THE ASSOCIATION BETWEEN FOOD INSECURITY AND TRANSPORTATION

INSECURITY FOR OLDER ADULTS IN CLARK COUNTY, NEVADA

By

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Abstract

Due to the increase in the aging population, it is a public health priority to ensure communities are age-friendly to promote aging in place. However, there is a gap in the literature examining the relationship between food insecurity and transportation insecurity for older adults, who face unique challenges to both. In addition, access to food and transportation is directly influenced by structural/systemic racism, and people of color are overburdened by both insecurities. Because racial and ethnic disparities impact health outcomes, understanding these disparities in transportation and food insecurity is a necessary first step in beginning to address these issues. The study aimed to better understand the association between transportation insecurity and food insecurity for older adults aged 60 and older in Clark County, Nevada while considering racial and ethnic differences. Through a quantitative cross-sectional study, a secondary data analysis was conducted utilizing data from Three Square Food Bank. Through this analysis, it was determined that 18.2% of older adult participants were food insecure and 25.3% were transportation insecure. Logistic regression revealed a significant association between food insecurity and transportation insecurity (χ^2=239.418, df=4, n=1,001, $p < 0.001$); a dose-response relationship shows that the odds of being food insecure increases as the severity of transportation insecurity increases. This association remains after controlling for correlates of food insecurity and transportation insecurity. While racial and ethnic differences in the odds of being food insecure were found in bivariate analysis, statistical significance was lost after controlling for correlates of food insecurity and transportation insecurity ($\chi^2 = 270.987$, df = 22, n = 816, $p < 0.001$). Furthermore, the odds of being transportation insecure were higher for non-white participants in bivariate analysis (χ^2=9.324, df = 3, n = 1,001, $p = 0.025$), but similarly, statistical significance was lost after controlling for correlates of food insecurity and transportation

insecurity ($\chi^2 = 143.846$, df = 18, n = 816, p = < 0.001). Results from this study suggest that food

and transportation insecurity are a public health concern for older adults; an association between

food and transportation insecurity indicates a need to address both simultaneously. Interventions

and policies aimed at the root causes of food and transportation insecurity are needed to better

serve older adults in Clark County, Nevada.

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Dedication

I dedicate my work to my late dad, Howard Phillips, and late grandpa, Ed Motter.

Dad – Your kindness, tenacity, and guidance will forever be with me. Thank you for inspiring

me to believe in myself like you believed in me. You will always be my greatest supporter.

Grandpa – You brought laughter, joy, and inspiration to every moment of our lives. I will forever

be grateful for the time we shared and the lessons you taught.

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Chapter 1: Introduction

There were 55.7 million older adults, who were aged 65 and older, in 2020, which accounts for approximately 17 percent of the United States population (Administration on Aging, 2022). There has been an increase of 15.2 million older adults since 2010, which is an increase of 38%. In comparison, the increase of individuals under age 65 was only 2% in the same time frame (Administration on Aging, 2022). The aging population is continuing to grow, and it is expected that "all baby boomers will be over the age of 65" by 2030 (AARP, 2020). Furthermore, in 2034, it will be the first time in history the number of older adults will be higher than the number of children in the United States (United States Census Bureau, 2018). By 2060, it is anticipated that the number of older adults will almost double to approximately 95 million in the United States (United States Census Bureau, 2018).

Due to the increase in the aging population, it is well-established that a public health priority is to ensure communities are age-friendly from a global and environmental health perspective. An age-friendly environment is defined as a community or home that "fosters healthy and active aging by building and maintaining intrinsic capacity across the life course and enabling greater functional ability in someone with a given level of capacity" (World Health Organization [WHO], n.d., para. 1). Age-friendly communities create an environment that is walkable or accessible for those with disabilities while providing housing, transportation, and socialization opportunities (Harrell et al., 2014). By having age-friendly environments, not only do they reduce social and physical barriers for the vulnerable population; but they can allow older adults to age in place (Lehning & Greenfield, 2017; WHO, n.d.).

The definition of aging in place has expanded over time. Previously, the term focused on older adults being able to age in their own homes. However, the term currently looks at an individual's ability to not only age in their own home, but also within the community of their

choice (Vanleerberghe et al., 2017). There are multiple benefits to aging in place such as maintaining independence, autonomy, and connection to social support by reducing expensive institutional care (Wiles et al., 2011). Due to these benefits, aging in place is favored by older adults as over 50% of them would like to continue to live at their current residence and/or community (Harrell et al., 2014).

To age in place within age-friendly communities, older adults must be able to access their basic needs and community amenities as well as interact with their communities in a fulfilling manner (Harrell et al., 2014). These needs cannot be met without reliable transportation, which is often described as an overlooked need for older adults (Crabtree & Mushi-Blunt, 2013). Older adults occasionally experience challenges related to instrumental activities of daily living (IADLs) (Crabtree & Mushi-Blunt, 2013). One primary challenge is going to medical appointments and grocery stores, and professionals who work with aging populations are specifically concerned with older adults' ability to go grocery shopping (Crabtree & Mushi-Blunt, 2013). Not only do transportation barriers such as the lack of access to public transit or vehicle ownership affect one's ability to go to the grocery store, but these barriers can also prevent individuals from accessing food if they live in a food desert (Hunter & Guest, 2021).

When individuals live in food deserts, they may often need to travel further to access foods that meet their nutritional needs. It is well-documented in the literature that nutritious dietary patterns are impacted by one's ability to access food, which can contribute to poor health outcomes (Office of Disease Prevention and Health Promotion, n.d.a, para. 3). Rates of diabetes and obesity are higher in neighborhoods with less fresh produce outlets (California Center for Public Health Advocacy, 2008). It is essential that individuals can access food that not only meets their dietary needs, but also their cultural, traditional, and personal preferences to achieve

healthy dietary patterns (United States Department of Agriculture [USDA], 2020). These needs cannot be met when barriers such as transportation exist. To improve the quality of life for individuals, especially older adults, it is important to study the association between food insecurity and transportation insecurity.

Chapter 2: Background & Significance

Food Insecurity

When individuals have "a lack of consistent access to enough food for every person in the household to live an active, healthy life," they experience food insecurity. (Feeding America, 2022, para. 1). According to the United States Department of Agriculture (USDA), food insecurity is categorized as low food security and very low food security while food security is categorized as high food security and marginal food security. Food insecurity is not the same as hunger, which is the physiological state that can be a result of food insecurity (USDA, 2023a). See Figure 1: Ranges of Food Security and Food Insecurity for the four levels of food security status.

Figure 1: Ranges of Food Security and Food Insecurity

Source: Gregory & Coleman-Jensen, 2017

Two-category food security status:	Food secure		Food insecure	
Four-category food security status:	**High food security**—Households had no problems or anxiety about consistently accessing adequate food.	**Marginal food security**—Households had problems, at times, or anxiety about acquiring adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.	**Low food security**—At times during the year, households reduced the quality, variety, and desirability of their diets due to a lack of resources for food, but the quantity of food intake and normal eating patterns were not substantially disrupted.	**Very low food security**—At times during the year, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money and other resources for food.
Severity of food insecurity	Less severe --> More severe			

In 2021, it was found that approximately 5.5 million seniors were food insecure, which makes up approximately 7.1% of individuals aged 60 and older (Ziliak & Gunderson, 2023). In Nevada, approximately 4.6% of seniors were considered food insecure while 1.4% of seniors were considered very low food secure with 6.9% of food insecure seniors (3.3% very low food secure seniors) living in the Las Vegas Metropolitan area (Ziliak & Gunderson, 2023).

Although food insecurity can impact individuals at any age, vulnerable populations such as older adults, who are defined as individuals aged 60 and older, experience food insecurity differently compared to other age groups (Ziliak & Gunderson, 2022). Food insecurity among older adults can increase their risk of developing nutrition-related conditions, which further complicates the financial, health, and nutritional challenges associated with aging (Loukaitou-Sideris & Wachs, 2018). There is a cyclical relationship between chronic disease and food insecurity, and the stress of food insecurity can exacerbate chronic conditions (Feeding America, 2023a). This is concerning as the Centers for Disease Control and Prevention (CDC) reports that "85% of older adults have at least one chronic condition, and 60% have at least two conditions" (National Institute of Health, 2017, para. 19). Older adults who are food insecure suffer from chronic conditions such as high blood pressure, diabetes, and arthritis more than older adults who are food insecure. In addition, healthcare costs for older adults who are food insecure are higher compared to older adults who have the same chronic conditions that experience food security (PAN Foundation, 2021). Consequently, food insecurity in the aging population will contribute to higher costs for healthcare (Berkowitz et al., 2019; Berkowitz et al., 2017).

Transportation Insecurity

The health of older adults also impacts their mobility and transportation access (Loukaitou-Sideris & Wachs, 2018). When someone "is unable to regularly move from place to

place in a safe or timely manner," they experience transportation insecurity (Gould-Werth et al., 2018, p. 1). Transportation insecurity has implications for various aspects of individuals' lives, and challenges related to transportation are the most common reason why individuals miss medical appointments or miss refilling prescriptions, which negatively affects health outcomes (Syed et al., 2013). If the nearby grocery store or food pantry is not on a current transit route, it may be inaccessible to the aging population (Leuthart et al., 2021). Lack of transportation can increase isolation, which is associated with depression and heightens the risk of mortality (Black & Hyer, 2018). This is especially concerning as Nevada has the second highest suicide rate in the country for older adults (Nevada Coalition for Suicide Prevention, 2022).

When older adults are food insecure, they are forced to make spending tradeoffs to afford food, medication, housing, utilities, and transportation (Feeding America, 2023a). In a study conducted in 2019 at the University of Southern California, the cost was found to be the primary barrier for older adults when accessing transportation (Saxon et al., 2019). Older adults "outlive their ability to drive by 7-10 years[,]" so they often become reliant on other transportation options (Black & Hyer, 2018, p. 1026). Older adults become dependent on family members or caregivers with 78% of caregivers coordinating or providing transportation for an older adult (National Aging and Disability Transportation Center [NADTC], 2023).

Older adults are also utilizing public transit or ride programs that are considered costly, inefficient, or ineffective (Saxon et al., 2019). In addition, many older adults live in areas that have low-quality access to transit (Transportation for America, n.d.). If available, public transit riders often need to travel by foot to their bus stop, which may be challenging if the rider has a disability or mobility issues (Loukaitou-Sideris & Wachs, 2018). In addition, as individuals age, there is a decline in walking abilities at an accelerated rate by the time individuals are in their 70s

(Black & Hyer, 2018). If individuals have low access and quality transit, they are unable to access food, which can lead to food insecurity.

Impact of Race and Ethnicity on Food Insecurity and Transportation Insecurity

For individuals who are aged 65 and older, approximately 24% (13.5 million) were part of communities of color in 2020, which is compared to 8.1 million in 2010 (Administration on Aging, 2022). This includes 9% identifying as Hispanic and of any race, 9% identifying as non-Hispanic African American, 5% identifying as non-Hispanic Asian American, 0.6% identifying as non-Hispanic American Indian and Alaska Native, 0.1% identifying as non-Hispanic Native Hawaiian/Pacific Islander, and 0.8% identifying as two or more races (Administration on Aging, 2022). It is projected that racial and ethnic minority populations will increase by 34% (27.7 million) by 2040 (Administration on Aging, 2022).

To improve food security rates among older adults and address inequities, communities must address the root causes of food insecurity (Odoms-Young & Bruce, 2019). Systemic/structural racism is a fundamental cause of food insecurity rather than solely the lack of resources (Bowen et al., 2021). Racial differences in socioeconomic status influence food insecurity. In addition, racism is associated with food insecurity independently of socioeconomic status (Bowen et al., 2021).

Compared to their white counterparts, African Americans are more likely to live in chronic poverty causing a lack of opportunity for upward income advancements. The differences in income trends are an effect of structural racism that inhibited intergenerational wealth accumulation, which in turn limits the ability to further education and employment opportunities (Chaparro et al., 2022). This can be connected to the rates of food insecurity being three times

higher in African American households (21.7%) compared to white households (7.1%) (Chaparro et al., 2022).

Food insecurity disproportionately affects communities of color of all ages (Kimani et al., 2021). Rates of food insecurity among Black, Hispanic, and American Indian or Alaska Native households were two times greater than households of their white counterparts (Kimani et al., 2021). The connection between race and food insecurity is multifaceted, and the "concentration of social and economic disadvantage among people of color" during their lifespan affects elevated rates of food insecurity (Odoms-Young & Bruce, 2019, p. 1). Food insecurity rates continued to increase especially for minority groups as a result of the COVID-19 pandemic (Kimani et al., 2021). For older adults, it was reported that African American seniors are more than three times as likely to experience food insecurity compared to white older adults. Hispanic seniors of any racial identity are twice as likely to experience food insecurity compared to their non-Hispanic counterparts (Ziliak & Gunderson, 2023).

