Journal of Agriculture, Food Systems, and Community Development
ISSN: 2152-0801 online
https://foodsystemsjournal.org

Sociodemographic correlates of food security status among older adults in central Ohio: Toward a typology of risk

Lauren Roberson,[a] * Katie Simpson,[b] Michelle Kaiser,[c] Smitha Rao,[d]
Holly Dabelko-Schoeny,[e] Marisa Sheldon,[f] and Allison Heemer[g]
The Ohio State University

Submitted November 25, 2025 / Revised January 26 and March 23, 2026 / Accepted March 25, 2026 / Published online July 22, 2026

Citation: Roberson, L., Simpson, K., Kaiser, M., Rao, S., Dabelko-Schoeny, H., Sheldon, M., & Heemer, A. (2026). Sociodemographic correlates of food security status among older adults in central Ohio: Toward a typology of risk. *Journal of Agriculture, Food Systems, and Community Development*, *15*(4), 53–74. https://doi.org/10.5304/jafscd.2026.154.003

Copyright © 2026 by the Authors. Published by the Lyson Center for Civic Agriculture and Food Systems. Open access under CC BY license.

Abstract

Vacillating trends in the prevalence of food insecurity (FI) have been observed in the U.S. While a decline occurred post-pandemic, the cessation of government assistance programs in 2023 resulted in increased prevalence, particularly among older adults, at 5.6% nationally and 7.4% in central Ohio. FI among older adults is concerning due to its impact on morbidity and mortality. Knowledge of associated correlates within geographic regions is limited. Prevalence of FI can vary by region, and central Ohio has one of the highest FI prevalence rates among older adults in

[a] * *Corresponding author:* Lauren Roberson, PhD, RDN, LD, Assistant Professor & State Extension Specialist, Department of Human Sciences, The Ohio State University; 1787 Neil Avenue, 311F Campbell Hall; Columbus, OH 43210 USA; +1-614-688-0261; roberson.177@osu.edu; https://orcid.org/0000-0002-9054-6132

[b] Katie Simpson, MSW, LISW-S, Social Work PhD Student, College of Social Work, The Ohio State University; 1947 North College Road; Columbus, OH 43210 USA.

[c] Michelle Kaiser, PhD, Associate Professor, College of Social Work, The Ohio State University; 1947 North College Road; Columbus, OH 43210 USA; https://orcid.org/0000-0003-4950-7796

[d] Smitha Rao, PhD, Assistant Professor, College of Social Work, The Ohio State University; 1947 North College Road; Columbus, OH 43210 USA; https://orcid.org/0000-0002-6788-001X

[e] Holly Dabelko-Schoeny, MSW, PhD, FGSA, Professor, Director of Research, Age-Friendly Innovation Center, College of Social Work, The Ohio State University, 1947 North College Road; Columbus, OH 43210 USA; and Age-Friendly Innovation Center, The Ohio State University, 1275 Kinnear Road; Columbus, OH 43212 USA; https://orcid.org/0000-0002-0952-819X

[f] Marisa Sheldon, MSW, LISW-S, Director of the Age-Friendly Innovation Center, Age-Friendly Innovation Center, The Ohio State University; 1275 Kinnear Road; Columbus, OH 43212 USA.

[g] Allison Heemer, BS, Undergraduate Research Assistant, Department of Human Sciences, The Ohio State University; 29 West Woodruff Avenue; Columbus, OH 43210 USA.

the U.S. For this study, a regional cross-sectional survey with stratified random sampling was utilized to inform future development of a typology for assessing FI risk. Older adults aged 50 and above who reside in one of eight counties in central Ohio were invited to participate. The final, regionally representative sample included 1,417 older adults. Data points were weighted to accurately depict the population distribution of the region. Analysis of variance (ANOVA), correlation coefficients, and chi-square tests were utilized to examine differences between sociodemographic characteristics and food security status. We found the majority of participants who were very low food secure had the following characteristics: identified as a woman, were age 74 years or younger, were divorced, widowed, or single, earned an annual household income at or below US$39,999, had completed either some college but had not earned a degree or earned a high school diploma or GED, were either retired but not seeking work or disabled and unable to work, and lived in an urban region. Findings can inform tailored risk assessments, interventions, and referrals to community-based services and government assistance programs in central Ohio and across similar geographic regions.

Keywords
food insecurity, correlates, sociodemographic characteristics, older adults

Introduction and Literature Review

Food insecurity (FI) is an underrecognized problem among older adults. FI impacted 13.5% of households in the U.S. in 2023 (Rabbitt et al., 2024). This equated to 47.4 million individuals; of these households, 8.4% experienced low food security, and 5.1% experienced very low food security. In central Ohio, older adults experienced FI at a rate of 7.4%, which is one of the highest in the U.S.; recent federal data indicates a FI rate of 12.8%, which represents a significant increase and historic high since 2011 (Rabbitt et al., 2024), mirroring national trends. FI is further compounded by the 26.7% of older adults who report struggling to find foods they want to eat, reflecting broader challenges in food access (Flynn, 2025). Older adults living in poverty face a disproportionate burden (Leung & Wolfson, 2021). This may be attributed to multiple factors, including increased financial burden, social isolation, health limitations, and lack of access to resources. For many older adults, the financial burden of living on a fixed income impacts their ability to maintain food security. While rising food costs may exacerbate the challenges of living on a fixed income and access to nutrient-dense foods, little research has been done in the U.S. to identify demographic correlates of FI among older adults specifically.

Literature has established that older adults who are single and living alone are at increased risk of FI (Reed-Jones, 2023). Older adults living alone often face increased social isolation compared to those living with others, limiting their ability to access food retailers and other assistance programs such as the USDA's Senior Farmers Market Nutrition Program (SFMNP), Supplemental Nutrition Assistance Program (SNAP), and Produce Perks that might otherwise promote food security (Burris

Funding Disclosure
The 2021 Central Ohio Regional Assessment on Aging was supported by the Central Ohio Area Agency on Aging and the Franklin County Office on Aging.

Conflict of Interest
The authors report no conflicts of interest.

Ethical Standards Disclosure
This study was conducted according to the guidelines laid down in the Declaration of Helsinki, and all procedures involving research study participants were approved by The Ohio State University Institutional Review Board (IRB). Written informed consent was obtained from all subjects/patients.

Author Contributions
Lauren Roberson: Conceptualization; Methodology; Formal Analysis; Writing Original Draft; Writing—Review & Editing
Katie Simpson: Conceptualization; Writing Original Draft; Writing—Review & Editing
Michelle Kaiser: Conceptualization; Data curation; Methodology; Writing Original Draft; Writing—Review & Editing
Smitha Rao: Conceptualization; Methodology; Writing Original Draft; Writing—Review & Editing
Holly Dabelko-Schoeny: Conceptualization; Data curation; Writing—Review & Editing
Marisa Sheldon: Conceptualization; Data curation; Writing—Review & Editing
Allison Heemer: Conceptualization; Writing Original Draft; Writing—Review & Editing

et al., 2021). Health limitations, particularly those associated with decreased mobility, also disproportionately impact older adults living alone and without a support network, as they are less physically able to seek out food resources (Aday et al., 2023).

Food insecurity is a complex, systemic concern widely recognized as a social determinant of health. A relationship between FI and sociodemographic characteristics, financial and social networks, healthcare and food access, and community-based resources has been established in previous literature (Pooler et al., 2018; Sen et al., 2025). People living in food-insecure households may also have limited dietary variability and less nutritionally dense diets (Rabbitt et al., 2024).

Our study examines sociodemographic correlates of FI among older adults (ages 50–95 years) across eight counties in central Ohio to inform the development of a typology of older adults at risk of FI in the region. By specifically examining sociodemographic characteristics such as income, geographic region of residence, and education level, we can determine whether there is a relationship between each characteristic and food security. Sociodemographic characteristics can then be incorporated into a typology to inform risk assessment. Geographic region is an especially important consideration when attempting to better understand FI for two reasons. First, food accessibility, socioeconomic status, and awareness and availability of assistance programs (e.g., SNAP), varies by region. Second, by identifying correlates within a unique region, public health practitioners and interventionists are better prepared to develop tailored approaches to screen for and help mitigate FI risk. These correlates, and eventually a typology, have significant implications for prompt screening of FI risk while also encouraging connection to social protection programs at the community level. We posed two research questions to better understand characteristics associated with very low, low, and high food security among older adults. The first examines the difference in food security status across several sociodemographic variables.

> RQ1: Does the food security among older adults in central Ohio differ (a) by gender identity, (b) age, (c) race and ethnicity, (d) marital status, (e) sexual orientation, (f) income, (g) education level, (h) employment status, (i) region of residence, (j) immigrant status, or (k) veteran status?

The second research question delves deeper by exploring the association between these sociodemographic variables and food security status.

> RQ2: Is food security status related to geographic region of residence, age, marital status, employment status, education level, and housing tenure (rent versus own) among older adults in central Ohio?

Applied Research Methods

Data for the study came from the 2021 Central Ohio Regional Assessment on Aging (CORAA). This assessment was conducted by the Age-Friendly Innovation Center, College of Social Work, the Ohio State University, in collaboration with the Central Ohio Area Agency on Aging and the Franklin County Office on Aging. The CORAA survey, conducted every five years, aims to understand social services and provide insight on key questions of older adult safety, health, and well-being in the region. The assessment surveyed older adults from the eight-county region of central Ohio using a stratified random sample across counties, resulting in regionally representative data. The sample was drawn from residential addresses most likely to have occupants over 50 years old. Participants were mailed a paper copy of the survey and asked to complete it and return via a prepaid envelope. Study protocol was approved by the Institutional Review Board (IRB) at the Ohio State University. Prospective participants were given an informed consent form to review and were provided a phone number they could call to ask questions before data collection began. By completing the survey, participants indicated their consent to participate. For the purposes of the paper, we utilized the term "older adult" to refer to all adults aged 50 years and older. While Dewey et al. (2025) classified senior individuals as those aged 60 and older, we have updated this term for our research based on recommendations for age-inclusive language (Trucil et al., 2020; Van Vleck, 2022). The

ETC Institute, a survey research firm, administered the survey via mail, with a 15% response rate. Individuals were eligible to participate if they met the following criteria: a resident of one of the eight counties, aged 50 years and above, and English-speaking. Geographic region of residence was classified according to the U.S. Census Bureau definitions of urban and rural. Urban regions are classified as having a population of 50,000 or greater, while rural regions are classified as having a population less than 2,500 (Ratcliffe et al., 2016). "Partially rural" is a term used by the Ohio Department of Aging and accounts for regions that have both urban and rural characteristics. Of the eight counties included in our study, three were urban, four were partially rural, and one was rural, as defined by the Ohio Department of Health (2020). Our sample is reflective of the following state and national characteristics: proportion of the population identifying as female, proportion of individuals aged 65 years and above, annual household income, proportion of individuals living in poverty, and number and proportion of employed individuals. See Table 1 for a comparison of key demographic data from our sample with state and national trends.

