \$46,633 - \$60,622 (\$3,887 - \$5,052 per month)
- \$60,623 - \$76,943 (\$5,053 - \$6,412 per month)
- \$76,944 - \$86,269 (\$6,413 - \$7,189 per month)
- \$86,270 - \$93,264 (\$7,190 - \$7,772 per month)
- More than \$93,264 (More than \$7,772 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 9

What was your household's gross annual income (total income before taxes) last year?

- \$51,360 or less (\$4,280 per month or less)
- \$51,361 - \$66,768 (\$4,281 - \$5,564 per month)
- \$66,769 - \$84,744 (\$5,565 - \$7,062 per month)
- \$84,745 - \$95,016 (\$7,063 - \$7,918 per month)
- \$95,017 - \$102,720 (\$7,919 - \$8,650 per month)
- More than \$102,720 (More than \$8,650 per month)

Display This Question:

If How many persons, including yourself, are in your household? = 10

What was your household's gross annual income (total income before taxes) last year?

- \$56,088 or less (\$4,674 per month or less)
- \$56,089 - \$72,914 (\$4,675 - \$6,076 per month)
- \$72,915 - \$92,545 (\$6,077 - \$7,712 per month)
- \$92,546 - \$103,763 (\$7,713 - \$8,647 per month)
- \$103,764 - \$112,176 (\$8,648 - \$9,348 per month)
- More than \$112,176 (More than \$9,348 per month)

End of Block: Screener

Start of Block: Household Food Security

The following questions ask about the food situation within your household.

Which of these statements best describes the food eaten in your household in the last 12 months?

- Enough of the kinds of food we want to eat
- Enough but not always the kinds of food we want
- Sometimes not enough to eat
- Often not enough to eat
- Don't know

Display This Question:

*If Which of these statements best describes the food eaten in your household in the last 12 months?
= Sometimes not enough to eat **OR** = Often not enough to eat*

Here are some reasons why people don't always have enough to eat. Please check any of the statements below if it is a reason why you don't always have enough to eat.

- Not enough money for food
- Too hard to get to the store
- On a diet
- No working stove available
- Not able to cook or eat because of health problems

Display This Question:

*If Which of these statements best describes the food eaten in your household in the last 12 months?
= Enough of the kinds of food we want to eat*

Here are some reasons why people don't always have enough of the kinds of foods they want to eat. Please check any of the statements below if it is a reason why you don't always have the kinds of foods you want or need.

- Not enough money for food
- Too hard to get to the store
- On a diet
- No working stove available
- Not able to cook or eat because of health problems

Please state whether the following statement was often true, sometimes true, or never true for you/your household in the last 12 months.

I/we couldn't afford to eat balanced meals.

- Often true
- Sometimes true
- Never true

In the last 12 months, did you or the other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes
- No
- Don't know

Display This Question:

If In the last 12 months, did you or the other adults in your household ever cut the size of your meals... = Yes

You selected "Yes" to cutting the size of your meals or skipping meals because there wasn't enough money for food. How often did this happen?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- Don't know

In the last 12 months, did you (or the other adults in your household) ever eat less than you felt you should because there wasn't enough money for food?

- Yes
- No
- Don't know

In the last 12 months, were you (or the other adults in your household) ever hungry but didn't eat because there wasn't enough money for food?

- Yes
- No
- Don't know

In the last 12 months, did you (or the other adults in your household) lose weight because there wasn't enough money for food?

- Yes
- No
- Don't know

Display This Question:

If In the last 12 months, did you or the other adults in your household ever cut the size of your meals... = Yes

Or In the last 12 months, did you (or the other adults in your household) ever eat less than you felt you... = Yes

Or In the last 12 months, were you (or the other adults in your household) ever hungry but didn't eat... = Yes

Or In the last 12 months, did you (or the other adults in your household) lose weight because there... = Yes

In the last 12 months, did you (or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No
- Don't know / Prefer not to say

Display This Question:

If In the last 12 months, did you (or other adults in your household) ever not eat for a whole day but... = Yes

You selected "Yes" for not eating for a whole day because there wasn't enough money for food. How often did this happen?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- Don't know / Prefer not to say

When was Michael Jackson the president?

- 1981 - 1989
- 1989 - 1993
- 1993 - 1997
- Never

Does your household have children under the age of 18?

Yes

No

Display This Question:

If Does your household have children under the age of 18? = Yes

If = No -> Skip to page 14

We will now ask you a few questions about the food situation for the children in your household.

Display This Question:

If Does your household have children under the age of 18? = Yes

For the following statements, please choose whether the statement was often true, sometimes true, or never true in the last 12 months for the children living in your household who are under 18 years old.

I/We relied on only a few kinds of low-cost food to feed the children because I was/we were running out of money to buy food.

Often true

Sometimes true

Never true

Don't know

I/We couldn't feed the children a balanced meal, because I/we couldn't afford that.

- Often true
 - Sometimes true
 - Never true
 - Don't know
-

The children were not eating enough because I/we just couldn't afford enough food.

- Often true
- Sometimes true
- Never true
- Don't know

Display This Question:

If I/we relied on only a few kinds of low-cost food to the feed children because I/we was/were = Often true

Or = Sometimes true

Or I/We couldn't feed the children a balanced meal, because I/we couldn't afford that. = Often true

Or = Sometimes true

Or The children were not eating enough because I/we just couldn't afford enough food. = Often true

Or = Sometimes true

In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food?

- Yes
- No
- Don't know / Prefer not to say

In the last 12 months, did any of the children ever skip meals because there wasn't enough money for food?

- Yes
- No
- Don't know / Prefer not to say

Display This Question:

If In the last 12 months, did any of the children ever skip meals because there wasn't enough money... = Yes

You selected "Yes" to children skipping meals because there wasn't enough money for food. How often did this happen?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- Don't know / Prefer not to say

In the last 12 months, were the children ever hungry but you just couldn't afford more food?

- Yes
- No
- Don't know / Prefer not to say

In the last 12 months, did any of the children ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No
- Don't know / Prefer not to say

End of Block: Household Food Security

Start of Block: Accessing Food & Food Assistance Resources

These next few questions ask you about your experience accessing food in your community.

Thinking about your community, please mark whether you agree or disagree with the following statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Food is accessible, available and affordable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food assistance resources (like food pantries & free meals) are easily accessible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to buy fresh fruits and vegetables.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The fresh fruits and vegetables are of high quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a large selection of fresh fruits and vegetables.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to buy low-fat products, such as low-fat milk or lean meats.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The low-fat milk or meat products are of high quality.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a large selection of low-fat milk or meat products available.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In the past month, how much of your household's food, meaning food to be consumed by members of your household, has come from the following food sources

	None at all	Only a little	Less than half	About half	More than half	Almost all	All
Grocery store or supermarket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Convenience store	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restaurant, food court, or canteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Street vendors or food trucks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Backyard garden or farm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food at workplaces	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fishing, hunting, or gathering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food stocks (food acquired more than one month ago)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food pantries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soup kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food given to you (for free) from family/friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other community food assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

How important are each of the following factors in your decision to shop at the place where you get most of your food?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Near your home	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Near or on the way to other places where you spend time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your friend/relatives shop at this store	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selection of foods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of foods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Taste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prices of foods	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nutrition / health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prevent weight gain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prevent weight loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Access to public transportation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In an average week, how many times do you eat a meal away from home or get take-out food?

Fast-food restaurant (__ times a week)

Sit-down restaurant (__ times a week)

Convenience store (prepared foods only) (__ times a week)

Other type of "restaurant" (e.g., food truck, cafeteria, etc.) (__ times a week)

We will now ask you about using food assistance services or resources.

Have you ever used community food assistance such as a food pantry, soup kitchen, or other free meal service for obtaining food?

Yes

No

Display This Question:

If Have you ever used community food assistance such as a food pantry, soup kitchen, or other free meal service for obtaining food? = Yes

Which three groups of food are most important to you to get from a food pantry? (Rank your top 3 choices)

_____ Fruits and vegetables

_____ Snack foods

_____ Dairy

_____ Ready-to-eat meals

_____ Eggs

_____ Dry grains (like pasta or rice or cereals)

_____ Meat and/or plant-based proteins (like meat alternatives, beans or other soy-based foods)

_____ Canned foods or other packaged foods

Display This Question:

If Have you ever used community food assistance such as a food pantry, soup kitchen, or other free meal service? = Yes

Please mark whether you agree or disagree with the following statements about your experiences using food assistance resources such as a food pantry, soup kitchen, or other free meal service.

(This does not include assistance that you receive from the government such as food stamps/SNAP or WIC)

	Strongly disagree	Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Agree	Strongly agree
I have to travel to more than one food pantry to get all my/my family's groceries.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is hard to find out what times these food resources are available or open.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have to plan my day/week around when I can go to the food pantry or other meal site.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel stressed by the rules and guidelines to use these food resources.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It takes a lot more time to use these food pantries or meal services than it does to go to a grocery store.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am treated differently by staff/volunteers when receiving food assistance.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I take food that I am offered even though I/my family may not want to eat it.

Select "Agree" for this response

I sacrifice quality of food to put food on the table.

It is hard to transport these foods home.

The food that I receive requires a lot of time to plan and process how to use it.

I worry about me/my family getting sick from eating outdated foods.

I use food assistance resources so that I can pay for other things (i.e., clothing, household items, telephone service) for myself/my family.

