THE IMPACT OF SUPPLEMENTAL NUTRITION ASSISTANCE PROGRAM (SNAP) PARTICIPATION ON FOOD PURCHASING PRACTICES, DIET QUALITY, AND FOOD INSECURITY AMONG LOW-INCOME OLDER ADULTS

by

TEMITOPE AIYEJORUN WALKER

(Under the Direction of Jung Sun Lee)

ABSTRACT

SNAP provides food-purchasing assistance for low-income Americans to alleviate hunger and improve nutrition. However, little is known about how SNAP benefits affect the household's food purchasing practices (FPP), diet quality, and food insecurity especially among low-income older adults whose SNAP participation has been typically lower than younger age groups. The goal of this study is to better understand the changes in FPP, diet quality, and food insecurity with the receipt of SNAP benefits among SNAP-eligible non-participating older adults in Georgia. A longitudinal mixed-methods approach was employed based on a natural experiment following a sample of low-income older Georgians (n=10) as they navigated the SNAP application process. An established SNAP application assistance model was utilized to help the study participants. The impact of SNAP benefit receipt was assessed using in-person interviews, interviewer-administered surveys, grocery receipt collection, and grocery shopping trip observations at three time points: 1) before SNAP benefit receipt, 2) one month after SNAP benefit receipt, and 3) three months after SNAP benefit receipt. Both qualitative and quantitative exploratory data analyses were conducted. At baseline, SNAP-eligible participants reported

higher financial constraints, poorer food insecurity, but comparable diet quality in comparison to the general older adult population. The impact of SNAP participation was evident in increasing shifts in household expenditure patterns for food purchased for consumption and improved food security at the midpoint. There were notable changes in six FPP constructs and related distinct practices following SNAP benefit receipt such as changes in the types of food purchased and the strategies employed in their purchase. Overall diet quality was not significantly improved after three months of SNAP benefit receipt, but there were significant increases in the intake quality of select nutrients of concern including saturated fat and sodium. The findings of this study provide a more in-depth conceptual understanding of the underlying mechanism of how SNAP benefits affect food and nutrition-related decision-making processes and behavior changes. These findings also support the feasibility of key strategies used in targeting and recruiting low-income older adults for SNAP research and the value of SNAP application assistance in evaluating the impact of SNAP participation.

INDEX WORDS: SNAP, food stamps, low-income, older adults, food purchasing practices, diet quality, food insecurity

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DEDICATION

Each of us has a gift, and I truly believe mine is rooted in my passion for serving others and the zeal at which I do it. I thank God for that revelation in my life, this special gift, and the opportunity to achieve what I so wanted in my career path, an opportunity to make a difference in the lives of others. This work is dedicated to the Aiyejorun family who planted me in fertile soil, seeded my success, and nurtured my growth and to the Walker family that welcomed me into their vase, added fresh water, and welcomed my bloom as a wife and a mother.

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CHAPTER 1

INTRODUCTION

The older adult population is rapidly growing in the United States. A majority of older Americans are affected by chronic conditions, with 80% of them living with at least one chronic condition (**Gerteis et al., 2014**). Over 4 million Americans aged 60 years and older live in poverty (9.7%) (**United States Census Bureau, 2018**). Furthermore, 8.3% of U.S. households with an older adult (65+) and 9.2% of older adults living alone were food insecure in 2015 (**Coleman-Jensen, Rabbitt, Christian, Gregory, & Singh, 2016**). Georgia's rates of poverty and food insecurity are higher than these national percentages (**United States Census Bureau, 2018; Ziliak & Gundersen, 2015**). Poverty and food insecurity are associated with lower food expenditures, low fruit and vegetable consumption, and lower diet quality (**Drewnowski & Specter, 2004**). Adequate nutrition plays a critical role in preventing and managing chronic diseases in older adults; however, poor diet quality is prevalent among older Americans, and is shown to be associated with greater all-cause mortality and disability (**Xu, Houston, Locher, & Zizza, 2012; Deierlein, Morland, Scanlin, Wong, & Spark, 2014**).

Significance of the Study

Participation in food assistance programs can reduce food insecurity and related nutrition problems of older adults (**Kamp, Wellman, & Russell, 2010**). Studies examining the impact of participation in the Supplemental Nutrition Assistance Program (SNAP) showed that participation increases household food expenditures (**Fox, Hamilton, & Lin, 2004**), increases

nutrient availability to households (**Fox et al., 2004**), and improves food insecurity with increasing benefits (**Nord & Prell, 2011; Ratcliffe, McKernan, & Zhang, 2011; Nord & Golla, 2009**). The positive impact of SNAP participation on diet quality, however, was not consistently shown across studies (**Mabli et al., 2010; Fox et al., 2004; Cole & Fox, 2008**). Ideally, SNAP benefits spent on food allow low-income participants to redirect spending to other goods and services (**Landers, 2007**); however, few studies have comprehensively examined the impact of SNAP on the full scope of the household budget as it relates to potential changes in diet quality and food insecurity among older adults. Furthermore, very little is known about the impact of SNAP participation on food purchasing practices (FPP) shown to be associated with food and nutrient intake among older adult SNAP participants.

Purpose of the Study and Research Questions

The purpose of this longitudinal study was to utilize a mixed methods approach to better understand the changes in FPP, diet quality, and food insecurity of SNAP-eligible non-participating older adults living in Georgia as they transitioned to be SNAP recipients. The findings help to identify potential changes in FPP, nutrition, and health that occur with successful navigation of the SNAP application process and show the feasibility of this type of study design. **Chapter 2** is a review of the literature of key areas addressed in the completion of this dissertation. This chapter covers the target population, older adults, and the significance and implication of population aging. A critical feature of this dissertation is the focus on SNAP. SNAP is defined and described in the context of its current use and role among older adults. In addressing a key barrier to SNAP participation in older adults, the role of SNAP application assistance provided through the Georgia CAFE (Community Advocacy to Access Food Stamps for the Elderly & Disabled) program in facilitating SNAP participation rates is reviewed. A

systematic review is presented to establish the constructs that are contained within FPP, and the methods and measures employed in their assessment are explored. A review of the current state of dietary intake and food insecurity among older adults are addressed independently, and their association with each other and SNAP are described. **Chapter 3** describes in detail the purpose of the study, research questions, study design, and research methods employed in this study. **Chapter 4** presents the results of the study. The results include details about recruitment, participant characteristics, the SNAP application process, and the changes to household expenses, FPP, Diet quality, and food insecurity after SNAP benefit receipt. **Chapter 5** provides a summary of findings of this study, strengths and limitations, overall conclusions, and implications for research, policy, and practice related to SNAP application assistance and SNAP benefit receipt, utilization, and impact.

CHAPTER 2

REVIEW OF THE LITERATURE

Population Aging

The older adult population is rapidly growing in the U.S. In 2010, there were 40 million people age 65 and over in the U.S., accounting for 13% of the total population. In 2011, the earliest segment of the baby boom generation turned 65 years of age. This event marked the beginning of a new phase of growth of the older adult population in the U.S. and is in line with what is referred to worldwide as "population aging." By 2030, there will be about 74.1 million persons 65 and over representing 21% of the U.S. population (**Federal Interagency Forum on Aging-Related Statistics, 2016**).

Socioeconomic state of older adults

The aging population is increasing in the proportion of oldest old (≥85 years old) and minority (**Federal Interagency Forum on Aging-Related Statistics, 2016**). About a third of older adults have a disability, and over 75% receive social security income nationally (75.9%) and within Georgia (76.7%) (**United States Census Bureau, 2018**). About 47.7 million Americans (15.5%) live in poverty, of which over 4 million are 60 and older (9.7%), and just under 196,000 reside in Georgia (11.1%) (**United States Census Bureau, 2018**).

Health status of older adults

In 2010, at least 80% of older Americans were living with at least one chronic condition (**Gerteis et al., 2014**). Furthermore, chronic diseases such as heart disease, stroke, cancer, and diabetes are among the most common and costly health conditions (**Centers for Disease**

Control and Prevention, 2015). Health disparities among older adults can occur due to genetic and environmental factors coupled with cultural and health behaviors. (**Bernstein & Munoz, 2012**). These disparities can be further exacerbated by inequalities in health care, income, and poverty, as well as food insecurity (**Bernstein & Munoz, 2012**).

Supplemental Nutrition Assistance Program (SNAP)

The Supplemental Nutrition Assistance Program (SNAP, formerly Food Stamps) is the largest of the federal nutrition assistance programs and serves as the first line of defense against hunger (**Supplemental Nutrition Assistance Program, 2018b**). SNAP provides monthly nutrition assistance benefits and nutrition education services to low-income families and individuals (**Supplemental Nutrition Assistance Program, 2018b**). SNAP served almost 42.2 million persons with an average monthly benefit of $125.79 in the fiscal year 2017 (**Supplemental Nutrition Assistance Program, 2018a**).

Eligibility requirements of SNAP

Households must meet certain criteria, including resource and income tests which are offset by select deductions to get SNAP benefits. There are special rules regarding amount and type of resources, income, and deductions that apply to those 60 and older. The allowable deductions are a standard deduction for all households; a 20% earned income deduction, a deduction for dependent care costs, a deduction for legally-owed child support payments, a deduction for medical costs for older adults and disabled people; and an excess shelter cost deduction. Deductions increase SNAP benefit amount by reducing net income. For older adults and disabled persons, allowable unreimbursed medical costs that are more than $35 a month may be deducted. Allowable costs include most medical and dental expenses, such as doctor bills, prescription drugs and other over-the-counter medication, dentures, inpatient and outpatient

hospital expenses, and nursing care. They also include other medically related expenses, such as certain transportation costs, attendant care, and health insurance premiums. The shelter deduction is for shelter costs that are more than half of the household's income after other deductions are taken. Allowable shelter costs include the costs of rent or mortgage, taxes, interest, and utilities such as gas, electricity, and water (**Supplemental Nutrition Assistance Program, 2018b**).

The receipt and usage of SNAP benefits

Georgia has a 19-day distribution cycle for their clients to receive benefits between the 5th and the 23rd of each month (**Georgia Department of Human Services, 2012**). SNAP benefits are used at supermarkets, large and small grocery stores, convenience store and specialty stores. SNAP benefits can be used to purchase foods to eat such as bread and cereals; fruits and vegetables; meats, fish and poultry; and dairy products. Seeds and plants that produce food can also be purchased (**Supplemental Nutrition Assistance Program, 2017**). Households with older adult members make fewer transactions (6.0 purchases on average) and spend less in the month than other household types (e.g., nonelderly disabled members made on average 7.2 purchases/month) (**Castner & Henke, 2011).** Similarly, households with older adults spent $24.55 per transaction, while households with non-older adults disabled members spent $31.00, and households with children but no older adults or disabled members spent $35.78 (**Castner & Henke, 2011**).

The potential impact of SNAP participation

Poverty and food insecurity are associated with lower food expenditures, low fruit and vegetable consumption, and lower quality diets (**Drewnowski & Specter, 2004**). SNAP participation has been shown to alleviate hunger and improve nutrition by improving food insecurity (**Nord & Prell, 2011; Ratcliffe et al., 2011**), potentially improving the availability of

food energy and protein at the household level (**Fox et al., 2004**), and increasing the availability of many vitamins and minerals (**Fox et al., 2004**).

A study conducted in 2012 shows that SNAP significantly improves the welfare of low-income households (**Tiehen, Joliffe, & Gundersen 2012**). **Tiehen et al. (2012)** used Current Population Survey data to examine the effect of SNAP on poverty between 2000 and 2009, by first adding SNAP benefits to income. Then, a calculation was done to see how these benefits affected the prevalence, depth of poverty, and severity of poverty. These terms are defined as "poverty rate", "poverty-gap index" defined as mean distance below the poverty threshold with mean is formed over the entire population with those who are not poor being counted as zero poverty gap, and severity of poverty ("squared-poverty-gap index" that averages the squares of the poverty gaps relative to the poverty line). Spanning 2000 to 2009, there was a reduction of both the poverty-gap index by an average of 10.3% and reduction of the squared-poverty-gap index by an average of 13.2% because of supplementing income by the value of SNAP benefits. This study, however, did not capture changes in food purchasing practices that resulted in this change in poverty status.

The prevailing consensus has been that participants in SNAP consistently have greater household food expenditures than non-participants of similar income levels (**Landers, 2007; Castner & Mabli, 2010**). However, with the availability of newer national datasets such as the National Household Food Acquisition and Purchase Survey (FoodAPS), a different purchasing pattern has been reported. A report using the FoodAPS data collected between April 2012 and January 2013 looked at food expenditure patterns of SNAP participating and eligible nonparticipating households (**Tiehen et al., 2017**). A critical adjustment made in this study was to account for household size and composition in analyzing spending patterns. After accounting

for these variables, the findings of the study suggested lower total food expenditures and food-at-home expenditures of SNAP households than those of eligible nonparticipant households. Another study employing the use of FoodAPS data looked at the nutritional quality of foods purchased using the Healthy Eating Index-2010 (**Mancino, Guthrie, Ver Ploeg, & Lin (2018). Mancino et al. (2018)** reported that SNAP-participating households devoted more of their money for food for consumption at home, but the nutritional quality of the foods purchased was lower than non-SNAP participating households. Additionally, a recent study employing the use of point of sale data from a leading grocery retailer showing food item purchases of 26.5 million households over a 12-month period reported that SNAP households and non-SNAP households purchased similar types of foods in these retail outlets (**Garasky, Mbwana, Romualdo, Tenaglio & Roy, 2016**). These studies show the diversity of studies looking at food purchasing practices as distinct practice areas comparing SNAP and non-SNAP households. However, few studies have comprehensively looked at the impact of SNAP on older adults, and very little is known about the impact of SNAP participation on food purchasing practices shown to be associated with food and nutrient intake among older adult SNAP participants. However, the fact that households with older adults tend to have the lowest benefit receipt rates may help to explain why considerable impacts have not been observed in previous studies (**Castner & Henke, 2011; Leftin, Eslami, & Strayer, 2012**).

SNAP participation among older adults

Even as SNAP enrollment rates have risen to record levels among all eligible households during the recession, rates for older adults have remained low (**Leftin et al., 2011**). Currently, more than one-third of eligible older adults (42%) participate in SNAP, the lowest rate among all demographic groups (**Gray & Cunnyngham, 2017**). In Georgia, the number of older adult SNAP participants has followed the national trend and only slightly increased or essentially held constant in recent years (**Cunnyngham, 2010**). A report by the USDA that looked at the trends of SNAP participation between 2002 and 2009 showed that rates were less than 37% for eligible older adults aged 60 and over at the national and state levels (**Cunnyngham, 2010; Leftin et al., 2011**). In 2010, there were 40.3 million monthly participants in SNAP of which nearly 1.6 million participants were from Georgia (**Eslami, Filion, & Strayer, 2011**). In FY 2010, 8% of all SNAP participants in the U.S. were age 60 or over (**Eslami et al., 2011**). In that same year, 6.5% of all SNAP participants in Georgia were age 60 and over (**Eslami et al., 2011**). In Georgia, the number of older SNAP participants followed the national trend and increased or essentially held constant each year from FY 2000 to FY 2007 (**Cunnyngham, 2010**).

Characteristics of older SNAP participants

There are key features identified for SNAP participants age 60 and over. Most of them are female, live alone, live in poverty, receive Social Security (SS) or Social Security Income (SSI), and receive the minimum benefits (**Leftin et al., 2011**). Households with older adult members had among the lowest benefit receipt rates in 2009, receiving only 44% of the benefits for which they were entitled (**Leftin et al., 2011**). Nationally, on average from FY 2000 to FY 2007, for older adults, 21% received the minimum SNAP benefit, and 12% received the maximum benefit (**Cunnyngham, 2010**). In FY 2010, 88% of all SNAP households with older

adults received income from either SSI or SS, and 6% with older adults had no income (**Eslami et al., 2011**). In that same year, these older adult SNAP households received an average SNAP benefit of $144 per month and had an average household size of 1.3 people (**Eslami et al., 2011**). SNAP participant characteristics of older adults were unique to the states as was the case for Georgia (**Cunnyngham, 2010; Eslami et al., 2011**). In Georgia FY 2002-2007, 72% were in one-person households, 84% were in poverty, and 96% of those with SSI were in poverty (**Cunnyngham, 2010**).

Barriers to eligible older adults receiving adequate SNAP benefits

Households with older adults receiving meal program assistance have been found to be least likely to have ever applied for SNAP benefits (**Lee, Johnson, & Brown, 2011a**; **Feeding America, 2014**). Lack of clarity and misinformation about who is eligible for SNAP and the range of benefits have resulted in eligible older adults choosing not to apply for SNAP benefits (**Gabor, Williams, Bellamy, & Hardison, 2002; Badger, 2012; Jones, 2014**). There is some evidence to suggest that some older adult applicants receive less than the benefit for which they are eligible by not claiming deductions they are eligible for (**Jones, 2014**). Although households with older adults can deduct out-of-pocket medical costs exceeding $35 from their gross monthly incomes to determine benefit levels, many households do not take this deduction (**Jones, 2014**). It is estimated that 55% of SNAP-eligible older adults would qualify to use this deduction; however, only 14% of eligible older adults and individuals with disabilities claim the medical expense deduction (**National Council on Aging, n.d**.). The length of any specific questions asked on the SNAP application may also serve as a barrier to participation among older adults (**Ponza, Ohls, Moreno, Zambrowski, & Cohen, 1999; Gabor et al., 2002; Badger, 2012**). Numerous studies have documented the fact that stigma plays a particularly important role in the

participation decisions of older adult households. Specifically, older adults have cited worries about how grocery store staff and other shoppers might perceive them, and about the embarrassment, they might feel if family and friends knew they received benefits (**Ponza et al., 1999; Gabor et al., 2002**).

Approaches to improve SNAP participation and utilization among older adults

Many approaches have been looked at to improve SNAP participation and utilization among older adults by addressing the main barriers of misinformation about SNAP eligibility and benefit level, lack of utilization of medical deductions, length of the application, transportation issues, and the associated stigma of using SNAP benefits. Strategies such as providing brochures on SNAP, eligibility rules, and local provider information to all potentially eligible older adults have been suggested and implemented (**Fuller-Thompson & Redmond, 2008; Supplemental Nutrition Assistance Program, 2018b**). Many states have begun to focus their strategies on improving utilization of medical expense deductions (**Jones, 2014**). Greater utilization of the eligible deductions would be one way to help older adults receive more than the minimum benefits deductions (**Jones, 2014**). Suggested SNAP application process improvements have include shortening the application, establishing local mobile SNAP offices and satellite offices, and making applications available online **(Martin, Cook, Rogers, & Joseph, 2003**). Forty-six of the states in the U.S. have websites allowing online application for SNAP which does not currently include Georgia (**Supplemental Nutrition Assistance Program, 2018c**). The ability to apply online and current use of the electronic transfer (EBT) card has helped to address some of the barriers to SNAP usage (**Martin et al., 2003; United States Department of Agriculture, 2011; United States Department of Agriculture, 2012**).

A few states have adopted simplified applications for older adults to improve the SNAP application process including Georgia. In December 2012, Georgia launched a simplified application initiative for eligible older adults called Senior SNAP to increase participation among older Georgians that was designed to expedite the SNAP application process and shorten benefit approval time. A Senior SNAP household is defined as the condition in which all individuals 60 years and older live together and who also purchase and prepare their meals together. There were unique features of the Senior SNAP application process that included no requirement of a formal interview and reduced verification requirements. Furthermore, applicants did not have to go to the Division of Family and Children Services (DFCS) office to apply for SNAP benefits. During this time, there was a heavy push from DFCS to use the online application system at the time called Georgia COMPASS (Common Point of Access to Social Services). In Georgia, individuals could also apply for SNAP through a paper application that could be downloaded online or received through a DFCS office submitted in-person, through email for Senior SNAP applicants, via fax submission, or by mail. For many older adults, having a means to apply remotely was helpful but still required either access to a computer, fax, a site to access SNAP advocates to get help with the application or to make copies of required documentation, and access to postal services. Georgia decided to remove the online SNAP application submission option promoting their "One Caseworker, One Family" model that emphasized DFCS directed new SNAP applicants to apply for benefits at their local DFCS offices (**Georgia Department of Human Services, 2016**). This change meant that only applicants who applied through a Georgia COMPASS Community Partner (uncompensated organizations that assist anyone requesting help with using the online system for SNAP, Medicaid, TANF and Child Care) could apply online for benefits outside of the DFCS office. These community partners are now referred to as Georgia

Gateway Community Partners (**Georgia Gateway, 2018).** However, the requirement to assist with all services that include SNAP, Medicaid, TANF, and Child Care, may hinder a more focused approach to addressing the specific needs of older adult SNAP applicants.

In the fall of 2015, Georgia was federally-approved to have a standard medical expense deduction (SMED) (**Georgia Department of Human Services, 2015**). Individuals 60 years and older, or receiving SS or SSI disability benefits were already eligible for medical deductions in applying for SNAP benefits. With the SMED, if an applicant in Georgia had more than $35 a month in out-of-pocket medical expenses, $150 deduction would be applied in the calculation of SNAP benefits. If an applicant had more than $185 a month in out-of-pocket medical expenses, an applicant could be eligible for a higher medical deduction. This change in policy immediately impacted many current SNAP recipients who had at least indicated they were paying for Medicare, a cost at a minimum of $104.90 per month at the time. This policy change would prove to be a valuable tool in streaming the SNAP application process for many older adults.

In 2017, Georgia had a year-long roll-out of a new computer system to replace Georgia COMPASS and ODIS called "Georgia Gateway" resulting in one system that receives SNAP applications and determines eligibility. Currently, applicants still cannot apply online remotely but can do so within their local DFCS office. Since the initial launch of Senior SNAP, there have been at least 2-3 changes in leadership, an increased amount of time to reach a staff person going to 48-72-hour return times versus an initial 24-hour call return time. However, it is important to note that this reply time is far better than the time of 2014-2015 when Georgia transitioned to a new phone system that resulted at the time in many dropped calls and persons not getting through to either a live person or recording to leave a message (**Georgia Department of Human Services, 2014**). Overall, Georgia has made a lot of changes critical in the SNAP application

process for older adults over the last five years of which the potential positive impacts could be significant.

SNAP Application Assistance for Older Adults through Georgia CAFE

A more targeted SNAP application assistance model has the potential to address the identified barriers to the application process among older adults. Clarification of SNAP eligibility criteria, utilizing available deductions, accurate completion of the SNAP application, obtaining and submitting proper documentation using the most appropriate submission method (**Badger, 2012; Finkelstein & Notowidigdo, 2018).** The goal of SNAP application assistance is to help SNAP eligible older adults understand their eligibility, apply for SNAP, and maximize the amount of SNAP benefits they are entitled to. A successful targeted SNAP application assistance model should be based on an in-depth understanding of how the SNAP application process works, the facilitators and barriers for eligible older adults in the process of applying for benefits, and how and what could be improved in the SNAP application process based on first-hand experience. In particular, it is critical for a SNAP application assistance model to take into account what is already known about the SNAP policies and implementation strategies employed in assessing eligibility for and applying to SNAP and to help SNAP applicants and advocates understand them.

Georgia CAFE: A validated SNAP application assistance model for older Georgians

Georgia CAFE (Community Advocacy to Access Food Stamps for the Elderly and Disabled) is the first-ever validated SNAP application assistance program to help low-income older Georgians access food through maximal SNAP benefit attainment. Georgia CAFE was originally developed and pilot-tested in the Athens area in 2010 based on strong collaborations among the University of Georgia (UGA) team, the Georgia Legal Services Program, Georgia

Division of Family and Children Services, and Georgia Division of Aging Services (**Badger, 2012**). Initial efforts were to develop and validate an advocate training program and to establish best practice models for sustainable SNAP advocate training. The process involved application assistance tailored to the unique needs of various community partners serving low-income older Georgians including Athens Community Council on Aging, UGA Campus Kitchen, Food Bank of Northeast Georgia, and other groups within the Aging Services Network. A special focus of Georgia CAFE's SNAP advocate training was on key barriers identified among older Georgians. These included navigating the SNAP application process, understanding the SNAP household definition, usage of the medical expense deduction, and the utilization of the SNAP EBT card (**Badger, 2012**). It was expected that training in these areas would equip SNAP advocates to enhance their assistance of eligible older Georgians obtain the maximum amount of SNAP benefits that they were entitled to receive. During the last seven years, the Georgia CAFE model expanded and provided four major services. These included: 1) providing direct assistance to SNAP eligible older adults, 2) training community-based SNAP advocates who provided application assistance to SNAP eligible older adults, 3) increasing awareness of relevant SNAP eligibility criteria, and 4) sharing policy analysis and supporting relevant advocacy initiatives to streamline the SNAP application and verification process for eligible older Georgians.

Georgia CAFE: Lessons learned about the SNAP application process by assisting eligible older Georgians

Georgia CAFE saw many incremental changes in state and federal policy in its tenure that was influential in shaping the type of assistance provided to eligible older adults. Key challenges were identified in the SNAP application process critical in designing and implementing an effective and efficient SNAP application assistance program for eligible older

Georgians. Identifying facilitators and barriers, improving efficiency, and supporting transformative SNAP policies and their implementation within the SNAP application process were critical to the impact of Georgia CAFE's work.

Facilitators and barriers for eligible older adults in the process of applying for benefits

Our first critical step was identifying what was hindering older Georgians from applying for SNAP benefits locally. Identifying the barriers served as not only the basis of why Georgia CAFE was started but shaped the elements of the training given to local SNAP advocates in helping the applicants served. Our target group, older Georgians, were already known to be a vulnerable population with unique characteristics and needs (**Lee, Fischer, & Johnson, 2010a).** Furthermore, many potentially eligible applicants, some without being screened, thought they would likely qualify for the minimum SNAP benefit amount, if at all (**Badger, 2012**). These were the same concerns expressed by many older adults in other research studies (**Fuller-Thompson & Redmond, 2008; Badger, 2012**). These misperceptions provided little incentive to go through the SNAP application process. However, an understanding of what was required in completing a SNAP application, what deductions were included, and a clearer distinction of how SNAP eligibility was determined, encouraged highly and marginally motivated individuals to apply for benefits (**Badger, 2012; Finkelstein & Notowidigdo, 2018**). Recognizing that what was reported in the literature was representative of the older Georgians served by Georgia CAFE, a targeted approach to address their needs within the SNAP application was developed and utilized (**Lee, Fischer, & Johnson, 2010a; Badger, 2012**).

Improving SNAP application efficiency for the applicant

Georgia CAFE was set apart by the comprehensive assistance provided to applicants. Addressing misconceptions, application completion, obtainment of supporting documentation for eligible deductions, and direct assistance were critical in improving efficiency. Assistance was provided in locations frequently visited by the applicants such as senior centers, housing authority common areas, and at home for some applicants **(Badger, 2012).** With the assistance of trained advocates, applicants were informed about what they needed to collect as supporting documentation, assisted in the completion of the SNAP application, and provided any follow up needed to obtain additional information. Applicants were assisted over the phone and in-person. What helped most was noting any documentation needed first, thoroughly filling out the application, and submitting the application. In these crucial steps, the applicant's time was minimized because they didn't collect unnecessary information and they did not have to commute out of their way for assistance. The burden was on the advocate to identify and compile the information.

Not being informed about eligible deductions, specifically medical deductions, in the SNAP application process was a recurring theme among those assisted by Georgia CAFE (**Badger, 2012**). With knowledge of key medical deductions, applicants could be assisted in identifying what expenses they needed to include and the simplest way to do it (**Jones, 2014; Adams, Lee, Bhargava, & Super, 2017)**. Georgia CAFE advocates shared a summary of key medical expenses with applicants and created forms to help capture and organize the eligible medical expenses of its applicants. The use of the form was crucial in increasing the number of applicants utilizing the medical deduction. However, this step was dramatically changed in 2015 with the inclusion of a federally-approved standard medical expense deduction (SMED) in

Georgia that eliminated the need in almost all cases for a separate medical expense form (**Georgia Department of Human Services, 2015**). Qualifying for the deduction was simple for many applicants who were already paying for a healthcare premium such as Medicare or at the very least had co-payments for medical prescriptions and over-the-counter medications and products of $35 or more per month. The SMED helped to streamline the paperwork needed for proving medical expenses, helped to determine SNAP eligibility easier, and in some cases increased the amount of benefits applicants were eligible for (**Jones, 2014**).