The survey data, stratified by county, were weighted to accurately reflect the region's population distribution. The final sample included 1,417 older adults. While analyses to address both RQs utilized a sample of 1,417, missing demographic data resulted in a sample size of 1,371, as reported in the appendix (Table A).

Variables

While there are notable variations in the definition of food security status and corresponding classifications, we used the definitions from the U.S. Department of Agriculture, Economic Research Service (USDA ERS, 2025): very low food security, low food security, and high food security. Food security was measured via a 1-item question, *"Over the last year, how often were you worried about not having enough food to eat?"* This single-item question was chosen because it reflects a feasible, convenient means of screening for FI, similar to the Hunger Vital Sign (HVS) tool (Hager et al., 2010). Given that our survey's purpose was to identify pressing needs of the aging demographic in this region, a single-item screener question was deemed sufficient to identify food security status so further probing could occur. Further, use of a single-item screener has been validated in the literature when compared to the USDA Household Food Security Survey Module Short-Form (HFSSM-SF; Jarvis et al., 2025). The USDA HFSSM-SF is considered the

Table 1. Comparison of Key Demographic Data from Our Sample with State and National Trends

	Central Ohio				
Characteristic	Urban	Partially Rural	Rural	Ohio	U.S.
Population	583,055	86,801	28,782	11,883,304	340,110,988
Sex (% female)	50.5	48.6	50.9	50.7	50.5
Individuals aged 65 and above (%)	16.0	16.3	18.8	19.1	18.0
Persons per household	2.6	2.6	2.5	2.4	2.5
Household income (US$)	$94,972	$88,183	$60,047	$69,680	$78,538
Poverty (%)	9.9	8.7	14.4	12.7	10.6
Number of persons employed (% of population)	289,123 (50)	25,751 (30)	9,980 (35)	5,081,279 (43)	139,831,742 (41)
High school graduation or higher (%)	93.8	91.6	85.8	91.6	89.4
Bachelor's degree (%)	43.1	28.7	13.8	30.9	35.0
Disability status *(%)*	8.5	9.5	14	10.2	9.1

gold standard measure of food security status. Response options for our 1-item measure included always, frequently, sometimes, rarely, and never. Responses of *always* and *frequently* were coded as very low food security, while responses of *sometimes* were coded as low food security. Responses of *rarely* and *never* were coded as high food security. While response options deviated from the gold standard six-item HFSSM-SF measure, we used the same terminology to classify food security status. The USDA ERS (2026) has defined very low food security as "reports of multiple indications of disrupted eating patterns and reduced food intake" (para. 5). Low food security is defined as "reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake" (para. 4). High food security is defined as either "no reported indication of food-access problems or limitations" (para. 2) or "one or two reported indications—typically of anxiety over food sufficiency or shortage of food in the house. There is little or no indication of changes in diets or food intake" (para. 3).

Sociodemographic variables included gender identity (man, woman, trans man or trans woman, nonbinary, and other); race and ethnicity (Asian/Pacific Islander, Black/African American, Native American, white/Caucasian, Hispanic/Latino, prefer not to answer, and other); marital status (single, married, divorced, or widowed); education level (high school diploma or GED, some college but no degree, associate's degree, bachelor's degree, and graduate or professional degree); and sexual orientation (heterosexual, gay, lesbian, bisexual, other, and prefer not to answer).

Participants also selected the county where they resided, provided the year they were born, and responded to dichotomous questions about their immigration and veteran status. Participants selected from various types of employment status (employed full-time, employed part-time, self-employed, unemployed but seeking work, enrolled in a work training program, retired and not seeking work, and disabled and unable to work). Housing tenure was measured by asking participants whether they owned or rented their home and if they had a mortgage.

Household income was measured by the question, *"What was your household income last year?"* Response options included under US$10,000; US$10,000–24,999; US$25,000–39,999; US$40,000–59,999; US$60,000–74,999; US$75,000–99,999; US$100,000 or more; and prefer not to answer.

Data Analysis

To address RQ1, a one-way analysis of variance (ANOVA) was conducted to compare differences in food security status across sociodemographic variables. Bonferroni post-hoc tests were conducted to determine which specific sociodemographic variables differed significantly by food security status. To address RQ2, Pearson product-moment correlation coefficients were computed to assess the relationship between food security status and sociodemographic variables, including socioeconomic status (education, geographic region of residence, and income), age, marital status, gender identity, and housing tenure (rent versus own). Moreover, chi-square tests were utilized to determine differences in food security status by sociodemographic variables. SPSS version 29.0.1.0 was used to perform all analyses.

Results

The purpose of this study was to identify sociodemographic correlates of food security status among older adults in central Ohio to inform future development of a typology of FI risk. Results from RQ1 outline how food security status *differs* by sociodemographic factors, including urban versus rural county of residence, age, gender identity, race and ethnicity, immigration status, veteran status, marital status, employment status, and education level. Results from RQ2 examine whether food security status is *related* to socioeconomic status, other sociodemographic factors mentioned above, and housing tenure and whether those relationships *differ* by food security status.

Participant Demographics

Most participants in the sample (N = 1,417) were white (83.6%), English-speaking (96.9%), and married (63.6%). Further, most participants identified as women (56.3%), identified as heterosexual (97.3%), and were retired and not seeking work

(53.1%) at the time of data collection. Just under 97% of participants had complete data for all variables of interest (N = 1,371). Of the entire sample, 7% were food insecure (5% were low food secure and 2% were very low food secure). Ninety-three percent of participants were highly food secure. According to the 1-item measure, mean food security among the sample was 4.7 ($SD \pm 0.7$) on a 5-point scale, indicating that participants trended toward being food secure.

Very low food security

Of participants experiencing very low food security, common characteristics included identifying as a woman (66.2%), 60–64 years of age (25.9%) followed closely by 50–59 years of age and 65–69 years of age (each 22.2%) and 70–74 years of age (18.5%), identifying as white (66.7%), divorced (35.7%), followed closely by widowed (32.1%), identifying as heterosexual (100%), earning an annual household income under US$10,000 (45.8%) followed closely by earning an annual household income between US$10,000 and $24,999 (37.5%), having taken some college courses but not earning a degree (28.6%), followed closely by having a high school diploma or general equivalency diploma (GED; 25%), retired and not seeking work or disabled and unable to work (each 40.7%), residing in an urban region (59.5%), nonveteran status (100%), and nonimmigrant status (92.9%).

From our data, it appears that characteristics such as identifying as male, age 75 years or greater, married, earning an annual household income above US$24,999, earning at least a high school diploma or GED, and part-time, full-time, self-employment, unemployment, or enrollment in a work training program are protective against very low or low food security. From a geographic standpoint, residing in a rural or partially rural region also appears to be protective.

Low food security

Of those experiencing low food security, the most common characteristics included identifying as a woman (66.2%), 65–69 years of age or 75–80 years of age (each 25%), identifying as white (80.6%), divorced (38.6%), and identifying as heterosexual (97.1%). Economically, low food security status was highest among participants with annual household incomes less than US$39,999 (83%), having completed some college but earned no degree (38.6%), and those who are retired and not seeking work (52.9%) or those who are disabled and unable to work (26.5%). Further, those living in an urban region also had higher rates of low food security status (82.4%). Veteran status did not appear to impact food security among the majority of participants (7.1%), while 100% of immigrants did not experience low food security. Low food security rates by age are variable, so no age range appears to be protective in this context. Similar results were found with marital status. Earning an annual household income greater than or equal to US$40,000 appears to be protective against FI.

High food security

Of those experiencing high food security, the most common characteristics included being married (60.2%), earning an annual household income greater than or equal to US$40,000, with a slight advantage for those earning a bachelor's or graduate/professional degree (26.5% and 23.2%, respectively). There are some nuances between characteristics of participants qualifying as very low and low food security status. While being retired and not seeking work was associated with increased risk of low or very low food security, the opposite was true for high food security. Rather, 53.1% of participants reporting they were retired and not seeking work were highly food secure. Similarly, while residing in an urban region was associated with very low or low food security status, this was not the case for those with high food security status (i.e., 71.6% of participants residing in an urban region were food secure compared to 23.1% residing in a partially rural region and 5.3% residing in a rural region). Interestingly, participants identifying as a man or woman had similar rates of high food security (44.1% and 55.6%, respectively), indicating region of residence alone may not be enough to include in a future risk assessment. Furthermore, food security rates varied by age, indicating, too, that this may not be the most reliable characteristic for assessing risk. Other variables, beyond what was measured here, should also be considered. See

Table A in the Appendix for a breakdown of participant sociodemographic characteristics by food security status (e.g., very low food security, low food security, and high food security).

In response to RQ2, there were some notable household demographic and regional differences in food security status (i.e., very low food security vs. low food security vs. high food security) across several variables, including geographic region of residence, age, marital status, employment status, and education level. Regionally, food security status across three of the eight participating counties was significantly different, $F(2, 1{,}385) = 4.27$, $p = .014$. Specifically, food security status was higher in one urban county ($M = 4.5$, $SD \pm 0.9$) but lowest in another ($M = 4.7$, $SD \pm 0.6$).

