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Socioeconomic Analysis: Demographic and Social Factors in Relation to SNAP Participation

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by

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Submitted to The Department of Business and Economics

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Chat GPT helped me with commands in Stata to run my regressions. I also used Grammarly for grammatical checks.

Abstract

The Supplemental Nutrition Assistance Program (SNAP) serves as a vital social safety net, alleviating food insecurity for low-income families nationwide. This study examines the impact of specific demographic and socioeconomic factors on SNAP participation using data from a Texas county-level analysis of income, age, race, and education. The analysis uses survey data from IPUMS for the regression models, tables, and graphs shown.

CHAPTER 1: Introduction

Social safety nets have assisted many American households for years, one of the most prominent being the Supplemental Nutrition Assistance Program (SNAP). SNAP is the largest nutritional assistance program in the United States, and with most of its funding coming from the federal level, its primary intention is to reduce food insecurity. However, the academic literature is sparse on the socioeconomic factors in a given area that affect SNAP participation. Previous research suggests that households using SNAP benefits often experience financial indebtedness. In this study, I investigate why this might be the case and whether the correlation remains valid. Focused on the relevance of Texas and comparing and contrasting at the county level, the state's population composition, second in the United States, renders SNAP in this state a unique endeavor. With steady socioeconomic contributions, the counties of Texas range from those with high poverty to those with high accrued net worth, exhibiting many statistically significant differences yet similarities on a larger scale. Thus, through the lenses of age, race, educational attainment, and income levels, a greater understanding comes from examining these factors on a county level. The central research problem of this analysis is: Which demographic and socioeconomic factors predict SNAP usage in Texas counties? This study uses individual-level data from the Integrated Public Use Microdata Series (IPUMS), specifically Texas data from 2010 to 2024. The primary analysis involves multiple regression models to assess the

significance of the independent variables — age, income level, educational attainment, and race — as they predict enrollment in SNAP.

This assessment contributes to the discussion on household debt by framing SNAP as a financial endeavor. It takes SNAP into account as more than a food benefit, but as a resource that essentially saves households from owing money. An educated awareness of SNAP enhances understanding of safety net resources and informs policy adjustments in the future.

CHAPTER 2: SNAP History and Function

First, let us examine the historical context of SNAP and its evolution. The purpose of a federal food assistance program is rooted in the Great Depression of the 1930s, when federal subsidies for food products were enacted to stabilize a nation in crisis. Then, in 1964, the proposed Food Stamps Act intended to help low-income Americans purchase food more efficiently. Such an initiative had an immediate impact on the economy from the day of distribution; low-income men, women, and children experienced increased purchasing power and additional per capita expenditures, resulting in an economic boom across the board, even in upstate and rural areas. Thus, the 1964 Food Stamp Act was integral to a poverty alleviation effort, hunger alleviation, and the development of successful programs, laying a solid foundation for what is known today. The only thing that changed in 2008 with the Food, Conservation, and Energy Act was the nomenclature; the Food Stamp Program was renamed the Supplemental Nutrition Assistance Program, indicating a shift in identity from a food assistance program to a healthy food buying assistance program and a food insecurity reduction program.

SNAP is the most extensive hunger relief program in the United States. SNAP assists low-income individuals, including men, women, and children, who struggle to access food. SNAP benefits are provided on Electronic Benefits Transfer (EBT) cards, allowing certain grocery purchases to be made. What is not permitted, however, are non-food items, alcohol,

tobacco, and prepared foods intended for immediate consumption. Federal poverty guidelines determine SNAP eligibility. Households with gross income of 130% or less of the poverty guideline are eligible for SNAP; their net income must be 100% or less of the poverty guideline. In addition to this requirement, households must maintain assets equal to or less than $5,000, except for $4,250 for households containing an elderly or disabled person who fails the gross income requirement (DHS.gov). SNAP has undergone legislative changes since 2018. In 2022, the reauthorization of the Farm Bill required the USDA to update the Thrifty Food Plan (TFP) for better alignment with current standards 2022 every five years thereafter. This adjustment in 2021 resulted in a 21% increase in SNAP benefits, improving food purchasing power and affording many SNAP recipients a better opportunity to buy what they needed (Food and Nutrition Services). This translates to a $1.502 billion increase in benefits in Texas alone. However, the most recent change, by 2023, was the expiration of COVID-19 SNAP benefits, which resulted in lower benefits and reduced food security for many people. Additionally, the 2024 changes modify work requirements for SNAP eligibility among individuals aged 18-54 without dependents. Thus, many will find their SNAP eligibility changed sooner rather than later. In general, such changes to eligibility are beneficial for low-income families, but they are subject to change based on larger socioeconomic factors, such as inflation and employment rates. Texas also has specific state-based policies relative to eligibility. For instance, the Texas Simplified Application Project (TSAP) encourages a simplified application process; households with elderly or disabled members living together also receive more extended certification periods. Moreover, Texas has an asset limit that exceeds national policy asset limits; the state grants a $5,000 asset threshold for all households, regardless of age or disability status (Texas Health and Human Services; Urban.org).