Having assisted in application completion, the advocate could more accurately predict SNAP eligibility, estimate potential SNAP benefit amounts, and focus on critical steps after SNAP application submission that have been problematic for applicants. This last part in comprehensive SNAP application assistance was vital in helping to troubleshoot application processing errors and delays. These problems were the result of lost applications, inaccurate processing of applications, missing deductions, inaccurate data entry, the improper inclusion of reported expenses, and misclassification of household status as examples. None of these issues, however, could be effectively identified, confirmed, and corrected without the assistance of staff from the processing agency. Agency staff are guided by policy that mandate timeliness of application processing, and they too have a vested interest in bringing SNAP application cases to a successful close (**Rosenbaum, 2014)**. Knowing that policy dictates a 30-day window to process applications, render a status of approval or denial, and issue benefits with manual inputs by staff at different points in the process depending on the method of submission, there is an inherent potential for errors to occur. When applicants are primed about what they should expect in SNAP benefit amounts, in what notices they should expect, the arrival time of those notices, and how those notices should be interpreted, the common errors and delays can be more quickly

identified and corrected. Georgia CAFE advocates made continual efforts to stay engaged with the applicants they served and served as a bridge to the staff of the processing agency. Having applicants inform advocates sooner about potential errors and delays was important in shortening the SNAP application process overall. Agency staff could be contacted more quickly, and problems could be fixed promptly, perhaps with the avoidance of requesting a fair hearing to dispute a potential denial or lower amount of SNAP benefits.

Supporting SNAP policies and implementation strategies that promoted SNAP participation

In the later phases of Georgia CAFE's work, sharing policy analysis and supporting relevant advocacy initiatives to streamline the SNAP application and verification process for eligible older Georgians became a greater priority. The lessons learned in the work of Georgia CAFE are about how SNAP policy and its implementation impacted how applicants should navigate the SNAP application process. The role of advocates was to stay informed about the changes that were occurring both at the state and local level and to continually articulate those changes to the applicants they served. What was evident at each step of Georgia CAFE's work was that a multi-level process was always utilized to maximize the effectiveness of the SNAP application assistance provided. There was consultation of the literature to use what was already working; an assessment of the needs of the older adults served to provide more targeted assistance; partnering with community, government, and university groups to help streamline the SNAP application process through improved communication and encouraging research as a vehicle to drive policy changes (**Adams et al., 2017);** and in turn, create educational material that supported the SNAP policies and effective use of them by applicants to share and help promote SNAP participation (**Georgia CAFE, 2018).** With the help of the SNAP advocates and the applicants served, Georgia CAFE created signature forms, brochures, and training that

ultimately helped both applicants and the SNAP advocates who assisted them to navigate the SNAP application process for the greater goal of improving SNAP participation.

Food Purchasing Practices (FPP)

The older adult population presents a wide range of unique socioeconomic and health characteristics that should be carefully considered in understanding and assessing FPP. There is a lack of consensus on how to define, identify, and assess FPP among older adults. A targeted literature review was conducted to identify key constructs and methods used to assess FPP among older adults in the U.S.

Literature review method

The review included studies directly assessing FPP in a sample that in part or whole included older Americans and were conducted in the U.S. between 2003 and 2013. Studies were excluded if they did not include older adults, studied adults from other countries, did not specify age range of a study sample, did not assess FPP directly (e.g., assessing purchasing intention vs. actual purchase), or only assessed foods not eaten at home (e.g., fast food and other restaurants).

Four electronic databases (i.e., PubMed, AGRICOLA, Web of Science, and EconLit) were used to identify studies measuring FPP among older adults for this review. Search terms used to identify studies meeting key inclusion criteria for this review include 1) descriptors of target population (i.e., ‘older adults’; ‘seniors’; ‘elderly’), 2) descriptors of food purchasing (i.e., ‘food’; ‘grocery’; ‘expenditure’), and 3) descriptors of FPP related actions (i.e., purchase’; ‘purchasing’; ‘shopping’; ‘buying’; ‘decision’; ‘choice’; ‘behavior’; ‘habit’; ‘practice’). These terms were used in combination for Boolean searches to find studies assessing FFP of older adults.

Initial searches resulted in 1,416 studies from AGRICOLA (117), PubMed (867), EconLit (11), and Web of Science (421). Many of the articles were excluded based on title and abstract because they did not include older adults or were not conducted in the U. S. When the title or abstract did not provide enough information to determine key eligibility criteria, a full-text review was conducted. There were 78 papers read for inclusion and 52 papers that did not meet the inclusion criteria. These papers included duplicates (11), studies not conducted in the U.S. (2), those not specifying that older adults were in the study (18), and studies that were off-scope (21). Twenty-six papers meeting the inclusion criteria were included for this review.

The overall review strategies were to identify and compare key constructs to define FPP and methods to assess the identified constructs among older adults. Any FPP assessed in each study was identified, then carefully examined to determine how the respective FPP were named and defined. The identified constructs were clustered based on similarities in related activities and processes involved in that practice. The methods and measures used to assess the FPP in the selected papers were examined by reviewing the abstract, method, and discussion sections focusing on characteristics of the study sample (e.g., age; gender; race, ethnicity; income; study setting/location) and study design (e.g., qualitative or quantitative methods used, length of study, use of primary or secondary data). Though all the studies that were selected included older adults, the studies that only targeted older adults were identified.

Findings of literature review

Of the 26 studies included, five (19.2 %) studies exclusively targeted older adults aged 60 years and older (**Homenko, Morin, Eimicke, Teresi, & Weinstock, 2010; AbuSabha, Namjoshi, & Klein., 2011; Chung, Popkin, Domino, & Stearns, 2007; Morland & Filomena, 2008; Munoz-Plaza et al., 2013**). **Table 1** shows the summary of sample characteristics, FPP

measures, and study design utilized in each selected research paper. Most of the selected studies were conducted in women (92.3%) and urban settings (80.8%). Three of the studies exclusively targeting older adults were conducted in urban areas (**AbuSabha et al., 2011; Morland & Filomena, 2008; Munoz-Plaza et al., 2013**) and one study targeted rural areas exclusively (**Homenko et al., 2010**). About 70% of the studies included low-income participants. Sample sizes of the identified studies varied ranging from 23 to 78,191 participants. Most studies included participants from multiple races and ethnic groups (88.4%).

Key constructs of FPP

Different names were used to refer to FPP in the reviewed studies, but six distinct constructs were identified as major FPP assessed in the selected studies. These constructs were "where food is purchased," "when and how often food is purchased," "types of food purchased," "financial resources used," "amount spent," and "strategies for maximizing resources." **Table 2** provides a summary of the six identified constructs, and the related FPP assessed under each construct. "Where food is purchased" covers all aspects of the location and sub-classifications of these locations. "Where and how often food is purchased" helps to capture temporal shopping patterns that include frequency, time of day, select days of the week, month, or season. "Types of food purchased" addresses the food that is purchased and identifies the many ways in which purchased foods can be classified such as canned versus fresh. "Financial resources used" specifically addresses the use of food assistance program benefits. "Amount spent" refers to the costs for purchasing individual foods (i.e., bread), food groups (i.e., fruits), or the total food bill. "Strategies for maximizing resources" includes strategies that can help to save money for food purchases. The construct of "where food is purchased" was measured most often with "strategies

for maximizing resources" measured least. These constructs were often measured in tandem in many studies.

Among the studies exclusively targeting older adults, there were distinct commonalities in FPP assessed. The measure of "amount spent" along with other FPP such as "where food is purchased," "types of food purchased," and "when and how often food is purchased were all assessed using a survey either in-person or by telephone. One study identified the "amount spent" by using the grocery store purchase observed during a grocery store trip observation (**Munoz-Plaza et al., 2013**). The practice of "amount spent" was assessed in all the studies targeted to older adults as a measure of a behavioral change in food purchasing (**Homenko et al., 2010; AbuSabha et al., 2011; Chung et al., 2007; Morland & Filomena, 2008**). Across the studies, fruit and vegetable intake was of common interest.

Although the identified six constructs are not specific to older adults, these constructs suggest strategies to better understand unique FPP of older individuals with different socioeconomic and health characteristics. For example, the "where food is purchased" and "when and how often food is purchased" constructs are potentially critical to assess FPP in older adults with limited physical and cognitive function, access to transportation, and social network. The "types of food purchased" construct could be directly affected by nutrition knowledge (**Beydoun & Wang, 2008**), education (**Berning & Hogan, 2014**), the type of chronic diseases older adults have, and related management practices they follow. The "financial resources used" construct is critical to be assessed among older individuals with a fixed income and more specifically lower incomes (**Leibtag & Kaufman, 2003**). The "amount spent" construct relies a lot on the type of "financial resources used" and was a common practice measure among the studies exclusively targeting older adults. The "strategies for maximizing resources" construct

could be largely affected by bargains available (**Leibtag & Kaufman, 2003**) and household size (**Sherman & Brittan, 1973**), and has been of significant research interest to explain how low-income households manage on limited food budgets (**Leibtag & Kaufman, 2003**). Essentially, the choice of appropriate practice constructs should reflect the unique characteristics of older study participants.

Key assessment methods of FPP

Most of the studies included in this review collected primary data to obtain information on FPP, with four studies using secondary data. One study used secondary data to identify FPP of older adults (**Chung et al., 2007**), while the remaining four studies that targeted older adults used primary data (**Homenko et al., 2010; AbuSabha et al., 2011; Morland &Filomena, 2008; Munoz-Plaza et al., 2013**).

Both quantitative and qualitative methods were used to assess different practice constructs (**Table 1**), with greater use of qualitative methods such as focus group interviews in a cross-sectional design. Most of the studies assessed self-reported FPP, and only two studies used objective data collection methods that included grocery store observation and receipt collection. The most diverse methods were employed for determining "types of food purchased" ranging from focus groups to using grocery receipts.

Surveys were the most frequently used quantitative method used to measure FPP. An example of a survey question used to measure both "when and how often food is purchased" and "types of food purchased" was posed to participants. The question was "How often, in the past month, did you do the following: (1) buy fresh vegetables, (2) buy fresh fruits, (3) buy a healthier version of something you liked, and (4) buy a new healthy food to try (**Kegler et al., 2012**)?" The mean of (1) and (2) was reported as "shopping for fruits and vegetables" and mean of (3)

and (4) reported as "choosing healthier foods" (**Kegler et al., 2012**). **Ayala, Mueller, Lopez-Madurga, Campbell, & Elder (2005**) used an interviewer-administered interview method, and asked an open-ended question about where they did their food shopping and the location of the store, both of which covered "where food is purchased." Studies measuring "amount spent" primarily used quantitative surveys and interviews and obtained information about dollars spent on food and the amount of other financial resources such as SNAP benefits.

Among the qualitative methods employed, focus groups were most frequently used. A common measure used among focus groups involved asking participants about "what types of food purchased" such as this example using the question, "…What types of fruits or vegetables were in your shopping cart (**McGee et al., 2011**)?". Unique methods involved the use of grocery store receipts, grocery store observation, and concept mapping. Grocery store receipts were not frequently used; but captured many FPP by obtaining documentation of store name, date, foods purchased, dollar amount of each food, food bill total, and payment method by participants (**Cullen et al., 2007**). Grocery store observation involved the dictation of a "tagalong" shopping trip capturing details such as modes of transportation, purchasing patterns, documentation of total food bill, and sources of payment (**Munoz-Plaza et al., 2013**). Concept mapping was employed in one study that was showcased in two of the reviewed papers (**Walker, Block, & Kawachi, 2012; Walker & Kawachi, 2012**). This method involved detailing some identified FPP by addressing "what things good or bad, influence your food buying practices? (**Walker et al., 2012; Walker & Kawachi, 2012**)" The assessment of "financial resources used" involved the most diverse use of qualitative and quantitative methods, using different types of surveys, focus groups, concept mapping, grocery receipts and store observation. The methods used to assess FPP in the selected studies highlight a high use of qualitative methods (e.g., focus groups,

suggested as an effective assessment tool among older adults) (**Loeb, Penrod, & Hupcey, 2006**). In the assessment of FPP, complementing quantitative methods were used (e.g., grocery store receipts, a critical objective measure of FPP suggested as a validation tool (**French, Shimotsu, Wall, & Gerlach, 2008**).

The limited number of studies of FPP among older adults does not provide enough information to determine what types or combinations of practice constructs would be most appropriate and best to assess among older adults. The studies included in this review assessed some or all six constructs mainly to characterize study participants' FPP and as measures of behavioral change. Ideally, assessing all the constructs using both subjective (e.g., surveys and focus groups) and objective (e.g., grocery receipts and store observation) methods would provide the most comprehensive understanding of FPP of older adults. Therefore, the findings of this review provide the framework for what FPP constructs can be assessed and a summary of the methods used to assess these constructs in these select papers, both critical in determining what study design might be best to utilize.

This review was limited to the U.S. to improve the potential for generalizability to both study and capture the unique and specific FPP of older adults in the U.S. with similar motivations. Similarly, to understand more about the food older adults consume and their implications, studies assessing FPP of older adults have been done in other countries including Australia, Canada, and the UK. Many of these studies used surveys in a large sample of older adults; however, again no consensus terms and definitions were used for FPP as presented in this review. Therefore, a critical gap may exist in research about the constructs of FPP and their assessment among older adults globally.

Table 1. Summary of Research Articles Including Older Americans in the Assessment of Food Purchasing Practices (n=26)

Reference	Sample	Study Design and Data Collection Method(s)	FPP Assessed	Measure(s)Used
Ayala, G. X., Mueller, K., Lopez-Madurga, E., Campbell, N. R, & Elder, J. P. (2005). Restaurant and food shopping selections among Latino women in Southern California. *Journal of the American Dietetic Association, 105*, 38-45. doi:10.1016/j.jada.2004.10.023	Latina women (21-67 y); Southern and Central areas of San Diego County, CA (n=357)	Cross-sectional study Interviewer-administered survey	a, d	Where participants did their food shopping and the location of the store and about shopping at discount and bulk-purchase stores
Yoo, S., Baranowski, T., Missaghian, M., Baranowski, J., Cullen, K., Fisher, J. O., et al. (2006). Food-purchasing patterns for home: a grocery store-intercept survey. *Public Health Nutrition, 9*(3), 384-393.	White, Hispanic, Black, Asian/Pacific Islanders and Other; 78.5% women (19-60+ y); at supermarkets, grocery or convenience stores in the greater Houston, TX area (n=823)	Cross-sectional study Interviewer-administered survey	a, b	The frequency of food shopping, day and time of usual "big shop," travel time for shopping trips, and usual shopping place
Chung, S., Popkin, B. M., Domino, M. E., & Stearns, S. C. (2007). *Effect of retirement on eating out and weight change: an analysis of gender differences*. *Obesity, 15*(4), 1053-1060. doi:10.1038/oby.2007.538	Non-Hispanic White, Hispanic, and Black; 52.6% men (51-71 y); participants in Health and Retirement Study (1992-2002) (n=6,012)	Longitudinal study Baseline in-home interview and follow-up phone interviews	c, e	Household spending on food at home defined as the total amount food stamps plus spending on food at home for each household

Cullen, K., Baranowski, T., Watson, K., Nicklas, T., Fisher, J., O'Donnell, S., et al. (2007). Food category purchases vary by household education and race/ethnicity: Results from grocery receipts. *Journal of the American Dietetic Association*, *107*, 1747–1752. doi:10.1016/j.jada.2007.07.007	Black, Hispanic, White non-Hispanic, and Other; 75% women (19+); in six major supermarket chains, 22 stores, across Houston, TX (n=167)	Longitudinal study Grocery store receipts	d, e	Total grocery dollars spent on food-related items and % of total grocery dollars spent in each food category
Casey, A. A., Elliott, M., Glanz, K., Haire-Joshu, D., Lovegreen, S. L., Saelens, B. E., et al. (2008). Impact of the food environment and physical activity environment on behaviors and weight status in rural U.S. communities. *Preventive Medicine*, *47*(6),600-604. doi:10.1016/j.ypmed.2008.10.001	White non-Hispanic and Non-White; 80.1% women (18-70+ y), 12 rural communities in MO, AK, and TN (n=826)	Cross-sectional study Telephone survey	a, b,	4-point Likert Scale - frequency of shopping at six types of stores: supermarkets, Wal-Mart, convenience stores, small grocery stores or markets, bakeries, or fruit/vegetable stores or farmers' markets
Heinrich, K. M., Hsu, L. J., Johnson, C. B., Jokura, Y., Rider, M., & Maddock, J. E. (2008). Food security issues for low-income Hawaii residents. *Asia Pacific Journal of Public Health*, *20*(Suppl), 64-69.	Native Hawaiian/Pacific Islander, White, Asian, and Black; 73.3% women (18-60+ y), Hawaii, Kauai, and Maui Counties, HI (n=86)	Cross-sectional study Focus group	b, c, f	Food purchasing behaviors and food security strategies
Morland, K. & Filomena, S. (2008). The utilization of local food environments by urban seniors. *Preventive Medicine, 47*(3), 289-293. doi:10.1016/j.ypmed.2008.03.009.	Black, White, and Latino; 81.3% women (65+ y), in 10 Brooklyn senior centers, NY (n=257)	Cross-sectional study Interviewer-administered survey	a, d	How and what types of produce were usually purchased for the household, location of primary store used to purchase fruits and vegetables, and if certain types of produce purchased in last month

Dammann, K. W., & Smith, C. (2009). Factors affecting low-income women's food choices and the perceived impact of dietary intake and socioeconomic status on their health and weight. *Journal of Nutrition Education and Behavior*, *41*, 242-253. doi:10.1016/j.jneb.2008.07.003	White, Black, American Indian, Hispanic, and Other; men and women (18-65 y) in libraries, homeless shelters, and community centers in a 20-mile radius of St. Paul, MN (n=92)	Cross-sectional study Focus group	c	Usage of federal food assistance programs
Bernstein, A. M., Bloom, D. E., Rosner, B. A., Franz, M., & Willett, W. C. (2010). Relation of food cost to healthfulness of diet among US women. *American Journal of Clinical Nutrition*. *92*(5), 1197-1203. doi:10.3945/ajcn.2010.29854	White and Non-White women (18-65 y), enrolled in the Nurses' Health Study (2002) (n=78,191)	Cross-sectional study Self-administered mail survey	d, e	The total amount of money spent on individual foods prepared at home each day estimated by multiplying cost of each food by frequency of consumption
Franzen, L., & Smith, C. (2010). Food system access, shopping behavior, and influences on purchasing groceries in adult Hmong living in Minnesota. *American Journal of Health Promotion*, *24*(6), 396-409. doi:10.4278/ajhp.080710-QUAL-121	Hmong, 69.6% women (18-64 y), in Midwest area of St. Paul, MN (n=69)	Cross-sectional study Focus group	b, a, d	How often and types of foods purchased at Hmong/Asian versus American grocery stores and food assistance programs used
Hermstad, A. K., Swan, D. W., Kegler, M. C., Barnette, J. K., & Glanz, K. (2010). Individual and environmental correlates of dietary fat intake in rural communities: a structural equation model analysis. *Social Science & Medicine*, *71*(1), 93-101. doi:10.1016/j.socscimed.2010.03.028	White and Black, 53.9% women (40-70 y), in four rural counties in Southwest GA: Brooks, Sumter, Worth and Decatur; Healthy Rural Communities 2 Study (n=527)	Cross-sectional study Secondary data analysis of Continuing Survey of Food Intake by Individuals (CSFII)	a, b	4-point scale assessed how often participants shopped at supermarkets or convenience stores

Homenko, D. R., Morin, P. C., Eimicke, J. P., Teresi, J. A., & Weinstock, R. S. (2010). Food Insecurity and Food Choices in Rural Older Adults with Diabetes Receiving Nutrition Education via Telemedicine. *Journal of Nutrition Education and Behavior*, *42*(6), 404–409. doi:10.1016/j.jneb.2009.08.001	White and non-white, 55.4% men (55-80+ y), in rural areas of central and northern upstate NY (n=74)	Cross-sectional study Telephone survey	a, c, d, f	Purchasing of fresh produce and/or canned goods, factors considered when purchasing canned goods, the location of purchase, use of food assistance program during the previous year
Jilcott, S. B., Hurwitz, J., Moore, J. B., & Blake, C. (2010). Qualitative perspectives on the use of traditional and nontraditional food venues among middle- and low-income women in Eastern North Carolina. *Ecology of Food and Nutrition*. *49*(5), 373-389. doi:10.1080/03670244.2010.507438	Black and White women (23-70 y), in urban and rural areas of eastern NC: Pitt and Greene counties (n=23)	Cross-sectional study In-person interview	a, b, c, d, e, f	The decision to use and use of particular food venues: grocery stores, supermarkets, discount supercenters, produce markets/farmer's markets, nontraditional food venues, food purchased at venues, and shopping patterns
AbuSabha, R., Namjoshi, D., & Klein, A. (2011). Increasing access and affordability of produce improves perceived consumption of vegetables in low-income seniors. *Journal of the American Dietetic Association, 111*(10), 1549-1555. doi:10.1016/j.jada.2011.07.003	Black and White, 82.3% men (55+ y), participants at a mobile fresh produce van at two senior housing sites in Troy and Albany, NY (n=79)	Quasi-experimental study Pre/post-survey completed by in-person interview	b, c, e	The frequency of supermarket visits, money spent on the last visit, the frequency of purchasing produce at the mobile market, change in frequency of supermarket visits, change in money spent at the supermarket
Anater, A. S., McWilliams, R., & Latkin, C. A. (2011). Food acquisition practices used by food-insecure individuals when they are concerned about having sufficient food for themselves and their households. *Journal of Hunger & Environmental Nutrition*. *6*(1), 27-44. doi:10.1080/19320248.2011.549368	White, Black, American Indian/Alaskan Native and Asian, 66% women (18-88 y), ten individuals/site at 50 emergency food providers, NJ (n=492)	Longitudinal study Interviewer-administered survey	a, c, f	Engagement in 78 food acquisition practices and use of public assistance programs

D'Angelo, H., Suratkar, S., Song, H. J., Stauffer, E., & Gittelsohn, J. (2011). Access to food source and food source use are associated with healthy and unhealthy food-purchasing behaviours among low-income African-American adults in Baltimore City. *Public Health Nutrition*, *14*(9):1632-1639. doi:10.1017/S1368980011000498	Black; 81.1% women (20-62 y), in predominantly low-income neighborhoods, East and West Baltimore City (n=175)	Cross-sectional study Interviewer-administered survey using Consumer Impact Questionnaire (CIQ)	a, b	Shopping frequency categorized by day/week/month/season, where food is purchased most often, the frequency of obtaining different foods
Jilcott, S. B., Moore, J. B., Wall-Bassett, E. D., Liu, H., & Saelens, B. E. (2011). Association between travel times and food procurement practices among Women supplemental nutrition assistance program participants in eastern North Carolina. *Journal of Nutrition Education and Behavior*, *43*(5), 385-389. doi:b10.1016/j.jneb.2010.11.004	Black, White and Other; women (20-62 y), at a small urban center in Pitt County, eastern NC (n=215)	Cross-sectional study Interviewer-administered survey	a, b	How often participants purchased food from a supermarket or discount superstore
McGee, B. B., Johnson, G. S., Yadrick, M. K., Richardson, V., Simpson, P. M., Gossett, J. M., et al. (2011). Food shopping perceptions, behaviors, and ability to purchase healthful food items in the lower Mississippi delta. *Journal of Nutrition Education and Behavior*, *43*(5), 339-348. doi:10.1016/j.jneb.2010.10.007	Black, White, Hispanic, and Asian, 95% women (18-60+ y), counties within the Lower Mississippi Delta region of AR, LA, and MS (n=81)	Cross-sectional study Focus group	a, d	Where people will/will not shop for groceries in the community, the frequency of shopping for and types of fruits, vegetables, and other healthful food, and fresh/frozen/canned fruits and vegetables

Blitstein, J. L., Snider, J., & Evans, W. D. (2012). Perceptions of the food shopping environment are associated with greater consumption of fruits and vegetables. *Public Health Nutrition*, *15*(6), 1124-1129.	Black, Hispanic, and Other; 78.8% women (18-75 y), in six low-income, primarily minority neighborhoods, Chicago, IL (n=495)	Cross-sectional study Interviewer-administered survey	a, c	Participation in food assistance programs, primary location where participants acquired fresh fruits and vegetables, number of times per month participants shopped for food for the household
Jilcott Pitts, S. B., McGuirt, J. T., Carr, L. J., Wu, Q., Keyserling, T. C. (2012). Associations between body mass index, shopping behaviors, amenity density, and characteristics of the neighborhood food environment among women adult Supplemental Nutrition Assistance Program (SNAP) participants in eastern North Carolina. *Ecology of Food and Nutrition*, *51*(6), 526-541. doi:10.1080/03670244.2012.705749	Black or Other (89%) and White women (20-64 y), in a small urban center in Pitt County, eastern NC (n=197)	Cross-sectional study Interviewer-administered survey	a, b, c	"Do you ever get food from a [food venue type]?", the frequency of shopping and types of food purchased at the venue
Kegler, M. C., Alcantara, I., Veluswamy, J. K., Haardörfer, R., Hotz, J. A., & Glanz, K. (2012). Results from an intervention to improve rural home food and physical activity environments. *Progress in Community Health Partnerships*, *6*, 265-277. doi:10.1353/cpr.2012.0042	Black and White; 86.7% women (40-70 y), in rural Southwest GA region: Cook, Randolph, and Mitchell counties (n=90)	Quasi-experimental study Three telephone interviews	d	4-point scale - how often, in the past month, they did the following: (1) buy fresh vegetables, (2) buy fresh fruits, (3) buy a healthier version of something they liked, and (4) buy a new healthy food to try; mean of (1) and (2) reported as “shopping for fruits and vegetables” and mean of (3) and (4) reported as “choosing healthier foods”

Walker, R. E., & Kawachi, I. (2012). Use of concept mapping to explore the influence of food security on food buying practices. *Journal of the Academy of Nutrition and Dietetics*, *112*(5), 711-717. doi:10.1016/j.jand.2011.12.020	Black, White, Hispanic/Latino, and Other; 56.7% women (28-66 y), in four low-income neighborhoods in Boston MA (n=67)	Cross-sectional study Three concept mapping sessions	a, b, d	Detailing some identified food purchasing principles by addressing "what things good or bad, influence your food buying practices?"
Walker, R. E., Block, J., & Kawachi, I. (2012). Do residents of food deserts express different food buying preferences compared to residents of food oases? A mixed-methods analysis. *International Journal of Behavioral Nutrition and Physical Activity*, *9*, 41-53. doi:10.1186/1479-5868-9-41	"Same as above."	"Same as above."	a, b, c, d	"Same as above" and use of emergency food assistance program in the last 12 months
Darko, J., Eggett, D. L., & Richards, R. (2013). Shopping behaviors of low-income families during a 1-month period of time. *Journal of Nutrition Education and Behavior*, *45*, 20-29. doi:10.1016/j.jneb.2012.05.016	White, Black, American Indian, Asian, Hispanic and Other; 86% women (20+ y), in two community organizations serving low-income populations and a university campus (n=72)	Cross-sectional study Focus group	a, b, c, d	"Describe your typical food shopping behaviors throughout the month," "Where do you shop for food?", "How far do you travel to do your food shopping?", "How do you decide what food items you buy in the store?", and "How do you pay for the food you buy?"