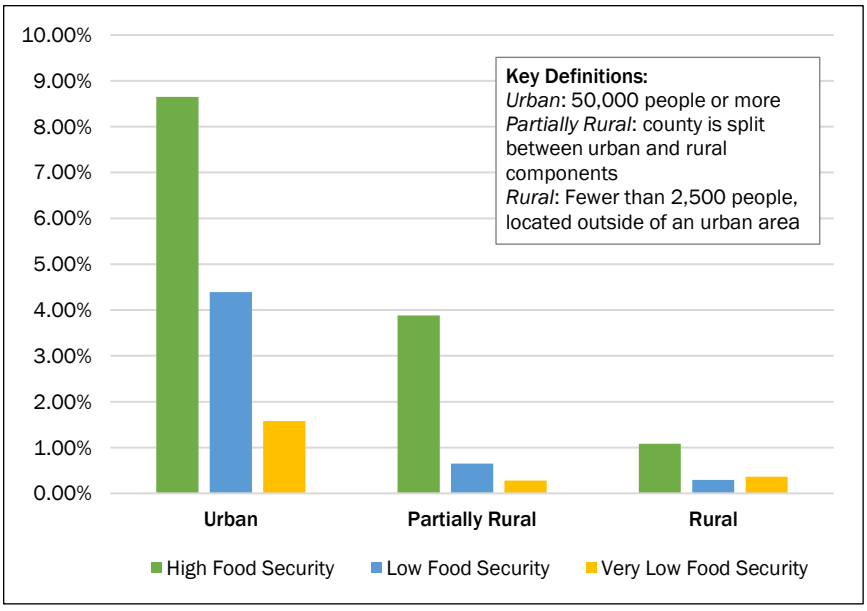
Differences between urban and rural counties were statistically significant, with older adults in one rural county ($M = 4.7$, $SD \pm 0.7$) experiencing higher food security status than those in two of the three urban counties. Our data revealed that, to an extent, older adults residing in urban counties experienced either very low or low food security relative to those residing in partially rural and rural regions.

For context, the urban county with the lowest food security status is home to the state capital and largest city. The population is 1,323,807, with 13.5% aged 65 years and older and with a median household income of US$73,795. On the contrary, the urban county with the highest food security status has a population of 214,124, with 15.5% aged 65 years and older, and a median household income of US$130,088. The third urban county has a population of 184,898, with 18.2% aged 65 and over and with a median household income of US$81,033. On average, partially rural counties have a population of 86,793 (ranging from 62,158 to 167,762), with 16.3% aged 65 and over (range 13.6–17.4%), and a median household income of US$88,183 (range US$72,927–109,506). The rural county in our sample has a population of 158,921, with 16.9% of the population aged 65 years and older, and a median household income of US$87,069. All data were retrieved from the July 1, 2024, U.S. Census Bureau Population Estimates (U.S. Census Bureau, 2024). Figure 1 provides a geographic breakdown of food security status, revealing that the urban counties had varying degrees, with some high and some low compared to the other counties.

Food security status varied by age, $F(5, 1{,}326) = 2.59$, $p = .024$. Very low food security was highest among those aged 60 to 64 years who were nearing retirement ($M = 4.6$, $SD \pm 0.8$), while older adults aged 80 years and above who had been retired for some time experienced higher food security ($M = 4.9$, $SD \pm 0.5$). Figure 2 presents the distribution of food security status across age groups, showing that high food security increases with age, to an extent. This appears to be true up until age 74. At age 75 and above, individuals trended toward being less food secure. On the other hand, individuals near or at retirement (ages 50–69) appear to be at increased risk of very low food security.

Marital status appeared to be protective against very low or low food security in

Figure 1. Region and Food Security Status



our sample, F(3, 1,347) = 41.65, p = <.001. Divorced (M = 4.4, SD ± 0.9), single (M = 4.5, SD ± 0.9), and widowed (M = 4.6, SD ± 0.8) participants experienced very low and low food security. Married individuals (M = 4.9, SD ± 0.4) were significantly more food secure than single persons, F(3, 1,347) = 41.65, p = <.001. Figure 3 illustrates differences in food security status by marital status, indicating that married individuals may be protected against very low and low food security to an extent, whereas divorced individuals and those living in single-person households experienced very low and low food security to greater extents.

Participants with less stable employment or income consistently demonstrated very low and low food security status, F(12, 1,375) = 14.39, p = <.001. Individuals with disabilities who were unable to work experienced the very low food security status (M = 3.9, SD ± 1.3), followed by retired individuals not seeking work (M = 4.3, SD ± 1.1). Those enrolled in a work training program (M = 5.0, SD ± 0.0), employed part-time (M = 4.9, SD ± 0.3), or employed full-time (M = 4.8, SD ± 0.5), experienced higher food security status.

Figure 2. Age and Food Security Status

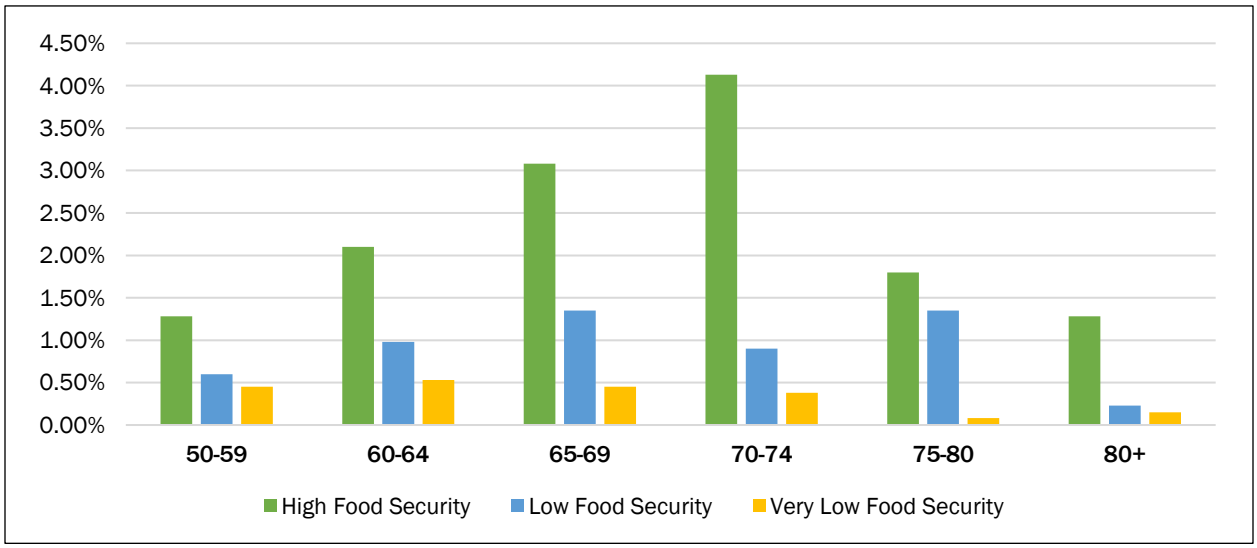


Figure 3. Marital Status and Food Security Status

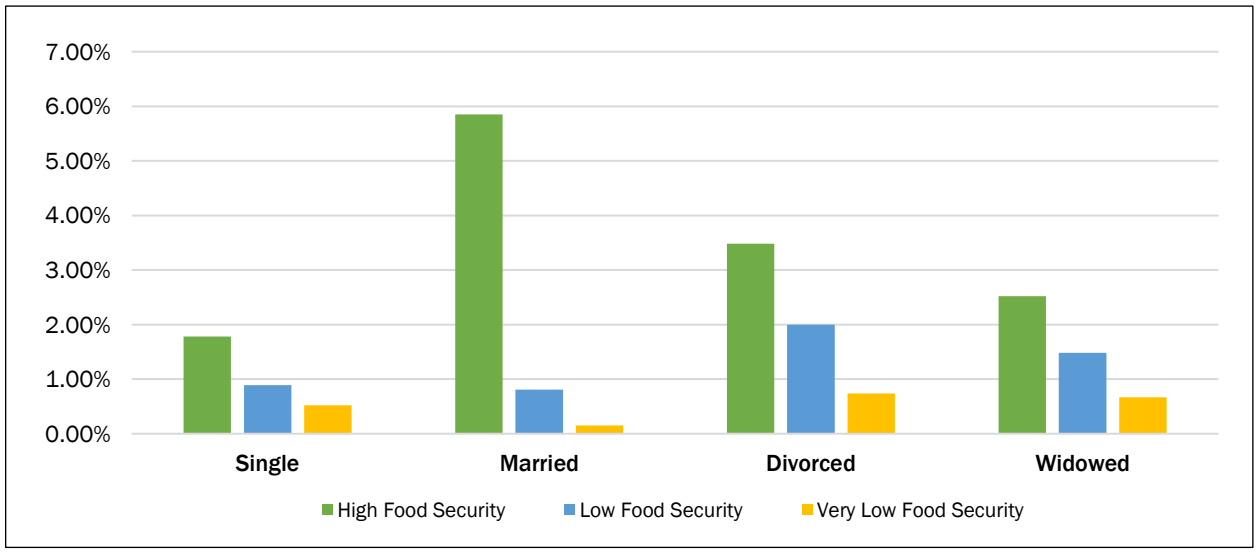


Figure 4 relates employment status to food security status, with employed individuals exhibiting the highest food security.

Furthermore, while education level also significantly influenced food security status, $F(5, 1{,}349) = 8.5$, $p = <.001$, the mean differences, according to our measure, were negligible, as explained below and in Table 2. Those with some college but no degree ($M = 4.5$, $SD \pm 0.8$), a high school diploma or GED ($M = 4.6$, $SD \pm 0.8$), an associate's degree ($M = 4.7$, $SD \pm 0.7$), and no high school diploma or GED ($M = 4.7$, $SD \pm 0.8$) had very low or low food security in our sample. On the other hand, participants with a bachelor's ($M = 4.8$, $SD \pm 0.5$) or graduate or professional degree ($M = 4.8$, $SD \pm 0.5$) were highly food secure. While differences in food security were only statistically significant for those with a bachelor's and graduate or professional degree, findings indicate that, to an extent, education may protect food security. Refer to Table 2 for means and standard deviations of food security status by education level.