Systems of oppression are well-documented in literature for food insecurity and transportation insecurity (Murphy et al., 2022a; Ziliak & Gunderson, 2023). Studies have shown that communities of color experience higher rates of food insecurity when social and economic factors are removed (Odoms-Young & Bruce, 2019). Although limited studies exist on transportation insecurity and race for all ages, it is evident that structural racism also has an impact on transportation insecurity. Inequities in education, poverty, and physical addresses affect the rates of transportation insecurities (Murphy et al., 2022a). In 2022, the first study to measure transportation insecurity using the Sixteen-Item Transportation Security Index was conducted. However, race and ethnicity data were aggregated, and the study included ages 25

and older (Murphy et al., 2022a). Furthermore, there are limited studies on transportation insecurity as it relates to race and ethnicity for older adults.

Correlates of Food Insecurity and Transportation Insecurity

In addition to race and ethnicity, there are multiple correlates of food insecurity and transportation insecurity. These correlates include age, gender, educational attainment, income level, marital status, household characteristics, walkability, and Supplemental Nutrition Assistance Program (SNAP) participation.

Age

Age has a unique relationship with food insecurity and transportation insecurity. As people age, food insecurity typically decreases. A recent study conducted by Feeding America found that seniors aged 60 to 69 had very low food insecurity rates that were approximately doubled compared to individuals ages 80 and above (Ziliak & Gunderson, 2023). However, with respect to transportation, as people age, they are less likely to drive, have an increased risk of disability, and experience declines in walking, which affects their access to transportation (Black & Hyer, 2018).

Gender

The literature reveals transportation has been a barrier to proper nutrition regardless of gender (Crabtree & Mushi-Blunt, 2013). However, studies have shown that men, who are in their seventh decade and no longer drive, will need transportation alternatives for approximately six years while women will need access to transportation for ten years (Transportation for America, n.d.) Yet, being female increases the rates of food insecurity for the aging population (Ziliak & Gunderson, 2023).

Educational Attainment

Education levels among older adults have increased. From 1970 to 2021, the rates of obtaining a high school diploma have risen from 28% to 89% (Administration on Aging, 2022). In 2021, it was estimated that 33% of older adults had a bachelor's degree or higher, and education levels were affected by race and ethnicity (Administration on Aging, 2022). It is well documented that education levels less than a high school diploma will be more commonly associated with any type of insecurity compared to education levels of a high school diploma or higher. Individuals who did not complete high school experience higher levels of transportation insecurity. However, it has been noted across all age groups high school graduates have the lowest rates of transportation insecurity but only somewhat less than individuals who attended some college or completed a college degree (Murphy et al., 2022a). With food insecurity, it has been found that older adults with an education less than or equivalent to a high school diploma are more likely to experience food insecurity (Tucher et al., 2021).

Income Level

Since financial burdens are associated with both food insecurity and transportation insecurity, income level is considered a predictor of these phenomena (Baek, 2016; Coleman-Jensen et al., 2022). Individuals of all ages are more likely to utilize public transportation and vehicles that are unreliable or are forced to walk when they live below the federal poverty level (Murphy et al., 2021). More research is needed to understand the impact of income on transportation insecurity for older adults.

Among all ages, approximately a quarter of low-income households experience food insecurity while the remaining three-quarters do not. Studies have shown that higher income households can be deemed food insecure as approximately 26.5% of all food-insecure households had an income "at or above 185 percent of the [federal] poverty threshold" in 2021

(Coleman-Jensen et al., 2022, p. 19). For older adults, it has been found that food insecurity disproportionately affects those living on a fixed income (Leung et al., 2021). In 2020, older adults, aged 65 and older, earned a median income of $26,668. However, in households led by those 65 and older, the median income was $68,067 (Administration on Aging, 2022). Incomes varied based on race and ethnicity as non-Hispanic white older adults had the highest median income of $72,855 while their Hispanic counterparts had median incomes of $46,183 and African Americans had a median income of $54,909 (Administration on Aging, 2022). For the aging population specifically, approximately 75% of food insecure older adults have incomes above the federal poverty line (Ziliak & Gunderson, 2023).

Marital Status & Household Characteristics

In 2021, 69% of older males, aged 65 and older, were married compared to older women (47%). For all older women, 30% of them were widows (Administration on Aging, 2022). From 1980 to 2021, there was an increase of divorced and separated older adults from 5% to 16% (Administration on Aging, 2022). Marital status is associated with food insecurity for older adults as those who are divorced, separated, or never married can experience food insecurity three times more often than married older adults (Ziliak & Gunderson, 2023). To date, no studies have identified measuring marital status among transportation insecure older adults.

It is well documented in the literature that there is an impact of household and individual-level components on food insecurity (Chung et al., 2012, Calise et al., 2019). In households where grandparents are raising grandchildren, data shows that food insecurity rates are higher (Ziliak & Gunderson, 2023). In addition, with more individuals in the home, financial support must be extended to cover all individuals, which does include transportation expenses. When more people live in the home, it can provide additional social support. With social support, it can

create assistance for seniors to access food and transportation as they oftentimes become reliant on family members and caregivers for such resources (NADTC, 2023).

Walkability

Neighborhood attributes are an essential predictor of food insecurity and transportation, especially due to the unique challenges the aging population experiences. Studies have identified some neighborhood-level factors contributing to food insecurity such as walkability, safety, and social cohesion (Chung et al., 2012, Calise et al., 2019). Nonetheless, these studies cannot be generalized to all cities and were not specific to seniors (Calise et al., 2019). Older adults overwhelmingly prefer communities that are walkable while providing public transit to travel to obtain basic needs such as food. Yet, older adults do not live in environments that support this preference. In addition, safety is a concern for older adults with uneven sidewalks, dangerous intersections, and a lack of benches to rest (Transportation for America, n.d.).

Supplemental Nutrition Assistance Program (SNAP) Participation

As the nation's largest nutrition assistance program, SNAP provides low-income individuals with financial assistance to purchase food at various locations (Food Research & Action Center, 2023). It is estimated by the U.S. Department of Agriculture that $1 in SNAP benefits produces $1.50 in economic activity in a weak economy (Center on Budget and Policy Priorities, 2023). As the program has the ability to not only ensure food is accessible to individuals with low incomes, but the program also helps generate income and jobs, especially in the agriculture field (Canning & Morrison, 2019). Until early 2023, emergency allotments in SNAP benefits and changes in eligibility were temporarily provided by Congress to help with income and job losses during the pandemic. From 2014 through 2018, SNAP helped 70,000 Nevadans rise above the poverty line (Center on Budget and Policy Priorities, 2023). In 2022,

Nevada received $1.28 billion in SNAP benefits, which included temporary pandemic relief (Center on Budget and Policy Priorities, 2023).

The SNAP program reaches vulnerable populations such as seniors (Food Research & Action Center, 2023). Over one-third of SNAP participants live with seniors or individuals with a disability (Center on Budget and Policy Priorities, 2022). However, participation in SNAP for older adults is lower compared to the general population (USDA, 2022). This can be attributed to stigma in seeking assistance, myths connected to the amount of benefits received, and barriers to the application process (PAN Foundation, 2021). In addition, older adults are often unaware that SNAP applications can be completed over the phone, which can reduce transportation barriers to complete an in-person application (Aday et al, 2022). However, despite seniors gaining access to SNAP benefits, they often experience barriers to using them. Once seniors receive SNAP funds to secure groceries, participants have reported transportation barriers such as a lack of a vehicle and money for gas or public transportation to get to the retailers accepting SNAP benefits (Melnick et al., 2022).

Gaps in the Research

Currently, there is a strong association between access to food and reliable transportation for all ages as people cannot meet their basic needs due to gaps in transportation (CDC, 2020). The transportation system needs to be assessed to understand these barriers, and the transportation system includes not only the modes of transportation available, but also the features of the built environment (CDC, 2014). Community design does determine the ability for older adults to participate in life-sustaining travel needs, so the abilities and travel behaviors of older adults must be taken into consideration (Kerr et al., 2012). In environments with high levels of sprawl that were designed for vehicles, travel becomes more difficult for older adults

who lack access to a vehicle, for those who avoid traveling alone, and for those who have mobility challenges (Kerr et al., 2012). More research is needed to fill gaps in knowledge about neighborhood-level barriers for transportation related to food accessibility and affordability (Shieh et al., 2021). The relationship between food insecurity and transportation insecurity needs to be studied independently of all ages, especially due to the unique barriers faced by seniors living in sprawl, including mobility, accessibility, and safety perception (NADTC, 2023).

Novelty of Study

The study is novel for multiple reasons. To date, there have been no studies in Clark County, Nevada examining the association between transportation insecurity and food insecurity for older adults while considering racial and ethnic differences. There are no studies to date utilizing the Sixteen-Item Transportation Security Index individually or in conjunction with the Food Security Index for the aging population. However, studies have been conducted about food insecurity for older adults in Southern Nevada (Three Square Food Bank, 2019). To create age-friendly communities for older adults, it is imperative to understand this potential association between both transportation insecurity and food insecurity, especially in Clark County, Nevada due to the continuous population growth. Clark County, Nevada is the most populated county in the state and continues to grow in total population while becoming more diverse (Healthy Southern Nevada, 2023; Nevada Department of Transportation, n.d.). It is expected that the population of seniors in Clark County will grow by 8.7% by 2060, so it is hoped that the findings of this study can improve the quality of life for seniors by meeting their transportation and food access needs (Regional Transportation Commission of Southern Nevada [RTC], 2020).

In addition, the study is novel due to the use of the revised Sixteen-Item Transportation Security Index in conjunction with the U.S. Household Food Security Survey Module: 6-Item

Short Form for the aging population. The Sixteen-Item Transportation Security Index is the only validated tool that measures transportation insecurity, and this tool focuses on the symptoms of transportation insecurity at the individual level (Murphy et al., 2022b). The index was designed in alignment with the U.S. Household Food Security Survey Module: 6-Item Short Form (Murphy et al., 2022b). The U.S. Household Food Security Survey Module: 6-Item Short Form was created by the National Center for Health Statistics, and the six-item instrument has been tested for validity and reliability. With high sensitivity and specificity with little bias, the instrument can recognize food insecure households (United States Department of Agriculture, 2012).

The Sixteen-Item Transportation Security Index was recently validated in 2018 and revised in 2021 (Gould-Werth et al., 2018). The Sixteen-Item Transportation Security Index has participants recall their experience with transportation in the last 30 days to determine their level of transportation insecurity. Participants can be deemed as having no insecurity/secure, marginal insecurity, low insecurity, moderate insecurity, or high insecurity for transportation (University of Michigan, n.d.). With the number of aging residents expected to grow, it is imperative to have their opinions, experiences, and voices heard within the research. Data used for the study included information directly from older adults living in Clark County, Nevada. This was the first study to interpret the data captured from the aging population measuring transportation insecurity and food insecurity, specifically in relation to race and ethnicity.

By utilizing the Sixteen-Item Transportation Security Index and U.S. Household Food Security Survey Module: 6-Item Short Form in one study, it is hoped to determine if an association between food insecurity and transportation insecurity exists for older adults. If there is an association, the findings could be used to bring together experts from multiple fields such

as public health, gerontology, and urban planning to inform future public health interventions and policies.

Theoretical Framework

The Social Ecological Model has been applied to the study, specifically to define the variables of interest. The model was selected due to its multi-level approach to understand how "health [is] affected by the interaction between the individual, the group/community, and the physical, social, and political environment" (CDC, 2011, p. 20). The model has four levels, which include individual, interpersonal, community, and societal (CDC, 2011). The potential association between food insecurity and transportation insecurity is anticipated to be complex, and multiple factors may influence the association within each level of the theoretical framework. Thus, it is necessary to consider the potential association through these four levels as this can create sustainable change to improve the quality of life for individuals (CDC, 2011).

At the individual level, factors are defined as the "biological and other personal characteristics" that may increase or decrease their likelihood of experiencing food insecurity and/or transportation insecurity (CDC, 2011, p. 22). The relationship level displays the social connection of older adults including but not limited to family and friends that influence their behaviors and/or circumstances (CDC, 2011). The community level is defined as the environments that promote social interactions and how these environments impact certain behaviors. These environments can include schools, places of employment or volunteerism, and neighborhoods (CDC, 2011). The final level of the Social Ecological Model is societal, which involves "cultural and social norms and the health, economic, educational, and social policies that help to create, maintain, or lessen socioeconomic inequalities between groups" (CDC, 2011, p. 22). The Social Ecological Model was applied when defining variables of interest. Variables

were defined by each level of the Social Ecological Model. Figure 2 displays each level of the

Social Ecological Model.