Munoz-Plaza, C. E., Morland, K. B., Pierre, J. A., Spark, A., Filomena, S. E., & Noyes, P. (2013). Navigating the urban food environment: Challenges and resilience of community-dwelling older adults. Journal of Nutrition Education and Behavior, 45 (4), 322–331. doi:10.1016/j.jneb.2013.01.015	Black, White, and Latino; 80% women (60-88 y), Brooklyn, NY (n=30)	Cross-sectional study In-home semi-structured interview; Single "tagalong" shopping trip observation collected through descriptive field notes	a, b, c, d, e, f	Where participants regularly shop for groceries and food, number of stores shopped at, food shopping frequency and patterns, types of food/groceries typically purchased at each store, total amount spent on groceries, participation in government economic assistance program, purchasing patterns, total food purchase bill, the source of payment
Zachary, D. A., Palmer, A. M., Beckham, S. W., & Surkan, P. J. (2013). A framework for understanding grocery purchasing in a low-income urban environment. *Qualitative Health Research*, *23*, 665-678. doi:10.1177/1049732313479451	Black and Other; 86.9% women (20-70 y) in Southwest Baltimore, MD supermarket (n=46)	Cross-sectional study Semi-structured interview; Focus group; Participant observation at the supermarket	d	How participants shopped for food, and how they made decisions about grocery purchasing, the process of grocery shopping

Note: See **Table 2** for how FPP are defined. a= "Where food is purchased," b= "When and how often food is purchased," c= "Financial resources used," d= "Types of food purchased," e= "Amount spent," and f= "Strategies for maximizing resources"; The five studies that exclusively targeted older adults aged 60 years and older are highlighted in grey (Homenko, Morin, Eimicke, Teresi, & Weinstock, 2010; AbuSabha, Namjoshi, & Klein., 2011; Chung, Popkin, Domino, & Stearns, 2007; Morland & Filomena, 2008; Munoz-Plaza et al., 2013).

Table 2. Key Constructs of Food Purchasing Practice among Older Adults: 2003-2013

	Food Purchasing Constructs	Food Purchasing Practices
a	**"Where food is purchased"**	Location of food purchasing, type of location, number of locations
b	**"When and how often food is purchased"**	The frequency of food purchasing, time of day or week of food purchasing
c	**"Financial resources used"**	Government assistance program benefit use: SNAP, WIC, TANF, Meals on Wheels, Congregate meal program
d	**"Types of food purchased"**	Types of food purchases
e	**"Amount spent"**	Amount spent on food purchases
f	**"Strategies for maximizing resources"**	Budgeting, bulk buying, discount purchasing

Dietary Intake of Older Adults

Previous studies suggest that the dietary intake of many older Americans need improvement (**Bachman, Reedy, Subar, & Krebs-Smith, 2008; Ervin, 2008; Krebs-Smith, Guenther, Subar, Kirkpatrick, & Dodd, 2010; Anderson et al., 2011; Bernstein & Munoz, 2012**). There are key factors such as sociodemographic and health characteristics that impact dietary intake of older adults (**Ervin, 2008; Brennan & Singh, 2011**). Additionally, there are differences in dietary intake of SNAP-eligible non-participating and SNAP participating older adults. However, research findings are mixed on how this difference is attributed to SNAP participation (**Cole & Fox, 2008; Mabli et al., 2010).**

Overall dietary intake of older adults

Results from the 2001–2004 National Health and Nutrition Examination Survey (NHANES) show that usual intake for a large percentage of older adults aged 51 to 70 years and over 70 years was below the recommended amounts for total fruit, total vegetables, milk, and whole grains (**Krebs-Smith et al., 2010**). These were based on MyPyramid food groups. A

comparative analysis of 2001-2002 NHANES data to the 2005 Dietary Guidelines finds that Americans across all age groups tend to consume foods that are high in fats and added sugars while neglecting recommended more nutrient-dense food groups (**Bachman et al., 2008**). This finding is supported among the older adults within the Cardiovascular Health of Seniors and Built Environment Study that evaluated diet quality using Healthy Eating Index (HEI) scores for over 1,300 adults, ages 60-99, using 1999-2002 NHANES data (**Deierlein et al., 2014**). With the decrease in the quantity of food and energy intake occurring substantially with age, there is a concurrent decline in key micronutrient intakes, e.g. calcium, zinc, iron, and B vitamins (**Bernstein & Munoz, 2012**). Older adults are already at risk for not meeting the RDA or Adequate Intake values for calcium; vitamins D, E, and K; potassium; and fiber (**Lichtenstein, Rasmussen, Yu, Epstein, & Russell, 2008; Bernstein & Munoz, 2012**). **Ervin (2008)** also examined diet quality using HEI scores for adults, 60 years of age and over, using data from the NHANES, 1999–2002, and showed intake of food groups and nutrients and overall diet quality of those 60 and older were associated with specific sociodemographic and health characteristics. Older adults with more years of education usually had higher scores. Furthermore, it has been documented that older adults with chewing deficiencies and lower socioeconomic status are less likely to comply with the recommended dietary guidelines (**Brennan & Singh, 2011**).

Dietary intake of SNAP participants and income-eligible non-participants

Cole and Fox (2008) reported on nutrient intakes, diet quality, and food choices of SNAP participants, those who were income-eligible for the SNAP but did not participate, and higher-income individuals who were not eligible for SNAP based on NHANES 1999-2004 data. SNAP participating older adults had overall diets that were lower in nutrient density than the diets consumed by higher-income non-participants (**Cole & Fox, 2008**). SNAP participating

older adults were less likely to consume foods from five of the ten food groups, which included grains, vegetables, fruits, dairy products; and added fats and oils. However, there were no significant differences between SNAP participants and income-eligible nonparticipants in mean daily energy intakes (**Cole & Fox, 2008**).

Furthermore, **Cole & Fox (2008)** showed that patterns of intake were distinctive among SNAP eligible non-participants and SNAP participants. There was a significant difference between SNAP participants and income eligible non-participants in the percent reporting consumption of all three meals of the day (38.2% vs. 51.4%). SNAP participants were more likely to skip lunch than income-eligible non-participants (**Cole & Fox, 2008**). The dietary intakes of SNAP-benefit eligible non-participating older adults mirror in many ways the patterns of SNAP participants. **Mabli et al. (2010)** analyzed the percentage and absolute change in diet quality measures that are associated with a 10-percent increase in food expenditures for SNAP participants and income-eligible non-participants and found that increased spending on food was positively associated with a small improvement in diet quality (increases primarily under one percent). Increased spending on food is associated with higher intake of both fruits and vegetables on many of the measures for both SNAP participants and eligible non-participants. Both households spend more on foods with solid fats, alcohol, and added sugar as food expenditures rise, but make choices that are higher in nutrient density.

Improving dietary intake through SNAP

The studies reviewed here show general improvement in access to healthy dietary intake options and nutrients but are mixed in the level of significance of the differences in diet quality. There are contradictory study findings of whether SNAP improves diet quality. Some suggest improvement (**Mabli et al., 2010)** while others do not (**Cole & Fox, 2008; Fox et al., 2004).**

This discrepancy may reflect the inadequacy of using dietary intake alone as a measure of the potential impact of SNAP on diet quality. There is a clear gap in understanding what differentiates income-eligible SNAP non-participants and SNAP participants that are not reflected in the measurement of dietary intake alone.

Food Insecurity Among Older Adults

Food insecurity is defined as "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (**Anderson, 1990**). "Food insecurity is measured as a household-level concept that refers to uncertain, insufficient, or unacceptable availability, access, or utilization of food" (**National Research Council, 2006**).

The extent of food insecurity among low-income older adults

In 2015, 8.3% of U.S. households with an older adult (65+) and 9.2% of older adults living alone were food insecure (**Coleman-Jensen et al., 2016**). The highest percentages of food insecurity, identified from the Current Population Survey data pooled from 2005-2012, exists among older adults (60+) who are between 51% and 99% of the poverty line (13.2%), who are black (11.5 %) or Hispanic (11.4%), under 65 years old (5.5-6.3%), divorced or separated (9.0%), live in the South (5.6%) or Non-metropolitan areas (5.1%), disabled (14.9%), and have less than a high school education (10.2%) compared to their counterparts (**Ziliak & Gundersen, 2015**). **Ziliak and Gundersen (2015)** further found an increasing trend of food insecurity in older adult population. The latest data shows that 8.1% (FY2015) of older Americans (60+) were food insecure, while 8.8% (FY2014) of older Georgians (FY2014) were food secure (**Ziliak & Gundersen, 2017**). Characteristics of food insecure older Georgians are similar to those in older Americans (**Lee, Fischer, & Johnson, 2010**).

Causes and consequences of food insecurity

Food insecurity is associated with nutritional and non-nutritional health status and can impact the overall well-being of older adults (**Lee et al., 2010a**). Food insecurity is associated with low nutrient intakes (**Lee & Frongillo, 2001; Bowman, 2007; Ziliak, Gundersen, & Haist, 2008**) and increased nutrition risk due to functional impairment (**Lee & Frongillo, 2001**) among older adults. Research studies have also identified poorer self-reported health status among food insecure older adults nationally and in Georgia (**Lee & Frongillo, 2001; Ziliak et al., 2008; Lee et al., 2010a; Ziliak & Gundersen, 2015**). Furthermore, food insecurity is associated with cost-related medication non-adherence among low-income older Georgians (**Bengle et al., 2010; Sattler & Lee, 2013**) who are more likely to have more office visits, inpatient hospital days, and emergency department visits than food secure older adults (**Bhargava & Lee, 2016**). Despite greater healthcare utilization, food insecurity is negatively associated with out-of-pocket medical expenses among low-income Georgians (**Bhargava, Lee, Jain, Johnson, & Brown, 2012**). There is a significant gap in research to understand the burden of healthcare costs for low-income Georgians better as it relates to their food needs.

Improving food security through food assistance programs

Studies suggest that participation in food assistance programs reduce food insecurity and related nutrition problems. For example, the Older Americans Act Nutrition Program (OAANP) results in reduced likelihood of food insecurity (**Edwards, Frongillo, Rauschenbach, & Roe, 1993; Lee et al., 2011a**), higher levels of nutrient intake (**Millen, Ohls, Ponza, & McCool, 2002**), but lower nutrient intakes on days when their meals were not delivered (**Edwards et al., 1993; Millen et al., 2002**). However, there is an unmet need for food assistance programs like the OAANP (**Lee, Sinnett, Bengle, Johnson, & Brown, 2010b**). SNAP has been offered as a

means of meeting some of that need. Studies on SNAP have found that SNAP participation increases household food expenditures (**Fox et al., 2004**), increases nutrient availability to households (**Fox et al., 2004**), and may reduce anemia and other nutritional deficiencies (**Lee et al., 2006**). **Nord and Gola (2009**) demonstrate that more food-insecure households self-selected into SNAP accounting for some of the limited improvement in food insecurity measures. The gap lies in knowing what else accounts for this change in food security that may be reflected in concurrent assessments of associated factors of dietary quality and food purchasing practices.

Conducting Research as a SNAP Application Assistance Advocate

The inclusion of SNAP application assistance as a critical research component requires a clear distinction in providing application assistance and engaging applicants as potential research participants. Having the researcher serve as a SNAP application assistant helps to also build a rapport with the potential research participant. Incentives are critical in any research study, but there is added value in helping to make SNAP benefits available to research participants. Ultimately, application assistance can help prevent some of the minor issues that can ultimately delay the start or completion of a research study.

The researcher for this project had a unique opportunity to serve as program coordinator for Georgia CAFE. As program coordinator, the researcher played a central role in identifying key stakeholders and shaping strategies to address assistance to older adults in the SNAP application process. This experience helped to gain an in-depth understanding of how the SNAP application process works for eligible older adults in the state of Georgia. As a SNAP application assistance advocate, the researcher is obligated to make sure each applicant is walked through the application process with the sensitivity and thoroughness required to ensure an accurate SNAP benefit amount (**Badger, 2012**). In dealing specifically with older adults, a lack of

knowledge about the SNAP application process, their potential eligibility, and completing an application can be alleviated with proper screening and SNAP application assistance (**Cody & Ohls, 2005**). Furthermore, it can serve as encouragement for non-SNAP participants to enroll who might not otherwise (**Barlett et al., 2004; Finkelstein & Notowidigdo, 2018**). Having in-depth knowledge of the application process can be crucial in assuring that the SNAP application is completed accurately with the inclusion of all critical supporting documentation (**Badger, 2012; Finkelstein & Notowidigdo, 2018**).

The ability of the researcher as an advocate relies heavily on open and frequent communication with both the applicants and the processing agency (**Badger, 2012; Barber, 2012**). Effective communication allows developing a rapport with the staff at the processing agency to navigate the application process as well as for timely agency follow-ups and identification of potential errors in how benefits are calculated (**Barber, 2012).**

Basic SNAP application assistance involves the completion of the application, but, there are advantages to knowing how benefits are calculated. Researchers can ultimately confirm that the approved benefit amount is the full amount that the applicant is entitled to receive. By being familiar with the expenses and deductions included in the application, a researcher can know before a decision is rendered by the processing agency how much an applicant is set to receive. Having aided in the SNAP application process, critical data can be obtained early. A researcher can gain a wealth of knowledge about the applicant that may foretell the dynamics of being a new SNAP applicant and how their potential SNAP benefits may impact their household expenditures. A critical element missing in much of the research looking at the impact of SNAP benefits to applicants is the benefit amount received by participants. Knowing that the range is between $15 and $192 currently for a single household presents a wide range of potential

impacts of the addition of SNAP benefits to the household (**Supplemental Nutrition Assistance Program, 2018b**).

Research Question, Hypothesis, Specific Aims

The purpose of this dissertation project was to better understand the changes in FPP, diet quality, and food insecurity of SNAP-eligible non-participating older adults living in Georgia as they became SNAP recipients. The research question is "What is the impact of SNAP participation on food purchasing practices, diet quality, and food insecurity among low-income older adults?" The overall hypothesis was that the receipt of SNAP benefits significantly changes FPP, diet quality, and food insecurity of low-income older Georgians. The overall hypothesis was tested in a sample of low-income older adults who were assisted in applying for SNAP benefits in Northeast Georgia and metropolitan-Atlanta. This study employed a longitudinal study design to compare the changes in FPP, diet quality, and food insecurity of low-income older adults before and after they received the SNAP benefits. The specific aims were:

Specific Aim 1: To understand food purchasing practices, diet quality, and food insecurity among SNAP-eligible non-participating older adults living in Georgia. *The hypothesis was that: (1) FPP, diet quality, and food insecurity of low-income older adults are negatively influenced by financial constraints.*

Specific Aim 2: To learn what SNAP-eligible non-participating older adults expect to change regarding food purchasing practices and diet quality upon receipt of SNAP benefits. *The hypothesis was that participants expect to change food purchasing practices and improve diet quality.*

Specific Aim 3: To examine the changes in food purchasing practices, diet quality, and food insecurity among older adults who newly received SNAP benefits. *The hypothesis was that:*

(1) Food purchasing practices would be affected by the receipt of SNAP benefits; (2) Diet quality and food security of low-income older adults in selected urban counties in Georgia would be improved with receipt of SNAP benefits

CHAPTER 3

METHODS

Study Design

This study employed a longitudinal mixed methods study design based on a natural experiment following SNAP-eligible non-participating older Georgians as they applied and received SNAP benefits. The study compared the food purchasing practices (FPP), diet quality, and food security of low-income older adults before and after they received SNAP benefits. This study utilized quantitative and qualitative assessment tools in a convenience sample of low-income older adults that resided in Northeast Georgia and metropolitan Atlanta. Qualitative and quantitative assessments were conducted at three designated time points with a planned grocery shopping trip observation conducted after the midpoint assessment. These included: 1) baseline assessment: before SNAP benefit receipt, 2) midpoint assessment: one month after SNAP benefit receipt, and 3) endpoint assessment: three months after the SNAP benefit receipt (**Appendix A**). All methods and procedures were approved before any procedures with human subjects were initiated by the University of Georgia Institutional Review Board on Human Subjects (IRB# STUDY00002089).

Subjectivity Statement

My research participants were informed that I was a graduate student in the Department of Foods and Nutrition at the University of Georgia and as a trained SNAP advocate, meaning that I could assist in the completion and submission of a SNAP application. I also clarified that I was not certified to provide any nutrition advice and that this was not an intervention. I had no

prior relationship to the participants, and when I first spoke with each participant, I disclosed to them that I am a graduate student who was recruiting for my research study to learn about the food, nutrition, and health of older adults who newly qualified for SNAP. I made clear in the study consent process and throughout the initial SNAP application process that my assistance with their SNAP application was separate from their consent to be in the study. Recruited participants could at any time choose not to participate in the study and understood that I would still assist them with their application and any associated follow up. I did assure participants that my priority was to make sure that they received the best assistance available in the SNAP application process. I explained to participants that my primary responsibility as a researcher was to observe without judgement each participants' purchasing practices and listen to and evaluate their experience as SNAP applicants and then as SNAP recipients as it related to the outcome measures.

I have over seven years of experience in providing SNAP application assistance to older adults and five years of experience providing SNAP application assistance training to other SNAP advocates in my role as program coordinator. I had previous work experience with SNAP advocates and local and state government staff in the metropolitan Atlanta area, and I had taken all the coursework required to complete a certificate in gerontology. Furthermore, my parents immigrated from Nigeria in the 1970's, I was born in Lafayette, Indiana but raised in metropolitan Atlanta and continue to reside in metropolitan Atlanta with my husband and son. Though my parents nor I never experienced the level of poverty that would have qualified for SNAP benefits, my parents did share with me the general hardships they managed in their early days in the United States that have helped me to be empathetic to the conditions experienced by the research participants. Through these experiences, I have developed subjectivities such as

methods of recruiting and maintaining participants as it related to the SNAP application process and an understanding what the potential hardships that would be present among these study participants.

Study Participants

All study subjects were SNAP-eligible non-participating older Georgians, aged 60 years and older, who could understand and speak English, lived on a fixed income, was a homeowner or renter home, did not work and resided in the counties within Northeast Georgia and metropolitan Atlanta. All subjects had to have a SNAP household that consisted of only persons aged 60 and older that purchased, cooked and prepared their meals. Of note, subjects could live with persons not aged 60 or older. The noted SNAP household conditions allowed all applicants to be eligible to apply for SNAP benefits through the Senior SNAP program (**Senior SNAP, 2018**).

Recruitment

Agencies working with Georgia CAFE or referred by SNAP advocate affiliate groups that serve older adults in Northeast Georgia and the metropolitan Atlanta area were asked for permission to recruit participants from their agencies to reach potentially eligible participants. The initial step in recruitment for the study was to identify those who were not currently receiving SNAP benefits, were interested in applying to SNAP and expressed a desire to be in the research study if eligible. Participant recruitment was done actively through in-person presentations or flyer distribution at community-based events, local senior centers, and other venues. Passive recruitment occurred by posting research recruitment flyers and inclusion of recruitment flyers with other materials such as grocery giveaways by approving agencies. Permission was sought to do presentations about the study and to leave recruitment flyers at the

location for potential participants to self-select. The presentation included general information about SNAP and what deductions were available for those aged 60 and older followed by a brief explanation of the research study.

Screening for SNAP eligibility

Those interested in applying for SNAP benefits were then asked to be screened for SNAP eligibility. Some potential participants signed up to be screened in-person, and others asked to be contacted via telephone, following an in-person recruitment opportunity, to determine if they were potentially eligible for SNAP benefits. Other persons called the research study phone line or emailed to express interest in the study and to be screened for SNAP eligibility as the second step in potential study eligibility. All potential participants were screened by the researcher for potential eligibility for SNAP benefits using a SNAP benefit budget sheet provided by Nancy Lindbloom of the Georgia Legal Services Program (GLSP) (See **Appendix C**).

Application for SNAP benefits

The third step was for those potentially eligible for SNAP benefits to be offered the opportunity to be assisted by either the researcher or by another SNAP advocate in the completion and submission of their SNAP application. Application assistance also included the provision of any assistance needed in the collection and submission of supporting documentation. Items collected included proof of income, copies of unreimbursed medical and healthcare expenses, and copies of housing expense documents. Assistance in the completion of the SNAP application was offered to all identified as potentially SNAP eligible based on the screening tool (See **Appendix C**). Persons assisted with their SNAP application were met either at public venues, common areas of rental properties, or their homes. The application completion process was usually completed in an hour or less with the applicant and in most instances, did

not require a follow-up visit. During the scheduled time, the SNAP application was completed, all required and supporting documentation was scanned, and signatures obtained for submission. A critical step in minimizing application completion time was scheduling the application completion time in advance and informing the applicant of all documents needed at the scheduled meeting. All applicants were assisted within the week of their consenting to be assisted with their application. Once the SNAP application was completed and supporting documentation obtained, the application was electronically combined and emailed to Senior SNAP or submitted in hard copy to the local Division of Family and Children Services (DFCS) office if the person was not eligible for Senior SNAP. The submission process that included compiling documentation, creating a table of contents of submitted materials, and emailing the application took about 1 hour to complete. The same time was attributed to SNAP applications submitted to the local DFCS office and the addition of time for commuting and waiting in line to submit applications to the local DFCS office added an hour.

Identifying eligible study participants following SNAP application

Potential participants were identified as those persons who were interested in applying for SNAP benefits, were deemed eligible for benefits based on the initial eligibility screening, and then applied to SNAP. The next step involved asking those who met the study inclusion criteria if they were interested in participating in the study and if so, would complete the informed consent process to be in the research study. Some participants were not interested in being in the study following screening for SNAP eligibility, some could not be reached following SNAP application assistance, and others agreed to be screened for study eligibility.

Consent Process

Study procedures were explained, and consent forms were read to participants followed by obtainment of written informed consent from each participant. The study consent form asked for access to each applicant's SNAP application information, specifically, information used to determine the amount of SNAP benefits each study participant would be potentially eligible to receive. Each participant was asked to complete a researcher-administered screening process that took up to 30 minutes to complete. Participants were informed that the screening included a sociodemographic profile assessment and a cognitive function test. Participants were informed about the content of the three in-person interviews and the requested grocery shopping trip observation. Each participant learned that the three interviews would take about 90 minutes each and that there would be two follow-up phone calls in the coming week to capture dietary intake taking no more than 10-15 minutes per call. Participants were told that they had the opportunity to receive up to a $75.00 gift card for their participation after their conclusion with the study based on how much of the study they completed.

Study Screening Process

The study screening included a sociodemographic profile assessment and a cognitive function test administered by the researcher and was completed within 30 minutes. The sociodemographic assessment included language spoken, ability to complete telephone interviews, employment status, food purchasing ability, previous SNAP participation (study participants could have received SNAP benefits before but not in the past year nor for longer than one year), functional ability noting any need for assistance, current forms of transportation used, and best times and ways to contact each participant. The cognitive function test was the Short Blessed Test (See **Appendix G**; **Carpenter et al., 2011**), a six-item questionnaire used to

determine the status of normal cognition, questionable impairment, or impairment consistent with dementia. All persons eligible for the study had to score a status of normal cognition

In-person Interviews and Observations

Multiple in-person interviews were conducted as a key component of this longitudinal study. Three in-person interviews with each participant occurred at the baseline, midpoint (one month after receipt of SNAP benefits), and endpoint (three months after receipt of SNAP benefits) of the study. The measurements included during each in-person interview at each assessment point are shown in **Appendix A**. The researcher-administered questionnaires are shown in **Appendix G**. Food purchasing practices, diet quality, and food insecurity were assessed at the three time points. Each questionnaire included open-ended questions to add depth to the quantitative assessments. All interviews were audio recorded and transcribed as needed. Field notes and occasional audio recorded notes were kept on each participant to note any details about the participant or documentation received that would help to clarify any findings determined in the analysis. All interviews and grocery shopping trip observations were conducted by the same researcher.

Baseline assessment: before receipt of SNAP benefits

The initial interview was conducted after participants applied for SNAP benefits. This interview was always conducted at a different time when both the SNAP application and the formal consent process were completed. The questions asked about key measures of food purchasing practices (FPP), diet quality, food insecurity. Additionally, the questionnaire included questions on several confounding variables: sociodemographic characteristics, ability to prepare and serve food, access to cooking equipment, and access to food storage units. SNAP application information was obtained from participants that included age, household type and size, income

and their sources, as well as housing and medical expenses. These were all critical in calculating the estimated amount of SNAP benefits each participant would potentially qualify to receive. Participants were asked what they would purchase with their SNAP benefits, to complete three 24-hour dietary recalls: one during the in-person interview and the other two by phone within the same week if possible, and to save their grocery receipts for the next 30 days. Receipts were picked up from each participant after the 30 days of receipt collection had concluded.

Midpoint assessment: one-month after SNAP benefit receipt

A second interview was conducted one month after each participant received access to their SNAP benefits. The questions asked about any changes in sociodemographic characteristics such as their household size, income and their sources, household expenditures, and medical expenses. Participants were asked what they had received in SNAP benefits, if they had used their benefits, and if so, what they purchased with them. They were also asked to complete three 24-hour dietary recalls; one during the in-person interview and the other two by phone within the same week if possible. Participants were requested to save their grocery receipts for the next 30 days. Receipts were picked up from each participant after the 30 days of receipt collection had concluded.

Endpoint assessment: three months after the SNAP benefit receipt

Each participant was asked to complete a third researcher–administered interview conducted after three months of receiving SNAP benefits. The questions asked about any changes in sociodemographic characteristics such as their household size, income and their sources, household expenditures, and medical expenses. Participants were asked what they were currently receiving in SNAP benefits; if they had used their benefits, and if so, what they purchased with them. They were also asked to complete three 24-hour dietary recalls; one during

the in-person interview and the other two by phone within the same week if possible. Participants were requested to save their grocery receipts for the next 30 days. Receipts were picked up from each participant after the 30 days of receipt collection had concluded.

Grocery shopping trip observation

During the midpoint assessment that followed receipt of SNAP benefits, participants were asked if the researcher could accompany them during one grocery shopping trip. Participants were asked to indicate when they would be shopping next to schedule an observation time. Otherwise, they were asked to call the researcher when they planned to go so that the researcher could meet them at the location to observe them during their grocery shopping trip. The grocery shopping trip assessment tool is shown in **Appendix G**.

Study Measures

Quantitative and qualitative assessment tools were utilized to describe study participants and to understand what potential changes might have occurred after they became SNAP participants. As SNAP participants, changes in FPP, diet quality, and food security were assessed on both categorical and continuous scales. Much of the categorical data were obtained from the sociodemographic descriptors, FPP identification, and food security measures of study participants. The continuous data were collected by assessing household expenses, grocery receipt collection, and diet quality over the course of the study.

Sociodemographics and household expenses

During each of the interviews at the three time-points, participants were asked about their sociodemographic profile that included age, gender, race, education, marital status, household size, and monthly household income and expenses. The assessment of some of the household expenses was derived from information used in the completion of the SNAP application that

included some housing and medical expenses (See **Appendix G**). The four key expense categories were "food purchased," "housing," "health," "transportation," and "other." These categories were based on those presented in the **Federal Interagency Forum on Aging-Related Statistics (2016**) profile of older Americans from the Bureau of Labor Statistics Consumer Expenditure Survey showing the 2010 annual household expenditures of older adults. Personal insurance and pensions did not have a separate category. "Food purchased" was narrowed to capture food for consumption at home and included any location for grocery shopping, and thus, did not include fast food and restaurants. The key focus was to capture the kind of expenses that SNAP benefits currently cover, which did not include fast food and restaurants. "Housing" expenses included rent or mortgage, property tax, homeowners' insurance, household utilities, phone, cable, internet, and lawn care. "Health" expenses included all unreimbursed medical expenses claimed as part of each participant's medical expenses for their SNAP application or noted as a monthly expense. "Transportation" costs included paying for rides, gas for the car, car insurance, and car payments. The category of "other" included toiletries, household cleaning supplies, credit card payments, church tithes or offerings, and pet care. The details of what each category included were based on the expenses shared by participants that were then sorted into a category. Once the categories were established the researcher asked about other expenses that may have been forgotten by participants. These included pet care, lawn care, and church tithes and offerings as examples.