Table 2. Mean Food Security Status by Education Level

Education Level	Mean [a]	Standard Deviation
Graduate or professional degree	4.8	0.5
Bachelor's degree	4.8	0.5
Associate's degree	4.7	0.7
Some college, no degree	4.5	0.8
High school diploma or GED	4.6	0.8
No high school diploma	4.7	0.8

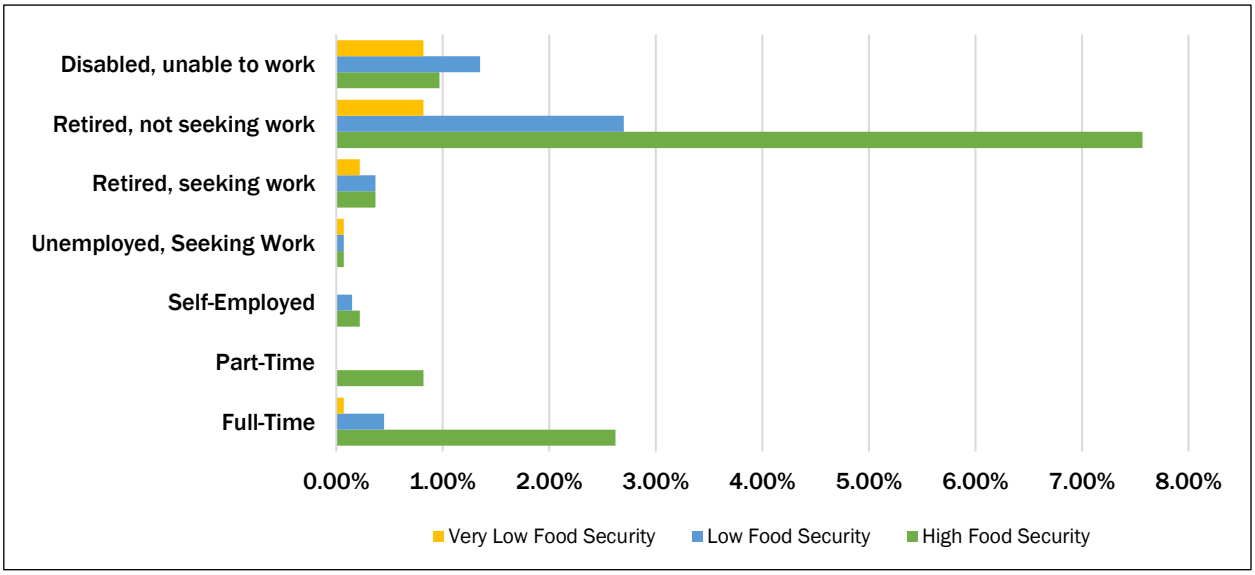
[a] FI risk was rated on a 5-point Likert scale with 1 = *very low food security* and 5 = *high food security*.

As shown in Figure 5, food security status was associated with more formal education resulting in a degree; however, some formal education does not appear to be associated with food security status.

Immigration status or veteran status do not appear to influence food security status. However, our sample is likely not diverse enough to capture these nuances, as was the case with race and ethnicity and sexual orientation.

In response to RQ2, there was a weak positive correlation between household income and food security status, $r(1{,}115) = .36$, $p = <.001$. Participants with lower household income experienced very low or low food security. Chi-square analyses were statistically significant, X^2 $(1, N = 24) = 192.23$, $p < .001$, revealing those earning under US$10,000 annually and those earning between US$10,000 and US$24,999 annually experienced very low food security (45.8% and 37.5%, respectively).

Figure 4. Employment Status and Food Security Status



Correlations between age, $r(1,331) = .07$, $p = .008$, education level, $r(1,354) = .15$, $p = <.001$, marital status, $r(1,350) = -.12$, $p = <.001$, housing tenure (rent versus own), $r(1,355) = -.14$, $p = <.001$, and food security status were statistically significant, but negligible. Correlation between gender identity, $r(1,371) = -.05$, $p = .060$, sexual orientation, $r(1,330) = .01$, $p = .642$, and food security status was not statistically significant.

Discussion

With this study, we sought to identify key correlates of food security status among older adults in central Ohio using a regional sample. Findings suggest some characteristics that may be common among individuals experiencing very low or low food security. This work serves as the first step in an attempt to recognize very low or low food secure individuals early so they can be enrolled in food assistance programs. We discuss the implications of these findings next.

Toward a Typology of the Food-Insecure Older Adult

We found very low and low food security status among individuals (a) identifying as a woman, (b) age 74 years and younger, (c) divorced, widowed, or single, (d) earning an annual household income at or below US$39,999, (e) those with either some college but no degree or those with a high school diploma or GED, (f) those who were either retired but not seeking work or disabled and unable to work, and (g) living in an urban region. See Figure 6 for proposed characteristics to be included in future development of a typology to inform screening for very low and low food security status.

Higher education levels, such as earning a bachelor's degree or a graduate or professional degree, appeared protective against very low and low food security status, consistent with prior literature. National trends suggest very low and low food security status is higher in rural areas, but our findings align with Gundersen et al. (2017)'s observation that people in urban-adjacent areas experience very low and low food security to a larger extent. While very low and low food security status generally declines with age, there are several reasons why food security status may have been lower among the 50–74 age group in our sample. Many older adults are not aware of available aging services or are unaware of the eligibility criteria (Bolkan et al., 2022; Denton et al., 2008). Of concern, many chronic diseases manifest and are diagnosed in this age range, contributing to food security status. For example, researchers found the mean age of chronic disease onset to be 62 years in their longitudinal analysis (Stacherl & Sauzet, 2024). From a financial lens, individuals age 64

Figure 5. Education Level and Food Security Status

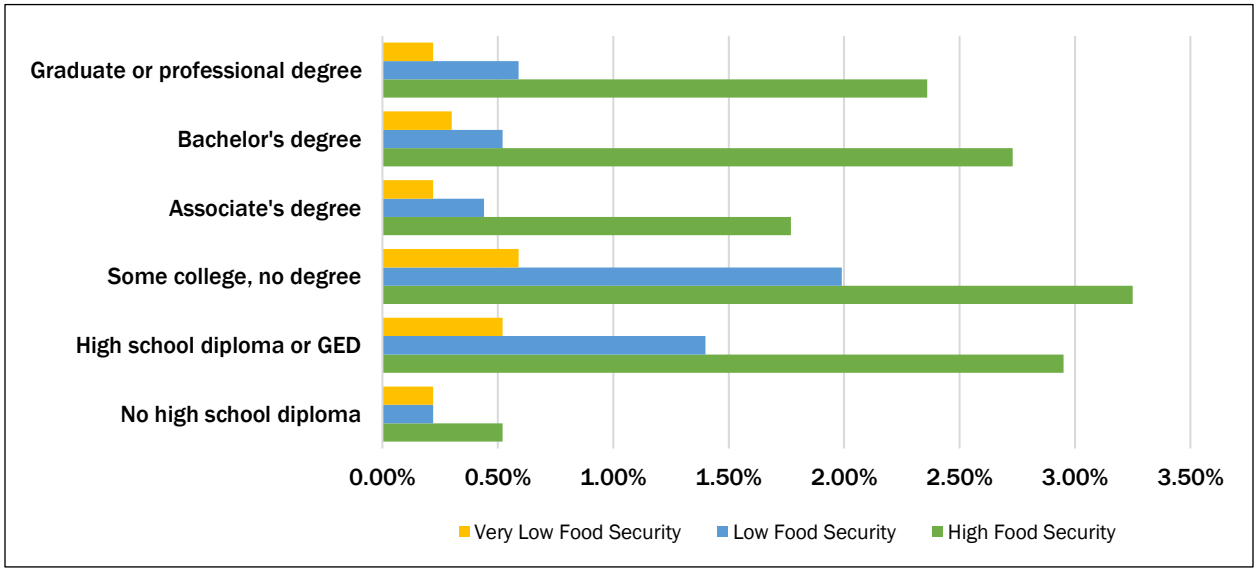
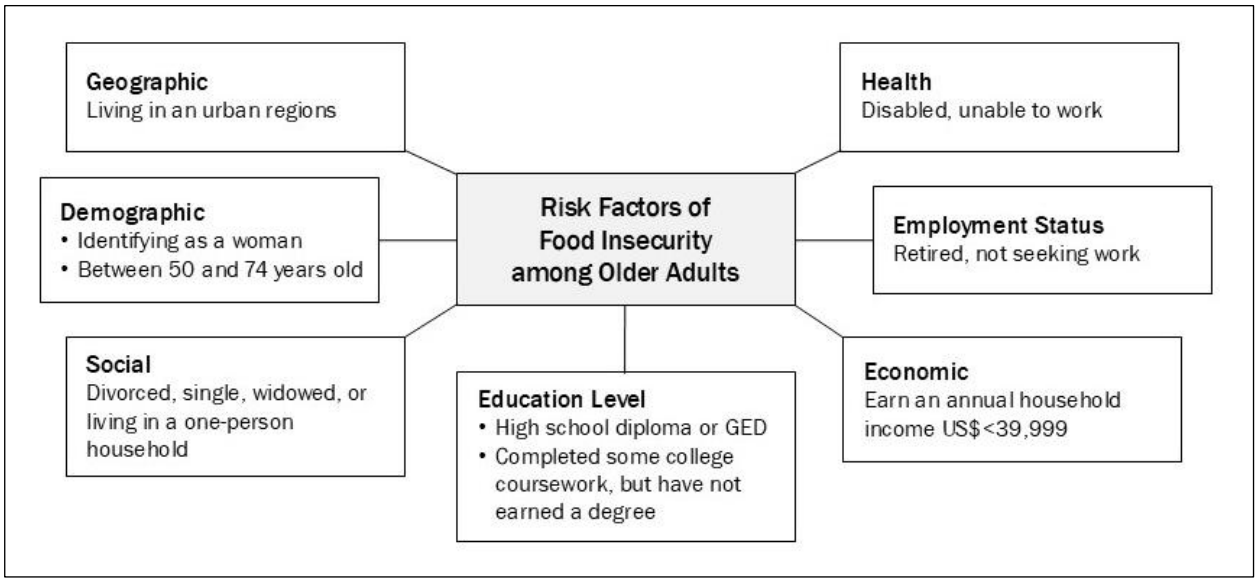


Figure 6. Factors Associated with Food Security Status Among Older Adults



years and under often face unique challenges as many are preparing for retirement (Brown et al., 2019). Factors such as increased medical expenses, debt, and lower investment returns highlight the need for targeted financial literacy and retirement-planning interventions. Likewise, living in a single-person household may impact food security status due to economic and social factors (Burris et al., 2021; Tamborini, 2007). These challenges create a pressing need for additional policy support to reduce healthcare expenditures and optimize return on investment, all of which could benefit older adults as they enter retirement.

Disabilities significantly contribute to food security status through functional limitations, increased healthcare costs, and restricted food access (Jones, n.d.; Kim et al., 2009). Very low or low food security status can impede mobility, creating a vicious cycle of poor health and diminished independence (Bishop & Wang, 2018). Regional public health interventions must therefore address multiple intersecting factors to mitigate the compounded effects of very low or low food security among older adults and individuals with disability, including access to affordable transportation (Dabelko-Schoeny et al., 2021).