Display This Question:

If Have you ever used community food assistance such as a food pantry, soup kitchen, or other free m... = Yes

Please mark whether you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have stopped socializing with some people due to their reaction to me using a food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am very careful whom I tell that I use the food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel guilty because I use the food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I fear losing friends and facing rejection because I use a food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Some people avoid interacting with me after finding out I used a food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel I'm not as good a person as others because I use a food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do not mind people in my neighborhood knowing I use a food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I have not had any trouble with people knowing that I use a food pantry.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I work hard to keep that I use a food pantry from others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Telling others I used a food pantry has been a mistake.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Do you currently receive any of the following? Check all that apply

- Food stamps (Supplemental Nutrition Assistance Program or SNAP benefits)
- WIC benefits
- Government cash assistance including TANF, SSI, SSDI, or GA (but not including social security benefits)
- Meal services targeted for older adults (like congregate meal sites or home delivered meals)
- No, I do not currently receive any of these benefits

Have you ever received any of the following in the past? Check all that apply

- Food stamps (SNAP benefits)
 - WIC benefits
 - Government cash assistance including TANF, SSI, SSDI, or GA (but not including social security benefits)
 - Meal services targeted for older adults (like congregate meal sites or home delivered meals)
 - No, I have never received any of these benefits
-

Display This Question:

If Do you currently receive any of the following? Check all that apply = Food stamps (Supplemental Nutrition Assistance Program or SNAP benefits)

Or Have you ever received any of the following in the past? Check all that apply = Food stamps (SNAP benefits)

Are you aware that you can use your food stamps/SNAP benefits to purchase food from Community Supported Agriculture (CSA)?

Yes

No

Display This Question:

If Are you aware that you can use your food stamps/SNAP benefits to purchase food from Community Sup... = Yes

Do you currently use or have you ever used your SNAP benefits for Community Supported Agriculture (CSA) produce or other goods?

Yes, I am currently using SNAP benefits for CSA goods

Yes, I have used SNAP benefits for CSA goods in the past

No, I haven't used SNAP benefits for CSA goods in the past

Part A. Would any of the following keep your household from using assistance programs or charities, or for applying for more assistance (e.g., food stamps/SNAP, WIC, food banks or other charities, Medicaid, etc.)? (Select all that apply)

- Make too much income to qualify
 - Would qualify for only a small amount, not worth it
 - Currently using all that my household is eligible for
 - Disqualified from receiving assistance due to things in my/our past
 - My income fluctuates throughout the year which means I may have to reapply for assistance more than once.
 - Do not want it to impact immigration status
 - None of the above
-

Part B. Would any of the following keep your household from using assistance programs or charities, or for applying for more assistance (e.g., food stamps/SNAP, WIC, food banks or other charities, Medicaid, etc.)? (Select all that apply)

- Do not know much about assistance programs or charities available
- Takes too much time and effort to apply or sign-up
- Too confusing to apply or sign-up
- Hard to travel to apply, sign-up, or use services
- Hard to use the internet or phone to apply, sign-up, or use services
- None of the above

Part C. Would any of the following keep your household from using assistance programs or charities, or for applying for more assistance (e.g., food stamps/SNAP, WIC, food banks or other charities, Medicaid, etc.)? (Select all that apply)

- Do not like relying on assistance programs or charities
- How I would feel about myself for using assistance
- How others may think of me for using assistance
- Do not want them to have my/our information
- Want to save it for others that need it more
- Do not like how assistance programs or charities treat people seeking help
- Other: _____
- None of the above

End of Block: Accessing Food & Food Assistance Resources

Start of Block: Self-Sufficiency Standard

We will now ask you some questions about how much you pay for living expenses.

Q50 Please select the county where you live.

▼ Pitkin County	Eagle County	Garfield County
-----------------	--------------	-----------------

Please select the size of your current living situation.

▼ Studio 1 bdr 2 bdr 3 bdr 4 bdr Other

Display This Question:

If Please select the county where you live. = Eagle County

And Please select the size of your current living situation. = Studio

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:

\$1132 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select the size of your current living situation. = 1 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:

\$1331 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select the size of your current living situation. = 2 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:

\$1715 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select the size of your current living situation. = 3 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2139 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select the size of your current living situation. = 4 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2326 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select the size of your current living situation. = Studio

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$947 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select the size of your current living situation. = 1 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$953 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select the size of your current living situation. = 2 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:

\$1212 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select the size of your current living situation. = 3 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:

\$1636 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select the size of your current living situation. = 4 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1982 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select the size of your current living situation. = Studio

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1129 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select the size of your current living situation. = 1 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1298 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select the size of your current living situation. = 2 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1711 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select the size of your current living situation. = 3 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2312 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select the size of your current living situation. = 4 Bedroom

Thinking about the last month, please select if your housing cost was much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2320 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Please select how many children (under 18 years old) in your household you pay for childcare.

▼ I/we have no children school-age	1 infant	1 preschooler	1
1 school-age + 1 teenager	1 infant + 1 preschooler	1 preschooler + 1 school-age	
2 school age infant + 2 preschooler	1 preschooler + 2 school-age		1
1 infant + 1 preschooler + 1 school-age		2 infants + 1 preschooler	Other

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than: \$1448 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1366 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 school-age

Or Please select how many children (under 18 years old) in your household you pay for childcare. = 1 school-age + 1 teenager

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$803 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2795 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 preschooler + 1 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2170 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 2 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1607 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 2 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$4161 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 1 preschooler + 1 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$3599 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 2 infants + 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$4223 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1306 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1190 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 school-age

Or = 1 school-age + 1 teenager

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$856 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2496 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 preschooler + 1 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2046 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 2 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1713 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 2 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$3686 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 1 preschooler + 1 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$3352 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 2 infants + 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$3801 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1689 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1655 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 school-age

Or = 1 school-age + 1 teenager

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$979 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 preschooler + 1 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$2634 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$3344 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 2 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$1958 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 2 preschooler

Or = 2 infants + 1 preschooler

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than:
\$5000 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

And Please select how many children (under 18 years old) in your household you pay for childcare. = 1 infant + 1 preschooler + 1 school-age

During times when you require childcare the most, is the average cost of childcare much higher, slightly higher, about the same, slightly lower, or much lower than: \$4323 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

Thinking about the last month, please select whether you, yourself, paid much higher, slightly higher, about the same, slightly lower, or much lower than \$85 for transportation.

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

Thinking about the last month, please select whether you, yourself, paid much higher, slightly higher, about the same, slightly lower, or much lower than \$279 for transportation.

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Pitkin County

Thinking about the last month, please select whether you, yourself, paid much higher, slightly higher, about the same, slightly lower, or much lower than \$163 for transportation.

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Please select which of the following best describes your household.

- | | | | |
|--------------------------------------|---|------------------------------------|---|
| ▼ 1 adult
adults + 1 infant | 1 adult + 1 preschooler | 1 adult + 1 infant + 1 preschooler | 2 |
| 1 adult + preschooler + 1 school-age | 1 adult + school-age + 1 teenager | | |
| 2 adults + 1 infant + 1 preschooler | 2 adults + 1 preschooler + 1 school-age | | |
| None of the above | | | |

Skip To: Page 57 If Please select which of the following best describes your household. = None of the above

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 1 adult

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$187 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 1 adult + 1 preschooler

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$500 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 1 adult + 1 infant + 1 preschooler

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$517 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 1 adult + 1 preschooler + 1 school-age

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than:

\$524 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 1 adult + 1 school-age + 1 teenager

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$553 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 2 adults + 1 infant

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$569 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 2 adults + 1 infant + 1 preschooler

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$582 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Eagle County

And Please select which of the following best describes your household. = 2 adults + 1 preschooler + 1 school-age

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$588 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 1 adult

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$221 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 1 adult + 1 preschooler

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$625 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 1 adult + 1 infant + 1 preschooler

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$641 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 1 adult + 1 preschooler + 1 school-age

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$649 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 1 adult + 1 school-age + 1 teenager

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$677 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 2 adults + 1 infant

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$693 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 2 adults + 1 infant + 1 preschooler

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$706 per month

- Much higher
 - Slightly higher
 - About the same
 - Slightly lower
 - Much lower
-

Display This Question:

If Please select the county where you live. = Garfield County

Or = Pitkin County

And Please select which of the following best describes your household. = 2 adults + 1 preschooler + 1 school-age

Thinking about the last month, please select whether your household healthcare cost was much higher, slightly higher, about the same, slightly lower, or much lower than: \$713 per month

- Much higher
- Slightly higher
- About the same
- Slightly lower
- Much lower

Thinking about your ability to pay basic expenses (including rent/mortgage, food, medication, etc.), which of the following best describes your household:

- There is enough money now to pay for basic expenses and we should be okay for the foreseeable future
- There is enough money to meet basic expenses now, but I am worried about the next few weeks/months
- There is not enough money to meet basic expenses now
- Not sure/Prefer not to say

Relative to other concerns you have for your household, how important of an issue is hunger?

- Hunger is the most important concern I have
- Hunger is among my top concerns
- Hunger is a mild concern
- Hunger is not a concern
- Not sure/Prefer not to say

Sometimes people find that their income does not quite cover their living costs. In the last 12 months, has this happened to you?

- Yes
 - No
 - Don't know
 - Not applicable (I don't have any personal income)
 - Prefer not to say
-

Display This Question:

If Sometimes people find that their income does not quite cover their living costs. In the last 12 months... = Yes

Did you do any of the following to make ends meet the last time this happened?

