

OKLAHOMA STATE UNIVERSITY
DEPARTMENT OF NUTRITIONAL SCIENCES

HOUSEHOLD FOOD SECURITY WITHIN THE COMMUNITY OF CHOCTAW,
OKLAHOMA

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II. ABSTRACT

Title: Household Food Security Within the Community of Choctaw, Oklahoma

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Background: Household food insecurity is an important public health problem globally. In the state of Oklahoma, 14.7% of households experience some level of food insecurity, with 13.3% of households experiencing food insecurity within the county of Oklahoma. Within the city of Choctaw, Oklahoma, several formal and informal food assistance programs exist. However, the awareness and utilization of these food assistance programs are unknown.

Objectives: This study estimated the prevalence of food insecurity within the city of Choctaw, Oklahoma, and explored the awareness and utilization of food assistance programs available in the community of Choctaw.

Methods: We conducted an online survey of residents of Choctaw, Oklahoma between December 2021 and April 2022. Residents of Choctaw, Oklahoma aged 18 years or older (n=120) were recruited through online social media posts and flyers posted to public spaces in the city. We collected data on household food insecurity using the USDA 6-Item Household Food Security Survey, and data on awareness and utilization of food assistance programs using a survey questionnaire.

Results: On average, participants were aged 43.9 ± 14.9 years. 42% of participants were obese. The majority of participants were female (86%), White (91%), married or living with a partner (72%), and were employed full-time (66%). The prevalence of household food insecurity among our sample was 26.7% (11.67% low food secure, 15.00% very low food secure). The majority of participants (95%) reported awareness of at least one type of food assistance program offered to the community of Choctaw, including Community Food Pantries, Farmers to Families, School Lunch/Meal, SNAP/Food Stamps, WIC, and Meals on Wheels. Among participants who reported being aware of food assistance programs, only 47.9% utilize at least one type of resource; about 52% do not utilize any food assistance program. Among non-utilizers, reasons include having sufficient access to food hence no need (38.46%) and feeling like other people needed the food more (13.46%). Other less common reasons participants gave include embarrassment, fear that people might think less of them, and lack of knowledge of how the pantry works. Overall, awareness of food assistance programs did not differ between food secure and food insecure households (94.3% vs 93.8%, $P=1.000$). However, food insecure households were more likely to utilize food assistance programs compared to households who were food secure (75% vs 37.9%, $P=0.0004$). That said, approximately 25% of food insecure households reported not utilizing any food assistance program.

Conclusion: In the city of Choctaw, Oklahoma, one in 4 households experience some form of food insecurity. Food assistance programs do exist, and the majority of respondents are aware of them. However, utilization of these programs is somewhat low. Future studies should explore

why these resources are not being utilized by some food insecure households to help inform strategies to minimize food insecurity.

Keywords: Household food insecurity, food assistance programs

III. INTRODUCTION

Food insecurity is a prevalent nutrition issue globally, including the United States. Food insecurity is defined by the United Nations Food and Agriculture Organization as when an individual lacks regular access to safe, nutritious food for growth, development, and an active life.¹ In 2020, it was found that 10.5% of households in the United States experienced food insecurity which was unchanged from 2019 pre-pandemic and lower than 11.1% of food insecure households in the United States in 2018.^{2,3} While it is important to recognize the nation-wide prevalence of food insecurity, it is important to note that State-wide variations in food security prevalence do exist. For instance, between 2018-2020, the prevalence of food insecurity ranged from 5.7% in New Hampshire to 15.3% in Mississippi.² Similar to other States, the State of Oklahoma has a high prevalence of food insecurity. In 2019, 14.7% of Oklahoma households were food insecure, which is higher than the national prevalence rate of 10.5%.⁴ Oklahoma ranks within the top 10 states with the highest food insecurity rate in the United States.⁵ Within the State of Oklahoma, variations do exist between counties and communities. The city of Choctaw is located within the State of Oklahoma and in Oklahoma County. In 2019, Oklahoma County had a food insecurity rate of 13.3%.⁶

With a high rate of food insecurity, a myriad of medical problems and chronic diseases occur in numerous individuals. Food insecurity has negatively been associated with health according to numerous research studies in not only adults but in children, as well. Consequences of food insecurity in children include increased risk of anemia, poor nutritional intake, cognitive problems, depression, anxiety, asthma, behavioral problems, and oral health problems when compared to food secure children.⁷ Food insecurity also impacts adults and has been shown to be associated with poor nutritional intake, increased risk of mental health problems, depression,

diabetes mellitus, hypertension, hyperlipidemia, increased sleep problems, and limitations in daily activities when compared to food secure adults.⁷

In the United States, several strategies have been adopted in an effort to combat food insecurity and the negative health problems associated with the nutritional issue. These strategies include the implementation of formal and informal food assistance programs. A food assistance program can be defined as any program, whether at the national, state, county, or community level, aimed at supporting an individual or household's dietary needs by increasing access to food resources. For the purposes of this study, food assistance programs will be categorized as formal or informal, with formal food assistance programs including federally funded programs and informal food assistance programs including community specific programs. A few examples of formal and informal food assistance programs include Supplemental Nutrition Assistance Program (SNAP or Food Stamps), Supplemental Nutrition Program for Women Infant Children (WIC), Farmers to Families, Meals on Wheels, School Lunch/Meal Program, and Community Food Pantries. These food assistance programs are in place to aid food insecure households in obtaining adequate amounts of nutritious and healthy food to meet dietary needs. However, not all food insecure households utilize food assistance programs. There are several reasons households may not utilize food assistance programs including lack of awareness of a resource, eligibility criteria of a food resource, and stigmas associated with food assistance programs.⁸ Other reasons may include application for food assistance program being too extensive or difficult or individuals are unsure how to apply.⁸

The city of Choctaw is located within the State of Oklahoma and in Oklahoma County. Anecdotal information shows that food insecurity is common in this community. However, no studies have been done to estimate the food insecurity prevalence rate. Additionally, even though

food assistance programs exist in the Choctaw community, it is unknown how many of these programs are utilized particularly by food insecure households. This study aimed to determine the prevalence of household food security among the community of Choctaw, Oklahoma. We also aimed to understand the awareness and utilization of food assistance programs offered to the Choctaw community.

Definitions

- A. High/Marginal Food Security - no reported indications of food-access problems or limitations.⁹
- B. Low Food Secure - reports of reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake.⁹
- C. Very Low Food Secure - reports of multiple indications of disrupted eating patterns and reduced food intake.⁹
- D. Food Assistance Program - any program, whether at the national, state, county, or community level, aimed at supporting an individual or household's dietary needs.
- E. Supplemental Nutrition Assistance Program (SNAP) - a federal program that provides nutrition benefits to low-income individuals and families that are used at stores to purchase food.¹⁰
- F. Supplemental Nutrition Program for Women, Infants, and Children (WIC) - provides federal grants to states for supplemental foods, health care referrals, and nutrition education for low-income pregnant, breastfeeding, and non-breastfeeding postpartum women, and to infants and children up to age 5 who are found to be at nutritional risk.¹¹

- G. Farmers to Families – federally funded program designed and implemented as a temporary, emergency relief effort to respond to severe market disruption caused by a global pandemic.¹²
- H. Meals on Wheels – federally funded program that cares for individuals whose diminished mobility makes it hard to shop for food, prepare meals or socialize with others.¹³
- I. National School Lunch Program – federally funded program in schools designed to make available to all students enrolled in schools and institutions meals during breakfast and lunch.¹⁴
- J. Community Food Pantry - directly serve local residents who suffer from hunger and food insecurity within a specific region.¹⁵

