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Differences in Supplemental Nutrition Assistance Program (SNAP) participation among Oklahoma counties

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Abstract

The Supplemental Nutrition Assistance Program (SNAP) is a federally funded and state administered program to combat food insecurity. Analyzing factors in SNAP participation is important to understanding consumption in food systems and supporting community development. As of 2019, 565,900 Oklahomans participate in the SNAP program, approximately 84% of those eligible for the program. This leads to two questions: why do those who are eligible participate, and how can we better reach those who do not? We analyzed county-level SNAP participation among the income-eligible to identify explanatory characteristics of SNAP usage. Data from sources such as the U.S. Department of Agriculture Economic

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Author Note

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Research Service (USDA ERS) and the U.S. Census Bureau were used to perform a regression analysis on 12 variables, such as store access and number of dependents. The percentage of households with children under 18 and the unemployment rate are associated with increases in SNAP participation among those eligible. Store access and rurality are associated with a decline in SNAP usage. These findings will aid policymakers, SNAP administrators, and outreach education groups in improving program participation by targeting groups susceptible to food insecurity and with low SNAP usage who could benefit from participation.

Keywords
SNAP, Welfare, Supplemental Nutrition, Food Insecurity, Food Assistance, Reducing Hunger, Poverty

Introduction

Food insecurity, the "limited or uncertain availability of nutritionally adequate and safe foods or limited and uncertain ability to acquire acceptable foods in socially suitable ways" (USDA ERS, 2020b, para. 4), is a severe problem in Oklahoma. From 2016 to 2018, 15.6% of the Oklahoma population experienced food insecurity, higher than the national average of 11.7% (USDA ERS, 2021). Only 11 other states had food insecurity rates above the national average (USDA ERS, 2021).

Government nutrition assistance programs play an important role in combatting food insecurity. A variety of broad and more targeted programs are available to provide support for food-insecure U.S. households, such as the Supplemental Nutrition Assistance Program (SNAP) (Gundersen, 2018; Gundersen et al., 2017). SNAP is a federally funded and state-administered program that assists low-income households with purchasing food for a nutritionally adequate diet (Congressional Research Service [CRS], 2018). Ratcliffe et al. (2011) suggest that participation in SNAP reduces the likelihood of being food-insecure by 30%, due to transferring resources to households to help them specifically purchase food. To participate in SNAP, a household's gross income must be at or below 130% of the poverty line or its net income at or below 100% of the poverty line (Hunger Free Oklahoma, 2021). Work-related requirements mandate certain household members to be registered for work, accept suitable job offers, and actively be looking or training for a job (CRS, 2018). Categorical eligibility allows certain groups participating in other welfare-type programs to be eligible automatically for SNAP benefits (CRS, 2018). Oklahoma does not require a lack of drug offenses or a criminal record to be eligible for SNAP (Providers, 2021). This Oklahoma-based research thus focuses on SNAP due to its wide scope of eligibility and the significant number of Oklahoma participants.

Although SNAP is a federal program, participation is voluntary and varies across states. According to the Center on Budget and Policy Priorities (2020), 84% of eligible individuals in Oklahoma participate in SNAP as of 2017. This is a relatively high percentage of SNAP participation compared to some neighboring states: 75% of eligible individuals participate in Texas, 71% in Kansas, while between 95% and 100% of eligible individuals in New Mexico participate (Center on Budget and Policy Priorities, 2020). The variation in the estimated percentage of eligible individuals participating in SNAP across states indicates that there could be unique state and local characteristics that influence participation rates.

The objective of this study is to identify explanatory characteristics of SNAP participation to determine if nutrition assistance programs can better reach eligible individuals who are not yet participating. We hypothesize that differences in SNAP usage rates among Oklahoma counties are based on differences in employment, level of county development, rurality, and household demographics. No published studies are available on SNAP participation in Oklahoma, leaving a gap for lawmakers and SNAP administrators in the state to understand the factors that may affect enrollment. Because SNAP affects the ability of low-income households to participate in food systems as consumers, this research would be valuable to food, agriculture, and community development researchers and practitioners.