	No	Yes
Draw money out of savings or transfer savings into current account	<input type="radio"/>	<input type="radio"/>
Cut back on spending, spend less, do without	<input type="radio"/>	<input type="radio"/>
Sell something that I own	<input type="radio"/>	<input type="radio"/>
Borrow food or money from family or friends	<input type="radio"/>	<input type="radio"/>
Borrow from employer/salary advance	<input type="radio"/>	<input type="radio"/>
Pawn something that I own	<input type="radio"/>	<input type="radio"/>
Take a loan from my savings and loans clubs	<input type="radio"/>	<input type="radio"/>
Take money out of a flexible mortgage account	<input type="radio"/>	<input type="radio"/>
Apply for loan/withdrawal on pension fund	<input type="radio"/>	<input type="radio"/>
Use authorised, arranged overdraft or line of credit	<input type="radio"/>	<input type="radio"/>
Use credit card for a cash advance or to pay bills/buy food	<input type="radio"/>	<input type="radio"/>
Take out a personal loan from a financial service provider (including bank, credit union or microfinance)	<input type="radio"/>	<input type="radio"/>
Take out a payday loan	<input type="radio"/>	<input type="radio"/>
Take out a loan from an informal provider/moneylender	<input type="radio"/>	<input type="radio"/>
Use unauthorized overdraft	<input type="radio"/>	<input type="radio"/>
Pay my bills late; miss payments	<input type="radio"/>	<input type="radio"/>

Other (Please specify):

In the past month, how often did you or your household have to choose between paying for food and paying for medicine/medical care?

- Never
- Rarely
- Sometimes
- Often
- Always

In the past month, how often did you or your household have to choose between paying for food and paying for utilities?

- Never
 - Rarely
 - Sometimes
 - Often
 - Always
-

In the past month, how often did you or your household have to choose between paying for food and paying for rent/mortgage?

- Never
- Rarely
- Sometimes
- Often
- Always

In the past month, how often did you or your household have to choose between paying for food and paying for transportation?

- Never
- Rarely
- Sometimes
- Often
- Always

In the past month, how often did you or your household have to choose between playing checkers or playing chess? Please select "Never"

- Never
 - Rarely
 - Sometimes
 - Often
 - Always
-

In the past month how often did you or your household have to choose between paying for food and paying for childcare?

- Never
- Rarely
- Sometimes
- Often
- Always

In the past month, how often did you or your household have to choose between paying for food and paying for education?

- Never
- Rarely
- Sometimes
- Often
- Always

End of Block: Self-Sufficiency Standard

Start of Block: Nutrition Security and Resiliency

How many adults in your household received income last month that was used for household expenses? (Count any income such as from a job, assistance program, retirement program, or any other income that came to the household)

▼ 0	1	2	3	4	5	6	7	8	9	Don't know
-----	---	---	---	---	---	---	---	---	---	------------

.....

How often in the past 12 months was your household able to put money into savings?

- Never
 - Only 1 or 2 months
 - Some months but not every month
 - Every month or almost every month
 - Don't know
-

The following questions ask about your household and your community. Please select to what extent you agree or disagree.

	Strongly disagree	Disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Agree	Strongly agree
If (I/we) have a financial challenge, I believe (I/we) can find ways to get what (I/we) need.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(I/We) know people personally who (I/we) can discuss things with like assistance programs, charitable organizations, and/or jobs or educational opportunities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy for people in my community to travel around to the places they need to be.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the next five years, I believe my household will be better able to afford basic needs such as food, housing, utilities, transportation, and medical care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Over the last year, was there a particular season that was harder for you to obtain adequate food for yourself/your family? (Select all that apply)

- Winter
 - Spring
 - Summer
 - Fall
 - Not a particular season
-

Which of the following statements describes why it was harder for you to obtain adequate food for yourself/your household during this season? (Select all that apply)

- Loss of income
- In-between jobs
- Less food available at food pantries or discounted/free food services
- Food was more expensive during this time
- My schedule changed and I wasn't able to access free food services
- The food pantry/food service schedule changed and I wasn't able to go
- More people to feed throughout the week or during the day (i.e., children out of school, extended family staying long-term)
- Experienced some hardship
- Other (please specify):

- One season was not harder than other seasons to obtain adequate food.

End of Block: Seasonal and Episodic Food Security

Start of Block: Commuting

How did you usually get to work LAST WEEK? Select the method of transportation used for most of the distance.

- Car, truck, or van
- Bus
- Subway or elevated rail
- Long-distance train or commuter train
- Taxicab
- Ride share app (like Uber, Lyft, hacking etc.)
- Motorcycle
- Bicycle
- Walked
- Worked from home
- Other method: _____

How many minutes did it usually take you to get from home to work LAST WEEK?
Write 0 if you do not travel to work

How many minutes did it usually take you to get from work to home LAST WEEK?
Write 0 if you do not travel to work

End of Block: Commuting

Start of Block: General Household Questions

How many drive-able motor vehicles (cars, trucks, and motorcycles) are there in your household?

Which of these best describes the neighborhood where you live?

- Urban/city or town
- Suburban
- Rural or very rural

Do you or someone else in your household own your home?

- No
- Yes

How would you describe your current housing situation?

- Temporary (meaning living somewhere for a short period of time, often WITHOUT commitments or contracts)
- Nontemporary (meaning a secure or longterm housing situation, often WITH commitments or contracts such as a lease)

Display This Question:

If How would you describe your current housing situation? = Temporary

Please select which most closely represents your current housing situation.

- Abandoned building, bus or train station, park, campground, or airport
- Car, van, boat, or recreational vehicle (RV)
- Living on the street
- Motel or hotel temporarily
- Staying with a friend or family member
- Rented room in a rooming or boarding house
- Residential treatment facility or supervised housing
- Shelter, mission, or transitional living situation
- Other (please specify):

Display This Question:

If How would you describe your current housing situation? = Nontemporary

Please select which most closely represents your current housing situation.

- Apartment
- House or townhouse
- Military housing
- Mobile home or house trailer
- Rented room in a rooming or boarding house
- Other (please specify):

Which of the following most accurately describes you?

- Female
- Male
- Non-binary
- Transgender
- Intersex
- Let me write... _____
- I prefer not to say

What racial background or ethnicity do you identify with? Select all that apply.

- Black/African American
 - White/Caucasian
 - Latino/Hispanic
 - Asian/South Asian/Pacific Islander
 - American Indian or Alaskan Native
 - Other (please specify):

 - I prefer not to say
-

What is the primary language spoken in your household? (If more than one language is spoken fluently, select all that apply)

- English
- Spanish
- Portuguese
- French
- Russian
- German
- Arabic
- Somali
- Chinese
- Vietnamese
- Tagalog
- Korean
- Japanese
- Hmong

Other (please specify):

What is your marital status?

- Married or living with a partner
- Separated or divorced
- Widowed
- Never been married

How would you describe your current employment status?

- Full-time employment (35 hours a week or more year-round)
- Part-time employment
- Unemployed, actively seeking employment
- Lost employment (temporarily or currently) since March 13, 2020
- Not employed, not seeking employment (student, retired, homemaker, disabled, etc.)

What is your highest level of education?

- 8th grade or less
- Some high school
- High school graduate or GED certificate
- Some college or technical school
- College graduate
- Graduate school or professional degree

End of Block: Background Questions

Start of Block: Assistance with survey

Did anyone assist you in filling out this survey?

- Yes
- No

End of Block: Assistance with survey

Start of Block: Link to \$10 Compensation

Would you like to receive your \$10 electronic gift card? Your response will still remain anonymous

- Yes
- No

End of Block: Link to \$10 Compensation

Start of Block: Default Question Block

Please enter the email address where you would like the \$10 electronic gift card sent to. We will not use this email to contact you, unless given permission by you, the participant.

Within 3 business days of completing this survey, you will receive an email with a link to your electronic gift card.

I have an email address. Type email address below:

I do not have an email address

May we contact you for future studies?

The contact information you provided will be kept separate from the survey information.

Yes

No

End of Block: Default Question Block

Start of Block: Link to \$100 Drawing

Would you like to be entered into a drawing for a chance to win \$100? Your response will still remain anonymous

Yes

No

End of Block: Link to \$100 Drawing

Start of Block: Default Question Block

Please enter an email address enter for a chance to win the \$100 electronic gift card. We will not use this email to contact you, unless given permission by you, the participant.

At the end of this survey collection, you will receive an email with a link to your electronic gift card if you won.

End of Block: Default Question Block

Thank you for taking this survey. Your response has been recorded.

Appendix 3. Cognitive Interview Guide for Charitable Food Assistance Measure

In the past month, how much of your household's food, meaning food to be consumed by members of your household, has come from the following food sources

	None at all	Only a little	Less than half	About half	More than half	Almost all	All
Grocery store or supermarket	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Convenience store	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Restaurant, food court, or canteen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Street vendors or food trucks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Backyard garden or farm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food at workplaces	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fishing, hunting, or gathering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food stocks (food acquired more than one month ago)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food pantries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Soup kitchen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Food given to you (for free) from family/friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other community food assistance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Script

Interviewer: We want to know what you think about a few of the questions on the survey. Would you be willing to answer a few more questions for us? It will only take 5-7 minutes and you will get an additional \$5

- *If participant declines, thank them anyway*
- *If participant agrees, continue to the prompts below:*

Interviewer: *[Using a hard-copy print out of the questions above]* Can you read the question and tell me in your own words what the question is asking?

- Follow up questions
 - What does “your household’s food” mean to you?
 - Who do you consider to be “members of your household”?

Interviewer: Can you read each of the food sources and tell me in your own words what each means to you or give me an example of each? *[Have participant go through each option]*

Interviewer: Look at the options that you are able to choose from; from “None at all” to “All” and the options in between. What did you think about the possible options to choose from?

- Follow up questions
 - Can you read each of the response options and tell me in your own words what each means to you in relation to *(interviewer - pick any two of the food sources- choose one that is more frequently used, and that is less frequently used like grocery stores & food from work places)?*
 - How did you come up with your response for each food source?
 - Were any of these food source options *(point to table)* easier or harder than others to answer? Which ones? Why?
-

Other probing questions if the respondent seems stuck:

“What’s going through your head right now?”