IV. LITERATURE REVIEW

Food insecurity is a complex nutrition issue that affects a multitude of households globally including the United States. Food insecurity is defined by the USDA as having limited or inadequate access to healthy, nutritious foods.² There are differing severity ranges of food security listed by the USDA as a means to classify how food secure or food insecure households are. The ranges include high food security which is defined as no problems of acquiring healthy and nutritious foods, marginal food security which is one or two reported problems of accessing healthy foods, low food security which is reduced access to healthy and nutritious foods but not necessarily reduction of food, and very low food security which is reduced food intake associated with decreased access to nutritious foods.⁹ Food insecurity is measured by US Household Food Security Modules that consist of 18 questions, 10 questions, or 6 questions (depending on time constraints) that effectively measure household or adult food status.^{16,17}

Food insecurity is common in America. It was estimated in 2020 that 10.5% of United States households experienced food insecurity, with approximately 3.9% (equivalent to 5.1 million households) experiencing very low food security.² Food insecurity in the United States has fluctuated throughout the years as it steadily increased from 10.7% in 2001 to 12% in 2004, decreased to 11% in 2005-2007, peaked at 14.9% in 2011, began to decline to 12% in 2017 and has stayed decreased at 10.5% 2019-2020.² Food insecurity occurs in every state across the United States, with some states experiencing higher rates of food insecurity than others. In 2019, the state with the lowest prevalence of food insecurity was New Hampshire at 6.6% and the state with the highest food insecurity rate was Mississippi at 15.7%.⁴ It is estimated that 14.7% of households within the State of Oklahoma experience food insecurity, with 5.6% of food insecure

households being very low food secure.¹⁸ This means that 1 in 6 individuals in Oklahoma face food insecurity.

Several risk factors have been reported to increase the risk of food insecurity and include low levels of education, limited social networks, low household income, inability to rely on friends and family in times of need, and unemployment.¹⁹ Income, education, home ownership, and age have been reported to be negatively associated with food insecurity, whereas unemployment, disability, and a state's tax burden are positively associated with food insecurity. Other reported risk factors include ethnicity, citizenship status, and participation in nutrition programs.²⁰

Health effects of food insecurity have been measured in numerous research studies for both children and adults. Household food insecurity has been associated with an increased risk of chronic diseases such as obesity, asthma, dyslipidemia, hypertension, and diabetes, and increased risk of micronutrient deficiencies.²¹ A study by Stuff et al. in 2004 found that adults who were food insecure were significantly more likely to report their health as poor or fair and scored significantly lower on the 12-item Health Survey compared to food secure adults.²² In another study by Stuff et al. in 2006, it was found that adults who were food insecure were more likely to be obese when compared to food secure adults.²³ The food insecure adults were also more likely to report health problems of hypertension, diabetes, heart disease, and metabolic syndrome when compared to food secure adults.²³ Apart from poor health outcomes, food insecurity may also impact the cost of healthcare.²⁴ Health care costs may be higher for food insecure households when compared to food secure households due to the increased risk of adverse medical problems. A study by Berkowitz et al. in 2019 found that one of the adverse financial effects of food insecurity is increased annual health care expenditures, with the health care expenses of

food insecure adults being \$1,834 higher than food secure adults.²⁴ Food insecurity and hunger have also been found to be associated with increased expenses due to increased illness and decreased academic achievement.²¹

Several interventions have been implemented to address food insecurity by improving access to food. Food assistance programs are an example of such interventions and include programs such as the Supplemental Nutrition Assistance Program (SNAP/Food Stamps), Supplemental Nutrition Program for Women Infants and Children (WIC), National School Lunch and Breakfast Programs, and Community Food Pantries.

Supplemental Nutrition Assistance Program, also known as SNAP or Food Stamps (formerly), is the largest Federal food assistance program that serves households by increasing the access of low-income households to nutritious food.²⁵ Those who qualify for SNAP receive monthly funds based on income and households size through a benefits card, much like a debit card, to purchase groceries at SNAP participating locations.²⁶ One of the main objectives of SNAP is to improve household food security.²⁵ Data from one study conducted by the U.S. Census Bureau from 2001 to 2006 based on USDA food security surveys revealed that the food security status of households decreased 7 to 8 months prior to enrollment into SNAP and then increased after SNAP benefits began, which supports the idea that households enroll in SNAP when they are food insecure and that SNAP is in place to improve household food security.²⁵ During the 2020 year, 282,339 Oklahoma households participated in SNAP.²⁷

Women Infants and Children (WIC) is a supplemental nutrition program that was created to improve the nutritional status of low-income women, infants, and children up to age 5 by providing nutritious foods, nutrition education, and access to health services.²⁸ The WIC Program aims to improve the nutrition status of women, infants, and children who are classified

as a nutrition risk, such as those who are anemic, underweight, or have any pregnancy complications.²⁸

The National School Lunch Program is a federal meal program administered by the USDA that provides students in schools nutritious lunches every school day that are low-cost or no-cost, depending on household income.²⁹ Another program offered to students is the School Breakfast Program funded and administered by the USDA to provide students with free or reduced breakfasts every school day.³⁰ The breakfast and lunch programs must meet Federal nutrition requirements, but schools have the flexibility to choose their menus each day as long as the meals meet the predetermined nutrition requirements.^{29,30}

Apart from the formal food assistance programs mentioned above, informal programs do exist within communities and include community food pantries. These community food pantries directly serve local residents who suffer from hunger and food insecurity.¹⁵ The community food pantries obtain food from donations, store the food, and then distribute to those in need, which directly impacts households.¹⁵ In Choctaw, Oklahoma, the majority of the community food pantries are organized by churches. They advertise the community food pantries via social media, make announcements during church services, and encourage individuals in the community to advertise through conversation. The community food pantries through the churches in Choctaw, Oklahoma are open to the public with no conditions to receive aid from the pantries.

V. METHODS AND MATERIALS

Study Site and Design

The study was conducted in the city of Choctaw, Oklahoma from December 2021 - April 2022. We used a cross-sectional study design to conduct an online survey using Qualtrics, an online survey platform. Choctaw is a city east of Oklahoma City and is located in Oklahoma County with a population of 12,474 individuals. Choctaw has been steadily growing in the past few decades, with the population growing from 9,377 residents in 2000 to 12,182 residents in 2020.³¹

Participant Recruitment

Individuals were eligible for participation in the study if they were 18 years or older and a current resident of Choctaw, Oklahoma. The survey was advertised by means of flyers and social media posts. An initial advertisement about the study with a link to the online survey was sent in a social media post (see Appendix A) to The City of Choctaw Facebook group with 14,100 members [12,182 residents in Choctaw as of 2020] to recruit participants. Additionally, flyers with a QR code link to the online survey were distributed to public places in Choctaw (e.g. City Hall, Churches, Walmart, and Choctaw Tag Agency) in order to recruit more participants who may not have access to social media platforms (see Appendix B). Additional reminder posts were made to the Facebook groups as an invitation to participate in the voluntary research study (see Appendix C). We estimated approximately 296 residents of Choctaw would respond to the survey in order to understand the prevalence of food insecurity within the community's residents, and received 174 total responses. This study was approved by the Oklahoma State University Institutional Review Board (IRB) for Human Subjects Research prior to data collection (see Appendix D).

Survey

The study utilized the online anonymous survey platform Qualtrics, a secure web-based system to gather responses. The survey contained a total of 39 questions (see Appendix E) including questions to gauge food security status using the USDA Six-Item Short Form of the Food Security Survey, the participant's awareness and utilization of food assistance programs within Choctaw, Oklahoma, and participant demographic information. The first page of the survey was an introductory page that required that participants had to answer two screening questions related to eligibility (see Appendix F) before moving forward to the consent information. If the potential participant did not meet eligibility criteria (i.e. they were not 18 years or older and/or were not current residents of Choctaw, Oklahoma) they were directed to the end of the survey. Once the potential participant met the predefined inclusion criteria, they were presented with the consent page which explained the details of the study including the background information, procedures, risks and benefits, compensation, confidentiality, voluntary nature of the study, contacts of the research team and Oklahoma State University IRB, and statement of consent (see Appendix G). If a potential participant did not consent to participate in the study, they were directed to the end of the survey. Once the participant agreed to participate in the study, they were directed to the survey page to begin answering the survey questions. Once participants reached the end of the survey, they were given the option to either close the survey with their responses recorded or click a link to a separate survey to enter into a drawing (see Appendix H). The separate survey contained two questions where participants could type in their name and email address to be entered into a drawing for a gift card as compensation for participating in the survey. The names and email addresses collected were not linked to the main

survey to preserve the anonymity of the first survey. Upon survey closure, twenty-five randomly selected participants will be emailed \$25 Amazon gift cards.