Figure 2: Social Ecological Model

Source: Centers for Disease Control and Prevention, 2011
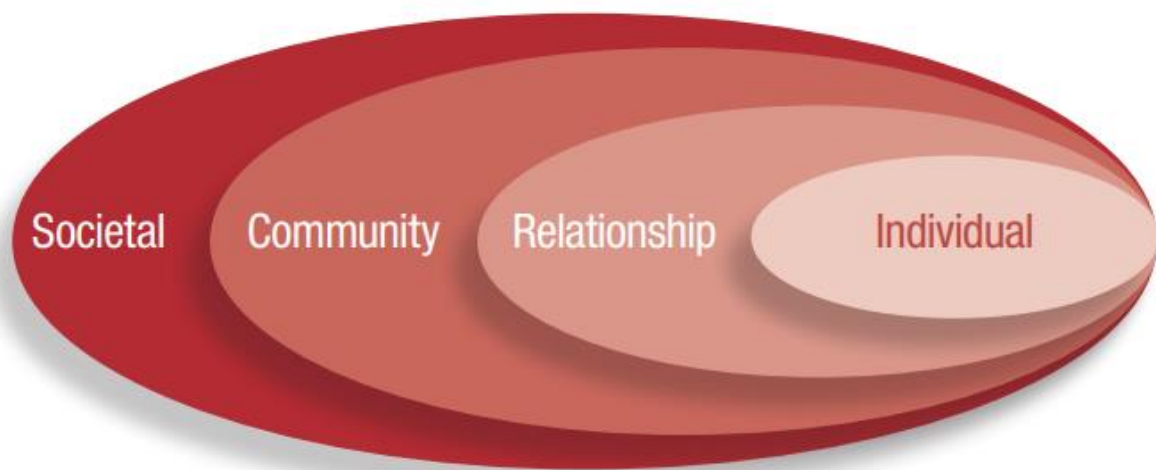
Research Questions

Unless there is a more targeted, comprehensive understanding of the association between

food insecurity and transportation insecurity for the aging population, it may be challenging to

create age-friendly communities. Due to racial and ethnic disparities and their impact on health

outcomes, racial and ethnic differences between transportation insecurity and food insecurity

must be explored (CDC, 2020; Harrell et al., 2014; Murphy et al., 2022a).

The study was designed effectively to gain a targeted, comprehensive understanding of

food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County,

Nevada while considering racial and ethnic differences. To provide the foundation to inform future public health interventions and policies to improve the quality of life for the aging population, the following research questions must be addressed.

1. Is there an association between food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada?

2. Are there racial or ethnic differences in food insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada?

3. Are there racial or ethnic differences in transportation insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County Nevada?

Chapter 3: Methodology

Study Design

A quantitative cross-sectional study was conducted to determine the association between food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

Research Questions

The study aimed to answer three research questions by conducting a secondary data analysis utilizing data collected by Three Square Food Bank.

1. Is there an association between food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada?

    $H_0{}^1$: There is no association between food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

    $H_a{}^1$: There is an association between food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

2. Are there racial or ethnic differences in food insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada?

    $H_0{}^2$: There are no racial or ethnic differences in food insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

    $H_a{}^2$: There are racial or ethnic differences in food insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

3. Are there racial or ethnic differences in transportation insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County Nevada?

$H_0{}^3$: There are no racial or ethnic differences in transportation insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

$H_a{}^3$: There are racial or ethnic differences in transportation insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

Participants

To be included in the study, individuals had to be at least 60 years old and living in Clark County, Nevada based on zip code. The lower bound for zip code was 89001 while the upper bound was 89199. The definition of an older adult or senior can vary based on the funding source or organization. Feeding America, which is the largest hunger relief organization in the United States, defines a senior as aged 60 or older (Feeding America, 2023b; Ziliak & Gunderson, 2022). As a result, the inclusion criteria for this study were determined to be aged 60 and older. From 2010 to 2020, there has been a 59% increase of the older adult population aged 65 and older in Nevada (Administration on Aging, 2022).

Setting

Since an overwhelming majority of Nevada's population resides in Clark County, this geographic area is the focus of this study. Currently, Clark County has a population of 2,350,206 residents, which makes up approximately 73.9 percent of the total population in Nevada (Healthy Southern Nevada, 2023). The population continues to grow with a percent population change of

3.05% from 2020 to 2023. Approximately 418,997 older adults aged 65 years and older live in Clark County, Nevada, which accounts for 17 percent of the total population (Healthy Southern Nevada, 2023).

Survey Tool

In partnership with the University of Nevada, Las Vegas, Three Square Food Bank developed a survey tool to conduct a needs assessment of transportation for older adults in Clark County Nevada. Three Square Food Bank and the University of Nevada, Las Vegas had resources to collect data from the sample of older adults aged 60 and older living in Clark County, Nevada, which is the ideal target population for the secondary data analysis (Boslaugh, 2009). The survey consisted of 77 questions.

Data Collection

A national research firm, Dynata, collected the data utilizing computer-aided technology software from November 2, 2022 through February 14, 2023. Participants were contacted through landline (n=554) and cell phone (n=446) from 5pm to 9pm local time. The survey took an average of 26 minutes to complete and had a response rate of 24.58%. Data was anonymized by Dynata before the analysis.

Measures

Since the study was developed utilizing the Social Ecological Model, the variables of interest are defined by the levels of the model including the individual, relationship, and societal levels. The variables of interest include food insecurity, transportation insecurity, race, ethnicity, age, gender, educational attainment, income level, marital status, household characteristics, walkability, and Supplemental Nutrition Assistance Program (SNAP) participation. See Table 1

for each variable, the level of the Social Ecological Model, the survey measurement, and the

outcome of the measure.

Table 1: Variables of Interest

Variable	Survey Measurement and/or Survey Questions	Outcome Of Measure
Individual Level of Social Ecological Model		
Food Insecurity	U.S. Household Food Security Survey Module: 6-Item Short Form	Food Insecure Food Secure
Transportation Insecurity	Sixteen-Item Transportation Security Index	Transportation Insecure Transportation Secure
Race	Adapted from the American Community Survey from the United States Census Bureau	White Black or African American Other or Multiple Races
Ethnicity	Adapted from the American Community Survey from the United States Census Bureau	Hispanic, Latino, or Spanish origin Not Hispanic, Latino, or Spanish origin
Age	Self-reported age	Ages 60-64 Ages 65-74 Ages 75-84 Ages 85+ Refused to Answer
Gender	Adapted from the American Community Survey from the United States Census Bureau	Female Male
Educational Attainment	Adapted from the American Community Survey from the United States Census Bureau	High School Graduate or Less Some College or Technical School (1-3 years) College Graduate Graduate or Professional Degree
Income Level	Adapted from the American Community Survey from the United States Census Bureau	Income $\leq$ \$25,000 Income >\$25,000 $\leq$ \$65,000 Income $\geq$\$65,000
Relationship Level of the Social Ecological Model		
Marital Status	Adapted from the American Community Survey from the United States Census Bureau	Single (Never married) Married Separated or Divorced Widowed
Household Characteristics	Adapted from the American Community Survey from the United States Census Bureau	The presence of child, stepchild, or partner's child in the household, age not specified
Community Level of the Social Ecological Model		
Walkability	Matching and averaging census block groups to the EPA's National Walkability Index	Least walkable Below average walkable Above average walkable Most walkable
Societal Level of the Social Ecological Model		
Supplemental Nutrition Assistance Program (SNAP) Participation	Adapted from the American Community Survey from the United States Census Bureau	Participation No Participation

The survey included several validated tools.

- The U.S. Household Food Security Survey Module: 6-Item Short Form measured food insecurity. The tool includes six questions. The raw scores can range from 0 to 6. A raw score of 0-1 indicates high or marginal food security, a raw score of 2-4 indicates low food security, and a raw score of 5-6 indicates very low food security. This validated tool effectively identifies food insecurity within households with little bias but high specificity and sensitivity (United States Department of Agriculture, 2012). Common with other research on food insecurity (Hunt et al., 2020), this variable was dichotomized to food insecure (score = 1) or food secure (score = 0).

- The Sixteen-Item Transportation Security Index measured transportation insecurity. The validated tool was modeled after the Food Security Index (Murphy et al., 2022a). The tool includes sixteen questions measuring how older adults have experienced transportation insecurity at the individual level for the past 30 days. This tool is effective regardless of the location or mode of transportation (Murphy et al., 2022b). The tool can result in a sum score of 0-2 indicating no insecurity/secure, a sum score of 3-5 indicating marginal insecurity, sum score of 6-10 indicating low insecurity, sum score of 11-16 indicating moderate insecurity, and a sum score of 17-32 indicating high insecurity (University of Michigan, n.d.).

- The American Community Survey from the United States Census Bureau was adapted to measure race, ethnicity, gender, income level, household characteristics, marital status, and Supplemental Nutrition Assistance Program (SNAP) participation (United States Census Bureau, 2017).

Age was measured by self-reported age, in years, from survey respondents. Walkability was measured using the Environmental Protection Agency's (EPA) National Walkability Index. The EPA's National Walkability Index is a tool that ranks the walkability of Census block groups. Variables such as intersection density, proximity to transit stops, and diversity of land use from the Smart Location Database (SLD) are used to determine walkability scores. Walkability scores can range from 1 to 20; areas with a score of 1 - 5.75 are deemed least walkable, 5.76 - 10.5 are deemed below average walkable, 10.51 - 15.25 are deemed above average walkable, and 15.26 - 20 are most walkable (United States Environmental Protection Agency, 2021). Because the EPA Walkability Index is measured at the Census block group level, but the survey contained the Census tract in which participants lived, the Walkability Index scores were averaged for all block groups within each tract to assign a score.

Analytic Approach

The data, including the codebook, was provided by the University of Nevada, Las Vegas, and the data were imported into IBM SPSS Statistics Version 29 for analysis. The data and codebook were reviewed for errors. In total, one thousand and one (n = 1,001) participants responded to the survey. Descriptive statistics including frequencies, mean, median, and standard deviation were calculated for each variable.

For the first two research questions, food insecurity was the dependent, dichotomous variable. The independent variables were transportation insecurity, race, ethnicity, gender, income level, age, education, household characteristics, marital status, walkability, and Supplemental Nutrition Assistance Program (SNAP) participation. For the third research question, transportation insecurity was the dependent, dichotomous variable. The independent variables were race, ethnicity, age, gender, educational attainment, income level, marital status,

household characteristics, walkability, and Supplemental Nutrition Assistance Program (SNAP) participation.

In the third research question, transportation insecurity was the dependent, dichotomous variable. Although levels of transportation insecurity have been established, it is recommended that transportation insecurity is dichotomized when running regression models that control for correlates (Murphy et al., 2022a). In a 2023 study, it was determined that the authors established the 5-category Transportation Security Index measures based on a mixed-methods approach and quantitative k-means clustering approach (McDonald-Lopez et al., 2023). The discrete categories represent qualitatively varying degrees of transportation insecurity, which provides the ability to better understand the association between health outcomes and transportation insecurity (McDonald-Lopez et al., 2023). As a result, when transportation insecurity was the independent variable in the first research question, the levels of transportation were utilized in order to show gradient in the association between transportation insecurity and food insecurity.

Several variables were collapsed due to small sample sizes. Variables for separated and divorced individuals were collapsed, high school graduates and less than a high school diploma were combined, and Asian and other or multiple races were collapsed. Once all variables were collapsed, independent variables were checked for multicollinearity to ensure the variables were not highly correlated. No multicollinearity issues were detected as VIF values were less than 10.

Logistic regression was conducted to address the three research questions. Five logistic regressions models were calculated with two analyses conducted per research question. For the first research question, the first two regression models were calculated to assess the potential association between food insecurity and transportation insecurity then adjusted for correlates of food insecurity and transportation insecurity. For the second research question, the third

regression model was calculated to assess potential racial or ethnic differences in food insecurity. The second regression model from the first research question was utilized for the second research question to adjust for correlates of food insecurity and transportation insecurity. The fourth and fifth regression models were calculated to assess potential racial or ethnic differences in transportation insecurity then adjusted for correlates of food insecurity and transportation insecurity.

The data analysis procedure was selected because it is a predictive model that will determine the relationship between the dependent or criterion variables with the independent or predictor variables (Hatcher, 2013). There are five assumptions of logistic regression, which also informed the decision to select this analysis. The first assumption is that the criterion variable is made up of exactly two categories (Hatcher, 2013). For example, the two categories of the variable food insecurity are food insecure or food secure. Next, there is linearity between "any continuous predictor variables and the logit of Y of the criterion variable" (Field, 2009; Hosmer & Lemeshow, 1989). In addition, the observations are independent of one another, so the same participant should not provide recurring measures (Hatcher, 2013). There should be a lack of specification errors meaning that all included predictive variables matter to the model (Hatcher, 2013). Finally, multicollinearity is non-existent if strong correlations exist between two or more predictive variables (Hatcher, 2013). Furthermore, the analysis allowed for multiple predictor variables, and the predictor variable may be multi-value variables or limited-value variables. Limited-value variables have variables with two to six values while multi-value variables have seven values or more (Hatcher, 2013).