In addition, work requirements are in place for almost everyone ages 16-59. Participants must apply for work to receive benefits, accept suitable jobs when offered, and not leave jobs without pay for ill-fated reasons. For example, Able-Bodied Adults Without Dependents (ABAWDs) can only receive benefits for three months within 36 months unless they can provide proof of 20 hours a week of work or training. However, some people are exempt from these requirements, including those medically documented as unable to work, pregnant women, and those with dependent young children. Students may qualify if they are enrolled at least half-time and also work in a work-study program or as caregivers (Food and Nutritional Services). Such requirements and eligibility create a more just safety net for these vulnerable populations who still get assistance, like the elderly, disabled populations, and those with children.

SNAP benefits extend beyond food security. In measurements of economic gains, SNAP has reduced poverty. In 2016, SNAP reduced poverty for 3.4 million people, and the natural poverty rate went from 14.2% to 13.1% (US Census Bureau). Most recently, in 2024, SNAP provided a safety net for 41.5 million low-income households to maintain their buying power and access to food amid inflation increases (CBPP). SNAP impacts health care expenditures. Food insecurity correlates with poor health and increased healthcare costs; one study in JAMA Internal Medicine found that SNAP participants had $1,400 lower annual healthcare costs than non-participants. Participants with hypertension had $2,700 lower health care costs than those without hypertension. Participants with coronary heart disease had nearly $4,100 lower costs. Other studies show that healthcare expenses can decrease by $5,000 per person annually. However, SNAP also has a strong economic multiplier. The U.S. Department of Agriculture's Economic Research Service (ERS) reports that for every $1 billion increase in SNAP benefits, the economy sees a $1.54 billion increase in GDP and more than 13,000 jobs supported, including hundreds in agriculture. According to the Congressional Budget Office and Food

Research & Action Center, $1.73 in economic activity is generated for every dollar invested in SNAP, which is an effective program. Additionally, the average monthly participation increased by 76.8% nationwide, and the annual budget expanded from $30.4 billion to $71.8 billion.

The SNAP program has been instrumental in addressing food insecurity for millions of low-income households, leading to improved health and wellness metrics and increased economic productivity during recessions and depressions. SNAP's success in providing people with equal access to adequate food is also essential to external research on how and why individuals engage with such a program and what additional stresses it may alleviate in their lives.

CHAPTER 3: Literature Review

Numerous studies have posed the question of how SNAP contributes to economic stability by relieving one less financial burden on low-income households. This reallocation of resources makes taking out loans at high interest rates unnecessary, which is a last resort for families struggling to make ends meet.

Similarly, Ratcliffe et al. (2016) examine the asset-related eligibility requirements of SNAP and their impact on savings behavior. They argue that if families understand that having a large cash reserve may result in the loss of their SNAP benefits, they are less inclined to save; therefore, relaxing such asset thresholds would enable policymakers to view SNAP as more than a supplemental income program for nutritional needs, but one that encourages long-term planning and sustainability. For instance, if families are allowed to save without fear of their benefits being stripped, they are less likely to fall into unforeseen expenses that lead to debt. On the contrary, those who cannot save live on a razor-thin edge and are more likely to go into debt than those who can save. SNAP had a particularly significant impact on household budgets during the COVID-19 pandemic. For instance, Di and Smith (2021) note that the emergency expansions of SNAP during the pandemic, in conjunction with other relief efforts, reduced households' reliance upon high-cost credit. This was particularly crucial when many low-income

households faced reduced hours and layoffs. Therefore, this short-term increase in SNAP benefits leveled consumption, reduced credit card spending, and prevented additional debt.

Additionally, further evidence of this idea comes from Baker et al. (2020), who report that consumer debt decreases during the pandemic. This implies a shift in spending from borrowing power to practical need. SNAP encourages this because stabilized families with food security do not need to take out loans for food, medical repairs, or even rent; they are more stabilized and not as in crisis mode as the rest. The fact that less consumer debt was found during the pandemic implies that SNAP families had access to what they needed and were not dependent upon loans for food, medical, or housing to survive. Ultimately, the Center for Poverty Research (n.d.) also reports that SNAP-eligible families are less likely to experience poverty and less likely to accumulate consumer debt. Thus, SNAP creates stabilization efforts.