“Can you think of another word for XX term?... What word is that?”

“How hard or easy is this for you to answer?”

“How did you arrive at your answer?”

“How easy or difficult was it for you to pick a response?”

Interviewer: That is all we need. Thank you for your time.

Do you live or work in Garfield, Eagle, or Pitkin County?



Must be 18 years or older to participate
*While there are no direct benefits to you, we hope to gain more knowledge on how and where people access food in this region.

TAKE THIS SURVEY
AND TELL US ABOUT
LIVING IN THIS
REGION

\$10 E-gift card
upon completion!

AND..
Enter to win \$100

*Email address recommended
to receive compensation



Step 1: Hover your phone camera over the QR code OR type in this link:

bit.ly/PAClifesurvey



Step 2: Take ~20 minutes to fill out the survey to the best of your knowledge



Step 3: Receive your \$10 e-gift card to your email inbox



Exploring Food & Daily Life in the PAC
Region study by Colorado State University



For additional information email stop-lab@colostate.edu

¿Vive o trabaja en el condado de Garfield, Pitkin, o Eagle?



Tiene que tener 18 años para completar este cuestionario.

*Si bien no hay beneficios directos para usted, esperamos aprender cómo y dónde las personas obtienen alimentos en esta región.



Paso 1: Escanear el código QR con su teléfono o vaya a este sitio web:

bit.ly/pacvida



Paso 2: Completar el cuestionario que toma ~20 minutos



Paso 3: Reciba su tarjeta de regalo electrónica de \$10 cuando complete el cuestionario

Estudio Explorando PAC comida y la vida diaria de Colorado State University

Para obtener información adicional email stop-lab@colostate.edu

TOME ESTE CUESTIONARIO Y COMPARTA SU OPINION SOBRE LA VIVIENDA EN ESTA REGION.

Reciba una tarjeta de regalo electrónica de \$10

Y..
Entra para ganar \$100!

*correo electrónico recomendada para recibir la compensación



Appendix 6. Recruitment Flyer for Photovoice in English



Volunteers Needed!

Are you interested in sharing how you experience your community?

We invite you to join a research project to use **photography** and **storytelling** to share your experiences and what impacts your life in your community.

What is the project: As experts of your community, we want to know how you navigate through your community, what makes your community great, and what could be better.

Who can participate: 1) 18 years or older
2) Live or work in Pitkin, Eagle, or Garfield County
3) Experienced hardships meeting basic needs like food in the past 12 months

What you will do: Attend 3 workshops (1 per week; 2 hours each)
Take photos of things in your community that influence how you access food
Share and discuss what photos mean to you in a small group setting.

What do you get: A chance to share your voice with others on social issues that matter to you. Learn how others experience their community. Advocate for community change.

You will be compensated \$100 for your participation

- Workshop location TBD (Glenwood Springs or Rifle)
- Transportation required
- Childcare provided **upon request**
- Dinner provided

Scan to apply →

or **Click here!**

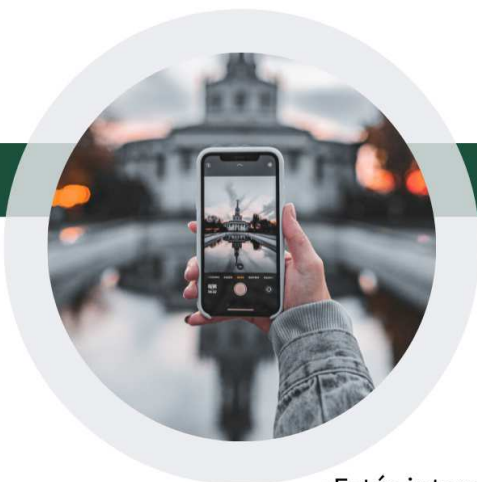


Contact: Ana Altares or Megan Mueller
at stop-lab@colostate.edu



Appendix 7. Recruitment Flyer for Photovoice in Spanish

Colorado
State
University



¡Se necesitan voluntarios!

¿Estás interesado en compartir su historia sobre cómo experience su comunidad?

Te invitamos a unirse a un proyecto de investigación para utilizar **la fotografía** y **la narración de historias** para compartir tus experiencias y lo que impacta tu vida diaria en tu comunidad.

Cuál es el proyecto: ¡Como expertos de su comunidad, queremos saber cómo las personas navegan a través de sus comunidades, qué hace que su comunidad sea excelente y qué podría ser mejor.

Quién puede participar: 18 años o más
Vive o trabaja en el condado de Pitkin, Eagle o Garfield
Han experimentado algunas dificultades para satisfacer necesidades básicas como alimentos en los últimos 12 meses

Lo que harás: Asistir a 3 talleres (1 por semana; 2 hr cada taller)
Tome fotos de las cosas en su comunidad que influyir en cómo acceder a las alimentos
Comparta y discuta lo que las fotos significan para usted en un grupo pequeño.
Discuta sus ideas para la acción sobre los temas que más importan.

Qué obtienes: La oportunidad de compartir tu voz con otros sobre temas sociales que te importan. Aprende cómo otros experimentan su comunidad. Abogar por el cambio comunitario.

- Los talleres en Español en Carbondale
- Transporte requerido
- Cuidado de niños proporcionado
- Cena proporcionada

Se le compensará
\$100 por su
participación

Escanear para aplicar →



Contacto: Ana Altares o Megan Mueller
a stop-lab@colostate.edu

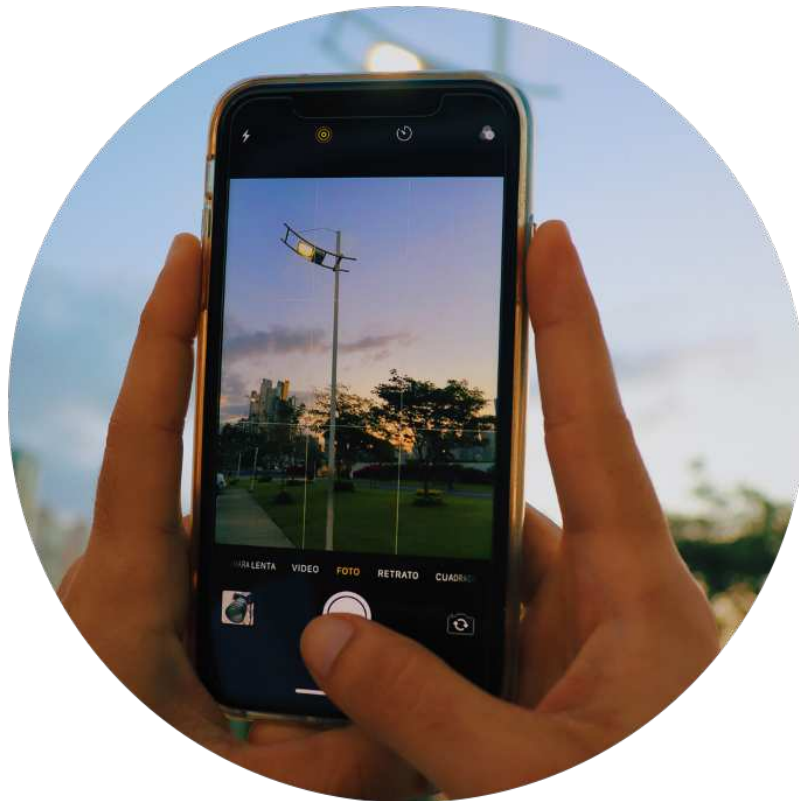


PHOTOVOICE

Facilitator Guideline - English

PARACHUTE TO ASPEN CORRIDOR

Exploring Food and Daily Life



Ana Altares, MS, RDN
Department of Food Science and Human Nutrition
Colorado State University

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Photovoice Facilitator Training

The Facilitator Principles (from Wang & Burris)

- Commitment to improving group members' ability to work together effectively
- Act as an information resource for participants
 - This may be information related to the community, food resources, policies, advocacy
- Reduce dependence on the facilitator to solve future problems
 - The facilitator should not be the dominant person in the group. The participants should learn how to work on complex problems independently.
- Openly committed to certain types of social change
- Recognize the political nature of photography and community-based work
 - How can photographs have influence on policies and community change. Consider what a photo can show and say.
- Sensitive to issues of power and ethics related to cameras
 - Consider who or what can be seen in photos. Does this put anyone in danger?
- Recognize personal aesthetic tastes and biases in photography
- Supports different styles of taking photos
- Understand the nature of critical reflection, discussion, and action of photovoice
 - Critical reflection involves looking at **what** is seen in the photos, **why** that photo was taken, and **how** that photo impacts the individuals relationship with food access
 - Discussion involves open and respectful communication between participants on what the photos show and represent and how this affects peoples' lives
 - Action in photovoice refers to what steps can be taken to initiate change. Whether that be reducing barriers or expanding strengths in the community.
- Understanding of local history, economy, and culture

Recruitment:

- Identify potential interested participants
 - This can be through word of mouth, face to face, email, phone calls, or message boards
- Participants can recruit people they know to participate
- 10 participants max for each cohort
- It is necessary to have approximately equal number of participants from each income category
 - 2-4 participants under 130% FPL

- 2-4 participants between 130-185% FPL
- 2-4 participants above 185% FPL
- It may be helpful to recruit 11 to 12 participants in case someone doesn't show up. We will contact participants 3-4 days prior to session 1 to confirm they are willing and able to participate for all 3 sessions.
 - Calls/texts/emails will be made 7 days and 2 days prior to session 1 to remind participants of workshop 1.