With logistic regression, it is important to evaluate how well the independent variables predict the dependent variable (Hatcher, 2013). This can be evaluated by conducting a goodness-

of-fit test. For this study, the Hosmer-Lemeshow test was conducted, which is one of the most widely used goodness-of-fit tests (Canary et al., 2017). Not only is the test useful for non-replicated data, but also the test is evident in the literature to simplify the implementation and interpretation of data (Hatcher, 2013; Paul et al., 2012). In addition, the test has been used with various sample sizes (Paul et al., 2012).

Chapter 4: Results

Descriptive Statistics

Of the survey participants (n=1,001), 18.2% were food insecure while 81.8% were food secure. While 74.7% of participants were deemed transportation secure, 25.3% of participants experienced transportation insecurity. Of those who were transportation insecure, 6.1% experienced marginal transportation insecurity, 6.75% experienced low transportation insecurity, 5.0% experienced moderate transportation insecurity, and 7.5% experienced high transportation insecurity. The majority of participants were female (56%) with a mean age of 74, had some college or technical school (34.8%), were white (77.7%), were married (43%), and had an annual household income greater than $25,000 but less than or equal to $65,000 (29.5%). A summary of the descriptive statistics can be found in Table 2.

Table 2: Descriptive Statistics of a Sample of Clark County, Nevada Adults Aged 60 or Older, 2023 (n=1001)

Variable	N	%
Food Insecurity		
Food Insecure	182	18.2
Food Secure	819	81.8
Transportation Insecurity		
Transportation Secure	748	74.7
Transportation Insecure	253	25.3
Marginal Transportation Insecure	61	6.1
Low Transportation Insecure	67	6.7
Moderate Transportation Insecure	50	5.0
High Transportation Insecure	75	7.5
Race		
White	778	77.7
Black or African American	117	11.7
Other or Multiple Races	106	10.6
Ethnicity		
Hispanic	46	4.6
Non-Hispanic	955	95.4
Age		
Mean (Standard Deviation)	74 (±8.2)	
60-64	120	12.0
65-74	385	38.5
75-84	341	34.1
85+	112	11.2
Refused to Answer	43	4.3
Gender		
Female	561	56.0
Male	438	43.8
Other	2	0.2
Educational Attainment		
High School Graduate or Less	249	24.9
Some College or Technical School (1 – 3 Years)	348	34.8
College Graduate	215	21.5
Graduate or Professional Degree	189	18.9
Income Level		
Income ≤ $25,000	249	24.9
Income >$25,000 ≤ $65,000	295	29.5
Income ≥$65,000	272	27.2
Marital Status		
Single (Never Married)	124	12.4
Married	430	43.0
Separated or Divorced	185	18.5
Widowed	262	26.2

Household Characteristics

Lives with Child, Stepchild, or Partner's Child	123	12.3

Supplemental Nutrition Assistance Program (SNAP) Participation

Participation	81	8.1
No Participation	920	91.9

Research Question One

Is there an association between food insecurity and transportation insecurity for older adults,

aged 60 and older, in Clark County, Nevada?

The logistic regression model was statistically significant ($\chi^2 = 239.418$, df = 4, n = 1,001,

$p < 0.001$). The Hosmer-Lemeshow Goodness of Fit Test shows a value of 1.00 indicating that

the model is a good fit. The AUC is 0.785, which means that the discriminant capability of this

model reached 78.5%.

A dose-response relationship shows that the odds of being food insecure increase as the

severity of transportation insecurity increases. Seniors with marginal transportation insecurity

have 3.5 times higher odds of being food insecure compared to seniors who are transportation

secure. Seniors with low transportation insecurity have 5.7 times higher odds of being food

insecure compared to seniors who are transportation secure. Seniors with moderate transportation

insecurity have 14.9 times higher odds of being food insecure compared to seniors who are

transportation secure. Seniors with high transportation insecurity have 43 times higher odds of

being food insecure compared to seniors who are transportation secure. See Table 3 for the full

model results.

Table 3: Logistic Regression Model of the Association Between Food Insecurity and Transportation Insecurity in a Sample of Clark County, Nevada Adults Aged 60 or Older, 2023 (n=1,001)

Variable	χ^2	p-value	df	B	S.E.	Wald	Sig.	Exp(B)	95% CI
Model	239.418	<0.001	4						
Marginal Transportation Insecure			1	1.247	0.333	13.987	<0.001	3.479	1.810-6.685
Low Transportation Insecure			1	1.742	0.293	35.257	<0.001	5.709	3.213-10.146
Moderate Transportation Insecure			1	2.699	0.316	73.154	<0.001	14.863	8.008-27.586
High Transportation Insecure			1	3.763	0.313	144.687	<0.001	43.062	23.326-79.499
Transportation Secure	Reference								

Next, correlates of food insecurity and transportation insecurity were added to this logistic regression model. The adjusted model was statistically significant ($\chi^2 = 270.987$, df = 22, n = 816, p < 0.001). The Hosmer-Lemeshow Goodness of Fit Test shows a value of 0.877, which indicates that the model is a good fit. The AUC is 0.861, which means that the discriminant capability of this model reached 86.1%.

After adjusting for correlates, those experiencing all levels of transportation insecurity were still more likely to be food insecure, with the odds increasing as the severity of transportation insecurity increases. Those with marginal transportation insecurity have 3.12 times higher odds of being food insecure compared to seniors who are transportation secure. Seniors with low transportation insecurity have 3.57 times higher odds of being food insecure compared to seniors who are transportation secure. Seniors with moderate transportation insecurity have 7.21 times higher odds of being food insecure compared to seniors who are transportation secure. Seniors with high transportation insecurity have 19.79 times higher odds of being food insecure compared to seniors who are transportation secure.

Additionally, income and household characteristics remained significant. Those having an annual household income of less than $25,000 per year had 11.55 times higher odds and those earning between $25,000 and 65,000 had 5.79 times higher odds of being food insecure than those earning greater than $65,000 per year. Furthermore, older adults who lived with a child, stepchild, and partner's child had 1.93 times higher odds of being food insecure than those who lived alone. Those with a college degree were less likely to be food insecure than those with a high school diploma or less. See Table 4 for the full model results.

Table 4: Logistic Regression Model of the Association Between Food Insecurity and Transportation Insecurity Adjusting for Correlates of Food Insecurity and Transportation Insecurity in a Sample of Clark County, Nevada Adults Aged 60 or Older, 2023 (n=816)

Variable	$\chi^2_{\circ}$	p-value	df	B	S.E.	Wald	Sig.	Exp(B)	95% CI
Model	270.987	<0.001	22						
Individual Level of the Social Ecological Model									
Marginal Transportation Insecure			1	1.139	0.381	8.910	0.003	3.122	1.478-6.595
Low Transportation Insecure			1	1.272	0.361	12.450	<0.001	3.569	1.761-7.237
Moderate Transportation Insecure			1	1.975	0.380	27.013	<0.001	7.206	3.422-15.175
High Transportation Insecure			1	2.985	0.369	65.318	<0.001	19.786	9.594-40.808
Transportation Secure									
Black or African American			1	-0.033	0.346	0.009	0.924	0.967	0.491-1.907
Other or Multiple Races			1	0.333	0.376	0.782	0.377	1.395	0.667-2.915
White	Reference								
Hispanic			1	0.732	0.477	2.358	0.125	2.079	0.817-5.292
Non-Hispanic	Reference								
Female			1	0.202	0.244	0.683	0.409	1.223	0.758-1.973
Male	Reference								
Income ≤ $25,000			1	2.447	0.456	28.767	<0.001	11.549	4.723-28.238
Income >$25,000 ≤ $65,000			1	1.756	0.439	15.999	<0.001	5.792	2.449-13.695
Income ≥$65,000	Reference								
High School Graduate or Less	Reference								
Some College or Technical School (1 – 3 Years)			1	0.061	0.270	0.051	0.822	1.063	0.626-1.802
College Graduate			1	-0.775	0.368	4.434	0.035	0.461	0.224-0.948

Graduate or Professional Degree		1	-0.380	0.375	1.028	0.311	0.684	0.328-1.426
Age 60-64	Reference							
Age 65-74		1	0.159	0.342	0.218	0.641	1.173	0.600-2.290
Age 75-84		1	-0.019	0.365	0.003	0.958	0.981	0.480-2.004
Age 85+		1	-0.650	0.497	1.715	0.190	0.522	0.197-1.381

Relationship Level of the Social Ecological Model

Lives with Child, Stepchild, or Partner's Child		1	0.660	0.312	4.456	0.035	1.934	1.048-3.568
Single (Never Married)	Reference							
Married		1	-0.262	0.360	3.721	0.467	0.770	0.380-1.559
Separated or Divorced		1	-0.764	0.395	1.751	0.054	0.466	0.214-1.012
Widowed		1	-0.523	0.116	0.174	0.186	0.593	0.273-1.286

Community Level of the Social Ecological Model

Walkability		1	0.048	0.116	0.174	0.676	1.050	0.836-1.318

Societal Level of the Social Ecological Model

SNAP Participation		1	0.006	0.351	0.000	0.986	1.006	0.506-2.002
SNAP No Participation	Reference							

Research Question Two

Are there racial or ethnic differences in food insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada?

  The model was statistically significant ($\chi^2 = 15.878$, df = 3, n = 1,001, p = 0.001). The Hosmer-Lemeshow Goodness of Fit Test shows a value of 0.838 indicating that the model is a good fit. The AUC is 0.552, which means that the discriminant capability of this model reached 55.2%. Those who identified as other or multiple races had 1.89 higher odds of being food insecure than their white counterparts. Additionally, Hispanics had two times higher odds of being food insecure compared to their Non-Hispanic counterparts. See Table 5 for the full model results.

Table 5: Logistic Regression Model of the Racial and Ethnic Differences in Food Insecurity in a Sample of Clark County, Nevada

Adults Aged 60 or Older, 2023 (n=1,001)

Variable	χ^2	p-value	df	B	S.E.	Wald	Sig.	Exp(B)	95% CI
Model	15.878	0.001	3						
Black or African American			1	0.432	0.243	3.130	0.077	1.538	0.955-2.479
Other or Multiple Races			1	0.635	0.246	6.682	0.010	1.887	1.166-3.053
White	Reference								
Hispanic			1	0.750	0.339	4.910	0.027	2.117	1.090-4.111
Non-Hispanic	Reference								

Next, it was examined if the racial and ethnic differences in food insecurity remained significant after adjusting for correlates of food insecurity and transportation insecurity. The model was statistically significant ($\chi^2 = 270.987$, df = 22, n = 816, p < 0.001). The Hosmer-Lemeshow Goodness of Fit Test shows a value of 0.877, which indicates that the model is a good fit. The AUC is 0.861, which means that the discriminant capability of this model reached 86.1%. The findings show that race and ethnicity were not significant predictors of food insecurity after adjusting for correlates.

Additionally, income and household characteristics remained significant. Those having an annual household income of less than $25,000 per year had 11.55 times higher odds and those earning between $25,000 and 65,000 had 5.79 times higher odds of being food insecure than those earning greater than $65,000 per year. Furthermore, older adults who lived with a child, stepchild, and partner's child had 1.93 times higher odds of being food insecure than those who lived alone. Those with a college degree were less likely to be food insecure than those with a high school diploma or less. See Table 4 for the full model results.

Research Question Three

Are there racial or ethnic differences in transportation insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County Nevada?

The model was statistically significant ($\chi^2 = 9.324$, df = 3, n = 1,001, p = 0.025). The Hosmer-Lemeshow Goodness of Fit Test shows a value of 0.944 indicating that the model is a good fit. The AUC is 0.548, which means that the discriminant capability of this model reached 54.8%. Those who identified as Black or African American had 1.61 higher odds of being transportation insecure while those who identified as other or multiple races had 1.68 higher odds of being transportation insecure compared to their white counterparts. See Table 6 for the full model results.