Health and medical care

At baseline, participants were first asked to rate their overall health on a 5-point scale. Participants were asked about having private or government health insurance. They were then asked what, if any, chronic conditions they had along with how they managed them.

Management included the use of prescription medication and if there were any associated diet restrictions. Participants were asked to expound on what diet restrictions they had and how that may have affected what food they purchased. At midpoint and endpoint interviews, participants were again asked to rate their overall health and to indicate any new chronic conditions, treatments, associated diet restrictions, and any recent health events. They also were asked if they had any changes in medical expenses for which they had a responsibility to pay.

Cooking equipment access and food preparation and serving ability

The participants were asked what cooking devices they had along with their access to cold storage equipment such as a refrigerator with freezer (**Landers & Shults, 2008).** There was an initial list of items and participants were asked if they used other equipment not on the current list to be added. Also, participants were asked about their ability to prepare and serve adequate meals, which was a closed-ended question taken from the instrumental activities of daily living (IADL) scale **(Lawton & Brody, 1969).** See **Appendix G** for the assessment.

Food purchasing practices (FPP)

FPP were assessed both quantitatively and qualitatively. The questions asked were based on the six constructs of FPP that were identified in the literature review (Chapter 2). These constructs were "where food is purchased," "when and how often food is purchased," "types of food purchased," "financial resources used," "amount spent," and "strategies for maximizing resources." Based on the assessment tools identified in the literature review, questions were selected and modified for this study.

The primary quantitative assessment tool

The primary quantitative assessment tool for FPP was the use of questions in the researcher-administered interview guide. The questions covered food shopping locations, food

shopping frequency, food items typically purchased, the monthly amount spent on food purchased for consumption at home, key deciding factors in food purchasing, and grocery shopping habits. There were few example questions to assess the construct of "strategies for maximizing resources" identified in the literature review on FPP among older adults; therefore, the question was broadly posed as, "how do you decide which foods to purchase?" The results helped to determine the kind of strategies employed. Though not used in the selected papers in the literature review, assessing food label use in purchasing was deemed a critical practice among FPP and was assessed in this study. Additionally, participants were asked at each interview about their potential to make unplanned food purchases to eliminate practices that were not typical but could be considered as a potential confounding factor in identifying FPP.

For the construct of "where food is purchased," all the reported food stores for grocery shopping were collected. The stores were clustered by store name and not by physical location/address. For example, multiple participants used Kroger® but not the same Kroger® location. The location was noted as Kroger® and not distinguished by its various locations. The stores were then classified by the type of store based on the USDA criteria (**Center for Budget and Policy, 2018**). including "Supermarket" "Grocery Store," "Superstore," "Specialty Food Store," "Farmers Market," "Convenience Store," and "Combination/Other." The "when and how often food is purchased" construct was assessed based on the reported time of day that a person shopped (i.e., 5 am – 11:59 pm as "morning," 12pm-5: 59 pm as "afternoon," and 6 pm – 4:59 am as "night."). If a participant either said that they shopped at varying times of the day or noted more than one category of time of day, the response was coded as varying. The frequency of grocery shopping was asked as an open-ended question and responses were categorized as either monthly or weekly. Then the number of times in that category a participant shopped was noted.

The construct of "types of food purchased," was assessed based on the responses of typical food purchased and then classified as one of the four categories (i.e., fruits, vegetables, grains, and protein). The construct of "financial resources used," was categorized as cash, credit card, check, or EBT. The construct of "amount spent," was determined based on the reported amount spent on groceries. The construct of "strategies for maximizing resources," included the dichotomous measure of shopping list used and the categories identified from responses to the open-ended question about reasons to buy the types of food they reported. There were pre-determined categories such as discount purchasing (e.g., buy-one-get-one and coupon use). Others were determined by the researcher and used to classify all responses at each time point. The categories were reported with a sampling of the responses that were included in that category.

Grocery receipt collection

Grocery receipt collection was included to validate the responses of participants to the primary quantitative assessment tool. The receipts showed a comparable response to the frequency of grocery shopping trips, shopping locations, and the monthly amount spent on food (**French et al., 2009**). Participants were asked to save their grocery receipts, specifically food purchases, over the course of a 30-day period at three time points to capture one month of purchases before and after SNAP benefit receipt. Each participant was given a zippered bag for storage of their grocery receipts that they retained for the duration of the study. After the close of 30 days, participants were contacted to schedule a time for the receipts to be collected and scanned by the researcher. The receipt information was documented in Microsoft Excel®. The information gathered from the receipts included, date, time, location, items purchased, cost per item, number of items, documentation of coupons or other noted discounting, amount total, and forms of payment when available (**French et al., 2009).**

The primary qualitative assessment tool

Qualitative interview questions and observations at some participants' resident common areas and homes occurred during the three study time points. The interview questions included reasons for shopping at primary food purchasing stores and for unplanned food purchases, specific elements of a food label used in determining if an item would be purchased or not, and potential and actual changes because of SNAP benefit receipt. Observations at participants' living space included potential food sources such as donated food, the presence of household occupants, human or pet, and general housing environment such as the condition of the cooking area as factors potentially impacting FPP.

Grocery shopping trip observation

The grocery shopping trip observation involved accompanying participants while they shopped for food and during the process asking what strategies were employed in the store to purchase food. The protocol was flexible and based in part on two studies employing grocery store observations (**Fowler, 2008; Munoz-Plaza et al., 2013**). During this grocery shopping trip, observations were made about how the participant navigated the store, the items selected to be purchased and any thoughts shared by the participant in the process of purchasing certain foods. Notes were taken, and the grocery shopping trip was audio recorded with participant permission consented to by all participants. There was a brief on-site follow-up interview if there were questions about the shopping trip once the participant had purchased their items. The receipt was then scanned.

There were many difficulties in scheduling the grocery shopping trip observation, which was incongruous with the reporting of several shopping trips per month by all participants at the midpoint. There was a continual lack of participant shopping times identified after the second

interview. Only seven participants completed the grocery shopping observation because a time could not be identified for the remaining three participants. It should be noted that these three participants relied on family or friends for a ride for their grocery purchases. Deviations from protocol due to time constraints resulted in a truncated observation process that included just the observations of the shopping trip and not information about how participants described their usual shopping trips nor a follow-up call on observations made during the grocery shopping trip.

Diet quality

Diet quality was assessed using 24-hour dietary recalls collected at the three study time points. During the three in-person visits, the recalls were administered by the researcher. Before the obtainment of the recalls, each participant was given a food amount booklet as an aid in helping to estimate portion size (**Nutrition Coordination Center, 2018)**. To capture two weekdays and a weekend day, the week of the home visit if possible, the researcher called the participant two additional days to administer the recalls over the phone. Recalls at each time point were first documented in writing on the entry form in the interview guide in **Appendix G** for each interview period. The researcher entered written entries into Automated Self-administered 24-hour (ASA24) Dietary Assessment Tool, a free Web-based tool that enables self-administered 24-hour recalls and a multi-pass method (**Subar et al., 2012**). Additional entry options in ASA24 were used entering observations and details shared by the participant. These included whether television or other media was in use during the meal, with whom they may have consumed the meal, method of food preparation, and an estimation of what was eaten was usual, less, or more (estimated by the researcher).

The three diet recalls at each time point were used to calculate three distinct Healthy Eating Index (HEI) scores at each time point for each participant. SAS © (version 9.4; SAS

Institute, Cary, CN), was used to calculate HEI-2015 scores from 24-hour recall data collected using ASA24-2016 for each participant following the guidance from the ASA24 Researcher Web Site (**ASA24 Researcher Web Site, 2018**). The SAS © program file titled, 'Totals' was downloaded from the ASA24 Researcher Web site. The 13 components that make up the HEI-2015 are noted in **Appendix B**.

Food security

Food security status was measured at the three time points using the modified six-item U.S. Household Food Security Survey Module (HFSSM) validated in a low-income older Georgian population (**Lee, Johnson, Brown, & Nord, 2011b**). Each question was specifically addressing the last 30 days. For the first two questions about the ability to buy food to last and to afford a balanced meal, the categories were "often," "sometimes," and "never." The remaining four questions regarding cutting the size of meals, skipping meals, eating less, and going hungry had a dichotomous scale of "no" or "yes." Based on the sum of affirmative responses ("Often" or "Sometimes" and "Yes") to the six-item HFSSM, a food insecurity summary score (score of 0–6) was calculated. The score was used to classify individuals into one of four levels of food security (score 0), marginal food security (score 1), low food security (score 2–4), and very low food security (score 5–6), or as either food secure (score of 0–1) or food insecure (score of 2–6) (**Lee et al., 2011b**).

Data Analysis

Through direct participant engagement, repeated in-person interviews, and researcher observations, a rich dataset consisted of both quantitative and qualitative data was established. For this study and very small sample size, mostly descriptive statistics for quantitative data and

key emerging findings from qualitative data were used to summarize the changes related to the SNAP benefit receipt observed in the study sample.

Quantitative data analysis

All quantitative data collected at three time points were managed in Microsoft Excel®. Descriptive statistics including median, range, frequency, and proportion were used to summarize study participant characteristics and measures of FPP, diet quality, and food security at three time points. These measures were compared across three time points. To compare continuous variables, Wilcoxon Signed Rank tests were used due to their non-normal distribution in the small sample size. All statistical analysis was conducted with SAS (Version. 9.4; SAS Institute, Cary, NC). $P<0.05$ was considered statistically significant.

Qualitative data analysis

Digital audio recordings of in-person interviews and grocery shopping trip interviews were transcribed verbatim and used in the analysis. Emerging themes and categories were identified using a constant-comparison method **(Charmaz, 2014).** The transcripts were coded, and codes were sorted into meaningful concept categories. The analysis proceeded by examination of relationships among and within categories, identification of emergent trends and patterns in the data allowed for the drawing of conclusions. Observations during the grocery shopping trips helped to identify key FPP and to triangulate findings captured in other assessments (**Fowler, 2008**). The analysis was ongoing through the collection of data, interview recordings and transcriptions, and field notes.

CHAPTER 4

RESULTS

Recruitment

Potential participants for this study were recruited between April 2017 and August 2017 through various sites and methods and screened for SNAP eligibility and potential research study participation (**Figure 1**). Contact was made with 62 organizations. These sites included senior centers (9), senior residence facilities (11), food pantries (10), recreation centers (3), farmers markets (2), libraries (2), health centers (1), churches (15), and other sites (9) in the Northeast Georgia and metropolitan Atlanta areas. Potential sites were contacted via phone, email, and in-person. A total of 28 sites (45% of the total sites reached) approved recruitment presentations (10), in-person flyer distribution (16), and posted flyers (5). Three sites approved multiple recruitment methods.

Following recruitment at various sites, the researcher engaged participants in-person, by phone, and email. A total of 66 potential participants were recruited, and 48 (73%) of them were ultimately screened for SNAP eligibility. Among the screened participants, 25 (38%) were eligible for SNAP benefits. Only 11 (17%) applied for SNAP benefits and agreed to be screened for the research study. Only one person was excluded from the study due to cognitive impairment.

Observations made about recruitment were recorded. Many of the places that agreed to have recruitment presentations were places where older adults were regularly engaged and had likely already signed up for SNAP benefits. The persons who ultimately were interested in being

screened for SNAP eligibility indicated they were motivated by the incentive of the study over the interest in applying for SNAP benefits alone. Most potential participants required multiple contacts to consider even the first step of providing information needed to be screened. Most of the applicants (80%) were screened by phone first. After SNAP eligible participants were identified, a time was set to meet participants in person. Five participants were met at public sites that included libraries, senior centers, recreation centers and the other five were met at their residences, including common areas of residential facilities and the inside of others' homes. After the initial visit, all but two participates were met at their residences.

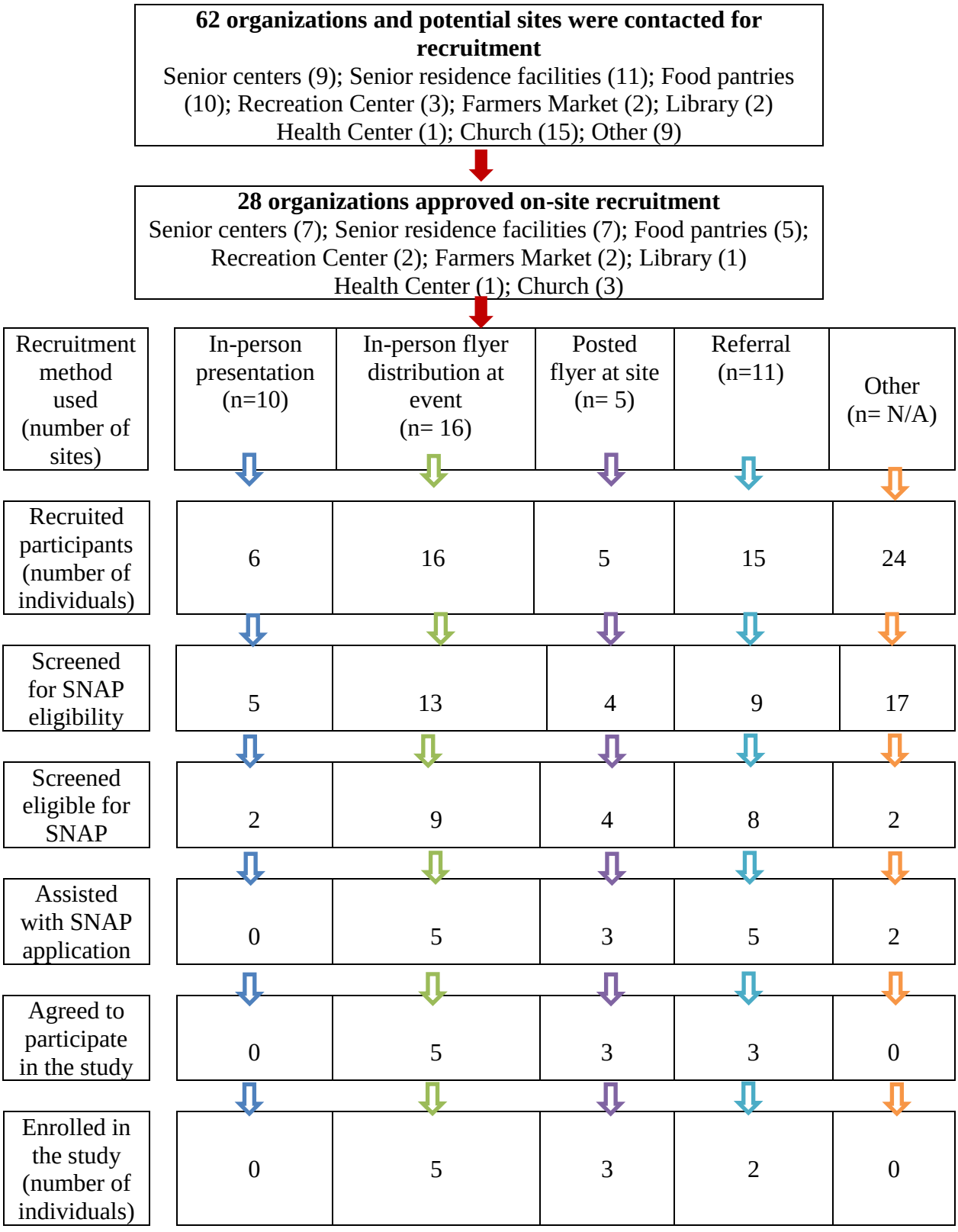

Figure 1. Process for recruiting and screening potential study participants

Participant Characteristics

The characteristics of study participants at baseline are shown in **Table 3**. The median [min-max] age was 65.5 [60-78] years old, 80% were female, and all were black of which two also identified as other. Only one participant had less than a high school diploma/GED. Most participants were widowed (80%). Median annual income [min-max] was $14,007.0 [$9,648.0-$19,660.0] with 60% living below 130% Federal Poverty Level (FPL) ($12,060.0 for one-member household in 2017). Social security benefits were the main source of income for 80% of participants. Participants resided within four counties with the largest number in Fulton County (60%). Homeowners comprised 60% of participants. The median [min-max] of persons living in each participant's household including themselves was 1 [1-5] reflecting the 70% living alone.

Most of the study participants (90%) reported having at least one chronic health condition, and the median [min-max] number of chronic conditions reported per participant was 2-3 [0-8]. Most frequently reported chronic conditions included high blood pressure (80%), arthritis (50%), and diabetes (40%). Over the course of the study, 90% of participants reported using prescription medication with a median [min-max] number of 2 [1-10] prescriptions taken. Over-the-counter medications were taken by 70% of participants with the median [min-max] number being 2 [1-5]. The majority of participants (80%) reported associated diet restrictions for high blood pressure, diabetes, high cholesterol, and complications of gout and bipolar medication including reduced consumption of sugar and salt as examples. More than half of participants (60%) had received SNAP benefits before ranging from 1-4 years ago (20%), 5-8 years ago (30%), and 13-16 years ago (10%) for a year or less. In the past year, 90% of participants received some form of food assistance other than SNAP from food banks, congregate meals, senior food boxes, home-delivered meals, food donations, or senior farmers markets. All

participants indicated having a range of 2-10 forms of cooking equipment they used regularly. All had the ability to store, refrigerate, and freeze food with 40% owning a deep freezer.

Table 3. Sociodemographic, Economic, and Health Characteristics of Study Participants (N=10)

Characteristics	Median [min-max] or n (%)
Age (y)	65.5 [60.0 - 77.0]
Female	8 (80)
Black	10 (100)
Education (≥12th Grade)	9 (90)
Marital status	
Single	1 (10)
Widowed	8 (80)
Divorced	1 (10)
Annual income	$14,007.0 [9,648.0 - 19,660.0]
<130% Federal Poverty Level (FPL)	6 (60)
Residing County	
Athens-Clarke	1 (10)
Barrow	1 (10)
DeKalb	2 (20)
Fulton	6 (60)
Homeowner	6 (60)
Number of household members	1 [1-5]
More than one in household	3 (30)
Food assistance in past year	9 (90)
Previous use of SNAP	5 (50)
Self-reported health	
Poor-fair	3 (30)
Good-excellent	7 (70)
Having any chronic condition	9 (90)
High blood pressure	8 (80)
Arthritis	5 (50)
Diabetes	4 (40)
Depression	2 (20)
Heart disease	1 (10)
Number of chronic conditions	2.5 [0-8]
Medication use	
Using prescription medication	9 (90)
Number of prescription medications taken	2 [1-10]
Using OTC* medications and supplies	7 (70)
Number of OTC medications and supplies	2 [1-5]

* OTC = Over-the-Counter

SNAP Application

All research participants were assisted in the entire SNAP application process including gathering required documentation, application completion, and application submission before baseline data collection for this study. **Figure 2** provides a graphic representation of the key steps and timeframe of the entire SNAP application process. The timeframe is between SNAP application submission and the EBT card receipt for the study participants (N=10). The figure shows what is occurring with the study participants and the Georgia Division of Family and Children Services (DFCS), the SNAP application processing agency following SNAP application submission. The SNAP application process steps outlined is similar across all states, and the general policies that govern these procedures are federally mandated. According to federal policy, a case is considered processed promptly if the household has an opportunity to participate in SNAP within 30 days of the application date for regular cases (**Rosenbaum, 2014**). The timeline and design of this research study were determined by the length of time it took each research participant's SNAP application to be approved. The optimal condition was a completed SNAP application process within 30 days.

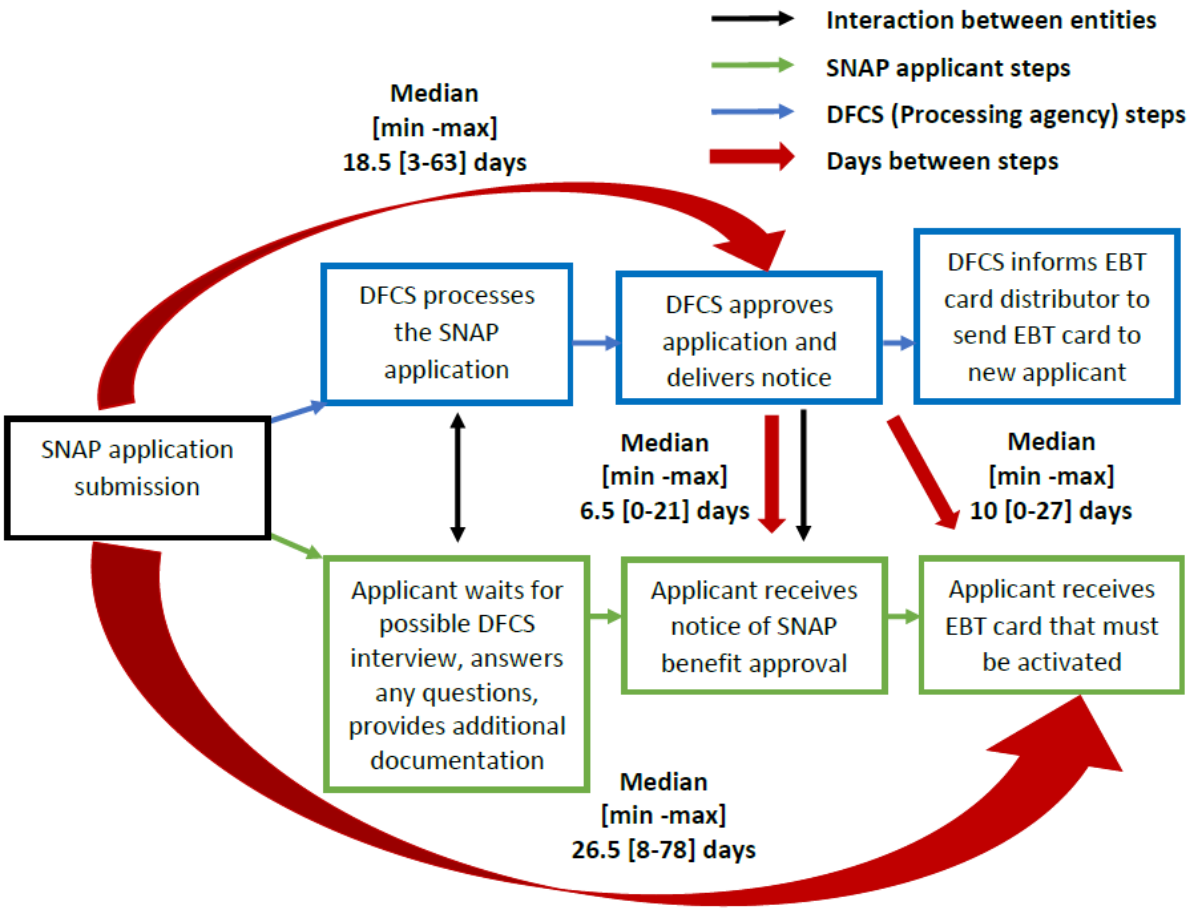

Figure 2. SNAP application process and timeframe in days at key steps (N=10)

Application process

All participants except for one filed their SNAP application via email through the Senior SNAP program. The other participant was assisted by a fellow SNAP advocate group designated as a COMPASS Community Partner and filed through the COMPASS Community Partner portal system on the online system. During this application period, the state of Georgia was transitioning to a new application processing computer system called GA Gateway. The existing application system, GA COMPASS, was taken offline the entire state from August 30, 2017 to September 5, 2017 as part of the transition to the new application processing computer system. During a significant portion of the week of September 11-15, 2017, the GA COMPASS system

was also offline again due to a power outage in the metropolitan Atlanta area. One study participant's application was initially not registered after submission via email. One participant was asked to provide additional shelter cost verification which had already been submitted. There was a delay in determining that the application had not been registered since the system was inaccessible multiple times during the submission period. The median [min-max] of time taken for the study participants to get approval for benefits from DFCS following submission was 18.5 [3-63] days. Study participants were notified that they were approved for SNAP benefits at a median [min-max] of 6.5 [0-21] days. Two participants were not sure if or when they received a notice of approval. Following approval by DFCS, the company distributing the EBT to participants would be notified to send cards to participants. The median [min-max] from DFCS approval of SNAP benefits to EBT card receipt was 10 [0-27] days. Two participants still had their EBT card as previous SNAP recipients; therefore they were ready to use benefits once they were notified that they were approved for SNAP benefits. The median [min-max] from SNAP application submission to EBT card receipt for all the participants was 26.5 [8-78] days. The majority of participants (70%) received their SNAP benefits within 30 days of initial SNAP application submission.

SNAP benefit receipt

All participants received their SNAP benefits following submission of their SNAP application. Once participants received their EBT cards, they activated them. The EBT card distributing company deposited the DFCS-approved monthly SNAP benefit amount on a standard predetermined date each month. The median [min-max] amount of benefits reported by participants, amount calculated by the researcher based on reported income and expenses, the amount approved by DFCS, and the amount loaded onto participants' EBT cards by each

interview date is reported in **Table 4**. SNAP benefits amount data throughout the study period presented in **Table 4** reflect dynamic changes in federal standards, income, and household expenditures. The median [min-max] monthly SNAP benefits reported by study participants was $48 [$15-$194] per month. Of note, the median amount reported was higher than the amount approved by DFCS due to different benefit amounts from the initial month compared to the months that followed. There were varying lengths of time it took participants to receive their EBT card following SNAP benefit approval by DFCS. Therefore, some participants had more than one month's worth of benefits loaded onto their card upon receiving their EBT card. Upon the participants' receipt of the EBT cards, 80% had one month's worth of benefits loaded, 10% had two months loaded, and 10% had no benefits loaded. By the midpoint interview (one month after EBT card receipt), all participants had at least one months' allotment of benefits loaded to their EBT card.

Different factors impacted the variation in SNAP benefits for participants from month to month. One participant's benefits were calculated incorrectly by DFCS resulting in a benefit change from $43 to $28, which corrected after the first month of benefit receipt. In October 2017, the annual release of a new benefits table reflected a change in the minimum ($15) and maximum ($192) SNAP benefit amount for all SNAP recipients (**U.S. Department of Agriculture, 2018).** There were also changes in key variables used in the calculation of SNAP benefits. These changes included a $3 increase in the standard deduction applied to all SNAP applicants based on SNAP household size (the number of applicants within a housing applying for SNAP benefits together). There was also a $37 reduction in the standard utility allowance used to calculate excess shelter costs. By October 2017, two participants had also been approved for Medicaid and thus no longer qualified for the medical expense deduction since they had no

qualifying medical expenses. This change resulted in a $50 reduction in SNAP benefits for one participant and no change in benefits for the other. These changes resulted in the final median [min-max] of SNAP benefits being $35 [15-192] per month.

Both one month (midpoint) and three months(endpoint) after SNAP benefit receipt, all participants were asked if they knew what SNAP benefits they were receiving. They could have learned this from the researcher calculated amount shared over the phone once he/she were identified as being eligible for SNAP benefits, from their DFCS notice of SNAP benefit approval, from a DFCS worker following an interview, or upon hearing their balance when they activated their EBT card by phone as examples. There were varying potential impacts of SNAP benefit receipt based on how much had initially accumulated on the EBT card and how much was spent in each subsequent month. The results showed that participants were provided between $17 to $582 by the time of this study's midpoint interview and $49 to $970 provided by the time of the endpoint interview. There were discrepancies noted following the midpoint interview between what participants reported and what was calculated by the researcher. DFCS was contacted to identify what information was used to determine the SNAP benefit amounts indicated. These differences were in part due to prorating of benefits based on when SNAP benefits were approved in a month and the approved benefit amount. Changes in social security disability benefit income, and medical care costs were also significant factors in SNAP benefit amount changes.