Screener

- Interested participants must complete the screener online (here) or they can fill out a printed version (see screener document).
- Eligible participants must meet the following requirements:
 - Meet income eligibility (at least 2 participants from each income group listed above)
 - Express interest in community change efforts AND/OR have experienced health disparities/inequities
 - At risk of food insecurity
 - Identify as a primary food buyer
 - Live/work in Pitkin, Eagle, or Garfield counties
 - Speak English or Spanish
- Other Intake Information Collected:
 - Demographics: race/ethnicity, age, sex, housing status
- Participants will be divided based on location

Checklist for Workshops

- _____ Slide deck
- _____ Consent form – verbal script (x 2)
- _____ Photo release form (x 100) (for Workshop 1 only)
- _____ Check-in sheet
- _____ Digital camera with microUSB (x 3?) (for Workshop 1 only)
- _____ Check out/Check in sheet for digital cameras
- _____ Food
- _____ Serving utensils
- _____ Paper/plasticware (plates, napkins, utensils)
- _____ Audio recorder (x 2)
- _____ Question mark cards (x 12)
- _____ Scratch paper + pens
- _____ Printed photos (for Workshop 3 only)
- _____ Pins/tape to hang photos (for Workshop 3 only)

_____ Large paper roll for photo categorization (for Workshop 3 only)

Photovoice Workshops

Workshop 1 (2 hours)

Time: [0:00 – 0:20]

- Participants register [Sign in sheet attached]
- Facilitator or photovoice assistant - read the Participant Verbal Consent Form
 - Only participants who consent “Yes” or “I consent” can participate in photovoice
 - If the participant does not consent, he/she will not be eligible to participate in photovoice
- [Food served during check in]

Time: [0:20 – 0:40]

- Introduction: Facilitators and Participants
 - Facilitator – state name and *brief* background
 - Introduce any other staff or team members
 - Participants go around introducing themselves + a food memory they have
 - Food memory could be something recent or from their childhood
 - Facilitators and team members also participate

Time: [0:40 – 0:45]

- Expectations for group discussions
 - Ask participants for their ideas, but you may suggest things like:
 - Take Space/Make Space – meaning if you know you are chatty, allow others the opportunity to share. Similarly, if you know you are quiet, don’t be afraid to share – what you have to say is as valuable as others!
 - Have an open mind
 - Respect each other
 - Don’t share personal information that others shared outside this room
- Let participants know that the workshops will be audio recorded. Ask participants to limit any extra noises so that the recording is clear.
- Pause for any questions

[Begin audio recording]

Time: [0:45 – 0:50]

- Project Overview
 - Provide participants with general information on the project:

- “Local community leaders have teamed up with folks from CSU to understand how and where people get their food in the area from Aspen to Parachute.
- We are interested in hearing from residents about strengths and barriers to how and where you get food in the region.
- This could be related to food from grocery stores, gas stations, restaurants or food pantries.
- We think it’s important to hear directly from residents because you are the ones with real life daily experience.
- You all are going to be the ones driving the discussions and activities here. This is about what YOU have to say since YOU all are the experts in your lives and within this community.
- You all are here because you have shown an interest in sharing your experience and learning more about how you and others in your community are impacted by the current food environment.”
- Pause for questions

Time: [0:50 – 1:05]

- Photovoice Methodology Introduction
 - What is photovoice? – photovoice is a type of participatory research which means that you all, as participants, take on a more active role in the research process
 - This includes deciding on what questions to ask, collecting and analyzing data
 - Photovoice asks you to:
 1. Think about how you access food affects your life OR how things in your community affect how you access food
 - a) Identify strengths and challenges in your community
 2. Take photos of things in your everyday life that are affected by this problem
 - a) Write a brief story of your photos
 3. Reflect on these images
 4. Discuss the pictures and story within the group setting
 - Through this process, we learn more about the issues that impact how we access food in this region. We learn about how each other are impacted. We explore how our environment- whether that be the physical environment, or the political or social environment like policies and programs, impacts the way we access food. And also how the way that we access food impacts other aspects of our lives.
 - This collective knowledge can help us advocate for change within our community. We can become better equipped to make a difference in this community by sharing our findings from photovoice with the community and talking to local leaders about next steps. Pictures speak louder than

words and it may be a picture that grabs the attention of leaders or policymakers to make a change!

- Show previous photovoice example
 - Using Photovoice to Examine Physical Activity in the Urban Context and Generate Policy Recommendations: The Heart Healthy Hoods Study // doi: [10.3390/ijerph16050749](https://doi.org/10.3390/ijerph16050749)
 - Photo 1: strength about being able to walk in neighborhoods
 - Photo 2: barrier or maybe an area for opportunity to create more bike lanes
 - Photo 3: strength about culture, sports, and taking care of public spaces
 - Photo 4: barrier about lack of lighting in public spaces at night

Time: [1:05 – 1:10]

- 5 minute break

Time: [1:10 – 1:25]

- Project intentions + Activity
- Some of you may be wondering what you all will be taking pictures of. This depends on what questions we want to ask so I want to start with an exercise
- Ask participants to take 5 minutes to think about “How did food get to your table this week?” and share with the person sitting next to them (groups of 2-3)
 - This could be the physical steps you took to put food on the table, or the thoughts and feelings you had along the way.
 - Ask participants to write this down
 - Ask participants to pair up and share how food got to their table
- After 5 minutes, ask participants if there was anything in particular that influenced how they got food for themselves or for their family in the past week?
 - If they need an example: [For instance- How did you make the decision to get food from X place? Or Why did you decide to grocery shop on X day?]
 - Allow 2 minutes to think about this
 - Ask participants to share – “What things influence how you got food this week?”
- Based on the responses (a few or many) – there are different things that impact the way we access foods.
- Ask participants: **What other questions should we ask about how we access food?**

Time: [1:25 – 1:40]

- Instructions for participants
 - Participants will have 2 weeks to take photographs of: ***What influences the food you eat?***
 - Consider the questions that participant stated above ^

- Suggest that participants take photos of places, things, behaviors, and activities that influence or affect how they meet their basic needs, such as food, shelter, clothing, transportation, childcare, medical care.
 - Instruct participants that they can interpret this however they want
 - Consider your daily activities in your community
 - Commuting to/from work, chores, errands, babysitting, family/friend time, meals
 - How do you navigate through your community (what is your community)?
 - Reflect on your surroundings
 - What strengths do you see in your community?
 - What challenges are you facing?
 - *How does this relate to how you access food in your community?*
- Participants can take as many photos as they want, but they will select 5-8 photos that are most meaningful to them
- For the 5-8 photos, they will write a brief description of the photos and share with the group
- For each photo, answer the following questions:
 1. What does this photo show?
 2. What is the story behind this photo? Why did you take this photo?
 3. How does this influence how or what you eat?
 4. Does this photo represent a strength or a challenge?
 5. Why is it a strength or challenge?
- Instructions on submitting photos
 - For participants that do not have a smartphone, they will borrow a digital camera. They will turn in their digital camera to the research team. They will send photo descriptions via email or turn in a hardcopy of photo descriptions.
 - For participants with camera phones/smart phones - send photos and descriptions via Whatsapp
 - Ask participants to download Whatsapp if they do not have it already
 - Go to the App Store (iPhone) or Google Play Store (Android)
 - Search for Whatsapp
 - Download it to your phone
 - Participants will be sent a chat invite from Ana – this is the contact that participants will send photos and descriptions to
 - Submit photos and descriptions on XX date (2 days before Workshop 2)

- Tell participants we will send them a reminder the week before to submit photos and descriptions.
- Have participants practice submitting a photo to Ana through Whatsapp

[Time 1:40 – 1:50]

- Other Important Notes
- Camera/Photography:
 - How to view photographs: Consider that you're trying to tell a story through a photograph
 - Photography tips:
 - Try to avoid zooming in too much on a subject. If you can, walk a little closer to the subject. You can also try cropping the photo after to focus in on the subject more.
 - Try to make sure the sun is behind you when taking a photo. This helps to reduce shadows.
- Ethics
 - Safety first!
 - Do not put yourself in danger for a photo!
 - Do not take photos of illegal activities!
 - Try to avoid taking photos of people that may identify them
 - If they need to be in the photo, kindly ask them if they would be willing to be in the photo.
 - Have them sign the photo release form.
 - Provide 10 photo release forms for Identifiable Human Subjects
 - If the photo is of a private business that identifies this business, ask for permission before taking a picture.
- Research
 - WhatsApp usage is for research purposes only – You will only be contacted about this project.
 - Participants own the photographs. They consent to the research team using photos for research purposes.
 - Report on data usage
 - Photos will be discussed in the next 2 workshops
 - Participants will also analyze photos and stories in small group settings, further analysis will be completed by the research team
 - Photos will be shared with policymakers, government/public health officials, media/journalists, community leaders in an exhibition format or other decided by group participants
 - Photos and descriptions will be published in scholarly articles and presented at academic conferences
 - NO identifiable information will be provided when sharing data from Photovoice unless agreed upon by the participant.
- Let participants know they will be sharing and discussing their photos next week
- Let participants know about compensation:

- \$30 at workshop 1
- \$30 at workshop 2
- \$40 at workshop 3
- Allow participants time for questions!

[Research team will send participants reminders to send photos and stories at two time points between workshop 1 and workshop 2. Research team will create slide show of participant photos for workshop 2.]