Measures

Household food security status was measured using the USDA Household Food Security Module: Six-Item Short Form.³² The questions focused on the participant's (and their household's) experiences with food over the past 12 months.

Questions regarding participant awareness and utilization of food assistance programs available to the community of Choctaw were developed by the research team. The options for responses regarding the awareness of food assistance programs in Choctaw included "Community Food Pantry", "Farmers to Families", "School Lunch/Meal", "SNAP/Food Stamps", "Women Infant Children (WIC)", and "Meals on Wheels". Participants were given the option to type into a textbox to list food assistance programs that were not listed in previous awareness questions but were offered to the community of Choctaw. Similarly, participants had the option to include food assistance programs they utilized (either all the time or sometimes) that were not mentioned in previous utilization questions.

Demographic information was also collected and included age, height, weight, gender, race, marital status, academic level, employment status, annual household income, number of household's residents, number of children under 18 years old and under 5 years old in the household. The data was stored on a password-protected computer in a password-protected file. The data remained anonymous and confidential as identifiable information (such as names, email addresses, identification numbers, etc.) were not collected for the purpose of the study.

Statistical Analysis

Household food insecurity was calculated using standard USDA protocol.³² Responses on the 6-item questionnaire were coded and summed. A score of 0-1 indicated high or marginal food security, 2-4 indicated low food security, and 5-6 indicated very low food security.³²

Food security was categorized as a binary variable (Food secure vs food insecure) and as a categorical variable (food secure, low food security, very low food security).

Participant characteristics were described by reporting means and standard deviations or frequencies and percentages of demographic and other variables. Differences in awareness and utilization of food assistance programs by food secure and food insecure households were analyzed using the chi-square test.

VI. RESULTS

Background Characteristics

A total of 174 potential participants clicked on the Qualtrics link. Among these, 16 responded they were not current residents of Choctaw, Oklahoma and 10 did not complete the eligibility screening questions, which left 148 participants as eligible to progress to the survey. Among the 148 eligible participants, 20 did not complete the consent form, leaving 128 participants as eligible with consent given. Among the 128 participants that were eligible and consented, 8 did not complete the USDA 6-item food security questionnaire. This left 120 participant responses as viable and were used in the data analysis. Figure 1 displays the progression of participants throughout the study.

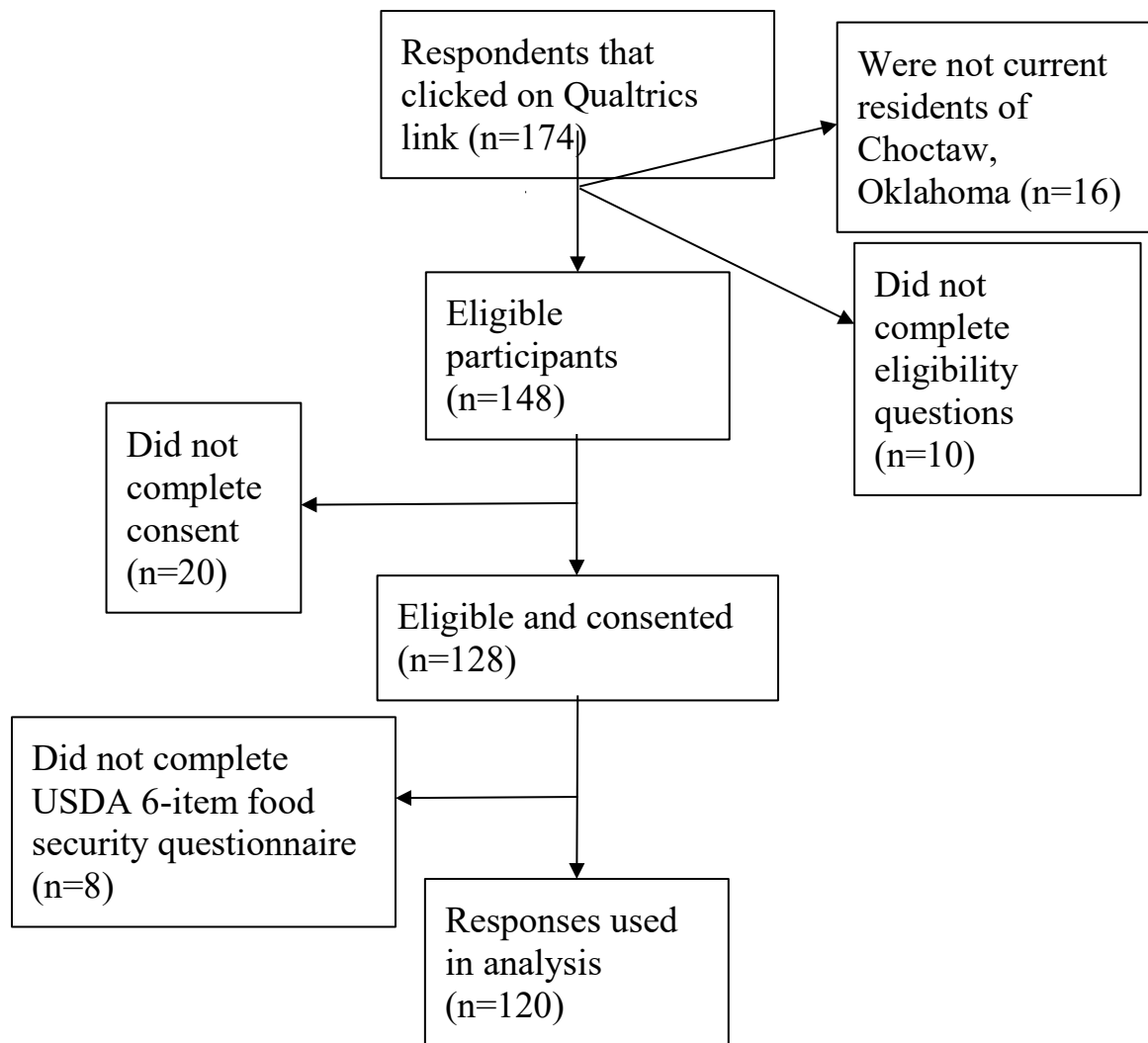


Figure 1. Participant progression throughout the study.

The demographics information of participants (n=120) is presented in Table 1. The average age of participants was 43.9 ± 14.9 years (range 18 - 81 years). The majority of participants were White (90.52%), female (86.21%), married or living with their partner (71.55%) and were employed full-time (65.52%). About half were obese (42.2%) and had a Bachelor's Degree or higher (49.14%) and lived in a household size of 4+ individuals (51.0%).

Table 1. Demographic Information of Participants.

Demographic Characteristic	Participants (n=120)
Gender	
Male	12.07%
Female	86.21%
Prefer not to answer	0.86%
Other	0.86%
Age	
Age Range	18 - 81
Average Age (y)	56.67
Weight Status¹	
Underweight	0.00%
Normal weight	22.70%
Overweight	35.10%
Obese	42.20%
Annual Household Income	
Under \$20,000	10.71%
\$20,001 - \$40,000	14.29%
\$40,001 - \$60,000	15.18%
\$60,001 - \$80,000	12.50%
\$80,001 - \$100,000	15.18%
\$100,001 or over	32.14%
Academic Level	
No Schooling	0.00%
Some high school, uncompleted	3.45%
High school graduate, completed	23.28%
Trade/technical/vocational training	15.52%
Bachelor's degree or higher	49.14%
Other	8.62%

¹ Weight status was calculated using BMI with the following BMI scale: underweight <18.5, healthy weight 18.5-24.9, overweight 25.0-29.9, and obese >30.0.

