

Food Insecurity Among Households With Children in the United States: A Comparative Analysis of SNAP Participants and Nonparticipants

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Abstract

Food insecurity remains a significant public policy issue for households with children in the United States. This study examines differences in household food-security status between households with children that participate in the Supplemental Nutrition Assistance Program (SNAP) and those that do not, using data from the December 2023 Current Population Survey Food Security Supplement (CPS-FSS). Using a quantitative, cross-sectional design, the study examines food-security status and demographic and socioeconomic characteristics among SNAP-participating and nonparticipating households. The final household-level sample included 3,943 households with children. Among SNAP-participating households, 50.6% experienced low or very low food security, while the remaining 49.4% had high or marginal food security. Among nonparticipating households, 27.3% experienced low or very low food security, while 72.7% had high or marginal food security. A Pearson chi-square test identified a statistically significant association between SNAP participation and household food-security status, $\chi^2(2, N = 3,943) = 214.223, p < .001$. In a multivariate logistic regression controlling for household income, education, race, marital status, employment status, Hispanic/Latino ethnicity, sex, number of children, and age, SNAP participation remained significantly associated with food insecurity (OR = 1.895, 95% CI [1.606, 2.235], $p < .001$). Because SNAP participation is not randomly assigned and the CPS-FSS is cross-sectional, these findings should be interpreted as associations rather than evidence that SNAP participation causes food insecurity. Overall, the findings highlight the substantial food-related and economic vulnerability experienced by many households with children participating in SNAP. The persistence of food insecurity among participating households underscores the importance of nutrition-assistance policies that not only

maintain access to SNAP but also consider whether benefit levels and complementary supports are sufficient to meet the needs of economically vulnerable families with children.

Chapter 1: Introduction and purpose of the Study

Food insecurity remains an enduring public policy issue in the United States, particularly for households with children. The U.S. Department of Agriculture (USDA) defines food insecurity as limited or uncertain access to adequate food because of insufficient financial or other resources (Rabbitt et al., 2024). Millions of U.S. households continue to experience food insecurity despite decades of federal investment in nutrition assistance. Inadequate access to sufficient and nutritious food has been associated with poorer physical health, developmental difficulties, lower educational attainment, and other long-term consequences, making households with children an especially important population for food-security policy (Gundersen & Ziliak, 2015).

My interest in this topic stems from my experience serving with AmeriCorps in a summer meal distribution program for low-income children. During the summer, many children lose regular access to school-based meal programs and may rely more heavily on their families, community organizations, and public nutrition programs to meet their nutritional needs. Working with families experiencing food insecurity showed me both the importance of nutrition assistance and the ongoing challenges some households face in maintaining consistent access to sufficient food. This experience motivated my interest in examining food insecurity among households with children and the role that public nutrition assistance plays within the broader social safety net.

The Supplemental Nutrition Assistance Program (SNAP) is the largest federal nutrition assistance program in the United States and a central component of the nation's social safety net. SNAP provides monthly benefits to eligible low-income households to supplement household food budgets and improve access to food. Previous research generally indicates that SNAP can reduce food-related hardship and improve household food access (Mabli & Ohls, 2015; Ratcliffe et al., 2011). Nevertheless, food insecurity remains prevalent among many households that participate in the program.

The persistence of food insecurity among SNAP recipients does not necessarily indicate that SNAP is ineffective. A central methodological problem in studying SNAP is selection bias. SNAP participation is not randomly assigned. Households experiencing greater financial hardship, income instability, unemployment, high living expenses, or other economic vulnerabilities may be more likely to participate in SNAP than households experiencing fewer economic difficulties (Gundersen et al., 2011; Ratcliffe et al., 2011). As a result, simple comparisons may show higher levels of food insecurity among SNAP participants even when the program provides meaningful assistance.

Existing research has established that households with children face elevated risks of food insecurity and that SNAP can reduce food-related hardship among economically vulnerable families. Research also shows that SNAP-participating households may report greater observed food insecurity than nonparticipants because participating households often enter the program with greater economic need (Gundersen et al., 2011; Mabli & Ohls, 2015; Ratcliffe et al., 2011). In addition, food insecurity varies according to household income, employment, educational attainment, race and ethnicity, family structure, and other socioeconomic characteristics.

Although this literature provides important evidence on SNAP and food insecurity, additional analysis can help clarify how food-security conditions and household characteristics differ between SNAP-participating and nonparticipating households with children. In particular, examining both the prevalence and severity of food insecurity alongside demographic and socioeconomic differences can clarify the economic vulnerability of households participating in SNAP without assuming that participation itself produces the observed differences. Multivariate analysis can further assess whether the observed association between SNAP participation and food insecurity remains after accounting for selected demographic and socioeconomic characteristics.

This study addresses that need using data from the December 2023 Current Population Survey Food Security Supplement (CPS-FSS). The analysis compares SNAP-participating and nonparticipating households with children, describes differences in food-security status, examines selected socioeconomic and demographic characteristics, and uses multivariate logistic regression to assess whether SNAP participation remains statistically associated with household food insecurity after accounting for selected household characteristics. The study is intended to identify patterns and statistical associations rather than estimate the causal effect of SNAP participation.

Research questions and Hypotheses

The primary research question is:

How do patterns of household food security differ between SNAP-participating and nonparticipating households with children in the United States?

Based on previous research showing that households experiencing greater economic hardship are more likely to participate in SNAP, this study expects SNAP-participating and nonparticipating households with children to differ in their food-security conditions.

1. What is the prevalence of low and very low food security among SNAP-participating households with children compared with nonparticipating households with children?
 - a. H1: SNAP-participating households with children will have a higher observed prevalence of low and very low food security than nonparticipating households with children.
2. Is there a statistically significant association between SNAP participation and household food-security status among households with children?
 - a. H2: SNAP participation will be statistically associated with household food-security status among households with children.
3. How do selected demographic and socioeconomic characteristics differ between SNAP-participating and nonparticipating households with children?
 - a. H3: SNAP participation will remain statistically associated with household food insecurity after accounting for selected demographic and socioeconomic characteristics.

These research questions guide the study's descriptive, bivariate, and multivariate analyses of food insecurity among households with children. Together, they examine differences in food-security status and household characteristics by SNAP participation and assess whether SNAP participation remains statistically associated with food insecurity after selected demographic and socioeconomic characteristics are taken into account.

The remainder of this manuscript is organized as follows. Chapter 2 reviews the literature on food insecurity among households with children, SNAP participation, socioeconomic and demographic disparities, and selection bias in SNAP research. Chapter 3 describes the CPS-FSS data, sample selection, variable measures, and analytic strategy. Chapter 4 presents the descriptive, bivariate, and multivariate findings. Chapter 5 interprets the findings in relation to previous research and discusses the study's limitations. Chapter 6 presents policy recommendations based on the findings, and Chapter 7 concludes the study by summarizing its primary contributions and implications.

Chapter 2: Literature Review

Introduction

Food insecurity among households with children remains an important public policy issue in the United States. Although federal nutrition programs such as the Supplemental Nutrition Assistance Program (SNAP) are intended to help low-income households access adequate food, many families receiving assistance continue to experience food insecurity. Previous research has examined the relationship between SNAP participation and food insecurity, but differences in the economic and demographic characteristics of participating households complicate this relationship. Households experiencing greater financial hardship are also more likely to participate in SNAP, making simple comparisons between participants and nonparticipants difficult to interpret (Gundersen et al., 2011; Mabli & Ohls, 2015; Mykerezzi & Mills, 2010; Ratcliffe et al., 2011).

This literature review examines previous research on food insecurity and SNAP participation, with particular attention to households with children. It first discusses the prevalence and consequences of food insecurity among families with children, followed by research on SNAP participation and food insecurity. It then considers socioeconomic and demographic factors associated with food insecurity and SNAP participation, including income, employment, education, race and ethnicity, household structure, age, and other demographic characteristics. Finally, it discusses selection bias in SNAP research and explains how the present study contributes to the existing literature.

Food Insecurity Among Households With Children

Food insecurity refers to a household's limited or uncertain access to adequate food because of insufficient financial or other resources (Rabbitt et al., 2024). The USDA measures household food security through questions capturing experiences such as worrying that food will run out, being unable to afford balanced meals, reducing meal sizes, and, in more severe circumstances, skipping meals because there is not enough money for food. These experiences are used to classify households along a range of food-security conditions, including high, marginal, low, and very low food security.

Households with children are an especially important population because food insecurity can affect children's immediate well-being and longer-term development. A substantial body of research has associated food insecurity with poorer physical health, developmental difficulties, behavioral and emotional problems, and poorer educational outcomes among children (Alaimo et al., 2001a; Casey et al., 2005; Gundersen & Ziliak, 2015; Jyoti et al., 2005; Kimbro & Denney, 2015; Rose-Jacobs et al., 2008). Rose-Jacobs et al. (2008), for example, found an association between household food insecurity and developmental risk among infants and toddlers even after accounting for potential confounding factors. Kimbro and Denney (2015) similarly found that transitions into food insecurity were associated with behavioral problems and poorer overall health among children.

Food insecurity has also been associated with children's academic and psychosocial outcomes. Alaimo et al. (2001a) found relationships between food insufficiency and cognitive, academic, and psychosocial outcomes among school-aged children and adolescents. Using longitudinal data, Jyoti et al. (2005) found that food insecurity was associated with poorer

developmental trajectories, including academic and social outcomes. More recent systematic reviews have continued to find associations between household food insecurity and children's behavioral, emotional, academic, and health outcomes (Abraham et al., 2023; Shankar et al., 2017). Collectively, this literature demonstrates that food insecurity is relevant not only to nutrition but also to broader dimensions of child well-being. Food insecurity can also affect dietary quality. Hanson and Connor (2014), in a systematic review of research involving U.S. adults and children, found evidence of differences in dietary quality associated with food insecurity. These nutritional consequences are important because limited household resources can affect both the amount and types of foods families are able to purchase.

Food insecurity is not evenly distributed across the population. Lower-income households, single-parent households, racial and ethnic minority households, and households experiencing unstable employment face elevated risks of food hardship (Bartfeld & Dunifon, 2006; Gundersen & Ziliak, 2015). Research focusing on households with children has similarly demonstrated that food insecurity reflects both household-level socioeconomic circumstances and broader contextual conditions. Bartfeld and Dunifon (2006), for example, found that differences in household characteristics and state-level economic and policy conditions helped explain variation in food insecurity among households with children.