SNAP was not a stabilization resource during the pandemic. Instead, it was crucial to provide foundational support so families do not fall into negative debt standings even after the pandemic. The more families achieve food security, the more they can focus on maintaining employment, avoiding debt, and improving their quality of life. This goes beyond socioeconomic stabilization efforts. Further research should determine the demographics that indicate a greater or lesser ability to lend, based on SNAP statistics, such as race, age, and income, which my research will also explore.

Gundersen et al. (2022) and Hardy et al. (2021) evaluate economic disruption in life, including job loss and health emergencies, as a significant determinant of SNAP receipt. These papers acknowledge SNAP as a valuable resource that many turn to; however, in emergencies, families also seek TANF and similar programs to stabilize more complex socioeconomic disruptions permanently. As a result, extensive socioeconomic concerns often arise across

multiple income assistance programs. For example, SNAP receipts indirectly contribute to lower medical debt (Berkowitz et al., 2017). If people have spare cash for out-of-pocket urgent care costs, lower medical debt lessens the need to acquire predatory loans and reduces long-term financial distress. However, like SNAP, this does not relieve the reasons why debts are incurred, whether from loan sharks, rent, or the failure to access appropriate medical care. Yet, integrating policy for SNAP and housing assistance, Medicaid, and unemployment services might be more successful in reducing low-income family household debt over time through socioeconomic avenues. More qualitative research, such as interviews or ethnographies, can provide insight into family composition, socioeconomic factors, and how they intersect with SNAP usage potential to alleviate competing resources among families with specific needs.

Geographic and demographic considerations also impact the effectiveness of SNAP in reducing household debt. According to Schanzenbach et al.'s (2021) research, the effectiveness of SNAP depends on where someone lives. For example, SNAP is more effective in urban settings than in rural ones. Urban environments have better access to administrative resources and public services; thus, they better match the effective distribution of resources and reduce household debt for low-income families using SNAP. Yet, rural settings often lack outreach, carry a stigma against those seeking help, and have ineffective internet use that contributes to adverse outcomes.

Wolfson et al.'s (2024) connection to similar rural resources fills the gaps where SNAP fails in rural applicant populations. Where SNAP operates, Wolfson et al. find that, in conjunction with housing assistance, SNAP helps avoid food insecurity and evictions. This emphasizes the importance of connected intervention services during economic distress, and knowing how these intersectional interventions work for diverse populations would translate to better policy implementation at the state and local levels. Ultimately, after research resolves rural

applicants' concerns, it will be essential to examine how SNAP functions in addressing these households' food, housing, and health insecurities. Additionally, connecting SNAP policies to recipient actions would be beneficial, for example, in terms of how emergency allotments or waivers of work requirements influence people's behavior within the program and subsequent outcomes over time.

Bianco and Moellman (2024) have conducted the most extensive academic study on SNAP and household debt. From 1999 to 2019, panel data indicated that household debt is significantly related to SNAP participation, but not to TANF. For instance, a one-standard-deviation change in household debt results in a 7.57% increase in SNAP participation over the subsequent ten quarters. Thus, SNAP is a more elastic safety net for those needing temporary assistance since it is more flexible than TANF, which has stricter guidelines and time limits. This result fortifies SNAP as a program that lends itself to proactively adjusting to economic conditions. When household debt rises, a reliably cyclical pattern emerges: food assistance is the immediate and most elastic response. Moreover, the authors conclude that household debt is both a predictor and a consequence of financial distress. This reinforces the idea that support programs that prevent such household debt from becoming necessary would be effective.

CHAPTER 4: Economic Trends and Expectations

Now, let's examine the trends in these countries and my expectations before reviewing the data and models. Of course, as with any state, some counties in Texas are poorer than others. However, this is the case where the need for SNAP is different. For the past twenty years, the counties have held a socioeconomic poverty level of 20%, which means that for 20% of the residents, over time, this economic strain keeps families in a struggling position, relying upon SNAP. (Every Texan, 2023). This is where these families' debt-to-income ratios (DTI) come into play. High DTI ratios imply that these families are more in debt than they earn in salary, further complicating their financial security. Thus, counties with a higher upper-bound debt-to-income (DTI) ratio in Texas are more likely to contain individuals who cannot pay their debts based on income and require Supplemental Nutrition Assistance Program (SNAP) to alleviate food-related expenses. Conversely, counties with a lower DTI ratio tend to be more stable, with a stable population, and require less governmental assistance. Research by Bianco and Moellman (2024) found that SNAP serves as a monetary supplement, allowing families to spend less on food and, consequently, allocate the saved funds towards rent, medical bills, or debt payments. When

