A Survey of Supplemental Nutrition Assistance Program (SNAP) Participants in Nevada: A Needs Assessment

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Abstract

The purpose of this study was to identify the food security, nutrition, physical activity educational needs of adults enrolled in Nevada’s Supplemental Nutrition Assistance Program (SNAP), in order to better inform the efforts of Nevada’s SNAP Education Program (SNAP-Ed). A descriptive, cross-sectional survey was conducted for this purpose using both telephone and online survey formats. Survey were available in English and in Spanish languages. The survey instrument consisted of 40 questions assessing participants’ perceptions of health and select health behaviors; food shopping patterns; food security; special considerations of this population; perceived nutrition and physical activity barriers; and preferences for nutrition education and physical activity promotion. A stratified random sample design was drawn from all SNAP households in Nevada with an active, open case in September, 2018. A total of 1,014 surveys were included in this study. Results indicated that a large proportion (74%) of SNAP households experienced food insecurity including 37.9% who had experienced low food security. In regards to achieving a healthful diet, the cost of healthy foods and drinks; the convenience of unhealthy foods; and the perishability of healthy foods were the barriers most often endorsed by participants. The number of barriers reported was greater among certain sociodemographic groups, including those with less than a high school education, those living in a household of one, and those living in households without children, (P<0.05). In regards to achieving a physically active lifestyle, costs
associated with physical activity, fitting exercise and physical activity into the day, and social influence of those around them were the barriers most often endorsed by participants. The number of barriers was greater among those with less than a high school education, (P<0.05). Additionally, it was identified that 31.2% of participants reported that they or someone in the household was on a special diet for health-related reasons, with a large number of the diets relating to diabetes (n=145). Approximately 44% of participants reported that they had a disability that impacted their daily life. A majority reported that their disability made it difficult to shop for foods and drinks (50.7%), and 58.9% reported that the condition prevented them from engaging in physical activity. Participants also indicated their preferences for nutrition education and physical activity education including topics of interest, and preferred formats and locations to receive information. Top formats to receive information were mail, Internet or website, and television. Top locations were a welfare or SNAP office, medical or dental clinics, and grocery stores. Topics of interest included ways to make food last all month, ways to prepare healthy meals quickly, preparing meals on a budget, ways to improve overall fitness, ways to exercise at home without equipment, and how to exercise without hurting yourself. This study gathered valuable information regarding the perceptions of SNAP participants that will be useful to inform future SNAP-Ed programming.
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Chapter 1

Introduction to Thesis

This thesis will begin with an introduction of the research topic and an overview of the study. Chapter 2 is a review of existing literature on the topic. Chapter 3 is a detailed description of the methods used for the research study. Chapter 4 is a presentation of results of the research. Finally, a discussion of results, conclusions and a summary of implications of this research are described in Chapter 5.

This chapter will begin with a discussion of the context, purpose and methods of this thesis study. Additionally, research pertaining to the needs of low-income populations in regards to food security, nutrition and physical activity will be discussed.

Statement of the Problem

The Supplemental Nutrition Assistance Program (SNAP), administered by the USDA Food and Nutrition Service (FNS), is the largest federally-funded nutrition assistance program,\(^1\) serving around 40 million Americans annually.\(^2\) The program began in the 1930s with the intention to distribute the country’s surplus food commodities to the needy during the Great Depression.\(^3\) It wasn’t until 1964 that the Food Stamp Act, was officially passed as law by President Lyndon B. Johnson, with the goal of achieving a more effective use of agricultural overproduction, while providing improved nutrition to low-income Americans.\(^3\) The Food Stamp Act of 1977 described the purpose of SNAP, “to alleviate hunger and malnutrition by
increasing food purchasing power for all eligible households who apply for participation.”3 Since then, the Food Stamp Program underwent reform over the proceeding decades and even changed the programs name to the Supplemental Nutrition Assistance Program or SNAP in 2009.3

In 1981, nutrition education was established as part of the Food Stamp Program, providing states with matched funds for delivering nutrition education.3 By 2004, Food Stamp Nutrition Education Program, now called Supplemental Nutrition Assistance Program-Education or SNAP-Ed, was implemented in all 50 states.3 SNAP-Ed is a federally-funded grant program, carried out by state agencies to provide nutrition education and obesity prevention interventions to SNAP-eligible individuals.4 According to the FY 2019 SNAP-Ed Guidance,5 the goal of SNAP-Ed is to, “improve the likelihood that persons eligible for SNAP will make healthy food choices within a limited budget and choose physically active lifestyles consistent with the current Dietary Guidelines for Americans and the USDA food guidance.”5 The target audience of SNAP-Ed is defined as, “SNAP participants and low-income individuals eligible to receive SNAP benefits or other means-tested Federal assistance programs, as well as individuals residing in communities with a significant low-income population.”5 SNAP-Ed interventions must be evidence-based nutrition education and obesity prevention.5 Therefore, much research has been done to evaluate the SNAP-eligible population and the programs that serve them.
While infectious disease was once our greatest concern, chronic diet-related diseases are now among the most significant health challenges facing Americans. Obesity is a nutrition-related disease and an important public health issue, as it has been strongly associated with chronic disease. In 2010, the Healthy, Hunger-Free Kids Act included reform that provided funding and guidance for SNAP-Ed programming as a Nutrition Education and Obesity Prevention Grant program, emphasizing the need for primary obesity prevention efforts in children.

Prevalence of obesity remains high, as approximately 39.8% of US adults and 18.5% of youths were obese in 2015-2016, with a higher prevalence among women. This number is increased in Nevada’s youth population (≤ 18), with an obesity prevalence of 26.5% overall in 2015. Although youth obesity rates have decreased slightly in recent years, obesity-related diseases are still a top concern for the US, as obesity is associated with a number of chronic diseases including, hypertension, coronary artery disease, stroke, diabetes, arthritis and certain cancers. This focus becomes increasingly important as a majority of SNAP participants are women and children.

In a study published by Ogden et al using 2011-2014 NHANES data, obesity disproportionately affects certain ethnic and sociodemographic groups over others. It was reported that non-Hispanic Blacks and Hispanic Americans had a greater prevalence of obesity when compared to other racial/ethnic groups. Additionally, educational attainment was a strong predictor of obesity, in general, those with a college degree had the lowest rates of obesity. In a study published by
Leung et al, researchers reported that SNAP participation was positively associated with increased BMI and waist circumference when compared to nonparticipants, independent of sociodemographic factors.\textsuperscript{15}

A 2015 study of California youth from 2010-2012 by Jin et al\textsuperscript{16} reported that children’s physical fitness was reported to be lower among children from low-income households, when compared to children from higher income households. This study utilized cross-sectional data from a generalizable sample of approximately 1.6 million students from California schools. Variables including a physical fitness assessment, BMI, and family income were assessed for associations. Children from lower income households had higher BMI scores and a higher prevalence of obesity. These findings indicate that children from low-income households are potentially at greater risk of increased BMI and obesity, indicating a need for physical activity interventions for low-income households.\textsuperscript{16}

Research has shown that the diets of SNAP participants are typically of poorer diet quality and purchase data of SNAP benefits have shown less-healthful food and beverages, when compared to nonparticipants.\textsuperscript{17-21} It is important to note that in general, US households regardless of SNAP participation do not purchase foods that are consistent with the recommendations provided in the Dietary Guidelines for Americans,\textsuperscript{6} and purchase data does not always correlate consumption behaviors.\textsuperscript{22} It is also important to note that these studies do not imply that SNAP participation causes a poor diet quality, nor are these studies able to
control for the complex interactions of food environments and food purchasing patterns.

A study conducted by Molitor et al\textsuperscript{23} evaluated the reach of California's SNAP-Ed programming from 2011-2012. Using census tracts to identify those residences that were SNAP-Ed-eligible with either no, low, moderate or high-level of SNAP-Ed intervention exposure. Molitor and colleagues reported that exposure to the highest-level concentration of SNAP-Ed interventions was associated with increased fruit and vegetable consumption among adults and children. It was noted by the authors that the study utilized an ecological approach and could not control for other influencing factors, such as participation in other assistance programs like Women, Infants, and Children (WIC), which nutrition education is a mandatory component.\textsuperscript{23} Another study conducted by Molitor et al,\textsuperscript{24} reported similar findings using 24-hour diet recall data. Specifically, they reported significant increases in fruit and vegetable consumption in low-income mothers in high SNAP-Ed reach census tracts, as compared to those with no or low reach groups.\textsuperscript{24} The findings from this study are congruent with findings from other studies demonstrating SNAP-Ed interventions positively impact healthful behaviors.\textsuperscript{25,26}

According to the FY 2019 SNAP-Ed Plan Guidance,\textsuperscript{5} mothers are the primary target population for SNAP-Ed interventions, because they are most likely to be responsible for food purchasing and preparing meals for their young children. Mothers with young children are therefore the group with the greatest potential for
the impact as the “nutrition gatekeepers” of most low-income households. Trends in recent food security rates in the US have shown that 11.8% of households were characterized as food insecure in 2017 and approximately 4.5% of those households experienced very low food security. Rates of food insecurity are higher than the national average for households with children under the age of 18, headed by a single female (30.3%), compared to all households with children (15.7%).

Food security is defined as, “access by all people at all times to enough food for an active, healthy life.” Research has shown that SNAP participation improves food security over time, particularly after six months of participation. While a study by Leung et al in 2014 reported that although the monthly benefits increased food security from baseline to follow-up for those participating in the program, short-term SNAP participation for a three-month period was not associated with improved food security when compared to non-participants. As previously mentioned, SNAP participants have room to improve diet quality and the association between income and the risk of obesity have been reported. Therefore, SNAP-Ed has an important role to play in improving the health of SNAP participants.

According to the FY 2019 SNAP-Ed Plan Guidance, “States must present a valid and data-driven needs assessment of nutrition, physical activity, and obesity prevention needs of the target population and their barriers to accessing healthy foods and physical activity in the State SNAP-Ed Plan.” Needs assessments are critical to program planning, development and implementation. Needs assessments can help obtain valuable information about a particular population, and should be
conducted often, as the needs of a population are subject to change over time.\textsuperscript{33}

There is no one way to conduct a needs assessment, but in order to make the most of valuable efforts, planning assessment methods should be done methodically in an effort to fully assess the parameters.\textsuperscript{33}

Surveys are a popular and efficient way to obtain valuable cross-sectional data about the intended population. Surveys are an important tool for gathering information about the nutrition and health of a population. Many considerations should be made when developing a survey instrument, as it usually requires expertise in survey research.\textsuperscript{33}

Understanding the needs of the SNAP-Ed population is important for making the most of SNAP-Ed interventions.\textsuperscript{5} The gap in understanding, regarding the current needs of Nevada’s SNAP-Ed target population is what this study aims to fill. This survey, as a part of the Nevada Statewide Needs Assessment, attempted to describe the needs of this population in an effort to formulate interventions using Policy, Systems and Environmental (PSE) approaches to achieve behavior changes conducive to health.

\textbf{Context}

This study was one part of a Statewide Needs Assessment for Nevada’s SNAP-Ed program.\textsuperscript{34} The needs assessment included three phases, generating both qualitative and quantitative data. Phase I was a summary of existing data from surveys and reports that were used to characterize Nevada’s low-income
Phase II consisted of key informant interviews to obtain their perceptions of the greatest needs of SNAP households and other low-income communities in Nevada, as well as opportunities to facilitate healthful nutrition and physical activity behaviors. Phase III, the study described here, consisted of a survey of adults enrolled in SNAP in Nevada.

**Purpose and Methods**

The goals of the survey were to describe the most pressing nutrition and physical activity needs of Nevadans enrolled in SNAP; and to examine relevant community characteristics and environmental factors that shape nutrition and physical activity barriers for policy, systems and environmental (PSE) interventions/approaches.

In order to describe the opinions and experiences of adults enrolled in SNAP in Nevada, the research objectives for this study were as follows:

1) To evaluate their relative level of concern regarding achieving household food security, a healthful diet, and a physically active lifestyle.

2) To assess their perceived barriers related to achieving household food security, a healthful diet, and a physically active lifestyle including select intrapersonal, interpersonal, and environmental influences.

3) To identify their preferences for nutrition education and physical activity promotion.

4) To examine the relationships among select demographic/household characteristics, and the perspectives of adults enrolled in SNAP.
In order to address the research objectives above, a descriptive cross-sectional survey, utilizing telephone and online survey formats was employed. The sample included SNAP households in Nevada stratified by the two most populated Nevada counties with 50% of households from Clark County, 35% from Washoe County and the remainder (15%) from all other 15 counties (Humboldt, Nye, Carson City, Pershing, Elko, Eureka, Lander, White Pine, Lincoln, Esmeralda, Mineral, Churchill, Douglas, Storey and Lyon). It was expected that the survey would have a 25% response rate. Therefore, a total of 3,959 SNAP households were randomly selected to achieve the final sample of 1,000. The Nevada Center for Surveys, Evaluations and Statistics administered the survey and helped develop the survey instrument in conjunction with the research team from the Department of Nutrition at the University of Nevada, Reno.

The University of Nevada, Reno Institutional Review Board approved this study protocol (Appendix F).

**Summary**

The results of this study will be used to strengthen Nevada’s Supplemental Nutrition Assistance Program-Education by providing insight into the perspectives and experiences of households participating in SNAP in Nevada. Findings from this study were included in a report provided to the Nevada Division of Welfare and Supportive Services, the agency that implements SNAP-Ed in Nevada.
In conclusion, this chapter summarizes the research problem, context, purpose and methods of this study. The next chapter, Chapter 2, will include a review of literature to provide context of this research.
Chapter 2

Review of The Literature

A description of the Supplemental Nutrition Assistance Program (SNAP) including a brief history, implementation, and participation in the program will be discussed in this chapter. The Supplemental Nutrition Assistance Program-Education (SNAP-Ed) is also described, including the program in Nevada. Next, research concerning the needs of low-income populations will be examined in relation to health, nutrition, food security and physical activity. Finally, the use of the Social-Ecological Model (SEM) for this research will be discussed.

The Supplemental Nutrition Assistance Program

The Supplemental Nutrition Assistance Program or SNAP is the nation’s largest federally-funded food and nutrition assistance program. Annually, it provides millions of low-income Americans with monthly benefits to increase food purchasing power. In 2018, just over 40 million individuals participated in SNAP. This translated to more than $65 billion dollars in federal expenditures. The reach of SNAP is extensive, serving every one in eight Americans. Thus far, the average monthly benefit for a SNAP participant in 2019 is $126.96 dollars per person.

The purpose of SNAP is “to alleviate hunger and malnutrition... by increasing food purchasing power for all eligible households who apply for participation.” SNAP is available to any household that meets eligibility standards established by the federal government. Funds were appropriated for the program with authorization from congress with the passing of the 2018 Farm Bill.
Household monthly income is the most significant factor for SNAP eligibility. In general, individuals and families must have a gross income that is at or below 130 percent of the Federal poverty guidelines from the previous fiscal year. Benefits are distributed to qualifying households and individuals with an Electronic Benefit Transfer (EBT) card. The piloted use of electronic benefit transfer systems began in 1984. This card acts much like a prepaid debit card and is loaded with benefits at the beginning of every month. In most states EBT cards can be used at authorized food retail stores for purchasing approved food items. EBT pilot projects were conducted through the 1990s to further examine if EBT card systems could reduce fraud by tracking food stamp transactions. In 2004, the EBT card replaced food stamps in all 50 states. State agencies work with contractors to acquire EBT systems and equipment for SNAP benefit delivery.