SNAP and Food Insecurity

SNAP is the largest federal nutrition assistance program in the United States and provides eligible low-income households with resources to purchase food. Because eligibility and participation are closely connected to economic need, SNAP serves households that are already

at elevated risk of food insecurity. Consequently, the relationship between SNAP participation and food insecurity is more complicated than a simple comparison between households receiving and not receiving benefits. A substantial body of research suggests that SNAP can reduce food-related hardship. Ratcliffe et al. (2011), for example, examined the relationship between SNAP participation and food insecurity while accounting for differences between participating and nonparticipating households. Their analysis found evidence that SNAP participation reduced both food insecurity and very low food security. Mykerezzi and Mills (2010), using methods designed to address endogenous program participation, similarly found that participation in the Food Stamp Program reduced household food insecurity.

Mabli and Ohls (2015) provided additional evidence through a national evaluation of SNAP participants. Their analysis compared households shortly after entering SNAP with households that had participated for approximately six months and also followed new participants over time. SNAP participation was associated with improvements in household food security across both approaches. These findings demonstrate the importance of examining changes among SNAP participants rather than relying solely on comparisons between recipients and nonrecipients. Research focusing specifically on households with children has also documented SNAP's relationship with material hardship. Shaefer and Gutierrez (2013), using Survey of Income and Program Participation data, found that SNAP participation was associated with reductions in food insecurity as well as other forms of material hardship among low-income households with children. Their findings are particularly relevant because food insecurity often occurs alongside difficulty paying for housing, utilities, healthcare, and other necessities.

At the same time, research has produced variation in the estimated relationship between SNAP and food insecurity depending on the population and analytic strategy. Studies using cross-sectional comparisons may find greater food insecurity among SNAP participants because participating households generally have greater underlying economic needs. Research using methods that address these systematic differences, however, more frequently finds evidence of a protective association between nutrition assistance and food security (Mabli & Ohls, 2015; Mykerezzi & Mills, 2010; Ratcliffe et al., 2011; Shaefer & Gutierrez, 2013).

Income and Economic Hardship

Household income is one of the strongest socioeconomic factors associated with food insecurity. Families with limited financial resources must allocate income across food, housing, transportation, utilities, childcare, healthcare, and other necessities. When resources are insufficient to cover these competing expenses, households may reduce food spending, alter dietary quality, or reduce the quantity of food consumed (Gundersen & Ziliak, 2015; Hanson & Connor, 2014). Research demonstrates that income does not operate independently from other forms of material hardship. Alaimo et al. (2001b), examining U.S. preschool and school-aged children, found that food insufficiency and family income were associated with children's health. Similarly, Shaefer and Gutierrez (2013) demonstrated that food hardship among low-income families with children occurs alongside difficulties meeting housing, utility, and medical expenses. These findings indicate that household food security is embedded within families' broader economic circumstances.

Income is also closely connected to SNAP participation because the program primarily serves households with limited financial resources. SNAP-participating households therefore differ systematically from many nonparticipating households in their economic circumstances. Differences in food-security status between participants and nonparticipants may consequently reflect, in part, the financial circumstances associated with program participation.

Income alone, however, does not fully capture material hardship. Families with similar incomes can face different pressures depending on household size, housing and childcare costs, healthcare expenses, transportation costs, employment stability, debt, and access to savings or other resources. Examining household income alongside additional socioeconomic characteristics therefore provides a more complete picture of the circumstances associated with food insecurity.

Employment and Educational Attainment

Employment is another important component of household economic security. Although employment provides income, having an employed adult does not necessarily protect a household from food insecurity. Low wages, unstable schedules, part-time employment, job loss, and employment-related expenses can affect a family's ability to consistently meet basic needs. Heflin et al. (2007), examining employment trajectories and food insufficiency among economically vulnerable women, demonstrated that employment circumstances, household resources, and work-related demands are relevant to food hardship. Their findings illustrate why employment status alone may not adequately represent a household's economic stability. A household may technically be employed while still experiencing insufficient financial resources to consistently afford food and other necessities.

Employment instability is particularly relevant for households with children because disruptions in earnings may occur alongside childcare, transportation, healthcare, and housing expenses. Research examining U.S. households with children during periods of economic disruption has similarly identified job loss and lower household income as important correlates of food hardship. These findings support examining employment status alongside income rather than treating employment as an independent indicator of economic security. Educational attainment is also associated with household economic circumstances. Education can shape access to employment opportunities, earnings, job stability, and employment-related benefits. Adults with higher levels of education generally have greater access to higher-paying and more stable employment, while adults with less education may experience greater exposure to low-wage or unstable work. Because education, employment, and income are closely interconnected, considering these characteristics together provides a more complete description of the socioeconomic circumstances of SNAP-participating and nonparticipating households.

Race and Ethnicity

Food insecurity varies substantially across racial and ethnic groups in the United States. Previous research has documented higher rates of food insecurity among Black and Hispanic households compared with White households (Gundersen & Ziliak, 2015). These disparities are connected to broader differences in income, wealth, employment opportunities, housing conditions, neighborhood resources, and other dimensions of socioeconomic inequality. Samuel et al. (2023) examined SNAP participation and racial disparities in food insecurity among households likely eligible for SNAP. After adjusting for household characteristics, Black and multiracial households experienced higher food insecurity than White households overall.

Importantly, racial disparities differed according to SNAP participation. Among households not participating in SNAP, Black and multiracial households experienced greater food insecurity than White households, whereas disparities were reduced among SNAP participants. These findings suggest that access to nutrition assistance may play an important role in understanding racial differences in food hardship.

Research involving households with children has also demonstrated that race and ethnicity intersect with other socioeconomic characteristics. Economic resources, household structure, employment conditions, neighborhood circumstances, and access to assistance can differ across racial and ethnic groups. Bartfeld and Dunifon (2006) further demonstrated that broader state economic and policy environments are relevant to food-security outcomes among households with children, highlighting the importance of considering social context alongside household characteristics. Race and ethnicity should therefore not be interpreted as independent causes of food insecurity. Rather, observed disparities may reflect unequal exposure to economic and structural conditions affecting household resources and food access. Including race and Hispanic/Latino ethnicity alongside income, education, employment, and household characteristics provides a more complete assessment of disparities among households with children.

Household Structure and Marital Status

Household structure can influence food security because the number of adults and children in a household affects both available resources and household expenses. Single-parent households may face particular challenges because one adult may be responsible for earning

income, providing childcare, and meeting household expenses. Previous research has identified single-parent households as a population with elevated vulnerability to food insecurity (Bartfeld & Dunifon, 2006; Gundersen & Ziliak, 2015). The presence of multiple adults may provide additional potential sources of income and greater flexibility in balancing employment and caregiving responsibilities. However, marriage or the presence of another adult does not guarantee economic security. Household resources must still be considered relative to expenses, employment circumstances, family size, and other financial obligations.

The number of children in a household is also relevant because additional household members increase food and other household needs. Families with more children must distribute available resources across more individuals while potentially facing greater childcare, housing, transportation, and healthcare costs. Research examining food insecurity among families with children therefore frequently considers family size and household composition alongside income and employment. Household structure is also relevant when examining child outcomes associated with food insecurity. Casey et al. (2005), Rose-Jacobs et al. (2008), and Kimbro and Denney (2015) demonstrate that food insecurity occurs within a broader family environment in which parental resources, household conditions, and children's developmental needs interact. Examining marital status and number of children therefore provides additional context for understanding differences between SNAP-participating and nonparticipating households.

Age and Other Demographic Characteristics

Age may also be associated with household economic stability and SNAP participation. Younger adults may have had less time to establish stable employment, accumulate savings, or

build financial assets, while older adults may have greater employment experience and accumulated resources. Age also intersects with household structure, employment, number of children, and other socioeconomic characteristics. Sex is another demographic characteristic relevant to the composition of households participating in SNAP. Its relationship with food insecurity may operate through household structure and economic circumstances, particularly because women are disproportionately represented among single-parent households. Research on low-income families has demonstrated that caregiving responsibilities, employment circumstances, and household resources are interconnected with food hardship (Heflin et al., 2007). Age and sex are therefore most appropriately considered alongside household economic and family characteristics rather than as isolated explanations for food insecurity. Their inclusion provides additional demographic context for comparing SNAP-participating and nonparticipating households and for estimating the adjusted association between SNAP participation and household food insecurity.

Selection Bias and the SNAP Participation Paradox

One of the most important methodological issues in research on SNAP and food insecurity is selection into the program. SNAP participation is not randomly distributed across households. Families experiencing greater economic hardship are more likely to qualify for and seek SNAP benefits and are also more likely to experience food insecurity. As a result, SNAP participants may have greater underlying food-security risk than nonparticipants before differences in program participation are considered. This creates what may appear to be a SNAP participation paradox. Unadjusted comparisons frequently show greater food insecurity among SNAP participants even though the program is intended to reduce food hardship. The two

groups, however, differ substantially in their underlying economic circumstances. Households experiencing the greatest need are disproportionately likely to enter the program, while households with greater financial resources are less likely to participate.

This selection problem has received substantial attention in the literature. Mykerezzi and Mills (2010) used endogenous treatment models and other strategies to account for program participation and found that Food Stamp Program participation reduced food insecurity. Ratcliffe et al. (2011) similarly used methods designed to address selection into SNAP and found evidence that participation reduced food insecurity and very low food security. Mabli and Ohls (2015) approached the problem by comparing new SNAP entrants with longer-term participants and following new entrants over time, finding improvements in household food security associated with participation. Shaefer and Gutierrez (2013) addressed selection among low-income households with children using a bivariate probit approach and similarly found that SNAP reduced the probability of household food insecurity. Taken together, these studies demonstrate why observed differences between SNAP participants and nonparticipants cannot be interpreted without considering the socioeconomic circumstances associated with program participation.

Multivariate regression provides one method of accounting for observed differences by considering characteristics such as income, education, employment, race and ethnicity, marital status, and household composition simultaneously. The present study uses this approach to determine whether SNAP participation remains statistically associated with food insecurity after selected observed household characteristics are included in the model.