Federal and state-level nutrition incentive programs can help older adults optimize their limited income to access healthy, affordable food. The Gus Schumacher Nutrition Incentive Program (GusNIP-NI) and Produce Prescription Programs (GusNIP-PPR) provide funding for programs that incentivize the purchase of fresh produce for eligible households to improve dietary intake and food security status, while also reducing healthcare needs and costs (USDA National Institute of Food and Agriculture, 2025). Additional programs like Produce Perks Midwest can help older adults with SNAP benefits stretch food dollars by doubling the value of SNAP at farmers markets and food retailers (Produce Perks, 2025). The USDA's SFMNP, administered by the Ohio Department of Aging, also provides low-income older adults with financial resources to purchase food through roadside stands, community supported agriculture (CSA) programs, and farmers markets (Pence, 2022). These programs help provide support for both producers and consumers, while contributing to improved local economies, thereby supporting efforts to address very low and low food security among older adults at a macro level (Bolen & Wolkomir, 2020). With the recent passage of the federal One, Big, Beautiful Bill Act, the cost of SNAP benefits will be shifted to states, while administrative costs will be transferred to counties (National Association of Counties, 2025). This shift has noticeable impact, as the Congressional Budget Office estimates that these administrative

changes will reduce SNAP funding by $187 billion, or by about 20% through 2034 (Center on Budget and Policy Priorities, 2025). By restricting the funding and accessibility for federal and state-level nutrition incentive programs, older adults in particular will face additional challenges that prevent them from maximizing their limited income to access healthy, affordable food. In addition, the cessation of the SNAP-Ed program, designed to educate individuals with limited resources on healthy food options that could be purchased and prepared on a fixed income, limits opportunities for nutrition education among vulnerable populations. Since its inception in 1977 with the Food Stamp Act, SNAP-Ed has decreased very low and low food security rates. The program has demonstrated a direct impact on dietary intake and diet quality, including increased fruit and vegetable intake and decreased intake of fast foods (Adedokun et al., 2021; Bhargava et al., 2024; Molitor et al., 2015; Rivera et al., 2018, 2019; USDA FNS, n.d.).

Limitations

This study is not without limitations. Notably, only 2% of our sample experienced very low food security, limiting the number of food-insecure individuals across sociodemographic characteristics. Also, we used a single-item measure of food security status. Other measures used in the literature range from 4 to 18 items ($M = 10.2$) according to Marques and colleagues (2014). These scales include the Modified Community Childhood Hunger Identification Project (CCHIP; Weinreb et al., 2002), Household Food Insecurity Access Scale (HFIAS; Swindale & Bilinsky, 2006), Food Insecurity by Elders (FIE; Wolfe et al., 2003), Core Food Security Measurement/Household Food Security Survey Module (CFSM/HFSSM; Bickel et al., 2000), and HFSSM-6SF and its modified version (Blumberg et al., 1999; Carmichael et al., 2007). Other scales include Tool to Assess Past Food Insecurity (Kuyper et al., 2006), Food Insecurity Questions of the National Health and Nutrition Examination Survey (NHANES III; Briefel & Woteki, 1992), Modified Food Insecurity Questions of NHANES III (Chávez et al., 2007), Radimer/Cornell Scale (R/CS; Radimer et al., 1990), Modified Radimer/Cornell Scale (R/CSm_a&d; Gollub & Weddle, 2004; Kendall et al., 1995), and Self-Administered Food Security Survey Module for Children Aged 12 and Older (SAFSSM; Connell et al., 2004). Use of a single-item measure that is based on perception of worry related to food access can underestimate actual food security status (Keenan et al., 2001; McKechnie et al., 2018; Nolan et al., 2006). Given these limitations, future work is necessary to go beyond screening to capture actual food security status across a number of dimensions among this demographic.

Our sample represents a small subset of older adults in central Ohio and is therefore not representative of state or national-level food security status among older adults. Likewise, our sample was relatively homogenous regarding race and ethnicity (81% of participants identified as white), sexual orientation (100% of participants identified as heterosexual), immigrant status (92.9% of participants reported non-immigrant status), and veteran status (100% of participants reported they were not a veteran). This limits generalizability of our findings to racial and ethnic minority groups, the LGBTQIA+ community, immigrants, and veterans. Likewise, there was a higher response rate among those living in more urban, higher-income counties. As a result, some of the most vulnerable older adults (those who are cognitively impaired, or those living in institutionalized settings) may not have been included in our sample, thus skewing the results and how reflective they are of the population of older adults in central Ohio. The cross-sectional nature of the data limits our ability to infer factors that predict or cause very low or low food security status (Goldberg & Mawn, 2015; Salazar et al., 2006).

Lastly, we cannot rule out potential self-report bias in survey responses, meaning food security status may be misrepresented among some sociodemographic groups. For example, other studies have found that middle-aged individuals aged 35–64 are more likely to report very low or low food security status when compared with other age groups (for example, Walker et al., 2021). As a result of these limitations, primarily the regional nature of these data and the use of a single-item measure, findings should be interpreted within this context.

Conclusions

These findings can, and should, raise public awareness about food security status as experienced by older adults. There are many steps that federal, state, and local aging services, in addition to nonprofits and other public health programs, can take, collectively, to increase the food security status of older adults and help make nutritious foods accessible for all.

Practical Implications

The proportion of older adults experiencing very low or low food security has continued to climb for several consecutive years following the end of additional aid during the COVID-19 pandemic and is predicted to continue increasing with the 2025 federal One, Big, Beautiful Bill Act and cessation of SNAP-Ed (Center on Budget and Policy Priorities, 2025). One in 10, or 12.6 million, adults aged 50 years and older in the U.S. experienced some degree of very low or low food security in 2023 (Dean & Figueiredo, 2025). We propose three strategies to increase food security in our region and across the greater Midwest.

Expand awareness of available resources via care navigation support

Many older adults do not know the services they qualify for and that are available to them (Denton et al., 2008). It is essential for practitioners working with older adults, especially those who are entering retirement or are approaching the eligibility age (e.g., 65 for Medicare), to provide education on eligibility and available programs in their respective region. Practitioners should help with program enrollment. Needs vary by region due to a number of factors, including food accessibility, availability of aid programs (e.g., SFMNP), and socioeconomic status. County or region-targeted education on food insecurity and associated risk factors is warranted. Financial and informational strategies should be developed for those who are at greatest risk. From a financial perspective, individuals entering retirement age (55 to 65) or going through a separation or divorce later in life could benefit from targeted financial management education that supports access to a healthy, well-balanced diet on a fixed income. One concrete example linking finances to food access and nutrition would be nutrition education on planning meals and budgeting for a single-person household. We suggest financial preparation education for retirement planning, extending beyond just 10 years prior. Financial literacy early in one's career is necessary to make wise financial decisions across the life course and secure an investment that can support retirement and unanticipated life events.

From an informational standpoint, care navigation is essential. Briefly, care navigation is a systematic means of coordinating care strategies with needed services and supports. It is often individually tailored in a case management setting by a trained professional (Pang et al., 2025). A care navigator, such as a social worker, community health worker, or senior center representative, could provide such information and assist with enrollment. New federal legislation, such as the One, Big, Beautiful Bill Act, has changed the application and recertification processes for SNAP. To address these changes, care navigators and SNAP employees can be available to help eligible individuals through the process with ease and confidence. Furthermore, care navigators can be trained to guide participants in selecting Medicare plans that specifically support meal services, limit out-of-pocket expenses, and reduce financial hardship (Park & Berkowitz, 2024).

Strengthen screening and identification of very low and low food security status

A typology or categorization of individuals experiencing very low or low food security, or those most likely to, should be tested and validated among a representative sample of older adults. When considering individuals that fit this profile, community health workers, case managers, and healthcare professionals could ask a simple screening question such as *"Have there been times in the past 12 months when you did not have enough money to buy food you or your family needed?"* (Food Research and Action Center, 2025). An evidence-based risk assessment would enable these individuals to a) screen older adults for risk and, if risk is identified, b) pair them with necessary resources to mitigate that risk (Goldberg & Mawn, 2015). For example, community-based organizations could be educated

on the risk factors we identified (i.e., identifying as a woman, age 74 years or younger, divorced, widowed, or single, earning an annual household income at or below US$39,999, those with either some college but no degree or those with a high school diploma or GED, those who were either retired but not seeking work or disabled and unable to work, and living in an urban region). From there, individuals matching one or more of these risk factors could then be screened using the one-item measure we suggest. If the individual scores at risk, trained professionals could then administer a more detailed assessment to inform necessary referrals for additional services and aid programs. Such screenings or assessments should be mandated as part of intake paperwork for utilization of healthcare services or enrollment in community-based assistance programs, with follow-up every six months to catch needs early.

Protect and prioritize existing social safety net programs

At present, there are three federal programs that should be bolstered: social security benefits, federal nutrition programs (e.g., SNAP, SFMNP, Produce Prescriptions), and the Older Americans Act (OAA). Suggestions for each are discussed below. Social security benefits should be protected and prioritized, even among early entitlement age, as research has shown this program can decrease the prevalence of FI, even during periods of economic turmoil (e.g., the recession, COVID-19; Singleton, 2023). If these protective services go away, then the U.S. will face increased healthcare expenditures for the physical and mental health conditions that are established consequences of FI in addition to poorer health outcomes, decreased lifespan, and quality of life.

From a policy standpoint, while the Agriculture Improvement Act of 2018 (commonly referred to as the farm bill) was composed of several place-based food policy councils working to address community needs, the bill expired on September 30, 2025. Continued advocacy and sup-port of this bill is essential in improving food security among older adults. Equally as important are programs such as SNAP, SNAP-Ed, SFMNP, and Produce Prescription, which have been shown to be effective at mitigating FI among older adults. Such programs should also be prioritized in advocacy and policy work (Aljahdali et al., 2024; Hager et al., 2023; O'Dare Wilson, 2017; Schanzenbach, 2023). Research has shown that older adults underutilize SNAP benefits (Berkowitz, et al., 2017; Berkowitz et al., 2021; Giordono et al., 2022). A targeted campaign to increase utilization of such social protection programs should therefore be prioritized.

In addition to the farm bill, advocacy for the reauthorization of the OAA, calling for a redistribution of funding to more congregate and home-delivered meal programs and nutrition education is warranted. The reauthorization should mandate that OAA programs have a food security navigator, or someone (a case manager, for example) who is trained to assess and connect older adults with food-related resources. At the federal level, the OAA Reauthorization that passed in the Senate included enhanced nutrition services to further support the needs of this population. At the time of writing, this reauthorization is being considered in the House (Freed et al., 2025; USAging, 2025). Advocacy and support for OAA reauthorization is timely and vital for influencing policymakers during this legislative session.