Table 4. Monthly SNAP Benefits Reported and Received by Study Participants during the Study Period (N=10)

Median [min-max]	Baseline	Midpoint	Endpoint	p-value*
Estimated monthly SNAP benefit amount by the researcher	N/A	$42 [$15-$194]	$35 [$15-$192]	0.0156*
Reported monthly SNAP benefit amount by participants	N/A	$48 [$15-$194]	$37 [$15-$192]	0.2031
Calculated monthly SNAP benefit amount by DFCS	N/A	$42 [$15-$194]	$35 [$15-$192]	0.0156*
Actual SNAP benefits received by participants to-date (based on DFCS amount)	N/A	$97 [$17-$582]	$167 [$49-$970]	0.0020

*Significantly different from midpoint based on Wilcoxon Signed Rank Test at $p < 0.05$

Expected and Reported Changes Reported by Participants after receiving SNAP Benefits

Participants were asked what they intended to (baseline), and did purchase (midpoint and endpoint) with their SNAP benefits as an open-ended question. The responses were then clustered into categories identified as “Buy Groceries,” “Buy Things I Might Not Otherwise,” “Buy Healthy Food,” “Don't Know,” and “No Purchase.” The categories and the corresponding responses are shown in **Table 5.** The responses for “Buy groceries” show that for all time-points, there was a wide understanding that participants were very intentional in using their SNAP benefits and in cases where the benefit amount was small, they considered specific items that could be purchased at that benefit amount. If the amount covered nearly all the groceries, there was a broad expectation that the EBT card would be the financial resource used. The categories “buy things I might not otherwise,” “buy healthy food,” and “don’t know,” were all examples of likely responses provided by participants whose SNAP benefit amounts were closer to the minimum, sometimes describing specific items that may have been considered before, but were

not financially feasible at the time. Once participants received benefits, these categories were not mentioned in subsequent interviews. Two participants who received the minimum or close to it reported not using the SNAP benefits. One indicated waiting to let benefits to accumulate to allow for greater purchasing power. Another participant had no specific reason for not using the SNAP benefit amount of $17 in the previous month. A theme that came up often with respondents was that they waited to use the EBT card at specific places and did not use it at all the locations that they shopped at currently.

Participants were then asked what changes they expected (baseline) and what reportedly changed (at midpoint and endpoint) following SNAP benefit receipt. The responses were then divided into categories, and the categories were named. **Table 6** shows what categories were identified and a selection of corresponding responses within them. Many participants did not expect any changes considering that they were getting the minimum amount of SNAP benefits. There was consistent reporting from these participants that they made no changes because of SNAP benefit receipt. Participants did not speak of "Buying groceries" as a change but were more specific in how these groceries may have been different in amount ("Buy more food") and quantity purchased per grocery trip ("Buy more food at one time"). Participants also reported about what they would do with the food such as "make more meals" and "eating more food." The mentioning of "eating more food" was not mentioned more than once, was mentioned at the midpoint and mentioned in relation to a negative weight gain. One participant mentioned a potential to consider a diet change that required guidance, but there was no mention of this endeavor after baseline. One participant mentioned the ability to get discounts from AT&T® for phone, internet, and cable if a customer had SNAP benefits. They intended to sign up for internet for just $10 month with this special. At three months after SNAP benefit receipt, the participant

had signed up for the service. Other participants also mentioned having money to pay for other household expenses that were already accruing and could now be paid on time. One participant used a store they had not used before ("Trying new shopping locations") within walking distance of their home because they had an EBT card sign indicating a two for one on fruits and vegetables. The category titled "buy things I might not otherwise" was rather vague and difficult to identify but practically mirrored the closed-ended question asked of all participants as to whether they ever purchased food they didn't plan to purchase. A majority of participants (70%) responded in the affirmative at each time-point. Interpreted as a need that could not be fulfilled due to financial constraint, this change was reported at midpoint only. Though no one mentioned initially that they might use other food assistance programs less or not at all, that was reported by two participants at the midpoint interview. Following SNAP benefit receipt, participants made observations of a financial burden being lifted ("Less concern about affording food to eat") noted at midpoint and endpoint. Participants were not asked to save receipts for food for outside consumption (i.e., fast food) but one respondent noted that they could now buy more fast food with the money they no longer had to use for food for home consumption following SNAP benefit receipt. As participants began to adjust to their financial status as SNAP recipients, the concept of staying in the budget ("more cost-conscious") was expressed at the endpoint. At endpoint, one participant who received the maximum amount of benefits discussed plans for buying healthier food.

Table 5. What Participants Intended to Purchase and Purchased with their SNAP Benefits

Use of SNAP Benefits	Baseline (Intended Use)	Midpoint (Actual Use)	Endpoint (Actual Use)
Buy Groceries	"Buy groceries." "Buy food." "Grocery shop." "…items for the cornbread I make-milk either buttermilk or whole milk." "A lot of staples-the meats, the veggies." "I can buy canned products." "I will buy more canned goods-English peas and corn." "…change in types [of fruit]" "More fresh fruits and vegetables." "Coffee, sugar-stevia-I usually buy the big box from Sam's®."	"I spent my benefits at Kroger® but not the full amount of benefits. I will likely spend it all this month." "I have purchased everything…you know…from the basics-eggs, bread, milk…everything, everything and anything that is possible." "Everything. All my groceries." "Meats, vegetables, fruits, bread, spices, herbs, green tea bags, vinegar, milk…." "Water and sardines at Walmart. I don't know; I don't remember." "I didn't even know they would pay for water... I fill a container every six months." "…stocking up on the shelf and frozen items." "Sausage, Maruchan® ramen noodles, canned vegetables, and ice cream."	"All of my food purchases." "… All the food I am purchasing is with my EBT card." "I get what I can with it…" "Covers my full grocery budget." "Made purchases with my SNAP benefits at ALDI…" "More canned vegetables." "I use them on its own, not at my main grocery store…Family Dollar®…to get juice." "Try to get fresh produce, not much meat, maybe fish, eggs, cereal [granola]" "Coffee, cream store brand stevia, pineapples, okra."

		“Carver's Market-2 for one on fruits and veggies.” “EBT card to buy meat…no sales tax…usually, pack with 3-4 pieces for 3 to 4 meals.”	
Buy Things I Might Not Otherwise	“More than likely, stuff that maybe I said no I wouldn't get this, maybe I'll go, I'll buy it now because if I have more than what or if I don't have to pull from what I am receiving [in income] then I can feel comfortable going buying a little extra.”		
Buy Healthy Food	“…nutritious things like collards and turnips.” “...fruits to follow a nutritional plan.” “…nutritious ones that sustain my health.”		
Don’t Know	“I don’t know. I have to get there.” “… I don't know. I'm so excited!”		
No Purchase made		“I am waiting to use them.”	“I didn’t use my stamps last month.”

Table 6. Changes Made by Participants Upon SNAP Benefit Receipt

Changes Made Due to SNAP Benefit Receipt	**Baseline (Expected)**	**Midpoint (Actual)**	**Endpoint (Actual)**
No Change	"No – not likely to spend more than currently spending on food." "Still plan to shop weekly-opportunity to get deals."	"No changes in what I buy or the amount of these items." "None-I haven't used them, but with time it adds up. I won't have to use my credit card."	"No" "Nothing drastic. Same purchases and location with or without benefits."
Buy Groceries	"Want to get fruit that is fresh." "Change types of fruit-those with lower sugar…berries are more expensive." "More fresh fruit and vegetables." "Increase the amount of fresh veggies and cheeses." "I will buy coffee, sweetener, and cream. I couldn't buy much more than that. Maybe vegetables."		
Buy more food [overall]	"I may buy more of staple items that are running out. I will buy more, buy one get one items." "I will make the month having food to eat." "Buy more to snack on"	"Allowed me to get borderline items." "I get more food…get more fresh fruits and vegetables." "Buying more food."	"I tend to have enough to buy the thing I want and need." "Buy one more thing that won't spoil…buy something that is on sale." "I have healthy snacks/foods readily available."

		"Bought a couple of packs of meat now more than I usually would" "Increased amount of purchases of food…"	
Buy more food [at one time]	"Buy more food at a time. I don't have to go to the store every week."		"…get more food purchased at a time."
Make more meals	"Making more planned meals."		
Eating more food		"I have gained weight because I have been eating more food-I'm more home bound so not able to exercise."	
Change in diet	"I'd consider changes [in diet] with guidance."		
Pay for other household expenses	"Sign up for cable with AT&T® because they have a deal for $10 per month for SNAP recipients."	"I can pay utility bills in full now instead of partial payments." "[I'm] able to buy more toiletries like bulk paper goods-paper plates, plastic utensils, household cleaners, toilet paper, toothbrushes, toothpaste…$50 every two months now."	"…frees up money of my own for bills [in the household]." "…have money for household expenses." "I now have internet [access]." "I can use the money…freed up to buy the pieces [for making quilts I will make money selling]."
Try new shopping locations		"I used my stamps at Carver's Market [that I had not been to before] because they had a sign	

		saying 2 for 1 on fruits and veggies. "It showed the EBT card with it."	
Spend less of own money on food		"Just not spending more than I spent before but less out of my pocket." "I am spending less of personal money." "…less spent of my own money…"	"It frees up some money so I can say I can go get this or I can get that." "I use less of my own money for food. I don't know how that changes my spending." "Not as much out of pocket."
Buy things I might not otherwise		"Now when I go to the store instead of saying only get these things, I can say what do I want to get, and I know this is the amount I have to start with to get those things."	
Use less of other food assistance programs		"I have not been going to the food bank." "…less food bank trips, none this month."	
Less concern about affording food to eat		"It takes pressure off to save money for food."	"Not having to make decisions on do I need this or not." "It does help. I don't have to be concerned that we won't eat tomorrow. There will always be something in the house to eat. It may

			not be what you want, but it will be there.”
Buy more fast food			“I buy more fast food-Taco Bell®, Popeye's®, and Church's Chicken® with the extra money I now have of my own.”
More cost conscious			“I pay attention to price more than I used to.”
Buy healthier food			“The foods I want I can get and plan my meals for a healthy balance.”

Changes in Household Expenses, Food Purchasing Practices, Food Insecurity, and Diet Quality after SNAP Benefit Receipt

Consistent assessments were conducted across the three time points to examine the impact of SNAP benefits on food purchasing practices, diet quality, and food security. These assessments also explored participants' perception of their health and financial status as well as any changes in household characteristics, household budget management, and tradeoff decisions that could affect the outcome measures of interest.

Household expenses

All participants in their screening indicated they managed their own money. As a follow up at baseline, participants were asked about their ability to handle their finances of which all responded in the affirmative. Some participants (30%) at baseline indicated that a friend or family member provided some form of financial assistance that included monies for utilities, food, and emergency expenses. At each time point participants were asked to identify what their financial situation was noted as "comfortable with extra," "enough but no extra," "have to cut back," and "cannot make ends meet." Half of the respondents noted that they "have to cut back" at both baseline (50%) and midpoint (50%), but at endpoint, 70% responded that they had "enough but no extra." Fewer participants reported financial burden after the receipt of SNAP benefits.

Table 7 shows both total household expenses and expense categories during the previous month. The expense categories include "food purchased for consumption at home," "housing," "health and medical care," "transportation," and "other" at three time points. Total household expenses are reported as median [min-max] values, and the category expenses are reported as percentages of those total household expenses. Across the time points, total household expense

medians [min-max] were $1,504.4 [$528.5 – $2,119.7] at baseline, $1,480.9 [$481.0 – $2,194.7] at midpoint, and $1,476.6 [$495.2 – $2,315.7] at endpoint. Overall, there were no significant changes in the median household expenses across the three time points.

At baseline, the median percentages spent by participants were 60.7% on housing, 11.4% on transportation, 7.7% on health and medical care, 7% on other expenses, and 6.3% on food purchased for consumption at home. The amount of food purchased during the previous month peaked at the midpoint with a percentage of 10.5% of total household expenses (p=0.0156) and remained so at endpoint (10.0%). There was a significant reduction in the percent of the total spent on health and medical care expenses at the midpoint (4.1%, p= 0.0156). At baseline, 70% of participants were paying for a healthcare premium, which dropped to 50% by endpoint due to Medicaid approval for two participants. Housing expenses slightly increased at midpoint (65.9%) and endpoint (67.7%) potentially due to various expense changes in specific housing categories (e.g., lawn care, water, electricity, gas for heating, cable, internet, and home phone at midpoint; home mortgage, water, electricity, gas for heating, cable, internet, and home phone at endpoint), however, these changes were not statistically significant. Transportation (11.4%) costs dropped at the midpoint (9.2%) and remained so at endpoint (9.1%). Some participants noted slight changes in what they spent on gas for the car (20%) and car insurance (10%), but these changes were not statistically significant. The percentage spent on other (7%) expenses was lower at the midpoint (6.3%) and endpoint (6.2%) but was not statistically significant.

Table 7. Household Expenses of the Study Participants during the Study Period (N=10)

	Baseline	**Midpoint**	**Endpoint**
Total household expenses, median [min-max]	$1,504.4 [$528.5 – $2,119.7]	$1,480.9 [$481.0 – $2,194.7]	$1,476.6 [$495.2 – $2,315.7]
Household expense categories, % median [min-max]			
Food purchased for consumption at home	6.3 [0-13.2]	10.5 [4.0-17.1]*	10.0 [2.8-19.0]
Housing	60.7 [33.1-80.4]	65.9 [33.1-78.9]	67.7 [33.2-81.3]
Health and medical care	7.7 [0-23.7]	4.1 [0-20.1]*	4.3 [0-20.5]
Transportation costs	11.4 [0-32.0]	9.2 [0-30.9]	9.1 [0-29.3]
Other	7.0 [3.0-44.8]	6.3 [2.9-44.8]	6.2 [2.7-44.9]

*Significantly different from baseline based on Wilcoxon Signed Rank tests at $p<0.05$

Food purchasing practices

All participants shopped for groceries independently excluding one study participant who was shopping with assistance by the endpoint. The participants' modes of transportation to go grocery shopping included driving their car, being driven in a car by a friend or family member, using a taxi service, and walking. The food purchasing practices of the study participants under the established six food purchasing practice constructs are summarized in **Tables 8-13**. The six constructs were "where food is purchased," "when and how often food is purchased," "types of food purchased," "financial resources used," "amount spent," and "strategies for maximizing resources."

Where food is purchased

There were seven different store types used by participants as summarized in **Table 8** (i.e., Supermarket, Grocery Store, Superstore, Specialty Food Store, Farmers Market, Convenience Store, and Combination/Other). Over the course of the study, 29 unique food stores were identified as places where participants shopped. The median [min-max] number of these locations where food was purchased per participant was 2.5 [2-11] stores at baseline, 4.5 [2-7] stores at the midpoint, and 4 [1-7] stores at the endpoint. At all time-points, supermarkets were utilized the most. There were nine unique primary stores reported that were identified as supermarkets, grocery stores, and superstores. Participants reported which store was their primary store and had the option to indicate more than one. The median [min-max] number of these primary locations where food was purchased per participant was 1 [1-3] stores at baseline, 1 [1-2] stores at the midpoint, and 1[1-1] stores at the endpoint. At each time point, supermarkets were the store type identified as the primary store by all participants.

9Food Purchasing Practice of Study Participant: "Where food is purchased"

	Baseline	**Midpoint**	**Endpoint**
Number of stores reported per participant, median [min-max]	2.5 [2-11]	4.5 [2-7]	4 [1-7]
Type of stores reported, n (%)*			
Supermarkets	10 (100)	10 (100)	10 (100)
Grocery Store	6 (60)	4 (40)	7 (70)
Superstore	2 (20)	3 (30)	1 (10)
Specialty Food Store	1 (10)	2 (20)	1 (10)
Farmers Market	0	5 (5)	2 (2)
Convenience Store	0	0	1 (1)
Combination/ Other	2 (20)	5 (50)	1 (10)
Number of primary stores reported per participant, median [min-max]+	1 [1-3]	1 [1-2]	1 [1-1]

Type of stores reported, n (%)*			
Supermarket	9(90)	9 (90)	8 (80)
Grocery Store	1(10)	1 (10)	2 (20)
Superstore	1(10)	0	0

*: Multiple responses per participant
+: Participants could report more than one primary store

When and how often food is purchased

The results gathered for the food purchasing practice of "when and how often food is purchased" are shown in **Table 9**. Participants reported shopping between one to more than six times per month at all three time-points. At baseline, 40% of participants shopped ≥6 times/month with an incremental percentage decline in the number of participants shopping at lower frequencies. The distribution of participants shopping < 4 times (40%) or ≥4 times (60%) remained the same at each time-point. The time of day participants tended to shop at baseline was mornings (30%), afternoons (20%), or varying times (50%). At endpoint, the majority of participants (70%) tended to shop at varying times. No participants indicated that they regularly shopped at night. All the participants who were not observed relied on a friend or family member for a ride to go grocery shopping. These frequencies and times of day mentioned for participants were also reflective of what times they had access to transportation which varied for each participant. Participants who owned a vehicle (60%) tended to go grocery shopping more often, while those relying on being driven by a family member or friend (40%) tended to frequent stores to purchase food less. One participant, who did not own a vehicle, had as many grocery store visits as participants who owned a vehicle. The elevated number of visists may have been the result of having to care for a mother and great-granddaughter.

Table 9. Food Purchasing Practice of Study Participants: "When and how often food is purchased" (N=10)

n (%)	**Baseline**	**Midpoint**	**Endpoint**
Shopping Frequency			
< 2 times/month	1 (10)	1 (10)	3 (30)
2 to <4 times/month	3 (30)	3 (30)	1 (10)
4 to <6 times/month	2 (20)	3 (30)	3 (30)
≥6 times/month	4 (40)	3 (30)	3 (30)
Time of Day			
Morning (8am-11:59am)	3(30)	2(20)	2(20)
Afternoon (12pm – 5:59pm)	2(20)	2(20)	1(10)
Varies (Different times)	5(50)	6(60)	7(70)

T***ypes of food purchased***

Participants were asked to name the foods they tended to purchase at baseline and reportedly purchased at follow-up assessments. The researcher classified these foods as either fruits, vegetables, grains, or protein. Participants reported purchasing 3 to 4 of the four food categories at all three time points showing no significant changes (**Table 10)**. All participants reported purchasing vegetables at all three time points as fresh, frozen, and or canned. The number of persons that purchased fruit increased between baseline (80%) and both midpoint (100%) and endpoint (90%). The number of participants that purchased protein food (e.g., meats and beans) was maximal at the midpoint (100%) and remained so at the endpoint assessment. This was supported by the types of items noted on receipts. Grains were purchased the least at baseline (60%), midpoint (70%), and endpoint (50%) and were often reported as refined grains such as white bread. Some participants indicated that grains were things likely to be provided as

a food donation and thus not purchased as often as other food types. Based on receipts saved by participants, many of the shopping trips were for a small number of items, while larger food purchase trips tended to occur only one to two times per month. Many participants indicated that they tended to eat the same things, and their shopping trips were to restock items.

Table 10. Food Purchasing Practice of Study Participants: "Types of food purchased" of participants (N=10)

	Baseline	**Midpoint**	**Endpoint**
The number of food categories purchased per person (out of 4 categories) per participant, median [min-max]	3 [2-4]	4 [3-4]	3 [3-4]
The types of food groups purchased+, n (%)			
Fruits	8 (80)	10 (100)	9 (90)
Vegetables	10 (100)	10 (100)	10 (100)
Grains	6 (60)	7 (70)	5 (50)
Protein	9 (90)	10 (100)	10 (100)

+ Multiple responses per participants

Financial resources used

Participants used cash, credit cards, debit cards, and EBT cards once activated to purchase groceries. The assessment results for the construct of "financial resources used" for each time point are shown in **Table 11**. At baseline, participants used cash (70%), debit cards (50%), and checks (20%) as financial resources. Some participants had their Social Security benefits loaded onto debit cards. At the midpoint, use of cash dropped to 30% of participants, and EBT card usage peaked with 90% of participants using their cards. One participant chose not to use their SNAP benefits of $16 per month to wait until the amount had accumulated for three months. Another participant receiving $16 per month had three months of benefits loaded on their EBT card due to delays in benefit receipt following SNAP application submission.

As described in the earlier section, the midpoint measure was 30 days after SNAP benefit recipients had received their EBT card. There were delays of over ten days for some participants (50%) in receiving their EBT cards following benefit approval. At the midpoint, all participants had had more than one month's worth of benefits loaded onto their EBT card as a result in the lag time between DFCS approving their SNAP benefits and when they received their EBT card that could be then activated for use. At endpoint, all types of resources were being used, but cash (70%) and EBT cards (90%) were used the most. Another participant who had a benefit about of $17 had not used their benefits the previous month. Ultimately, most participants (90%) who ranged in SNAP benefit amounts of the minimum ($15/$16) to maximum ($192/$194) still used other financial resources besides the EBT card. The median [min-max] number of financial resources used went from 1 [1-2] to 2 [1-4], p=0.0313 over the course of the study. This reflected a significant increase in the number of financial resources used by participants with the addition of an EBT card.

Table 11. Food Purchasing Practice of Study Participants: "Financial resources used" (N=10)

	Baseline	**Midpoint**	**Endpoint**
The number of financial resources used per participant, median [min-max]	1 [1-2]	2 [1-2]	2 [1-4]*
The types of financial resources used +, n (%)			
Cash	7(70)	3(30)	7(70)
Credit Card	0	0	1(10)
Debit Card	5(50)	5(50)	4(40)
Check	2(20)	1(10)	2(20)
EBT	0	9(90)	9(90)

*Significantly different from baseline based on Wilcoxon Signed Rank Test at $p < 0.05$
+ Multiple responses per participants

Amount spent

Participants estimated the amount spent in the previous month on groceries, specifically on food (**Table 12**). The estimated median [min-max] of the amount spent by participants in the previous month was $91.0 [$0-$180.0] at baseline. Amount spent significantly increased to $100 [$57.5-$300.0] at midpoint ($p=0.0313$). At endpoint, the median amount spent dropped slightly to $87.1 [$40.0-$300.0]. The range of amount spent on food at midpoint and endpoint was wider than that at baseline reflecting the different amount of SNAP benefits received by participants ranging from $15 - $194/month over the course of the study. These changes also are in line with the infusion of SNAP benefits at the midpoint that may have been higher with multiple months of SNAP benefits potentially available on all participants' EBT cards.

Table 12. Food Purchasing Practice of Study Participants: "Amount spent" (N=10)

	Baseline	Midpoint	Endpoint
Total dollar amount in the last month, median (min-max)	$91 [$0-$180.0]	$100 [$57.5-$300.0]*	$87 [$40.0-$300.0]

*Significantly different from baseline based on Wilcoxon Signed Rank Test at $p < 0.05$

Strategies for maximizing resources

To determine what strategies were used by these study participants, they were asked what the reasons were in deciding to purchase the food they said they typically purchased using an open-ended question. The responses were then used to generate categories of strategies used based in part on those identified in the literature review and discussed specifically in a study conducted by **Leibtag and Kaufman (2003**). Due to the limited number of papers listing the types of maximizing strategies to assess among low income older adults, the responses helped in the development of a more comprehensive list. Based on these responses, the "strategies for maximizing resources" employed included budgeting, menu planning, discount purchasing, purchasing a greater portion of discounted foods, comparison shopping, buying in-season items, use of a prewritten shopping list, and assessing available space. The categories and corresponding responses intended to explore the construct of "strategies for maximizing resources" are shown in **Table 13**. Participants shared that they made a more conscious effort to consider what they had to spend and to plan their meals following SNAP benefit receipt. Presumably by the endpoint, participants had made most of their adjustments in how they were choosing to spend their SNAP benefits in relation to their funds, perhaps reflected in no endpoint responses addressing budgeting. A strategy often employed was discount purchasing which was often identified when the term "sale" was mentioned in a response. Some participants mentioned purchasing a greater portion of discounted foods commonly identified as "buy one, get one" as an example. Comparison shopping referring to selecting products of specific freshness,

nutritional quality, and convenience based on price was hard to both identify and was limited in the frequency it was mentioned. The category was based on what **Leibtag and Kauffman (2003)** titled "purchasing less expensive food products within a product class." The identified responses at the midpoint referred to use of the term comparison shopping literally and indirectly. To pay the lowest prices for fruits and vegetables, participants reported buying in-season items and mentioned "in-season" recognizing the potential price difference. The category, "use of a prewritten shopping list" was first inquired about in a closed-ended question. A list was utilized by 50% of participants across the three time-points. This category's responses were identified here by a few participants indicating that they used a list, grocery flyer, or mental accounting of what to purchase. The final category listed refers to taking account of what space is available to store food for refrigeration or freezing. This category was identified at the endpoint by a participant, who in the previous month, had two additional persons move into their home. This list was a diverse sampling of the types of strategies that participants identified as key in there food purchasing decisions but was not definitive in the frequency at which they were applied.

Table 13. Food Purchasing Practice of Study Participants: "Strategies for maximizing resources."

Strategy for maximizing resources	**Baseline**	**Midpoint**	**Endpoint**
Budgeting	"I look at what I can spend against what I am buying." "I'm conscious of what I have [to spend] and what I have at the house already." "I think about more than one menu at a time to stretch the budget."	"I'm a sight shopper-the looks and price makes me decide if I will buy it." "Growing up you could take a $20 and feed a family of 4 for 3-4 days. It may not have been what you wanted, but you ate...that's where those staples come in. We were never hungry growing up."	
Menu planning	"I have an idea about what I want to eat." "The vegetables...iceberg lettuce, tomatoes, and onions...I buy for sandwiches and salad." "Items used to make simple meals…baked chicken and salad…items for salad making." "I use my leftovers so many create new meals from it." "Buying ingredients for a particular dish-meatloaf for example…before shopping, I decide what I am going to make then go get those items."	"I purchase meats because I may have a menu in mind or I see it and buy it." "I buy boxed meals, so I buy the items that go around that." "I make cornbread often so I buy ingredients for it." "I have a set breakfast each morning, so many of the items I get are for my breakfast."	"This week I am preparing for soup fast, so the food I'm buying is for that." "I usually buy a chicken, but I may get other meat if I have a certain dish in mind."

Discount purchasing	"I buy what's on sale."	"I look at the sale items and what we need." "Any canned beans and eggs, I buy is whatever is on sale." "I buy whatever is on sale." "I have a strategy of getting discounted meats when they are in the discount bin at Food Depot®."	"For yogurt, I buy what's on sale." "I buy things on sale. " "I buy whatever is on sale." "Sometimes it's hard to pass up a good deal if items are on sale. I'll put things back to get it [if I need to]." "I buy my bread from Flowers® Foods Bakery." "I get whatever pasta is on sale since I am cost conscious...It can be a brand name if it's on sale." "I go to DeKalb Farmer's market 1 to 2 times per month. If you go towards the end of the month, they will have stuff marked down - yogurts, fresh quiches, pasta meals, turkey bacon. You get 50% off."
Purchasing a greater portion of discounted foods	"…if they have buy one, get one I can do it like that."		"I get buy one, get one items."
Comparison shopping		"Comparison shopping helps to keep costs low." "Sometimes I buy frozen vegetables [instead of fresh]."	

Buying in-season items	"I buy in-season items that are fresh or frozen to keep when the fresh one is not available." "I buy in season-now watermelon, cantaloupe…in the winter-make soup, so it's a different purchase."		
Use of a prewritten shopping list		"I have a routine list of things I buy…" "I use the grocery flyer sent in the mail to determine if I go to the store and what I get." "I know what I want ahead of time."	
Assessing available space			"It's based on the room in the fridge and freezer." "More limits now on fridge and freezer with extra roommates now."

Food security

Assessments of food security were conducted among participants at each study time-point and are reported in **Table 14**. At baseline, 60% of participants reported a lack of food security in the last 30 days. These participants reported either low food security (30%) or very low food security (30%). They reported that the food didn't last (60%), they couldn't afford balanced meals (50%), cut meal sizes (50%), skipped meals (30%), ate less than they should (50%), and went hungry (20%) over the course of the last 30 days. After initially receiving SNAP benefits, all participants reported food security (100%) that was either high (50%) or marginal (50%) food security at the midpoint. At endpoint having received SNAP benefits for at least two months, 80% of participants still reported high (60%) and marginal (20%) food security. However, 20% of participants reported either low (10%) or very low food security (10%). Some participants reported that the food didn't last (30%), they couldn't afford balanced meals (30%), cut meal sizes (10%), skipped meals (10%), ate less than they should (10%), and went hungry (10%).