Research Gap and Contribution of the Present Study

Previous research provides substantial evidence that food insecurity is closely connected to economic hardship and that households with children face particular vulnerabilities. Studies have associated food insecurity with children's physical health, development, behavior, academic performance, psychosocial well-being, and dietary quality (Alaimo et al., 2001a; Casey et al., 2005; Hanson & Connor, 2014; Jyoti et al., 2005; Kimbro & Denney, 2015; Rose-Jacobs et al., 2008; Shankar et al., 2017). Other research demonstrates that income, employment, family structure, race and ethnicity, and broader economic conditions contribute to differences in food-security risk (Bartfeld & Dunifon, 2006; Gundersen & Ziliak, 2015; Heflin et al., 2007; Samuel et al., 2023). The SNAP literature further demonstrates that program participation is closely intertwined with household economic needs. Studies using methods designed to account for selection into SNAP generally find evidence that the program reduces food-related hardship, despite the high observed prevalence of food insecurity among participating households (Mabli & Ohls, 2015; Mykerezzi & Mills, 2010; Ratcliffe et al., 2011; Shaefer & Gutierrez, 2013). These findings demonstrate the importance of examining both SNAP participation and the broader socioeconomic circumstances of participating households.

The present study contributes to this literature by using the December 2023 CPS-FSS to provide a contemporary national analysis of SNAP-participating and nonparticipating households with children. Rather than examining SNAP participation in isolation, the study considers food-security status alongside household income, race and ethnicity, age, sex, marital status, employment, educational attainment, and number of children. Descriptive and bivariate analyses identify differences in food-security conditions and household characteristics, while multivariate logistic regression examines whether SNAP participation remains statistically

associated with household food insecurity after these selected demographic and socioeconomic characteristics are considered simultaneously.

By combining descriptive, bivariate, and multivariate analyses, the study provides an updated profile of food insecurity and economic vulnerability among U.S. households with children. It also places the observed association between SNAP participation and food insecurity within a broader body of research on economic hardship, demographic inequality, program participation, and selection into nutrition assistance.

Chapter 3: Data, Methodology, and Limitations

Research Design

This study uses a quantitative, cross-sectional research design and secondary analysis of the December 2023 Current Population Survey Food Security Supplement (CPS-FSS). The study examines differences in household food-security status between SNAP-participating and nonparticipating households with children in the United States. It also examines demographic and socioeconomic differences between the two groups, including household income, race and ethnicity, age, sex, educational attainment, employment status, marital status, and number of children. A quantitative comparative approach is appropriate because the study examines patterns and statistical associations among SNAP participation, household characteristics, and food insecurity. The analysis combines descriptive statistics, bivariate statistical tests, and multivariate logistic regression. The multivariate analysis examines whether SNAP participation remains statistically associated with household food insecurity after accounting for selected observed demographic and socioeconomic characteristics.

Data Source: Current Population Survey Food Security Supplement

This study uses data from the December 2023 Current Population Survey Food Security Supplement (CPS-FSS). The Current Population Survey (CPS) is a nationally representative household survey conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics. The CPS primarily collects information on employment and labor-force participation, along with demographic and socioeconomic information about individuals and households. The survey is designed to represent the civilian, noninstitutionalized population of the United States living in

households (U.S. Census Bureau, 2023). The Food Security Supplement is administered as part of the CPS and is sponsored by the U.S. Department of Agriculture's Economic Research Service (USDA ERS). The U.S. Census Bureau collects the survey data, while USDA ERS sponsors the supplement and uses the data to produce national estimates of food security in the United States. The supplement collects information about household food expenditures, participation in food-assistance programs such as SNAP, and experiences and behaviors related to difficulty obtaining adequate food because of limited financial resources (USDA ERS, 2024).

The CPS-FSS is administered annually. In 2023, the Food Security Supplement was conducted in December following the household's regular CPS interview. Households in the CPS are selected through a probability-based sampling design intended to produce nationally representative estimates of the U.S. civilian, noninstitutionalized population. The Food Security Supplement is administered to participating CPS households as appropriate, allowing information on food security and nutrition-assistance participation to be linked to demographic, employment, income, and household characteristics collected through the broader CPS (U.S. Census Bureau, 2023; USDA ERS, 2024).

For the December 2023 CPS, approximately 54,000 households were selected for the probability sample. The public-use CPS-FSS microdata file contains 126,832 person- or address-level records. Of the selected sample, 41,772 households completed the basic CPS interview, and 30,863 interviewed households completed the Food Security Supplement, representing 72,492 person records (U.S. Census Bureau, 2023; USDA ERS, 2024). These figures represent the original survey and public-use data before the restrictions used to create the analytic sample for this study. This study accessed the CPS-FSS data through IPUMS CPS,

which provides harmonized CPS variables and documentation for research use. The data were analyzed using IBM SPSS Statistics.

Sample Selection and Analytic Sample

The analytic sample was created in several stages. Because this study focuses on households with children, the first step was to identify households containing at least one child under age 18. Household membership was identified using CPS household identifiers, and person-level records were used to determine whether each household contained a child. Children were defined as household members age 17 or younger who were not the household reference person, spouse, or unmarried partner. This process identified 10,903 households containing at least one child under age 18. The CPS public-use data contain person-level records, meaning that several individuals from the same household may appear in the dataset. However, SNAP participation and household food-security status are measured at the household level. Counting every person-level record would therefore duplicate the same household-level information across multiple individuals. To prevent this duplication, the analysis was restricted to one observation per household, using the household reference person to represent each household.

The sample was then restricted to households with valid substantive responses for the two primary variables: SNAP participation and household food-security status. Administrative, missing, and other non-substantive response categories were excluded from the primary analysis. After restricting the data to households with children, selecting one observation per household, and retaining households with valid responses for SNAP participation and household food-security status, the final analytic sample included 3,943 households with children. Of these households, 1,102 reported receiving SNAP benefits during the previous 12 months, while 2,841

did not report receiving SNAP benefits. The household, rather than the individual person, is therefore the unit of analysis throughout the study.

The number of valid observations varies slightly for analyses involving additional demographic or socioeconomic variables when a particular variable contains missing or non-substantive responses. The multivariate logistic regression uses complete information across all variables included in the model and therefore contains 3,878 households. The number of valid cases is reported with each analysis when applicable. The study compares SNAP-participating and nonparticipating households with children based on reported program participation. Nonparticipating households were not classified according to SNAP eligibility. Accordingly, the nonparticipating group may include both SNAP-eligible and SNAP-ineligible households.

Variable Measurement

The analysis includes household food insecurity as the primary dependent variable, SNAP participation as the key independent variable, and several demographic and socioeconomic characteristics. Reader-friendly descriptions of the variables are provided below along with the CPS/IPUMS variable names.

Dependent Variable: Household Food-Security Status

Household food-security status during the previous 12 months is measured using HRFS12M1. This CPS-FSS measure summarizes household responses to questions about experiences and behaviors related to difficulty obtaining adequate food because of limited financial resources.

For the descriptive and bivariate analyses, substantive responses are represented by three ordered categories:

- 1 = High or marginal food security
- 2 = Low food security
- 3 = Very low food security

High or marginal food security represents households reporting no or relatively limited indications of difficulty obtaining adequate food. Low food security reflects reduced quality, variety, or desirability of the household diet. Very low food security represents more severe food hardship in which limited resources can disrupt eating patterns and reduce food intake.

For descriptive interpretation, households classified as having either low or very low food security are considered food insecure. The original three-category measure is retained for the descriptive and bivariate analyses because it allows differences in the severity of food insecurity to be examined.

For the multivariate logistic regression, a binary food-insecurity variable was created from HRFS12M1. Households with high or marginal food security were coded 0 = food secure, while households with low or very low food security were coded 1 = food insecure. This binary measure allows logistic regression to estimate the association between SNAP participation and the odds of household food insecurity after accounting for selected demographic and socioeconomic characteristics.

Key Independent Variable: SNAP Participation

The primary independent variable is household participation in the Supplemental Nutrition Assistance Program, measured using HESP1. This variable identifies whether anyone in the household reported receiving SNAP benefits during the previous 12 months.

Substantive responses are coded as:

- 1 = SNAP received
- 2 = SNAP not received

Administrative, missing, and other non-substantive response categories were excluded where applicable. SNAP participation is the key explanatory variable because the study primarily examines whether household food-security patterns differ between households that participate in SNAP and those that do not.

For the multivariate logistic regression, households not receiving SNAP serve as the reference category, allowing the adjusted odds of food insecurity among SNAP-participating households to be compared with those of nonparticipating households. Several additional variables are used to describe SNAP-participating and nonparticipating households and as covariates in the multivariate analysis. These variables were selected because previous research identifies them as relevant to household economic conditions, SNAP participation, and food insecurity.

Household income is measured using the CPS family-income measure and grouped into six broader income categories for interpretation:

- Less than \$25,000

- 25, 000–49,999
- 50, 000–74,999
- 75, 000–99,999
- 100, 000–149,999
- \$150,000 or more

Income is included because household financial resources are closely related to both SNAP participation and the risk of food insecurity. The grouped income measure is treated as categorical in the multivariate logistic regression.

Race and ethnicity are measured using PTDTRACE and PEHSPNON for the household reference person. Race identifies the racial classification of the household reference person, while Hispanic/Latino ethnicity is examined separately. Race and ethnicity are included because previous research has documented disparities in food insecurity across racial and ethnic groups. These differences should not be interpreted as effects caused by race or ethnicity themselves; rather, they may reflect broader socioeconomic and structural conditions associated with household resources and food access. Race and Hispanic/Latino ethnicity are treated as categorical variables in the multivariate analysis.

Age is measured using the CPS age variable for the household reference person. Administrative or non-substantive values were excluded during data cleaning, and the cleaned age measure is treated as a continuous variable. Age is included because economic circumstances, employment, household composition, and available resources may vary across stages of adulthood. Sex is measured for the household reference person using the CPS sex variable and is treated as a categorical variable with two categories: male and female.