Workshop 2

Time: [0:00 – 0:20]

- Participants sign in
- Verify that participant has submitted photos and stories
- Participants who borrowed digital camera will turn in camera with photos and narrative at 2nd workshop
 - These photos will be uploaded to computer to share with the group
- [Food served during check in]
- Remind participants that the meeting will be recorded

[Begin audio recording]

Time: [0:20 – 0:22]

- Facilitator provides overview of meeting
 - Participants share photos and description of photos
 - There are two goals for today:
 - To share your experience of food access in your community
 - To listen and understand others experiences
 - Participants may ask questions, provide comments after sharing
 - Participants should take notes on anything that stands out to them
 - *[provide note-taking worksheets for participants – collect these after the workshop so they can have them for the next workshop]*
 - 10 minutes max for participants (8 minutes for sharing, 2 minutes for comments/questions)

Time: [0:22 – 1:02]

- Participant Photo Sharing
 - Facilitator instructs participants to address elements they wrote about in their narratives:
 - What does this photo show?
 - What is the story behind this photo? Why did you take this photo?
 - How does this influence how or what you eat?

- Does this photo represent a strength or a challenge?
 - Why is it a strength or challenge?
- ^Participants don't need to answer every question, but provide a brief overview of the story of the photo
- After each participant goes, allow other participants to add any insights or ask questions of the presenter.
- Facilitator: if something stands out to you from the photos or their descriptions, you can probe the participant about it
- *There is some flexibility in how much time to allow for discussion.
 - Encourage participants to be interactive with each other
 - However, be cautious to keep participants on the topic at hand.
 - If participants are getting off topic, you can let them know we can revisit this topic if we have time, but we want to respect everyone's time
- This should be enough time for ~4 participants

Time: [1:02 – 1:10]

- ~8 minute break

Time: [1:10– 1:50]

- Continue photo sharing
- This should be enough time for about 3-4 participants
- Participants who haven't shared yet will share at workshop 3

***Compensation:** Participants will receive \$50 at the end of workshop 2. Participant must sign for receipt of compensation. Provide a hardcopy if they would like one.
[Research team will send a friendly reminder 2-3 days prior to workshop 3. Research team prints out photos]

Workshop 3

Time: [0:00 – 0:20]

- Participants sign in
- [Food served during check in]
- Remind participants that session will be audio recorded

[Begin audio recording]

Time: [0:20 – 0:22]

- Facilitator provides overview of session
 - Remaining participants will share their photos
 - Begin analysis of photos and stories
 - Consider follow-up/next steps for sharing findings with community

Time: [0:22 – 0:52]

- Remaining participants will share their photos and descriptions
- 10 minutes max for participants (8 minutes for sharing, 2 minutes for comments/questions)

Time: [0:52 – 1:00]

- ~8 min break

Time: [1:00 – 1:05]

- Facilitator explains how participants will begin analysis phase
- The goals for this analysis include:
 - Identify what issues stood out individually
 - What common themes are there?
 - Are there any outlier issues that we want to discuss?
 - Discuss what issues are most meaningful to the group
 - Consider potential action steps to be taken
 - How will findings be shared with the community?
 - What issues should be prioritized in the community?

Time: [1:05 – 1:20]

- Break-out activity
 - Divide group into threes (3, 3, 4)
 - Provide each group with equal number of printed photos
 - Have description printed and taped on back of photos?
 - Instruct groups to group photos into different categories as they choose
 - Photos will be pinned on paper on wall or grouped on tables
 - Write name of category above photos
 - Categories can include things that are similar – for instance, transportation category could include bikes and cars. Bikes could also be grouped into recreation category with hiking.
 - Work with your group to decide which category is appropriate

Time: [1:20 – 1:30]

- Walking tour
 - As a whole group, we will travel to each group's photo categorization
 - The group will briefly explain their categories as needed and anything that stood out to them as a group
 - Ask if other participants agree with the categories or if they have any questions or suggestions
- *[facilitator or assistant write categories on the board]*

Time: [1:30 – 1:40]

- Group discussion

- What categories stood out most to you?
- What photos stood out most to you?
- Why did this stand out to you?

Time: [1:40 – 1:50]

- Top categories
 - Have participants list the top 3 categories/themes/issues they feel are most important or that they would like to address. These will be anonymous
- Facilitator/assistant reviews and present to the group.
- Ask participants if there are any disagreements with the overall ranking.

Time: [1:50 – 2:00]

- Group discussion & wrap-up
 - How would participants like to share these findings?
 - Where could this event take place?
 - Who is interested in staying involved?
 - Follow up with data analysis – is researcher interpretation in line with participant?
 - Follow up with community sharing event/photovoice exhibit
 - Other? i.e., community resident coalition?
- [Provide sign-up sheet for follow up. Participants provide name and preferred contact. Check for follow up on items above.]
- Thank participants for their commitment and participation throughout this activity.

***Compensation:** Participants will receive \$50 at the end of workshop 3. Participant must sign for receipt of compensation. Provide a hardcopy if they would like one.

Photovoice Screener

This screener should be completed using this [link]. Participants may complete a hard copy screener if unable to complete the online version. Verify the participant is considered eligible before inviting them to participate in photovoice. The online version will indicate whether the participant is eligible to participate in photovoice. If using a hard copy screener, check eligibility guidelines after question 11.

1. What county do you live in?
 - a. Pitkin
 - b. Eagle
 - c. Garfield
 - d. Other (please specify): _____

2. What county do you work in?
 - a. Pitkin
 - b. Eagle
 - c. Garfield
 - d. Other (please specify): _____

3. How old are you?
 - a. Drop down box – 2-100

4. What is the primary language you speak?
 - a. English
 - b. Spanish
 - c. Other (Please specify): _____

5. How many people are in your household?
 - a. Dropdown box 1-10

6. What was your gross income last month? *[participant will only answer question specific to their household size from 1-10]*
 - a. 1
 - i. Less than \$1,580
 - ii. Between \$1,581 - \$2,248
 - iii. More than \$2,248
 - b. 2
 - i. Less than \$2,136
 - ii. Between \$2,137 - \$3,040
 - iii. More than \$3,040
 - c. 3
 - i. Less than \$2,693
 - ii. Between \$2,694 - \$3,833

- iii. More than \$3,833
- d. 4
 - i. Less than \$3,250
 - ii. Between \$3,251 - \$4,625
 - iii. More than \$4,625
- e. 5
 - i. Less than \$3,807
 - ii. Between \$3,808 - \$5,417
 - iii. More than \$5,417
- f. 6
 - i. Less than \$4,364
 - ii. Between \$4,365 - \$6,210
 - iii. More than \$6,210
- g. 7
 - i. Less than \$4,921
 - ii. Between \$4,922 - \$7,002
 - iii. More than \$7,002
- h. 8
 - i. Less than \$5,477
 - ii. Between \$5,478 - \$7,795
 - iii. More than \$7,795
- i. 9
 - i. Less than \$6,034
 - ii. Between \$6,035 - \$8,587
 - iii. More than \$8,587
- j. 10
 - i. Less than \$6,591
 - ii. Between \$6,592 - \$9,380
 - iii. More than \$9,380

7. Who does the majority of food shopping/procurement in your household?

Please select all that apply.

- a. Yourself
- b. Your spouse/significant other
- c. Your parent/guardian
- d. Your child
- e. Another family member

8. Which of these statements best describes the food eaten in your household in the last 12 months: —enough of the kinds of food (I/we) want to eat; —enough, but not always the kinds of food (I/we) want; —sometimes not enough to eat; or, —often not enough to eat?

- a. Enough of the kinds of food we want to eat
- b. Enough but not always the kinds of food we want

- c. Sometimes not enough to eat
 - d. Often not enough to eat
 - e. Don't know
9. "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?
- a. Often true
 - b. Sometimes true
 - c. Never true
 - d. Don't know
10. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?
- a. Often true
 - b. Sometimes true
 - c. Never true
 - d. Don't know
11. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?
- a. Often true
 - b. Sometimes true
 - c. Never true
 - d. Don't know

[Questions 1-11 are screener questions.

Eligibility includes:

(1) Must be 18 years or older,

(2) Must live/work in Pitkin, Eagle, or Garfield counties,

(3) Must respond "Often true" or "Sometimes true" to questions 9-11 or

"Sometimes

not enough to eat" or "Often not enough to eat" to questions 8.

(4) Must select "yourself" for question 7. May select other options as well.

If eligible, participant continues with the remaining questions. The remaining questions are demographic and workshop preference questions.]

12. Which of the following best describes you?
- a. Female
 - b. Male
 - c. Non-binary
 - d. Transgender
 - e. Intersex

- f. Other (please specify): _____
- g. I'd rather not say

13. What racial or ethnic background do you identify with? Select all the options that apply.

- a. Black/African American
- b. White/Caucasian
- c. Latino/Hispanic
- d. Asian/South Asian
- e. Pacific Islander/Native Hawaiian
- f. American Indian/Alaska Native
- g. Other (please specify): _____
- h. I'd rather not say

14. What is your marital status?

- a. Married or living with a partner
- b. Separated or divorced
- c. Widowed
- d. Never married

15. How would you describe your current employment situation?

- a. Full-time employment (35 hours a week or more throughout the year)
- b. Part-time employment (Less than 35 hours a week)
- c. Unemployed, actively seeking employment
- d. Job loss (temporary or current)
- e. Not employed, not seeking employment (student, retiree, stay-at-home, disabled)

16. What is your highest level of education?

- a. 8th grade or less
- b. Some high school
- c. High school graduate or GED certificate
- d. Some university
- e. Associate degree or technical school
- f. University graduate
- g. Graduate school or professional degree

17. Which location would you prefer to attend the photovoice workshop?

- a. Rifle
- b. Glenwood Springs
- c. Carbondale

18. Do you need childcare to be provided at the workshop?

- a. Yes

b. No

19. Dinner will be provided at the workshops. Do you have any dietary restrictions?

- a. No dietary restrictions
- b. Gluten-free
- c. Lactose-intolerant
- d. Vegetarian
- e. Vegan
- f. Allergy (please specify): _____
- g. Other (please specify): _____

20. Do you have a camera phone you are able to take photos on?

- a. Yes
- b. No

21. Have you previously used or currently use Whatsapp?

- a. Yes
- b. No

Verbal Consent Form

[Facilitator or Research assistant reads the following script to participant.]