Table 1 (Continued). Demographic Information of Participants.

Demographic Characteristic	Participants (n=120)
Employment Status	
Unemployed	10.34%
Part-time	8.62%
Full-time	65.52%
Other	15.52%
Marital Status	
Single, never married	16.38%
Married or living with a partner	71.55%
Divorced or separated	10.34%
Widowed	1.72%
Other	0.00%
Race	
American Indian or Alaska Native	5.17%
Asian	0.00%
Black or African American	0.86%
Native Hawaiian or Other Pacific Islander	0.00%
White	90.52%
Prefer not to answer	2.59%
Other	0.00%

Table 1 (Continued). Demographic Information of Participants.

Demographic Characteristic	Participants (n=120)
Household Size	
1	4.60%
2	22.20%
3	22.20%
4+	51.00%
Households with Children (Under 18)	
0	43.80%
1	29.50%
2	11.40%
3	9.50%
4+	5.80%
Households with Children (Under 5)	
0	82.10%
1	12.30%
2	3.80%
3	0.90%
4+	0.90%

Household Food Insecurity

The prevalence of household food insecurity among our sample was 26.67%, implying that about one out of four households within Choctaw, Oklahoma experienced some form of household food insecurity in the past 12 months. Among households who reported being food insecure, 11.67% experienced low food insecurity and 15% of households experienced very low food insecurity. The majority of households experienced marginal or high food security (73.33%). The data is presented in Figure 2.

Household Food Security Status in Choctaw, Oklahoma

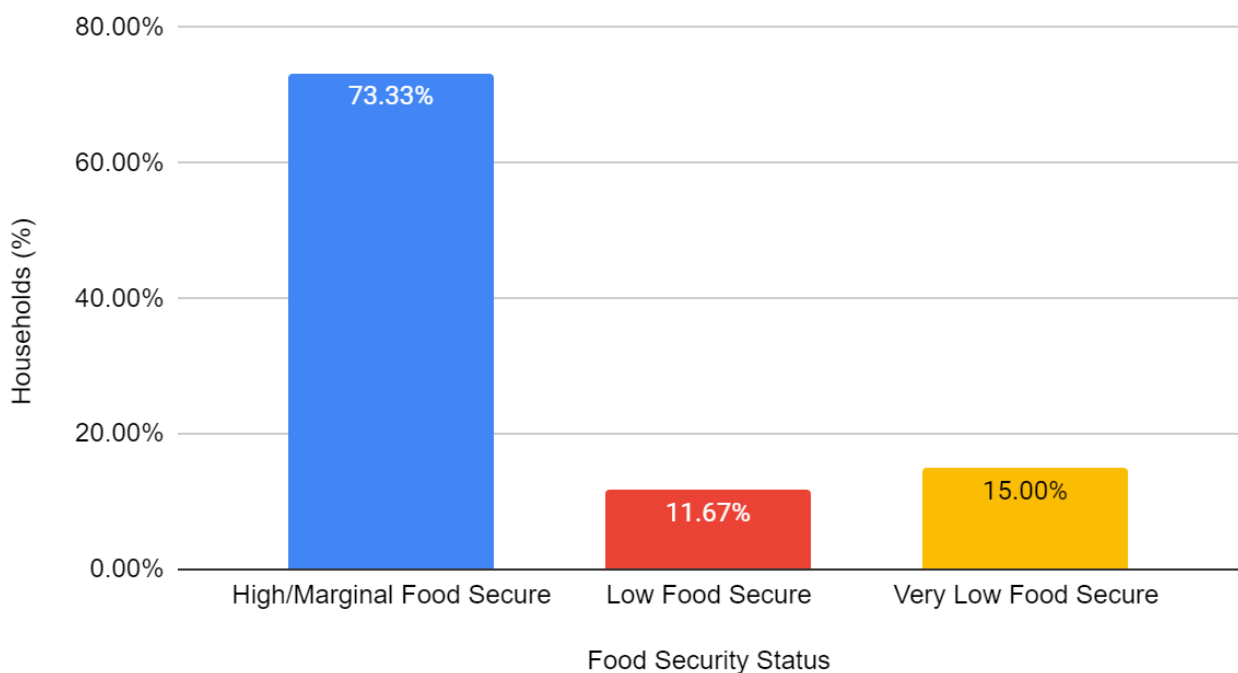


Figure 2. Household Food Security Status.

Awareness of Food Assistance Programs

The majority (95%) of participants were aware of at least 1 type of food assistance program within Choctaw (Figure 3). The awareness of each food assistance program is presented in Figure 4. The most well-known food assistance program was ‘SNAP/Food Stamps’ (84.90%), followed closely by school lunches (83%) and WIC (77%). The least known program was the “Farmers to families” program. Compared to the more formal programs, only about one-third of the participants were aware of community food pantries.

Food assistance program awareness by household food security status was also examined (Figure 5). Among households that were food insecure, 1.70% of very low food insecure households were not aware of at least one food assistance program. All households that experienced low food insecurity were aware of at least one food assistance program. The majority (95%) of food secure households were aware of at least 1 food assistance program.

Awareness of Food Assistance Programs in Choctaw, Oklahoma

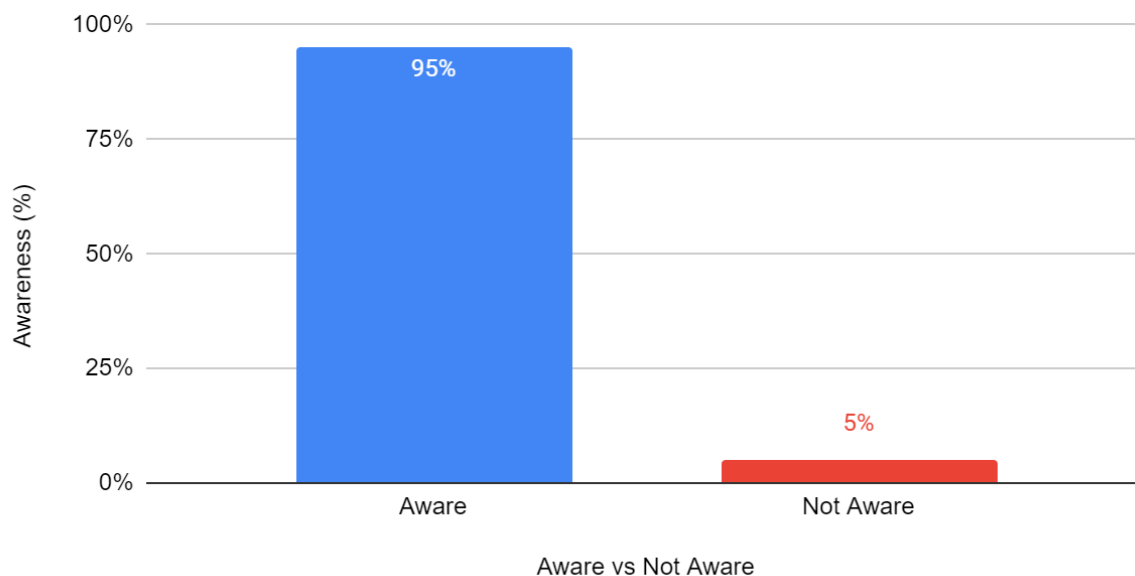


Figure 3. Awareness of Food Assistance Programs in Choctaw, Oklahoma.