**Brief History of SNAP**

SNAP was preceded by the Food Stamp Program (FSP), which began in 1939. Then, the program utilized an exchange system, where individuals could purchase orange stamps for food. For every one dollar of orange stamps purchased, an extra $0.50 cents worth of blue stamps was received which could only be used to buy foods that the US Department of Agriculture determined to be surplus. The Great Depression had taken place years prior in October of 1929 and was one of the worst economic recessions in US history. The economic collapse left many Americans in economic constraints, with a 25% unemployment rate by 1933. In the midst of widespread unemployment, hunger and poverty, the Food Stamp
Program helped many Americans gain access to food, while strengthening the agricultural economy.\textsuperscript{3}

As the US economy improved, the Food Stamp Program (FSP) ended in 1943 and it wasn't until 1961 that the pilot Food Stamp Program began under the newly elected President John F. Kennedy. The pilot program was overseen by the United States Department of Agriculture (USDA) and continued to expand. Food stamps were sold in 22 states by 1964. The program continued to use stamps for benefit transfer, but ultimately eliminated the need to purchase additional stamps for surplus foods. In January 1964, the Food Stamp Act was signed into law by President Lyndon B. Johnson. This made the program not only permanent, but mandated that responsibly be shared between federal and state governments. Added regulations included that states must develop eligibility standards and plans to implement the program including distributing food stamps. It also detailed eligibility requirements for foods that could be purchased with food stamps.\textsuperscript{3} Rapid expansion of the program continued through the 1970s and by 1974 the FSP was operating across the US, with over 15 million Americans enrolled.\textsuperscript{3}

In 1977, legislation reform of The Food Stamp Act tightened controls on the program with the passing of The Food and Agriculture Act of 1977 (P.L. 95-113).\textsuperscript{3} This shifted the focus to benefit those in greatest need, while also eliminating the need to purchase food stamps in order to receive benefits. This was in an attempt to reduce fraud within the program, while also lowering the barrier for participation.\textsuperscript{3} Household benefits were based on standardized income guidelines set by the
poverty threshold. Additionally, rules were established to provide FSP benefits for Indian Tribal Organizations, students and immigrants. The Food and Agriculture Act of 1977 also included provisions for outreach, including expanding nutrition education to program participants.\(^3\)

Through the mid to late 1980s, there was greater recognition of domestic hunger and therefore efforts were made to improve the FSP through legislation.\(^3\) Eligibility was expanded to the homeless, sales tax was eliminated from food stamp purchases and increased benefits were provided to participants based on the Thrifty Food Plan.\(^3\) The Thrifty Food Plan was established by the USDA to specify a diet that was considered nutritionally adequate at the lowest possible cost, based on current market food prices. Prior to this period, the US experienced a recession in the early 1980s.\(^3\) This led to reductions in the federal budget, including cutbacks to the FSP. After the decline in FSP participation during the 1980s, the early 1990s was marked by record participation in the program. In 1993, the passing of The Mickey Leland Childhood Hunger Relief Act (P.L. 103-66) led to a $2.8 billion dollar increase in food stamp benefits expenditures over four years. Welfare reform during the mid-1990s led to legislation that eliminated most immigrant eligibility, as well as tightened work requirements for participants.\(^3\) The program continued to evolve throughout the 1990s and into the early 2000s. Simplifying program rules and shifting the focus of the FSP to improve access, while also streamlining the process for participants were a result. The Farm Security and Rural Investment Act of 2002 (P.L 107-171)
included changes to the Food and Nutrition Service (FNS) to restore eligibility to immigrants under specific qualifications.³

The Food, Conservation, and Energy Act of 2008 (P.L. 110–234), also known as the 2008 Farm Bill was signed into law, increasing program funding by $10 billion over ten years.³ In addition, efforts were made to decrease the stigma associated with participating in the Food Stamp Program.³ The law officially changed the name to the Supplemental Nutrition Assistance Program or SNAP.³ The name highlights the programs emphasis as a supplement to other monthly expenditures for food purchases. Additionally, it called attention to the programs efforts to improve the health of low-income Americans through nutrition. Legislation also changed the name of the educational component of the Food Stamp Program, from the Food Stamp Nutrition Education Program to the Supplemental Nutrition Assistance Program-Education or SNAP-Ed.³ Requirements for nutrition education provided through SNAP-Ed programming were also clarified in the 2008 bill; including providing education to individuals eligible for SNAP that is consistent with the most recent Dietary Guidelines for Americans (DGA).³ The following year, in response to the Great Recession, The American Recovery & Reinvestment Act of 2009 (P.L. 111-5) increased program expenditure to enhance participants’ benefits, while stimulating the economy. By 2013, participation in SNAP had hit a record high of 47.6 million people.³ Since then, the program has experienced a decline in participation rates, to just under 40 million participants in 2018.²
The Agricultural Act of 2014 (P.L. 113-79) also known as the 2014 Farm Bill, signed into law by President Obama and led to many changes in SNAP policy. The bill reauthorized SNAP and included provisions to alter regulations for authorized food retailers including EBT equipment and transactions. Additionally, the definition of retailer was expanded to include those agencies that facilitate home food delivery to elderly and/or disabled persons. Food Insecurity and Nutrition Incentive (FINI) grants were also authorized to incentivize the purchase of fruits and vegetables among SNAP participants. The FINI grant program supported projects by providing point-of-purchase incentives at authorized SNAP retailers to improve the health and nutrition of SNAP households.

The Supplemental Nutrition Assistance Program has grown and evolved since it began in the 1930s. Today, the program serves over 40 million Americans. The USDA operates many food and nutrition assistance programs that are administered by the Food and Nutrition Service (FNS). Programs and services administered by the Food and Nutrition Services include food distribution programs like the Commodity Supplemental Food Program (CSFP) and Food Distribution Program on Indian Reservations (FDPIR), child nutrition programs like the National School Lunch Program (NSLP) and School Breakfast Program (SBP), and Women, Infants and Children (WIC). SNAP is the largest nutrition assistance program offered by FNS. As an entitlement program, anyone who meets eligibility requirements for the program receive benefits. While the FNS administers SNAP nationally, state and local governments operate the program locally, including disseminating benefits.
and ensuring participant eligibility. The federal government fully funds benefits costs, while administrative costs for the program are shared equally among administering agencies and the FNS.\textsuperscript{38}

**SNAP in Nevada**

States have some flexibility regarding the implementation of SNAP. In Nevada, SNAP is administered statewide by the Nevada Division of Welfare and Supportive Services (DWSS). Nevada has numerous welfare offices across the state to administer SNAP and cases are managed electronically on a statewide basis. Additionally, applications for assistance are processed jointly with Medicaid and Temporary Assistance for Needy Families (TANF).\textsuperscript{42}

In 2017, SNAP reached 441,000 Nevada residents, or one in every seven persons.\textsuperscript{43} This is equal to roughly 15\% of the overall population in the state. These rates are similar to the US rates, as SNAP reached 13\% of the population, or one in every eight Americans in the same year.\textsuperscript{12} Nevada distributed $625.06 million in benefits in 2017, with an average monthly benefit of $224 per household.\textsuperscript{43} In Nevada, approximately 64\% of SNAP households were families with children, compared to 68\% nationally in the same year.\textsuperscript{43} Similarly, 28\% were families with members that are elderly or have disabilities, compared to 33\% nationally.\textsuperscript{43} Participation rates continue to rise for Nevadans, with 81\% of those that were considered eligible participating in SNAP in 2015.\textsuperscript{43} This rate is slightly lower than the national average of 83\% in 2015.\textsuperscript{12} Historically, Nevada has reported relatively low rates of participation with only 64\% of those eligible participating in 2014.\textsuperscript{35}
SNAP participation is closely associated with the US economy and poverty. Participation in SNAP changes in response to economic fluctuations. In the past decades, SNAP participation has shifted in response to changes seen in US poverty rates, unemployment rates and economic status. Most recently the Great Recession, which left many households in financial crisis, led to increases in SNAP participation. Prior to this time, SNAP participation had seen a decline in the late 1990s and early 2000s as the US economy was improving. In 2008, during the biggest economic crash since the Great Depression, participation in SNAP increased significantly as did unemployment and poverty rates. Following this period, average participation in SNAP peaked in 2013, serving 47.6 million Americans. Since 2013, participation rates have steadily declined as the economy improved. The relationship between SNAP and the overall economy demonstrates how important assistance programs are in serving low-income Americans, most of which are living in poverty. In fiscal year 2017, 81% of SNAP households lived in poverty. With a majority of SNAP households comprised of families with children, elderly or individuals living with a disability, SNAP benefits the nation’s most vulnerable populations. Although not everyone who qualifies for SNAP ultimately participates, SNAP benefits have the power to increase a households income above the federal poverty level (FPL).

The Supplemental Nutrition Assistance Program-Education

SNAP-Ed is the educational component of SNAP. The goal of SNAP-Ed is “to improve the likelihood that persons eligible for SNAP will make healthy food choices.
within a limited budget and choose physically active lifestyles consistent with the current DGA and the USDA food guidance."^{5}

SNAP-Ed providers and program facilitators educate low-income, SNAP eligible individuals about how to make healthy choices about nutrition, how to stretch food dollars further and how to live physically active lives.^{45} The focus of SNAP-Ed efforts is to help SNAP eligible individuals and families make healthy choices that prevent nutrition-related chronic disease such as obesity. Primary prevention efforts are intended to prevent or postpone the onset of disease through improved nutrition and physical activity behaviors.

The FNS encourages SNAP-Ed providers to use the six guiding principles, outlined in the FY 2019 SNAP-Ed Plan Guidance.^{5} SNAP-Ed Guidance is a document issued annually that provides policy guidance to state SNAP-Ed implementing agencies. The six guiding principles characterize the FNS vision in implementing nutrition education and obesity prevention. The first principle describes the target population of SNAP-Ed. This includes those eligible for SNAP and individuals living in communities with significant low-income populations. Additionally, individuals that qualify for other means-tested federally funded assistance programs are the target population of SNAP-Ed efforts. The second principle describes the approaches to nutrition education and obesity prevention. States are encouraged to use a combination of approaches and strategies that include all sectors of society described in the Social-Ecological Model (SEM). The FNS includes three approaches to be used in combination by states. Approach one is individual or group-based
intervention strategies. Approach two is multilevel interventions aimed at including various agencies. Approach three includes community and public health interventions for improving nutrition and physical activity. All interventions and activities implemented by states should be consistent with the current DGA and should work with local health agencies to carry out these approaches. The third principle describes the priority audience of SNAP-Ed efforts as SNAP eligible women and their children. Prioritizing women and children has the greatest potential for impact on nutrition and physical activity behaviors of low-income populations. Per the FNS, program guidance also provides some flexibility for states to include other priority populations to focus SNAP-Ed efforts. The fourth principle instructs that SNAP-Ed activities must be evidence-based and focus on key nutrition and physical activity behavioral outcomes to be most effective. The fifth principle describes the coordination and collaboration of state efforts with other stakeholders in their role of implementing nutrition education, health promotion and obesity prevention efforts. This collaboration effort is important in providing consistent messaging to the target population and is more likely to result in long-lasting behavior changes when delivered through multiple channels at different levels of the SEM. The sixth principle describes the use of defined roles for all local, state and national SNAP and SNAP-Ed providers in implementing state plans.\textsuperscript{5}

**SNAP-Ed History**

The Food and Agriculture Act of 1977,\textsuperscript{3} included requirements to provide outreach to Food Stamp Program participants including nutrition education
materials. SNAP-Ed officially began in 1981 with the passing of legislation that expanded the Food Stamp Program to provide food and nutrition education. States were given the option to obtain matching funds for delivering nutrition education to eligible participants. Several states had approved Food Stamp Nutrition Education (FSNE) plans by the early 1990s. In 1992, seven states had nutrition education contracts with the Food and Nutrition Service. Today, 50 state agencies and three US territories provide education to eligible low-income populations through this funding mechanism. The program changed names in 2008 from the Food Stamp Nutrition Education Program (FSNEP) to the Supplemental Nutrition Assistance Program Education or SNAP-Ed. In 2017, federal funding reached $414 million.

**Healthy Hunger-Free Kids Act of 2010**

On December 13th of 2010, the Healthy, Hunger-Free Kids Act of 2010 (HHFKA) (P.L. 111-296) was signed into law. This act reauthorized child nutrition programs and led to significant changes to SNAP education. SNAP-Ed became a Nutrition Education and Obesity Prevention grant program, focusing the program’s efforts on preventing obesity through nutrition and physical activity promotion. It was also stipulated that education efforts should be comprehensive, evidence-based and delivered in individual and group-based interventions. Additionally, education should be administered at multiple levels and focus on policy, systems and environmental (PSE) changes and/or interventions. PSE interventions are described in Plan Guidance as a community and public health approach that can produce long-lasting and meaningful impact for low-income populations. A policy
includes any written statement(s) that describes actions, resources, implementations, evaluations and enforcement that help guide behavior changes in SNAP-Ed programming. Systems are unwritten, ongoing decisions or changes of an organization that alter or adopt healthful behaviors and usually precede or are created out of a policy. Environment interventions include modifications to the physical and built environments that bring about healthy behavior changes that affects physical, social and economic changes.5

Significant changes to SNAP-Ed programming also occurred as a result of the Agricultural Act of 2014 (P.L. 113-79) also known as the 2014 Farm Bill.3 SNAP-Ed provisions included physical activity as a nutrition education topic and required state, local agencies, institutions, and contractors to cooperate with USDA and its contractors on evaluations and research.

SNAP-Ed in Nevada

Nevada has participated in SNAP Education since 1999 and in the FY 2019, just over $3 million in funding was provided to the state for a number of different SNAP-Ed programs. A SNAP-Ed coordinator from the Division of Welfare and Supportive Services provides guidance and coordination for Nevada's SNAP-Ed efforts, as well as developing state plans.46

Characteristics of low-income households

Households that are eligible for SNAP experience high levels of food insecurity.28 Household food security is defined as, “access by all people at all times to enough food for an active, healthy life.”28 Household food security status is
monitored annually by the Economic Research Service (ERS) of USDA using a nationally representative sample of US households. The Current Population Survey (CPS) is conducted by the US Census Bureau and includes the Food Security Supplement that measures food security using a set of questions about household conditions and behaviors. Additional questions are included to determine if a child between the age of 0-17 years lives in the home. In a report\textsuperscript{28} by the Economic Research Service on household food insecurity, inconsistent and inadequate access to enough food due to lack of resources (i.e., food insecurity) affected an estimated 11.8\% of US households in 2017. This is a significant decline from the previous year (12.3\%). Very low food security, characterized by reduced food intake and disrupted eating patterns due to lack of resources, was experienced by approximately 4.5\% of households in 2017. Very low food security rates were also down significantly from 4.9\% in 2016. It is important to note that more than half (58\%) of the households identified as food insecure, participated in one or more of the largest federal nutrition assistance programs (i.e., SNAP, WIC, National School Lunch Program) in the previous month. While not fully recovered, declining rates of food insecurity are now similar to 2007 pre-recession.\textsuperscript{28}

Low-income households utilize a number of strategies to obtain the food they need. Many utilize nutrition assistance programs like SNAP to get enough food to eat. Those that do turn to assistance programs, typically do so because of difficulties in coping with insufficient resources.\textsuperscript{28} Participation in SNAP has been shown to reduce food insecurity and raise families out of poverty.\textsuperscript{44} In a study by Malbi and
Ohls, a large survey of SNAP households newly enrolled in the program were compared to those that had been in the program for six months. Researchers then completed a longitudinal analysis of the newly enrolled households after six to seven months of participation. Initial and follow-up food security status was measured by a computer-assisted telephone interview survey using the 18-item food security module used in the CPS. Researchers reported that participation in SNAP for approximately six months significantly reduced food insecurity both cross-sectionally (-4.2%) and over time (-11.1%). In another study by Leung and colleagues, investigators evaluated short-term participation in SNAP and its impact on food security by following 107 adults over a three-month period. They administered a questionnaire to evaluate food security using the 10-item USDA food security module at baseline and at follow-up. They compared adults enrolled in SNAP (60%), to those income-eligible, but not enrolled in SNAP (40%). At baseline just over half (52%) were classified as food insecure. Household food security did not significantly change over the study period when comparing both groups, SNAP participant to non-participants. Although, significant improvements to household food security was reported within groups from baseline to follow-up, indicating notable influence SNAP benefits have on a household’s ability to acquire enough food.

Due in part to lack of resources, nutrition quality may also be reduced in low-income populations. Although research has shown mixed results in the dietary quality of SNAP participants compared to non-participants, overall most American
Dietary intakes of SNAP participants tend to have higher intakes of certain food types and ingredients such as added sugars, sodium, sugar-sweetened beverages, solid fats and refined grains and lower intakes of whole fruit, whole grains, nuts and seeds and total vegetables compared to both income-eligible non-participants and higher income individuals. In a 2018 report by ERS, quality of food purchases for the overall US population was 53 out of 100, compared to 48 out of 100 for SNAP households, as measured by the Healthy Eating Index-2010 (HEI-2010). In general, most Americans can improve diet quality to better align with dietary recommendations regardless of income.

In a 2015 systematic review of diet quality of SNAP participants by Andreyeva et al., researchers analyzed 25 peer-reviewed articles regarding diets of participants receiving SNAP benefits. Included studies contained outcome variables regarding diet scores; macronutrients, micronutrients, and energy intake; meal patterns; and food spending. Results from this review indicate several consistencies, as well as some mixed findings among studies. Findings that were consistent across studies showed little differences regarding the intakes of meat, milk, fat or oils and sweets among those receiving SNAP, compared to those income-eligible not receiving benefits and to higher income nonparticipants. Similarly, intakes of macronutrients, vitamin A, vitamin B12, vitamin C and sodium were similar across studies. Inconsistencies reported in the review included significantly lower intakes of zinc, calcium, iron and greater spending on foods consumed outside of the home among SNAP participants, compared to nonparticipants. Several mixed findings
were noted between the diets of SNAP participants and other low-income nonparticipants, including energy intake, fruit and vegetable intake, sugar-sweetened beverage consumption and whole grain intake. It was also noted that differences in diet patterns were observed between nationally representative samples, genders and age-specific groups. For example, fiber intake among SNAP participants was similar across studies, but one study reported significantly lower intake of fiber among SNAP participants in several age specific groups (19-31 and 51-70 years) compared to other ages. Findings from this review indicate that in general, diet quality is lower than what is recommended regardless of income or participation in SNAP. Additionally, this paper suggests that SNAP participants consume adequate calories, yet have lower diet quality than nonparticipant adults, particularly those of higher income. Consuming energy-dense foods that tend to lack adequate nutrients is one explanation of the deficits observed among SNAP participants compared to low-income nonparticipants.\textsuperscript{21} This research helps to understand the dietary outcomes of SNAP participants, but also points to components of the diet to improve among SNAP participants. For example, lower intakes of fiber and vitamin C among SNAP participants reported in this study,\textsuperscript{21} points to the need to increase fruit and vegetable consumption among this population to ensure adequate intake of important nutrients.