Hello, my name is Dr. Megan Mueller and I am a researcher from Colorado State University in the department of Food Science and Human Nutrition. We are conducting a research study on food access in the Parachute to Aspen Corridor. The title of our project is Examining Food Access through Photovoice in the Parachute to Aspen Corridor - Colorado. The Principal Investigator is Dr. Megan Mueller (Food Science and Human Nutrition) and the Co-Principal Investigator is Dr. Carrie Chennault (Anthropology and Geography). This project has been funded by the USDA National Institute for Food and Agriculture.

We would like you to participate in an activity called photovoice, where you take photos of things in your community related to food access and discuss your photos and experience with others in a group setting. You will also be asked to write a brief description of what the photos mean to you and discuss in a group setting. These photos and group discussion can help us better understand how people are impacted by food insecurity and ways to improve food security in this community. Participation will take approximately 4 weeks with 3 workshops (2-hour sessions). These workshops will take place at (XX) location.

Workshop 1: Introduction of photovoice protocol and project objectives
2 weeks to photograph things in your community that impact your food access.

Workshop 2: Present 5-8 photos among group

Workshop 3: Begin reviewing photos and descriptions for common themes among the group.

*Workshops will be audio recorded and notes will be taken.

Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participation at any time without penalty.

We will be collecting your name and mobile telephone number (if you have one). We will use your phone number to contact you on the mobile app, WhatsApp. We will use WhatsApp to communicate with you over the course of the study. You will use WhatsApp to send us the photos you take and descriptions of the photos. We will not use your name or telephone number for any other purpose. When we report and share the data with others, we will combine the data from all participants. We will also remove your name and use an alias name for all data.

While the level of risk is minimal, you may become uncomfortable with some questions related to social issues such as food insecurity or procedures related to exploring your

community for features to take photographs of. Facilitators will be trained to promote a safe space for dialogue and make efforts to ensure everyone is welcome to share only what they are comfortable sharing.

There is no direct benefit to you. However, as a participant in this study, you may benefit from increased engagement in community change efforts. You may also benefit from increased understanding of how others in your community experience or cope with food insecurity. We hope to learn more about how residents experience food insecurity and the factors that influence how individuals access food in the Parachute to Aspen Corridor. This may help future populations or other regions with a similar issue of food insecurity.

You will be compensated for taking part in this research. After the conclusion of the second workshop, you will receive the first \$50 cash compensation. After the conclusion of the third workshop, you will receive the second \$50 cash compensation for your participation in this study. You will be required to sign for receipt of the compensation.

All information gathered in this study will be kept as confidential as possible. Your privacy is very important to us, and the researchers will take every measure to protect it. Your information may be given out if required by law; however, the researchers will do their best to make sure that any information that is released will not identify you. No reference will be made in written or oral materials that could link you to this study. For this study, we will assign a code to your data so that the only place your name will appear in our records is on the consent and in our data spreadsheet which links you to your code. Only members of the research team will have access to the link between you, your code, and your data. All records will be stored in a restricted access folder and a locked drawer in a restricted-access office at CSU for three years after completion of the study. After the storage time, the information gathered will be destroyed.

The photographs you take will remain in your ownership. By signing this consent form, you give the CSU researchers license to use photographs collected in this project for purposes such as education, sharing with community partners, publications, and presentations.

Would you like to participate?

If yes: Proceed.

If no: Thank you for your time.

Offer to give the participant your contact information and the Participant's Rights contact information (If you have questions about your rights as a volunteer in this research, contact the CSU IRB at: CSU_IRB@colostate.edu; 970-491-1553.). This could be verbally or in the form of a study summary sheet/cover letter or contact card.



Examining Food Access through Photovoice in the Parachute to Aspen Corridor
Release Form for Use of Photograph

Megan Mueller, PhD MPH, Assistant Professor
Ana Altares, MS RD, PhD Student
Department of Food Science and Human Nutrition
970-491-1092
Stop-lab@colostate.edu

Name of Participant: _____

I am 18 years of age or older and hereby give my permission to Dr. Megan Mueller to use any photos or videotape material taken of myself during her research on 'Examining Food Access through Photovoice in the Parachute to Aspen Corridor'. The photos and videotape material will only be used for research purposes and for the presentation of the research. My name will not be used in any publication. I will make no monetary or other claim against CSU for the use of the photograph(s)/video. As with all research consent, I may at any time withdraw permission for photos or video footage of me to be used in this research project.

Signature: _____ Date: _____

If Participant is under 18 years old, consent must be provided by the parent or legal guardian:

Printed Name: _____ Date: _____

Parent/Guardian Signature: _____

IRB No.: 4223

Date of IRB Approval: XX-XX-XXXX

Script for talking with someone about being in your photovoice picture

Here is a script that you can use when you are asking someone to be in your picture.

“Hi, I’m (name). I live here in (City/Town name). I am working with Colorado State University on a photovoice project.

We are taking picture of people, places and things that represent food access issues that concern us. We are using the pictures from the project to help raise awareness about food access in the region and to start conversations among other people participating in the project.

I would love for you (your family/your kids/etc.) to be in one of my photos. Would you mind if I took some photos of you (your family/kids/whomever you want in the photos) to add to my photovoice project?

I need your permission, so I would need you to sign this consent form (hand person the form if they agree) and please feel free to sign on behalf of your kids (if appropriate).

You don’t have to pose or look at the camera or do anything special. Please just do what you were doing before I stopped you and pretend I’m not even here. (Or, if you do want to pose your subject, explain how you would like them to look in the photo, and why. But remember, posing is not the same as staging or faking, which you should avoid doing.)

I would be happy to email you copies of the photos that I take of you (and/or your children, family members, etc.). Would you like to give me your email address so that I can send or have someone send these photos to you.

(THANK THEM FOR AGREEING)

IF THEY ASK:

How will my photo be used?

You might be wondering how we plan to use these photos. This project is part of an educational project organized by Colorado State University. Many of these pictures will be used to help start conversations among other photovoice participants working with me. There is a possibility that we may also show some pictures in a video or at a gallery exhibit in the future.

The names of the people in the pictures will NOT be used, but someone who sees the picture online or on display may recognize the people in the pictures. At the end of the project, the photos will belong to me as the photographer and Colorado State University.

What do I get for having my picture taken?

You will be part of the Colorado State University photovoice project, and will have helped to raise awareness about food access in the Parachute and Roaring Fork Valley region.

Do I have to have my picture taken?

You do NOT have to have your picture taken. If you have your photo taken and later decide that you do not want your picture shared or displayed, you may contact Colorado State University and the picture will be removed.

What if I have questions?

If you have questions, you can contact the research team, Ana Altares or Dr. Megan Mueller at stop-lab@colostate.edu.

Adapted from Powers, Freedman, & Pitner, 2012, "From Snapshot to Civic Action."

Face-to-Face Facilitator Recruitment Script

Hello, my name is (name) and I am looking for facilitators for an upcoming project with Colorado State University. We are hoping to understand how people cope with food insecurity and how they access food in this region.

We are going to use a tool called photovoice where participants explore their community and take photos of places, activities, and other things that may impact how they access food. The participants then come together as a group to talk about what they took photos of and what the photos mean to them. This is a unique way of getting insight into how people cope with food insecurity on a daily basis. We hope these photos and the group discussions can help inform community leaders of how to improve food security in this region.

We are looking for facilitators to help guide the group conversation with participants. We are looking for individuals who are interested in community change or health efforts, or work in basic needs assistance areas such as food or housing. The facilitator should be interested in engaging with participants in open-minded conversations.

As a facilitator, you will receive photovoice methodology training (one 2-hour session) to understand the photovoice method and research ethics. You will also need to complete a CITI Human Subjects Research Training course (~3-6 hours, on your own time). This training will prepare you for working with people in a research study, including how to protect vulnerable populations and ensuring ethical study procedures. The cost of training will be covered by Colorado State University and you will receive a certificate upon completion.

The study will consist of 3 2-hour photovoice workshops at (xx) location with the participants. One workshop to introduce participants and teach the photovoice method. The second and third workshop will present participant photos and discuss photos in a group setting. These will be on the following dates: (XX, XX, XX).

By participating as a facilitator, you will benefit by gaining skills as a trained photovoice and group discussion facilitator. Facilitators will be given a \$100 gift card as compensation for participating in this study.