Awareness of Food Assistance Programs in Choctaw, Oklahoma

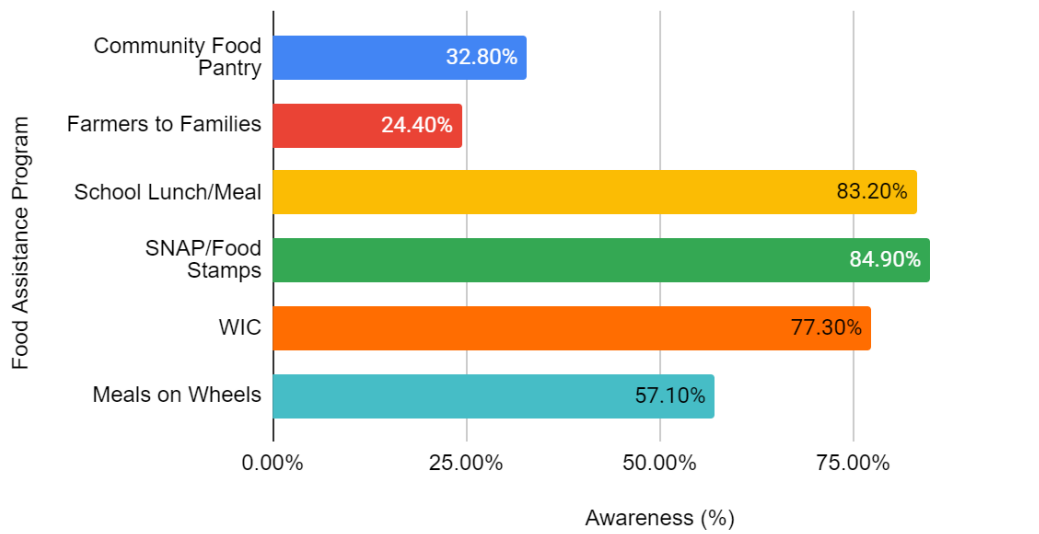


Figure 4. Awareness of Individual Food Assistance Programs.

Awareness Did Not Differ By Food Security Status

P=1.000

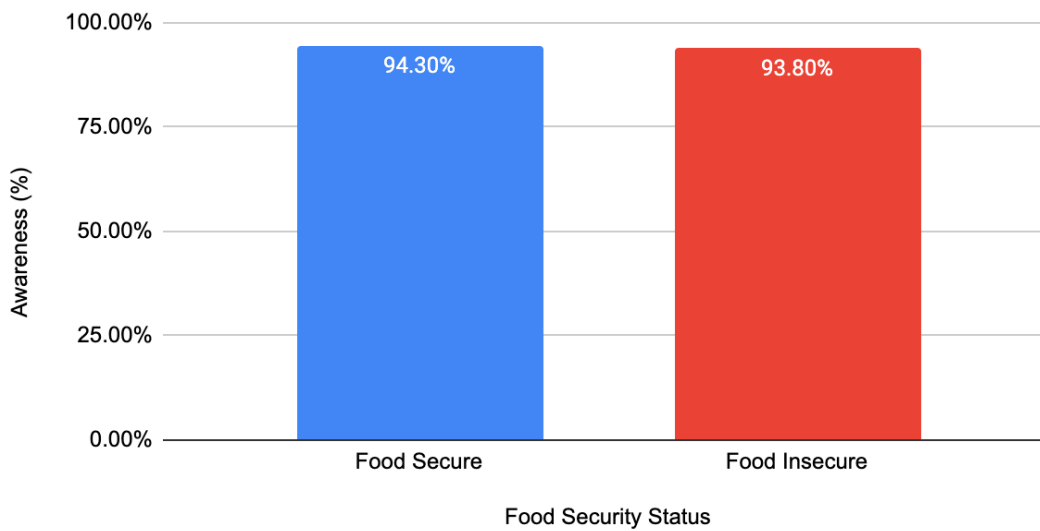


Figure 5. Awareness of Food Assistance Programs by Food Security Status.

Utilization of Food Assistance Programs

Figures 6-8 present data gathered regarding the utilization of food assistance programs by households in Choctaw, Oklahoma. Nearly half of respondents (47.90%) reported utilizing at least 1 food assistance program (Figure 6). It was found that 75% of food insecure households utilized at least 1 food assistance program, whereas approximately 40% of food secure households reported utilizing at least 1 food assistance program (Figure 7). This means that 1 in 4 households that experience some form of food insecurity do not utilize food assistance programs. The utilization of each food assistance program offered in Choctaw, Oklahoma is presented in Figure 8, with the highest used resource being School Lunch/Meal at 35.30% and the lowest used resource being Meals on Wheels (0.80%).

Utilization of Food Assistance Programs

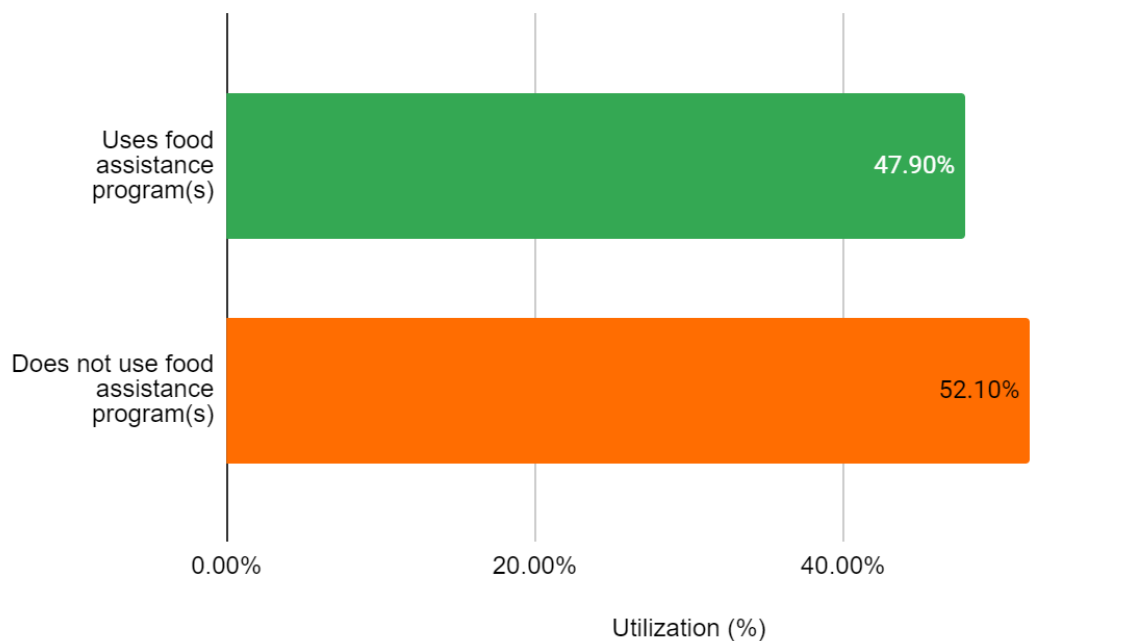


Figure 6. General Utilization of Food Assistance Programs.

Utilization Did Differ By Food Security Status

P=0.0004

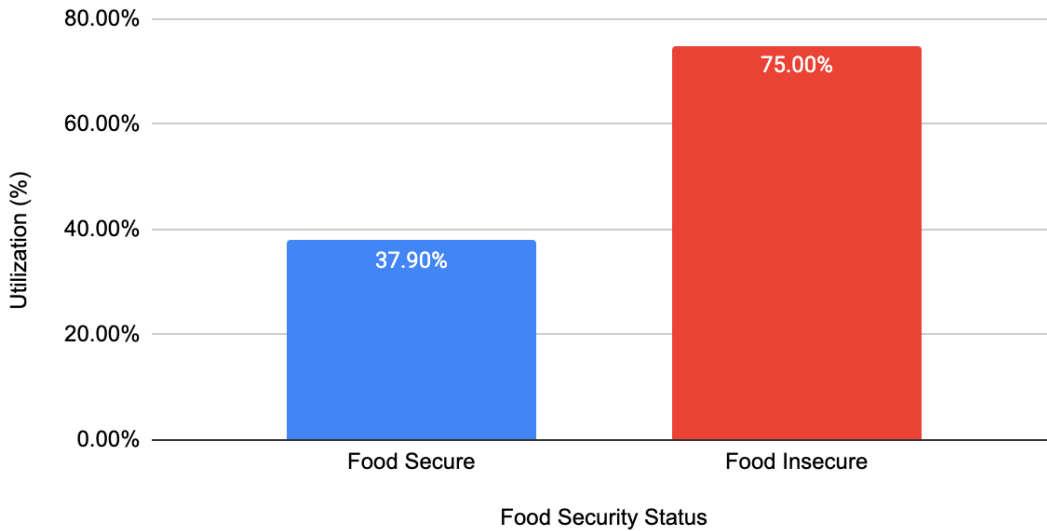


Figure 7. Utilization of Food Assistance Program by Food Security Status.