Table 6: Logistic Regression Model of the Racial and Ethnic Differences in Transportation Insecurity in a Sample of Clark County, Nevada Adults Aged 60 or Older, 2023 (n=1,001)

Variable	χ^2	p-value	df	B	S.E.	Wald	Sig.	Exp(B)	95% CI
Model	9.324	0.025	3						
Black or African American			1	0.481	0.215	4.979	0.026	1.617	1.060-2.466
Other or Multiple Races			1	0.520	0.230	5.126	0.024	1.682	1.072-2.639
White		Reference							
Hispanic			1	0.135	0.344	0.154	0.694	1.145	0.583-2.247
Non-Hispanic		Reference							

This logistic regression model was adjusted for correlates of food insecurity and transportation insecurity. The model was statistically significant (χ^2 = 143.846, df = 18, n = 816, p = < 0.001). The Hosmer-Lemeshow Goodness of Fit Test shows a value of 0.149 indicating that the model is a good fit. The AUC is 0.729, which means that the discriminant capability of this model reached 72.9%. After adjusting for the correlates of food insecurity and transportation insecurity, neither race or ethnicity remained significant correlates of transportation insecurity. Income was a significant correlate of transportation insecurity. Those having an annual household income of less than $25,000 had 7.78 times higher odds and those earning between $25,000 and 65,000 had 2.15 times higher odds of being transportation insecure than those earning greater than $65,000 per year. See Table 7 for the full model results.

Table 7: Logistic Regression Model of the Racial and Ethnic Differences in Transportation Insecurity Adjusting for Correlates of Transportation Insecurity and Food Insecurity in a Sample of Clark County, Nevada Adults Aged 60 or Older, 2023 (n=816)

Variable	χ^2	p-value	df	B	S.E.	Wald	Sig.	Exp(B)	95% CI
Model	143.846	<0.001	18						
Individual Level of the Social Ecological Model									
Black or African American			1	0.377	0.265	2.017	0.156	1.457	0.867-2.451
Other or Multiple Races			1	0.320	0.307	1.085	0.298	1.377	0.754-2.513
White		Reference							
Hispanic			1	0.081	0.414	0.038	0.845	1.084	0.482-2.441
Non-Hispanic		Reference							
Female			1	-0.097	0.189	0.263	0.608	0.907	0.626-1.315
Male		Reference							
Income ≤ $25,000			1	2.052	0.270	57.536	<0.001	7.780	4.579-13.219
Income >$25,000 ≤ $65,000			1	0.765	0.264	8.392	0.004	2.148	1.281-3.603
Income ≥$65,000		Reference							
High School Graduate or Less		Reference							
Some College or Technical School (1 – 3 Years)			1	-0.023	0.226	0.010	0.919	0.977	0.627-1.523
College Graduate			1	-0.024	0.274	0.008	0.929	0.976	0.571-1.669
Graduate or Professional Degree			1	0.057	0.287	0.039	0.843	1.058	0.603-1.857
Age 60-64		Reference							
Age 65-74			1	-0.380	0.258	2.170	0.141	0.684	0.413-1.134
Age 75-84			1	-0.275	0.276	0.995	0.319	0.759	0.442-1.304
Age 85+			1	-0.538	0.375	2.062	0.151	0.584	0.280-1.217
Relationship Level of the Social Ecological Model									

		df	B	SE	Wald	p	Exp(B)	95% CI
Lives with Child, Stepchild, or Partner's Child		1	0.473	0.262	3.272	0.070	1.605	0.961-2.681
Single (Never Married)	Reference							
Married		1	-0.344	0.288	1.428	0.232	0.709	0.403-1.247
Separated or Divorced		1	-0.095	0.306	0.096	0.756	0.909	0.499-1.657
Widowed		1	-0.109	0.315	0.120	0.729	0.897	0.484-1.282
Community Level of the Social Ecological Model								
Walkability		1	0.068	0.092	0.543	0.461	1.070	0.893-1.282
Societal Level of the Social Ecological Model								
SNAP Participation		1	0.576	0.297	3.765	0.052	1.778	0.994-3.181
SNAP No Participation	Reference							

Chapter 5: Discussion

As the aging population continues to grow, it is well-established that a public health priority is to ensure communities are age-friendly. Age-friendly communities ensure older adults have access to resources to not only meet their basic needs, but also allows them to interact with their communities (Harrell et al., 2014). However, transportation insecurity and food insecurity pose unique challenges for older adults (Crabtree & Mushi-Blunt, 2013; Feeding America, 2023a). The purpose of this study was to determine if there was an association between transportation insecurity and food insecurity for older adults, aged 60 and older, in Clark County, Nevada, while also considering racial and ethnic differences. We found a significant proportion of older adults to be both food and transportation insecure, with racial and ethnic differences being partially explained by other correlates.

Overall, 18.2% of the sample population were food insecure, which is higher compared to the national average of 7.1% food insecure seniors and the statewide average of 4.6% food insecure seniors found in 2021 (Ziliak & Gunderson, 2023). The difference in food insecurity rates could be attributed to the data collection methods. This study surveyed seniors directly using the U.S. Household Food Security Survey Module: 6-Item Short Form. The study conducted in 2021 utilizes the Current Population Survey Food Security Supplement (CPS-FSS), which reports on the food insecurity rates at the household level (Ziliak & Gunderson, 2023). Each December, the CPS-FSS surveys one adult in each household about all household members to indicate food insecurity (USDA, 2023b). Thus, this methodology might result in an underestimation of food insecurity in older adults, depending on the response of the surveyed household member. This can be misleading, as food insecurity and its impact are not equally distributed throughout the household (Bowen et al., 2021). Alternatively, it could be a result of

talking with more senior-headed households since the survey methodology stipulated that the interviewer speak directly with the older adult. Data does show that older adults who live alone are more likely to be low income (Primus & Paris, 2023).

Approximately 25.3% of older adult participants were transportation insecure on some level, with 6.1% being marginal, 6.7% being low, 5% being moderate, and 7.5% being high. A study conducted in 2022 using nationally representative data from The KnowledgePanel® survey found that approximately one in four U.S. adults were transportation insecure (Murphy et al., 2022a). Although this study was not limited to seniors, they did report transportation insecurity rates by age group. Of those who were aged 65 and older, 19% reported that they were transportation insecure with 9% being marginal, 5% being low, 3% being moderate, and 2% being high (Murphy et al., 2022a). Ages 60-64 were collapsed with ages 40-59, thus we are unable to compare this group. Due to the connection found between age and transportation insecurity, especially related to unaddressed travel needs, interventions targeted at mobility are warranted. Further exploration of the underlying causes and community informed opportunities for intervention are needed (Murphy et al., 2022a).

The Association Between Food Insecurity and Transportation Insecurity

All levels of transportation insecurity including marginal, low, moderate, and high transportation insecurity were associated with food insecurity ($p = < 0.001$). As the levels of transportation insecurity increased, the severity of the likelihood of food insecurity increased. This dose-response relationship remained after adjusting for correlates of food insecurity and transportation insecurity. Further, those who lived with a child, stepchild, or partner's child had a 1.9 times higher odds of being food insecure than those not living with a child.

To date, there are no studies that explore the association between food insecurity and transportation insecurity using this validated Sixteen-Item Transportation Security Index. Thus, there are also no studies examining this association in older adults living in Clark County, Nevada. However, transportation is often documented as a barrier for accessing food for the aging population (Shieh et al., 2021). Barriers are numerous, ranging from driving cessation, mobility challenges, neighborhood-level attributes, to cost (Black & Hyer, 2018, Loukaitou-Sideris & Wachs, 2018, Transportation for America, n.d., Saxon et al., 2019). Furthermore, a study conducted in 2019 at the University of Southern California attributed cost to be the primary barrier for older adults accessing transportation, which may be impacted due to spending tradeoffs related to food insecurity (Saxon et al., 2019, Feeding America, 2023a). A 2023 study identified that public transportation and driving limitations were associated with barriers to accessing food for older adults. In the same study, older adults reported that financial limitations, lack of vehicle ownership, and perceived unsafe driving conditions were common issues when accessing transportation. These transportation barriers were also reported as limiting factors to not only being able to afford food but also to access grocery stores (Freiria et al., 2023). Analogous with prior research, our study found that transportation insecurity and food insecurity were associated.

Both food insecurity and transportation insecurity are related to deficiencies in resources that are strongly linked to income. For example, food insecurity disproportionately affects those living on a fixed income (Leung et al., 2021). Aday et al. (2022) found that older adults with a low-income encounter financial barriers that can limit their ability to access healthy foods on a consistent basis (Aday et al., 2022). In addition, older adults who experience food insecurity often need to make decisions on spending tradeoffs between food and transportation and other

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necessary items. Our results show a statistically significant association with annual household income, with those earning less than $25,000 and those earning less than $65,000 but greater than $25,000 having a greater odds of being food insecure than those earning greater than $65,000 annually. Further, our findings corroborate the notion that food and transportation insecurity are not strictly due to income, as the relationship between the two remained significant, even after controlling for income.

Between December 2021 and December 2022, food prices increased by 10.4% and continued to increase in 2023 (Martinchek et al., 2023). Another study, although focusing on all ages, noted that limited access to transportation could cause households without cars to spend more funds on public transportation, which could further decrease funds for food at the grocery store (Baek, 2016). Although the literature shows that older adults often have access to transportation due to a caregiver such as a child, stepchild, or partner's child, with more individuals residing in one home, it could cause limited financial resources to be stretched, especially for those with low household incomes (NADTC, 2023). This may be one reason for our finding that living with a child, stepchild, or partner's child was associated with food insecurity and transportation insecurity. Again, these associations remained even after controlling income, confirming that these phenomena are more complex than solely a lack of monetary resources.

Based on the study findings, the null hypothesis was rejected; there was an association between food insecurity and transportation insecurity in older adult participants, aged 60 and older, in Clark County, Nevada.

Racial and Ethnic Differences in Food Insecurity

Previous findings comport that there are racial and ethnic differences in rates of food insecurity, with those identifying as a non-white race and Hispanic ethnicity having higher rates of food insecurity (Ziliak & Gunderson, 2021). We found racial and ethnic differences in food insecurity before controlling for known correlates; older adult participants who identified as other or multiple races and those who identified as Hispanic had higher odds of being food insecure than their white counterparts. However, this relationship became non-significant after adjusting for correlates of food insecurity and transportation insecurity.

The State of Senior Hunger Report in 2021 found that seniors who identified as Black or African American experienced food insecurity at a rate three times higher than their white counterparts, those identifying as Asian American, Pacific Islander, Native American, and multi-racial had food insecurity rates 6.1 percentage points higher than their white counterparts, and Hispanic seniors were two times more likely to experience food insecurity compared to the non-Hispanic seniors (Ziliak & Gunderson, 2021). There are a few speculative reasons that our findings do not parallel previous findings. First, sample sizes were relatively low, with 117 identifying as Black or African American, 106 identifying as other or multiple races, and 46 identifying as Hispanic, and our sample may not be representative of the non-white, Hispanic older adult population. Further, our sample does consist of more senior-headed households than the CPS data used to calculate national food insecurity rates, which may inherently lead to different findings. Alternatively, our findings may indicate that racial and ethnic differences are partially explained by the other known correlates, such as income.

After controlling for correlates of food insecurity and transportation insecurity, race and ethnicity did not remain significant predictors of food insecurity. As a result, we fail to reject the null hypothesis and conclude that there are no racial or ethnic differences in food insecurity after

controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada.

While our findings indicate that race and ethnicity are not significant correlates of food insecurity after controlling for known correlates, it is important to point out that structural racism directly causes food insecurity (Bowen et al., 2021). The connection between food insecurity, race, and ethnicity is complex, as the relationship is affected by various social and economic determinants (Odoms-Young, 2018). Race and ethnicity are correlated with income and household characteristics. Racial and ethnic disparities exist within wealth and income (Bowen et al., 2021). It is well-documented that Black or African American and Hispanic led households are more likely to have lower incomes due to the racial wealth gaps, which increases over one's lifetime (Thomas et al., 2020). In addition, those who identify as Black or African American, Asian, and Hispanic are more likely to live in multigenerational households, which can cause financial resources to be stretched (Cohn et al., 2022, King, 2018). Furthermore, Black and Hispanic households are often less likely to be homeowners as a result of historical racial and ethnic discrimination in home ownership (United States Census Bureau, 2020; Korver-Glenn, 2018; Rothstein, 2017). A study conducted in 2018 found an association between racial discrimination over the life course and food insecurity, but no indicators of socioeconomic status mitigate this association (Burke, 2018). This further shows the deep roots of structural racism and its multifaceted impact on food insecurity (Bowen et al., 2021).

Racial and Ethnic Differences in Transportation Insecurity

We found racial differences in transportation insecurity before controlling for known correlates, with those who identified as Black or African American and other or multiple races being more likely to be transportation insecure compared to their white counterparts. This is

similar to previous findings. While data using this specific 16-item validated tool are limited, a 2022 study of adults aged 25-64 years which used it found that Black adults were 33% more likely and those who identified as some other race/ethnicity were 46% more likely to experience any level of transportation insecurity compared to their white counterparts before controlling for correlates of transportation insecurity (Murphy et al., 2022a).