If you are interested in learning more about this, please contact Ana Altares or Megan Mueller at stop-lab@colostate.edu

Appendix 9. Filtering out Bots from Survey Data

Discard if **one** of these items is flagged

**These items are based off recommendations from Qualtrics support team*

1. Time stamps – if 2+ in a row starts or finishes at the same time
2. ReCAPTCHA score $\leq .5$ = BOT (Humans scores are greater than .5; scale 0-1)
3. Relevant ID Duplicate = true, then a duplicate
4. Relevant ID Duplicate score ≥ 75 , then a duplicate
5. Relevant ID Fraud Score ≥ 30 BOT
6. Time <600 seconds (10 min)
 - a. Median time for round 1 surveys was 1181 sec ~20 minutes
 - b. 10 min = 50%

Discard if at least **two** of the following is flagged

7. Question 166 (MZ) – How often have you had to choose between playing Chess or checkers? – Select “Never” (*acts as a trap question*)
 - a. If anything else is selected \rightarrow *flag*
8. Question 62_7 (FZ) Please select “No” (*acts as a trap question*)
 - a. If “Yes” is selected \rightarrow *flag*
9. Time starts: Between 2:00 AM – 4:00 AM
10. Children questions: If Q10(AS) = no THEN,
 - a. Q75(KF) = I/we have no children, if anything else is selected
 - b. Q129(LJ) = 1 adult or None of the above OR blank?
 - c. Q113(NA) = Never
 - d. If these aren’t answered this way, discard
11. Answered “subway/above ground rail” (*there are no subways in this area*)
12. If any other inconsistencies such as foreign language is used, but only English is chosen as language spoken

Other steps added to increase security and clarify compensation mechanism

- Added language to consent form that indicates non-payment
 - “If there is suspicious activity or bots used in the completion of the survey, you will be disqualified from participating, and payment will not be made”
- Added honey pot question (#6) in food security section
 - This doesn’t seem to working currently (no responses)
- Added branching to screen out potential bots (security measures)
 - This is not working (working with Qualtrics support)

Additional ideas to increase security (not done yet)

- Collect IP address (though these can still be hacked)
- Add open-ended text response

Appendix 10. Differences in the odds of obtaining none, a small portion, about half, or the majority of total household food from charitable food assistance for Supplemental Nutrition Assistance Program (SNAP) participants above and below 130% FPL. (Model 2)

GOLR Odds Ratios (95% Confidence Interval)

	≥ 1 vs 0 A small portion or more vs None	≥ 2 vs ≤ 1 About half or more vs A small portion or less	3 vs ≤ 2 The majority vs About half or less
Charitable Food Assistance			
Food Pantries ^a	0.75 (0.54, 1.05)	1.58 (1.20, 2.06) **	2.26 (1.60, 3.20) ***
Soup Kitchens ^a	0.70 (0.53, 0.2) *	1.64 (1.15, 2.35) **	1.54 (0.87, 2.72)
Free Food (Family/Friends)	0.95 (0.70, 1.27)	1.61 (1.13, 2.29) **	2.02 (1.26, 3.23) **
Other CFA	1.16 (0.86, 1.56)	1.69 (1.02, 2.80) *	3.83 (1.72, 8.54) **

Notes: GOLR = generalized ordinal logistic regression. CFA = charitable food assistance. Models were adjusted for age, sex, education level, employment status, housing status, marital status, and race/ethnicity.

a. The assumption for proportional odds were violated, yielding variable odds ratios for each level of the outcome variables food pantries and soup kitchens.

* $p < .05$; ** $p < .01$, *** $p < .001$

Appendix 11. Sensitivity Analysis for use of charitable food assistance using income as an ordinal variable to illustrate a similar effect such that as increase increases, so does the amount of food obtained from charitable food assistance sources.

GOLR Odds Ratios, Adjusted (95% Confidence Interval)			
	≥ 1 vs 0 A small portion or more vs None	≥ 2 vs ≤ 1 About half or more vs A small portion or less	3 vs ≤ 2 The majority vs About half or less
Charitable Food Assistance			
Food pantry	1.02 (.90, 1.16)	1.20 (1.08, 1.34) **	1.53 (1.33, 1.75) ***
Soup Kitchen	0.84 (.75, .94) **	1.26 (1.1, 1.44) **	1.30 (1.07, 1.58) **
Free food (Family/friends)	1.10 (1.00, 1.22)	1.10 (1.00, 1.22)	1.10 (1.00, 1.22)
Other CFAs	1.14 (1.01, 1.29) *	1.16 (0.98, 1.38)	1.79 (1.37, 2.34) ***

Appendix 12. Differences in the odds of never to always engaging in economic tradeoffs between food and other basic needs for participants above and below 130% FPL. (Model 2)

GOLR Odds Ratios, Adjusted (95% Confidence Interval)

	≥ 1 vs 0, Occasionally or more vs Never	2 vs ≤ 1, Frequently vs Occasionally or less
Economic Tradeoffs		
Medicine ^a	1.48 (1.09, 2.01) *	1.29 (0.90, 1.84)
Housing ^a	1.03 (0.76, 1.49)	1.16 (0.85, 1.57)
Utilities ^a	1.06 (0.78, 1.44)	1.86 (1.36, 2.54) ***
Childcare ^a	1.52 (1.16, 2.00) **	1.31 (0.89, 1.94)
Education ^a	1.75 (1.32, 2.32) ***	1.76 (1.22, 2.55) **
Transportation ^b	1.27 (0.93, 1.74)	1.86 (1.28, 2.70) **

Notes: GOLR = generalized ordinal logistic regression. Models were adjusted for age, sex, education level, employment status, housing status, marital status, and race/ethnicity.

a. The assumption for proportional odds were violated, yielding variable odds ratios for each level of the outcome variables food pantries and soup kitchens.

b. Sample size for tradeoffs between food and transportation was limited to n=764 due to missing data.

* $p < .05$; ** $p < .01$, *** $p < .001$

Appendix 13. Sensitivity Analysis for engagement in economic tradeoffs using income as an ordinal variable to illustrate a similar effect such that as increase increases, so does the frequency of economic tradeoffs.

GOLR Odds Ratios, Adjusted (95% Confidence Interval)

	≥ 1 vs 0, Occasionally or more vs Never	2 vs ≤ 1 , Frequently vs Occasionally or less
Economic Tradeoffs		
Medicine	1.17 (1.05, 1.31) **	1.17 (1.05, 1.31) **
Housing	1.01 (.91, 1.13)	1.01 (.91, 1.13)
Utilities ^a	0.96 (0.85, 1.09)	1.27 (1.12, 1.45) ***
Childcare	1.18 (1.06, 1.32) **	1.18 (1.06, 1.32) **
Education ^a	1.19 (1.06, 1.34) **	1.44 (1.25, 1.66) ***
Transportation	1.20 (1.06, 1.36) **	1.20 (1.06, 1.36) **

Notes: GOLR = generalized ordinal logistic regression. Models were adjusted for age, sex, education level, employment status, housing status, marital status, and race/ethnicity.

a. The assumption for proportional odds were violated, yielding variable odds ratios for each level of the outcome variables food pantries and soup kitchens.

b. Sample size for tradeoffs between food and transportation was limited to n=764 due to missing data.

* $p < .05$; ** $p < .01$, *** $p < .001$

Appendix 14. Sensitivity Analysis for economic tradeoffs between food and other basic needs based on income. Assessed only for those participants with infants, preschool or school age children to account for those households who are most likely to have childcare expenses (n=331).

GOLR Odds Ratios, Adjusted (95% Confidence Interval)

Economic Tradeoffs	
Medicine	3.21 (1.89, 5.45) ***
Housing	2.27 (1.35, 3.83) **
Utilities	2.83 (1.60, 4.99) ***
Childcare	3.66 (2.09, 6.43) ***
Education	3.78 (2.17, 6.56) ***
Transportation	2.94 (1.59, 5.44) **

Note: GOLR = generalized ordinal logistic regression. Models were adjusted for age, sex, education level, employment status, housing status, marital status, race/ethnicity, household resilience, and financial literacy. Only one odds ratio is provided as the assumption for proportional odds was not violated for the primary independent variable, SNAP eligibility. The GOLR was the best model since the assumption for proportional odds was violated for other covariates.

* $p < .05$; ** $p < .01$, *** $p < .001$

Appendix 15. Sensitivity Analysis for economic tradeoffs between food and other basic needs based on income. Assessed only for those participants with education level of at least some college or more to account for participants who may be paying for education expenses (n=735).

GOLR Odds Ratios, Adjusted (95% Confidence Interval)

Economic Tradeoffs	≥ 1 vs 0, Occasionally or more vs Never	2 vs ≤ 1 , Frequently vs Occasionally or less
	Medicine ^a	1.33 (0.94, 1.88)
Housing ^a	0.96 (0.65, 1.27)	0.96 (0.65, 1.27)
Utilities	0.87 (0.58, 1.32)	1.79 (1.20, 2.68) **
Childcare ^a	2.00 (1.42, 2.81) ***	2.00 (1.42, 2.81) ***
Education	1.72 (1.20, 2.46) **	3.39 (2.17, 5.31) ***

Transportation ^{a,b}

1.36 (0.92, 2.01)

1.36 (0.92, 2.01)

Note: GOLR = generalized ordinal logistic regression. Models were adjusted for age, sex, education level, employment status, housing status, marital status, race/ethnicity, household resilience, and financial literacy.

a. The same odds ratio is provided for both levels as the assumption for proportional odds was not violated for the primary independent variable, SNAP eligibility.

b. Sample size for tradeoffs between food and transportation was limited to n=764 due to missing data.

* $p < .05$; ** $p < .01$, *** $p < .001$

Appendix 16. Photovoice Participant Characteristics (n = 6)

	Participants					
	Paula	Elena	Maria	Raul	Nina	Laura
Age	55	45	42	38	43	37
Sex	Female	Female	Female	Male	Female	Female
# in Household	2	5	6	4	4	3
Income Range (% FPL)	131 – 185	≤ 130	131 – 185	131 – 185	≤ 130	≤ 130
Children in Household	No	Yes	Yes	Yes	Yes	No
Race/Ethnicity	Hispanic / Latino/a	Hispanic / Latino/a	Hispanic / Latino/a	Hispanic / Latino/a	Hispanic / Latino/a	Hispanic / Latino/a
Marital status	Married or living with a partner	Never married	Married or living with a partner	Never married	Never married	Married or living with a partner
Employment status	Not employed, not seeking employment	Part-time employment	Unemployed, actively seeking employment	Job loss	Part-time employment	Not employed, not seeking employment
Education level	8 th grade or less	8 th grade or less	8 th grade or less	College degree	Some high school	High school graduate or GED