Background

Oklahoma faces several socioeconomic challenges, such as high poverty rates, high employment in the

volatile oil and gas industry, and low educational attainment. These factors, among others, may affect participation in food assistance programs. Demographically, Oklahoma has a large Native American[1] population, which creates a unique policy and implementation environment. Other published analyses have included some characteristics relevant to SNAP participation in Oklahoma, but none include all potentially influential factors in a single analysis. We expect that factors such as the mining-dependent economy, the rural/urban divide in nutrition, and local demographics would affect SNAP participation in Oklahoma. We use food assistance program studies at the national, state, and local levels, and Oklahoma's particular characteristics, to inform this research.

Prior Food Assistance Research

The limited number of state and local studies of SNAP participation motivates the need to better understand what influences SNAP participation at a more granular level in order to get assistance to where it is needed. National studies do not allow for inferences to be drawn about individual regions and states but can form a baseline of what factors to consider in a local SNAP participation analysis. Since states are responsible for administering this federal program, taking this research a step further is necessary.

We have identified a few key studies that consider demographic, socioeconomic, and community factors that may influence supplemental nutrition assistance program participation nationally. Pinard et al. (2017) identify unemployment, poverty, the economy, outreach measures, cost of living, family structure, income, education, disability, race, eligibility, and other nutrition program participation as factors that influence an individual's participation in SNAP. Cohen (2019) finds older populations, noncitizens, and households with an employed member are least likely to participate in SNAP. Andrews and Smallwood (2012) suggest that changes in a person's need level, changes in the business cycle, improved access to benefits expanded eligibility, and increased program benefit amounts influence SNAP participation. Additionally, rural SNAP eligible residents participate in SNAP at a rate of 86% versus 73% of eligible urban residents (Bailey, 2014). Bailey (2014) suggests this could be due to lower income and higher poverty in rural areas making rural residents more reliant on government assistance programs.

In addition to demographic, socioeconomic, and community factors, some studies also consider personal attributes or emotions that may influence participation. Juan et al. (2004) indicate that 45% of households not participating in supplemental nutrition assistance programs are food insecure. This is due to factors such as personal independence, cost of application or participation, stigma, low expected benefits, previous bad experiences, and lacking knowledge of how to apply (Juan et al, 2004). A study in Washington state looking at the low SNAP participation among the population over 60 years old identifies stigma and cultural behaviors, misinformation, transportation, and communication with SNAP offices by non-English or limited-English speaking elderly as barriers to participation among seniors (Gabor et al., 2002).

Economic Activity

Oklahoma ranked forty-third among the states for financial health and economic well-being in 2019, partially attributable to a higher percentage of workers in low-wage jobs and a poverty rate above the national average (Cullison, 2019). The 2019 median household income in Oklahoma was US$52,919, compared to the national median income of US$62,843 (U.S. Census Bureau, 2020b). The state's total real gross domestic product is US$203,699 million, which was ranked twenty-seventh in the nation in 2019 (Bureau of Economic Analysis, 2020). All Oklahoma metro counties have experienced employment growth since 2007, but in most non-metro counties employment has decreased, as measured by the number of jobs in the

[1] Because the tribal nations in Oklahoma have origins in North America, this segment of the population is referred to as "Native American" for the purposes of this study. However, we recognize that the population data used could include citizens of other tribal nations as well. Alternatively, "Indigenous" and "First Peoples" could have been used, but we felt "Native American" most closely represents this Oklahoma demographic group.

county (Shideler, 2018). Oklahoma's unemployment rate is closely tied to energy markets, which may run counter to national employment trends. Employment can be highly variable, associated with the number of sites in development and production. During the period of this study, the oil and gas industry accounted for 6.5% of total employment in the state and 13.2% of household earnings (State Chamber of Oklahoma Research Foundation, 2016).