Educational attainment is measured using PEEDUCA, which identifies the highest level of education completed by the household reference person. For analysis and interpretation, educational attainment was grouped into five categories:

- Less than high school
- High school graduate or equivalent
- Some college or associate degree
- Bachelor's degree
- Graduate or professional degree

Education is included because educational attainment is associated with employment opportunities, earnings, job stability, and longer-term household economic resources.

Educational attainment is treated as categorical in the multivariate analysis. Employment status is derived from PEMLR, which identifies the labor-force status of the household reference person. The original employment categories were recoded into three broader categories:

- Employed
- Unemployed
- Not in the labor force

The employed category includes respondents who were at work or had a job but were temporarily absent from work. The unemployed category includes respondents who were unemployed and looking for work or unemployed while on layoff. Remaining substantive categories representing individuals outside the labor force were grouped as not in the labor force. Administrative and non-substantive responses were treated as missing. Employment status is

included because labor-force attachment can affect household income and the stability of economic resources available to meet household needs. Employment status is treated as categorical in the multivariate logistic regression.

Marital status is derived from PEMARITL for the household reference person and is grouped into five categories:

- Married
- Widowed
- Divorced
- Separated
- Never married

Marital status provides information about household and family structure. Household structure is relevant because the number of adults available to contribute income, provide childcare, and share household expenses may affect the resources available to meet household needs. Marital status is treated as categorical in the multivariate analysis. The number of children in the household is represented by the CPS measure identifying the number of children under age 18 in the household. The measure is treated as a count variable and is included because households with more children may face greater food, childcare, housing, healthcare, and other household expenses. Number of children is treated as a continuous covariate in the multivariate logistic regression.

Data Cleaning

The CPS-FSS data were cleaned and prepared in SPSS before analysis. The first step was to identify households containing children under age 18. Household-level indicators were created from the person-level records so that records associated with households containing at least one child could be identified. The primary variables were examined using frequency distributions to identify substantive responses, administrative codes, and missing or non-substantive responses. Records without valid information for the variables required for a particular analysis were excluded from that analysis.

Because SNAP participation and food-security status are household-level measures, the dataset was restricted to one observation per household before conducting the household-level analyses. This step was necessary because retaining multiple individuals from the same household would duplicate identical household-level SNAP and food-security information.

Several variables were recoded into analytically meaningful categories to improve interpretation and address sparse categories. Household income, educational attainment, employment status, marital status, and selected demographic variables were grouped into broader categories. Frequency distributions were examined after recoding to verify the resulting categories and identify missing or invalid values.

For the multivariate analysis, household food-security status was additionally recorded into a binary measure. High or marginal food security was coded as food secure, while low and very low food security were combined and coded as food insecure. The final analytic dataset

therefore consists of households with children under age 18, with one observation per household and valid information for the variables required for each analysis.

Statistical Analysis

Statistical analyses were conducted using IBM SPSS Statistics and proceeded in three stages. The first stage consisted of univariate descriptive statistics used to describe the analytic sample. Frequencies and percentages were calculated for categorical variables, including SNAP participation, household food-security status, household income, race and ethnicity, marital status, educational attainment, employment status, and sex. Continuous variables, including age and number of children, were summarized using the mean, standard deviation, and number of valid observations.

The second stage consisted of bivariate analyses comparing SNAP-participating and nonparticipating households. Cross-tabulations were used to examine relationships between SNAP participation and categorical household characteristics. Pearson chi-square tests of independence were used, where appropriate, to determine whether the distributions of categorical characteristics differed significantly according to SNAP participation. For continuous characteristics, such as age and number of children, group means were compared to describe differences between SNAP-participating and nonparticipating households.

The primary bivariate analysis examined the association between SNAP participation and household food-security status. A cross-tabulation compared the distribution of high or marginal, low, and very low food security between SNAP-participating and nonparticipating households. A Pearson chi-square test of independence was then used to determine whether SNAP participation

and the three-category household food-security measure were statistically associated. Statistical significance was evaluated using a threshold of $p < .05$.

The third stage consisted of a binary logistic regression analysis examining whether SNAP participation remained statistically associated with household food insecurity after accounting for selected demographic and socioeconomic characteristics. For this analysis, the dependent variable was the binary food-insecurity measure, coded 0 = food secure and 1 = food insecure. SNAP participation was the primary independent variable.

The multivariate model simultaneously included household income, educational attainment, race, marital status, employment status, Hispanic/Latino ethnicity, sex, number of children, and age as covariates. Categorical predictors were entered as categorical variables using indicator coding, while age and number of children were entered as continuous covariates. Non-SNAP households served as the reference group for the primary SNAP participation variable.

The logistic regression was estimated using the Enter method so that all selected predictors were entered into the model simultaneously. Results are reported using regression coefficients, statistical significance tests, odds ratios [Exp(B)], and 95% confidence intervals for the odds ratios. Overall model performance was evaluated using the omnibus test of model coefficients, the Nagelkerke pseudo- R^2 statistic, the Hosmer–Lemeshow goodness-of-fit test, and the classification table. The final multivariate model included 3,878 households with complete information across the variables included in the model. Although the multivariate model adjusts for selected observed demographic and socioeconomic characteristics, statistical adjustment cannot establish that SNAP participation causes changes in household food insecurity.

Chapter 4: Analysis Results

Overview of the Analysis

This chapter presents the results of the analysis of households with children in the December 2023 Current Population Survey Food Security Supplement (CPS-FSS). The analysis first describes the demographic and socioeconomic characteristics of the analytic sample. It then examines the distribution of household food-security status according to SNAP participation and selected household characteristics. Finally, a multivariate binary logistic regression examines whether SNAP participation remains statistically associated with household food insecurity after accounting for household income, educational attainment, employment status, race, marital status, Hispanic/Latino ethnicity, sex, age, and number of children. The final household-level analytic sample included 3,943 households with children. Of these households, 1,102 (27.9%) reported receiving SNAP benefits during the previous 12 months, while 2,841 (72.1%) did not report receiving SNAP benefits. The multivariate logistic regression included 3,878 households with complete information across the variables included in the model.

Descriptive Characteristics of the Analytic Sample

Household food-security status varied considerably within the analytic sample. Of the 3,943 households, 2,610 (66.2%) had high or marginal food security, 923 (23.4%) had low food security, and 410 (10.4%) had very low food security. When the low and very low food-security categories were combined, 1,333 households (33.8%) were classified as food insecure. Household income was concentrated primarily in the lower and middle income categories. Approximately 18.1% of households reported annual household income below \$25,000, 30.9% reported income

between \$25,000 and \$49,999, and 23.2% reported income between \$50,000 and \$74,999. Smaller proportions reported household incomes between \$75,000 and \$99,999 (10.9%), between \$100,000 and \$149,999 (10.3%), or \$150,000 or more (6.6%). Educational attainment also varied across the sample. Approximately 13.8% of household reference persons had less than a high school education, 32.2% were high school graduates, 31.0% had completed some college or an associate degree, 15.5% held a bachelor's degree, and 7.6% held a graduate or professional degree. Most household reference persons were White (76.9%), followed by Black (13.0%), Asian (4.7%), Other or Multiracial (3.4%), and American Indian or Alaska Native (1.9%). Approximately 26.1% of the sample identified as Hispanic or Latino. Women represented 61.7% of household reference persons, compared with 38.3% who were men. Most household reference persons were married (56.7%). Approximately 23.2% had never married, 12.8% were divorced, 3.9% were widowed, and 3.4% were separated. Among respondents with valid employment information, 71.8% were employed, 3.4% were unemployed, and 24.8% were not in the labor force. The mean age of the household reference person was 41.36 years (SD = 11.84), with ages ranging from 15 to 85 years. Table 1 summarizes the demographic and socioeconomic characteristics of the analytic sample.

Table 1: Descriptive Characteristics of the Analytic Sample.

<i>Characteristic</i>	<i>N</i>	<i>%/</i>
<i>Household Income</i>		
Less than \$25,000	712	18.10%
\$25,00-\$49,999	1,220	30.90%
\$50,000-\$74,999	914	23.20%
\$75,000-99,999	430	10.90%
\$100,00-\$149,999	408	10.30%

\$150,000 or More	259	6.60%
<i>Educational Attainment</i>		
Less than high school	542	13.80%
High school graduate	1,267	32.20%
Some college/ Associate Degree	1,222	31.00%
Bachelor's Degree	609	15.50%
Graduate/Professional degree	300	7.60%
<i>Race</i>		
White	3,034	76.90%
Black	514	13.00%
American Indian/ Alaska Native	74	1.90%
Asian	187	4.70%
Other/Multiracial	134	3.40%
<i>Marital Status</i>		
Married	2,234	56.70%
Widowed	153	3.90%
Divorced	505	12.80%
Separated	135	3.40%
Never married	913	23.20%
<i>Employment Status</i>		
Employed	2,803	71.80%
Unemployed	133	3.40%
Not in labor force	969	24.80%
<i>Hispanic/ Latino Ethnicity</i>		
Hispanic/Latino	1,029	26.10%
Not Hispanic/ Latino	2,914	73.90%
<i>Sex</i>		
Male	1,509	38.30%

Female	2,434	61.70%
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Note. N = 3,943. Categorical variables are reported as N (valid percentage). Educational attainment and marital status each had three missing observations; employment status had 38 missing observations. Percentages may not total 100.0% because of rounding.

Research Question 1: Food-Security Status by SNAP Participation

What is the prevalence of low and very low food security among SNAP-participating households with children compared with nonparticipating households with children?

H1: SNAP-participating households with children will have a higher observed prevalence of low and very low food security than nonparticipating households with children. To examine Research Question 1, the distribution of household food-security status was compared between SNAP-participating and nonparticipating households with children. Food insecurity was substantially more prevalent among households participating in SNAP. Among the 1,102 SNAP-participating households, 49.4% had high or marginal food security, 31.9% had low food security, and 18.7% had very low food security. In comparison, among the 2,841 nonparticipating households, 72.7% had high or marginal food security, 20.1% had low food security, and 7.2% had very low food security. When low and very low food security were combined, 50.6% of SNAP-participating households were food insecure, compared with 27.3% of nonparticipating households, a difference of approximately 23.3 percentage points. Very low food security was also more than twice as prevalent among SNAP-participating households as among nonparticipating households (18.7% compared with 7.2%).