Since the United States is a car-dependent country, driving is highly valuable to seniors (Pristavec, 2018). However, older adults "outlive their ability to drive by 7-10 years", so they often become reliant on other transportation options (Black & Hyer, 2018, p. 1026). Furthermore, it has been well-documented that racial differences exist in driving patterns as individuals age; communities of color are less likely to drive compared to their white counterparts (Choi & Mezul, 2012, Mezuk & Rebok, 2008, Freeman et al., 2006). It is possible that racial disparities related to driving cessation expand as age increases (Choi et al., 2012).

Racial inequities also exist within the public transportation system. Communities of color are more dependent on the public transportation system, especially due to the lack of investment in transit networks in Black communities. In addition, transportation resources are often targeted in affluent, less dense areas where white individuals reside (Swistra, 2021). These racial differences are the product of systemic racism and oppression that has existed for decades through policies that led to racial discrimination, dispossession in neighborhoods where communities of color overwhelmingly live, and restricted job advancement (Murphy et al., 2022a).

In a 2022 study, it was reported that Hispanic adults were 29% more likely to experience any level of transportation insecurity compared to their white counterparts before controlling for correlates of transportation insecurity (Murphy et al., 2022a). However, this study did not find a

significant association between seniors who identified as Hispanic and transportation insecurity. Again, reasons for this difference may be due to a small sample size or due to innate differences in the older adult population that we focused on. In addition, the Hispanic population is more likely to live in multigenerational homes and have a strong sense of social cohesion due to cultural norms (Cohn et al., 2022; Mulvaney-Day et al., 2007). Therefore, this population may have more outlets for transportation access.

However, after adjusting for correlates of food insecurity and transportation insecurity, race lost significance while ethnicity remained insignificant. As a result, we fail to reject the null hypothesis and conclude that there are no racial or ethnic differences in transportation insecurity after controlling for correlates of food insecurity and transportation insecurity for older adults, aged 60 and older, in Clark County, Nevada. Similarly, Murphy et al. (2022a) also found no significant differences in transportation insecurity between Black, Hispanic, and white participants after controlling for correlates (Murphy et al., 2022a). Similar to racial and ethnic disparities in food insecurity, our findings may indicate that racial and ethnic differences in transportation insecurity are partially explained by the other known correlates, such as income, which remained a significant correlate.

Although race and ethnicity were not found to be significant after controlling for other correlates, the racial differences in transportation insecurity should not be disregarded. The results imply that structural racism that causes inequities in income and age influence the inequities in transportation insecurity rates (Murphy et al., 2022a). In addition to inequities in the wealth gap, there are racial inequities in age. Approximately 63% seniors experience at least one form of daily age-related discrimination, while 31% of seniors experience at least one significant discriminatory event throughout their lives (Luo et al., 2012). Furthermore, age discrimination

can intersect with racial discrimination (Office of Disease Prevention and Health Promotion, n.d.b.). Those who identify as Black are more likely to experience perceived discrimination, which can cause stress and ultimately impact health outcomes (Luo et al., 2012).

Limitations

Limitations exist within all studies. Since this is a cross-sectional study, it is a population-based study specific to Clark County, Nevada older adults during a specific timeframe. Thus, it may not be generalizable to all older adults in Clark County or those living outside of Clark County, Nevada. The study utilized a convenience sample to collect data via phone surveys, so only those with a phone were able to participate. All data are self-reported. This could lead to issues with response bias or recall bias. Participants might respond in a way that appears favorable to the person who is conducting the phone survey, resulting in possible social desirability bias. In addition, the validated 6-item food insecurity tool asks participants questions about their food situation over the last 12 months to determine food security status, and the transportation insecurity index uses a recall timeframe over the last 30 days to determine transportation security status. These time periods might be difficult for some participants to accurately remember what occurred or their feelings about such situations, resulting in recall bias.

This study sought out to determine if racial or ethnic differences exist for older adults experiencing food insecurity and transportation insecurity. However, 77% of the sample identified as white, which resulted in an oversample of white older adults and an undersample older adults who identify as Black, other or multiple races, or Hispanic. This may have impacted the results and not accurately represented racial and ethnic differences in food insecurity and transportation insecurity.

Future Research and Implications

Due to the proposed cyclical relationship between food insecurity and transportation insecurity for older adults in Clark County, potential interventions should combine both food and transportation resources for older adults. Through these interventions, both transportation and food options should be diversified in order to meet the unique needs of older adults. Transportation options can range from carpooling systems to accessible, efficient public transit. However, further research is needed to determine practical solutions for diversifying transportation options for older adults experiencing food insecurity.

In addition, with income often impacting older adults' ability to access food and transportation and being a consistent correlate of food and transportation insecurity, financial literacy courses and resources would be beneficial to incorporate into interventions for adults of all ages, but older adults in particular due to the majority living on a fixed income. Our findings and those of previous studies have shown that food insecurity is not simply a result of household income. Food insecurity has been reported to also be connected to the ability to manage finances (Carman & Zamarro, 2016). Furthermore, those who do not have a basic understanding of financial notions are more likely to experience food insecurity (Carman & Zamarro, 2016). It is also well-documented that financial knowledge and behaviors are associated with generational wealth, increased retirement savings, and improved spending tradeoffs decisions (Behrman et al., 20212; Lusardi & Mitchell, 2007; Carlin & Robinson, 2010).

Since financial resources should not only be one component of food insecurity and transportation insecurity interventions, it is important to explore the additional social determinants of health for older adults (Carman & Zamarro, 2016). Future research should

incorporate affordable housing, mental health, and access to healthcare in conjunction with food insecurity and transportation insecurity.

In addition, more research is needed to further explore race and ethnic differences for older adults who experience food insecurity and/or transportation insecurity. This study is a starting point to understanding these associations for older adults in Clark County. Future research should oversample communities of color to potentially better understand the association between race and ethnicity with food insecurity and transportation insecurity. Finally, the impact of structural racism greatly influences multiple social, economic, and political determinants of health, all of which are intertwined in the variables of interest, food and transportation insecurity. Therefore, public health interventions and policies should be focused on dismantling systems of oppression in order to ensure improved health and quality of life for communities of color.

Conclusion

As the aging population continues to increase, age-friendly communities should be a priority. In order to achieve age-friendly communities, older adults must have access to the necessary resources and services they need to live a healthy, happy and fulfilling lifestyle, which means ensuring older adults are both food and transportation secure. This study aimed to better understand the association between transportation insecurity and food insecurity for older adults aged 60 and older in Clark County, Nevada while considering racial and ethnic differences. Results from this study suggest high rates of food and transportation insecurity in older adults residing in Clark County. Further, there is an association between food and transportation insecurity, necessitating the need to target both simultaneously. Because racial and ethnic disparities impact health outcomes, future studies aimed at better understanding these disparities in transportation and food insecurity are a necessary first step in addressing these issues. Due to

the complexities of food and transportation insecurity, community experts in food security and transportation must come together to explore potential solutions. Through data-informed public health interventions and policies addressing root causes of food and transportation insecurity, the aging population in Clark County, Nevada can be better served to reduce food and transportation insecurity.

UNLV

TITLE OF STUDY: <u>An examination of senior hunger in Southern Nevada</u>

INVESTIGATOR(S) AND CONTACT PHONE NUMBER: <u>Courtney Coughenour, 702-895-4278; Ian McDonough, 702-895-3652</u>

The purpose of this study is gain a better understanding of issues related to senior hunger and access to food in Southern Nevada. You are being asked to participate in the study because you meet the following criteria: you are aged 60 or older and you reside in Southern Nevada.

If you volunteer to participate in this study, you will be asked to do the following: complete a survey that will last approximately 25 minutes.

This study includes only minimal risks. You *will not* be compensated for your time.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact **the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-581-2794, or via email at IRB@unlv.edu.**

Your participation in this study is voluntary. You may withdraw at any time. You are encouraged to ask questions about this study at the beginning or any time during the research study.

<u>Participant Verbal Consent:</u>

I understand the information for which I was just read and I agree to participate in this study. I am at least 18 years of age.

<u> NOTE TO DYNATA: BE SURE TO RECORD THE COUNTY AND CENSUS TRACT FROM WHICH THE RESPONDENT WAS SAMPLED</u>**

<u>NOTE: Record an identifying ID number from BOTH 2019 and 2022 that can be used to match pre/post results</u>**

<u>Screener Questions to be Coded into the Survey</u>

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***SCREENING QUESTIONS ALWAYS ASKED ***
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Is there currently an individual living in the household who is 60+ years of age?
- ☐ YES (Procced to next question)
- ☐ NO (Terminate survey)

Are you 60+ years or older (yes/no)?
- ☐ YES (Proceed to question 1 and skip remaining screening questions)
  If YES, how old are you? _____
- ☐ NO (Procced to next question)

Would it be possible to speak with the individual who is 60+ years or older (yes/no)?
- ☐ YES (Proceed to question 1 and skip remaining screening questions)
- ☐ NO (Procced to next question)

Are you the spouse/partner of the senior living in the household (yes/no)?
- ☐ YES (Procced to next question)
- ☐ NO (Terminate survey)

What is the age of the person 60+ years old living in the household?
  Recorded age: _____

Do you reside in Clark County Nevada?
- ☐ YES (Procced to next question)
- ☐ NO (Terminate survey)

Transportation

1. To get to the places they need to go, people might walk, bike, take a bus, train or taxi, drive a car, or get a ride. In the past 30 days, how often were you late getting somewhere because of a problem with transportation?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

2. In the past 30 days, how often did it take you longer to get somewhere than it would have taken you if you had different transportation?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

3. There are times when we need to wait for transportation to pick us up. In the past 30 days, how often did you spend a long time waiting because you did not have the transportation that would allow you to come and go when you wanted?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

4. In the past 30 days, how often did you have to arrive somewhere early and wait because of the schedule of the bus, train, or person giving you a ride?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

5. In the past 30 days, how often did you have to reschedule an appointment because of a problem with transportation?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

6. In the past 30 days, how often did you skip going somewhere because of a problem with transportation?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

7. In the past 30 days, how often were you not able to leave the house when you wanted to because of a problem with transportation?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

8. In the past 30 days, how often did you worry about whether or not you would be able to get somewhere because of a problem with transportation?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

9. In the past 30 days, how often did you feel stuck at home because of a problem with transportation?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

10. In the past 30 days, how often do you think that someone did not invite you to something because of problems with transportation?
    - ☐ Often
    - ☐ Sometimes
    - ☐ Never

11. In the past 30 days, how often did you feel like friends, family, or neighbors were avoiding you because you needed help with transportation?
    - ☐ Often
    - ☐ Sometimes
    - ☐ Never

12. In the past 30 days, how often did you feel left out because you did not have the transportation you needed?
    - ☐ Often
    - ☐ Sometimes
    - ☐ Never

13. In the past 30 days, how often did you feel bad because you did not have the transportation you needed?
    - ☐ Often
    - ☐ Sometimes
    - ☐ Never

14. In the past 30 days, how often did you worry about inconveniencing your friends, family, or neighbors because you needed help with transportation?
    - ☐ Often
    - ☐ Sometimes
    - ☐ Never

15. In the past 30 days, how often did problems with transportation affect your relationships with others?
    - ☐ Often
    - ☐ Sometimes
    - ☐ Never

16. In the past 30 days, how often did you feel embarrassed because you did not have the transportation you needed?
   - ☐ Often
   - ☐ Sometimes
   - ☐ Never

17. Do you have a reliable mode of transportation (car, bus, friend/family member) to access a grocery store, food pantry, and other resources on a consistent basis?
   - ☐ Yes (Skip questions 18-19)
   - ☐ No (Skip question 20)

18. Why do you not have reliable transportation? Select all that apply.
   - ☐ I do not like to drive/I don't drive/I don't have a personal vehicle
   - ☐ I have a health condition or disability that prevents me from driving
   - ☐ I do not have the money to afford transportation
   - ☐ I rely on a family or friend to drive me, but they are not regularly available
   - ☐ I do not feel safe using public transportation
   - ☐ I do not know how to use public transportation
   - ☐ The weather prevents me from using public transportation
   - ☐ Other: _____

19. If the ride was free, what mode of transportation would you like to use?
   - ☐ Bus
   - ☐ Cab
   - ☐ Ride share (Uber, Lyft)
   - ☐ Transportation provided by a community organization (Non-profit transportation program)
   - ☐ Paratransit
   - ☐ Other: _____

20. People use various forms of transit to get where they need to go. Please circle the answer that best indicates how often you do the following?