Demographics

Several rural Oklahoma counties experienced an increase in population between 1970 and 2010 due to an increase in energy jobs (Barker, 2012). However, those increases are not expected to be enough to offset a long-term trend of population decline in rural counties and a population increase in urban counties associated with the Tulsa and Oklahoma City metropolitan areas. Forty-one of Oklahoma's 77 counties experienced population decrease since 2010 (World Population Review, 2018). Counties with a declining population generally face restricted business development, which may affect employment opportunities and store access.

Some population demographics are unique to the state. Oklahoma is home to 38 tribal nations, which own millions of acres. Oklahoma has the second-largest Native American population in the U.S., with 523,360 citizens of tribal nations, representing 13.36% of the state population (World Population Review, 2021). The Native American population faces challenges with lower educational attainment, lower labor force participation, and higher poverty rates (Sarche & Spicer, 2008). Nationally, over 25% of the Native American and Alaskan Indian population live in poverty, and only 25% of this population participates in nutrition assistance programs (Native Farm Bill Coalition, 2017; Sarche & Spicer, 2008). These national figures support exploration of SNAP participation among Oklahoma Native American citizens, a historically underserved population, to ensure that those who wish to participate in the program have the resources needed to enroll.

Rurality

Analyses looking at food desert tracts are performed individually for urban and rural areas to allow for systematic differences between these areas (Dutko et al., 2012). Vacant housing, minority population, unemployment, low income, and region of the country were significant predictors of food desert status in rural areas (Dutko et al., 2012). This helps to explain how rural Oklahomans may have limited access to food and may impact their SNAP usage. Additionally, it motivates the need to control for rurality in other food systems research.

Oklahoma rural counties have a lower average household income and an aging population (U.S. Census Bureau, 2020). In the largely rural western half of the state, over 50% of the population has low store access and nine counties are considered food deserts.[2] In addition, jobs may be located far from unemployed individuals, making it difficult to meet SNAP's work-related requirements (Cohen, 2019; Gundersen, 2018). These factors illustrate some of the challenges faced by rural residents and could influence their decision to participate in a supplemental nutrition assistance program.

Access to Stores That Accept SNAP Benefits

Proximity to stores that accept SNAP benefits may influence program participation. Nineteen counties in Oklahoma have fewer than 10 SNAP-authorized stores (USDA ERS, 2020a). Tulsa and Oklahoma counties have 466 and 681 SNAP authorized stores, respectively, including grocery stores, convenience stores, supercenters, and specialized food stores. The percentages of SNAP recipients with low store access in their county range from 1.45% to 100%. In rural communities, the nutritional value of items that can be purchased with SNAP benefits may be lower than in urban communities because the only store in town may have a limited selection of nutritious foods. Lack of participation by those who qualify may also be due to limited program education and deficient transportation to access program benefits. The distribution and consumption of food eligible for purchase under the

[2] This study defines food deserts as counties where residents must drive 10 or more miles to the nearest grocery story or supermarket (Morton & Blanchard, 2007).

SNAP program may be an area for future food systems research.

Materials and Methods

Data

Data are available through the USDA ERS data on rurality (USDA ERS, 2019a), store access (USDA ERS, 2020a), and county typologies (USDA ERS, 2019b). The U.S. Census Bureau (2020a) American Community Survey five-year estimates include data on SNAP recipients and household demographics. Data are obtained from the Bureau of Economic Analysis (2020) on development (measured through GDP) and the Oklahoma Employment Security Commission (2021) on employment.

The most recent data sources, for 2015 and 2017, are used and represent a snapshot in time on SNAP participants in 2015. While more recent data is available on some characteristics, this was the window of time in which the most data overlap occurs. The variables represent employment, level of county development, location, and demographic measures, that we hypothesized influence SNAP usage rates. The variable representing "employment" is the unemployment rate. People are considered unemployed if they are available for work, but do not have a job and have actively looked for work in the past four weeks (U.S. Bureau of Labor Statistics 2015). County development is represented by GDP, a measure of the value of production in the county. The variable "store access" is the number of people in an urban county living more than one mile from a supermarket/large grocery store or the number of people in a rural county living more than 10 miles from a supermarket or large grocery store (USDA ERS, 2020a). Further data descriptions and summary statistics for the variables in the regression are shown in Table 1, except for the Rural-Urban Continuum Code statistics for Oklahoma, which are in Table 2.