someone loses their job, it's a clear sign that more income is unavailable to households and food stability is not improved. Therefore, counties with the highest unemployment will have the highest SNAP enrollment. Based on this, we can reasonably conclude that SNAP enrollment is closely tied to unemployment and poverty. When individuals lose their jobs, a family's income significantly decreases, creating food insecurity and a reliance on programs such as SNAP. Therefore, it is a logical assumption that counties with a higher unemployment rate will simultaneously have a higher enrollment in SNAP. In an attempt to confirm or deny this hypothesis, let's look at a small case study with four specific counties in Texas that bear the extremes of the socioeconomic spectrum: two wealthy Texas counties and two poor Texas counties in the year 2023.

The counties chosen —Willacy, Dimmit, Kendall, and Rockwall —vary in their socioeconomic makeup, which impacts their SNAP enrollments. For example, Willacy and Dimmit have poverty levels of 29% for Willacy and 25.1% for Dimmit, and above-average unemployment levels. For example, the unemployment rate in Willacy County was 7.8% as of 2023, while Dimmit's rate was 3.2% (Texas Workforce Commission, 2023). This means that many of these populations lack access to employment opportunities, which traps them in a cycle of financial distress, likely exacerbated by food insecurity. Therefore, SNAP is an essential service for these low-income populations that need support to meet their basic food requirements. Alternatively, Kendall and Rockwall have significantly lower poverty levels, at 7% for Kendall and 4.7% for Rockwall, as well as lower unemployment rates, at 3.3% for Kendall and 3.6% for Rockwall (Texas Workforce Commission, 2023). Thus, these socioeconomic conditions reflect a more stable economy with more access to jobs, which reduces the need for government-subsidized food assistance programs.

Other indicators of income disparity include educational attainment and debt-to-income (DTI) ratios. According to the U.S. Census Bureau (2022), Kendall and Rockwall have a higher average educational attainment rate among the adult population, with a bachelor's degree or higher, compared to Willacy and Dimmit. For example, over 40% of Rockwall County residents hold a bachelor's degree or higher, compared to less than 15% in Willacy and Dimmit, indicating that college completion is significantly more common in these two higher-income areas. Higher-income markets typically offer better employment opportunities for individuals with bachelor's degrees. In addition, the counties are similarly located with average DTI ratios, just in different contexts. Willacy and Dimmit have higher average DTI ratios, so they likely struggle more. In contrast, Kendall and Rockwall have lower average DTI ratios, indicating they will likely manage their household debt more effectively (Consumer Financial Protection Bureau, 2022). These socioeconomic indicators —poverty, unemployment, education, and DTI —determine how much counties utilize SNAP. In the case of Willacy and Dimmit, high poverty and unemployment levels, compounded with low educational attainment and high DTI ratios, create a socioeconomic destitute realm. Citizens of these counties are less likely to have access to resources or opportunities that would help them upwardly mobilize and are, therefore, more likely to rely upon such safety net programs to fulfill their most basic needs. Conversely, Kendall and Rockwall have low poverty and unemployment rates, which are attributed to higher educational attainment and the ability to manage debt. As for the utilization of SNAP, Willacy and Dimmit have rates of 23.2% and 18.1%, while Kendall and Rockwall have rates of 4.6% and 6.3%, respectively (Zip Data Maps, 2023). Such figures validate that structural socioeconomic advantages significantly reduce the need for such programs, while socioeconomic disadvantages substantially increase dependence.