Table 2: Household Food-Security Status by SNAP Participation

Food-Security Status	Snap Participation (N= 1,102)	Nonparticipants (N= 2,841)
High or marginal food security	49.40%	72.70%
Low food security	31.90%	20.10%
Very low food security	18.70%	7.20%
Low or Very low food Security	50.60%	27.30%

Note. Percentages are calculated within SNAP-participation status. Low or very low food security represents the combined food-insecure category used in the binary logistic regression.

The descriptive findings support H1. SNAP-participating households with children had a substantially higher observed prevalence of both low and very low food security than households that did not participate in SNAP.

Food Security Across Demographic and Socioeconomic Characteristics

Food-security status was also examined in relation to the demographic and socioeconomic characteristics included in the analysis. These characteristics included household income, educational attainment, employment status, race and ethnicity, marital status, sex, age, and number of children. Examining these characteristics provides context for the multivariate analysis because households differ across multiple dimensions that may be associated with food insecurity.

The descriptive patterns indicated that food insecurity was not distributed uniformly across the socioeconomic and demographic characteristics of households in the analytic sample.

In particular, household income, educational attainment, employment status, race, marital status, and other household characteristics showed variation across food-security categories. These characteristics were therefore considered simultaneously in the multivariate logistic regression rather than interpreted solely through separate bivariate significance tests.

Table 3: Food-Security Status by Selected Household Characteristics

Household characteristic	High/Marginal n (%)	Low n (%)	Very Low n (%)
Household income			
Less than \$25,000	347 (48.7%)	226 (31.7%)	139 (19.5%)
\$25,000–\$49,999	793 (65.0%)	292 (23.9%)	135 (11.1%)
\$50,000–\$74,999	651 (71.2%)	192 (21.0%)	71 (7.8%)
\$75,000–\$99,999	306 (71.2%)	86 (20.0%)	38 (8.8%)
\$100,000–\$149,999	299 (73.3%)	88 (21.6%)	21 (5.1%)
\$150,000 or more	214 (82.6%)	39 (15.1%)	6 (2.3%)
Education			
Less than high school	315 (58.1%)	151 (27.9%)	76 (14.0%)
High school graduate	802 (63.3%)	316 (24.9%)	149 (11.8%)
Some college/associate degree	791 (64.7%)	293 (24.0%)	138 (11.3%)
Bachelor's degree	472 (77.5%)	105 (17.2%)	32 (5.3%)
Graduate/professional degree	228 (76.0%)	57 (19.0%)	15 (5.0%)
Employment status			
Employed	1,911 (68.2%)	648 (23.1%)	244 (8.7%)
Unemployed	64 (48.1%)	37 (27.8%)	32 (24.1%)
Not in labor force	605 (62.4%)	231 (23.8%)	133 (13.7%)
Race			
White	2,051 (67.6%)	693 (22.8%)	290 (9.6%)
Black	303 (58.9%)	144 (28.0%)	67 (13.0%)

American Indian/Alaska Native	40 (54.1%)	12 (16.2%)	22 (29.7%)
Asian	148 (79.1%)	34 (18.2%)	5 (2.7%)
Other/Multiracial	68 (50.7%)	40 (29.9%)	26 (19.4%)
Hispanic/Latino ethnicity			
Hispanic/Latino	657 (63.8%)	270 (26.2%)	102 (9.9%)
Not Hispanic/Latino	1,953 (67.0%)	653 (22.4%)	308 (10.6%)
Marital status			
Married	1,643 (73.5%)	435 (19.5%)	156 (7.0%)
Widowed	97 (63.4%)	34 (22.2%)	22 (14.4%)
Divorced	294 (58.2%)	146 (28.9%)	65 (12.9%)
Separated	68 (50.4%)	39 (28.9%)	28 (20.7%)
Never married	506 (55.4%)	268 (29.4%)	139 (15.2%)
Sex			
Male	1,095 (72.6%)	298 (19.7%)	116 (7.7%)
Female	1,515 (62.2%)	625 (25.7%)	294 (12.1%)

Note. Percentages are row percentages and represent the distribution of food-security status within each demographic or socioeconomic group. Percentages may not total 100.0% because of rounding. Valid sample sizes vary slightly for education (N = 3,940), employment status (N = 3,905), and marital status (N = 3,940) because of missing values.

Research Question 2: Multivariate Association Between SNAP Participation and Household Food Insecurity

After accounting for selected demographic and socioeconomic characteristics, is SNAP participation statistically associated with household food insecurity among households with children? H2: SNAP participation will remain statistically associated with household food insecurity after accounting for selected demographic and socioeconomic characteristics.

To examine Research Question 2, a binary logistic regression was estimated predicting household food insecurity from SNAP participation while accounting for household income, educational attainment, employment status, race, marital status, Hispanic/Latino ethnicity, sex, age, and number of children. For this analysis, the dependent variable was coded 0 = food secure and 1 = food insecure. Households experiencing high or marginal food security were classified as food secure, while households experiencing low or very low food security were classified as food insecure.

The final regression model included 3,878 households with complete information across the variables included in the model. The overall model was statistically significant, $\chi^2(24) = 335.111, p < .001$, indicating that the predictors collectively improved the model compared with an intercept-only model. The Cox and Snell pseudo- R^2 was .083, and the Nagelkerke pseudo- R^2 was .115. The Hosmer-Lemeshow goodness-of-fit test was not statistically significant, $\chi^2(8) = 11.797, p = .160$, indicating no evidence of poor model fit.

SNAP participation remained significantly associated with household food insecurity after adjustment for the demographic and socioeconomic characteristics included in the model.

SNAP-participating households had approximately 1.90 times the odds of experiencing household food insecurity compared with nonparticipating households, holding the other variables in the model constant ($B = .639$, $SE = .084$, $OR = 1.895$, 95% CI [1.606, 2.235], $p < .001$). The results therefore support H2.

Household income was significantly associated with food insecurity overall ($p < .001$). Relative to households in the lowest income category, several higher-income categories had significantly lower odds of food insecurity. Households with incomes of 25,000–49,999 had lower odds of food insecurity ($OR = .683$, $p < .001$), as did households with incomes of 50,000–74,999 ($OR = .662$, $p < .001$), 100,000–149,999 ($OR = .706$, $p = .024$), and \$150,000 or more ($OR = .457$, $p < .001$). The 75,000–99,999 category did not reach conventional statistical significance ($p = .058$).

Educational attainment was also statistically significant overall ($p = .001$). Relative to household reference persons with less than a high school education, those with a bachelor's degree had significantly lower odds of household food insecurity ($OR = .555$, $p < .001$), as did those with a graduate or professional degree ($OR = .656$, $p = .020$). The high school and some college/associate degree categories were not statistically significant after adjustment for the other variables in the model.

Race was significantly associated with household food insecurity overall ($p < .001$). Relative to White household reference persons, Asian household reference persons had lower adjusted odds of household food insecurity ($OR = .618$, $p = .013$), while those classified as Other or Multiracial had higher adjusted odds ($OR = 1.810$, $p = .002$). The Black and American

Indian/Alaska Native categories were not statistically significant after adjustment for the other characteristics included in the model.

Marital status was significantly associated with household food insecurity overall ($p < .001$). Compared with married household reference persons, divorced respondents had approximately 1.53 times the odds of food insecurity ($OR = 1.533, p < .001$), separated respondents had approximately 1.78 times the odds ($OR = 1.775, p = .003$), and never-married respondents had approximately 1.47 times the odds ($OR = 1.467, p < .001$). The widowed category was not statistically significant.

Employment status was not statistically significant as an overall categorical predictor at the .05 level ($p = .074$). However, the unemployed category had higher odds of household food insecurity than the employed reference category ($OR = 1.479, p = .040$). The not-in-the-labor-force category was not statistically significant ($p = .483$).

Hispanic/Latino ethnicity was not statistically significant after adjustment for the other variables in the model ($OR = .970, p = .730$). Age was also not statistically significant ($OR = 1.001, p = .752$), nor was the number of children in the household ($OR = .991, p = .794$). Sex was statistically significant ($OR = 1.243, p = .007$).

Table 4: Binary Logistic Regression Predicting Household Food Insecurity

Predictor	B	SE	OR	95% CI for OR	<i>p</i>
SNAP participation	0.639	0.084	1.895	[1.606, 2.235]	< .001
Household income (overall)					
25,000–49,999	-0.381	0.104	0.683	[.557, .838]	< .001
50,000–74,999	-0.413	0.102	0.662	[.524, .837]	< .001
75,000–99,999	-0.279	0.147	0.756	[.567, 1.009]	0.058
100,000–149,999	-0.348	0.154	0.706	[.522, .954]	0.024
\$150,000 or more	-0.783	0.201	0.457	[.308, .678]	< .001
Educational attainment (overall)					
High school graduate	-0.215	0.116	0.807	[.643, 1.012]	0.064
Some college/associate degree	-0.186	0.121	0.83	[.655, 1.053]	0.125
Bachelor's degree	-0.588	0.147	0.555	[.416, .741]	< .001
Graduate/professional degree	-0.422	0.181	0.656	[.460, .936]	0.02
Race (overall)					
Black	0.117	0.109	1.124	[.908, 1.391]	0.282
American Indian/Alaska Native	0.277	0.249	1.32	[.810, 2.150]	0.265
Asian	-0.4	0.1	0.61	[.422, .905]	0.013

	81	95	8		
Other/Multiracial	0.59 4	0.1 88	1.81	[1.253, 2.615]	0.002
Marital status (overall)					
Widowed	0.15 8	0.1 93	1.17 1	[.803, 1.708]	0.413
Divorced	0.42 7	0.1 13	1.53 3	[1.228, 1.915]	< .001
Separated	0.57 4	0.1 92	1.77 5	[1.219, 2.584]	0.003
Never married	0.38 3	0.0 99	1.46 7	[1.209, 1.780]	< .001
Employment status (overall)					
Unemployed	0.39 1	0.1 91	1.47 9	[1.018, 2.149]	0.04
Not in labor force	-0.0 64	0.0 91	0.93 8	[.785, 1.122]	0.483
Hispanic/Latino ethnicity	-0.0 3	0.0 88	0.97	[.817, 1.152]	0.73
Sex	0.21 7	0.0 8	1.24 3	[1.062, 1.455]	0.007
Number of children	-0.0 09	0.0 33	0.99 1	[.930, 1.057]	0.794
Age	0.00 1	0.0 04	1.00 1	[.994, 1.008]	0.752

Note. N = 3,878. The dependent variable is household food insecurity (0 = food secure; 1 = food insecure). OR = odds ratio; CI = confidence interval. Odds ratios are reported as Exp(B).