The regression identifies explanatory characteristics using county-level SNAP participation as a percentage of the population below 125% of the poverty line as the dependent variable (*SNAPUsage*). This dependent variable measures the variability in actual enrollment among those who are likely income-eligible for SNAP, primarily following a Program Access Index created for a study in New York City (Cohen, 2019; Lorts et al., 2019). Since not every SNAP-eligible individual participates, this dependent variable allows us to determine the factors that influence usage among those who are likely eligible.

Urban and rural communities are identified using the USDA ERS Rural-Urban Continuum Codes (RUCC). RUCC categories distinguish metropolitan counties by the population size of their metro area and nonmetropolitan counties by the degree of urbanization and closeness to a metro area (USDA ERS, 2019a). The continuum codes range from 1 to 9, where 1 is fully urban and 9 is fully rural. Table 2 describes the differences in codes.

Model Specification

The influence of county-level characteristics on SNAP usage (participation among those income-eligible) is measured through ordinary least squares regression analysis. The Breusch-Pagan/Cook-Weisberg test is used to test for heteroscedasticity. The null hypothesis is constant variance (homoscedasticity); the critical value is 0.07 (p-value is 0.7976) for the regression, thus failing to reject the null hypothesis. Model specification tests based on the Ramsey RESET test reveal no specification issues with Equation 1 (below). The F-stat is 1.19 and the p-value is 0.32, indicating that the functional form does not suffer from omitted variable bias. Variance inflation factors are used to check for multicollinearity. All VIFs are below 3, indicating that the model does not suffer from multicollinearity. OLS results are presented here to calculate the relationship between *SNAPUsage* and the twelve independent variables in Table 1. The final regression is shown in Equation 1:

[Equation 1]
$$\begin{aligned} SNAPUsage_c = {} & \alpha + \beta_1 PovRate_c + \\ & \beta_2 StoreAccess_c + \beta_3\, Age65_c + \\ & \beta_4 Dependents_c + \beta_5 Female_c + \\ & \beta_6 GDP_c + \beta_7 LowEd_c + \\ & \beta_8 NativeAmerican_c + \beta_9 UnempRate_c \\ & + \beta_{10} MiningDependent_c + \beta_{11} Rural_c \\ & + \beta_{12} PopLoss_c + \varepsilon \\ & C \in \{77 \text{ Oklahoma Counties}\} \end{aligned}$$

Results and Discussion

The combination of independent variables captures 45.33% (35.08%) of the variability of SNAP usage in Oklahoma as measured by the unadjusted and adjusted R^2, respectively.[3] Store access, households with children under 18, unemployment rate, and the rural dummy[4] significantly affect SNAP usage. The percentage of Native American people has a

Table 1. Summary Statistics for SNAP Participation Rate Explanatory Characteristics (RUCC are in Table 2)