Therefore, they are using it as a temporary resource to get by during times of increased debt or fiscal distress, not as a permanent solution. Households are more likely to use SNAP when their debt levels are higher, allowing families to allocate a greater portion of their scarce income to food and less to other necessities, such as housing, medical care, and utilities (Bianco & Moellman, 2024). SNAP eliminates the need to borrow credit from high-interest credit cards or payday loans, which trap low-income families in debt spirals (Evans, 2023). SNAP was a good temptation for additional allowance per family during the pandemic because for families in debt distress during the pandemic, SNAP alleviated their fall into undue, unnecessary debt pits as it provided extra money to stay afloat so they wouldn't have to pay high-interest loans to stay above water (USDA, 2023). Therefore, Dimmit and Willacy SNAP could be a requirement for the foreseeable future in counties with higher poverty rates and unfavorable debt-to-income ratios. However, in counties with lower poverty rates and better debt-to-income ratios, Kendall, Rockwall, and SNAP are utilized when times are tough. Still, they are not tools for families who can otherwise manage without them. This is also further supported by nascent research that claims SNAP is a consumption-smoothing measure in addition to other household economic plans, where socioeconomic status supports success as an additive, rather than an anti-poverty measure (Urban Institute, 2016; Brewer, 2022). Therefore, assessing participation via counties should reveal that families are not using SNAP because they are in poverty, but rather need a consumption-smoothing resource while they are vulnerable.

CHAPTER 5: Methodology

For the data I used, I will be pulling survey data from the Integrated Public Use Microdata Series (IPUMS), which contains contextual information on Texas residents since 2010, encompassing 3,365,034 individuals. The relevant variables include race, age, education level, income, and whether the respondent is currently receiving SNAP benefits. This database is widely used for research and policy because of its extensive years of cross-temporal variable harmonization and adequate documentation.

The first step I took to assess the situation was to determine the total number of SNAP recipients annually using the collapse function in Stata. This allowed me to create annual totals

and evaluate a macro trend over a 14-year period. A line chart spanning 2010-2024 of the collapsed data facilitated a clearer understanding of enrollment fluctuations and a proper baseline for subsequent demographic assessment. I even changed the x-axis to reflect every two years for better presentation and visual appeal, as this allowed new readers to see exact numbers that fluctuated during specific periods of policy changes or natural disasters, and the more structural factors, such as SNAP expansions during COVID and fluctuations due to the Farm Bill. Following the trend analysis, I conducted regression analyses to explore the predictive significance of demographic variables on SNAP receipt. Next, I assessed the racial composition of my dataset using the frequency table function and was able to ascertain the racial breakdown, which showed how different racial groups are represented. Although race wasn't used in the regression at this stage, it still provides important insight into differences in participation and exposure to economic challenges. Understanding racial makeup is key to understanding who may be eligible for or using SNAP.

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These regressions aim to assess the importance of age, income, and education level, both independently and collectively, to determine whether a person is more or less likely to receive SNAP benefits. For example, the first regression used age and income as independent variables to determine whether older individuals were more or less likely to receive SNAP benefits than those with lower incomes. Research has shown that older individuals are more susceptible to public assistance due to their inability to work or remain in low-income positions (Gray, 2021). However, low-income households are more likely to qualify for income-based eligibility allowances (USDA, 2023). I added education level to examine its independent relationship with program participation in the second regression model I ran. Education is often seen as a baseline

for potential income and socioeconomic status. For instance, those who do not graduate from high school or have access to low educational opportunities may find themselves in situations where they are more likely to be unemployed or underemployed and, in turn, susceptible to food insecurity. Therefore, adding this variable was essential to understand the government's perspective on this program, as facilitated access to services based on socioeconomic disadvantaged factors was understandable when educational attainment levels were considered.

Finally, in a third regression model, I combined all three variables: age, income, and education. This additional regression creates a composed intersectionality of perspective from compounded vulnerabilities. For example, someone could be an older adult with a low income, meaning there are compounded barriers to socioeconomic stability. Therefore, examining the variables in conjunction with each other is crucial. Additionally, I created an age variable with four categories: under 30 = 1, 30–44 = 2, 45–59 = 3, and 60 and above = 4. I tabulated SNAP participation by age category using the tabulate command. This is a nominal variable, as it is important to assess any trends in program usage by age: individuals are young, newly employed with unstable incomes, middle-aged with families to support, and elderly in retirement with potentially limited resources and savings. This becomes more clearly stratified in terms of where life stages dictate government program usage and whether these age categories require further outreach for assistance.

CHAPTER 6: Data and Results

Table 6.1: SNAP Participation by Age Group

Food Stamp Recipiency	Age 1	Age 2	Age 3	Age 4	Total
No	1,011,894	549,570	595,621	725,120	2,882,205
	35.11%	19.07%	20.67%	25.16%	100.00%
Yes	257,412	88,297	68,692	68,428	482,829
	53.31%	18.29%	14.23%	14.17%	100.00%

Total	1,269,306	637,867	664,313	793,548	3,365,034
	37.72%	18.96%	19.74%	23.58%	100.00%