In a study of product-level food and beverage purchases among a sample of US households by Grummon et al,\textsuperscript{20} found that on average, regardless of income, most households purchased less healthful foods. Researchers evaluated differences
between households currently participating in SNAP, to those income-eligible nonparticipants and higher income households. Using multivariate adjusted analyses, it was reported that higher income and income eligible households not participating in SNAP purchased more fruit, less sweeteners and less processed meat than SNAP participants. Additionally, it was reported that SNAP households purchased significantly more sugar-sweetened beverages, total calories, sodium and sugar than nonparticipants. Food and beverage purchases don’t necessarily equate to consumption patterns, which is a limitation of this study. However findings from this research using large samples of item-specific purchases, helps to identify areas for improving the nutritional quality of food and beverage purchases using SNAP benefits.²⁰

Children are particularly susceptible to the effects of food insecurity.⁵¹ It is important to note that household rates of food insecurity are higher than the national average among household with children (15.7%), particularly those with children under the age of 6 (16.4%) and those households headed by a single parent. In 2017, 30.3% of households with children headed by a single women experienced food insecurity; while, 19.7% of households with children headed by males experienced food insecurity, compared to the national average of 11.8% of all households.²⁸ A growing body of evidence indicates that children in households facing food insecurity experience increased negative health impacts compared to food secure households.⁵² A study published in 2004 by Cook et al⁵³ evaluated the associations between food insecurity and health outcomes of young children. This
study utilized medical records and conducted household surveys at medical centers in six US cities to evaluate the effects of food insecurity among children. Caregivers completed surveys assessing food security status, household characteristics and federal assistance. Caregivers were approached after a child’s admission to emergency departments and asked questions regarding lifetime hospitalizations and the self-reported health of the child. Researchers reported that 21.4% of households surveyed were food insecure and almost half of study participants received food stamps at some point in the previous year. Those that were categorized as food insecure had almost twice the odds of reporting “fair/poor” health of child than those households characterized as food secure. Additionally, children with a food insecure household status had greater odds of being hospitalized when compared to food secure households. Researchers also reported possible effect modification of health status for households receiving federal nutrition assistance, conveying the important role programs plays in childhood health outcomes.53

Accessing healthy foods is challenging for households with limited resources. Individuals residing in “food deserts” experience limited access to fresh, nutritious food.54 In addition to limited access to healthy foods and beverages; ethnic/racial, urban, rural and socioeconomic disparities exist in our food environment. In a study by Gosliner et al,55 researchers analyzed the availability, quality and price of fresh produce in various stores in low-income neighborhoods in California. Higher variety and quality of produce was most available in larger grocery stores, followed by
small markets and convenience stores. Stores that accepted SNAP benefits and/or WIC participants had a larger selection of fruits and vegetables, more variety and higher quality produce than non-participating stores. Cost of fresh produce was lower in retail outlets that carried a more diverse selection, yet overall produce was more expensive in low-income neighborhoods compared to other neighborhoods.\textsuperscript{55} These findings suggest that store type plays an important role in fruit and vegetable access in low-income neighborhoods. Additionally, this research highlights the role that programs like SNAP play in augmenting the food retail environment of neighborhoods that serve low-income consumers. Eliminating diet-disparities by improving access to fresh produce has the potential to improve diet quality of low-income consumers. Similar findings were observed in another study evaluating the access and cost of fresh produce in low-income communities compared to higher income neighborhoods.\textsuperscript{56}

Food insecurity is a strong predictor of chronic disease risk, including hypertension, stroke, cardiovascular disease, type II diabetes and cancer.\textsuperscript{57,58} In a report\textsuperscript{57} by ERS it was noted that in some cases, food insecurity status was a stronger predictor of chronic disease than household income. This association is even more significant when assessing the range of household food security (high, marginal, low and very low), with higher predicted prevalence of chronic disease among the low and very low food secure households.\textsuperscript{57}

In a study by Leung et al,\textsuperscript{59} food security status was positively associated with depression in a sample of 3,518 low-income adults. Data from 2005-2010
National Health and Nutrition Examination Survey (NHANES) was used to assess food security status and depression. Selected households had income at or below 130% of FPL. Forty-two percent of the sample reported receiving SNAP benefits in the past 12 months. Researchers reported that food security status had a dose-like response to depressive symptoms. Those with low food security status had 2.10 greater odds (95% CI: 1.46, 3.02) of depression compared to food-secure adults. Additionally, those with very low food security had 3.42 greater odds (95% CI: 2.61, 4.49) of depression. The probability of depression was reported to be greatest among households participating in SNAP (18.8%), with the exception of households with very low food security not participating in the program having the highest probability (20.9%). Although this study does not point to causality of food security status and depression, similar studies have reported poor mental health outcomes among low-income households that experience high rates of food insufficiency.

SNAP-Ed plays a role in improving food security of low-income households. In a study by Rivera et al., researchers utilized a randomized, controlled, parallel study design to evaluate the effect of SNAP-Ed intervention on food security over a four to ten week period. Participants were low-income adults with at least one child in the home (n=575). Almost 40% of participants identified as food insecure at baseline. After the one-year study period, household food security significantly improved for households that received the SNAP-Ed intervention compared to the control group. Although child food security, as assessed by the self-reported 18-item
US Household Food Security Survey Module, did not significantly improve over the study period. Authors explained this could be due to the low prevalence and shielding effects of food insecurity from the children in the home.\textsuperscript{26}

In a similar study by Rivera et al\textsuperscript{64} evaluating the impact of SNAP-Ed interventions and various environmental factors on food security, researchers found that SNAP-Ed interventions improved long-term food security in both urban and rural community settings when compared to the control group. When evaluating different environmental factors such as resources available including SNAP-authorized retailers, food pantries and recreational facilities, no significant association was noted in improving food security when comparing those participating in SNAP-Ed programming to those not participating. Exploring the impact of SNAP-Ed interventions on long-term food security is important in evaluating the effectiveness of the program and its role in supporting the efforts of SNAP.\textsuperscript{64}

While much has been learned about the consequences of food insecurity, some concerns have been raised in how household food security status is measured. In a 2013 review by Cook et al\textsuperscript{51} the association between “marginal food security” and public health outcomes were examined among relevant research conducted in the US. Research often dichotomizes food security status as food secure (high food security or marginal food security) and food insecure (low food security or very low food security). Therefore, understanding experiences of households with “marginal food security” is important to address all levels of food insecurity. The current
classification potentially overestimates food security among households with only “marginal” reductions food intake or adequacy. After reviewing studies of adult and child health outcomes, strong associations were described between marginal food insecurity and poor health outcomes. Researchers reported that studies using the standard 18-item scale, treat marginal food security separately (i.e., not categorized as food secure), as their households have health outcomes similar to those identified as food insecure (i.e., low food security and very low food security). Although more research is needed to explore the health implications of households with marginal food security, studies like this describe the complex nature of food security status as it relates to health outcomes.51

A qualitative investigation of the US Department of Agriculture 18-item Household Food Security Survey Module, reported that a sample of low-income, food insecure individuals with young children tend to interpret questions and report differences in definitions presented in the USDA food security module.65 The subjectivity of responses was observed between differences in men and women who completed the module. For example, the term “household” was interpreted differently depending on the gender; fathers exhibited less consistency when defining household, whereas mothers tend to define households as the immediate family that lived in the home. This is particularly concerning, as each question in the module indicates “household” when referencing who to include in the measure. It was also reported that the meaning of “balanced meal” was interpreted differently by gender. Fathers based this term on personal experiences and peer influence,
whereas mothers defined the nutritional quality of meals based on health-related expert advice they've received. Understanding the inconsistency of interpreting this widely used food security module tool is important in its interpretation. In addition to the high rates of food insecurity, low-income Americans also disproportionately experience obesity. Obesity is an important public health issue in the US. Health consequences of obesity are well known, yet the prevalence remains high as approximately 39.8% of US adults and 18.5% of youths were obese in 2015-2016. Studies have suggested obesity prevalence is particularly high among certain age, gender, and race/ethnicity groups. In a report published by the CDC regarding the prevalence of obesity among US adults by education and income, findings suggest the relationship between obesity and income is a complex. Data was analyzed from the National Health and Nutrition Examination Survey (NHANES), a cross-sectional survey used to monitor health of US citizens. In general, income was reported to be negatively associated with obesity prevalence, but differences existed between subgroups. Prevalence of obesity was highest among lower income white women, compared to middle income and higher income counterparts. Interestingly, no difference in obesity prevalence by income level was observed among African American women. Additionally, similar patterns were observed among white, Asian, and Hispanic males. African American males had higher obesity prevalence among the highest income group, compared to the lowest. When evaluated by educational attainment, obesity prevalence was lowest among college graduates and highest among those who had a high school degree. Research
outlining trends in obesity by income and educational attainment are important in our understanding of what groups experience obesity disparities.\textsuperscript{13}

In addition to genetics and individual behaviors, the food environment has been shown to be associated with body weight and diet-related disease prevalence.\textsuperscript{8,69-71} Cooksey-Stowers and colleagues\textsuperscript{72} evaluated “food swamps” as a predictor of obesity across the US. Data collected from the USDA 2009 Food Environment Atlas was used to evaluate food environment and determine “food swamps” measured by the ratio of fast-food retailers and convenience stores relative to grocery stores and supermarkets. Additionally, “food deserts” were calculated based on low access measured by the presence of grocery stores more than one mile away in urban areas and more than 10 miles in rural areas. Physical activity environments were measured using the Food Environment Atlas resources on amenities (i.e., recreational/fitness facilities) and natural amenities (i.e., lakes/weather) available by US county. Neighborhood characteristic data was matched to other environment measures using 2010 US Census data. Researchers reported that “food swamps” were significantly related to obesity at the county-level and may play an even larger role than food deserts on predicting obesity rates. The association was even more evident in counties where transportation access was limited and populations were less mobile, potentially limiting their ability to access healthy foods from retailers.\textsuperscript{72}

In a 2018 study by Sanjeevi et al,\textsuperscript{71} researchers evaluated the role of food insecurity on diet quality and body mass index (BMI) of 152 low-income women
receiving SNAP benefits. Height and weight were measured to determine the participants’ weight status. A food frequency questionnaire was used to evaluate dietary intake, and diet quality was measured using Dietary Guidelines Adherence Index (DGAI 2015). Environmental influences were measured using the multi-dimensional home environment scale and included measures on intrapersonal, home environment, community and social influences. Food security status was assessed using the US Adult Food Security Scale, categorizing participants as either food secure (39.5%) or food insecure (60.5%). Food insecurity was positively associated with BMI, with mean BMI among food insecure women at 30.7 kg/m² compared to 27.8 kg/m² among food secure women. Researchers reported that environmental influences played a significant role in facilitating the relationship between food security status and BMI. Factors that had significant influence on BMI included unsafe neighborhoods, social eating, social support, emotional eating and the availability of unhealthy foods in the home. When evaluated by food security status, women who were categorized as food insecure reported significantly higher environmental factors of unsafe neighborhoods and availability of unhealthy foods, compared to food secure women. Findings from this research highlights the role that environment plays in the health of low-income populations. For example, neighborhood safety and the availability of unhealthy foods in the home were significantly related to food insecurity and elevated BMI among this low-income population. The relationship between food security status and BMI from a social-ecological perspective is useful in understanding the environmental influences that
impact everyday life, which can then be used in developing public health interventions aimed at improving the health of low-income populations.\textsuperscript{71} Although emerging research on the role of the food environment and its impact on obesity is compelling, an article published by Mattes and Foster\textsuperscript{73} acknowledge that gaps still exist in our understanding of “obesogenic environments,” or those environments that encourage obesity among its residents. Additionally, existing literature is limited due to inconsistencies and wide scope, and therefore should be considered in our understanding of how environment interacts with obesity.

As noted previously, physical activity promotion is an integral part of SNAP-Ed efforts as an obesity prevention program. The health benefits of physical activity are well known,\textsuperscript{74} yet many Americans struggle to achieve the recommended amount of physical activity outlined in the Physical Activity Guidelines for Americans 2\textsuperscript{nd} edition.\textsuperscript{74-77} Some research finds that low-income populations are less likely to engage in physical activity,\textsuperscript{78} particularly among children.\textsuperscript{79} A study by Child et al\textsuperscript{80} that evaluated the physical activity of low-income communities and relevant neighborhood characteristics that were associated with meeting physical activity recommendations, researchers found that 45.9\% of the sample (n=342) was reported to meet physical activity recommendations of at least 150 minutes of moderate to vigorous activity. Interestingly, those that had “close ties” or social networks of personal relationships in their lives, had greater odds of meeting physical activity recommendations. This association was even stronger when subjects reported that these “close ties” regularly engaged in physical activity.\textsuperscript{80}
Similar findings were reported in a cross-sectional study of physical activity attainment of low-income adults, emphasizing the role of the social environment in physical activity among this population.\textsuperscript{81}

Understanding the modifiable factors that facilitate physical activity and reduce sedentary behaviors are important in supporting healthy behaviors of low-income populations.\textsuperscript{78,81-86} In a study by Finkelstien and colleagues,\textsuperscript{83} researchers evaluated the barriers and facilitators of physical activity among low-income Colorado youth living in both urban and rural communities. Focus groups and surveys completed by parents, youths, and community stakeholders identified barriers to physical activity at various levels. Familial-level barriers included conflicts with youth school schedule and parent work schedules, as well as the child’s lack of interest. Community-level barriers included neighborhood concerns (i.e., traffic safety and illicit activity), limited access to facilities (i.e., parks and gyms), lack of transportation, limited information on physical activities available and little community involvement. Additional barriers included costs and limited availability of programs associated with physical activities in the community.\textsuperscript{83} Findings from this research are helpful in identifying relevant community characteristics to be considered in developing interventions aimed at increasing physical activity among low-income populations.

**Needs assessments and SNAP-Ed**

Needs assessments remain an important tool to gain understanding of a particular group. Boyle\textsuperscript{33} defined needs assessment as, “the evaluation of the
community in terms of health and nutrition status, its needs, and the resources available to address those needs." In program planning, needs assessments are critical in evaluating if the program is effective in meeting the needs of the target population and their environment. The central focus of a needs assessment is the target population. Needs assessments are used to gather information to learn more about the target population.

Although there is not one correct way to conduct a needs assessment, Boyle describes basic principles of conducting a needs assessment in seven steps. The first step is to set the parameters of the assessment, including defining the community, purpose, goals and objectives of the assessment. The second step is to develop a data collection plan, outlining the types and methods of data to be collected. Step three is collecting the data through the various methods determined in step two. The fourth step includes analyzing and interpreting the data. Data derived from the assessment should detail the strengths of the existing community characteristics that relate to health in the community, as well as the nutrition and health-related issues that can be improved. The fifth step is to share assessment findings with other groups and organizations. Sharing results with others not involved in the assessment is important in raising awareness of nutrition concerns in a community. Step six is setting priorities, which involved deciding which nutrition concerns identified in the needs assessment is most important. This is described as often being particularly challenging for nutrition professionals to determine which need deserves attention, because in reality there isn’t typically enough resources available to public health
professionals to address all needs of a community. The seventh and final step outlined by Boyle\textsuperscript{33} is choosing a plan of action. This includes the “now what?” of the needs assessment. Using the information from the results of the assessment and prioritizing the most significant needs, the next step involves what should be done to support the needs of the community. Action plans can include any number of approaches and activities to facilitate change and should be shared among community members.\textsuperscript{33}

Per the provisions of the HHFKA of 2010, “states must present a valid and data-driven needs assessment of nutrition, physical activity and obesity prevention needs of the target population and their barriers to accessing healthy foods and physical activity in the state.”\textsuperscript{5} SNAP-Ed plan guidance\textsuperscript{5} details that needs assessments should include existing information and new information collected about the target population, demographic characteristics, diet-related health statistics for the state, other nutrition programs for low-income populations and areas where needs are not being met. Findings from needs assessments should then highlight the potential implications of the needs assessment and be included in the current SNAP-Ed state plans.\textsuperscript{5}

Findings from Alaska’s 2014 SNAP-Ed Needs Assessment\textsuperscript{87} indicated that the largest dietary gaps Alaskans faced were low fruit and vegetable intake and high sugar-sweetened beverage intake. The needs assessment included various methods, including a review of existing data and gathering new data from nutrition professionals, educators and low-income Alaskans. The results of the needs
assessment indicated that 97% of surveyed respondents wanted to eat more fruits and vegetables. Additionally, 72.8% indicated they wanted to reduce their sugar-sweetened beverage intake. It was also reported that cost was one of the most common barriers to eating healthy foods. Alaska’s 2018 SNAP-Ed Needs Assessment evaluated nutrition needs in various “settings” based on PSE strategies. Each setting included key findings, an inventory analysis of what is being offered and a summary of the gaps and subsequent needs of each setting. Key findings from this report indicated that Alaskans rely heavily on fish and hunting for food acquisition. Additionally, it is identified that many nutrition education materials were not tailored to the traditional foods and needs of Alaskan Natives.