Reference categories are nonparticipation in SNAP, household income below \$25,000, less than high school education, White, married, employed, and the applicable reference categories for ethnicity and sex. Categorical predictors were entered using indicator coding.

The classification analysis showed that the model correctly classified 68.8% of households overall. The model correctly classified 89.8% of food-secure households and 27.9% of food-insecure households. Thus, although the model identified statistically significant relationships between several household characteristics and food insecurity, it was considerably more successful at classifying food-secure households than food-insecure households.

Summary of Findings

The analysis produced two central findings corresponding to the study's research questions. First, food insecurity was substantially more prevalent among SNAP-participating households with children than among nonparticipating households. Approximately 50.6% of SNAP-participating households experienced low or very low food security, compared with 27.3% of nonparticipating households. Very low food security was also considerably more prevalent among SNAP participants.

Second, the multivariate logistic regression showed that SNAP participation remained significantly associated with household food insecurity after accounting for household income, educational attainment, employment status, race, marital status, Hispanic/Latino ethnicity, sex, age, and number of children. SNAP-participating households had approximately 1.90 times the adjusted odds of food insecurity compared with nonparticipating households.

The multivariate model also identified significant associations between food insecurity and household income, educational attainment, race, marital status, and sex. In contrast, employment status was not statistically significant overall at the .05 level, and Hispanic/Latino

ethnicity, age, and number of children were not statistically significant after adjustment for the other characteristics included in the model.

These results provide the basis for the discussion in Chapter 5. The following chapter interprets the central findings in relation to previous research, considers the study's limitations, and discusses implications for SNAP and broader food-security policy.

Chapter 5: Discussion

Summary and Interpretation of Findings

The purpose of this study was to examine household food insecurity among households with children in the United States and assess how food-security status varies according to SNAP participation and selected demographic and socioeconomic characteristics. Using data from the December 2023 Current Population Survey Food Security Supplement (CPS-FSS), the analysis examined a final household-level sample of 3,943 households with children.

The findings demonstrate substantial differences in food-security status between SNAP-participating and nonparticipating households. Among SNAP-participating households, 31.9% experienced low food security and 18.7% experienced very low food security. Combined, 50.6% of SNAP-participating households experienced food insecurity, compared with 27.3% of nonparticipating households. Very low food security was also more than twice as prevalent among SNAP participants as among nonparticipants, at 18.7% compared with 7.2%. These findings support the first hypothesis and indicate that households with children receiving SNAP represent a population experiencing substantial food-related and economic hardship.

The bivariate analysis also identified a statistically significant association between SNAP participation and household food-security status, supporting the second hypothesis.

Food-security status additionally varied across several demographic and socioeconomic characteristics. Household income showed a particularly strong relationship with food security, while education, employment status, race, marital status, sex, and Hispanic/Latino ethnicity were also significantly associated with food-security status in the bivariate analyses. These patterns

reinforce the understanding of food insecurity as a multidimensional form of economic hardship rather than a condition associated with any single household characteristic.

The multivariate logistic regression further showed that SNAP participation remained significantly associated with household food insecurity after accounting for household income, educational attainment, employment status, race, marital status, Hispanic/Latino ethnicity, sex, age, and number of children. SNAP-participating households had approximately 1.90 times the adjusted odds of food insecurity compared with nonparticipating households. This finding supports the third hypothesis and indicates that the observed difference between SNAP participants and nonparticipants was not explained entirely by the demographic and socioeconomic characteristics included in the model.

SNAP Participation and Food Insecurity

The higher prevalence of food insecurity among SNAP-participating households may initially appear inconsistent with SNAP's purpose as a nutrition-assistance program. However, this pattern is consistent with a central issue identified throughout the SNAP literature: households do not enter the program under the same economic circumstances as households that do not participate. SNAP primarily serves households with limited resources, and families experiencing greater economic hardship are simultaneously more likely to experience food insecurity and seek nutrition assistance. This finding is consistent with Gundersen et al. (2011), who identified selection bias as an important challenge in estimating the relationship between SNAP participation and food insecurity. Their research demonstrated that households selecting into SNAP tend to have characteristics associated with greater underlying food hardship.

Ratcliffe et al. (2011) similarly found that simple comparisons can make SNAP participants appear more food insecure because participants often enter the program with greater economic need. After accounting for selection into SNAP, Ratcliffe et al. found evidence that participation reduced food insecurity. Mabli and Ohls (2015) likewise found improvements in food security associated with SNAP participation when comparing participants over time.

The present findings complement this research rather than contradict it. The higher observed prevalence of food insecurity among SNAP participants in this study identifies the substantial vulnerability of households receiving assistance. Even after adjustment for several measured characteristics, SNAP participation remained significantly associated with food insecurity. This suggests that measured differences in income, education, employment, race, marital status, and other characteristics do not fully account for the difference between participating and nonparticipating households. Other dimensions of economic hardship may contribute to this remaining association. Families with similar reported income or employment status can face substantially different housing costs, childcare expenses, healthcare costs, debt obligations, transportation expenses, income volatility, and local costs of living. Such differences can affect both a household's need for SNAP and its ability to maintain adequate food access. The adjusted association found in this study therefore provides additional evidence that SNAP-participating households constitute a particularly economically vulnerable population.

Socioeconomic Characteristics and Food Insecurity

Household income showed one of the clearest relationships with food-security status. The prevalence of food insecurity generally decreased as household income increased, with the highest-income households substantially more likely to experience high or marginal food security. This finding is consistent with Gundersen and Ziliak (2015), who identify limited economic resources as a central predictor of food insecurity. It is also consistent with national USDA evidence showing that food insecurity is concentrated among households with incomes closer to or below the federal poverty line (Rabbitt et al., 2024). Income, however, does not operate independently of other household circumstances. Families must allocate their available resources across housing, utilities, childcare, transportation, healthcare, food, and other necessities. Consequently, two households reporting similar incomes may face substantially different levels of economic pressure. This helps explain why income is a strong predictor of food security without fully accounting for variation in household food hardship.

Educational attainment also showed a meaningful relationship with food security. Households whose reference person had a bachelor's degree or graduate or professional degree generally experienced lower odds of food insecurity than households in the lowest educational category. This pattern is consistent with the broader literature connecting educational attainment to employment opportunities, earnings, economic stability, and access to resources. Education may therefore operate partly through the economic opportunities available to households rather than functioning as an isolated determinant of food security. Employment produced a more nuanced pattern. Employment status was associated with food-security status in the bivariate analysis, but employment status was not statistically significant overall in the multivariate model

after other household characteristics were considered. This distinction is important because it suggests that simply being employed does not capture the full economic circumstances associated with food access. Low wages, part-time employment, unstable schedules, interruptions in earnings, and differences in household expenses can leave employed families vulnerable to food insecurity. The findings therefore add nuance to the expectation that employment alone provides protection against food hardship.

Marital status remained important after adjustment. Compared with married households, divorced, separated, and never-married households had significantly higher adjusted odds of food insecurity. This pattern is consistent with previous research identifying single-parent and single-adult households with children as particularly vulnerable to food insecurity (Gundersen & Ziliak, 2015; Rabbitt et al., 2024). Households with fewer potential earners may face greater difficulty balancing food expenses with housing, childcare, transportation, and other necessities. The present findings therefore reinforce the importance of household structure in understanding economic vulnerability among families with children. Race and ethnicity also revealed important patterns. The bivariate analysis showed significant differences in food-security status across racial groups and by Hispanic/Latino ethnicity, consistent with previous research documenting racial and ethnic disparities in food insecurity (Gundersen & Ziliak, 2015; Rabbitt et al., 2024). In the adjusted model, however, not all racial and ethnic categories remained statistically significant. Hispanic/Latino ethnicity, for example, was no longer statistically significant after other characteristics were considered. This suggests that some observed disparities overlap with differences in income, education, employment, marital status, and other socioeconomic circumstances included in the model.

At the same time, some racial differences remained after adjustment. Households with an Asian reference person had significantly lower adjusted odds of food insecurity than White households, whereas households classified as Other/Multiracial had significantly higher adjusted odds. These findings should be interpreted cautiously because broad racial categories can mask substantial variation within groups. More broadly, the results are consistent with research emphasizing that racial disparities in food insecurity occur within wider patterns of inequality involving income, wealth, employment opportunities, housing, neighborhood resources, and other structural conditions. Sex was also statistically significant in the multivariate model, whereas age and number of children were not. These findings demonstrate the importance of distinguishing between characteristics that appear related to food insecurity in descriptive comparisons and those that remain independently associated after other measured factors are considered. Taken together, the results reinforce the literature reviewed in Chapter 2 describing food insecurity as the product of interconnected economic, demographic, and household circumstances.

Severity of Food Insecurity Among SNAP-Participating Households

One of the most important findings of this study is the prevalence of very low food security among SNAP-participating households with children. Nearly one in five SNAP-participating households in the analytic sample—18.7%—experienced very low food security, compared with 7.2% of nonparticipating households. Very low food security represents a particularly severe form of hardship in which limited resources may disrupt normal eating patterns and reduce food intake. This finding is important because participation in a nutrition-assistance program and achievement of food security are not equivalent outcomes.

SNAP supplements household resources available for food, but participating families must continue to manage other essential expenses. Housing, childcare, healthcare, transportation, utilities, and other necessities compete for limited household resources. The persistence of very low food security among some SNAP recipients therefore highlights the depth of economic hardship experienced by a portion of the population served by the program. This pattern is consistent with research showing that SNAP can reduce food hardship without necessarily eliminating it. Ratcliffe et al. (2011) found reductions in food insecurity after addressing selection into SNAP, while Mabli and Ohls (2015) found improvements in household food security following SNAP participation. The present study adds to this evidence by showing that substantial food insecurity remains observable among households with children participating in SNAP in recent CPS-FSS data. Together, these findings suggest that program participation can coexist with continued economic vulnerability.