Table 6.2: Racial Composition

Race [General Version]	Freq.	Percent	Cum.
White	2,378,793	70.69	70.69
Black/African American	328,140	9.75	80.44
American Indian or Alaska Native	22,703	0.67	81.12
Chinese	27,753	0.82	81.94
Japanese	3,080	0.09	82.03
Other Asian or Pacific Islander	129,483	3.85	85.88
Other Race, NEC	205,067	6.09	91.98
Two Major Races	256,412	7.62	99.60
Three or More Major Races	13,603	0.40	100.00
Total	3,365,034	100.00	

Table 6.3: SNAP Participation by Education Level

Food Stamp Recipients	n/a or no	grade 12	1 year of college	2 years of college	4 years of college	Total
No	174,188	786,985	369,963	163,567	469,192	2,882,205
	6.04%	27.30%	12.84%	5.68%	16.28%	100.00%

Yes	67,726	243,131	103,596	35,360	16,751	482,829
	14.03%	50.35%	21.46%	7.32%	3.47%	100.00%
Total	241,914	1,030,116	473,559	198,927	485,943	3,365,034
	7.19%	30.63%	14.07%	5.91%	14.44%	100.00%

Figure 6.1: SNAP Participation Trend

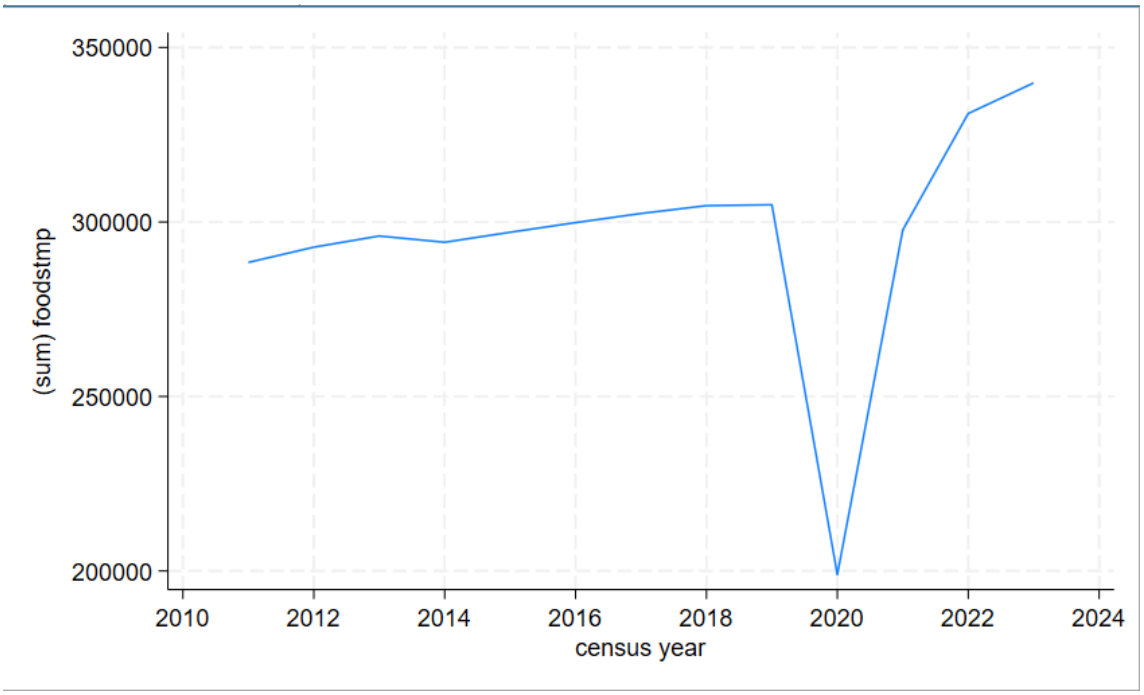

Table 6.4: Regression Model 1- Age and Income Predicting Snap

	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]
age	-0.0016966	0.0000109	-155.28	0.000	-0.0017181 to -0.0016752
incwage	5.28e-08	6.54e-10	80.78	0.000	5.15e-08 to 5.41e-08
_cons	1.198685	0.0005737	2089.26	0.000	1.19756 to 1.19980