Variable	Variable Description (Year)	Type	Data Source	Mean (Std. Dev.)	(Min, Max)
SNAPUsage	Actual SNAP recipients as a percentage of the population below 125% of the federal poverty line (2015)	Percentage	U.S. Census Bureau American Community 5-year Survey	55.467 (12.508)	(24.888, 82.195)
PovRate	Poverty rate (2015)	Percentage	U.S. Census Bureau American Community 5-year Survey	17.053 (4.64)	(9.8, 29.9)
StoreAccess	Percentage of SNAP recipients with low access to any store (2015)	Percentage	USDA ERS	27.848 (19.154)	(1.45, 100)
Pop65	Percentage of population 65 or older (2010)	Percentage	U.S. Census Bureau American Community 5-year Survey	16.042 (2.727)	(10.24, 21.95)
Dependents	Percentage of households with children under 18 (2015)	Percentage	U.S. Census Bureau American Community 5-year Survey	29.194 (15.192)	(5.882, 147.82)
Female	Female percentage of the population (2015)	Percentage	U.S. Census Bureau American Community 5-year Survey	49.725 (2.031)	(39.983, 52.336)
GDP	GDP in 2015 in millions of dollars	Continuous	Bureau of Economic Analysis	2.409 (8.333)	(0.076, 54.586)
LowEd	County has 20 percent or more residents 25–64 with neither HS diploma nor GED from 2008-2012	Dummy	USDA ERS	.0519 (0.223)	(0, 1)
NativeAmerican [a]	Native American percentage of the population (2015)	Percentage	U.S. Census Bureau American Community 5-year Survey	10.148 (7.892)	(0.73, 42.01)
UnempRate	Unemployment rate (2015)	Percentage	Oklahoma Employment Security Commission	4.919 (1.457)	(2.3, 8.6)
MiningDependent	County has 13 percent or greater of average annual labor and proprietor earnings derived from mining, or 8 percent or greater of total employment in mining 2010–2012	Dummy	USDA ERS	0.299 (0.461)	(0, 1)
Rural	County has a RUCC of 7, 8, or 9	Dummy	USDA ERS	0.403 (0.494)	(0, 1)
PopLoss	County number of residents declined between 1990 and 2000 censuses and between 2000 and 2010 censuses	Dummy	USDA ERS	0.156 (0.365)	(0, 1)

[a] Census data includes those individuals that selected "American Indian" or "Alaskan Native" on the Census. The OMB defines "American Indian or Alaska Native" as a "person having origins in any of the original peoples of North and South America (including Central America) and who maintains tribal affiliation or community attachment" (Norris et al., 2012).

[3] The R^2 is a goodness-of-fit measure for a linear model, representing how much of the variability in the dependent variable is explained by the independent variables. The unadjusted R^2 does not account for the number of variables in the model, while the adjusted R^2 does.

[4] A "dummy" variable takes a value of 0 or 1 to indicate the absence or possession of a categorical factor. For example, a value of 1 for low education indicates the county had a 20% or greater share of residents aged 25–64 with neither a high-school diploma nor a general educational development (GED) certificate from 2008–2012, while a value of 0 indicates the county does not meet that same criterion.

marginally significant effect on SNAP usage rates. Table 3 illustrates all explanatory characteristics in the regression.

As the percentage of SNAP participants with low access to a store increases by 1 percentage point, SNAP usage decreases by 0.167 percentage points. As more people have low store access, the SNAP usage rate declines, indicating that increased store access may increase SNAP usage. Store access is a logical participation determinant in a nutrition assistance program that requires shopping at a participating store. Individuals without store access may be more likely to participate in a program that provides physical goods or rely on organizations such as churches to deliver needed foods. Access could also be associated with a decrease in SNAP usage by 7.384 percentage points for rural counties, relative to suburban and urban

Table 2. Rural-Urban Continuum Code (RUCC) Descriptions

Rural-Urban Continuum Code[a]	Metro/Nonmetro	Description
1	Metro	Counties in metro areas of 1 million population or more
2	Metro	Counties in metro areas of 250,000–1 million population
3	Metro	Counties in metro areas of less than 250,000 population
4	Nonmetro	Urban population of 20,000 or more, adjacent to a metro area
5	Nonmetro	Urban population of 20,000 or more, not adjacent to a metro area
6	Nonmetro	Urban population of 2,500–19,999, adjacent to a metro area
7	Nonmetro	Urban population of 2,500–19,999, not adjacent to a metro area
8	Nonmetro	Completely rural or less than 2,500 urban population, adjacent to a metro area
9	Nonmetro	Completely rural or less than 2,500 urban population, not adjacent to a metro area

[a] For this study, codes 1 to 3 were combined as "urban," codes 4 to 6 were combined as "mixed urban/rural," and codes 7 to 9 were combined as "rural."