Comparison With Previous Research

Overall, the findings of this study largely align with the literature reviewed in Chapter 2. Gundersen and Ziliak (2015) describe food insecurity as closely connected to economic disadvantage and document its consequences for families and children. The present study similarly found substantial differences in food-security status according to household income, education, employment, marital status, and other socioeconomic characteristics. The particularly high prevalence of food insecurity among SNAP-participating households also reinforces the importance of focusing on families with children as a population facing significant food-related hardship.

The results also align with Gundersen et al. (2011), Ratcliffe et al. (2011), and Mabli and Ohls (2015) regarding the complexity of the relationship between SNAP participation and food insecurity. Those studies demonstrate that participating households often have greater underlying economic need than nonparticipants and that selection into SNAP complicates simple comparisons. The present study found the same descriptive pattern: SNAP participants reported substantially more food insecurity than nonparticipants. The multivariate findings add nuance by showing that the association remained even after several observable demographic and socioeconomic characteristics were considered.

The findings concerning demographic disparities also correspond with prior evidence. Gundersen and Ziliak (2015) and Rabbitt et al. (2024) identify substantial differences in food insecurity by income, race and ethnicity, and household structure. Similar patterns appeared in the present analysis. However, the multivariate results demonstrate that some relationships changed after other characteristics were taken into account. Hispanic/Latino ethnicity, age, and number of children were not statistically significant in the adjusted model, and employment status was not significant overall. These findings add nuance to descriptive research by showing that characteristics associated with food insecurity at the bivariate level do not necessarily maintain independent statistical associations once related socioeconomic factors are considered simultaneously. The present study contributes to this literature by focusing specifically on U.S. households with children using the December 2023 CPS-FSS and combining descriptive, bivariate, and multivariate analyses. Rather than evaluating SNAP participation in isolation, the analysis situates participation within the broader socioeconomic circumstances of families receiving assistance. The findings reinforce an interpretation of SNAP as one component of a

larger social safety net serving households that often face multiple and overlapping forms of economic disadvantage.

Limitations

Several limitations should be considered when interpreting these findings. First, the CPS-FSS is cross-sectional, and SNAP participation and food-security experiences are measured during overlapping or relatively close reference periods. The data therefore do not establish the temporal ordering necessary for causal inference. Second, SNAP participation is not randomly assigned. Although the multivariate analysis adjusts for several observable demographic and socioeconomic characteristics, participating and nonparticipating households may differ in unmeasured ways that are also associated with food insecurity. Selection into SNAP therefore remains an important limitation. Third, the nonparticipating comparison group includes households across a broad range of economic circumstances. Some nonparticipating households may not meet SNAP eligibility requirements. The comparison therefore does not represent a direct comparison between SNAP participants and otherwise similar SNAP-eligible nonparticipants. Future research could strengthen this comparison by restricting the analytic sample according to relevant eligibility criteria. Fourth, the analysis relies on self-reported survey data. Measures of SNAP participation, household characteristics, and food-security experiences may be affected by recall or reporting error. Several measures were also combined into broader analytic categories, which improves interpretability but may obscure meaningful differences within those categories. Finally, the model does not capture every factor that may influence household food security. Housing and childcare costs, healthcare needs, household wealth and debt, income volatility, geographic differences in cost of living, disability-related

expenses, and participation in other assistance programs may contribute to household food hardship. Future research incorporating these factors, longitudinal data, and more comparable groups of SNAP participants and eligible nonparticipants could provide a more complete understanding of the relationship between nutrition assistance and food insecurity.

Policy Implications and Recommendations

The findings have several implications for food-security policy. Most importantly, they demonstrate that SNAP serves a population experiencing substantial economic and food-related vulnerability. Approximately half of SNAP-participating households with children in the analytic sample experienced low or very low food security, and participating households were disproportionately represented among groups experiencing broader socioeconomic disadvantage.

Evaluate SNAP Benefit Adequacy

The persistence of low and very low food security among SNAP-participating households supports continued evaluation of SNAP benefit adequacy. In this study, 31.9% of SNAP-participating households experienced low food security and 18.7% experienced very low food security. These findings demonstrate that many households receiving nutrition assistance continue to experience difficulty maintaining adequate food access.

Previous research has found that SNAP can reduce food insecurity and that benefit generosity can influence food hardship (Austin & Sokol, 2024; Ratcliffe et al., 2011). Policymakers should therefore continue evaluating whether benefit levels adequately reflect contemporary food prices, household size, and the circumstances of families with children. Evaluation should consider not only whether eligible households receive SNAP but also the

extent to which benefits allow households to maintain consistent access to adequate food throughout the benefit period.

Address Food Insecurity Within the Broader Economic Circumstances of Families

The findings also demonstrate that food insecurity should be understood within the broader economic circumstances of households. Income, employment, education, marital status, race and ethnicity, and other characteristics were associated with household food-security status. Policies addressing food insecurity should therefore recognize that SNAP cannot independently address every source of household economic hardship. Families must meet expenses for housing, childcare, transportation, healthcare, utilities, and other necessities while maintaining sufficient resources for food. Policies that strengthen household income stability and reduce major financial pressures may complement SNAP and other nutrition programs.

This does not mean that nutrition assistance should be replaced by broader economic policies. Instead, the findings support viewing SNAP as one component of a coordinated social safety net in which nutrition assistance works alongside policies addressing income stability and other household necessities.

Maintain Accessible SNAP Participation

The high prevalence of food insecurity among participating households also indicates that SNAP reaches families experiencing substantial need. Maintaining accessible pathways to program participation is therefore important for households with children experiencing financial hardship.

Program administrators should continue efforts to ensure that eligible households can understand eligibility requirements, complete applications, provide necessary documentation, and maintain benefits through recertification. Because the present study did not directly examine administrative burden or barriers to enrollment, it cannot determine which specific administrative reforms would increase participation or reduce food insecurity. Nevertheless, maintaining an accessible nutrition-assistance system remains particularly important for the economically vulnerable population identified in this analysis.

Future Research

Future research should build on the present study in several ways. One important improvement would be to compare SNAP participants with nonparticipants who are demonstrably eligible for the program based on income and other relevant eligibility criteria. Such an approach would create a more appropriate comparison group than one containing all nonparticipating households.

Future analyses should also apply appropriate CPS-FSS survey weights and account for the survey's complex sampling design when producing population-level estimates. Doing so would improve the ability to generalize findings to U.S. households with children. Longitudinal

research would provide another important extension. Following households over time could help researchers examine food-security conditions before and after SNAP enrollment and better identify changes associated with program participation. Quasi-experimental or other causal research designs could further address selection bias and provide stronger estimates of SNAP's effects.

Future multivariate research could also incorporate additional household characteristics, including housing costs, childcare expenses, geographic differences, disability, healthcare expenditures, household wealth, debt, and participation in other safety-net programs. These factors may help explain why some households continue to experience food insecurity even after receiving nutrition assistance.

Conclusion

Food insecurity remains an important public policy challenge for households with children in the United States. This study examined household food-security patterns using data from the December 2023 CPS-FSS and found substantial differences between SNAP-participating and nonparticipating households. Approximately 50.6% of SNAP-participating households experienced low or very low food security, compared with 27.3% of nonparticipating households. Very low food security affected 18.7% of SNAP participants compared with 7.2% of nonparticipants. Food-security status also varied significantly according to several demographic and socioeconomic characteristics, including household income, educational attainment, employment status, race, marital status, sex, and ethnicity.

The multivariate analysis further demonstrated that SNAP participation remained significantly associated with household food insecurity after adjustment for the socioeconomic and demographic characteristics included in the model. These results underscore the substantial economic vulnerability of the population served by SNAP while also demonstrating the complexity of the relationship between nutrition assistance and food insecurity. The findings have important implications for public policy. SNAP remains a central component of the U.S. nutrition safety net, but food insecurity cannot be understood solely as a question of participation in a single program. Households must manage food expenses alongside housing, childcare, healthcare, transportation, utilities, and other necessities, often with limited and unstable resources.

Reducing food insecurity among households with children therefore requires continued attention to SNAP benefit adequacy and accessibility while also recognizing the broader economic circumstances affecting families. Future research using stronger comparison groups, survey-adjusted estimates, longitudinal data, and causal research designs can provide a clearer understanding of how SNAP affects household food security over time. Taken together, the findings of this study demonstrate that households with children participating in SNAP represent a population experiencing substantial food-related and economic vulnerability and reinforce the importance of nutrition assistance within a broader policy response to household economic hardship.

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Appendix

Appendix A: CPS-FSS Variables and Coding

This appendix provides additional information regarding the variables from the December 2023 Current Population Survey Food Security Supplement (CPS-FSS) used in the analysis. The table below summarizes the study variables, their role in the analysis, and the coding or categories used for statistical analysis.

Variable	Study Measure	Coding/Categories
Household Food Security	Dependent variable	High/Marginal Food Security; Low Food Security; Very Low Food Security
SNAP Participation	Primary independent variable	Received SNAP; Did Not Receive SNAP
Household Income	Socioeconomic characteristic	CPS household/family income categories
Educational Attainment	Socioeconomic characteristic	Collapsed educational categories used in analysis
Employment Status	Socioeconomic characteristic	Employment categories used in analysis
Race	Demographic characteristic	Race categories used in analysis
Hispanic/Latino Ethnicity	Demographic characteristic	Hispanic/Latino; Not Hispanic/Latino
Marital Status	Household characteristic	Collapsed marital-status categories used in analysis
Sex	Demographic characteristic	Male; Female

Age	Demographic characteristic	Age of household reference person
Number of Children	Household characteristic	Number of children in household

Appendix B: Supplemental Statistical Output

This appendix presents supplemental statistical results from the analyses reported in Chapter 4. The tables provide additional detail regarding the bivariate associations between household food-security status and selected demographic and socioeconomic characteristics, as well as overall model-fit statistics for the binary logistic regression predicting household food insecurity.