Table 14. Food Security of Study Participants

	Baseline	**Midpoint**	**Endpoint**
Food security item response, n (%)			
Food didn't last	6 (60)	5(50)	3 (30)
Can't afford balanced meals	5 (50)	0	3 (30)
Cut meal size	5 (50)	0	1 (10)
Skipped meals	3 (30)	0	1 (10)
Ate less	5 (50)	0	1 (10)
Hungry	2 (20)	0	1 (10)

Food security: 4-level category			
High	2 (20)	5 (50)	6 (60)
Marginal	2 (20)	5 (50)	2 (20)
Low	3 (30)	0	1 (10)
Very low	3 (30)	0	1 (10)
Food security: 2-level category			
No	6 (60)	0	2 (20)
Yes	4 (40)	10 (100)	8 (80)

Diet quality

The total and component HEI-2015 scores of study participants at each time point are shown in **Table 15**. The median [min-max] HEI total score was statistically significant between midpoint (49.0 [25-74.0]) and endpoint (58.2 [44.3-85.3], p=0.0195). {Nine diet recalls were obtained for all participants except for one participant having only seven recalls. During the midpoint interview period, two participants reported an illness of which one completed only one of three diet recalls. The reported meals of the other participant per day was equivalent to what they typically would eat in a single meal and likely was the result of a reduced appetite during illness. There were no significant changes in any of the reported HEI component scores except for the scores for fatty acids, sodium, and saturated fats. Fatty acid component scores were significantly different both between midpoint (4.9 [0-10]) and endpoint (9.7 [2.6-10], p=0.0039) scores and endpoint and baseline (6.0 [0.2-10], p=0.0234) scores. Saturated fats component scores were significantly different between midpoint 4.1 [0-8.7] and endpoint (7.3 [1.3-10], p=0.0020) scores and endpoint and baseline (3.9 [0-10], p=0.0371) scores. Consumption of foods that included cheese, pork sausage and patties, ice cream, animal fat, butter, coconut milk,

luncheon and canned meat dropped at midpoint and endpoint resulting in a decrease in saturated fat of more than 10 and 20 grams, respectively. Participants reported greater consumption of foods higher in monounsaturated and polyunsaturated fatty acids that included consumption of peanut butter, foods cooked with olive oil, different types of fish such as tilapia, tuna, and catfish though many were fried, and walnuts. There was a continual increase in foods higher in polyunsaturated fats at midpoint and endpoint. The increase in the sodium component score at the endpoint (3.3 [0-6.2], p=0.0547) was statistically significant in comparison to baseline. At endpoint, there was the absence of one high sodium item (luncheon meat) over 300 times the value of the lowest salt content foods (i.e. water, raw fruit, and minimally seasoned vegetables) consumed at baseline and midpoint, but not at endpoint. There was an improvement in diet quality of foods consumed containing fatty acids, while reducing the consumption of sodium and saturated fats. Fruit consumption increased over the course of the study, as reflected in the minor increases in total fruits score and the whole fruits score at the endpoint, but neither change was statistically significant. Though reported dairy consumption, which was initially low, declined further after midpoint, the change was not statistically significant. The total vegetables and total protein scores remained the same across time points, and no statistically significant changes occurred.

Table 15. Total and Component HEI -2015 Scores of Study Participants (N=10)

HEI Component Score, median [min, max]	**Baseline**	**Midpoint**	**Endpoint**
Total Fruits [0-5]	1.8 [0-5.0]	4.2 [0-5.0]	2.5 [0.6-5.0]
Whole Fruits [0-5]	3.3 [0-5.0]	2.6 [0-5.0]	4.9 [0.5-5.0]
Total Vegetables [0-5]	4.5 [2.9-5.0]	4.2 [0-5.0]	4.4 [0.7-5.0]

Greens and Beans [0-5]	3.7 [0-5.0]	3.9 [0-5.0]	4.3 [0-5.0]
Whole Grains [0-10]	1.2 [0-5.1.0]	0.8 [0-6.7]	0.7 [0-10.0]
Dairy [0-10]	4.0 [0.1-10.0]	4.8 [0-10.0]	2.1 [0-6.2]
Total Protein [0-5]	5 [0.3-5]	5 [3.5-5]	5 [4.8-5.0]
Seafood and Plant Proteins [0-5]	5 [0-5.0]	4.6 [0-5.0]	4.2 [0-5.0]
Refined Grains [0-10]	9.9 [0-10.0]	6.7 [0-10.0]	7.4 [0.9-10.0]
Added Sugars [0-10]	8.9 [4.3-10.0]	8.4 [0-10.0]	5.8 [0.1-10.0]
Fatty Acids [0-10]	6.0 [0.2-10.0]	4.9 [0-10.0]	9.7 [2.6-10.0]*+
Sodium [0-10]	1.7 [0-5.9]	1.3 [0-4.8]	3.3 [0-6.2]+
Saturated Fats [0-10]	3.9 [0-10.0]	4.1 [0-8.7]	7.3 [1.3-10.0]*+
Energy	4,735.3 [3,805.4-6,356.4]	4,540.3 [936.4-7,443.2]	5,084.2 [3,378.7-7,762.6]
HEI Total Score (0–100), Median [min-max]	57.1 [29.5-76.5]	49.0 [25-74.0]	58.2 [44.3-85.3]*

*Significantly different from midpoint based on Wilcoxon Signed Rank test, $p < 0.05$
+Significantly different from baseline based on Wilcoxon Signed Rank Test, $p < 0.05$

Participant Case Studies

The overall characteristics of all participants are presented in **Table 3;** Additionally, qualitative researcher-administered interviews provided a richer understanding of each participant's unique experience through engagement in this study. A summary of two distinct participants is shared reflecting their unique living experience, which affected their use of SNAP benefits and its impact on their food purchasing practices, food insecurity, and dietary quality during the study.

Case study #1

Participant #1 is a 64-year-old Black divorced female who resided in metropolitan Atlanta. She received $860 per month in Social Security benefits and held a college degree. She described herself as being in good health and managed her type 2 diabetes, high cholesterol, and high blood pressure with prescription medication. She owned a home and paid $650 for her mortgage, property tax, and homeowners' insurance per month plus utilities. She was a proficient computer user and frequently corresponded via email with the researcher to provide information during the study. Participant #1 also owned a car and a dog. She lived alone and spent her days out with family and friends for leisure and to accompany them to medical appointments, to participate in activities and consume congregate meals at the local senior center, and attend church. She tended to eat out either at a fast food restaurant, at an outing with family or friends in their homes, or consume snacks she had with her. This often occurred several times during the week since she was on-the-go often. This rush typically impacted her morning meal. A typical example of her meals during a weekday is shown in **Figure 3**.

Breakfast:
2 coffees-8:00am 1 Black prepared at home and the other 9:30 am black purchased on the way to class
Water-prepared a 30oz container and sipped on it throughout the morning
(No food for breakfast -rushing)

Lunch-

12:00 noon Tuna wrap (Tuna inside a spinach wrap) probably about 6oz of tuna salad inside
Bowl @ 6oz of vegetable beef soup (tomato based) with 2 packs of saltine crackers with 2 in each packs.
1 package of salt and vinegar potato chips don't know size but a small bag probably 1-1.5oz
1 12oz cup of sweetened iced tea with ice
Refilled water cup and drank throughout the afternoon and evening

Dinner-
7:30 pm Seafood salad purchased a couple of days prior from walmart (imitation crabmeat, shrimp, pickles, mayonaise)
Tossed salad-Lettuce(iceburg), tomatoes, cucumbers with Kroger brand ranch dressing. About 1 and a half cups of salad and 3 Tablespoons of Dressing)
2 strips of lemon pepper chicken breast (about 4" long) prepared with olive oil and lemon pepper salt (prepared at home)
1 orange Faygo diet soda

Figure 3. Example of a diet record during the week for Participant #1

Participant #1 qualified for just over 90% of the maximum amount of SNAP benefits with or without the inclusion of the medical expense deduction as a new recipient of Medicaid. This was in part because she had over $800 in housing expenses deemed eligible for the SNAP shelter cost deduction. The assessment of the impact of receiving SNAP benefits on the food insecurity and diet quality of Participant #1 included several additional financial and life-changing events: Participant #1 turned 65 during this study, was newly qualified for Medicaid, and had an increase of $60 in monthly social security disability income. With the receipt of SNAP benefits, Participant #1 changed primary food purchasing venue from Wholesale Food Outlet® to

Kroger® and reported shopping consistently in the afternoons 1-2 times per week over the course of this study. Before receiving SNAP benefits, Participant #1 used cash and debit cards to purchase groceries, then shifted to use of SNAP benefits and debit card, then in the final reporting (endpoint) indicated using only the SNAP benefits. The respondent reported spending approximately $150 the previous month on groceries at baseline and endpoint with a peak expenditure of nearly $190 the previous month on groceries at the midpoint. She initially reported buying mostly canned or frozen fruits, fresh, canned, and frozen vegetables, and chicken as well as beef. Following SNAP benefit receipt indicated purchasing fresh fruit such as berries, grapes, and oranges, fresh vegetables, and a greater variety of meats at the midpoint and endpoint interviews. Participant #1's HEI scores were 47.65 (baseline), 43.46 (midpoint), and 55.23 (endpoint). These scores were all below the median score for all participants. During this study, there was a drop of SNAP benefits for Participant #1 of $4 between midpoint and endpoint assessments. Participant #1 noted that she would be making a concerted effort to change the types of foods, which was reflected in her consuming less saturated fat and consuming more polyunsaturated fats reported as peanut butter. These changes were reflected in her diet recall and HEI scores. The food security measures based on the six-item assessment were reported as high food security at all three time-points reflecting no change in food security following SNAP benefit receipt.

Case study #2

Participant #2 was a 66-year-old divorced black male who resided in metropolitan Atlanta. He received just over $800 per month in Social Security benefits, and had Medicaid benefits, and completed some college. He described himself as being in excellent health, an occasional smoker, and was currently taking prescription medication for high blood pressure and

high cholesterol as well as a daily prescribed Vit B_{12}. He lived alone in a senior's only high-rise building where he paid nearly $150 per month in rent and additional for utilities that were supplemented by energy assistance. He spent his days watching television either in his apartment or the floor breakroom or playing pool at the local senior center. He enjoyed watching sports, and specifically watched all the NFL games that were on television. He cooked all his food in the microwave and bought the same type and brand of food every month. Participant #2's purchases consisted of restocks of Del Monte® brand canned goods (because it didn't require a can opener), Maruchan® Ramen noodle packets, sausage patties or links, an off-brand of Rice Krispies® cereal, and raisins. Participant #2 shared a photo (**Figure 4**) of these items he purchased along with items that are routinely donated and left in the residence lounge for people to take (e.g., the Publix strawberry fruit bars). He owned a non-functioning vehicle, but he intended to repair it when he saved enough money to finance both the diagnosis of the problem and repair of the vehicle. He relied on friends for rides at a cost per ride. Participant #2 smoked cigarettes, but was particular about the brand of cigarettes he smoked, and so because of a lack of availability of his preferred brand of cigarette at the stores he currently frequented; he was not smoking by the midpoint of this study. He noted that he spent about $10-$20 on alcohol per month. Participant #2 qualified for 24-29% of the maximum SNAP benefit amount before and after October 2017 when benefit levels dropped following the federal rate change. After receiving SNAP benefits, Participant #2 reported no additional financial and life-changing events. Participant #2 had a fixed household expenditure throughout the study, planned to purchase more of the same types of foods that he previously purchased, and attributed his good health to his current diet.

With the receipt of SNAP benefits, Participant #2 continue to shop at Kroger® and he reported grocery shopping three times per month as he had before. Before SNAP benefit receipt, Participant #2 used his debit card at baseline, then shifting to using a combination of SNAP benefits and debit card use for the midpoint and endpoint of the study. The respondent reported spending approximately $80 the previous month at baseline and midpoint with a peak expenditure of nearly $95 the previous month at the endpoint. He consistently reported buying canned vegetables and sausage patties or links and fluctuated between purchasing ice cream with fruit in it or Sara Lee® honey wheat bread across all three time-points. He indicated his consistent purchase of Turkey Hill® ice cream was his only source of dairy products. Participant #2's HEI scores were 43.39 (baseline), 34.47 (midpoint), and 44.27 (endpoint). These scores were all below the median score for all participants, and at the endpoint, reflected the lowest HEI score. During this study, there was a drop of SNAP benefits for Participant #2 of $10 between midpoint and endpoint assessments. The food security measures were reported as low food security (baseline), marginal food security (midpoint), and high food security (endpoint) reflecting an incremental improvement following SNAP benefit receipt. Participant #2 did not change the types of foods purchased for consumption at home throughout the study but did note consumption of more fast food purchases following SNAP benefit receipt. He tended to consume foods high in saturated fat and salt regularly as a component of a consistent intake of sausage patties and links for breakfast and dinner.

Figure 4. Photograph of items purchased and received as donations by Participant #2

CHAPTER 5

DISCUSSION

Summary of Findings

This study examined the changes in food purchasing practices (FPP), food insecurity, and diet quality of low-income older adults as new SNAP recipients. This natural experiment was conducted in a sample of ten SNAP-eligible older Georgians assisted by an established SNAP application assistance model. The study employed a longitudinal mixed-methods approach including multiple follow-up assessments guided by each participant's unique SNAP application process using complementary measures and methods. The ten participants who enrolled in this study were all Black women (80%) and men (20%) who were SNAP-eligible non-participants. Most of the participants at baseline lived in urban areas and were living below 130% of the federal poverty line. Almost all had more than a high school education and reported good to excellent health at baseline even though they had at least one chronic condition treated with medication. All participants were either single, widowed, or divorced with a majority being widowed. These characteristics appear to be typically seen in a group that is at greater nutritional risk and representative of eligible non-participating older adults (**Shahar, Schultz, Shahar, & Wing, 2001; Fey-Yensan, English, Pacheco, Belyea, & Schuler, 2003; Bowman, 2007; Ziliak et al., 2008**).

At baseline, SNAP-eligible participants reported higher financial constraints, poorer food security, but comparable diet quality in comparison to the general older adult population (**Guenther et al., 2014; Strickhouser, Wright, & Donley, 2015; Federal Interagency Forum**

on Aging-Related Statistics, 2016). The findings of this study suggest that SNAP benefits affect household expenses, FPP, diet quality, and food insecurity of the study participants.

Most significant findings of this study were that household expenditures had significant implications for the potential impact of SNAP benefit receipt. Housing and transportation were the two largest household expense categories (median of 60.7% and 11.4% of the total household expenses, respectively) with the least spent on food purchased for consumption at home (median of 6.3% of the total household expenses). This baseline household expense pattern of the study sample was similar to that of the older American population 65 years and older based on the Consumer Expenditure Survey data (2014), though the percentages of household expense categories were different (i.e., housing: 32.4%; transportation: 15.9%; food: 7.8%) **(Federal Interagency Forum on Aging-Related Statistics, 2016).** Homeownership and the expenses associated with its upkeep and functional limitation posed the highest burden on study participants and, in some cases, were the key factor in applicants receiving a significant amount of SNAP benefits. There were significant changes in household expenses following SNAP benefit receipt as reported by participants. At least 50% of participants reported a reduction in financial strain after the receipt of SNAP benefits**.** The significant increase in the amount of food purchased for consumption at home and a concurrent decrease in health and medical care expenses at midpoint was also the point at which all participants reported food security. The association of poverty, food insecurity, and food expenditures shown in this study are supported in the review conducted by **Drewnowski & Specter (2004)** that identified an association of poverty and food insecurity with lower food expenditures, lower diet quality, and low fruit and vegetable consumption.

The very high level of food insecurity of SNAP-eligible non-participants at baseline may reflect their poorer sociodemographic and economic status compared to the general (especially SNAP ineligible) older population (**Ziliak & Gundersen, 2015**). The initial response to SNAP benefit receipt resulted in a 100% of participants reporting food security but then shifting slightly to 80% two months later by the endpoint assessment. Of note, although the improvement in reported food security status occurred at midpoint when the percentage of household expenses spent on food for consumption at home was significantly higher, all participants reported food security regardless of the actual amount of SNAP benefit received by the participant. This added caveat may be explained by most participants reporting financial status improvement following SNAP benefit receipt regardless of SNAP benefit amount. The conditions in which participants reported their food security are reflected best in the two case studies showing food security remaining throughout the study and improving incrementally throughout the study.

Overall diet quality after one month of SNAP benefit receipt did not improve. The significant improvement in the total HEI score at endpoint as compared to one month after SNAP benefit receipt is likely a reflection of a reported significantly lower consumption of food by one participant and only capturing one of three diet recalls for another participant. The total HEI scores of the two participants presented as case studies were either at or well below the already suboptimal diet quality of Americans (**Guenther et al., 2013, Deierlein et al., 2014**). Participant #1 by the close of the study had comparable scores while Participant #2 remained well below the average of Americans. These differences showed the impact of making a choice to select more healthy food items and choosing to eat a greater quantity of the same foods that were not as healthy following SNAP benefit receipt. There were significant reductions in the intake of select nutrients of concern including saturated fat and sodium. These changes reflected

an absence of foods that are higher in saturated fats and sodium and other changes in consumption patterns following SNAP benefit receipt. Though there are contradictory study findings whether SNAP improves diet quality at all, this study supports the findings from **Mabli et al. (2010**) reporting similar saturated fats and fatty acid score increases related to the SNAP benefit receipt among low income older adults. Also, this study supports findings by others reporting no improvement in overall diet quality between baseline and three months in a sample of older adults followed for three months after SNAP application assistance (**Leung et al., 2014**).

The unique findings of this study were the identification and feasibility of assessing the changes in six FPP constructs and related distinct practices among older adults. There were notable changes in constructs. The median number of stores used for grocery shopping increased from baseline (2.5) to midpoint (4.5), and there was a consolidation of the type of store to primarily supermarkets, a finding supported by several studies (**Castner & Henke, 2011; Ver Ploeg, 2015; Mancino et al., 2017; Volpe, Kuhns, & Jaenicke, 2017**). Similarly, participants shopped between one to ten times per month noting households with older adult members averaged six trips per month **(Castner & Henke, 2011).** There was a slight shift to more participants reporting shopping fewer times per month following SNAP benefit receipt which may have been the result of a reported increase in the number of purchases per trip.

There were distinct observations made in assessing the types of food purchased and the strategies employed in their purchase. Notably, participants' intended purchase of more fruit following SNAP benefit receipt occurred at midpoint and endpoint and was reflected in a concurrent increase both in whole and total fruit HEI component scores, though not statistically significant. This study shows the value of a multi-assessment method in identifying key FPP and how the FPP complement each other. Participants were using their own money to supplement

their food purchases regardless of the SNAP benefit amount, and these findings suggest that SNAP's intended purpose to supplement a portion of a household's budget was occurring. Additionally, participants reported spending more on groceries at a level maintained at endpoint following SNAP benefit receipt. Some participants were receiving the minimum benefit amount, others reported typical monthly food purchase amounts at baseline that were above the amount they were approved for in SNAP benefits, and others noted purchasing more fast food, all which required the use of additional financial resources. The additional strategies for maximizing resources that were identified among participants following SNAP benefit receipt were expected among low-income populations (**Leibtag et al., 2003).** The number of newly identified strategies among study participants may also suggest that participants were making a concerted effort to manage their expenses differently following SNAP benefit receipt.

The novel part of the study design was the inclusion of SNAP application assistance. It was established in the literature that the SNAP application process was a key barrier to SNAP participation in older adults. This study eliminated that aspect by providing study participants comprehensive assistance and helped to ensure all participants successfully navigated the SNAP application process; the amount approved for each participant was the maximum amount for which they were entitled, and they were able to receive and utilize the SNAP benefits if desired. To ensure that the assessment of the impact of SNAP benefit receipt was accurately measured, the goal was to make sure each participant had the potential to use their approved benefits maximally. Therefore, in assessing FPP, food security, and diet quality, any potential dose effects could be observed. The potential missing of a dose effect was a concern expressed by **Leung et al. (2014)** in a longitudinal study assessing changes in food security and dietary intake

following SNAP receipt of low-income adults in which few changes were observed (**Leung et al., 2014**).

Recently, another study reported that inclusion of SNAP application assistance impacted SNAP participation among households including older adults. The study by **Finkelstein and Notowidigdo (2018)** involved nearly 32,000 households with an older adult (60+) enrolled in Medicaid, but not SNAP, being engaged to assess SNAP take-up. There were three groups: 1) information intervention group that received information only, 2) information plus assistance intervention group that received both information and application assistance, and 3) a control group that received neither information nor assistance (**Finkelstein & Notowidigdo, 2018**). Assistance was provided by a partnering non-profit agency over the phone to help applicants apply, submit, and troubleshoot the SNAP application process. The researchers noted that those in the intervention groups, relative to the control group, had a larger share of rejections due to later withdrawal of their application or not showing up for an appointment. These were factors not of concern in this study because most participants did not have to go through an interview, and if it was required, it was conducted over the phone, and all applicants were committed to having their application processed.

Currently, both chambers of Congress have passed their versions of the Farm Bill from which SNAP is funded and guided (**Becker, 2018; Bolen et al., 2018**). The Senate bill made little changes from the previous version signed into law in 2014 (**Becker, 2018**). There were significant changes proposed in the Farm Bill passed by the House of Representatives on June 21, 2018 (**Bolen et al., 2018**). Many of the major changes proposed exempt persons 60 and older. However, there are proposals to SNAP that could impact persons like the research study participants. Some of these included the potential to take away SNAP from people who

committed a single crime years or even decades ago and have since completed their sentence and complied with all terms of their release. A change that would be a reversal of the change Georgia made to allow those who have met the conditions of their sentence to once again not eligible to receive benefits. The House bill looks to privatize a portion of the SNAP administrative process which could prove problematic for older adults who may need more assistance in the SNAP application process to ensure they receive the correct benefit amounts. At the same time, the bill would also eliminate the United States Department of Agriculture's (USDA) authority to fund projects to improve SNAP access. The House bill would allow states to "make unused benefits inaccessible after three months and cancel unused benefits after six months." Older adults tend to be the group that leaves the most benefit amounts unused and even with this study participants let their benefits accrue to in some cases make a more substantial benefit amount to spend at one time. There are some potentially positive changes proposed. The bill would allow SNAP participants to use their benefit allotment to purchase dietary supplements and enable online merchants to accept SNAP benefits. Furthermore, the House bill would require USDA to update the Thirty Food Plan (TFP), that the SNAP benefit levels are based on, every five years, based on "current food prices, food composition data, and consumption patterns" that could help to identify and potentially fund more accurate SNAP benefit levels. Now, the chambers will be working to reconcile the two versions of the Farm Bill to have one version to be approved by both and eventually signed into law. It remains to be seen the potential impact of the changes that will ultimately be in the Farm Bill on the older adults like the ones in this study.

In Georgia, the researcher had the advantage of going through the Senior SNAP program, a streamlined application process. The ease of communicating with Senior SNAP staff was crucial for checking on application status, identifying and correcting errors, and confirming

SNAP benefit amounts for applicants. An observation also noted in the study by **Finkelstein and Notowidigdo (2018),** was that SNAP application assistance reduces the error rate on applications while encouraging marginally motivated individuals to start the application process. The provision of SNAP application assistance may have also helped to get all potential participants in this study to agree to complete the SNAP application process as a precursor to study participation. Any delays in the SNAP application process increased the length of the study because the second interview (midpoint) was scheduled once applicants received their EBT card, therefore, the accuracy and efficiency of the SNAP application process were crucial to the timing of the remainder of the study.

Strengths and Limitations

To the researcher's knowledge, this is the first study to comprehensively explore changes that occur among older adults following SNAP benefit receipt. The use of a longitudinal mixed method approach with multi-measures and methods strengthened the study design and allowed the researcher to gain a rich understanding of the experiences of SNAP-eligible older adults and the context in which they make various decisions and behavioral changes regarding their food purchases, food resource management, and food consumption. Of note, the use of in-person interviews conducted in settings that were convenient and comfortable for participants facilitated an in-depth understanding of how the life experience of older adults potentially impact the effect of SNAP benefit receipt.

The ability to design and conduct of this study was made possible by adopting the established SNAP application assistance model of Georgia CAFE. The use of an established SNAP application assistance model consisting of a comprehensive process of application completion, submission, and follow up encouraged potential participants to share their personal

and financial information with the researcher. This process helped to establish a critical rapport with study participants to facilitate the collection of valid and reliable data. The established contacts with community partners helped to target potential SNAP-eligible older Georgians and to reach participants who would have been difficult to engage without the connection of someone with whom they have established trust. Furthermore, SNAP application assistance helped to ensure maximal benefits for all study participants and fostered open communication with the SNAP application processing agency, the Georgia Division of Family and Children Services (DFCS), critical in ensuring accurate and timely processing.

A comprehensive systematic review conducted for this study to identify the six FPP constructs in older adults was critical. This review helped in the identification and devising of measures needed in assessing these constructs. These six FPP constructs helped to enhance our conceptual understanding of the underlying mechanism of how SNAP benefits affect food and nutrition-related decision-making processes. These constructs can help to explain the nutritional and health status of these low-income older Georgians before and after SNAP benefit receipt. Furthermore, the review provided the framework to establish a unique approach to assessing the six constructs together.

This study is not without limitations. This study was conducted in a small sample consisting of one race group; therefore, the findings of this study cannot be generalized to older populations. Though providing SNAP application assistance was beneficial, having to provide it to all interested persons during the recruitment phase delayed the recruitment process and opportunities that could be pursued at a given time. In assessing household expenses and monthly SNAP benefit receipt, relying only on self-report proved problematic in obtaining an accurate measure of household expenditure and financial resources. The study was also limited

in that participant recruitment, SNAP application assistance, data collection, and interpretation were conducted by the same researcher. However, this study provides valuable information on the feasibility and practicality of utilizing the SNAP application assistance model in food assistance evaluation in low-income older adults. The study design used in this study could be tested in a larger sample size with a team of trained researchers and/or SNAP administrators involved in participant recruitment and data collection.

Conclusions

This study presents a more in-depth understanding of how SNAP participation would affect FPP, diet quality, and food insecurity of low-income older individuals. Focusing on SNAP-eligible non-participating older Georgians offered a unique opportunity to study this issue even within this small sample with diverse perspectives on the expected and actual changes due to SNAP benefit receipt. The impact of SNAP participation among older Georgians was more pronounced in shifts in household expenditure patterns than other measures. These shifts specifically in food purchased for consumption at home and health and medical care, present a potential avenue to address improving FPP, diet quality, and food insecurity. The findings of this study show the feasibility of key strategies used in targeting and recruiting low-income older adults for SNAP research, assessing older adults in this longitudinal framework, and the value of SNAP application assistance in evaluating the impact of SNAP participation.

Implications for Research, Policy, and Practice

The findings of this study underscore the need for more rigorous evaluation of SNAP policy changes and implementation recommendations both at the state and federal level for older adults. For example, Georgia's SNAP Standard Medical Expense Deduction (SMED) was based on systematic policy analysis and evaluation research, helped to streamline the application

process, and increase the benefits of many older Georgians who were already receiving Medicare **(Adams et al., 2017)**. Current discussions related to the amount, format, and implementation of SNAP benefits include providing a box of shelf-stable groceries (**Business Insider, 2018**) and various state and national level initiatives to address senior hunger. Research evidence on the existing and alternative food assistance models must be the foundation of any initiatives to address senior hunger. Efforts designed to take an in-depth look at the current impact of SNAP among older adults must account for the complexities of the older adults' experience in the context of the established food assistance delivery systems that they utilize. More evaluation studies employing a comprehensive approach like this study in a larger scale could help to evaluate the changing dynamics of how older adults utilize food assistance while understanding the complexities of their impact on household expenses, FPP, food security, and diet quality. Such understanding is critical to improving the provision of effective and efficient food assistance programs and targeted policy and program development, implementation, and evaluation.