Leverage existing state and local infrastructure

To give some context about the geographic region where this data was collected, several counties in central Ohio have a property tax levy in place that fund services for older adults specifically (The Center for Community Solutions, 2018). While services vary from county to county, examples of programming include nutrition, transportation, home modification, case management, caregiver support, disease management, and health promotion (Freed et al., 2025). In addition to advocacy for legislation at the federal level, state plans are an excellent way to specify goals related to food security status. From a financial perspective, local coalitions could push for county levies to support senior centers and other service infrastructure, as these have great potential to promote high food security among the clients they serve. State units on aging are required to formulate state plans every five years. Incorporating one or more goals targeting food security has

merit and can contribute to actionable change by mobilizing units like the Area Agencies on Aging, which can implement much-needed programming. There is value in this programming being prioritized by and within the aging network. By focusing on regional relationships outside the traditional networks, each state could utilize and consolidate resources that advocate for food and nutrition support.

Directions for Future Research

By studying the social determinants of health that directly impact FI risk (e.g., sociodemographic characteristics, housing, food access), we can better develop a tailored solution that combines education, advocacy, and systems-level change. By addressing the gap in FI literature among the population of older adults in the Midwest, our research suggests two strategies to consider.

Develop and implement interventions targeting financial and nutritional determinants

Financial literacy education curricula should be developed, pilot-tested, implemented, and evaluated, targeting populations at greatest risk of FI (i.e., identifying as a woman, age 74 years or younger, divorced, widowed, or single, earning an annual household income at or below US$39,999, those with either some college but no degree or those with a high school diploma or GED, those who were either retired but not seeking work or disabled and unable to work, and living in an urban region). While a financial literacy model is controversial among some disciplines, financial education may be a viable starting point. However, as the social determinants of health theory posits, there are many factors that increase risk. Rather than focusing on the individual, it is necessary to address community-level barriers to food security, such as transportation and food access, to create systems-level change. Evidence-based nutrition education, such as the curriculum provided by SNAP-Ed and the Expanded Food and Nutrition Education Program, can help at-risk individuals learn food resource management skills while navigating federal food and nutrition assistance programs. Prior research has emphasized the underutilization of programs like SNAP; warranting future research to better understand barriers to participation (Berkowitz et al., 2017; Berkowitz et al., 2021; National Council on Aging, 2025; Schanzenbach, 2023). Pre- and post-measures of food security status should be collected at multiple timepoints to determine efficacy and effectiveness. In addition, future research may collect self-reported objective measures of nutrition status (food frequency questionnaire, 24-hour recall, food diary) and biological measures of nutrition status (skin carotenoids, body composition, blood samples, etc.).

Utilize a mixed methods approach to better understand the experiences of at-risk older adults

A qualitative exploration is necessary to further contextualize findings from the perspective of those with lived experience. For example, older adults who are food insecure and qualify for services but do not use them would be an important population to reach. Findings would help public health practitioners and interventionists better understand challenges and barriers to identifying services, enabling them to devise best practices for overcoming those challenges (Goldberg & Mawn, 2015). While survey data provides documentation of issues and a profile of those who are at highest risk, qualitative data can provide a more in-depth understanding of how participants experience FI and can reveal challenges and barriers that restrict access to utilizing assistance programs. For each of these strategies, sample stratification is necessary to ensure equitable diversity across demographic variables, especially income, race and ethnicity, and sexual orientation. Targeted recruitment in areas known to be food deserts and regions with very low and low food security status among older adults is recommended. Moreover, racial and ethnic minority groups, the LGBTQIA+ community, immigrants, and veterans should be intentionally recruited in future studies. To better understand the lived experiences of these minority groups, qualitative explorations are warranted to provide nuance of their food-related experiences as older adults.

With recent changes to federal legislation, coupled with the rise in the aging demographic across the U.S., it is imperative to address FI. If left unaddressed, FI can result in increased risk of chronic disease, morbidity, and mortality, all of

which can increase healthcare expenditures and healthcare burden, which is already strained (Berkowitz et al., 2018). By centering on region-specific patterns and determinants of food security status, our study employs a targeted and context-sensitive approach that enhances our ability to identify sociodemographic characteristics to support the development of effective, locally relevant interventions. Our attempt to categorize sociodemographic characteristics to inform the development of a typology of food-insecure older adults has merit and potential to serve as a front-line screening tool by trained professionals who work with older adults regularly. Given that certain sociodemographic characteristics such as identifying as a woman, age 74 years or younger divorced, widowed, or single, earning an annual household income at or below US$39,999, those with either some college but no degree or those with a high school diploma or GED, those who were either retired but not seeking work or disabled and unable to work, and living in an urban region are all related to food security status, future intervention and policy decisions should prioritize individuals that match these characteristics. Tailored interventions, risk assessments, and referral to existing community-based services and infra-structure are cost-effective ways to address this pressing issue.



References

Aday, R. H., Wallace, J. B., Jones, S. C., Pogacsnik, A. R., Leifker, K. F., & Kibe-Pea, E. W. (2023). Understanding the experiences of food insecurity in older adult households. *Journal of Gerontological Social Work*, *66*(2), 239–262. https://doi.org/10.1080/01634372.2022.2098443

Adedokun, O. A., Plonski, P., & Aull, M. (2021). Food resource management mediates the relationship between participation in a SNAP-Ed nutrition education program and diet quality. *Journal of Nutrition Education and Behavior, 53*(5), 401–409. https://doi.org/10.1016/j.jneb.2020.09.013

Aljahdali, A. A., Na, M., & Leung, C. W. (2024). Food insecurity and health-related quality of life among a nationally representative sample of older adults: Cross-sectional analysis. *BMC Geriatrics*, *24*, Article 126. https://doi.org/10.1186/s12877-024-04716-9

Berkowitz, S. A., Palakshappa, D., Rigdon, J., Seligman, H. K., & Basu, S. (2021). Supplemental Nutrition Assistance Program participation and health care use in older adults: A cohort study. *Annals of Internal Medicine*, *174*, 1674–1682. https://doi.org/10.7326/M21-1588

Berkowitz, S. A., Seligman, H. K., Meigs, J. B., & Basu, S. (2018). Food insecurity, healthcare utilization, and high cost: A longitudinal cohort study. *The American Journal of Managed Care*, *24*(9), 399–404. https://pmc.ncbi.nlm.nih.gov/articles/PMC6426124/

Berkowitz, S. A., Seligman, H. K., Rigdon, J., Meigs, J. B., & Basu, S. (2017). Supplemental Nutrition Assistance Program (SNAP) participation and health care expenditures among low-income adults. *Journal of the American Medical Association Internal Medicine, 177*(11), Article 1642. https://doi.org/10.1001/jamainternmed.2017.4841

Bhargava, V., Lee, J. S., Cotto-Rivera, E., & Simpson, E. (2024). The impact of SNAP-Ed direct education on nutrition and physical activity outcomes before and after the COVID-19 pandemic. *Journal of Nutrition Education and Behavior*, *56*(8), Article S77. https://doi.org/10.1016/j.jneb.2024.05.174

Bickel, G., Nord, M., Price, C., Hamilton, W., & Cook, J. (2000). *Guide to measuring household food security, revised 2000*. U.S. Department of Agriculture, Food and Nutrition Service. https://www.fns.usda.gov/research/guide-measuring-household-food-security-revised-2000

Bishop, N. J., & Wang, K. (2018). Food insecurity, comorbidity, and mobility limitations among older U.S. adults: Findings from the Health and Retirement Study and Health Care and Nutrition Study. *Preventive Medicine*, *114*, 180–187. https://doi.org/10.1016/j.ypmed.2018.07.001

Blumberg, S. J., Bialostosky, K., Hamilton, W. L., & Briefel, R. R. (1999). The effectiveness of a short form of the Household Food Security Scale. *American Journal of Public Health*, *89*(8), 1231–1234. https://pubmed.ncbi.nlm.nih.gov/10432912/

Bolen, E., & Wolkomir, E. (2020, May 28). *SNAP boosts retailers and local economics*. Center on Budget and Policy Priorities. https://www.cbpp.org/sites/default/files/atoms/files/8-29-17fa.pdf

Bolkan, C., Weaver, R. H., Kim, E., & Mandal, B. (2022). Regional planning for aging in place: Older adults' perceptions of needs and awareness of aging services in Washington state. *Journal of Elder Policy*, *2*(1), 161–192. https://doi.org/10.18278/jep.2.1.7

Briefel, R. R., & Woteki, C. E. (1992). Development of food insufficiency questions for the third national health and nutrition examination survey. *Journal of Nutrition Education, 24*(Suppl 1), 29S–35S. https://doi.org/10.1016/s0022-3182(12)80134-8

Brown, J., Dynan, K., & Figinski, T. (2019). The risk of financial hardship in retirement: A cohort analysis. In O. Mitchell, & A. Lusardi (Ed.), *Remaking retirement: Debt in an aging economy* (pp. 60–86). Oxford Academic.

Burris, M., Kihlstrom, L., Arce, K. S., Prendergast, K., Dobbins, J., McGrath, E., Renda, A., Shannon, E., Cordier, T., Cong, Y., & Himmelgreen, D. (2021). Food insecurity, loneliness, and social support among older adults. *Journal of Hunger & Environmental Nutrition*, *16*(1), 29–44. https://doi.org/10.1080/19320248.2019.1595253

Carmichael, S. L., Yang, W., Herring, A., Abrams, B., & Shaw, G. M. (2007). Maternal food insecurity is associated with increased risk of certain birth defects. *Journal of Nutrition, 137*(9), 2087–2092. https://pubmed.ncbi.nlm.nih.gov/17709447/

Center on Budget and Policy Priorities (2025, August 14). *By the numbers: Harmful Republican mega bill takes food assistance away from millions of people* [Policy brief]. https://www.cbpp.org/research/food-assistance/by-the-numbers-harmful-republican-megabill-takes-food-assistance-away-from.