Utilization of Food Assistance Programs in Choctaw, Oklahoma

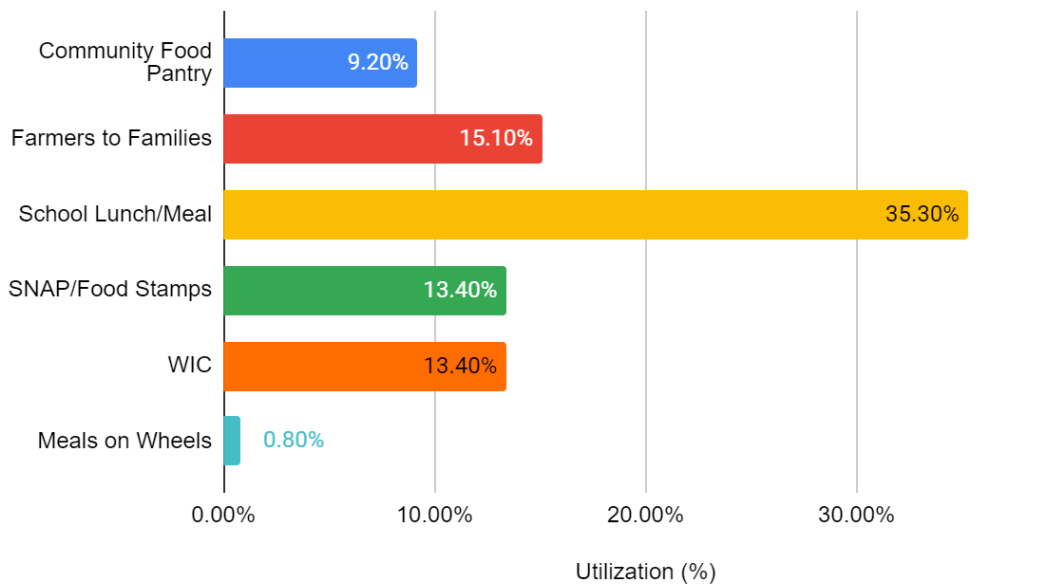


Figure 8. Reported Utilization of Each Food Assistance Programs in Choctaw, Oklahoma

Barriers to Utilization of Food Assistance Programs

Among participants who reported not using any food assistance program, we asked about reasons for non-utilization. Figure 9 expresses the common reported barriers to utilizing a food assistance program, with the top reasons being “feeling like other people need the food more” (13.46%), “embarrassment” (4.49%), and “lack of knowledge of how the pantry works” (4.49%).

Reported Barriers to Not Utilizing Food Assistance Programs for All Households

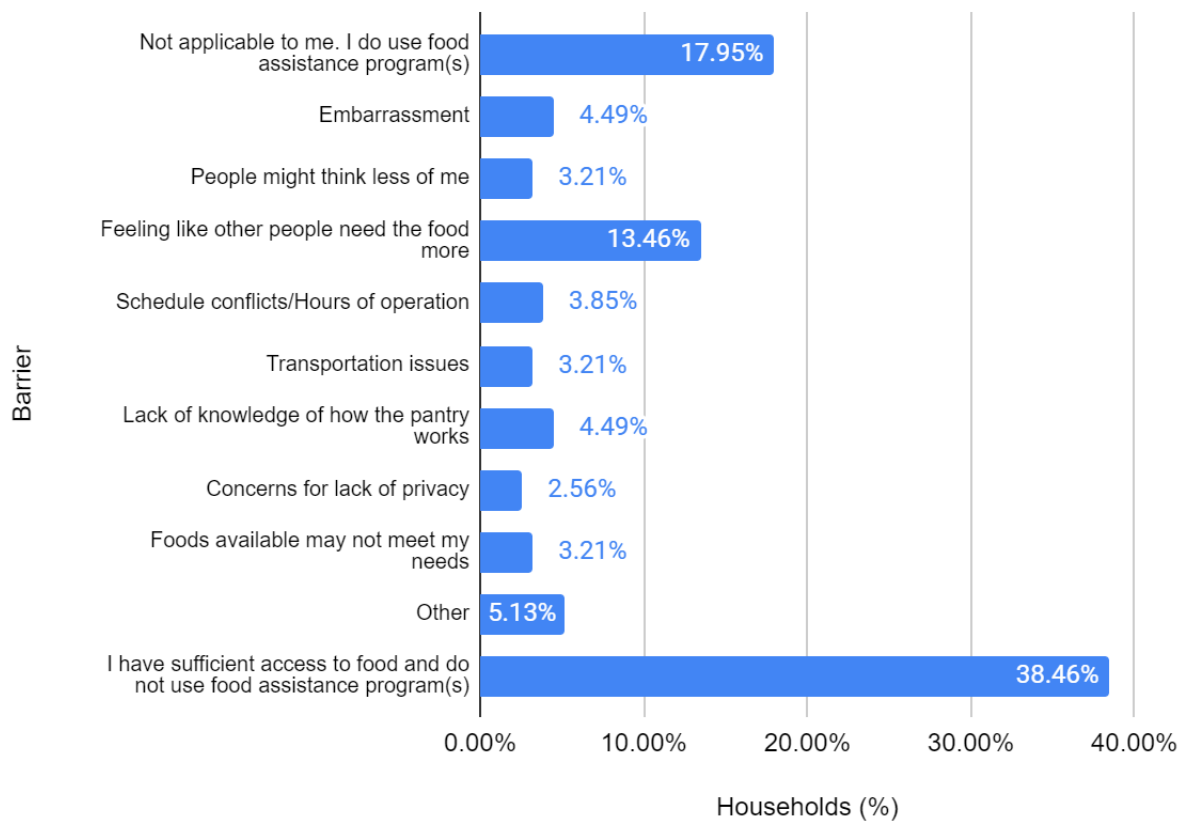


Figure 9: Reported Barriers to Not Utilizing Food Assistance Programs.

VII. DISCUSSION

This study evaluated the food security status of residents of Choctaw, Oklahoma. We also evaluated the awareness and utilization of food assistance programs by residents of Choctaw. Our findings suggest that food insecurity is highly prevalent in the city of Choctaw. Our study showed a prevalence rate of 26.7%, which means that 1 in 4 households in Choctaw, Oklahoma experience some form of food insecurity. This rate is much higher than the State average of 14.7%, and the national average of 10.5%. Other studies have found that Oklahoma County, which is the county Choctaw is located in, has a food insecurity prevalence of 13.3%.³³ This means that Choctaw, Oklahoma has a higher prevalence of food insecurity than the overall county, state, and nation. A few reasons that this higher prevalence occurs could be due to reasons such as households believing they are food secure when they actually classify as food insecure. Studies that evaluate how location affects household food security status have found that places where transportation options are limited, places with fewer supermarkets, and places where travel distances to stores are greater have greater risk of food insecurity.³⁴ In Choctaw, Oklahoma, there is one main grocery store (Walmart), with any other grocery store options being in neighboring cities. This could also be a factor as to why the food insecurity prevalence is higher in the city when compared to the county and state levels. If residents of Choctaw, Oklahoma do not wish to grocery shop at Walmart for some reason, their only other option would be to commute to neighboring cities to shop for groceries. If they are unable to commute to nearby cities for grocery shopping due to some form of transportation issues, it could contribute to the city's higher rate of food insecurity. They could opt to purchase inexpensive, unhealthy food from the multitude of fast food restaurants available in Choctaw, Oklahoma, as it

has been found by a study conducted in 2014 that approximately 79% of food insecure households reported purchasing inexpensive, unhealthy food as the top coping strategy to meet their food needs.³⁵ However, since this study did not evaluate contributing factors to household food insecurity, these reasons are speculation based on reviewed literature, and future studies should focus on examining the reasons food insecurity is so prevalent in Choctaw, Oklahoma.