Additionally, the findings can provide the framework for some needed evidence-based research to further evaluate the feasibility of such a study design in a larger sample. For example, further research is needed to compare the value of one assessment method over another in evaluating the FPP of older adults. More specifically, are the collection of grocery receipts and grocery store observations a necessary tool in overlaying different measures to validate identified FPP? Also, research is needed to identify what assessment measures of FPP might be best to consider recommending to aging service providers to assess among their clients in evaluating the effectiveness of food assistance. Furthermore, could observations beyond three months of SNAP benefit receipt reveal a changing or consistent household expenditure and how might food

security and diet quality compare then? More research is still needed to better understand the unique older adult experience in addressing their initial barriers to SNAP participation as well as their corresponding changes following SNAP benefit receipt.

The complexity of SNAP application assistance for older adults with dynamic household expenditures, supports the need for SNAP application assistance for SNAP-eligible non-participating older adults applying for SNAP. Navigation of the SNAP application process could be helped by more comprehensive training for aging service providers and researchers in government, university, and community settings to facilitate partnerships, improve SNAP participation rates, and encourage opportunities for evaluation. The Georgia CAFE model provides an established example of how effective SNAP application assistance is impactful for proper SNAP benefit receipt and rigorous SNAP impact study design. At the state level, the Georgia Department of Human Services, Division of Aging Services, published their Georgia State Plan to Address Senior Hunger in December 2017 (**Georgia State Plan to Address Senior Hunger, 2017**). The targeted goal is to improve food security of older Georgians with the recognition that a coordinated and cooperative effort is required among healthcare providers, community groups, government agencies, and university researchers. Key recommendations within the plan address the need for coordinated data collection and analysis and development and provision of nutrition education. These recommendations are both in keeping with the implications of this research study showing the value of a coordinated effort among different stakeholders in supporting potentially informative research for effective nutrition education.

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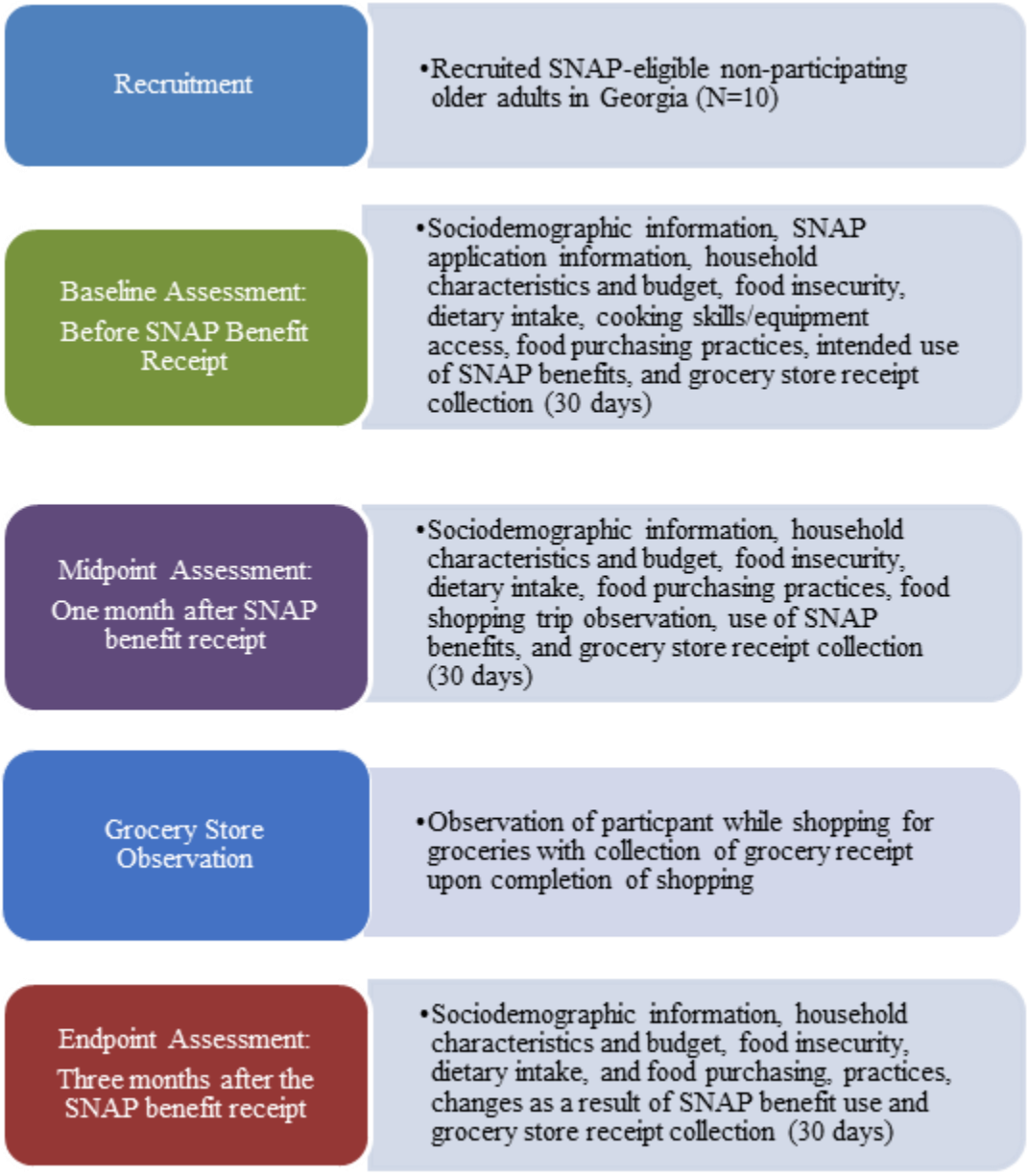
Appendix A. Dissertation Project Study Design



Appendix B. HEI-2015 Dietary Components, Constituents, and Scoring Standards

HEI-2015 Dietary Components, Constituents, and Scoring Standards				
Component	**Units**	**Dietary Constituents**	**Maximum Score**	**Standard for Maximum**
Total Fruits	cup eq.	Total Fruit	5	≥0.8 cup eq. per 1,000 kcal
Whole Fruits	cup eq.	Citrus, Melons, Berries + Other Intact Fruits	5	≥0.4 cup eq. per 1,000 kcal
Total Vegetables	cup eq.	Total Vegetables + Legumes (Beans and Peas) in cup equivalents	5	≥1.1 cup eq. per 1,000 kcal
Greens and Beans	cup eq.	Dark Green Vegetables + Legumes (Beans and Peas) in cup equivalents	5	≥0.2 cup eq. per 1,000 kcal
Whole Grains	oz. eq.	Whole Grains	10	≥1.5 oz. eq. per 1,000 kcal
Dairy	cup eq.	Total Dairy	10	≥1.3 cup eq. per 1,000 kcal
Total Protein Foods	oz. eq.	Total Meat, Poultry, and Seafood (including organ meats and cured meats) + Eggs + Nuts and Seeds + Soy + Legumes (Beans and Peas) in oz. equivalents	5	≥2.5 oz. eq. per 1,000 kcal
Seafood and Plant Proteins	oz. eq.	Seafood (high in n-3) + Seafood (low in n-3) + Soy + Nuts and Seeds + Legumes (Beans and Peas) in oz. equivalents	5	≥0.8 oz. eq. per 1,000 kcal
Refined Grains	oz. eq.	Refined Grains (≥4.3 oz. eq. per 1,000 kcal)	10	≤1.8 oz. eq. per 1,000 kcal

Added Sugars	tsp. eq.*	Added Sugars (≥26% of energy)	10	≤6.5% of energy
From Food and Nutrient Database for Dietary Surveys (FNDDS) (or other nutrient database)				
Fatty Acids	G	((Total Monounsaturated Fatty Acids + Total Polyunsaturated Fatty Acids)/Total Saturated Fatty Acids ≤1.2))	10	(MUFAs + PUFAs) /SFAs≥2.5
Sodium	mg**	Sodium (≥2.0 g per 1,000 kcal)	10	≤1.1 g per 1,000 kcal
Saturated Fats	g***	Total Saturated Fatty Acids (≥16% of energy)	10	≤8% of energy
Energy	kcal	Total Energy	---	

cup eq.=cup equivalents; oz. eq.=ounce equivalents; g=grams; mg=milligrams
*=teaspoon equivalents are converted to kcal in the scoring process.
**= sodium is converted from mg to g in scoring process.
***= fatty acids are calculated in grams but converted to energy in the scoring process.

APPENDIX C. SNAP Eligibility and Benefit Amount Worksheet

HOW TO FIGURE OUT FOOD STAMPS ELIGIBILITY AND AMOUNT OF STAMPS

You can use this form to figure the amount of Food Stamps someone should be getting in typical situations. Some people are "categorically eligible" and others may be ineligible for reasons you can't tell by using this worksheet. When in doubt, check the Economic Support Services Manual (ESSM) and the regulations. All amounts on the worksheet are monthly.

Gross Income Test

There is **no gross income test** if the Household contains a **senior or disabled** member. However, if someone is senior or disabled, and trying to get separate FS while they live with relatives and purchase and prepare food together, use the gross income amounts in **Line A** for the non-senior/non-disabled Household members to see if they can get separate FS.

For **all other Households**, add the gross monthly earned income and unearned income. Total income must not be more than the gross income amounts below for the Household size. Use **Line B** if no one in the Household is senior or disabled.

GROSS INCOME LIMITS (10/2016)									
Household Size	1	2	3	4	5	6	7	8	**each add'l**
A. To separate a senior or disabled HH	1634	2203	2772	3342	3911	4480	5051	5623	572
B. Not senior or disabled household	1287	1736	2184	2633	3081	3530	3980	4430	451
Remember, if HH has a senior or disabled member, there is no gross income limit.									

Net Income and Amount of Stamps - If the Household met the Gross Income Test, figure the net income and amount of stamps:

Start	_____	Gross monthly earnings from work
minus	-_____	20% of gross monthly earnings (gross earnings multiplied by 0.2)
equals	=_____	
plus	+_____	**Unearned** monthly income (TANF, GA, SSI, UIB, Social Security, CS, etc)
equals	=_____	
minus	-_____	Standard Deduction ($157 for HH of 1 - 3; $168 for HH of 4; $197 for HH of 5; $226 for HH's of 6 or more)
equals	=_____	
minus	-_____	**Medical expenses** over $35/month ONLY for ELDERLY OR DISABLED HH MEMBERS (See 7 CFR 273.9(d)(3)) Std. Med. Exp.Ded. = $150
equals	=_____	
minus	-_____	**Dependent care costs** . (When needed for training, education, work)
equals	=_____	
minus	-_____	**Child support paid** by HH member under legal obligation to pay.
	=_____	**ADJUSTED INCOME** CONTINUED (over)

Equals _____ ____ **ADJUSTED INCOME** (Copy from other side of page)

Minus _____ **SHELTER DEDUCTION** Figure as follows:

:

SUA is mandatory unless the AU incurs the cost of only <u>one</u> non-heating/non-cooling utility (like water, sewage, garbage, electricity or gas not used for heating/cooling), in which case use ACTUAL cost of the utility. See details at bottom of page. Also see <u>Utilities</u>: ODIS 3617.)

Rent/mortgage/taxes/insurance	_____
Heat/utilities (Actual or SUA below)	+_____
Telephone (<u>Only if</u> no SUA; see table below)	+_____
Equals Actual Shelter Costs	=_____
Minus ½ Adjusted Income	-_____
Equals Excess Shelter Costs *	=_____

*** Maximum shelter deduction is $517 (effective 10/2016) unless HH contains senior or disabled member in which case there is no maximum limit.**

equals	=_____	**NET FOOD STAMP INCOME** (If over the amounts in **Line C**, HH not eligible for benefits)
	_____	**Maximum food stamp allotment** for Household size from **Line D** below.
minus	-_____	30% of HH's Net Food Stamp Income (multiply net income above by 0.3 and subtract here)
equals	=_____	**AMOUNT OF FOOD STAMPS** Household should get. If this amount is under $16 (even under zero), but the Net FS Income was within the amounts of Line C below, they get $16. Minimum benefit amount for one and 2-person households is $16.

NET INCOME LIMITS and MAXIMUM ALLOTMENTS (10/2016)

Household Size	1	2	3	4	5	6	7	8	**each add'l**
C. Net Income Maximum	990	1335	1680	2025	2370	2715	3061	3408	347
D. Maximum Food Stamp Allotment	194	357	511	649	771	925	1022	1169	146

MONTHLY FOOD STAMPS STANDARDS IN GEORGIA (10/2016)

Telephone Standard	= $35 (Telephone standard only used if <u>not</u> using either SUA.)
Heating/Cooling Standard Utility Allowance (SUA)	= $391 if AU: • incurs an expense for heating/cooling, OR • incurs an expense for <u>excess</u> h/c utility expense in public housing, OR • rec'd LIHEAP (low-income energy assistance) in last 12 months at same address
Limited SUA	= $340 if AU: • incurs <u>2</u> non h/c utility expenses OR • incurs non h/c utility expense in public housing

* If more than one AU live under the same roof and share utility expenses, each AU will receive the full SUA.

Developed by Deborah Johnson (ALAS) / Rev. 10/2016 by Nancy Lindbloom (GLSP)

APPENDIX D. SNAP Application Material

Division of Family and Children Services

Georgia Senior Supplemental Nutrition Assistance Program (SNAP) Application

This application is used for individuals applying for the Supplemental Nutrition Assistance Program (SNAP) *formerly the Food Stamp Program)*. The Georgia Senior SNAP program is an elderly simplified application project designed to make it easier for seniors to receive food stamp benefits.

To be eligible for the Senior SNAP program, everyone in the household must be:

- 60 years of age or older;
- must purchase and prepare their meals together;
  AND
- have no earnings from work.

You may file this application by completing your name and address, and by signing the form. If you need help filling out this application or need help communicating with us, ask us or call 1-877-423-4746. If you are deaf or hard of hearing, please call GA Relay at 711. Our services are free. You may also mail your application to: Georgia Senior SNAP, P.O. Box 537, Avondale Estates, GA 30002. If you are living in an institution and applying for Food Stamps (SNAP) and SSI at the same time, the filing date of your application is the date you are released from the institution.

Can I Choose Someone to Apply for SNAP for me?

Complete this section only if you want someone to fill out your application for you as your authorized representative.

Name: _____ Phone: _____

Address: _____ Apt: _____

City: _____ State: _____

Tell us who you are and where you live. We must be able to reach you by telephone.

First Name	*Middle Initial*	*Last Name*	*Suffix*
Street Address Where You Live			*Apt*
City		*State*	*Zip Code*
Mailing Address (if different)			
City		*State*	*Zip Code*
Home Telephone Number	*Other Contact Number*		*E-Mail address*
For Office Use Only		**Date Received By The County**	

Division of Family and Children Services

Georgia Senior Supplemental Nutrition Assistance Program (SNAP) Application

Do I Qualify to Get SNAP Benefits Faster?

Answer these questions about the applicant and all household members to see if you can get SNAP benefits within 7 days.

Did anyone in your household get money this month? ❑ Yes ❑ No If yes, how much? _____ When? ___

How much money do you and all household members have in cash or in the bank? $ _____

How much do you and all household members pay for rent or mortgage and all utilities (electric, gas, water, etc?

$ _____

Tell us about the applicant and all household members. List yourself (or the person above shown on the first line).

NAME First Middle Initial Last	Relation-ship to You	Social Security Number (SSN) (See statement below)	Date of Birth	Sex (M/F)	Age	*** Optional		Are you a U.S citizen, qualified alien or in a satisfactory immigration status? (Y/N)
						Hispanic Yes /No	Race (See below)	
	SELF							

*** **Penalty Warning:** Individuals who are applying for Food Stamps must provide or apply for an SSN as required by the Food and Nutrition Act of 2008. We will verify and use your SSN for Federal and State data matches, including but not limited to, Social Security, VA, GA Department of Labor, program disqualifications, and for collection of fraud debts. We will also match your information with other Federal, state, and local agencies to verify your income and eligibility. Collateral contacts will be used to verify information when discrepancies are found. If immigration status information has been submitted on your application, this information may be subject to verification through the United States Citizenship and Immigration Service (USCIS) and will require submission of certain information from this application to USCIS.
*** **Optional:** We collect data on race color, and national origin to ensure we are in compliance with Federal civil rights laws. By providing this information, you will assist us in administering our programs in a non-discriminatory manner. Your household is not required to give us this information and it will not affect your eligibility or benefit level. **Choose one or more race codes: AL**-American Indian/Alaska Native; **AS**-Asian; **BL**-Black; or African American; **HP**-Hawaiian or other Pacific Islander; **WH**-White.

Tell us more about the applicant and all household members

1) Has anyone been convicted of a drug-related felony that was committed after 8/22/96? Yes ❑ No ❑

   If yes, name of person: _____

   a) Are you in compliance with any terms of probation related to any sentence received as a result of a drug felony conviction? (For Food Stamps only) ❑Yes ❑ No

   b) Are you in compliance with the terms of parole related to any sentence received as a result of a drug felony conviction? (For Food Stamps only) ❑Yes ❑ No

   c) Have you successfully completed all the terms of probation or parole related to any drug related conviction?

   (For Food Stamps Only) ❑Yes ❑ No

2) Is anyone in your household currently serving a Food stamp disqualification due to fraud? Yes ❑ No ❑

   If yes, name of person: _____

3) Has anyone been convicted of giving false information about where they live and who they are to get multiple food stamp benefits in more than one area after 8/22/96? Yes ❑ No ❑

If yes, name of person:_____when:_____where:_____

4) Is anyone trying to avoid prosecution or jail for a felony? Yes ❑ No ❑

If yes, who: _____

5) Is anyone violating conditions of probation or parole? Yes ❑ No ❑

If yes, who: _____

6) Have you or any household member been convicted of trading Food Stamp benefits for drugs after 8/22/96? Yes ❑ No ❑

7) Have you or any household member been convicted of buying or selling Food Stamp benefits over $500 after 8/22/96? Yes ❑ No ❑

8) Have you or any household member been convicted of trading Food Stamp benefits for guns, ammunition or explosives after 8/22/96? Yes ❑ No ❑

Tell us about the income your household receives

Does anyone in your household receive money from social security, SSI, VA, retirement, or any other income?

Yes ☐ No ☐ **If yes, complete the chart below.**

Name	Source	Gross Monthly Amount (before taxes, deductions and Medicare premium)

Tell us about your shelter and utility expenses

	YES	NO	If YES, list monthly/yearly amount
Does your household pay mortgage?			
Does your household pay rent?			
Does your household pay property taxes on the home?			
Does your household pay homeowner's insurance?			**If YES, list monthly/yearly amount**
Does your household pay for heating or cooling costs?			
If your household does not pay heating or cooling costs, do you pay other utilities?			**If YES, list the utility costs you pay and the amount you pay below.**

Tell us about your medical expenses

Does your household pay out-of-pocket medical expenses over $35 per month? Yes ❑ No ❑

Do you pay a Medicare Premium? Yes ❑ No ❑

Division of Family and Children Services

Georgia Senior Supplemental Nutrition Assistance Program (SNAP) Application

If yes, complete the chart below. We will need proof of your medical expenses. You may be potentially eligible to receive more benefits.

Person Who Has The Bill	Type of Expense (Doctor, Hospital, Prescriptions, Medicare Premium, transportation)	Amount Owed

Do you or someone in your household pay legally obligated child support to someone living outside of your home?
Yes ☐ No ☐ If yes, who and how much per month? _____

For more information about TANF Community Outreach Services, please call 1-877-423-4746 or visit our website at: http://www.dfcs.dhr.georgia.gov.

Only US citizens and qualified aliens are eligible for SNAP benefits. Any non-citizens or non-qualified aliens may be left off your application for assistance. Such persons will not be reported to the Immigration and Customs Enforcement Agency. Non-citizens included on your application will have eligibility determined under the SNAP rules. The income and resources of all individuals in your household will be considered in determining eligibility for persons included on the SNAP application.

I certify that each applicant included in my household is a U.S. citizen or alien in lawful immigration status and that the information provided is true to the best of my knowledge. I give permission for the Georgia Department of Human Services, Division of Family and Children Services to make a full review of my case and any necessary contacts to verify my statements. I know that I could be penalized if I knowingly give false information.

_____ _____ _____
Signature of Applicant Date Signature of witness if signed by mark

_____ _____ _____
Signature of Authorized Representative Date Signature of witness if signed by mark

APPENDIX E. Informed Consent Form

UNIVERSITY OF GEORGIA
CONSENT FORM

Understanding Food Purchasing Practices, Nutrition, and Health of Older Adults

Researcher's Statement

We are asking you to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." A copy of this form will be given to you.

Principal Investigator: Jung Sun Lee, PhD, RD
Department of Foods and Nutrition
College of Family and Consumer Sciences
280 Dawson Hall
The University of Georgia
Athens, GA 30602-3622
706-542-6783

Purpose of the Study

The purpose of this research study is to better understand the changes in food purchasing practices, nutrition, and health of SNAP (food stamp)-eligible older adults living in Georgia who transition to being SNAP recipients. You are being asked to participate because you are a Georgian who is potentially eligible for SNAP benefits.

Study Procedures

As a new SNAP applicant, you will be asked to provide information from your SNAP application and questioned about it to obtain information necessary to determine what information was used to determine the amount of SNAP benefits you will receive. You will also be asked to participate in a series of interviews with a graduate student from the University of Georgia. These interviews will occur both before and after the receipt of your SNAP benefits. Each interview will last about 90 minutes and responses will be audio-recorded and notes will be taken. Each interview will ask about food purchasing practices. If you agree to participate, an initial screening will

be conducted in order to participate in the study. The screening will include questions about you such as your date of birth and primary language, applying for SNAP benefits and your food purchasing practices. There will also be a test to assess the skills you would use in food purchasing practices such as memory, reading, and writing.

Initial interview: Interview before receiving SNAP benefits
We will obtain information about you from your SNAP application (example: your age, how many people live in your household, income sources, housing expenses and medical expenses).

During this interview, you will be asked to complete a student–administered interview guide about how and where you shop and nutrition information and a brief questionnaire about your intended use of SNAP benefits. You will also be asked to complete a food survey about what you have eaten recently. Within the same week, you will be contacted by phone to complete two additional food surveys. You will then be asked to provide the receipts for the household food you purchased over the last 30 days as requested at the interview after one month of receiving SNAP benefits.

Second Interview: Interview after one month of receiving SNAP benefits
You will be interviewed again. In this month, you will complete three food surveys, and asked to start collecting the receipts of your household food purchases over the next 30 days.

Grocery Shopping Trip Observation and Interview
Within this study period following your receipt of SNAP benefits, you will be asked to be accompanied during one food shopping trip. During this food shopping trip your thoughts will be both written down and audio recorded. A copy of your grocery store receipt will be made.

Third Interview: Interview after three month of receiving SNAP benefits
You will complete your last set of interviews and asked to complete three food surveys. You will then be asked to provide the receipts for the household food you purchased over the last 30 days.

Risks and Discomforts
The risks and discomforts of participating in this study are minimal.

Psychological Risks
While in this study, you might experience some mild psychological discomfort. For example, answering questions about your nutrition, health, food purchasing practices and other personal questions might make you feel uncomfortable. You are under no obligation to answer any of the questions asked of you as a part of this study. You do not have to answer interview questions that make you feel uncomfortable.

Risk of Loss of Privacy
Even though the researchers will take extensive precautions with your personal and private information, there is always a chance of loss of privacy. We will make every effort to protect the privacy of the information you provide during this study.

Benefits
There are no personal direct benefits to your participation in this study. The benefits to society include a better understanding of the food purchasing practices, nutrition, and health of older Georgians who are eligible for and ultimately receive SNAP benefits. The researchers will also learn what participants expect to do with the addition of SNAP benefits.

Incentives for participation
You will have the opportunity to receive up to $75.00 gift card for your participation after you have completed your time in the study. For each interview you complete, you will receive a $20 gift card and with the completion of the grocery shopping trip observation you will receive a $15 gift card.

Audio Recording
All interviews will be audio recorded. The grocery shopping trip observation will be audio recorded. This is necessary so the researcher can review the interview sessions in detail, so that no information is missed. The audio recordings will be written out, and all identifying words (i.e. someone's name) will be left out of the written version. The recording will be held for 6 years after being written out and then destroyed. The audio recordings require your consent.

If you consent to all audio recordings in this research study initial here. ____

If you do not wish to be audio recorded during the interviews initial here. ____

If you do not wish to be audio recorded during the grocery shopping trip initial here. ____

Privacy/Confidentiality

You will be assigned a non-identifying number, and all your data and recordings will be stored under this number. The assigned number will be kept on a master list that we will retain that can link to your identifiable information. All data will be stored in locked filing cabinets in a locked office on the UGA campus. All information entered into a computer database will be stored under a password-protected, encrypted file. The project's research records may be reviewed by departments at the University of Georgia responsible for regulatory and research oversight. Researchers will not release identifiable results of the study to anyone other than individuals working on the project without your written consent unless required by law. If reportable information such as neglect is observed, researchers will be required by State and/or Federal law to report them to the proper authorities.

Taking part is voluntary

Taking part in this study is voluntary. You have the right to choose not to take part in this study. If you choose to take part, you have the right to stop at any time. If you refuse or decide to withdraw later, there will be no penalty and you will not lose any benefits or rights to which you are entitled. The assistance provided to you by a SNAP advocate in the completion and submission of your SNAP application is not tied to your participation in this study. Any assistance you need in that process will still be provided whether you choose to take part in the study.

If you decide to stop or withdraw from the study, the information/data collected from or about you up to the point of your withdrawal will be kept as part of the study and may continue to be analyzed.

If you have questions

The main researcher conducting this study is Temitope Walker, a graduate student at the University of Georgia. Please ask any questions you have now. If you have questions later, you may contact Dr. Jung Sun Lee at leejs@uga.edu or 706-542-6783. If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706-542-3199 or irb@uga.edu.

Research Subject's Consent to Participate in Research:

To voluntarily agree to take part in this study, you must sign on the line below. Your signature below indicates that you have read or had read to you this entire consent form, and have had all of your questions answered.

_____	_____	
Name of Researcher	Signature	Date
_____	_____	
Name of Participant	Signature	Date

Please sign both copies, keep one and return one to the researcher.

APPENDIX F. Study Screening Form

Understanding Food Purchasing Practices, Nutrition, and Health of Older Adults

SCREENING FORM

Please fill in the blank and check the box with the participant's response.

1. Name: _____
2. Birth date: ____/____/____ (Age: ____)
3. Home address:
   _____
4. Mailing address, if different from home address: _____
   _____

   _____
   _
5. What language do you usually speak at home? □ English (1) □ Spanish (2) □ Other (0)
6. Are you able to complete a telephone interview? □ yes (1) □ no (0)
7. What number can we use to reach you with for the completion of these interviews?

   _____□ Home (0) □ Cell (1) □ Other (2)
8. Are you currently employed or seeking employment? □ yes (1) □ no (0)
9. Are you able to purchase food on your own? □ yes (1) □ no (0)
10. If no, how are you assisted in the purchase of food?
    _____
11. Who does most of the grocery shopping in your household? (circle one)

    a) Self (1)
    b) Spouse/significant other (2)
    c) Parent(s) (3)
    d) Child(ren) (4)
    e) Friends/roommate (5)
    f) Other (describe): _____ (6)
12. Are you or have you applied for SNAP benefits within the last 30 days? □ yes (1) □ no (0)
13. Have you ever received SNAP benefits before? □ yes (1) □ no (0)
14. If you received SNAP benefits before, when was the last time you received them?
    _____

15. If you are eligible to participate in this research study, what is the best way to get in contact with you?

□ Phone: _____ □ Email: _____

□ Mail: _____

16. What are the best days for me to contact you?

□ Sunday (1) □ Monday (2) □ Tuesday (3) □ Wednesday (4) □ Thursday (5) □ Friday (6) □ Saturday (7)

17. What are the best times of day to contact you?_____

Short Blessed Test (SBT)

Instructions to the participant: Now I would like to ask you some questions to check your memory and concentration. Some of them may be easy and some of them may be hard.