Chávez, N., Telleen, S., & Kim, Y. O. R. (2007). Food insufficiency in urban Latino families. *Journal of Immigrant and Minority Health*, *9*(3), 197–204. https://pubmed.ncbi.nlm.nih.gov/17295051/

Connell, C. L., Nord, M., Lofton, K. L., & Yadrick, K. (2004). Food security of older children can be assessed using a standardized survey instrument. *Journal of Nutrition*, *134*(10), 2566–2572. https://pubmed.ncbi.nlm.nih.gov/15465749/

Dabelko-Schoeny, H., Maleku, A., Cao, Q., White, K., & Ozbilen, B. (2021). "We want to go, but there are no options": Exploring barriers and facilitators of transportation among diverse older adults. *Journal of Transport & Health*, *20*, Article 100994. https://doi.org/10.1016/j.jth.2020.100994

Dean, O., & Figueiredo, C. (2025, April). *Fact sheet: 1 in 10 adults ages 50 and older were food insecure in 2023*. American Association of Retired persons (AARP). https://doi.org/10.26419/ppi.00162.004

Denton, M., Ploeg, J., Tindale, J., Hutchison, B., Brazil, K., Akhtar-Danesh, N., Quinlan, M., Lillie, J., Millen Plenderleith, J., & Boos, L. (2008). Where would you turn for help? Older adults' awareness of community support services. *Canadian Journal on Aging*, *27*(4), 359–370. https://doi.org/10.3138/cja.27.4.359

Dewey, A., Hilvers, J., Dawes, S., Harris, V., Hake, M., & Engelhard, E. (2025, May). *Map the meal gap: A report of local food insecurity and food costs in the United States in 2023*. Feeding America National Organization. https://www.feedingamerica.org/research/map-the-meal-gap/overall-executive-summary

Flynn, J. (January 17, 2025). *The 10 states where older adults struggle with food insecurity*. Retirement Living: Journal of Retirement Research. https://www.retirementliving.com/senior-food-insecurity-report

Food Research and Action Center. (2025). *Farm bill.* https://frac.org/action/snap-farm-bill/road-to-the-farm-bill

Franklin County Cares. (2025). *Life expectancy.* https://www.franklincocares.org/indicators/index/view?indicatorId=8195&localeId=38

Freed, M., Cubanski, J., & Neuman, T. (2025, June 3). *What to know about the Older Americans Act and the services it provides to older adults.* https://www.kff.org/medicare/issue-brief/what-to-know-about-the-older-americans-act-and-the-services-it-provides-to-older-adults/

Giordono, L., Rothwell, D. W., Grutzmacher, S., & Edwards, M. (2022). Understanding SNAP use patterns among older adults. *Applied Economic Perspectives and Policy*, *44*(2), 609–634. https://doi.org/10.1002/aepp.13228

Goldberg, S. L., & Mawn, B. E. (2015). Predictors of food insecurity among older adults in the United States. *Public Health Nursing*, *32*(5), 397–407. https://doi.org/10.1111/phn.12173

Gollub, E. A., & Weddle, D. O. (2004). Improvements in nutritional intake and quality of life among frail homebound older adults receiving home-delivered breakfast and lunch. *Journal of the American Dietetic Association*, *104*(8), 1227–1235. https://pubmed.ncbi.nlm.nih.gov/15281039/

Gundersen, C., Dewey, A., Hake, M., Engelhard, E., & Crumbaugh, A. S. (2017). Food insecurity across the rural-urban divide: Are counties in need being reached by charitable food assistance? *The Annals of the American Academy of Political and Social Science*, *672*(1), 217–237. https://doi.org/10.1177/0002716217710172

Hager, K., Du, M., Li, Z., Mozaffarian, D., Chui, K., Shi, P., Ling, B., Cash, S. B., Folta, S. C., & Zhang, F. F. (2023). Impact of produce prescriptions on diet, food security, and cardiometabolic health outcomes: A multisite evaluation of 9 produce prescription programs in the United States. *Circulation: Cardiovascular Quality and Outcomes*, *16*(9), Article e009520. https://doi.org/10.1161/circoutcomes.122.009520

Hager, E. R., Quigg, A. M., Black, M. M., Coleman, S. M., Heeren, T., Rose-Jacobs, R., Cook, J. T., Ettinger de Cuba, S. A., Casey, P. H., Chilton, M., Cutts, D. B., Meyers, A. F., & Frank, D. A. (2010). Development and validity of a 2-item screen to identify families at risk for food insecurity. *Pediatrics*, *126*(1), e26–32. https://pubmed.ncbi.nlm.nih.gov/20595453/

Jarvis, J. E., Perez, J., Himmelgreen, D., Dumford, A. D., Conner, K., Stern, M., & DeBate, R. (2025). Test validity of a single-item food insecurity screening assessment among college students. *American Journal of Health Promotion*, *39*(3), 514–519. https://doi.org/10.1177/08901171241302001

Jones, D. (n.d.). *SNAP matters for people with disabilities*. Food Research & Action Center. https://frac.org/blog/snap-matters-people-disabilities

Keenan, D. P., Olson, C., Hersey, J. C., & Parmer, S. M. (2001). Measures of food insecurity/security. *Journal of Nutrition Education*, *33*(S1), S49–S58. https://doi.org/10.1016/s1499-4046(06)60069-9

Kendall, A., Olson, C. M., & Frongillo, E. A. (1995). Validation of the Radimer/Cornell measures of hunger and food insecurity. *Journal of Nutrition*, *125*(11), 2793-2801. https://pubmed.ncbi.nlm.nih.gov/7472659/

Kim, K., Kim, M. K., & Sin, Y.-J. (2009). Household food insecurity and its characteristics in Korea. *Health and Social Welfare*, *29*(2), 268–292. https://doi.org/10.15709/hswr.2009.29.2.268

Kuyper, E. M., Espinosa-Hall, G., Lamp, C. L., Martin, A. C., Metz, D. L., Smith, D., Townsend, M. S., & Kaiser, L. L. (2006). Development of a tool to assess past food insecurity of immigrant Latino mothers. *Journal of Nutrition Education and Behavior, 38,* 378-382. https://pubmed.ncbi.nlm.nih.gov/17142195/

Leung, C. W., & Wolfson, J. A. (2021). Food insecurity among older adults: 10-year national trends and associations with diet quality. *Journal of the American Geriatrics Society, 69*(4), 964–971. https://doi.org/10.1111/jgs.16971

Marques, E. S., Reichenheim, M. E., de Moraes, C. L., Antunes, M. M. L., & Salles-Costa, R. (2014). Household food security: A systematic review of the measuring instruments used in epidemiological studies. *Public Health Nutrition*, *18*(5), 877–892. https://doi.org/10.1017/s1368980014001050

McKechnie, R., Turrell, G., Fiskes, K., & Gallegos, D. (2018). Single-item measure of food insecurity used in the National Health Survey may underestimate prevalence in Australia. *Australian and New Zealand Journal of Public Health*, *42*(4), 389–395. https://pubmed.ncbi.nlm.nih.gov/30035843/

Molitor, F., Sugerman, S., Yu, H., Biehl, M., Aydin, M., Levy, M., & Ponce, N. A. (2015). Reach of Supplemental Nutrition Assistance Program–Education (SNAP–Ed) interventions and nutrition and physical activity–related outcomes, California, 2011–2012. *Preventing Chronic Disease*, *12*(12), E33. https://pubmed.ncbi.nlm.nih.gov/25764139/

National Association of Counties. (2025, October 31). *H.R. 1 and the Supplemental Nutrition Assistance Program (SNAP): What counties should know*. https://www.naco.org/resource/one-big-beautiful-bill-act-and-supplemental-nutrition-assistance-program-snap-what

National Council on Aging. (2025, November 19). *7 facts about older adults and SNAP*. https://www.ncoa.org/article/7-facts-about-older-adults-and-snap/

Nolan, M., Rikard-Bell, G., Mohsin, M., & Williams, M. (2006). Food insecurity in three socially disadvantaged localities in Sydney, Australia. *Health Promotion Journal of Australia*, *17*(3), 247–254. https://doi.org/10.1071/he06247

O'Dare Wilson, K. (2017). Community food environments and healthy food access among older adults: A review of the evidence for the Senior Farmers' Market Nutrition Program (SFMNP). *Social Work in Health Care*, *56*(4), 227–243. https://doi.org/10.1080/00981389.2016.1265631

Ohio Food Policy Network. (2025). *Advancing Ohio's food policy*. https://ohiofpn.org/

Ohio Department of Health. (2020, December). *Ohio's rural and urban counties*. https://www.ohioruralhealth.org/ohio-rural-health-improvement-plan

Pang, R. K., Weller, C. D., Srikanth, V., Shannon, B., & Andrew, N. E. (2025). Community care navigation intervention for people who are at-risk of unplanned hospital presentations. *Cochrane Database of Systematic Reviews*, *10*, Article CD014713. https://doi.org/10.1002/14651858.CD014713.pub2

Park, S., & Berkowitz, S. A. (2024). Financial hardship among traditional Medicare and Medicare Advantage enrollees with and without food insecurity. *Journal of General Internal Medicine*, *39*(13), 2407–2414. https://doi.org/10.1007/s11606-024-08798-4

Pence, E. (2022). *Factors influencing the implementation of the Ohio Senior Farmers' Market Nutrition Program: A place-based multiple-case study* [Doctoral dissertation, Ohio State University]. OhioLINK. http://rave.ohiolink.edu/etdc/view?acc_num=osu165825188504104

Pooler, J. A., Hartline-Grafton, H., DeVore, M., Sudore, R. L., & Seligman, H. K. (2018). Food insecurity: A key social determinant of health for older adults. *Journal of the American Geriatrics Society*, *67*(3), 421–424. https://doi.org/10.1111/jgs.15736

Produce Perks. (2025). *How Produce Perks works.* https://produceperks.org/how-it-works/

Rabbitt, M. P., Reed-Jones, M., Hales, L. J., & Burke, M. P. (2024). *Household food security in the United States in 2023*. U.S. Department of Agriculture, Economic Research Service (Report No. ERR-337). https://doi.org/10.32747/2024.8583175.ers

Radimer, K. L., Olson, C. M., & Campbell, C. C. (1990). Development of indicators to assess hunger. *Journal of Nutrition*, *120*(Suppl 11), 1544–1548. https://pubmed.ncbi.nlm.nih.gov/2243303/

Ratcliffe, M., Burn, C., Holder, K., & Fields, A. (2016, December 8). *Defining rural at the U.S. Census Bureau* [American Community Survey and geography brief]. U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau. https://www.census.gov/library/publications/2016/acs/acsgeo-1.html

Reed-Jones, M. (2023, December 12). *Food insecurity in U.S. households with older adults increased in 2022.* U.S. Department of Agriculture, Economic Research Service. https://www.ers.usda.gov/data-products/charts-of-note/108066

Rivera, R. L., Dunne, J., Maulding, M. K., Wang, Q., Savaiano, D. A., Nickols-Richardson, S. M., & Eicher-Miller, H. A. (2018). Exploring the association of urban or rural county status and environmental, nutrition-and lifestyle-related resources with the efficacy of SNAP-Ed (Supplemental Nutrition Assistance Program-Education) to improve food security. *Public Health Nutrition*, *21*(5), 957–966. https://pmc.ncbi.nlm.nih.gov/articles/PMC10261059/

Rivera, R. L., Maulding, M. K., & Eicher-Miller, H. A. (2019). Effect of Supplemental Nutrition Assistance Program–Education (SNAP-Ed) on food security and dietary outcomes. *Nutrition Reviews*, *77*(12), 903–921. https://pubmed.ncbi.nlm.nih.gov/31077323/

Salazar, L. F., Crosby, R. A., & DiClemente, R. J. (2006). *Research methods in health promotion*. John Wiley & Sons.