Findings from assessments like Alaska’s SNAP-Ed Needs Assessment are helpful in identifying the unique characteristics of the population. The nutrition and physical activity needs of Alaskans were very specific to the region's geographic, social/cultural, economic and historical characteristics. Needs assessments can be very powerful in ensuring that SNAP-Ed efforts are tailored and delivered in ways that are most likely to make long-lasting impactful change. Understanding what specific populations and regions of the state that would benefit most from SNAP-Ed interventions can maximize efficient delivery of resources, while also allowing the development of short-term and long-term goals for the program.

**Social-Ecological Model**

The Social-Ecological Model (SEM) is the theoretical basis for this study. Ecological models, including SEM, describe how individual behaviors are influenced...
by various factors in their environment. According to Sallis and Owen,\textsuperscript{89} these models are derived from the scientific field of biology known as ecology. The term “ecology,” describes the interrelated nature of organisms and their environment. In ecological models, the influence of one's environment on health behaviors is reflected in health interventions. Ecological models are distinguished from other models of behavior, with an emphasis on the environment as an important determinant of health behaviors. Environment is defined as the space outside the person, contrasted with intrapersonal variables.\textsuperscript{89} Environment was further described by Stokols\textsuperscript{90} as being multidimensional. Environment includes the social, physical (both built and natural), actual or perceived, and constructs of a defined area. These models propose that behaviors are influenced by multiple environmental factors at different levels. They also assume that the environment is a source of unhealthy and healthy behaviors, both enabling and hindering the health of the individual. Therefore, it is important to understand interactions across identified factors when developing and evaluating health behavior interventions.

Ecological models describing behaviors were largely based on the work of Urie Bronfenbrenner in 1979.\textsuperscript{89} In his book, \textit{The Ecology of Human Development},\textsuperscript{91} Bronfenbrenner proposed a new theoretical prospective in evaluating the ecological environment. He outlined the environmental interactions with individuals on three levels, microsystem, mesosystem and exosystem, each nested inside the next.\textsuperscript{91} Other theories and models in health behavior often failed to acknowledge the role of environment. At the time in the US, there was increased interest in preventing
chronic disease through health promotion strategies. This led to a shift from individually based approaches to health behavior, to the development of community and environment efforts to improve health. This came with the acknowledgement that public health challenges, like improving diet quality and increasing physical activity, require multidimensional approaches that accommodate diverse populations.

McLeroy and colleagues proposed a variation to Bronfenbrenner’s ecological model, designed for use in assessing interventions at multiple environmental levels in research and in practice. In this model, behaviors were determined to be influenced at five different levels: intrapersonal, interpersonal, institutional, community and public policy. The first is the interpersonal level factors including the knowledge, attitude, skills, and beliefs of the individual, shaped by their developmental history. The second is the interpersonal factors that are defined as both formal and informal networks of social influence including family, friends and work groups. The next level of influence is the institutional factors of groups and organizations, including the rules and regulations of operations. Community level factors are considered as the relationships that exist between organizations, institutions and networks within a defined boundary. Finally, the fifth level details influence from policies at the local, state, and federal level.

The Dietary Guidelines For Americans 2015-2020 utilizes SEM as a framework guiding the food and physical activity decisions of Americans. Chapter three of Dietary Guidelines, *Everyone Has a Role in Supporting Healthy Eating*
Patterns, describes approaches that target multiple levels of the Social-Ecological Model and have the potential to improve health at the population level. This policy document is intended to provide guidance for recommendations, understanding of healthy diet patterns and identify strategies for health professionals to better promote healthy nutrition and physical activity choices detailed in the Dietary Guidelines. Physical activity and food and beverage intake of Americans are influenced first by “individual” factors like demographics, food preferences and genes. The next level is described as “settings” in which you live, work and go to school and how they interact with health outcomes on a community level. Then “sectors” are identified as the systems, organizations and industries that influence nutrition and physical activity. Encompassing all other layers of influence is the “social and cultural norms and values” of Americans and includes influences likes belief systems, traditions, religion, lifestyle and body image. All are thought to be important influences on health outcomes.

In summary, this chapter included a review of relevant literature detailing the role of SNAP and SNAP-Ed in assisting millions of low-income Americans annually. Through an evaluation of literature on low-income communities, evidence portraying the complex relationship that exists between health disparities of low-income populations was explained. This chapter described the association that exists between low-income households that experience high rates of food insecurity, their subsequent altered diet quality and adverse health outcomes. The rates of obesity among the US population was also explored among those with limited
resources, as well as the role physical activity in addressing this public health concern. Additionally, how these concepts interact at various levels of the Social-Ecological Model was explained as approaches to health interventions. Evaluating the needs of the SNAP-Ed target population, as the basis of this study, was described including the use of needs assessment in understanding experiences of SNAP participants and income-eligible populations.
Chapter 3
Methods

This chapter describes the purpose, objectives and methods of this thesis study. Additionally, a description of the study participants, survey development, data collection procedures and statistical analysis are explained.

Context

This study was one part of a Statewide Needs Assessment for Nevada’s SNAP-Ed program. The needs assessment included three phases, generating both qualitative and quantitative data. Phase I was a summary of existing data from surveys and reports that were used to characterize Nevada’s low-income communities. Phase II consisted of key informant interviews to obtain their perceptions of the greatest needs of SNAP households and other low-income communities in Nevada, as well as opportunities to facilitate healthful nutrition and physical activity behaviors. Phase III, the study described here, consisted of a survey of adults enrolled in SNAP in Nevada. The goals of the survey were to describe the most pressing nutrition and physical activity needs of Nevadans enrolled in SNAP; and to examine relevant community characteristics and environmental factors that shape nutrition and physical activity barriers for policy, systems and environmental (PSE) interventions/approaches. For Phase III of the needs assessment, the Nevada Center for Surveys, Evaluations and Statistics administered the survey and helped to develop the survey instrument in conjunction with the researchers from the Department of Nutrition at the University of Nevada, Reno.
**Research Objectives**

In order to describe the opinions and experiences of adults enrolled in SNAP in Nevada, the research objectives for this study were as follows:

1. To evaluate their relative level of concern regarding achieving household food security, a healthful diet, and a physically active lifestyle.
2. To assess their perceived barriers related to achieving household food security, a healthful diet, and a physically active lifestyle including select intrapersonal, interpersonal, and environmental influences.
3. To identify their preferences for nutrition education and physical activity promotion.
4. To examine the relationships among select demographic/household characteristics, and the perspectives of adults enrolled in SNAP.

**Methods**

*Study Design*

This was a descriptive cross-sectional survey utilizing telephone and online survey formats. Both survey formats were available in English and in Spanish.

*Sample*

The study plan was to achieve a final sample of 1,000 households. The sampling frame included all SNAP households in Nevada during the month of September 2018 (N= 234,233), as provided by the Nevada Division of Welfare and Supportive Services (DWSS). Given the population distribution in Nevada, a
stratified random sample design was employed. The sample was stratified by the two most populated Nevada counties, with 50% of households from Clark County, 35% from Washoe County and the remainder (15%) from all other 15 counties. All other counties included Humboldt, Nye, Carson City, Pershing, Elko, Eureka, Lander, White Pine, Lincoln, Esmeralda, Mineral, Churchill, Douglas, Storey and Lyon counties. It was expected that the survey would have a 25% response rate. Therefore, a total of 3,959 SNAP households were randomly selected to achieve the final sample of 1,000. The sample was separated into four groups to allow for the survey administration to occur in waves. The staggered approach allowed researchers to conduct telephone interview surveys in a timely fashion, as needed for each group until 1,000 surveys were completed.

*Survey Procedures*

This study was approved by the Office of Research Integrity at the University of Nevada, Reno prior to initiation of study procedures (Appendix F). Participant recruitment occurred by mail in four waves. Letters of invitation were sent to the participant’s address, provided in the application for assistance. Individuals identified as the “head of household” were selected for participation in this study. A personalized introductory letter (Appendix B) explained the purpose of the study and detailed the instructions for completing the survey by either format. In addition to the introductory letter, a list of answers to frequently asked questions (Appendix C) was included to provide details about the study. If the participant preferred to take the survey by phone, they were instructed to wait for a phone call from the
survey center. One week after the introductory letters were sent, a reminder letter (Appendix D) was mailed to the same households.

The online survey contained the same survey questions and response options as the telephone interview survey instrument, with minimal prompts adapted. The online survey offered a Spanish version option at the beginning of the survey. To gain access to the online survey, participants were instructed to use the URL provided in the letter, along with the 5-digit access code to enter the survey. The 5-digit access code granted access to the survey and served as a unique identifier for survey participants. The online survey was hosted by Qualtrics software (Qualtrics LLC., 2019, Seattle, WA) and was available to participants to complete at their leisure. The online survey introduction included the instructions, procedures, and risks and benefits of the study. The online survey also included a question prompting participants to agree or not agree that they were “18 years of age or older and wish to participate in the study.” Additionally, it was stated in both the letter of invitation and in the introduction of each survey format that, “participation in this study will have no impact on SNAP benefits now or in the future.” Participants were informed that they could skip any questions they did not want to answer and could quit at any time. The estimated time to complete the online survey was approximately 10 minutes.

Approximately one week after the reminder letter was sent, the University of Nevada Center for Surveys, Evaluation and Statistics began calling households who had not yet completed the survey online. Households were called up to eight times
with a message left on the first and third attempts (Appendix E). A scripted survey instrument was developed and provided to the Survey Center for the administration of the telephone survey. Additionally, the survey instrument was translated into Spanish. The survey instrument was programmed into their computer-assisted telephone interviewing WinCATI system (5.0.1.5 ci3 2.6.16, Sawtooth Technologies Inc., 2019 Northbrook, IL). The telephone survey was anticipated to take 10-15 minutes to complete. Telephone surveys were conducted in a secure survey lab by the team at the University of Nevada Center for Surveys, Evaluation and Statistics. When completing the survey by phone, the interviewer asked to speak with the participant by name. Surveys conducted over the telephone obtained verbal consent by reading the survey instructions, including the procedures, risks and benefits of the study to the participant.

Households that had not completed the survey online were called to complete telephone interviews. This process continued until 1,000 household surveys were completed. All research participants that completed the survey received a $10 gift card. The gift card was distributed by email or sent to a physical address provided by the participant.

**Survey Instrument**

The content of the survey instrument was driven by the research objectives previously noted and definitions of key constructs developed by this researcher (Table 1). A review of peer-reviewed research identified potential survey questions regarding the study objectives. These questions were reviewed and adapted as
necessary. Other questions were created by the research team specifically for this study. A steering committee provided feedback on the content of the survey instrument during the development process, to help ensure it was closely aligned with the intended goals and objectives of the needs assessment. All questions were developed to be suitable for telephone and online survey formats.

The survey questions related to: perceptions of health and select health behaviors; food shopping patterns; food security; special considerations; perceived nutrition and physical activity barriers; and preferences for nutrition education and physical activity promotion (Appendix A). Each of these survey sections are briefly described in this chapter. The final survey instrument consisted of 40 closed-ended questions. The survey was pre-tested on a small group prior to implementation.
Table 1. Definitions of Key Constructs and Variables

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrier</td>
<td>Something, either tangible or intangible, that would prevent or deter an individual from carrying out or adapting a healthful behavior.</td>
</tr>
<tr>
<td>Concern</td>
<td>A matter of importance to someone.</td>
</tr>
<tr>
<td>Environmental Influences:</td>
<td>The sociocultural, policy, economic, and physical (including both built and natural) environments or settings that individuals live, work, are educated, eat, play and function in, that affect nutrition and physical activity behaviors.</td>
</tr>
<tr>
<td>Food Security:</td>
<td>Access by all people at all times to enough food for an active, healthy life.</td>
</tr>
<tr>
<td>Intrapersonal Influences:</td>
<td>Characteristics of the individual such as knowledge, skills, attitudes, beliefs, self-concept, psychosocial factors, age, race/ethnicity, gender, socioeconomic status, disability, preferences, developmental history and gene-environment interaction that affect nutrition and physical activity behaviors.</td>
</tr>
<tr>
<td>Interpersonal Influences:</td>
<td>Social networks such as friends, family and peers that affect nutrition and physical activity behaviors.</td>
</tr>
<tr>
<td>Nutrition Education:</td>
<td>A combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other nutrition-related behaviors conducive to health and well-being; and delivered through multiple venues, involving activities at the individual, institutional, community and policy levels.</td>
</tr>
<tr>
<td>Physical Activity:</td>
<td>Any body movement, other than your regular job duties, that works muscles and requires more energy than resting.</td>
</tr>
<tr>
<td>Physical Activity Promotion:</td>
<td>Activities or resources that promote physical activity and reduce sedentary behavior.</td>
</tr>
</tbody>
</table>

**Demographic and Household Characteristics**

Demographic and household characteristics of SNAP households were provided using information from the SNAP Household Application for Assistance. Therefore, it was not necessary to include such questions in the survey instrument.
Household characteristics utilized here included county of residence, household income and household composition. The Application for Assistance was used to identify households with children. Due to a lapse in time from the initial sample and the collection of information from the application, it could not be determined whether or not 126 survey participants resided in a household with children. Individual characteristics of the survey participant identified as head-of-household that were collected included age, race/ethnicity, gender and education level.

Perceptions of Health and Behavior Measures

Perception of health questions were adopted from the Behavioral Risk Factor Surveillance System (BRFSS) survey, Nutrition Environment Measures Survey (NEMS-P) and (FoodAPS) National Household Food Acquisition and Purchase Survey. Participants were asked three questions pertaining to their overall health status, level of physical activity and diet quality. Participants had the option of describing their general health status as, “excellent,” “good,” “fair” or “poor.” Participants were then provided with definitions of “physical activity” and “healthy foods and drinks.” Physical activity was defined as, “any body movement, other than your regular job duties, that works muscles and requires energy.” Participants were prompted to describe their level of physical activity: “very active,” “moderately active” or “not active.” “Healthy foods and drinks” was defined as, “those that contain little or no saturated fat, sugar, or salt and are high in nutrients. Examples of healthy foods include fruits, vegetables, whole grains, low-fat dairy, and lean meats. Examples of unhealthy foods include cookies, chips, soda, candy and fried foods.”
Participants were prompted to describe their diet as, “very healthy,” “moderately healthy” or “not healthy.”

*Food Shopping Patterns Measures*

To gain insight into the potential challenges and constraints that low-income households may face in acquiring nutritionally adequate foods and drinks, participants were asked questions pertaining to shopping patterns, transportation, resources available in the home and the type of store that they shop most frequently for food. For our purposes, a definition of household was defined as, “anyone who lives in your home and shares most meals and food.”

*Food Security Measures*

Self-reported food security status was measured to gain information regarding the prevalence of this condition and to understand potential differences in households experiencing food insecurity relative to households that do not. Food security is defined as, “access by all people at all times to enough food for an active, healthy life.” Food security status was assessed using the US Household Food Security Survey Module: Six-Item Short Form. Questions in this module were originally developed in 1995 by the National Center for Health Statistics and published with few changes by the USDA Economic Research Service in 2012. This survey module was intended to assess household food security for the previous 12 months. Household food security status was determined by affirmative response scores, per the instructions provided by Economic Research Service. A household was designated as “high or marginal food security,” “low food security” or “very low
food security.” Minor changes were made to the prompts based on the mode of administration.

**Special Considerations**

The survey included a set of questions about the need for a modified diet or special foods for a health condition. In the survey instrument, this was referred to as a, “special diet for health-related reasons.” Participants who indicated that they, or someone in their household was on such diet, were asked to describe the diet and to answer questions about potential difficulties in purchasing the necessary foods (i.e., cost, access and transportation).

The survey also included questions to determine if the participant had a disability defined in this study as, “a physical, mental or emotional condition that impacts daily life.” If the participant answered “yes,” they were asked three additional questions pertaining to their ability to acquire, prepare and consume foods and drinks.