Drive myself	Never	Sometimes	Mostly/Always
Get a ride from a person I live with	Never	Sometimes	Mostly/Always
Get a ride from person who I don't live with (not including ride shares like Uber or Lyft)	Never	Sometimes	Mostly/Always
Walk	Never	Sometimes	Mostly/Always
Bicycle	Never	Sometimes	Mostly/Always
Take a taxi	Never	Sometimes	Mostly/Always
Ride public transit (bus)	Never	Sometimes	Mostly/Always
Take a community van (e.g. from a senior center)	Never	Sometimes	Mostly/Always
Ride paratransit	Never	Sometimes	Mostly/Always
Ride share (such as Uber or Lyft)	Never	Sometimes	Mostly/Always

21. If never or sometimes was selected for any of the above options, ask the following (if Mostly/Always selected, skip). Which of the following are barriers to **insert options from above**? (Select all that apply)
- [ ] I don't feel safe
- [ ] It is too expensive
- [ ] It's hard or inconvenient to access
- [ ] I don't know how to use it
- [ ] My health and/or a disability prohibits me
- [ ] Other - explain

22. Do you need any of the following types of assistance when you travel around town? Select all that apply.
- [ ] Assistance getting into and out of the vehicle
- [ ] Person to accompany you
- [ ] Help loading and unloading bags and boxes
- [ ] Door-to-door service
- [ ] Wheelchair lift or ramp
- [ ] Space for folding up your wheelchair or walker
- [ ] Other: _____

23. Do you currently receive free home delivered groceries from a local community organization?
- [ ] Yes
- [ ] No (Skip question 24)

24. If you had access to reliable transportation, would you use it to go to the grocery store or pantry instead of receiving home delivered groceries?
- [ ] Yes
- [ ] No

Food Security

For these statements, please indicate whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months.

25. 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
- [ ] Don't know or refused (Don't read)

26. (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
- ☐ Don't know or refused (Don't read)

27. In the last 12 months 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 to question 28)
- ☐ Don't know or refused (Don't read and skip to question 28)

28. If yes, 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
- ☐ Don't know or refused (Don't read)

29. 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
- ☐ Don't know or refused (don't read)

30. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?
- ☐ Yes
- ☐ No
- ☐ Don't know or refused (don't read)

Please answer the following questions about you and your household:
31. In the past 12 months, was there a rent or mortgage increase that made it difficult to pay?
- ☐ Yes
- ☐ No

32. In the past 12 months, did you not pay or underpay your rent or mortgage?
- ☐ Yes
- ☐ No

33. In the past 12 months, did you not pay the full amount of a gas, oil, or electricity bill?
- ☐ Yes
- ☐ No

34. In the past 12 months, have you moved two times or more?
- ☐ Yes
- ☐ No

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35. In the past 12 months, did you move in with other people, even for a little while, because of financial problems?
   ☐ Yes
   ☐ No

36. In the past 12 months, did you "live with others beyond the expected capacity of the house or apartment"?
   ☐ Yes
   ☐ No

Health

Please answer the following questions about your general health:

Health Questions	Yes	No
36. Are you deaf, or do you have serious difficulty hearing?		
37. Are you blind, or do you have serious difficulty seeing, even when wearing glasses?		
38. Because of a physical, mental, or emotional condition, do you have serious difficulty concentrating, remembering, or making decisions?		
39. Do you have serious difficulty walking or climbing stairs?		
40. Do you have difficulty dressing or bathing?		
41. Because of a physical, mental, or emotional condition, do you have difficulty doing errands alone such as visiting a doctor's office or shopping?		
42. Do you have a disability?		

Social Support and Social Help

Please answer the following questions about your social support & social health:

43. I am content with my friendships and relationships.
   ☐ Strongly Disagree
   ☐ Disagree
   ☐ Neutral
   ☐ Agree
   ☐ Strongly Agree
   ☐ Don't Know

44. I have enough people I feel comfortable asking for help at any time.
- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly Agree
- ☐ Don't Know

45. My relationships are as satisfying as I would want them to be.
- ☐ Strongly Disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly Agree
- ☐ Don't Know

Supplemental Nutrition Assistance Program (SNAP)

46. Do you currently receive Supplemental Nutrition Assistance Program (SNAP) formerly known as food stamps?
- ☐ Yes
- ☐ No (Skip questions #47-49)

47. How much did you receive in SNAP (formerly known as food stamps) benefits last month?

$ _ _ _ .00

48. SNAP benefits increased during the pandemic. Tell me how receiving additional SNAP benefits impacted your life.

_____
_____
_____
_____
_____

49. Do you use your SNAP benefits to have groceries delivered directly to your home through a grocery store or online retailer?
- ☐ Yes
- ☐ No

Aging In Place

These questions are about safety, your neighborhood, & aging in place. Please mark an "X" in the boxes to indicate your response.	Strongly Agree	Agree	Disagree	Strongly Disagree
50. Many of the places that I need to go regularly, such as the grocery store, church, a doctor, are within an easy walking distance to my home.				
51. It is easy to walk to a transit stop (bus) from my home.				
52. There are safe, well-maintained sidewalks in my community.				

Gambling Behavior

54. During a typical week, how often do you gamble?

　＿＿＿＿＿＿ time(s) per week

If more than zero times per week, continue to question #55, otherwise skip to question #56.

55. In the previous 12 months, how often do you play the following (never, sometimes, often, daily):

55a. Slot Machines

☐ Never　　☐ Sometimes　　☐ Often　　☐ Daily

55b. Casino Betting Tables (Blackjack, Poker, Craps, Roulette, etc.)

☐ Never　　☐ Sometimes　　☐ Often　　☐ Daily

55c. Online Poker Games

☐ Never　　☐ Sometimes　　☐ Often　　☐ Daily

55d. Online Gambling Other than Poker

☐ Never　　☐ Sometimes　　☐ Often　　☐ Daily

55e. Bingo

☐ Never　　☐ Sometimes　　☐ Often　　☐ Daily

55f. Horse Racing

☐ Never　　☐ Sometimes　　☐ Often　　☐ Daily

55g. Dog Racing

☐ Never ☐ Sometimes ☐ Often ☐ Daily

55h. Sports Betting (Formal or Informal)

☐ Never ☐ Sometimes ☐ Often ☐ Daily

55i. Card Games for Money (Other than casino table games)

☐ Never ☐ Sometimes ☐ Often ☐ Daily

55j. Other not included above (please specify) _____

56. Have you ever written a bad check or taken money that didn't belong to you from family members, friends, or anyone else in order to pay for your gambling?
    ☐ Yes
    ☐ No

57. Have you ever needed to ask family members, friends, a lending institution, or anyone else to loan you money or otherwise bail you out of a desperate money situation that was largely caused by your gambling?
    ☐ Yes
    ☐ No

58. Has your gambling ever caused serious or repeated problems in your relationships with any of your family members or friends? Or, has your gambling ever caused you problems at work or school?
    ☐ Yes
    ☐ No

59. Have you lied to family members, friends, or others about how much you gamble and/or about how much money you lost on gambling, on at least three occasions?
    ☐ Yes
    ☐ No

Inflation

60. Do you think you (and any family living with you) are financially better or worse off these days than you were 12 months ago? (much worse off, somewhat worse off, about the same, somewhat better off, much better off)
    ☐ Much worse off
    ☐ Somewhat worse off
    ☐ About the same
    ☐ Somewhat better off
    ☐ Much better off

61. Over the previous 12 months, did you perceive there to be price inflation or price deflation?
    ☐ Inflation
    ☐ Deflation

If answered much or somewhat worse off **and** inflation, then ask question #62, otherwise skip to question #63.

62. Regarding your previous 2 answers, did price inflation play a significant role in making your financial situation worse off?
    - ☐ Yes
    - ☐ No
    - ☐ Unsure

63. And looking ahead, do you think you (and any family living with you) will be financially better or worse off 12 months from now than you are these days?
    - ☐ Much worse off
    - ☐ Somewhat worse off
    - ☐ About the same
    - ☐ Somewhat better off
    - ☐ Much better off

64. Over the next 12 months, do you think that there will be price inflation or price deflation?
    - ☐ Inflation
    - ☐ Deflation

Employment

Please answer the following questions about you and your household:

65. Did you or did anyone in your household work at a job or business at any time in the past 12 months (If yes, skip to question #66)?

Yes
No
Don't Know (VOL)
Refused/Skipped (VOL)

66. What was the <u>main reason</u> you did not work in the past <u>12 months</u>?

Ill, or disabled and unable to work
Retired
Taking care of home or family
Going to school
Could not find work
Doing something else
Don't Know (VOL)
Refused/Skipped (VOL)

67. How often do you get out of the house?
- ☐ On most days of the week
- ☐ A few times per week
- ☐ Once per week
- ☐ Less than once per week
- ☐ I do not leave my home

68. Many older adults have difficulty leaving their homes to get groceries for reasons such as mobility, transportation, or other health conditions. Some programs deliver groceries to your home. Is this a service you need?
- ☐ Yes
- ☐ No
- ☐ Unsure

Demographics

69. What is the highest grade or year of school you completed?
- ☐ Less than high school diploma
- ☐ Grade 12 or GED (High school graduate)
- ☐ College 1 year to 3 years (Some college or technical school)
- ☐ College 4 years or more (College graduate)
- ☐ Graduate or professional degree

70. Are you of Hispanic, Latino, or Spanish origin?
- ☐ Yes
- ☐ No

71. Please tell me which one of the following you would use to describe yourself? (YOU MAY CHOOSE MORE THAN ONE GROUP)
- ☐ White
- ☐ Black or African American
- ☐ Asian
- ☐ American Indian or Alaska Native
- ☐ Middle Eastern or North African
- ☐ Native Hawaiian or other Pacific Islander
- ☐ Some other race or ethnicity

72. What is your gender?
- ☐ Female
- ☐ Male
- ☐ Choose to self-describe: _____

73. What is your marital status?
- ☐ Single (never married)
- ☐ Married
- ☐ Separated
- ☐ Widowed
- ☐ Divorced

74. I'm going to read you a list of income categories. Which category represents the total combined income of all members of your family who are 15 years of age or older <u>during the past 12 months</u>. Please include money from things such as jobs, net income from business, pensions, social security payments, and any other money income received. Was it…

Zero (VOL)
$5,000 or less
$ 5,001 – $10,000
$10,001 – $15,000
$15,001 – $20,000
$20,001 – $25,000
$25,001 – $30,000
$30,001 – $35,000
$35,001 – $50,000
$50,001 - $65,000
$65,001 - $80,000
$80,001 - $105,000
$105,001 - $120,000
$120,001 or more
Don't Know (VOL)
Refused/Skipped (VOL)

75. Not counting yourself, how many other people live in your household at least <u>4 days out of the week</u>?
   ☐ Enter a number |____|
   ☐ No one; I live by myself (If selected, skip to closing)

76. Of the other people who live in your household, please tell me how the people who live in your household are related to you. Are they … (CHECK ALL THAT APPLY)
   - ☐ A spouse or domestic partner
   - ☐ Your child, stepchild, or your partner's child
   - ☐ Your grandchild, step-grandchild or your partner's grandchild
   - ☐ Your parent
   - ☐ Your spouse/partner's parent
   - ☐ Your grandparent
   - ☐ Your spouse/partner's parent
   - ☐ Your sibling
   - ☐ Your spouse/partner's sibling
   - ☐ Some other relative of you or your spouse/partner such as aunt, uncle, niece, nephew, or cousin
   - ☐ A friend
   - ☐ Your roommate

77. Of the other people who live in your household, how many of them are children under the age of 18?
   - ☐ Enter a number |____| (ENTER #)
   - ☐ No one in the HH is under age 18

78. What is the zip code of your home address in Southern Nevada?

   _____

Closing: If you or someone you know needs supplemental food assistance, I would like to provide you with Three Square's Call Center number. This number will connect you to pantry locations, long term services, and you can also sign up for a home delivered grocery program. Would you like the phone number to the call center? (If yes, it's 702-765-4030).

Thank you very much for your time.