Table 6.5: Regression Model 2-Education Level Predicting SNAP

Education Level	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]
No schooling	-0.0071664	0.0013892	-5.16	0.000	-0.0044436 to -0.0098892
12th grade, no diploma	-0.0649284	0.0019623	-33.08	0.000	-0.0610823 to -0.0687746
Regular high school diploma	-0.1344569	0.0019844	-67.75	0.000	-0.1305876 to -0.1383261
GED or alternative credential	-0.1913904	0.0022340	-85.69	0.000	-0.1870127 to -0.1957680
Some college, less than 1 year	-0.1576666	0.0022011	-71.65	0.000	-0.1533525 to -0.1619807
1 or more years of college, no degree	-0.2024762	0.0021631	-93.60	0.000	-0.1982365 to -0.2067159
Associate's degree	-0.2410612	0.0022087	-109.19	0.000	-0.2367322 to -0.2453901
Bachelor's degree	-0.2516947	0.0022345	-112.64	0.000	-0.2473152 to -0.2560741
Master's degree	-0.2572692	0.0023781	-108.21	0.000	-0.2526085 to -0.2619298

Professional degree	-0.2520137	0.0027313	-92.29	0.000	-0.2466604 to -0.2573671
Doctoral degree	-0.2565546	0.0030248	-84.80	0.000	-0.2506265 to -0.2624828

Table 6.6: Regression Model 3-Combining Predictors

Education Level	Coefficient	Std. err.	t	P>|t|	[95% conf. interval]
No schooling	0.0030202	0.0014369	2.10	0.036	0.0008239 to 0.0058365
12th grade, no diploma	-0.0622905	0.0022795	-27.33	0.000	-0.0578227 to -0.0667583
Regular high school diploma	-0.1291466	0.0023053	-56.04	0.000	-0.1246283 to -0.1336649
GED or alternative credential	-0.1824003	0.0025904	-70.43	0.000	-0.1773232 to -0.1874774
Some college, less than 1 year	-0.1492485	0.0025570	-58.38	0.000	-0.1442368 to -0.1542603
1 or more years of college, no degree	-0.1911607	0.0025143	-75.99	0.000	-0.1862326 to -0.1960889
Associate's degree	-0.2303724	0.0025630	-89.87	0.000	-0.2253499 to -0.2353949

Bachelor's degree	-0.2407854	0.0025945	-92.82	0.000	-0.2357001 to -0.2458707
Master's degree	-0.2465711	0.0027585	-89.38	0.000	-0.2411645 to -0.2519778
Professional degree	-0.2412354	0.0031774	-75.94	0.000	-0.2350085 to -0.2474623
Doctoral degree	-0.2685578	0.0034284	-78.32	0.000	-0.2618277 to -0.2752878

First, Table 6.1 shows the age distribution of SNAP recipients within the final sample. Age is categorized into four groups: less than 30 (Age 1), 30-44 (Age 2), 45-59 (Age 3), and 60 and above (Age 4). Of the 482,829 individuals who have received SNAP, the most significant percentage of the sample falls within the Age Group of 1, at 53.31%. This is significantly higher than the 37.72% of this demographic, which is part of the general population, meaning those under age 30 are more likely to be SNAP recipients than expected. At ages four and 60+, the percentage of SNAP recipients is significantly lower at 14.17% compared to the population percentage of 23.58%. Therefore, younger ages are more likely to be SNAP recipients, which may be due to less job security, lower salaries, or less savings accrued during this timeframe.

We can also see from Table 6.2 a frequency tabulation of race. This was not a predictor variable entered into the regression models, yet it holds significant descriptive value. Most of the sample is White (70.69%), with Black or African American persons making up 9.75% and multiracial persons accounting for 7.62%. Therefore, the inclusion of this variable suggests that there may be some socioeconomic diversity vulnerability to levels of resources and food equity

that remain unanswered through economic opportunities or social safety nets, thereby highlighting the importance of networks. It may be interesting to explore how this factor also influences the equation alongside age, income, and education in the future, thereby supporting or discouraging SNAP use or participation more effectively.

Finally, Table 6.3 analyzes SNAP recipients by their educational attainment. Higher educational accomplishments are associated with a lower likelihood of receiving SNAP benefits. Of those who received SNAP benefits, 50.35% completed 12th grade, and only 14.03% received no educational achievements. Of those who received SNAP benefits, only 3.47% went on to earn a four-year college degree. Therefore, the ability to sustain oneself and not require food is influenced by educational achievements and deprivations, meaning that knowledge on how to be an economically independent entity is acquired through the levels of education attained. Figure 6.1 shows that SNAP enrollment in Texas improved consistently from 2010 to 2024, experiencing a notable spike during the global COVID-19 pandemic in 2020, followed by a decline to pre-emergency stabilization levels by 2022. Such feelings suggest that SNAP is a temporary program for a temporary economic safety net.