**Nutrition and Physical Activity Barrier Measures**

As noted in Table 1, a barrier was defined as, “something, either tangible or intangible, that would prevent or deter an individual from carrying out or adopting a healthful behavior.” Perceived barrier questions were selected for this study using the social-ecological model (SEM). Questions were developed to reflect the various levels of SEM including intrapersonal, interpersonal and environmental influences. Barriers to achieving a healthy diet considered for this study included: cost, access, availability, transportation, taste/preferences, time, knowledge/skill, motivation,
social norms and support. Physical activity barriers considered for this study included: weather, safety, access, cost, knowledge/skill, time, physical abilities, competing motivations, social norms and support. For all perceived barrier questions, participants were presented with a statement and provided a 5-point Likert scale to indicate their relative agreement or disagreement with the statement.

Preferences for Nutrition Education and Physical Activity Promotion

To better inform SNAP-Ed efforts offered to low-income communities, questions were included in the survey pertaining to topics, formats and places for nutrition education and physical activity promotion. For the purposes of this study, physical activity promotion included, “any activities or resources that promote physical activity and reduce sedentary behavior.” The definition of nutrition education used was, “a combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other nutrition-related behaviors conducive to health and well-being; and delivered through multiple venues, involving activities at the individual, institutional, community and policy levels.”

Topics, formats and places of nutrition education and physical activity promotion included in this study were informed by the findings from Phase II of the state-wide SNAP-Ed Needs Assessment, existing SNAP-Ed programming, nutrition education of low-income adults found in the literature, SNAP-Ed Evaluation Framework and steering committee member input. Participants were asked to answer “yes” or “no” to a list of different topics, formats and places that interested
them. They were also offered to specify any other topic, format or place they were interested in learning more about, that wasn’t listed.

**Statistical Analysis**

Weighting was employed to ensure adequate representation of the overall SNAP population in Nevada. Participants were assigned a weight based on gender (male, female), age (<25, 25-39, 40-54, 55-69, 70+), race/ethnicity (white, Hispanic, other/multiple/African American) and county of residence (Clark, Washoe and all others). Weighting helped to ensure adequate representation of groups that may be overrepresented or underrepresented in the sample.

Statistical software suite used Statistical Analysis Software version 9.4 (SAS Institute Inc., Cary, NC) to compute descriptive and inferential statistic data. Statistical significance was determined at P < 0.05. Descriptive statistics were completed using weighted data collected as described previously. Results from survey measures regarding perceptions of health and behavior, food shopping patterns, food security status, perceived nutrition and physical activity barriers, special needs and preferences for nutrition education and physical activity promotion were reported as frequencies, proportions, means and 95% confidence intervals. Inferential statistics included weighted Chi-squared analysis of independent variables including: gender, age, race, marital status, education, household size, expected gross household income, and county of residence. Analysis was conducted to determine significant associations across dependent variables including: food procurement patterns, food security status, households with a
special diet, and nutrition education and physical activity promotion preferences.

Weighted t-tests were used to determine differences in the number of nutrition and physical activity barriers, P<0.05.

**Conclusion**

This chapter was a description of the methods used to develop and administer a telephone and web-based survey of approximately 1,000 adults enrolled in SNAP in Nevada. This representative sample was selected to obtain the perspectives and experiences of SNAP participants, identified as head of households, regarding their perceived nutrition and physical activity needs. The results of this study will be described in detail in the next chapter.
Chapter 4
Results

This chapter is a description of the results of this study. Result findings are presented in tables and figures that follow the narrative. Results presented here describe findings in regards to the survey sample; survey participants’ characterization of perceived health status, health behaviors and level of concern; barriers to achieving household food security, a healthful diet and a physically active life; special considerations among this population; and nutrition education and physical activity promotion preferences.

Survey Sample

A total of 1,014 survey participants were included in this study. Of those, 590 completed telephone surveys and 424 completed online surveys (Table 2). The response rate for the surveys completed by telephone was 22%, determined by the number of completed interviews divided by the number of potentially eligible households or respondents (as per resulting call outcome dispositions). The cooperation rate was 62%, determined by the proportion of all completed interviews of (multiplied by) all eligible households or respondents ever contacted. Most of the surveys were completed in English, while 7.4% were completed in the Spanish language (Table 2). As described in Chapter 3, with the exception of survey formats and languages, data were weighted to better represent the overall population this study intended to characterize (i.e., SNAP households in Nevada).
Eighty-percent of survey participants resided in Clark County, while 11.2% resided in Washoe County and 8.2% resided in the remaining Nevada counties (Figure 1). A majority of the survey participants were female (65.4%), never married (53.4%), living in a household of one person (51.1%) and living in a home without children (58.3%). Additionally, 38.7% of the sample population was between the ages of 25-29, 41.2% identified as white, 49.1% completed high school or equivalent as the highest level of educational attainment, while 67.5% had an expected gross monthly income of $0 (Table 3).

**Characterization of Perceived Health Status, Health Behavior and Level of Concern**

Survey participants were asked to describe their current health status. A majority of participants indicated their health was “Good” (46.8%) or “Fair” (33.7%), while few indicated their health to be “Poor” (7.9%) or “Excellent” (11.6%). The meaning of “health” was left up to the participant to determine what it meant to them and was not based on any physiological parameters or clinical diagnoses.

Survey participants were asked to describe their current diet (Figure 2) and physical activity level (Figure 3). A definition of healthy foods and drinks was provided to participants and was as follows, “Healthy foods and drinks include those that contain little or no saturated fat, sugar or salt and are high in nutrients. Examples of healthy foods include fruits, vegetables, whole grains, low-fat dairy, and lean meats. Examples of unhealthy foods include cookies, chips, soda, candy and fried foods.” Nearly all survey participants indicated that in general, their diet was
healthy, with 74.3% reporting their diet to be “moderately healthy,” and 18.8% reporting their diet to be “very healthy.” Only 7% indicated their current diet as “not healthy.” An overwhelming majority of survey participants agreed or strongly agreed (92%) that it was important to them to choose healthy foods and drinks (Figure 4).

In regards to physical activity level, a large proportion of participants indicated that they are physically active with 61.7% reported being “moderately active,” while 17.2% reported being “very active” and 20.9% reported being “not active” (Figure 3). A definition of physical activity was provided to participants and was as follows, “Physical activity includes any body movement, other than your regular job duties, that works muscles and requires energy.” Approximately 81% of survey participants agreed or strongly agreed that it was important to them to exercise and be physically active (Figure 5).

**Barriers**

Barriers assessed in this study included those related to achieving household food security, a healthful diet and a physically active lifestyle. Survey results are described below.

In regards to food procurement (see Table 4), a majority of respondents reportedly were the primary food shopper for the household (84%). Other food shoppers were their spouse or partner (7.6%), someone else (3.9%), a housemate or roommate (2.4%) or other relative (1.9%). A majority reported that they shopped most frequently at a grocery store (63.1%) or superstore or wholesale club
(33.1%), while few reportedly shopped most often at a convenience store (2.4%) or other store not listed (1.5%). The most common method of transportation used to obtain household groceries was a personal vehicle (65.9%), followed by public transportation (14%), other method (8.6%), walking (6.5%), taxi or ridesharing service (4.7%) and biking (0.3%). Additionally, few reported not having access to reliable and or affordable transportation to get groceries (10%) and only 5.3% reported no full-service grocery store nearby to shop for groceries. Many shopped 3-4 times a month (36.6%), followed by 5 or more times a month (32.5%), 1-2 times a month (29.4%) and less than once a month (1.5%). Nearly all reported that they have access to a working stove (96.2%) and refrigerator (98.1%) in the home.

Additionally, select food procurement and sociodemographic characteristics of survey participants were compared. The former included shopping for groceries at a convenience store, food shopping less than three times per month, shopping without a personal vehicle and reporting no full-service grocery store nearby (Table 5a). These were determined to be potential threats to a household’s ability to acquire the food they need to live active and healthy lives (i.e., achieving food security). As noted previously, few participants reported shopping for groceries at a convenience store (2.4%), the greatest proportion were between the ages of 55-69 (5.3%), widowed (8.0%), and those living in a household with 4+ persons (30.3%). Approximately 30% of the survey population reported shopping less than three times per month, and a majority were between the ages of 55-69 (37.3%), those identifying as African American/multiple/other (38.7%), widowed (34.1%), those
living in households without children (37.2%) and those with an expected monthly income of $1,000 or less (31.7%). Approximately 34% did not have a personal vehicle to shop for food, the greatest proportion were between the ages of 55-69 (37.6%), those identifying as African American/multiple/other (41.4%), widowed (40.0%), those with less than a high school education (35.7%) and those in a household of one (41.0%) and those with a monthly income of $0 (34.8%). The greatest proportion of individuals reporting no full-service grocery store nearby were widowed persons (21.6%), those living alone (12%) and those 70+ years of age (14.9%).

Differences among select food procurement and demographic characteristics were compared using weighted Chi-squared tests and results are shown in Table 5b. Males were more likely than females to report grocery shopping without a personal vehicle and living with no full-service grocery store nearby. Older participants were more likely to report shopping without a personal vehicle and no full-service grocery store nearby. Those that were older than 55 years of age and those younger than 25 years old reported shopping less than three times a month. White participants were more likely to shop at a convenience store, compared to other race/ethnicity groups. Those who identified as African American, other or multiple races/ethnicities were more likely to report shopping less than three times a month, and without a personal vehicle. Widowed participants were more likely to shop at a convenience store, without a personal vehicle and less than three times a month. Having less than a high school education was related to not having a full-service
grocery store nearby, shopping without a personal vehicle, and shopping less than three times a month. Living alone was associated with all procurement characteristics that have the potential to negatively impact food access, with the exception of shopping at a convenience store, which was related to larger households (4+). Living in a household without children was related to shopping at a convenience store, shopping without a personal vehicle and shopping less often. Residing in Clark County was related to all food procurement characteristics that have the potential to negatively impact food access.

Food security status was assessed using the USDA Six-Item Food Security Survey Module. Affirmative response to individual food security survey module questions are shown in Table 6. Scoring was based on the number of affirmative responses to survey questions as described in food security module. Instructions included a raw score of 0-1 is assigned to marginal or high food security, with a raw score of one is considered marginal. A raw score of 2-4 is assigned to low food security and a score of 5-6 is assigned to very low food security.98 Per the module scoring instructions, 26% of households were categorized as food secure, while 74% were categorized as food insecure. Of those households that were food insecure, approximately 36% experienced low food security and almost 38% experienced very low food security.

Using the results, those classified as food secure were compared to those classified as low food secure and very low food secure (Table 7). As shown in Table 7, the highest rates of food insecurity were noted in Washoe County (76.7%).
compared to Clark County (74.4%) and all others (70.1%). Additionally, prevalence of food insecurity was higher among those who identified as white (75%), less than 25 years of age (79.2%), widowed (80.1%), having less than a high school education (76%) and those living in a household without children (75%). The greatest prevalence of very low food security was among participants who identified as white (42.5%), those aged 40-54 (42.7%) and those less than 25 years of age (41.9%). The highest prevalence of food security was among those older than 70 years of age (30.3%), identifying as Hispanic (30.8%), with an expected income greater than $0 but less than $1,000 (34.5%) and those living in a household with 4+ people (30.3%). No significant differences were noted between food security status and demographic characteristics, based on weighted Chi-squared tests.

In addition to food security status, survey participants were also asked about the use of emergency food services. The emergency food assistance question included mention of services from a food bank, food pantry or community kitchen, including senior centers, adult daycares or religious charities. Of the entire survey sample, 36.2% reported using emergency food services at some point within the last year (Table 4). Of those households, approximately 22% were identified as very low food security and 14.5% were identified as low food security.

Perceived barriers to achieving a healthy diet were assessed using nine statements with a 5-point Likert response scale. As shown in Table 8, responses were “strongly agree,” “agree,” “neither agree nor disagree,” “disagree,” or “strongly disagree.” For the sake of simplicity, percentages presented below indicate
responses as either agree (combined “agree” and “strongly agree”) or disagree (combined “disagree” and “strongly disagree”). Statements were both positively and negatively worded. Therefore, interpretation of responses to statements depended on the wording. The most commonly reported barriers to achieving a healthy diet were cost (52%), convenience of unhealthy foods (34.8%), foods spoil too quickly (32.1%), lack of social support (22%), limited access to stores that sell healthy foods and drinks (21.4%) and time required to prepare healthy foods and drinks (20%). The least commonly reported barriers included knowledge of what healthy foods and drinks are (4.3%), the taste of healthy foods and drinks (5.6%), and planning healthy meals (5.7%).

The mean number of barriers experienced by participants was computed by assigning scores to responses. Barrier scores were then computed by summing across all items such that larger scores indicated more barriers. Inferential statistics using weighted t-tests were then computed to determine if the mean number of barriers reported differed across sociodemographic variables, with P<0.05 (Table 9). More barriers were reported among males, those aged 55-69, among widowed and living in a household with income $0. Significant differences in the mean number of barriers were found among those with less than a high school education compared to higher educational attainment groups. Additionally, among those living in a household of one person compared to larger households, and those living in a household without children compared to those households with children.
Similar to barriers to achieving a healthy diet, perceived barriers to achieving a physically active life were assessed using six statements, and a 5-point Likert response scale. As shown in Table 10, these responses were “strongly agree,” “agree,” “neither agree nor disagree,” “disagree,” or “strongly disagree.” Percentages presented below indicate responses as either agree (combined “agree” and “strongly agree”) or disagree (combined “disagree” and “strongly disagree”). The most commonly reported barriers to physical activity were cost (30.9%), busy schedules (29.4%), lack of social support (28.5%), followed by weather (23.3%), and safety (18.5%). The least common reported barrier to physical activity was limited abilities (16%).

The mean number of barriers experienced by participants was computed by assigning scores to responses. Agreement and disagreement to barriers were assigned either a one or zero, respectively. The mean number of barriers experienced by participants was computed by assigning scores to responses. Barrier scores were then computed by summing across all items such that larger scores indicated more barriers. Weighted t-tests were then computed to determine if the number of reported barriers differed across sociodemographic variables, with P<0.05 (Table 11). More barriers were reported among females, those 70+ years of age, those identifying as white, divorced or separated, an income of $1000 or greater, those living in a household of one person and those living in a household without children. Significant differences in the mean number of physical activity barriers were found for those individuals with less than a high school education.
compared to those that finished high school or had college or post graduate attainment.

Special Considerations

Approximately 31% of participants indicated that they or someone in the household follows a “special diet for health-related reasons” (Table 12). The greatest proportion were female, between the ages of 25-39, those identifying as white, never married and those that completed high school or equivalent as the highest level of educational attainment. Participants were asked questions regarding the cost and accessibility of foods required for the diet (Table 14). A majority of households agreed or strongly agreed that the foods for the diet are too expensive (77.2%). Just over one-third reported that it’s difficult to get to a store that sells the foods for the diet (37.7%). Chi-squared tests indicated statistically significant relationships existed among household income and those that reported a special diet. Specifically, households with an expected income of $0, were significantly more likely to report a special diet. Households without children were more likely to follow a special diet. Additionally, those reporting a disability were more likely to report someone in the household following a special diet (Table 12).

Qualitative special diet responses were coded into general categories by the research team, including a registered dietitian (Table 13). Coding for diets was based on anyone in the home and could include multiple diet patterns. Special diet responses were coded as either “vulnerable” or “non-vulnerable.” A definition of vulnerable was developed by the research team and was as follows, “any household
that is potentially in need of special care or support due to their diet-related condition(s), dietary needs, and/or restrictions.” A vulnerable designation is important to our understanding of conditions that put households at risk of reduced diet quality, increased food insecurity, and subsequent impaired physical, mental and emotional health and well-being. Dietary needs considered vulnerable included: type I and II diabetes, pre-diabetes, diets for cardiovascular disease, low sodium diets, renal diets, hepatic diets, diets for autoimmune diseases (i.e., celiac disease, lupus, IBD, Crohn’s, multiple sclerosis), gastric-related diets (i.e., colitis, GI surgeries and intestinal disorders), cancer-related diets and food allergies. An example of a “non-vulnerable” diet would include a prudent diet consisting of “healthy foods,” fruits and vegetables and diets related to wellness. In total, 31% of survey participants reported open-ended diet responses that were coded into 19 categories. The top five overall responses for a special diet include: diabetes (n=145), low sodium (n=44), prudent diet (n=32), cardiovascular disease CVD (n=32) and “other” (n=24) (Table 13). It is important to note these responses were self-reported and did not signify the presence of diagnosed disease state or medically prescribed diets.

In addition to the need for special diets, 44% of participants indicated that they had a physical, mental or emotional condition that impacted their daily life (i.e., a disability). Of those that indicated a disability, a greater proportion were male (52.6%), between the ages of 55-69 (57.9%) and identified as white (54.8%). When compared by geographical region, Washoe County residents reported the highest
rate (50.8%), followed by all others (46.7%) and lastly by Clark County residents (43.8%).