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Curriculum Vitae

Alyx J. Phillips
Curriculum Vitae

alyxjordanphillips@gmail.com

Education

Ph.D.   Public Health, University of Nevada, Las Vegas   2024
               Concentration: Global and Environmental Health

MPH   Social and Behavioral Health, University of Nevada, Las Vegas   2018

BS   Public Health, Youngstown State University   2015
               Concentration: Health Education and Health Promotion

Research Experience

2023 – Present *Director of Grants Administration*, Three Square Food Bank, Las Vegas, NV
- Oversees the organization's pre-award and post-award government and private grants
- Chairs internal Grants Committee to disburse grant funds to community partners
- Directs staff members that strategically manages the life cycle of government and private grants to reduce food insecurity in Southern Nevada
- Assesses organizational and community needs to develop, inform, and prepare for competitive grant proposals and opportunities
- Conducts research on corporate, foundation, government, and individual funding sources
- Identifies potential funding opportunities to support annual program and operating needs as well as long-term strategic objectives
- Advises community partners in grant management, program planning, implementation, and evaluation

2022 – 2023 *Senior Programs Manager*, Three Square Food Bank, Las Vegas, NV
- Developed, implemented, and evaluated data-driven hunger relief initiatives targeting vulnerable populations across the lifespan
- Developed and oversaw original research projects for graduate and undergraduate students
- Managed staff members, volunteers, and interns that strategically increase food access to children and seniors in food insecure or at-risk households

- Wrote and managed multiple service agreements and contracts to execute hunger relief efforts
- Maintained a $7.9 million operating budget across organizational, state, and federal fiscal years
- Stewarded strong relationships between partners to achieve sustainable, innovative programs

2018 – 2022 *Senior Hunger Programs Manager*, Three Square Food Bank, Las Vegas, NV
- Developed, implemented, and evaluated data-driven hunger relief initiatives targeting the aging population
- Managed staff members, volunteers, and interns that provide efforts to reduce senior hunger in Southern Nevada
- Developed original research projects for graduate and undergraduate students
- Wrote and managed multiple service agreements and contracts
- Maintained an operating budget of $3.6 million

2021 – 2022 *Research Assistant*, Nevada Exploratory Alzheimer's Disease Research Center, Las Vegas, NV
- Served on Outreach, Recruitment, and Education team to support the development of the Nevada Exploratory Alzheimer's Disease Research Center
- Developed screening tools for recruitment and to collect high quality data for individuals with dementia in rural settings
- Applied research methodologies to expand the understanding of Alzheimer's disease in rural areas

2017 *Master of Public Health Student Intern*, Immunize Nevada, Las Vegas, NV
- Conducted a needs assessment using focus groups with approximately 100 students
- Developed a statewide leadership program to providing hands-on, meaningful opportunities for future public health professionals, which lead to the program becoming a Certified Service Enterprise

2017 – 2018 *Community Educator*, University Medical Center of Southern Nevada, Las Vegas, Nevada
- Developed, implemented, and evaluated injury prevention and childhood obesity prevention programs under the Kohl's Cares 4U Grant
- Developed and implemented a comprehensive evaluation process for health education and continuing education courses
- Managed support staff and volunteers
- Built and fostered strong community partnerships

2016 – 2017 *Research Assistant,* Children's Heart Center Nevada, Las Vegas, Nevada

- Led a research team to coordinate efforts to improve health outcomes for children with congenital heart disease
- Prepared and maintained IRB documents, regulatory documents, and case reports for sponsor companies
- Created population-specific, technical health education materials for studies

University Teaching Experience

2020 – Present *Part-Time Instructor*, University of Nevada, Las Vegas – School of Public Health
Las Vegas, Nevada
- Introduction to Public Health – web-based (Fall 2020)
- Introduction to Public Health – web-based (Fall 2021)
- Introduction to Public Health – web-based (Spring 2022)
- Introduction to Public Health – web-based (Fall 2022)
- Built Environment and Health – web-based (Spring 2023)
- Built Environment and Health – web-based (Fall 2023)

Certifications

2023   Collaborative Institutional Training Initiative

2015   Certified Health Education Specialist #24886, National Commission for Health Education Credentialing

Conference Activity

Presentations

2022   **Phillips, A**., Coughenour, C., McDonough, I., McCoy, S. Neighborhood walkability is associated with food insecurity in older adults in Southern Nevada. American Public Health Association, Boston, MA, November 6-9.

2020   **Phillips, A.**, Segler, L., Ayele, S., Arreola, E. Golden Groceries: A Solution for Food Insecurity and Chronic Disease Management. Nevada Public Health Association Annual Conference, Virtual, September 21-23.

2019   Segler, L. Thompson-Robinson, M., Ayele, S., Arreola, E., **Phillips, A.** Factors Associated with Food Insecurity Among Individuals, Aged Sixty and Older, in Clark County, NV. Nevada Public Health Association Annual Conference, Reno, NV, September 24-25.

2021   **Phillips, A.**, Avila, K., Skelton, S. Ride Share Pilot Program: An Innovative Food Insecurity Solution for Older Adults. Nevada Public Health Association, Virtual, September 13-15.

2020   **Phillips, A.**, Segler, L., Ayele, S., Arreola, E. Evaluation of population-specific programming for food-insecure seniors, aged 60 and older, in las vegas, NV. American Public Health Association, Virtual, October 25-28.

2020   Segler, L., Whaley, R., Thompson-Robinson, M., Coughenour, C., Ayele, S., Arreola, E., **Phillips, A**. Mental health factors associated with food insecurity in the aging population in las vegas, NV. American Public Health Association, Virtual, October 25-28.

2020   Whaley, R., Segler, L., Coughenour, C., Thompson-Robinson, M., Ayele, S., Arreola, E., **Phillips, A**. Disability factors associated with food insecurity in the aging population in las vegas, NV. American Public Health Association, Virtual, October 25-28.

Grants and Awards

2024   Project DASH Impact Grant. Funded by Silicon Valley Community Foundation. $3,500. Directed grant application and activities including implementation and evaluation.

2024   Starbucks Global Month of Good General Operating Grant. Funded by Feeding America. $10,000. Directed grant application and activities including implementation and evaluation.

2024   Walmart and Sam's Club Fight Hunger. Spark Change. Funded by Feeding America. $22,800. Directed grant application and activities including implementation and evaluation.

2024   Chick-Fil-A Child and Family Feeding Program Cycle 2 Grant. Funded by Feeding America. $25,000. Directed grant application and activities including implementation and evaluation.

2024   City of North Las Vegas, State and Local Fiscal Recovery Funds (SLFRF) State Plan for American Rescue Plan Act (ARPA). Funded by the City of North Las Vegas. $75,000. Directed grant application and activities including implementation and evaluation.

2024   Greener Grant Program. Funded by Consumer Technology Association. $50,000. Directed grant application and activities including implementation and evaluation.

2023   Transportation Services. Funded by the Department of Health and Human Services, Aging and Disability Services Division. $143,000. Directed grant application and activities including implementation and evaluation.

2023	Nutrition Services. Funded by the Department of Health and Human Services, Aging and Disability Services Division. $83,750. Directed grant application and activities including implementation and evaluation.
2023	Fund for Healthy Nevada. Funded by Nevada Clinical Services – Office of Food Security. $432,962. Directed grant application and activities including implementation and evaluation.
2023	Southern Nevada Health District Grant. Funded by Southern Nevada Heath District via Centers for Disease Control and Prevention. $708,891. Directed grant application and activities including implementation and evaluation.
2023	Albertson's Nourishing Neighbors: Connecting to Federal Meals Grant. Funded by Feeding America. $50,000. Directed grant application and activities including implementation and evaluation.
2023	USAA General Operating Grant. Funded by Feeding America. $20,000. Directed grant application and activities including implementation and evaluation.
2023	FY24 Starbuck FoodShare Capacity Building Grant. Funded by Feeding America. $12,000. Directed grant application and activities including implementation and evaluation.
2023	Costco General Operating. Grant. Funded by Feeding America. $25,000. Directed grant application and activities including implementation and evaluation.
2023	Sysco General Operating Grant. Funded by Feeding America. $1,019.27. Directed grant application and activities including implementation and evaluation.
2023	CVS General Operating Grant. Funded by Feeding America. $67,799.97. Directed grant application and activities including implementation and evaluation.
2023	Albertsons Companies Foundation Nourishing Neighbors Breakfast for Kids Grant. Funded by Feeding America. $60,000. Directed grant application and activities including implementation and evaluation.
2023	Share Our Strength Grant. Funded by Share Our Strength Grant. $10,000. Directed grant application and activities including implementation and evaluation.
2023	FY24 Red Nose Day Child Hunger Grant. Funded by Feeding America. $10,000. Directed grant application and activities including implementation and evaluation.
2023	FY23 Red Nose Day Child Hunger Grant. Funded by Feeding America. $10,000. Directed grant application and activities including implementation and evaluation.
2023	JCPenney Child and Family Feeding Grant. Funded by Feeding America. $22,500. Directed grant application and activities including implementation and evaluation.
2023	Feeding America Multi-Donor Summer Feeding Grant. Funded by Feeding America. $50,104. Directed grant application and activities including implementation and evaluation.
2023	Lineage Logistics General Operating Grant. Funded by Feeding America. $18,627.45. Directed grant application and activities including implementation and evaluation.
2023	Costco Food Purchase Grant. Funded by Feeding America. $40.909.90 Directed grant application and activities including implementation and evaluation.

2023	Cargill Food Safety. Funded by Feeding America. $2,383. Directed grant application and activities including implementation and evaluation.
2023	Multi-Donor Equitable Food Access Round 3 Grant. Funded by Feeding America. $300,000. Provided grant writing, management of grant, and supervision of staff.
2022	Multi-Donor Senior Hunger Grant. Funded by Feeding America. $150,000. Provided grant writing, management of grant, and supervision of staff.
2022	Nevada Community Food Access Grant. Funded by the Nevada Department of Agriculture. $95,440. Provided grant writing, management of grant, and supervision of staff.
2022	Transportation Services. Funded by the Department of Health and Human Services, Aging and Disability Services Division. $143,000. Provided grant writing, management of grant, and supervision of staff.
2022	Manager of the Quarter. Three Square Food Bank.
2021	Community Mobility Design Challenge. Funded by the National Center for Mobility Management. $36,535.50. Provided grant writing, management of grant, and supervision of community members.
2021	COVID-19 Emergency Services. Funded by the Department of Health and Human Services, Aging and Disability Services Division $365,891. Provided grant writing, management of grant, and supervision of staff.
2020	COVID-19 Emergency Services. Funded by the Department of Health and Human Services, Aging and Disability Services Division $296,938. Provided management of grant, and supervision of staff.
2020	National Public Health Week. Funded by American Public Health Association $500. Provided grant writing, management of the grant, and assessment and evaluation.
2019	Public Health Program of the Year Award. Nevada Public Health Association
2019	Manager of the Quarter. Three Square Food Bank.

Invited Talks

2024	April 9. University of Nevada, Las Vegas, Pre-Capstone in Public Health. Nerida, T. & **Phillips, A.** Three Square Food Bank Internships.
2023	November 21. University of Nevada, Las Vegas, Pre-Capstone in Public Health. Nerida, T. & **Phillips, A.** Three Square Food Bank.
2022	September 7. Kiwani's Club of Southern Nevada. **Phillips, A.** Three Square Food Bank.
2022	March 29. University of Nevada, Las Vegas, Pre-Capstone in Public Health. **Phillips, A.** Finding Your Place to Help Others Age in Place.
2020	October 20. University of Nevada, Las Vegas, Pre-Capstone in Public Health. **Phillips, A.** Finding Your Place to Help Others Age in Place.
2020	September 29. Nevada Senior Services Virtual Summit. **Phillips, A.** Golden Groceries: Empowering Seniors Through A Client-Choice Model.

2020	June 4. Immunize Nevada. McCoy, D. & **Phillips, A.** Three Square Food Bank COVID-19 Response Efforts.
2019	April 16 & September 17. University of Nevada, Las Vegas, Public Health Capstone. **Phillips, A.** & Whaley, R. Teamwork and Collaboration in Public Health.

Media Appearances

2020	Guest appearance on the Channel 13 Las Vegas News Broadcast, Oct 13 (Golden Groceries Program).

Service to the Profession

2023	State Treasurer, Nevada Public Health Association
2022 – Present	West Las Vegas Maternal-Child Community Advisory Board, Three Square Food Bank
2022	Grants Committee Member, Three Square Food Bank
2021	Nevada Early Childhood Advisory Council Strategic Plan Project, The Stacey Wedding Group
2021 – 2022	HOPE Grant Stakeholder Committee, Regional Transportation Commission of Southern Nevada (RTC)
2021	HOPE Grant Evaluation Team, Regional Transportation Commission of Southern Nevada (RTC)
2021	Reviewer, American Public Health Association Annual Conference abstracts
2021	Immediate-Past President, UNLV School of Public Health Alumni Chapter
2020 – 2021	Southern Nevada Chapter Vice President, Nevada Public Health Association
2020 – Present	Reviewer, Nevada Public Health Association Annual Conference abstracts
2020	President, UNLV School of Public Health Alumni Chapter
2019 – Present	Coordinated Transportation Plan Stakeholder Committee, Regional Transportation Commission of Southern Nevada (RTC)
2019	Member-at-Large/Acting President, UNLV School of Public Health Alumni Chapter
2019	Health Promotion/Disease Prevention Representative, Nevada Public Health Association

Professional Memberships

2022 – Present	Grant Professionals Association
2022 – Present	Compassionate Las Vegas, Jameson Fellowship
2019 – Present	Leadership Advance – Las Vegas Metro Chamber of Commerce
2019 – Present	Delta Omega Public Health Honor Society, Delta Theta Chapter of UNLV
2019 – Present	American Express Leadership Academy
2018 – Present	Nevada Public Health Association
2017 – Present	American Public Health Association
2015 – Present	National Commission for Health Education Credentialing