We observed that almost all participants were aware of some type of food assistance program. This was true for both food secure and food insecure households. On the other hand, the utilization of these resources was somewhat low, including informal programs that do not require participants to meet eligibility criteria, such as community food pantries; only about half of participants reported using at least one food assistance program. We also observed that food assistance programs were more likely to be utilized by food insecure households. This finding was not surprising because food assistance programs are generally in place for those who cannot obtain adequate, nutritious foods, such as households facing food insecurity. Although food assistance programs are generally being utilized by food insecure households, there are still households experiencing food insecurity who are not seeking aid from these resources. We found that 1 in 4 food insecure households reported not utilizing any food assistance programs. The 25% of food insecure households that did not utilize food resources were likely to be aware of the resources yet still did not utilize them. Community food pantries, which do not require individuals to meet eligibility criteria, were not as commonly used as expected. Only 1 out of 10 people reported using food pantries. Data from the Current Population Survey Food Security Supplement by the USDA found that in 2020, 6.7% of U.S. households reported using a food pantry, which was an increase from 4.4% in 2019, which could be attributed to the pandemic as more resources were being implemented as temporary relief in 2020-2021.³⁶ They also found

that only 36.5% of food insecure households reported utilizing a food pantry.³⁸ This suggests that even on a national level, those facing some form of food insecurity are not utilizing food resources. In a study conducted by Fong et al. in 2016, they interviewed low-income individuals to understand why low-income households do not utilize food resources.³⁷ Some of the reported barriers to utilizing food resources included believing they do not need the food assistance, lack of information, physical or health challenges, timing issues, long lines, and poor quality of food.³⁷ The most reported reason in the 2016 study was believing that they did not need the food (42%).³⁷ This reported barrier is consistent with the present study as 13.46% of participants reported not utilizing a food assistance program reported that they felt as though there were other people who needed the food assistance more. In a study conducted by Martin et al. in 2003, the researchers studied participation of food insecure households in SNAP, food pantries, and soup kitchens to determine barriers or reasons food insecure households do not utilize these food assistance resources.³⁸ They found that barriers to food assistance programs differed by age and ethnicity with elderly households being less than half as likely to receive SNAP when compared to nonelderly households and that they are more likely to say they feel uncomfortably enrolling in SNAP.³⁸ They also found that Black households were less than half as likely to enroll in SNAP when compared to Hispanic households, and Hispanic households were more likely than non-Hispanic households to say they feel uncomfortable utilizing food pantries.³⁸ These studies support that there are current barriers to enrolling in or participating in food assistance programs, whether formal or informal. Future studies should focus on identifying barriers to the utilization of food assistance programs by the food insecure households that reported not utilizing any resources in Choctaw, Oklahoma.

Study Strengths and Limitations

Study strengths included allowing for the online survey to be easily accessible online and easy to complete. Administering the survey online was positive for those with time constraints as participants could complete the survey at any time and at any location. The recruitment strategies allowed for a variety of people to have the opportunity to complete the survey, and additional reminder posts were provided to the City of Choctaw Facebook group to recruit more participants. There were a few limitations that should be taken into consideration. First, the nature of the study required that participants have access to a phone to complete the online survey, and they also had to be able to read English. Secondly, recruitment techniques (reminder emails) allowed for more exposure to the Facebook group compared to the flyers. There were multiple re-posts on the Facebook Group with residents of Choctaw, Oklahoma, however, the flyers in public spaces were not reposted. Lastly, the sample size of 296 participants was not reached before the data was analyzed for this current thesis.

VIII. CONCLUSION

The main research questions this study aimed to evaluate included the household food security status of Choctaw, food assistance program awareness within Choctaw, and food assistance utilization within Choctaw, Oklahoma. It was found that approximately 1 in 4 households in Choctaw experienced food insecurity, awareness of at least 1 type of food assistance program was very common, awareness of food assistance programs did not differ by food security status, and food insecure households were more likely to utilize food resources when compared to those food secure.

Implications for Future Research

This study did not evaluate extensively the barriers as to why food insecure households do not seek aid from food assistance programs, however, more in depth studies are required to fully understand the reasons households may be unable to utilize food assistance programs.

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X. APPENDICES

Appendix A - Social Media Advertisement

**WE ARE INTERESTED
IN UNDERSTANDING
HOUSEHOLD FOOD
SECURITY WITHIN
THE COMMUNITY OF
CHOCTAW,
OKLAHOMA!**

1. Are you 18 years or older?
2. Do you live in the city of Choctaw?
3. Are you interested in this survey?

If you answered YES to all the above questions, please click the link in the post to access the survey!

Alternatively, you can contact the research team at danielle.woods@okstate.edu or harriet.okronipa@okstate.edu.



**WE ARE INTERESTED IN
UNDERSTANDING
HOUSEHOLD FOOD SECURITY
WITHIN THE COMMUNITY OF
CHOCTAW, OKLAHOMA**

Are you 18 years or older? Do you live in the city of Choctaw?
Are you interested in participating in this survey?

If you answered YES to all the above questions, please scan the QR code below to access the survey.



Alternatively, you can contact the research team at danielle.woods@okstate.edu or harriet.okronipa@okstate.edu.

Appendix C - Example of Facebook Post With Social Media Advertisement

Are you interested in participating in research that impacts Choctaw? If you haven't already, take the anonymous household food security survey by clicking the link below!

Link to anonymous survey: https://okstateches.az1.qualtrics.com/jfe/form/SV_4HnutZ8TFHOeIMi



**WE ARE INTERESTED
IN UNDERSTANDING
HOUSEHOLD FOOD
SECURITY WITHIN
THE COMMUNITY OF
CHOCTAW,
OKLAHOMA!**

1. Are you 18 years or older?
2. Do you live in the city of Choctaw?
3. Are you interested in this survey?

If you answered **YES** to all the above questions, **Alternatively,** you can contact the research team at

Appendix D - OSU IRB Approval Letter



Oklahoma State University Institutional Review Board

Date: 12/03/2021
Application Number: IRB-21-510
Proposal Title: Food Security in the Community of Choctaw, Oklahoma

Principal Investigator: Danielle Woods
Co-Investigator(s):
Faculty Adviser: Harriet Okronipa
Project Coordinator:
Research Assistant(s):

Processed as: Exempt
Exempt Category:

Status Recommended by Reviewer(s): Approved

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in 45CFR46.

This study meets criteria in the Revised Common Rule, as well as, one or more of the circumstances for which continuing review is not required. As Principal Investigator of this research, you will be required to submit a status report to the IRB triennially.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 405-744-3377 or irb@okstate.edu.