Weighted Chi-squared tests revealed that perceived health status and disability were not independent; as those that identified as living with a disability were more likely to report fair or poor health status, compared to those that didn’t report a disability (Table 15). These differences were statistically significant at P<0.05.

Disabled participants were asked additional questions about their diet and physical activity. A majority agreed or strongly agreed that the condition made it difficult to shop for food (50.7%) and prevented them from exercising and being physically active (58.9%). Almost 40% (39.5%) reported that the condition made it difficult to prepare food, while a majority (52.7%) did report that the condition made it difficult to eat or drink. Computed t-tests revealed greater number of barriers to achieving a healthy diet were reported by those that indicated having a disability, compared to those who did not, 2.37 and 1.69 mean number of barriers respectively. Similarly, t-tests also indicated greater number of physical activity barriers were reported by those living with a disability, compared to those who did not, 1.67 and 1.10 mean number of barriers respectively.

**Nutrition Education and Physical Activity Promotion**

As shown in Table 16, participants reported a high interest in nutrition education topics, including ways to make food last all month (71.9%), ways to
prepare healthy meals quickly (70.8%), preparing meals on a budget (67.3%) and safe food preparation and handling (49.9%). Participants also reported a high interest in physical activity topics, including ways to improve overall fitness (59.5%), ways to exercise at home without equipment (59%), how to exercise without hurting yourself (51.4%), free activity trackers and fitness apps (49%) and how to fit exercise into the day (43%).

In addition to the topics listed, survey participants had the opportunity to list other topics that they were interested in, but was otherwise not listed. A total of 165 “Other” responses were coded into the following: special dietary needs and preferences, planning and preparing meals, shopping for food, locations to purchase foods, general nutrition, assistance and physical activity topics. Specific topics relating to special dietary needs and preferences included information regarding diabetes, weight loss, vegan/vegetarian diets, digestive conditions, allergies and pregnancy. Topics relating to planning and preparing meals include the nutritional needs and preferences of children, cooking, healthy recipes, balanced meals, quick meals, meals that last, cooking for one and topics relating to cooking with minimal kitchen resources. Topics relating to shopping for food include managing food resources, shopping on a budget, choosing healthy and inexpensive foods and shopping for foods that will last. Topics relating to locations to purchase foods included where to buy healthy foods, inexpensive foods and utilizing farmer’s markets. Topics relating to assistance include food assistance programs, transportation, child care, legal and financial services. Topics relating to physical
activity include activities for kids, activities for older adults, activities for those with special conditions/disabilities, activities you can do at home and locations to exercise. Additionally, several responses not categorized included topics related to food attributes, nutritional composition of meals, growing food, healthy lifestyle, stress management, as well as sources for accurate nutrition information.

In addition to assessing nutrition education and physical activity topics of interest, survey participants were also asked how they would prefer to receive the information (i.e., formats) and where they preferred to receive information (i.e., locations). The preferred formats were mail (64.2%), Internet or website (41.5%), television (35.8%), text messages (33.8%), in person (32.1%) and lastly telephone (22.1%). The preferred locations reported were welfare or SNAP office (54.9%), medical or dental center (48%), grocery store (47.1%), school (37.3%), parks and recreation center (36.5%), and community or senior center (36.2%) and lastly at a church or faith-based organization (31%) (Table 16).

Survey participants also had the opportunity to list other education formats and locations that they were interested in, but was otherwise not listed. Other formats listed by participants included email, social media, applications, podcasts, doctors, community groups and free seminars or classes. Other locations participants indicated for receiving education include at a gym, food pantry and at home due to travel constraints.

Additionally, weighted Chi-squared tests were computed to determine whether or not relationships existed among select sociodemographic characteristics
of those that indicated interest in education topics, formats and locations. Survey participants’ interest in nutrition education topics was examined by gender, age, educational attainment and county of residence, findings are presented in Table 17. Significant differences were noted between males and females, regarding preparing healthy meals on a budget, safe food preparation and handling, as well as ways to prepare healthy meals quickly (Table 17), with greater interest noted among women (P<0.05).

Survey participants’ interest in physical activity promotion topics are presented by gender, age, educational attainment and county of residence in Table 18. No significant differences were noted among demographic characteristics and physical activity promotion topics.

Participants’ preferred formats to receive education are presented by gender, age, educational attainment and county of residence in Table 19. Significant differences were noted between males and females who preferred nutrition education and physical activity promotion by telephone.

Participants’ preferences of locations to receive nutrition education by gender, age, educational attainment and county of residence are presented in Table 20. Significant differences were noted between males and females among those that indicated interest in church or faith organizations to receive education (P<0.05). Additionally, the relationships among educational attainment among those that indicated interest in receiving information at a medical or dental clinic was significant. Females, respondents between the ages of 25-39, who’s highest
educational attainment was high school and those residing in Clark County were more likely to report interest in locations to receive information.

In summary, this chapter described the results of this thesis study. Additionally, figures and tables display the results discussed. The following chapter, Chapter 5, includes a discussion of results, including conclusions of this study.
Figure 1. Distribution of Survey Participants’ County of Residence
"In general, how would you describe the foods and drinks you consume?"

<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Healthy</td>
<td>18.8%</td>
</tr>
<tr>
<td>Moderately Healthy</td>
<td>74.3%</td>
</tr>
<tr>
<td>Not Healthy</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

Figure 2. Percentage of Survey Participants’ Characterization of Their Current Diet
Figure 3. Percentage of Survey Participants’ Characterization of Their Current Physical Activity Level
"It is important to me to choose healthy foods and drinks."

Figure 4. Percentage of Survey Participants’ Relative Level of Concern to Choose Healthy Food and Drinks
Figure 5. Percentage of Survey Participants’ Relative Level of Concern to Exercise and be Physically Active

"It is important to me to exercise and be physically active."
Table 2. The Format and Language of Surveys Completed by Participants \(^a\) (n=1,014)

<table>
<thead>
<tr>
<th></th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Survey Format</strong></td>
<td></td>
</tr>
<tr>
<td>Phone</td>
<td>590 (58.2)</td>
</tr>
<tr>
<td>Online</td>
<td>424 (41.8)</td>
</tr>
<tr>
<td><strong>Survey Language</strong></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>939 (92.6)</td>
</tr>
<tr>
<td>Spanish</td>
<td>75 (7.4)</td>
</tr>
</tbody>
</table>

\(^a\) Unweighted data
Table 3. Sociodemographic Characteristics of Survey Participants as Reported on the Application for Assistance Submitted to the Nevada Division of Welfare and Supportive Services

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>723 (65.4)</td>
</tr>
<tr>
<td>Male</td>
<td>291 (34.6)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>49 (8.4)</td>
</tr>
<tr>
<td>25-39</td>
<td>361 (38.7)</td>
</tr>
<tr>
<td>40-54</td>
<td>271 (24.8)</td>
</tr>
<tr>
<td>55-69</td>
<td>245 (22.0)</td>
</tr>
<tr>
<td>70+</td>
<td>88 (6.1)</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>601 (41.2)</td>
</tr>
<tr>
<td>African American</td>
<td>147 (26.2)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>193 (24.4)</td>
</tr>
<tr>
<td>Other/ Multiple</td>
<td>73 (8.2)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>183 (17.5)</td>
</tr>
<tr>
<td>Never Married</td>
<td>486 (53.4)</td>
</tr>
<tr>
<td>Divorced/ Separated</td>
<td>295 (24.9)</td>
</tr>
<tr>
<td>Widowed</td>
<td>50 (4.2)</td>
</tr>
<tr>
<td><strong>Education</strong>b**</td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>224 (22.9)</td>
</tr>
<tr>
<td>High School</td>
<td>509 (49.1)</td>
</tr>
<tr>
<td>College/Post Grad</td>
<td>273 (28.0)</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td>704 (67.5)</td>
</tr>
<tr>
<td>$1-$1,000</td>
<td>112 (12.3)</td>
</tr>
<tr>
<td>$1,000+</td>
<td>198 (20.3)</td>
</tr>
<tr>
<td><strong>Household Size</strong></td>
<td></td>
</tr>
<tr>
<td>1 person</td>
<td>522 (51.1)</td>
</tr>
<tr>
<td>2-3 people</td>
<td>327 (31.1)</td>
</tr>
<tr>
<td>4+ people</td>
<td>165 (17.8)</td>
</tr>
<tr>
<td><strong>Children in Home</strong>a</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>531 (58.3)</td>
</tr>
<tr>
<td>Yes</td>
<td>357 (41.7)</td>
</tr>
</tbody>
</table>

*a It could not be determined whether or not 126 participants reside in households with children, analysis based on n=888.

*b Due to missing data, analysis is based on n=1,006.

*c weighted percent row
Table 4. Food Procurement Characteristics and Resources of Survey Participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary household grocery shopper</strong></td>
<td></td>
</tr>
<tr>
<td>Survey participant</td>
<td>859 (84.0)</td>
</tr>
<tr>
<td>Spouse or Partner</td>
<td>64 (7.6)</td>
</tr>
<tr>
<td>Someone else</td>
<td>42 (3.9)</td>
</tr>
<tr>
<td>Housemate or roommate</td>
<td>20 (2.4)</td>
</tr>
<tr>
<td>Other relative</td>
<td>28 (1.9)</td>
</tr>
<tr>
<td>Refuse/ Don’t Know/ Not Sure/ Missing</td>
<td>1 (0.2)</td>
</tr>
<tr>
<td><strong>Method of transportation to the grocery store</strong></td>
<td></td>
</tr>
<tr>
<td>Personal vehicle</td>
<td>708 (65.9)</td>
</tr>
<tr>
<td>Public Transportation</td>
<td>116 (14.0)</td>
</tr>
<tr>
<td>Other</td>
<td>77 (8.6)</td>
</tr>
<tr>
<td>Walking</td>
<td>63 (6.5)</td>
</tr>
<tr>
<td>Taxi or ride-sharing service</td>
<td>43 (4.7)</td>
</tr>
<tr>
<td>Biking</td>
<td>6 (0.3)</td>
</tr>
<tr>
<td><strong>Type of store used to get most household groceries</strong></td>
<td></td>
</tr>
<tr>
<td>Grocery Store</td>
<td>639 (63.1)</td>
</tr>
<tr>
<td>Superstore or Wholesale Club</td>
<td>331 (33.1)</td>
</tr>
<tr>
<td>Convenience Store</td>
<td>32 (2.4)</td>
</tr>
<tr>
<td>Other type of Store</td>
<td>11 (1.5)</td>
</tr>
<tr>
<td><strong>Frequency of household grocery shopping</strong></td>
<td></td>
</tr>
<tr>
<td>Less than once a month</td>
<td>16 (1.5)</td>
</tr>
<tr>
<td>1-2 times a month</td>
<td>285 (29.4)</td>
</tr>
<tr>
<td>3-4 times a month</td>
<td>374 (36.6)</td>
</tr>
<tr>
<td>5+ times a month</td>
<td>322 (32.5)</td>
</tr>
<tr>
<td><strong>Use of emergency food services in previous 12 months</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>455 (36.2)</td>
</tr>
<tr>
<td><strong>Resources</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerator available in the home</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>997 (98.1)</td>
</tr>
<tr>
<td><strong>Working stove available in the home</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>973 (96.2)</td>
</tr>
</tbody>
</table>

* Weighted percent row
Table 5a. Food Procurement Characteristics that have the Potential to Negatively Impact Food Access by Sociodemographic Characteristics of Survey Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Shops at convenience store</th>
<th>No personal vehicle</th>
<th>No full-service grocery store</th>
<th>Shops less than 3x/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Female</td>
<td>19 (2.6)</td>
<td>194 (26.8)</td>
<td>48 (10.0)</td>
<td>211 (29.7)</td>
</tr>
<tr>
<td>Male</td>
<td>13 (4.5)</td>
<td>112 (38.5)</td>
<td>22 (11.0)</td>
<td>90 (31.5)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 25</td>
<td>0 (0.0)</td>
<td>11 (22.5)</td>
<td>3 (10.0)</td>
<td>18 (36.7)</td>
</tr>
<tr>
<td>25 - 39</td>
<td>7 (1.9)</td>
<td>89 (24.7)</td>
<td>17 (7.9)</td>
<td>89 (24.8)</td>
</tr>
<tr>
<td>40 - 54</td>
<td>8 (2.9)</td>
<td>85 (31.4)</td>
<td>21 (11.7)</td>
<td>74 (28.1)</td>
</tr>
<tr>
<td>55 - 69</td>
<td>13 (5.3)</td>
<td>92 (37.6)</td>
<td>18 (9.8)</td>
<td>90 (37.3)</td>
</tr>
<tr>
<td>70+</td>
<td>4 (4.6)</td>
<td>29 (32.9)</td>
<td>11 (14.9)</td>
<td>30 (35.3)</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>24 (4.0)</td>
<td>174 (28.9)</td>
<td>44 (10.6)</td>
<td>174 (29.4)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>4 (2.1)</td>
<td>41 (21.2)</td>
<td>9 (4.5)</td>
<td>44 (22.9)</td>
</tr>
<tr>
<td>Other/ Multiple/African American</td>
<td>4 (1.8)</td>
<td>91 (41.4)</td>
<td>17 (8.2)</td>
<td>83 (38.7)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>5 (2.7)</td>
<td>34 (18.6)</td>
<td>17 (14.7)</td>
<td>45 (24.9)</td>
</tr>
<tr>
<td>Never Married</td>
<td>12 (2.5)</td>
<td>175 (36.0)</td>
<td>29 (9.2)</td>
<td>150 (31.3)</td>
</tr>
<tr>
<td>Divorced/ Separated</td>
<td>11 (3.7)</td>
<td>77 (26.1)</td>
<td>16 (7.6)</td>
<td>91 (31.2)</td>
</tr>
<tr>
<td>Widowed</td>
<td>4 (8.0)</td>
<td>20 (40.0)</td>
<td>8 (21.6)</td>
<td>15 (34.1)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>8 (3.6)</td>
<td>80 (35.7)</td>
<td>16 (12.1)</td>
<td>66 (30.0)</td>
</tr>
<tr>
<td>High School</td>
<td>14 (2.8)</td>
<td>151 (29.7)</td>
<td>35 (9.9)</td>
<td>152 (30.5)</td>
</tr>
<tr>
<td>College/ Post Grad</td>
<td>10 (3.7)</td>
<td>73 (26.7)</td>
<td>19 (10.1)</td>
<td>81 (29.9)</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td>27 (3.8)</td>
<td>245 (34.8)</td>
<td>55 (11.0)</td>
<td>218 (31.7)</td>
</tr>
<tr>
<td>$1 - $1,000</td>
<td>3 (2.7)</td>
<td>35 (31.3)</td>
<td>5 (7.6)</td>
<td>35 (31.5)</td>
</tr>
<tr>
<td>$1,000+</td>
<td>2 (1.0)</td>
<td>26 (13.1)</td>
<td>10 (8.9)</td>
<td>48 (24.2)</td>
</tr>
<tr>
<td>Household size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 person</td>
<td>28 (24.6)</td>
<td>214 (41.0)</td>
<td>45 (12.0)</td>
<td>189 (37.2)</td>
</tr>
<tr>
<td>2-3 people</td>
<td>1 (25.7)</td>
<td>71 (21.7)</td>
<td>18 (8.8)</td>
<td>82 (25.2)</td>
</tr>
<tr>
<td>4+ people</td>
<td>3 (30.3)</td>
<td>21 (12.7)</td>
<td>7 (6.9)</td>
<td>30 (18.3)</td>
</tr>
<tr>
<td>Children in Homea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>26 (4.9)</td>
<td>211 (39.7)</td>
<td>45 (11.6)</td>
<td>193 (37.3)</td>
</tr>
<tr>
<td>Yes</td>
<td>2 (0.6)</td>
<td>74 (20.7)</td>
<td>14 (6.8)</td>
<td>78 (22.0)</td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>16 (4.3)</td>
<td>114 (30.9)</td>
<td>31 (12.5)</td>
<td>112 (30.6)</td>
</tr>
</tbody>
</table>
Table 5a. (continued)

<table>
<thead>
<tr>
<th></th>
<th>Washoe</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9 (2.0)</td>
<td>159 (35.5)</td>
<td>26 (8.9)</td>
<td>123 (28.0)</td>
</tr>
<tr>
<td>All others</td>
<td>7 (3.6)</td>
<td>33 (16.8)</td>
<td>13 (9.3)</td>
<td>66 (34.4)</td>
</tr>
</tbody>
</table>

*a* Analysis based on n=888.