The results of the regression are presented in Tables 6.4-6.6 below. Examining the regression output reveals the statistical significance of SNAP and the independent variables. For instance, in Table 6.4, the first estimation includes age and income as independent variables. The age coefficient is -0.00170 ($p < 0.001$). This is a statistically significant negative relationship: for every year older, there is one less likelihood of being on SNAP; therefore, for every increase in age, the possibility decreases marginally with statistical significance. On the other hand, the income coefficient is $5.28 \times 10^{\wedge} (-8)$ ($p < 0.001$). This is a positive, practically significant relationship. This is an interesting finding because one would presume that the higher income one

earns, the less likely they would need government assistance like SNAP; however, this could be due to high-income outliers skewing the data or that this is a nonlinear relationship and not all effects are evaluated in this model. Nonetheless, the magnitude is relatively small. Regardless, the t-values are extraordinarily high with corresponding low p-values (< 0.001), suggesting that each independent variable is a strong and consistent determinant for the model.

The second regression in Table 6.5 uses education level as the sole predictor. Here, the coefficients are increasingly negative as the level of education increases. For example, high school graduates have a coefficient of -0.134 ($p < 0.001$), bachelor's graduates have a coefficient of -0.252 ($p < 0.001$), and doctoral graduates have a coefficient of -0.257 ($p < 0.001$). All findings are statistically significant at the $p < 0.001$ level and suggest a strong negative correlation between education and SNAP participation; the more educated one is, the less likely they are to need to access food stamps to eat. Additionally, the increase in negative value exhibits a dose-response relationship, indicating that each higher level of education provides greater socioeconomic stability.

Table 6.6 combines all three variables —age, income, and education —into a single regression model to determine the impact of each when assessed. Many of the findings replicate prior results. However, the age coefficient turns slightly positive for specific cohorts (i.e., no schooling at 0.003, $p = 0.036$), which makes sense nonlinearly under control with education. Yet, the vast majority of findings still support the notion that the more educated a person is, the less likely they are to be on SNAP, with coefficients of -0.062 for those who stopped at 12th grade and -0.268 for those who received their doctorate (all $p < 0.001$). Because significance transferred from the independent variable analysis to the dependent variable analysis, it stands confirmed that education is the strongest predictor of this variable in all comparisons.

Thus, these results provide a picture of the characteristics related to SNAP usage in Texas,

as influenced by socioeconomic and demographic variables. The most important variables are age and income. Although they are more important than education in predicting strength, it is clear that education is the variable generating SNAP usage. Educated individuals use SNAP significantly less than uneducated persons, even when age and income are controlled for. In relation to the case study, this correlates as according to Statista, in 2023, 13.1% of people who just have a high school diploma live in poverty, 25.1% of people live in poverty who don't have a diploma, while only 4% of people with a bachelors degree or higher live in poverty.

Chapter 7: Conclusion

The results of this study reveal who benefits from SNAP in Texas, primarily young, low-income, and lower-educated populations, and provide a more transparent snapshot of the regression models as well. Education had the highest output of all the factors attributed to SNAP receipt. Individuals with a high school degree or less were significantly more likely to be on

SNAP than those with some college or a higher education. Age and income were correlated, but the relationship was more tenuous, as other factors, such as high debt-to-income ratios, could lead to younger and lower-income individuals having access to SNAP, without necessarily attributing it to low education levels.

Ultimately, these findings support Bianco and Moellman's assertions that families receiving SNAP are not necessarily doing so to avoid hunger but instead using it to reduce debt and avoid financial distress. Families who do not have to spend as much on food can allocate their resources to rent and medical bills, and avoid payday loans with high interest rates. This is even more true in Texas-based counties where debt-to-income ratios are high, such as Willacy and Dimmit, because SNAP helps these families make ends meet with the little they have; similarly, those in counties with less poverty and less debt rely on SNAP as a short-term resource during financial hardships.

The statistics suggest that SNAP is more than just a food program; it's a vital intervention for families struggling to make ends meet financially. It's a fail-safe that gives low-income families a few extra dollars here and there to manage other essential responsibilities without worrying about added debt.

A significant drawback of this research is the limited availability of county data. For instance, while the IPUMS dataset is excellent for providing individual-level detail, it does not fully capture the full SNAP participation at the Texas county level. Thus, comparing all counties was difficult, given the data I had. Furthermore, certain socioeconomic statuses of counties, such as debt-to-income ratios or political shifts that may have changed over time, were not found at the county level either, which could have better explained why certain counties utilized SNAP differently. Thus, this research encourages the use of more localized or aggregate data for future

studies to understand better SNAP at the county level.

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