		Correct	Incorrect
1)	What year is it now?	**0**	**1**
2)	What month is this?	**0**	**1**

Please repeat this name and address after me:
John Brown, 42 Market Street, Chicago
John Brown, 42 Market Street, Chicago
John Brown, 42 Market Street, Chicago
(underline words repeated correctly in each trial)
Trials to learn _____ (if unable to do in 3 trials = C)

3) Without looking at your watch or clock, tell me what time it is. (If response is vague, prompt for specific response within 1-hour)

Correct	Incorrect
0	**1**

4) Count aloud backwards from 20 to 1 (mark correctly sequenced numerals – if subject starts counting forward or forgets the task, repeat instructions and score one error)

0 1 2 Errors

20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

5) Say the months of the year in reverse order. If the tester needs to prompt with the last name of the month of the year, one error should be scored – mark correctly sequenced months.

D N O S A JL JN MY AP MR F J **0 1 2 Errors**

6) Repeat the name and address you were asked to remember.

(John Brown, 42 Market Street, Chicago) **0 1 2 3 4 5 Errors**

_____, ____, ___, _____, _____

Item	Errors	Weighting Factor	Final Item Score
1		x 4	
2		x 3	
3		x 3	
4		x 2	
5		x 2	
6		x 2	
		Sum Total (range 0-28) =	

0-4 = normal cognition
5-9 = questionable impairment
≥ 10 = Impairment consistent with dementia

Assessment of Functional Ability

Check Yes or No for the ability to perform these functions on his or her own. Ask the person if they are able to complete these tasks on their own. If No, ask if task is completed with assistance from someone else.

	Function	Yes	No	Yes, with Assistance
18	Eating			
19	Bathing			
20	Grooming			
21	Dressing			
22	Transferring			
23	Continence			
24	Managing money*			
25	Telephoning			
26	Preparing meals			
27	Laundry			
28	Housework			
29	Housework outside home			
30	Routine health care			
31	Special health care (if applicable)			
32	Being alone			

*This specific refers to the ability to manages financial matters independently (budgets, writes checks,
pays rent, bills, goes to bank), collects and keeps track of income. Assistance may refer to the ability to
manage day-to-day purchases, but needs help with banking, major purchases, etc.

Questions adapted from Georgia Division of Aging Services Home and Community Based Client Intake Form

33**.** What form of transportation do you use? *Circle the answer(s) that apply.*

a) Travels independently on public transportation
b) Drives own car
c) Driven by friend or family member in a car
d) Arranges own travel via taxi
e) Uses public transportation with assistance

APPENDIX G. Interviewer-Administered Questionnaires

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

Initial Interview

Interviewer-administered

ID of Participant:
1. Today's date (M/D/Y): ___/___/___
Demographics
2. Gender: Male (0) Female (1)
3. Which race/ethnicity do you most identify with? **White (1) Black (2) Hispanic/Latino (3) Asian (4) Other (5)**
4. What is the highest grade or level of school you have completed or the highest degree you have received? **1 2 3 4 5 6 7 8 9 10 11 12 High School/GED (13) Some College/University (14) College/University (15) Some Graduate Education (16) Graduate Degree (17)**
5. Marital status: *Please circle one that best describes your situation* **Single (1) Married (2) Separated (3) Widowed (4) Divorced (4) Living with a partner (5)**
6. How many people live in your household? ____ (*If participant lives alone, skip the next question.)*
7. Persons living in the household: *(Note how many)* **____ own children (1) ____ grandchildren (2) ____ Mother (3) ____ Father (4) ____ siblings (5) ____ Other relative(s) (6) ____ Female friend (7) ____ Male friend (8) ____ Other (9)**
8. Which groups have you assisted you with the obtainment of food in the past year? *Write N/A if not applicable. If the choice is applicable, note how often the service was used as daily, weekly, monthly, yearly with a number.* **a. Food Bank _____** **b. Food Stamps _____** **c. Soup Kitchens _____** **d. Senior Center/Congregate meal _____** **e. Home-delivered meals _____** **f. WIC _____**

SNAP Application Information
Use initial interview time to clarify any missing or incomplete responses.

9. What is your household's total annual income for the most recent calendar year?

Write Actual Amount or N/A. **_____**

10. Sources of Income: *Write Actual Amount or N/A.*

1. **Social Security**
   _____
2. **SSI _____**
3. **Child support**
   _____
4. **Veteran's benefits _____**
5. **Regular gifts from family or friends to assist with bills or expenses**
   _____
6. **Other income sources (e.g. pension)***
   _____
7. **Note income that is not accounted in the SNAP application_____**

11. Government Benefits as Sources of Income: *Write Actual Amount or N/A.*

a) **Housing assistance _____**
b) **Energy/Fuel Assistance _____**
c) **Transportation Assistance _____**
d) **Other _____**
   _____
   _____

12. What housing expenses along with amounts were claimed for the housing expense deduction in the application for SNAP benefits? *Write Actual Amount or N/A.*

a) **Rent/mortgage/taxes/insurance _____**
b) **Heat/utilities _____**
c) **Telephone _____**

Total Housing Expenses: _____

13. What medical expenses along with amounts were claimed for the medical expense deduction in the application for SNAP benefits? *Write Actual Amount or N/A.*

a) **Transportation costs to doctor's offices, pharmacies, hospitals, etc.** _____
b) **Healthcare premiums** _____
c) **Doctor/hospital visits (co-payments)** _____
d) **Co-payments for prescriptions medications** _____
e) **Over-the-counter (OTC) medications/products** _____
f) **Dental bills** _____
g) **Unpaid medical bills currently being billed for** _____
h) **Other expenses (cost of eyeglasses, medical supplies):**

_____
_____
_____
_____
_____
_____

Total Medical Expenses: _____

14. List prescription medications you take.

_____
_____
_____
_____

Total number of Prescription Medications: _____

15. List over-the-counter medications and medical supplies/devices you use.

_____

_____

_____

_____

Total number of over the counter medications and medical supplies/devices: _____

16. Household Expenses or Medical Expenses <u>*Not Included*</u> i**n SNAP Application**
(*Indicate monthly amount or N/A)**:***

(1) Food _____

(2) Cable _____

(3) Credit card payments _____

(4) Loan payments _____ *(Note here if referring to home mortgage :_____)*

(5) Rent-to-own payments _____

(6) Life or burial insurance _____

(7) Other_____

_____

_____

17. List other expenses that were counted as deductions from your income in your SNAP application.

_____

_____

_____

_____

Household Expenses

18. Does anyone *(family, friends or other)* **help you pay your monthly household expenses?**

___ Yes (1) ___ No (0)

(*Ask in reference to the food, medical, and housing expenses that are both included and not included in the SNAP application*; ***If No, proceed to next question.)***

a. Who helps? _____

b. How often? _____

c. How much? _____

d. What do they help pay for? (*Ask in reference to the food, medical, and housing expenses that are both included and not included in the SNAP application*)

_____

_____

_____

19. What statement best describes your ability to handle finances? *Circle the indicated response.*

(1) You manage financial matters independently (you budget, write checks, pay rent/mortgage, pays bills, manage banking, collects and keep track of your income).

(2) You manage day-to-day purchases, but need help with banking, major purchases, etc.

(3) You are not able to handle money.

*** Note any issues in answering stated by the participant here.**

20. How would you describe the money situation in your household right now?

(1) Comfortable with extra
(2) Enough but no extra
(3) Have to cut back
(4) Cannot make ends meet

Health and Medical Care		
21. How would you rate your overall health? *Circle one.* **Poor (0) Fair (1) Good (2) Very good (3) Excellent (4)**		
22. Do you have health insurance? ___ Yes (1) ___ No (0) *(If no, skip the next 4 questions)*		
<u>Government provided</u>: **23. Medicaid? ___ Yes (1) ___ No (0)** **24. Medicare? ___ Yes (1) ___ No (0)** **25. ……..Do you have Medicare Part D? Yes (1) ___ No (0)**		
26. Do you have Private Insurance? ___ Yes (1) ___ No (0)		
27. List your Chronic Diseases		
th medication?	**Dietary Restriction(s)?**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
1) ___ No (0)	**___ Yes (1) ___ No (0)**	
28. If you indicated that you have dietary restrictions, what are your dietary limitations? How do these restrictions affect what food you buy?		

Food Purchasing Practices
29. What statement best describes your grocery shopping experience? *Circle the indicated response.* **a) I take care of all grocery shopping needs independently.** **b) I shop independently for small purchases.** **c) I need to be accompanied on any grocery shopping trip.**
30. Where do you go grocery shopping?
31. Which food store do you go to the most? What are the reasons you go to this store the most? **32.**
33. How often do you go grocery shopping? (*Examples include weekly, monthly, daily, or as needed*)
34. What time of day do you go grocery shopping? *(i.e. morning, afternoon, or night)*
35. When you go grocery shopping how do you get the store? (*Referring to mode of transportation.)*
36. How much did you spend on groceries last month? (*This is a specific reference to food purchases.)*
37. How do you pay for the food you purchase? *(Examples include cash, check, or credit card.)*
38. Do you use a pre-written grocery list when you go grocery shopping?___ Yes (1) ___ No (0)
39. Do you buy food items you don't plan to purchase when you go grocery shopping? ___ Yes (1) ___ No (0) If yes, what are the reasons?
40. Have you had to choose between buying food and buying medication?___ Yes (1) ___ No (0)
41. Have you had to choose between buying food and paying housing expenses?___ Yes (1) ___ No (0)

42. What types of foods do you tend to purchase?

43. How do you decide which foods to purchase?

44. Do you read the food ingredients on a food label? ___ Yes (1) ___ No (0)
- **a) Do you read these labels to decide what food to buy?___ Yes (1) ___ No (0)**
- **b) If so, what is it on the label that makes you decide whether or not to buy the item?**

Use of SNAP Benefits

45. Do you know how much in SNAP benefits you will likely receive? If so, how much per month? _____

46. What do you plan to do with your SNAP benefits?

47. Will you consider making any changes because of SNAP benefit receipt? ___ Yes (1) ___ No (0)If so, what changes might you make?

Cooking Equipment List and Food Preparation

Ask the participant whether they have each item available for cooking and/or food storage in their home. If the participant says yes, an "X" will be placed in a box next to the item listed.

☐ **Refrigerator with freezer (1)**

☐ **Stove with oven (2)**

☐ **Pressure cooker (3)**

☐ **Microwave oven (4)**

☐ **Deep freezer (5)**

☐ **Toaster oven (6)**

☐ **Toaster (7)**

☐ **Slow cooker (8)**

☐ **Other major cooking appliance (9)** _____

48.

49. What description best describes your method of food preparation? *Circle the indicated response.*

(1) I plan, prepare and serve adequate meals.
(2) I prepare adequate meals if supplied with ingredients.
(3) I heat, serve and prepare meals or prepares meals but do not maintain adequate diet.
(4) I need to have meals prepared and served for me.

Modified 6-item U.S. Household Food Security Survey Module **Validated in the Georgia Advanced Performance Measures Project 2008-2009**	
These next questions are about the food eaten in your household in the last 30 days and whether you were able to afford the food you need.	
1. During the last 30 days, how often was this statement true: The food that we bought just didn't last, and we didn't have money to get more.	(1) During the last 30 days, how often was this statement true: The food that we bought just didn't last, and we didn't have money to get more.
2. During the last 30 days, how often was this statement true: We couldn't afford to eat balanced meals.	(1) During the last 30 days, how often was this statement true: We couldn't afford to eat balanced meals.
3. In the past 30 days, did you or other adults in your household ever cut the size of your meals because there wasn't enough money for food?	(1) In the past 30 days, did you or other adults in your household ever cut the size of your meals because there wasn't enough money for food?
4. In the past 30 days, did you or other adults in your household ever skip meals because there wasn't enough money for food?	(1) In the past 30 days, did you or other adults in your household ever skip meals because there wasn't enough money for food?
5. In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?	(1) In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?
6. In the last 30 days, were you ever hungry but didn't eat because there wasn’t enough money for food?	(1) In the last 30 days, were you ever hungry but didn't eat because there wasn’t enough money for food?

24-Hour Diet Recall

SERVING ABBREVIATIONS:	
Tablespoon	= TBSP
Cup	= c
Teaspoon	= tsp
Pound	= lb.

Interviewer-administered in-person

Meal Abbreviations: **B**=breakfast, **L**=lunch, **D**=dinner, **S**=snack

(Use food models to demonstrate portions or USDA guide)

Please be as specific as possible. Include all beverages, condiments, and portion sizes.

Meal/ Time	Food Item and Method of Preparation	Amount Eaten	Where

Instructions for First Receipt Collection

Please collect your grocery receipts over the course of the next 30 days and we will collect them from you at your next interview. We will provide you with a folder for you to hold your receipts in.

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

24-Hour Diet Recall

SERVING ABBREVIATIONS:	
Tablespoon	= TBSP
Cup	= c
Teaspoon	= tsp
Pound	= lb.
Ounce	= oz.
Slice	= sl

Interviewer-administered by phone

Meal Abbreviations: **B**=breakfast, **L**=lunch, **D**=dinner, **S**=snack

(Use food models to demonstrate portions or USDA guide)

Please be as specific as possible. Include all beverages, condiments, and portion sizes.

Meal/ Time	**Food Item and Method of Preparation**	**Amount Eaten**	**Where**

24-Hour Diet Recall

SERVING ABBREVIATIONS:	
Tablespoon	= TBSP
Cup	= c
Teaspoon	= tsp
Pound	= lb.

Interviewer-administered by phone

Meal Abbreviations: **B**=breakfast, **L**=lunch, **D**=dinner, **S**=snack

(Use food models to demonstrate portions or USDA guide)

Please be as specific as possible. Include all beverages, condiments, and portion sizes.

Meal/ Time	Food Item and Method of Preparation	Amount Eaten	Where

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

Second Interview

Interviewer-administered

ID of Participant:
Today's date (M/D/Y): ___/___/___ *(*At least 45 days after SNAP application submitted)*
Household Demographics
1. Have you had a change in your marital status? ___ Yes (1) ___ No (0) (*If yes, please indicate your new status*)
2. Have you had a change in those living in your household? ___ Yes (1) ___ No (0) *(If yes, please indicate who now lives with you)*
3. How would you describe the money situation in your household right now? **1) Comfortable with extra** **2) Enough but no extra** **3) Have to cut back** **4) Cannot make ends meet**
4. Have you had a change in your income sources? ___Yes (1) ___ No (0) (*If yes, please indicate what has changed.*)
5. Have you had any change in household expenses you are responsible for? ___Yes (1) ___ No (0) (*If yes, please indicate what has changed.*)
Health and Medical Care
6. How would you rate your overall health? *Circle one.* **Poor (0) Fair (1) Good (2) Very good (3) Excellent (4)**
7. Note any new chronic diseases and if and what treatment is required including any dietary restrictions. Also, indicate if there were any recent health events (*e.g. hospitalizations*) **since the last interview.**

8. If you indicated that you have dietary restrictions, what are your dietary limitations? How do these restrictions affect what food you buy?
9. Have you had any change in medical expenses you are responsible for? ___Yes (1) ___ No (0) (*If yes, please indicate what has changed.*)

Food Purchasing Practices
10. What statement best describes your grocery shopping experience? **(1) I take care of all grocery shopping needs independently.** **(2) I shop independently for small purchases.** **(3) I need to be accompanied on any grocery shopping trip.**
11. Where do you go grocery shopping?
12. Which food store do you go to the most? What are the reasons you go to this store the most.
13. How often do you go grocery shopping? (*Examples include weekly, monthly, daily, or as needed*)
14. What time of day do you go grocery shopping? *(i.e. morning, afternoon, or night)*
15. When you go grocery shopping how do you get the store? (*Referring to mode of transportation.)*
16. How much did you spend on groceries last month? (*This is a specific reference to food purchases.)*
17. How do you pay for the food you purchase? *(Examples include cash, check, or credit card.)*
18. Do you use a pre-written grocery list when you go grocery shopping?___ Yes (1) ___ No (0)
19. Do you buy food items you don't plan to purchase when you go grocery shopping? ___ Yes (1) ___ No (0) If yes, what are the reasons?

20. Have you had to choose between buying food and buying medication___ Yes (1) ___ No (0)
21. Have you had to choose between buying food and paying housing expenses?___ Yes (1) ___ No (0)
22. What types of foods (*like fruits, vegetables, bread/rice, or fish/meat/beans*) do you tend to purchase?
23. How do you decide which foods to purchase? (*Examples include cost, seasonality, freshness, quality, your nutrition etc.*)
24. Can you read the food ingredients on a food label? ___ Yes (1) ___ No (0) **a) Do you read these labels to decide what food to buy? ___ Yes (1) ___ No (0)** **b) If so, what is it on the label that makes you decide whether or not to buy the item?**
Use of SNAP Benefits
25. How much in SNAP benefits are you receiving per month? _____
26. What day of the month do you get SNAP benefits? _____
27. Have you received your EBT card? ___ Yes (1) ___ No (0) *Answer must be yes to proceed with questions.*
28. Have you used your SNAP benefits? ___ Yes (1) ___ No (0)
29. If you have used your SNAP benefits, what did you purchase?
30. What if any changes have you made because of SNAP benefit receipt? (*Examples include change in where do you go grocery shopping, how often you go grocery shopping, how much you spend on food, what types of food, buying medication.*

Modified 6-item U.S. Household Food Security Survey Module **Validated in the Georgia Advanced Performance Measures Project 2008-2009**	
These next questions are about the food eaten in your household in the last 30 days and whether you were able to afford the food you need.	
1. During the last 30 days, how often was this statement true: The food that we bought just didn't last, and we didn't have money to get more.	(1) Often (2) Sometimes (3) Never
2. During the last 30 days, how often was this statement true: We couldn't afford to eat balanced meals.	(1) Often (2) Sometimes (3) Never
3. In the past 30 days, did you or other adults in your household ever cut the size of your meals because there wasn't enough money for food?	(1) Yes (2) No
4. In the past 30 days, did you or other adults in your household ever skip meals because there wasn't enough money for food?	(1) Yes (2) No
5. In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?	(1) Yes (2) No
6. In the last 30 days, were you ever hungry but didn't eat because there wasn’t enough money for food?	(1) Yes (2) No

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

24-Hour Diet Recall

SERVING ABBREVIATIONS:	
Tablespoon	= TBSP
Cup	= c
Teaspoon	= tsp
Pound	= lb.
Ounce	= oz.
Slice	= sl

Interviewer-administered in-person

Meal Abbreviations: **B**=breakfast, **L**=lunch, **D**=dinner, **S**=snack

(Use food models to demonstrate portions or USDA guide)

Please be as specific as possible. Include all beverages, condiments, and portion sizes.

Meal/ Time	**Food Item and Method of Preparation**	**Amount Eaten**	**Where**

Instructions for Second Receipt Collection

Please collect your grocery receipts over the course of the next 30 days and we will collect them from you at your next interview. We will provide you with a folder for you to hold your receipts in. We will call to schedule your next interview.

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

24-Hour Diet Recall

SERVING ABBREVIATIONS:	
Tablespoon	= TBSP
Cup	= c
Teaspoon	= tsp
Pound	= lb.
Ounce	= oz.
Slice	= sl

Interviewer-administered by phone

Meal Abbreviations: **B**=breakfast, **L**=lunch, **D**=dinner, **S**=snack

(Use food models to demonstrate portions or USDA guide)

Please be as specific as possible. Include all beverages, condiments, and portion sizes.

Meal/ Time	Food Item and Method of Preparation	Amount Eaten	Where

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

24-Hour Diet Recall

SERVING ABBREVIATIONS:	
Tablespoon	= TBSP
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(Use food models to demonstrate portions or USDA guide)

Please be as specific as possible. Include all beverages, condiments, and portion sizes.

Meal/ Time	**Food Item and Method of Preparation**	**Amount Eaten**	**Where**

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

Grocery Shopping Trip Observation and Interview Guide

Interviewer-administered

ID of Participant:
1. Today's date (M/D/Y): ___/___/___
Describe for me a typical grocery shopping trip that you have taken.
Pre-Grocery Shopping
2. Before you leave your home to go grocery shopping, how do you prepare for the trip?
3. What day of the week do you typically go grocery shopping? *(Note if not set day)*
4. What time of day? *(Note if not set time)*
5. Do you use coupons for your groceries? Yes (1) No (0)
6. Do you use advertising circulars or commercials before grocery shopping to decide what food you purchase? **Yes (1) No (0)**
Grocery Shopping
7. Describe for me the entire in-store grocery shopping process from the moment you start until it is time to head to the cashier.
8. How often do you take advantage of in-store coupons or in-store specials?

Observation Protocol for Grocery Shopping Trip	
Participant ID: **Where:** **Time of Day:** **Length of Time Spent Shopping:** **Special circumstances:**	
Descriptive Notes	**Reflective notes**
Entering the store:	
Produce Section:	
Meats:	
Dairy:	
Navigating Food Aisles	
Navigating Other Aisles	
Shopping List? Items listed?	
Interaction with other shoppers	
Interaction with Store Staff	
Checking Out:	
Leaving the Store:	
Miscellaneous:	

Grocery Shopping Trip Observation Follow up
This interview can be conducted over the phone or as part of the third interview. These questions will be driven by the notes taken during the grocery shopping trip.
1. **Ask about locations that were visited in the store.** *(e.g. I noticed that you stopped in the [product] section of an aisle and spent some time looking at the various items without selecting anything. What were you looking for? Why did you decide to not buy anything from this section?*)
2. **Ask about decision on how they moved through the store to make purchases.** *(e.g. I noticed that you stopped in the [product] section of an aisle and spent some time looking at the various items before selecting the [brand of product]. How did you make your decision?)*
3. **Ask about the quantity and size of individual food purchases made.** *(e.g. You selected a family size package of [product]? Why family size? What are your plans for that particular product?)*

4. Ask about any aides such as lists, coupons, or flyers used. What items were purchased using these aides?
5. Do you buy the same foods every time? If not, what determines what you buy and when?
6. **Did you buy anything you had not planned on buying? If so, what items? Why did you buy these items?** *(e.g. I noticed that you didn't spend any time at all deciding upon [product]. You just picked it off the shelf without any apparent deliberation and put it in your shopping cart. Was this a planned or habitual purchase? What prompted you to pick this product?)*
7. **Note methods of payments used to purchase food?** *(See receipt)*

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

Third Interview

Interviewer-administered

ID of Participant:
Today's date (M/D/Y): ___/___/___ *(*At least 90 days after receipt of SNAP benefits)*
Household Demographics
1. Have you had a change in your marital status? ___ Yes (1) ___ No (0) (*If yes, please indicate your new status*)
2. Have you had a change in those living in your household? ___ Yes (1) ___ No (0) (*If yes, please indicate who now lives with you*)
3. How would you describe the money situation in your household right now? **1) Comfortable with extra** **2) Enough but no extra** **3) Have to cut back** **4) Cannot make ends meet**
4. Have you had a change in your income sources? Yes (1) ___ No (0) (*If yes, please indicate what has changed.*)
5. Have you had any change in household expenses you are responsible for? Yes (1) ___ No (0) (*If yes, please indicate what has changed.*)
Health and Medical Care
6. How would you rate your overall health? *Circle one.* **Poor (0) Fair (1) Good (2) Very good (3) Excellent (4)**
7. Note any new chronic diseases and if and what treatment is required including any dietary restrictions. Also, indicate if there were any recent health events (*e.g. hospitalizations*) **since the last interview.**

8. If you indicated that you have dietary restrictions, what are your dietary limitations? How do these restrictions affect what food you buy?
9. Have you had any change in medical expenses you are responsible for? (*If yes, please indicate what has changed.*)
Food Purchasing Practices
10. What statement best describes your grocery shopping experience? **(1) I take care of all grocery shopping needs independently.** **(2) I shop independently for small purchases.** **(3) I need to be accompanied on any grocery shopping trip.**
11. Where do you go grocery shopping?
12. Which food store do you go to the most? Why do you go there most often?
13. How often do you go grocery shopping? *(Examples include weekly, monthly, daily, or as needed)*
14. What time of day do you go grocery shopping? *(i.e. morning, afternoon, or night)*
15. When you go grocery shopping how do you get the store? (*Referring to mode of transportation.)*
16. How much did you spend on groceries last month? (*This is a specific reference to food purchases.)*
17. How do you pay for the food you purchase? *(Examples include cash, check, or credit card.)*
18. Do you use a pre-written grocery list when you go grocery shopping?___ Yes (1) ___ No (0)
19. Do you buy food items you don't plan to purchase when you go grocery shopping? ___ Yes (1) ___ No (0) If yes, what are the reasons?

20. Have you had to choose between buying food and buying medication?___ Yes (1) ___ No (0)
21. Have you had to choose between buying food and paying housing expenses?___ Yes (1) ___ No (0)
22. What types of foods (*like fruits, vegetables, bread/rice, or fish/meat/beans*) **do you tend to purchase?**
23. How do you decide which foods to purchase? (*Examples include cost, seasonality, freshness, quality your nutrition etc.*)
24. Do you have dietary restrictions related to any medical conditions? ___ Yes (1) ___ No (0) **a) If so, what are the medical condition(s) and what are your dietary limitations?** **b) How do these restrictions affect what food you buy?**
25. Can you read the food ingredients on a food label? ___ Yes (1) ___ No (0) **a) Do you read these labels to decide what food to buy?___ Yes (1) ___ No (0)** **b) If so, what is it on the label that makes you decide whether or not to buy the item?**
Use of SNAP Benefits
26. How much in SNAP benefits are you receiving per month? _____
27. What do you purchase with your SNAP benefits?
28. What if any changes have you made as a result of SNAP benefit receipt? (*Examples include change in where do you go grocery shopping, how often you go grocery shopping, how much you spend on food, what types of food, buying medication.*)

Modified 6-item U.S. Household Food Security Survey Module **Validated in the Georgia Advanced Performance Measures Project 2008-2009**	
These next questions are about the food eaten in your household in the last 30 days and whether you were able to afford the food you need.	
7. During the last 30 days, how often was this statement true: The food that we bought just didn't last, and we didn't have money to get more.	(4) Often (5) Sometimes (6) Never
8. During the last 30 days, how often was this statement true: We couldn't afford to eat balanced meals.	(4) Often (5) Sometimes (6) Never
9. In the past 30 days, did you or other adults in your household ever cut the size of your meals because there wasn't enough money for food?	(3) Yes (4) No
10. In the past 30 days, did you or other adults in your household ever skip meals because there wasn't enough money for food?	(3) Yes (4) No
11. In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?	(3) Yes (4) No
12. In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food?	(3) Yes (4) No

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

24-Hour Diet Recall

SERVING ABBREVIATIONS:	
Tablespoon	= TBSP
Cup	= c
Teaspoon	= tsp
Pound	= lb.
Ounce	= oz.
Slice	= sl

Interviewer-administered in-person

Meal Abbreviations: **B**=breakfast, **L**=lunch, **D**=dinner, **S**=snack

(Use food models to demonstrate portions or USDA guide)

Please be as specific as possible. Include all beverages, condiments, and portion sizes.

Meal/ Time	Food Item and Method of Preparation	Amount Eaten	Where

Instructions for Third Receipt Collection
Please collect your grocery receipts over the course of the next 30 days and we will schedule a time to collect them from you. We will provide you with a folder for you to hold your receipts in.

Understanding Food Purchasing Practices Nutrition, and Health of Older Adults

24-Hour Diet Recall

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24-Hour Diet Recall

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