*b* Weighted percent row

*c* Only includes the participants that indicated the specified food procurement characteristic was true for them.
Table 5b. The Relationships Among Food Procurement Characteristics that have the Potential to Negatively Impact Food Access and Sociodemographic Characteristics of Survey Participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Shops at convenience store</th>
<th>No personal vehicle</th>
<th>No full-service grocery store nearby</th>
<th>Shops less than 3x/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-</td>
<td>b</td>
<td>b</td>
<td>-</td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td>b</td>
<td>b</td>
<td>-</td>
<td>b</td>
</tr>
<tr>
<td>Marital Status</td>
<td>b</td>
<td>b</td>
<td>-</td>
<td>b</td>
</tr>
<tr>
<td>Education</td>
<td>-</td>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>Income</td>
<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>Household size</td>
<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>Children in Home(^a)</td>
<td>b</td>
<td>b</td>
<td>-</td>
<td>b</td>
</tr>
<tr>
<td>County</td>
<td>b</td>
<td>b</td>
<td>b</td>
<td>b</td>
</tr>
</tbody>
</table>

\(^a\)Analysis based on n=888.

\(^b\) P <0.05, weighted Chi-squared test to determine relationships among variables.
Table 6. Survey Participants’ Affirmative Responses to Food Security Questions as Assessed by the U.S. Household Food Security Survey Module: Six-Item Short Form \(^a\)

<table>
<thead>
<tr>
<th>Food Security Survey Questions</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The food that I/we bought just didn’t last, and I/we didn’t have money to get more.”</td>
<td>807 (79.6)</td>
</tr>
<tr>
<td>“I/We couldn’t afford to eat balanced meals.”</td>
<td>704 (67.8)</td>
</tr>
<tr>
<td>“In the last 12 months, did you/ you or other adults in your household ever cut the size of meals or skip meals because there wasn’t enough money for food?”</td>
<td>524 (49.9)</td>
</tr>
<tr>
<td>(If yes above, ask)“ How often did this happen - almost every month, some months but not every month, or in only 1 or 2 months?” (^b)</td>
<td>434 (42.8)</td>
</tr>
<tr>
<td>“In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food?”</td>
<td>541 (54.2)</td>
</tr>
<tr>
<td>“In the last 12 months, were you ever hungry but didn’t eat because there wasn’t enough money for food?”</td>
<td>599 (62.2)</td>
</tr>
</tbody>
</table>

\(^a\) Food security questions are based on the previous 12 months.

\(^b\) This question includes those that answered “yes” to the previous question, (n=522).
Table 7. Sociodemographic Characteristics of Survey Participants by Food Security Status as Assessed by Affirmative Responses to the U.S. Household Food Security Survey Module: Six-Item Short Form

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Food Secure</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Food Secure</td>
<td>Food Insecure</td>
<td>Very Low Food Security</td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>Marginal/ High Food Security</td>
<td>Low Food Security</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>191 (25.7)</td>
<td>238 (36.0)</td>
<td>294 (38.3)</td>
<td>723</td>
</tr>
<tr>
<td>Male</td>
<td>69 (26.3)</td>
<td>112 (36.7)</td>
<td>110 (37.0)</td>
<td>291</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>9 (20.7)</td>
<td>20 (37.4)</td>
<td>20 (41.9)</td>
<td>49</td>
</tr>
<tr>
<td>25-39</td>
<td>94 (28.0)</td>
<td>127 (34.0)</td>
<td>140 (38.0)</td>
<td>361</td>
</tr>
<tr>
<td>40-54</td>
<td>60 (24.0)</td>
<td>83 (33.3)</td>
<td>128 (42.7)</td>
<td>271</td>
</tr>
<tr>
<td>55-69</td>
<td>59 (25.0)</td>
<td>89 (39.8)</td>
<td>97 (35.2)</td>
<td>245</td>
</tr>
<tr>
<td>70+</td>
<td>38 (30.9)</td>
<td>31 (47.9)</td>
<td>19 (21.3)</td>
<td>88</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>150 (23.8)</td>
<td>182 (33.8)</td>
<td>269 (42.5)</td>
<td>601</td>
</tr>
<tr>
<td>Hispanic</td>
<td>57 (30.8)</td>
<td>84 (40.7)</td>
<td>52 (28.5)</td>
<td>193</td>
</tr>
<tr>
<td>Other/ AA/ Multiple</td>
<td>53 (25.1)</td>
<td>84 (36.0)</td>
<td>83 (38.9)</td>
<td>220</td>
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<tr>
<td>Marital Status</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Married</td>
<td>51 (28.5)</td>
<td>70 (38.9)</td>
<td>62 (32.6)</td>
<td>183</td>
</tr>
<tr>
<td>Never Married</td>
<td>111 (24.5)</td>
<td>171 (34.5)</td>
<td>204 (40.9)</td>
<td>486</td>
</tr>
<tr>
<td>Divorced/ Separated</td>
<td>85 (28.1)</td>
<td>88 (34.9)</td>
<td>122 (37.0)</td>
<td>295</td>
</tr>
<tr>
<td>Widowed</td>
<td>13 (19.9)</td>
<td>21 (54.6)</td>
<td>16 (25.5)</td>
<td>50</td>
</tr>
<tr>
<td>Educationa</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>49 (24.0)</td>
<td>92 (43.6)</td>
<td>83 (32.4)</td>
<td>224</td>
</tr>
<tr>
<td>High School</td>
<td>135 (25.2)</td>
<td>178 (35.4)</td>
<td>196 (39.4)</td>
<td>509</td>
</tr>
<tr>
<td>College/Post Grad</td>
<td>72 (19.9)</td>
<td>79 (32.0)</td>
<td>122 (39.6)</td>
<td>273</td>
</tr>
<tr>
<td>Income</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td>178 (25.5)</td>
<td>234 (34.6)</td>
<td>292 (39.9)</td>
<td>704</td>
</tr>
<tr>
<td>$1-$1,000</td>
<td>36 (34.5)</td>
<td>44 (40.9)</td>
<td>32 (24.7)</td>
<td>112</td>
</tr>
<tr>
<td>$1,000+</td>
<td>46 (22.2)</td>
<td>72 (38.9)</td>
<td>80 (38.9)</td>
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</tr>
<tr>
<td>Household Size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 person</td>
<td>129 (24.6)</td>
<td>171 (35.2)</td>
<td>222 (40.2)</td>
<td>522</td>
</tr>
<tr>
<td>2-3 people</td>
<td>82 (25.7)</td>
<td>124 (38.1)</td>
<td>121 (36.3)</td>
<td>327</td>
</tr>
<tr>
<td>4+ people</td>
<td>49 (30.3)</td>
<td>55 (36.0)</td>
<td>61 (33.7)</td>
<td>165</td>
</tr>
<tr>
<td>Children in Homeb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>----</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>129 (24.9)</td>
<td>185 (36.8)</td>
<td>217 (38.3)</td>
<td>531</td>
</tr>
<tr>
<td></td>
<td>106 (30.0)</td>
<td>122 (35.9)</td>
<td>129 (34.5)</td>
<td>357</td>
</tr>
<tr>
<td><strong>County</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>115 (25.7)</td>
<td>167 (37.3)</td>
<td>166 (37.1)</td>
<td>448</td>
</tr>
<tr>
<td>Washoe</td>
<td>86 (23.3)</td>
<td>122 (33.1)</td>
<td>161 (43.6)</td>
<td>369</td>
</tr>
<tr>
<td>All Others</td>
<td>59 (29.9)</td>
<td>61 (31.0)</td>
<td>77 (39.1)</td>
<td>197</td>
</tr>
<tr>
<td>Sample (overall)</td>
<td>260 (25.9)</td>
<td>350 (36.2)</td>
<td>404 (37.9)</td>
<td>1,014</td>
</tr>
</tbody>
</table>

**Abbreviation:** AA, African American.

\( ^{a} \) Due to missing data, analysis is based on \( n=1,006 \).

\( ^{b} \) Due to a time lapse in data collection, it could not be determined whether or not 126 participants reside in households with children. Analysis based on \( n=888 \).

\( ^{c} \) No significant differences were noted between groups, \( P >0.05 \).

\( ^{d} \) Weighted percent row
<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Strongly Agree n (%)</th>
<th>Agree n (%)</th>
<th>Neutral n (%)</th>
<th>Disagree n (%)</th>
<th>Strongly Disagree n (%)</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It costs too much for me to eat healthy food and drinks.”</td>
<td>229 (22.2)</td>
<td>315 (29.7)</td>
<td>166 (16.7)</td>
<td>228 (24.1)</td>
<td>73 (6.9)</td>
<td>1,011</td>
</tr>
<tr>
<td>“I buy unhealthy foods and drinks more often BECAUSE they are more convenient than healthy foods.”</td>
<td>102 (8.6)</td>
<td>251 (26.2)</td>
<td>204 (20.9)</td>
<td>330 (32.7)</td>
<td>127 (11.6)</td>
<td>1,014</td>
</tr>
<tr>
<td>“Healthy food and drinks spoil too quickly.”</td>
<td>64 (7.0)</td>
<td>257 (24.7)</td>
<td>251 (24.7)</td>
<td>327 (32.0)</td>
<td>106 (10.5)</td>
<td>1,005</td>
</tr>
<tr>
<td>“People I spend the most time with usually make healthy food and drink choices.”</td>
<td>127 (11.0)</td>
<td>385 (36.9)</td>
<td>265 (24.7)</td>
<td>182 (17.8)</td>
<td>52 (4.3)</td>
<td>1,011</td>
</tr>
<tr>
<td>“It is hard for me to get to a store that sells healthy foods and drinks.”</td>
<td>82 (7.5)</td>
<td>143 (13.9)</td>
<td>166 (17.3)</td>
<td>397 (39.4)</td>
<td>226 (21.8)</td>
<td>1,014</td>
</tr>
<tr>
<td>“It takes too much time to prepare healthy foods and drinks.”</td>
<td>46 (4.4)</td>
<td>163 (15.6)</td>
<td>204 (20.6)</td>
<td>421 (42.3)</td>
<td>176 (16.7)</td>
<td>1,010</td>
</tr>
<tr>
<td>“I know how to plan meals that include healthy foods and drinks.”</td>
<td>364 (33.1)</td>
<td>506 (52.6)</td>
<td>82 (8.5)</td>
<td>46 (4.5)</td>
<td>15 (1.1)</td>
<td>1,013</td>
</tr>
<tr>
<td>“Healthy foods and drinks taste good.”</td>
<td>348 (32.3)</td>
<td>474 (47.8)</td>
<td>133 (14.1)</td>
<td>48 (4.6)</td>
<td>10 (1.1)</td>
<td>1,013</td>
</tr>
<tr>
<td>“I know what foods and drink at the grocery store are healthy.”</td>
<td>420 (37.8)</td>
<td>485 (48.8)</td>
<td>70 (8.8)</td>
<td>30 (3.9)</td>
<td>6 (0.3)</td>
<td>1,011</td>
</tr>
</tbody>
</table>
Table 9. Number of Potential Barriers to Achieving a Healthy Diet by Sociodemographic Characteristics of Survey Participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Participants</th>
<th>No. of Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)e</td>
<td>M</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>723 (65.4)</td>
<td>1.95</td>
</tr>
<tr>
<td>Male</td>
<td>291 (34.6)</td>
<td>2.01</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>49 (8.4)</td>
<td>1.82</td>
</tr>
<tr>
<td>25-39</td>
<td>361 (38.7)</td>
<td>1.99</td>
</tr>
<tr>
<td>40-54</td>
<td>271 (24.8)</td>
<td>1.90</td>
</tr>
<tr>
<td>55-69</td>
<td>245 (22.0)</td>
<td>2.10</td>
</tr>
<tr>
<td>70+</td>
<td>88 (6.1)</td>
<td>1.94</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>601 (41.2)</td>
<td>2.06</td>
</tr>
<tr>
<td>African American</td>
<td>147 (26.2)</td>
<td>1.89</td>
</tr>
<tr>
<td>Hispanic</td>
<td>193 (24.4)</td>
<td>1.90</td>
</tr>
<tr>
<td>Other/ Multiple</td>
<td>73 (8.2)</td>
<td>2.07</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>183 (17.5)</td>
<td>1.96</td>
</tr>
<tr>
<td>Never Married</td>
<td>486 (53.4)</td>
<td>1.98</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>295 (24.9)</td>
<td>1.98</td>
</tr>
<tr>
<td>Widowed</td>
<td>50 (4.2)</td>
<td>1.99</td>
</tr>
<tr>
<td><strong>Education</strong>a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>224 (22.9)</td>
<td>2.14&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>High School</td>
<td>509 (49.1)</td>
<td>1.99&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>College/Post Grad</td>
<td>273 (28.0)</td>
<td>1.82&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td>704 (67.5)</td>
<td>2.02</td>
</tr>
<tr>
<td>$1-$1,000</td>
<td>112 (12.3)</td>
<td>1.80</td>
</tr>
<tr>
<td>$1,000+</td>
<td>198 (20.3)</td>
<td>1.94</td>
</tr>
<tr>
<td><strong>Household Size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 person</td>
<td>522 (51.1)</td>
<td>2.07&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>2-3 people</td>
<td>327 (31.1)</td>
<td>1.97&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>4+ people</td>
<td>165 (17.7)</td>
<td>1.70&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Children in Home</strong>b</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>531 (58.3)</td>
<td>2.09&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Yes</td>
<td>357 (41.7)</td>
<td>1.74&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>County</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>448 (80.6)</td>
<td>1.95</td>
</tr>
<tr>
<td>Washoe</td>
<td>369 (11.2)</td>
<td>2.04</td>
</tr>
<tr>
<td>All others</td>
<td>197 (8.2)</td>
<td>2.11</td>
</tr>
</tbody>
</table>
Table 9. (continued)

| Abbreviation: | M, mean number of perceived barriers; 95% CI, confidence interval. |
|==============|---------------------------------------------------------------|
| a            | Due to missing data, analysis is based on n= 1,006.         |
| b            | Due to a time lapse in data collection, it could not be determined whether or not 126 participants reside in households with children. Analysis based on n=888. |
| c,d          | Values with different superscripts represent significant differences at P <0.05, weighted t-tests were used to determine differences of means among variables. |
| e            | weighted percent row                                         |
Table 10. Survey Participants’ Agreement/Disagreement to Statements Relating to Circumstances that May Facilitate or Hinder Physical Activity

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Strongly Agree n (%)</th>
<th>Agree n (%)</th>
<th>Neutral n (%)</th>
<th>Disagree n (%)</th>
<th>Strongly Disagree n (%)</th>
<th>Total n</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It’s hard to find ways to exercise and be physically active that I can afford.”</td>
<td>92 (7.4)</td>
<td>237 (23.5)</td>
<td>166 (15.9)</td>
<td>390 (41.2)</td>
<td>125 (11.6)</td>
<td>1,011</td>
</tr>
<tr>
<td>“My daily schedule makes it hard for me to exercise and be physically active.”</td>
<td>90 (8.9)</td>
<td>214 (20.5)</td>
<td>192 (18.5)</td>
<td>385 (39.7)</td>
<td>130 (11.9)</td>
<td>1,011</td>
</tr>
<tr>
<td>“People I spend time with usually exercise and are physically active.”</td>
<td>101 (11.0)</td>
<td>359 (33.6)</td>
<td>253 (26.2)</td>
<td>226 (22.6)</td>
<td>69 (5.9)</td>
<td>1,008</td>
</tr>
<tr>
<td>“There are safe places to exercise and be physically active in all types of weather.”</td>
<td>154 (15.9)</td>
<td>438 (44.9)</td>
<td>153 (15.2)</td>
<td>204 (18.7)</td>
<td>60 (4.6)</td>
<td>1,009</td>
</tr>
<tr>
<td>“There are safe places to exercise and be physically active near my home.”</td>
<td>187 (18.2)</td>
<td>505 (50.6)</td>
<td>119 (12.2)</td>
<td>142 (13.4)</td>
<td>55 (5)</td>
<td>1,008</td>
</tr>
<tr>
<td>“I am able to find ways to exercise and be physically active within my abilities.”</td>
<td>178 (16.9)</td>
<td>560 (54.5)</td>
<td>127 (12.6)</td>
<td>114 (12.3)</td>
<td>35 (3.6)</td>
<td>1,014</td>
</tr>
</tbody>
</table>
Table 11. Number of Potential Barriers to Physical Activity by Sociodemographic Characteristics of Survey Participants