Table 3. Results of the Relationship Between Oklahoma SNAP Usage (*SNAPUsage*) and Explanatory Characteristics (*N*=77)

Variable	Coef.[a]	Std. Err.	t	P> |t|	95% Confidence Interval
PovRate	0.475	0.425	1.12	0.268	(–0.375, 1.324)
StoreAccess	**–0.167**	**0.070**	**–2.37**	**0.021**	**(–0.307, –0.026)**
Age65	0.156	0.553	0.28	0.779	(–0.949, 1.261)
Dependents	**0.181**	**0.082**	**2.21**	**0.031**	**(0.018, 0.345)**
Female	–0.219	0.614	–0.36	0.723	(–1.446, 1.008)
GDP[b]	–0.036	0.158	–0.23	0.819	(–0.352, 0.279)
LowEd	–2.848	6.141	–0.46	0.644	(–15.116, 9.421)
NativeAmerican	–0.362	0.233	–1.56	0.125	(–0.827, 0.103)
Unemp_Rate	**3.500**	**1.353**	**2.59**	**0.012**	**(0.798, 6.202)**
MiningDependent	–2.608	2.899	–0.90	0.372	(–8.400, 3.184)
Rural	**–7.384**	**2.796**	**–2.64**	**0.010**	**(–12.970, –1.798)**
PopLoss	0.435	4.452	0.10	0.923	(–8.459, 9.328)
Constant	45.479	31.852	1.43	0.158	(–18.152, 109.110)

Source: OLS regression results.
[a] Variables that have a significant coefficient at the 10% significant level or better are bold.

counties. There could be several explanations for this result. First, while urban residents may be more aware of where they can use SNAP benefits if they were to apply for the program, rural residents may not realize it is an option in their area if their county does not have a major grocery retailer. Although food options may be limited in rural areas, many convenience stores, specialized food stores, and small grocers are SNAP retailers in Oklahoma. Second, this result may be related to Gundersen's (2018) observation of the role social stigma plays in participation, particularly since Oklahoma rural areas are highly conservative.

The percentage of the population that is Native American is, at most, marginally significant; however, given the importance of this population in the Oklahoma economy, the results will be presented more fully. As the percentage of the population identifying as Native American increases by 1 percentage point, SNAP usage decreases by 0.362 percentage points. As the Native American population generally has a high poverty rate, many Native American people are income-eligible for SNAP. While the exact reason for usage decrease is unclear, there may be several possible explanations. First, the existence of additional tribal or state programs serving those groups, including alternative programs such as the Food Distribution Program on Indian Reservations (USDA Food and Nutrition Service, 2018), may affect the usage of SNAP. Second, there may be effects from stigma associated with government programs, such as reliance on government funds and capability of purchasing foods (Gunderson, 2018). Due to the large Native American population in the state, dedicating resources to better understand SNAP usage by this segment of the population would be a valuable extension of this work.

A 1 percentage point increase in the unemployment rate increases SNAP usage by 3.5 percentage points. This could be due to individuals seeking temporary assistance during periods of unemployment. As industries like oil and gas are prominent in the state, there may be a greater need for temporary supplemental assistance than in regions dominated by industries with more consistent employment.

A 0.181 percentage point increase in SNAP participation rate occurs when the number of households with children under 18 increases by 1 percentage point. Households with children are more likely to participate in food assistance programs (Pinard et al., 2017). As the number of children within a household increases, the likelihood of experiencing chronic poverty and participating in SNAP both increase (Pinard et al., 2017). SNAP benefits increase with the size of a household, so the program may seem more attractive to households that will receive greater benefits. The population over 65 was not a significant user of SNAP; this is not unexpected, as previous literature indicates that aging populations may utilize other sources of food aid such as food pantries (Robinson, 2017) and may not utilize SNAP as extensively (Geiger et al., 2014).