Sincerely,
Oklahoma State University IRB

Appendix E - Qualtrics Survey Questions

1. In the last 12 months, the food that (I/we) bought just didn't last, and (I/we) didn't have money to get more.
 - a. Often true
 - b. Sometimes true
 - c. Never true
 - d. Do not know
2. In the last 12 months, (I/we) couldn't afford to eat balanced meals.
 - a. Often true
 - b. Sometimes true
 - c. Never true
 - d. Do not know
3. In the last 12 months, since last December, did (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?
 - a. Yes
 - b. No
 - c. Do not know
4. How often did (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 in the last 12 months?
 - a. Almost every month
 - b. Some months but not every month
 - c. Only 1 or 2 months
 - d. Do not know
5. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?
 - a. Yes
 - b. No
 - c. Do not know
6. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?
 - a. Yes
 - b. No
 - c. Do not know
7. Do you know about any food assistance programs here in Choctaw? By food assistance program, I mean any program that distributes food or provides people with food or resources to get food. Are you aware of any of those programs here in Choctaw?
 - a. Yes
 - b. No
8. Which of the following food assistance programs in Choctaw are you aware of?

- a. Community Food Pantry
 - b. Farmers to Families
 - c. School Lunch/Meal
 - d. SNAP/Food Stamps
 - e. Women Infant Children (WIC)
 - f. Meals on Wheels
9. Are there other food assistance programs in Choctaw that you are aware of that I have not mentioned?
- a. Yes
 - b. No
10. Please tell me the name(s) of these other food assistance programs that you are aware of in Choctaw that I have not already asked about. (Please write in the space below)
11. Have you ever used or benefitted from any of the following food assistance programs that exist here in Choctaw?
- a. Food Pantry
 - b. Farmers to Families
 - c. School Lunch/Meal
 - d. SNAP/Food Stamps
 - e. Women Infant Children (WIC)
 - f. Meals on Wheels
12. Are there other food assistance programs in Choctaw that you have used or benefitted from that I have not mentioned?
- a. Yes
 - b. No
13. Please tell me the name or type of the other food assistance programs that you have used or benefitted from that I have not mentioned. (Please write in the space below)
14. How often do you use this other food assistance program that you just mentioned?
- a. Sometimes
 - b. All the time
15. If you do not use any food assistance program, please tell me some of the reasons why you do not use a food assistance program [please select all that applies]
- a. Not applicable to me. I do use food assistance program(s)
 - b. Embarrassment
 - c. People might think less of me
 - d. Feeling like other people need the food more
 - e. Schedule conflicts / Hours of operation
 - f. Transportation issues
 - g. Lack of knowledge of how the pantry works
 - h. Concerns for lack of privacy
 - i. Foods available may not meet my needs

- j. Other
 - k. I have sufficient access to food and do not use food assistance program(s)
16. If there are other reasons that I have not mentioned regarding why you do not use a food assistance program, please share them with me. (Please write in the space below)
17. What is your age in years?
18. What is your height? (Include whether using feet/inches or centimeters. Example: If your height is 5 feet 8 inches, write 5 feet 8 inches)
19. What is your weight? (Include whether using kilograms or pounds. Example: if your weight is 175 pounds, write 175 pounds)
20. What is your gender?
- a. Male
 - b. Female
 - c. Other
 - d. Prefer not to answer
21. What is your race?
- a. American Indian or Alaska Native
 - b. Asian
 - c. Black or African American
 - d. Native Hawaiian or Other Pacific Islander
 - e. White
 - f. Prefer not to answer
 - g. Other
22. Are you Hispanic or Latino?
- a. Yes
 - b. No
 - c. Prefer not to answer
23. What is your marital status?
- a. Single, never married
 - b. Married or living with a partner
 - c. Divorced or separated
 - d. Widowed
 - e. Other
24. What is your academic level?
- a. No schooling
 - b. Some high school, uncompleted
 - c. High school graduate, completed
 - d. Trade/technical/vocational training
 - e. Bachelor's degree or higher
 - f. Other
25. What is your employment status?

- a. Unemployed
 - b. Part-time
 - c. Full-time
 - d. Other
26. What is the annual income of your household?
- a. Under \$20,000
 - b. \$20,001 - \$40,000
 - c. \$40,001 - \$60,000
 - d. \$60,001 - \$80,000
 - e. \$80,001 - \$100,000
 - f. \$100,001 or over
27. Not including yourself, how many people live with you in your household?
28. How many children (less than 18 years old) live with you in your household?
29. How many children (less than 5 years old) live with you in your household?

Appendix F - Eligibility Screening Questions

Thank you for your interest in participating in this household food security survey. Please answer the following questions on the next page about your age (whether you are 18 years or older) and your residency status (whether you currently live in Choctaw, Oklahoma or not).

1. Age:
 - a. I am 18 years of age or older
 - b. I am UNDER the age of 18 years
2. Residency Status:
 - a. I currently live within the city of Choctaw, Oklahoma
 - b. I DO NOT currently live in Choctaw, Oklahoma

Appendix G - Consent Form

Welcome to the Choctaw Household Food Security Study! We will start by taking you through the informed consent page. Please read the next page carefully, then answer the question at the end to let us know whether you agree to be part of the study or not.

Below is an overview of what you can expect during the survey.

Title: Household Food Security Within the Community of Choctaw, Oklahoma

Informed Consent information

Background Information:

You are invited to participate in a research study titled “Household Food Security in the Community of Choctaw, Oklahoma” being conducted by Danielle Woods and Dr. Harriet Okronipa from the Department of Nutritional Sciences, Oklahoma State University. We ask that you read this form and contact the research team at danielle.woods@okstate.edu or harriet.okronipa@okstate.edu if you have any questions. Your participation is entirely voluntary.

Procedures:

If you agree to be in this study, we will ask you to answer a series of questions about your food experience, your awareness and use of food assistance programs here in the community of Choctaw, Oklahoma. Your responses will be completely anonymous and you may stop the survey at any time if you do not wish to proceed. Participation in the study involves the following time commitment: Approximately 30 minutes.

Risks and Benefits of being in the Study:

There are no known risks associated with this research study which are greater than those ordinarily encountered in daily life. There are no direct benefits to you. However, this study may provide us with more information regarding food security and food assistance programs in the community of Choctaw, Oklahoma.

Compensation:

Participants who complete the study will have a chance to be entered into a draw for a \$25 gift card. If you would like to be entered into the draw, you will be asked to provide your name and email address at the end of the survey. We will contact all winners after the survey closes.

Confidentiality:

The information that you give in the study will be handled confidentially. The survey is completely anonymous. The name and email you provide at the end of the survey will only be used for the drawing and will not be linked to your survey responses in any way. All the information we collect will be stored on a password-protected computer. This informed consent form will be kept for 3 years after the study is complete, and then it will be destroyed. Your data collected as part of this research project will not be used or distributed for future research studies. The research team works to ensure confidentiality to the degree permitted by technology. It is possible, although unlikely, that unauthorized individuals could gain access to your

responses because you are responding online. However, your participation in this online survey involves risks similar to a person's everyday use of the internet. If you have concerns, you should consult the survey provider privacy policy at <https://www.qualtrics.com/privacy-statement/>. It is unlikely, but possible, that others responsible for research oversight may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share your information if law or policy requires us to do so.

Voluntary Nature of the Study:

Your participation in this research is voluntary. You are free to withdraw your consent and participation in this project at any time.

Contacts and Questions:

The Institutional Review Board (IRB) for the protection of human research participants at Oklahoma State University has reviewed and approved this study. If you have questions about the research study itself, please contact either the undergraduate student investigator at danielle.woods@okstate.edu, or Dr. Harriet Okronipa at harriet.okronipa@okstate.edu. If you have questions about your rights as a research volunteer, you may contact the IRB at (405) 744-3377 or irb@okstate.edu.

Statement of Consent:

If you agree to participate in this survey, please click "I agree to participate in this survey" below. By clicking "I agree to participate in this survey", you are acknowledging that you freely and voluntarily agree to participate in this project and that you are at least 18 years old and live in the city of Choctaw. If you DO NOT agree to participate in this survey, please click "I DO NOT agree to participate in this survey".

Appendix H - Drawing Survey for Compensation

Please enter your name and email address in the indicated spaces below to be entered into a drawing for one of twenty-five \$25 Amazon gift cards. Your name and email address will NOT be linked to the survey in any way. Your survey responses are anonymous.