Table B1: Bivariate Associations Between Household Characteristics and Food-Security Status

Characteristic	Pearson χ^2	df	p	Valid N
Household income	177.47	10	< .001	3,943
Educational attainment	75.809	8	< .001	3,940
Employment status	53.179	4	< .001	3,905
Race	80.74	8	< .001	3,943
Hispanic/Latino ethnicity	6.238	2	0.044	3,943
Marital status	145.981	8	< .001	3,940
Sex	46.261	2	< .001	3,943

Note. Pearson chi-square tests examine the bivariate association between each characteristic and the three-category household food-security measure: high/marginal, low, and very low food security. Sample sizes vary slightly because of missing values.

Table 2B: Binary Logistic Regression Model Summary

Model Statistic	Result
Cases included in analysis	3,878
Cases excluded because of missing data	65
Omnibus model χ^2	335.111
df	24
p	< .001
−2 Log Likelihood	4634.741
Cox & Snell R^2	0.083
Nagelkerke R^2	0.115
Hosmer–Lemeshow χ^2	11.797
Hosmer–Lemeshow df	8
Hosmer–Lemeshow p	0.16
Overall classification accuracy	68.80%
Food-secure cases correctly classified	89.80%
Food-insecure cases correctly classified	27.90%

Note. The dependent variable was binary household food insecurity, coded 0 = food secure and 1 = food insecure. The model included SNAP participation, household income, educational

attainment, race, marital status, employment status, Hispanic/Latino ethnicity, sex, number of children, and age.

Table B3: Adjusted Associations With Household Food Insecurity

Predictor	Odds Ratio	95% CI	p
SNAP participation	2	[1.606, 2.235]	< .001
Household income			< .001 overall
\$25,000–\$49,999	0.683	[.557, .838]	< .001
\$50,000–\$74,999	0.662	[.524, .837]	< .001
\$75,000–\$99,999	0.756	[.567, 1.009]	0.058
\$100,000–\$149,999	0.706	[.522, .954]	0.024
\$150,000 or more	0.457	[.308, .678]	< .001
Educational attainment			.001 overall
High school graduate	0.807	[.643, 1.012]	0.064
Some college/associate degree	0.83	[.655, 1.053]	0.125
Bachelor’s degree	0.555	[.416, .741]	< .001
Graduate/professional degree	0.656	[.460, .936]	0.02
Race			< .001 overall
Black	1.124	[.908, 1.391]	0.282
American Indian/Alaska Native	1.32	[.810, 2.150]	0.265
Asian	0.618	[.422, .905]	0.013
Other/Multiracial	1.81	[1.253, 2.615]	0.002
Marital status			< .001 overall
Widowed	1.171	[.803, 1.708]	0.413
Divorced	1.533	[1.228, 1.915]	< .001

Separated	1.775	[1.219, 2.584]	0.003
Never married	1.467	[1.209, 1.780]	< .001
Employment status			.074 overall
Unemployed	1.479	[1.018, 2.149]	0.04
Not in labor force	0.938	[.785, 1.122]	0.483
Hispanic/Latino ethnicity	0.97	[.817, 1.152]	0.73
Sex	1.243	[1.062, 1.455]	0.007
Number of children	0.991	[.930, 1.057]	0.794
Age	1.001	[.994, 1.008]	0.752

Note. OR = odds ratio; CI = confidence interval. The dependent variable was coded 0 = food secure and 1 = food insecure. Reference categories were SNAP nonparticipant, household income below \$25,000, less than high school education, White, married, employed, and the applicable reference categories for ethnicity and sex. $N = 3,878$.

Appendix C: Analytic Sample Selection

Sample Selection Stage	N
Initial person-level records for children under age 18	44,512
Household-level sample of households with children	10,903
Final analytic sample with valid SNAP participation and food-security data	3,943

Note. The final analytic sample was restricted to households with children that contained valid observations for the primary SNAP participation and household food-security measures.

Analyses involving additional demographic and socioeconomic variables may contain different valid sample sizes because of missing responses for individual variables.

References

- Gundersen, C., Kreider, B., & Pepper, J. (2011). *The economics of food insecurity in the United States*. *Applied Economic Perspectives and Policy*, 33(3), 281–303.
<https://doi.org/10.1093/aep/ppr022>
- Gundersen, C., & Ziliak, J. P. (2015). *Food insecurity and health outcomes*. *Health Affairs*, 34(11), 1830–1839.
<https://doi.org/10.1377/hlthaff.2015.0645>
- IPUMS CPS. (2024). *Current Population Survey Food Security Supplement (CPS-FSS), December 2023*. IPUMS
<https://cps.ipums.org/cps/>
- Ratcliffe, C., McKernan, S. M., & Zhang, S. (2011). *How much does the Supplemental Nutrition Assistance Program reduce food insecurity?* *American Journal of Agricultural Economics*, 93(4), 1082–1098
<https://doi.org/10.1093/ajae/aar026>
- U.S. Census Bureau & U.S. Bureau of Labor Statistics. (2023). *Current Population Survey Food Security Supplement (CPS-FSS)*. U.S. Department of Commerce.
<https://www.census.gov/programs-surveys/cps.html>
- Coleman-Jensen, A., Rabbitt, M. P., Gregory, C. A., & Singh, A. (2024). *Household Food Security in the United States in 2023*.
- Gregory, C. A., & Coleman-Jensen, A. (2017). *Food insecurity, chronic disease, and health among working-age adults*.
- Tiehen, L., Jolliffe, D., & Gundersen, C. (2020). *Alleviating Poverty in the United States: The Critical Role of SNAP Benefits*.
- USDA Economic Research Service (2024). *Food Security in the U.S.: Measurement and Trends*.
- Mabli, J., & Ohls, J. (2015). *Supplemental Nutrition Assistance Program participation is associated with an increase in household food security in a national evaluation*. *The Journal of Nutrition*, 145(2), 344–351.
- Rabbitt, M. P., Reed-Jones, M., Hales, L. J., & Burke, M. P. (2024). *Household food security in the United States in 2023*. U.S. Department of Agriculture, Economic Research Service.

Ratcliffe, C., McKernan, S. M., & Zhang, S. (2011). How much does the Supplemental Nutrition Assistance Program reduce food insecurity? *American Journal of Agricultural Economics*, 93(4), 1082–1098.

Tiehen, L., Jolliffe, D., & Gundersen, C. (2020). *Alleviating poverty in the United States: The critical role of SNAP benefits*. U.S. Department of Agriculture, Economic Research Service.

Alaimo, K., Olson, C. M., & Frongillo, E. A., Jr. (2001). Food insufficiency and American school-aged children's cognitive, academic, and psychosocial development. *Pediatrics*, 108(1), 44–53. <https://doi.org/10.1542/peds.108.1.44>

Alaimo, K., Olson, C. M., Frongillo, E. A., Jr., & Briefel, R. R. (2001). Food insufficiency, family income, and health in U.S. preschool and school-aged children. *American Journal of Public Health*, 91(5), 781–786. <https://doi.org/10.2105/AJPH.91.5.781>

Bartfeld, J., & Dunifon, R. (2006). State-level predictors of food insecurity among households with children. *Journal of Policy Analysis and Management*, 25(4), 921–942. <https://doi.org/10.1002/pam.20214>

Casey, P. H., Szeto, K. L., Robbins, J. M., Stuff, J. E., Connell, C., Gossett, J. M., & Simpson, P. M. (2005). Child health-related quality of life and household food security. *Archives of Pediatrics & Adolescent Medicine*, 159(1), 51–56. <https://doi.org/10.1001/archpedi.159.1.51>

Hanson, K. L., & Connor, L. M. (2014). Food insecurity and dietary quality in U.S. adults and children: A systematic review. *The American Journal of Clinical Nutrition*, 100(2), 684–692. <https://doi.org/10.3945/ajcn.114.084525>

Heflin, C. M., Corcoran, M. E., & Siefert, K. A. (2007). Work trajectories, income changes, and food insufficiency in a Michigan welfare population. *Social Service Review*, 81(1), 3–25. <https://doi.org/10.1086/511162>

Jyoti, D. F., Frongillo, E. A., & Jones, S. J. (2005). Food insecurity affects school children's academic performance, weight gain, and social skills. *The Journal of Nutrition*, 135(12), 2831–2839. <https://doi.org/10.1093/jn/135.12.2831>

- Kimbro, R. T., & Denney, J. T. (2015). *Transitions into food insecurity associated with behavioral problems and worse overall health among children. Health Affairs, 34(11), 1949–1955.* <https://doi.org/10.1377/hlthaff.2015.0626>
- Mabli, J., & Ohls, J. (2015). *Supplemental Nutrition Assistance Program participation is associated with an increase in household food security in a national evaluation. The Journal of Nutrition, 145(2), 344–351.* <https://doi.org/10.3945/jn.114.198697>
- Mykerezi, E., & Mills, B. (2010). *The impact of Food Stamp Program participation on household food insecurity. American Journal of Agricultural Economics, 92(5), 1379–1391.* <https://doi.org/10.1093/ajae/aaq072>
- Rose-Jacobs, R., Black, M. M., Casey, P. H., Cook, J. T., Cutts, D. B., Chilton, M., Heeren, T., Levenson, S. M., Meyers, A. F., & Frank, D. A. (2008). *Household food insecurity: Associations with at-risk infant and toddler development. Pediatrics, 121(1), 65–72.* <https://doi.org/10.1542/peds.2006-3717>
- Samuel, L. J., Crews, D. C., Swenor, B. K., Zhu, J., Stuart, E. A., Szanton, S. L., Kim, B., Dwivedi, P., Li, Q., Reed, N. S., & Thorpe, R. J., Jr. (2023). *Supplemental Nutrition Assistance Program access and racial disparities in food insecurity. JAMA Network Open, 6(6), e2320196.* <https://doi.org/10.1001/jamanetworkopen.2023.20196>
- Shaefer, H. L., & Gutierrez, I. A. (2013). *The Supplemental Nutrition Assistance Program and material hardships among low-income households with children. Social Service Review, 87(4), 753–779.* <https://doi.org/10.1086/673999>
- Shankar, P., Chung, R., & Frank, D. A. (2017). *Association of food insecurity with children's behavioral, emotional, and academic outcomes: A systematic review. Journal of Developmental & Behavioral Pediatrics, 38(2), 135–150.*