Conclusions

Oklahoma consistently faces food insecurity challenges due to factors such as average household incomes that are lower than the national average, large numbers of workers in lower-wage jobs, large rural areas, a mining-dependent economy, and above-average poverty rates. SNAP can play a role in reducing food insecurity in the state. As of 2019, Oklahoma SNAP usage (the percentage of SNAP eligible individuals who participate out of those who are likely income-eligible) is 84% (Center on Budget and Policy Priorities, 2020). However, little analysis is available on these local and regional SNAP participants, and none that is specific to Oklahoma. This study provides a first attempt at identifying factors affecting SNAP usage among income-eligible Oklahoma households. The results identify areas that may contribute to the remaining 16% gap in Oklahoma SNAP usage. This analysis can help policymakers, SNAP administrators, and partner education institutions better understand SNAP participation, which can enhance outreach to groups that are eligible and could benefit from the program but are not yet participating.

The unemployment rate and the number of households with children under 18 are positively associated with SNAP usage in Oklahoma. It is logical that the demand for supplemental nutrition assistance increases with the percentage of the workforce unemployed and with the number of

households who have children. Store access, the percentage of the population that is Native American (marginally), and rurality are associated with lower SNAP usage. Further analysis is needed to better understand the reasons behind these results. Limited store access may indicate a barrier to participation. However, this result may also indicate an opportunity for education on how to use SNAP benefits and where they are accepted, such as by helping SNAP users learn that places like gas stations and convenience stores often accept SNAP benefits. Further analysis will be needed to identify why decreases in SNAP usage were found among rural counties and in Native American populations. The effects of limited store access and of rurality on SNAP usage may be related, particularly as small-town populations and small-town grocery store numbers decline. However, reduced SNAP usage in rural counties may also be associated with a reluctance to participate, due to factors such as perceived social stigma from participating. That the Native American population has lower SNAP usage rates may have several explanations, including fewer outreach programs designed for this underserved population and alternative nutrition assistance programs available to this community.

The results from this analysis suggest expanding education opportunities to target audiences, and the need to better understand the effectiveness of outreach efforts. For example, Oklahoma State University Extension's popular co-parenting classes could have literature available on eligibility and enrollment in SNAP for households with children under 18 and parents who may be working part-time to assist with childcare. Partnerships with city chambers of commerce and county government programs, especially in rural counties, can be used to distribute additional information on how stores can become authorized to accept SNAP benefits, to better advertise stores which accept SNAP benefits, and to connect with state food-pantry programs to start local outreach where needed. These results indicate that increasing store access may be the most manageable way to increase SNAP usage. More broadly, this analysis could enhance agricultural and regional economists' focus on nutrition assistance based on characteristics specific to their regions, tying more closely to associated research in regional and community development, food systems, health, and consumption spending. State lawmakers exploring economic development may find these results helpful as they consider programs to encourage small business growth, job opportunities, and improving the well-being of their constituents.

SNAP does not represent the only nutrition assistance available in Oklahoma, so analyzing it in isolation may not reflect the combined programs or resources used by at-risk households. Future research could consider other supplemental nutrition assistance programs available in the state, such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), the Food Distribution Program on Indian Reservations (FDPIR), and the several programs that support the nutrition of school-aged children (Oklahoma State Department of Education, n.d.). Participation in these alternative programs could influence SNAP participation (Pinard et al., 2017).

This analysis forms a starting point that could serve as a baseline for comparison to future research during an economic downturn as data becomes available. For example, the concurrence of economic challenges associated with the COVID-19 pandemic in 2020–2021 and low oil prices in 2019–2020 creates an ideal opportunity to see how Oklahoma SNAP usage changes in economically difficult times. In addition, there may be an opportunity to work with Oklahoma's tribal nations on further studies of nutrition assistance targeted to these groups.

This analysis of SNAP usage in Oklahoma supports a need for research on SNAP participation at the local and regional levels. Other states can replicate this project with their unique factors that may impact SNAP participation, just as this study built from a study in New York City. Factors such as poverty rate, education, and race may influence SNAP participation nationally, but gaining insights into the specific factors at a more granular level may have benefit for increasing SNAP participation and reducing hunger in individual communities.

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