Schanzenbach, D. W. (2023). Understanding SNAP: An overview of recent research. *Food Policy*, *114*, Article 102397. https://doi.org/10.1016/j.foodpol.2022.102397

Sen, K., Kruse, C. S., Mileski, M., & Ramamonjiarivelo, Z. (2025). Interventions to reduce social isolation and food insecurity in older adults: A systematic review. *Frontiers in Nutrition*, *12*, Article 1607057. https://doi.org/10.3389/fnut.2025.1607057

Singleton, P. (2023). The effect of social security benefits on food insecurity at the early entitlement age. *Applied Economic Perspectives and Policy*, *45*, 392–413. https://doi.org/10.1002/aepp.13312

Stacherl, B., & Sauzet, O. (2024). Chronic disease onset and wellbeing development: Longitudinal analysis and the role of healthcare access. *European Journal of Public Health*, *34*(1), 29–34. https://doi.org/10.1093/eurpub/ckad167

Swindale, A., & Bilinsky, P. (2006). Development of a universally applicable household food insecurity measurement tool: Process, current status, and outstanding issues. *Journal of Nutrition*, *136*(5), 1449S–1452S. https://pubmed.ncbi.nlm.nih.gov/16614442/

Tamborini, C. R. (2007). The never-married in old age: Projections and concerns for the near future. *Social Security Bulletin*, *67*(2), 25–40. https://pubmed.ncbi.nlm.nih.gov/18457083/

The Center for Community Solutions. (2018, February 26) *Should your address determine access to aging services? An analysis of senior tax levies in Ohio.* https://www.communitysolutions.com/resources/address-determine-access-aging-services-analysis-senior-tax-levies-ohio

Trucil, D. E., Lundebjerg, N. E., & Busso, D. S. (2020). When it comes to older adults, language matters and is changing: American Geriatrics Society update on reframing aging style changes. *Journal of the American Geriatrics Society*, *69*(1), 265–267. https://doi.org/10.1111/jgs.16848

USAging. (2025). *Older Americans Act Reauthorization 2024-2025.* https://www.usaging.org/oaa.

U. S. Census Bureau. (2024). *QuickFacts.* https://www.census.gov/quickfacts/

U.S. Department of Agriculture Economic Research Service [USDA ERS]. (May 2024). *Six-item short form of the food security survey module.* https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools

USDA ERS. (2026, March 30). *Food security in the U.S. – Definitions of food security.* https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security

USDA Food and Nutrition Service. (n.d.). *SNAP-Ed: Educating communities-promoting nutrition security.* https://snaped.fns.usda.gov/sites/default/files/documents/timeline_0.pdf

USDA National Institute of Food and Agriculture. (2026, April 17). *The Gus Schumacher Incentive Program – Produce Prescription (GusNIP-PPR).* https://www.nifa.usda.gov/gusnip-request-applications-resources-ppr

Van Vleck, M. (2022, February 28). *Age-inclusive language: Are you using it in your writing and everyday speech?* Washington University in St. Louis. https://sites.wustl.edu/centerforaging/age-inclusive-language-are-you-using-it-in-your-writing-and-everyday-speech/

Walker, R. J., Garacci, E., Dawson, A. Z., Williams, J. S., Ozieh, M., & Egede, L. E. (2021). Trends in food insecurity in the United States from 2011–2017: Disparities by age, sex, race/ethnicity, and income. *Population Health Management*, *24*(4), 496—501. https://doi.org/10.1089/pop.2020.0123

Weinreb, L., Wehler, C., Perloff, J., Scott, R., Hosmer, D., Sagor, L., & Gundersen, C. (2002). Hunger: Its impact on children's health and mental health. *Pediatrics*, *110*(4), Article e41. https://pubmed.ncbi.nlm.nih.gov/12359814/

Wolfe, W. S., Frongillo, E. A., & Valois, P. (2003). Understanding the experience of food insecurity by elders suggests ways to improve its measurement. *Journal of Nutrition, 133,* 2762–2769. https://pubmed.ncbi.nlm.nih.gov/12949362/

Appendix

Table A. Participant Characteristics by Food Security Status

	All Survey Participants		High Food Security		Low Food Security		Very Low Food Security	
Gender Identity	*n* = 1,371		*n* = 1,271		*n* = 71		*n* = 29	
	Yes	%	Yes	%	Yes	%	Yes	%
Man	596	43.5	561	44.1	24	33.8	11	37.9
Woman	772	56.3	707	55.6	47	66.2	18	66.2
Trans man or trans woman	2	0.1	2	0.2	0	0.0	0	0.0
Nonbinary	1	0.1	1	0.1	0	0.0	0	0.0
Mean Age (Years)**	*n* = 1,332		*n* = 1,233		*n* = 72		*n* = 27	
50–59	161	12.1	147	11.9	8	11.1	6	22.2
60–64	194	14.6	174	14.1	13	18.1	7	25.9
65–69	300	22.5	276	22.4	18	25	6	22.2
70–74	285	21.4	268	21.7	12	16.7	5	18.5
75–80	204	15.3	185	15	18	25	1	3.7
80 and above	188	14.1	183	14.8	3	4.2	2	7.4
Race and Ethnicity	*n* = 1,358		*n* = 1,256		*n* = 72		*n* = 30	
Asian	30	2.3	27	2.1	2	2.8	2	6.7
Black	145	10.7	129	10.2	9	12.5	7	23.3
White	1,135	83.6	1,057	84.2	58	80.6	20	66.7
Latino	37	2.7	34	2.7	2	2.8	1	3.3
Mixed	10	0.7	9	0.7	1	1.4	0	0
Marital Status***	*n* = 1,211		*n* = 1,253		*n* = 70		*n* = 28	
Single	140	11.6	121	9.7	12	17.1	7	25
Married	767	63.3	754	60.2	11	15.7	2	7.1
Divorced	205	16.9	168	13.4	27	38.6	10	35.7
Widowed	239	19.7	210	16.8	20	28.6	9	32.1
Sexual Orientation	*n* = 1,330		*n* = 1,233		*n* = 68		*n* = 29	
Heterosexual	1,294	97.3	1,199	97.2	66	97.1	29	100
Gay	19	1.4	18	1.5	1	1.5	0	0.0
Lesbian	11	0.8	11	0.9	0	0.0	0	0.0
Bisexual	6	0.5	5	0.4	1	1.5	0	0.0
Income***	*n* = 453		*n* = 375		*n* = 54		*n* = 24	
Under US$10,000	96	21.2	69	18.4	16	29.6	11	45.8
US$10,000–24,999	196	43.2	160	42.7	27	50	9	37.5
US$25,000–39,999	161	35.5	146	38.9	11	20.4	4	16.7
US$40,000–59,999	175	15.9	167	44.5	6	11.1	2	8.3
US$60,000–74,999	136	12.2	130	34.7	5	9.3	1	4.2
US$75,000–99,999	154	13.9	154	41.1	0	0.0	0	0.0
US$100,000+	184	16.6	184	49.1	0	0.0	0	0.0

	All Survey Participants		High Food Security		Low Food Security		Very Low Food Security	
Education Level* **	*n* = 1,355		*n* = 1,257		*n* = 70		*n* = 28	
No high school diploma	71	5.2	65	5.2	3	4.3	3	10.7
High school diploma or GED	236	17.4	210	16.7	19	27.1	7	25
Some college, no degree	263	19.4	228	18.1	27	38.6	8	28.6
Associate's degree	138	10.2	129	10.3	6	8.6	3	10.7
Bachelor's degree	344	25.4	333	26.5	7	10	4	14.3
Graduate or professional degree	303	22.4	292	23.2	8	11.4	3	10.7
Employment Status* **	*n* = 1,298		*n* = 1,203		*n* = 68		*n* = 27	
Full-time	265	3.0	258	19.3	6	0.5	1	3.7
Part-time	110	18.9	110	8.2	0	0.0	0	0.0
Self-employed	43	3.0	41	3.1	2	0.2	0	0.0
Unemployed, seeking work	13	0.9	11	0.8	1	0.1	1	3.7
Enrolled in a work training program	8	0.6	8	0.6	0	0.0	0	0.0
Retired, seeking work	38	2.8	30	2.2	5	0.4	3	11.1
Retired, not seeking work	743	53.1	696	52.2	36	52.9	11	40.7
Disabled, unable to work	78	5.9	49	3.7	18	26.5	11	40.7
Regions of Residence* **	*n* = 1,388		*n* = 1,283		*n* = 74		*n* = 31	
Urban	994	71.6	911	71	61	82.4	22	59.5
Rural	73	5.3	64	5	4	5.4	5	16.1
Partially Rural	321	23.1	308	24	9	12.2	4	12.9
Immigrant Status*	*n* = 1,349		*n* = 1,251		*n* = 70		*n* = 28	
Yes	33	2.4	31	2.5	0	0	2	7.1
No	1,316	97.6	1,220	97.5	70	100	26	92.9
Veteran Status	*n* = 1,341		*n* = 1,242		*n* = 70		*n* = 29	
Yes	171	12.8	166	13.4	5	7.1	0	0.0
No	1,170	87.2	1,076	86.6	65	92.9	29	100

* $p < .05$ (X^2 statistic), ** $p < .01$ (X^2 statistic), *** $p < .001$ (X^2 statistic)