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Participants</th>
<th>No. of Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>M (95% CI)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>723 (65.4)</td>
<td>1.33 (1.21-1.46)</td>
</tr>
<tr>
<td>Male</td>
<td>291 (34.6)</td>
<td>1.25 (1.07-1.44)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>49 (8.4)</td>
<td>1.00 (0.68-1.31)</td>
</tr>
<tr>
<td>25-39</td>
<td>361 (38.7)</td>
<td>1.25 (1.08-1.41)</td>
</tr>
<tr>
<td>40-54</td>
<td>271 (24.8)</td>
<td>1.40 (1.21-1.60)</td>
</tr>
<tr>
<td>55-69</td>
<td>245 (22.0)</td>
<td>1.37 (1.14-1.60)</td>
</tr>
<tr>
<td>70+</td>
<td>88 (6.1)</td>
<td>1.49 (1.05-1.93)</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>601 (41.2)</td>
<td>1.38 (1.25-1.52)</td>
</tr>
<tr>
<td>African American</td>
<td>147 (26.2)</td>
<td>1.33 (1.10-1.55)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>193 (24.4)</td>
<td>1.21 (0.99-1.43)</td>
</tr>
<tr>
<td>Other/Multiple</td>
<td>73 (8.2)</td>
<td>1.14 (0.74-1.53)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>183 (17.5)</td>
<td>1.37 (1.11-1.64)</td>
</tr>
<tr>
<td>Never Married</td>
<td>486 (53.4)</td>
<td>1.20 (1.06-1.33)</td>
</tr>
<tr>
<td>Divorced/Separated</td>
<td>295 (24.9)</td>
<td>1.50 (1.30-1.71)</td>
</tr>
<tr>
<td>Widowed</td>
<td>50 (4.2)</td>
<td>1.22 (0.84-1.61)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>224 (22.9)</td>
<td>1.46 (1.26-1.66)</td>
</tr>
<tr>
<td>High School</td>
<td>509 (49.1)</td>
<td>1.27 (1.14-1.41)</td>
</tr>
<tr>
<td>College/Post Grad</td>
<td>273 (28.0)</td>
<td>1.23 (1.00-1.46)</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td>704 (67.5)</td>
<td>1.30 (1.17-1.42)</td>
</tr>
<tr>
<td>$1-$1,000</td>
<td>112 (12.3)</td>
<td>1.12 (0.87-1.37)</td>
</tr>
<tr>
<td>$1,000+</td>
<td>198 (20.3)</td>
<td>1.45 (1.22-1.68)</td>
</tr>
<tr>
<td><strong>Household Size</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 person</td>
<td>522 (51.1)</td>
<td>1.32 (1.17-1.47)</td>
</tr>
<tr>
<td>2-3 people</td>
<td>327 (31.1)</td>
<td>1.31 (1.13-1.49)</td>
</tr>
<tr>
<td>4+ people</td>
<td>165 (17.7)</td>
<td>1.25 (1.02-1.47)</td>
</tr>
<tr>
<td><strong>Children in Home</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>531 (58.3)</td>
<td>1.32 (1.17-1.47)</td>
</tr>
<tr>
<td>Yes</td>
<td>357 (41.7)</td>
<td>1.29 (1.14-1.45)</td>
</tr>
<tr>
<td><strong>County</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>448 (80.6)</td>
<td>1.28 (1.16-1.40)</td>
</tr>
<tr>
<td>Washoe</td>
<td>369 (11.2)</td>
<td>1.41 (1.26-1.56)</td>
</tr>
<tr>
<td>All others</td>
<td>197 (8.2)</td>
<td>1.39 (1.19-1.60)</td>
</tr>
</tbody>
</table>
Table 11. (continued)

**Abbreviation:** M, mean number of perceived barriers; 95% CI, confidence interval.

^a^ Due to missing data, analysis is based on n=1,006.

^b^ Due to a time lapse in data collection, it could not be determined whether or not 126 participants reside in households with children. Analysis based on n=888.

^c^d^ Values with different superscripts represent significant differences at P <0.05, weighted t-tests were used to determine differences of means among variables.

^e^ weighted percent row
Table 12. Survey Participants Who Reported that Someone in the Household was on a “Special Diet for Health-Related Reasons” by Sociodemographic Characteristics

<table>
<thead>
<tr>
<th>Special diet</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>312 (31.2)</td>
</tr>
<tr>
<td>No</td>
<td>702 (68.8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>218 (20.6)</td>
</tr>
<tr>
<td>Male</td>
<td>94 (10.6)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>12 (2.0)</td>
</tr>
<tr>
<td>25-39</td>
<td>96 (11.1)</td>
</tr>
<tr>
<td>40-54</td>
<td>83 (7.7)</td>
</tr>
<tr>
<td>55-69</td>
<td>91 (8.0)</td>
</tr>
<tr>
<td>70+</td>
<td>30 (2.5)</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>197 (14.2)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>49 (7.6)</td>
</tr>
<tr>
<td>Other/ AA/ Multiple</td>
<td>66 (9.3)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>64 (5.9)</td>
</tr>
<tr>
<td>Never Married</td>
<td>141 (16.1)</td>
</tr>
<tr>
<td>Divorced/ Separated</td>
<td>94 (8.0)</td>
</tr>
<tr>
<td>Widowed</td>
<td>13 (1.3)</td>
</tr>
<tr>
<td>Educationa</td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>60 (6.3)</td>
</tr>
<tr>
<td>High School</td>
<td>150 (14.5)</td>
</tr>
<tr>
<td>College/Post Grad</td>
<td>99 (10.3)</td>
</tr>
<tr>
<td>Incomeb, d</td>
<td></td>
</tr>
<tr>
<td>$0</td>
<td>239 (24.7)</td>
</tr>
<tr>
<td>$1-$1,000</td>
<td>28 (2.2)</td>
</tr>
<tr>
<td>$1,000+</td>
<td>45 (4.3)</td>
</tr>
<tr>
<td>Household Size</td>
<td></td>
</tr>
<tr>
<td>1 person</td>
<td>172 (17.7)</td>
</tr>
<tr>
<td>2-3 people</td>
<td>99 (9.5)</td>
</tr>
<tr>
<td>4+ people</td>
<td>41 (4.1)</td>
</tr>
<tr>
<td>Children in Homec, d</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>184 (20.7)</td>
</tr>
<tr>
<td>Yes</td>
<td>91 (10.3)</td>
</tr>
<tr>
<td>Self-reported Disabilityc, d</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>206 (20.6)</td>
</tr>
<tr>
<td>No</td>
<td>104 (10.6)</td>
</tr>
</tbody>
</table>
Table 12. (continued)

<table>
<thead>
<tr>
<th>County</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clark</td>
<td>141 (25.4)</td>
</tr>
<tr>
<td>Washoe</td>
<td>111 (3.2)</td>
</tr>
<tr>
<td>All Others</td>
<td>60 (2.5)</td>
</tr>
</tbody>
</table>

**Abbreviation:** AA, African American.

- Due to missing data, analysis based on n = 309 for education.
- Due to missing data, analysis based on n = 275 for households with children.
- Due to missing data, analysis based on n = 310 for self-reported disability.
- P <0.05, weighted Chi-squared test to determine relationships among variables.
- Weighted percent row
- Only includes the participants who indicated they or someone in the household was on a special diet.
Table 13. The Most Commonly Reported “Special Diet for Health-Related Reasons” as Characterized by Survey Participants $^a$ (n=312)

<table>
<thead>
<tr>
<th>Self-Reported Diet</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet for Diabetes</td>
<td>145</td>
</tr>
<tr>
<td>Low Sodium</td>
<td>44</td>
</tr>
<tr>
<td>Prudent Diet</td>
<td>32</td>
</tr>
<tr>
<td>Diet for Cardiovascular Disease</td>
<td>32</td>
</tr>
<tr>
<td>Low Carb/ High Protein</td>
<td>20</td>
</tr>
<tr>
<td>Food Intolerance</td>
<td>16</td>
</tr>
<tr>
<td>Less Meat</td>
<td>13</td>
</tr>
<tr>
<td>Diet for Gastric Issues</td>
<td>12</td>
</tr>
<tr>
<td>Low-Fat</td>
<td>11</td>
</tr>
<tr>
<td>Renal Diet</td>
<td>10</td>
</tr>
<tr>
<td>Vegan/Vegetarian</td>
<td>10</td>
</tr>
<tr>
<td>Food Allergy</td>
<td>9</td>
</tr>
<tr>
<td>Non-vulnerable GI $^b$</td>
<td>8</td>
</tr>
<tr>
<td>Autoimmune</td>
<td>7</td>
</tr>
<tr>
<td>Modified Texture</td>
<td>4</td>
</tr>
<tr>
<td>Gluten Free</td>
<td>3</td>
</tr>
<tr>
<td>Diet for Cancer</td>
<td>3</td>
</tr>
<tr>
<td>Diet for Hepatic Disease</td>
<td>1</td>
</tr>
<tr>
<td>Other $^c$</td>
<td>24</td>
</tr>
</tbody>
</table>

$^a$ Question was open-ended and based on survey respondents’ interpretation of a “special diet for health-related reasons.” Responses coded as either a diet pattern or a diet relating to a self-reported disease or condition.

$^b$ Non-vulnerable indicated GI diets that are unlikely to result in elevated risk for reduced nutritional intake.

$^c$ Other indicates reported diet that does not fit into any other category.
Table 14. Survey Participants’ Agreement/Disagreement to Statements Relating to Experiences with Someone in the Household on a “Special Diet for Health-Related Reasons” a,b (n=312)

<table>
<thead>
<tr>
<th>Experiences with Special Diet</th>
<th>Strongly Agree n (%)</th>
<th>Agree n (%)</th>
<th>Neutral n (%)</th>
<th>Disagree n (%)</th>
<th>Strongly Disagree n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The foods and drinks for special diet are too expensive.”</td>
<td>119 (39.2)</td>
<td>118 (38.0)</td>
<td>41 (13.3)</td>
<td>29 (7.2)</td>
<td>5 (2.2)</td>
</tr>
<tr>
<td>“It is difficult to get to the store that has the special foods and drinks that are needed for the diet.”</td>
<td>41 (15.0)</td>
<td>66 (22.7)</td>
<td>71 (24.0)</td>
<td>97 (24.5)</td>
<td>37 (13.7)</td>
</tr>
<tr>
<td>“I have access to reliable and/or affordable transportation to get to the grocery store.”</td>
<td>107 (32.2)</td>
<td>112 (34.4)</td>
<td>38 (18.2)</td>
<td>31 (8.6)</td>
<td>23 (6.1)</td>
</tr>
<tr>
<td>“There is a full-service grocery store near my home that sells uncooked meats, fresh fruits, vegetables, AND baked goods.”</td>
<td>165 (50.7)</td>
<td>107 (37.2)</td>
<td>11 (2.6)</td>
<td>22 (8.4)</td>
<td>7 (1.1)</td>
</tr>
</tbody>
</table>

a Question was based on survey respondents’ interpretation of a “special diet for health-related reasons.”

b Only includes the participants that indicated they or someone in the household on a special diet.
**Table 15. Self-perceived Health Status by Self-reported Physical, Mental or Emotional Condition**

<table>
<thead>
<tr>
<th>Health Status</th>
<th>Disability</th>
<th>Yes</th>
<th>(%)</th>
<th>No</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td></td>
<td>23</td>
<td>2.1</td>
<td>78</td>
<td>9.5</td>
</tr>
<tr>
<td>Good</td>
<td></td>
<td>144</td>
<td>14.4</td>
<td>311</td>
<td>32.5</td>
</tr>
<tr>
<td>Fair</td>
<td></td>
<td>225</td>
<td>20.7</td>
<td>135</td>
<td>12.9</td>
</tr>
<tr>
<td>Poor</td>
<td></td>
<td>81</td>
<td>7.0</td>
<td>11</td>
<td>0.9</td>
</tr>
</tbody>
</table>

*P <0.05, weighted Chi-squared test to determine relationships among variables.*
Table 16. Survey Participants’ Interest in Education on Nutrition and Physically Activity Topics, Formats, and Locations for Delivery a

<table>
<thead>
<tr>
<th>Nutrition Topics of Interest</th>
<th>Yes n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ways to make food last all month</td>
<td>705 (71.9)</td>
</tr>
<tr>
<td>Ways to prepare healthy meals quickly</td>
<td>689 (70.8)</td>
</tr>
<tr>
<td>Preparing meals on a budget</td>
<td>659 (67.3)</td>
</tr>
<tr>
<td>Safe food preparation and handling</td>
<td>464 (49.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Activity Topics of Interest</th>
<th>Yes n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ways to improve overall fitness</td>
<td>600 (59.5)</td>
</tr>
<tr>
<td>Ways to exercise at home without equipment</td>
<td>604 (59.0)</td>
</tr>
<tr>
<td>How to exercise without hurting yourself</td>
<td>527 (51.4)</td>
</tr>
<tr>
<td>Free activity trackers and fitness apps</td>
<td>501 (49.0)</td>
</tr>
<tr>
<td>How to fit exercise into the day</td>
<td>453 (43.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preferred Formats</th>
<th>Yes n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail</td>
<td>643 (64.2)</td>
</tr>
<tr>
<td>Internet/ website</td>
<td>450 (41.5)</td>
</tr>
<tr>
<td>Television</td>
<td>343 (35.8)</td>
</tr>
<tr>
<td>Text message</td>
<td>352 (33.8)</td>
</tr>
<tr>
<td>In person</td>
<td>331 (32.1)</td>
</tr>
<tr>
<td>Telephone</td>
<td>219 (22.1)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preferred Locations</th>
<th>Yes n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welfare or SNAP office</td>
<td>540 (54.9)</td>
</tr>
<tr>
<td>Medical or dental center</td>
<td>483 (48.0)</td>
</tr>
<tr>
<td>Grocery store</td>
<td>471 (47.1)</td>
</tr>
<tr>
<td>School</td>
<td>371 (37.3)</td>
</tr>
<tr>
<td>Parks and recreation center</td>
<td>380 (36.5)</td>
</tr>
<tr>
<td>Community or senior center</td>
<td>362 (36.2)</td>
</tr>
<tr>
<td>Church or faith organization</td>
<td>309 (31.0)</td>
</tr>
</tbody>
</table>

a Does not include the participants that indicated “No.”
Table 17. Survey Participants’ Interest in Nutrition Education Topics by Select Sociodemographic Characteristics  

<table>
<thead>
<tr>
<th>Topics</th>
<th>Preparing healthy meals on a budget</th>
<th>Safe food preparation and handling</th>
<th>Ways to make food last all month</th>
<th>Ways to prepare healthy meals quickly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristic</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>490 (70.8)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>348 (53.4)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>516 (73.7)</td>
<td>511 (74.5)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Male</td>
<td>169 (60.3)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>116 (42.7)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>189 (67.9)</td>
<td>178 (63.3)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>37 (80.1)</td>
<td>25 (53.2)</td>
<td>33 (69.2)</td>
<td>39 (86.6)</td>
</tr>
<tr>
<td>25-39</td>
<td>255 (70.1)</td>
<td>177 (51.5)</td>
<td>265 (76.9)</td>
<td>264 (72.6)</td>
</tr>
<tr>
<td>40-54</td>
<td>183 (69.3)</td>
<td>124 (49.7)</td>
<td>200 (74.4)</td>
<td>190 (71.6)</td>
</tr>
<tr>
<td>55-69</td>
<td>138 (58.1)</td>
<td>101 (43.6)</td>
<td>162 (63.8)</td>
<td>149 (62.9)</td>
</tr>
<tr>
<td>70+</td>
<td>46 (55.1)</td>
<td>37 (55.6)</td>
<td>45 (59.5)</td>
<td>47 (60.7)</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>158 (74.3)</td>
<td>128 (60.8)</td>
<td>170 (77.1)</td>
<td>169 (79.4)</td>
</tr>
<tr>
<td>High School</td>
<td>321 (65.2)</td>
<td>232 (49.9)</td>
<td>346 (69.9)</td>
<td>334 (68.9)</td>
</tr>
<tr>
<td>College/ Post Grad</td>
<td>174 (64.4)</td>
<td>100 (40.0)</td>
<td>183 (70.1)</td>
<td>179 (65.8)</td>
</tr>
<tr>
<td><strong>County</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>309 (68.8)</td>
<td>227 (52.1)</td>
<td>327 (73.2)</td>
<td>322 (72.1)</td>
</tr>
<tr>
<td>Washoe</td>
<td>229 (60.5)</td>
<td>168 (45.0)</td>
<td>252 (66.3)</td>
<td>238 (64.8)</td>
</tr>
<tr>
<td>All others</td>
<td>121 (60.4)</td>
<td>69 (32.7)</td>
<td>126 (64.3)</td>
<td>129 (64.6)</td>
</tr>
</tbody>
</table>

<sup>a,b</sup> P <0.05, weighted Chi-squared tests used to determine relationships among variables.  

<sup>c</sup> Does not include the participants that indicated “No” to topic interest.  

<sup>d</sup> Weighted percent row
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>How to fit exercise and physical activity into the day</th>
<th>How to exercise without hurting myself</th>
<th>Ways to improve overall fitness</th>
<th>Ways to exercise at home without equipment</th>
<th>Free activity trackers and fitness apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>320 (41.8)</td>
<td>370 (47.4)</td>
<td>413 (55.3)</td>
<td>418 (54.1)</td>
<td>360 (46.7)</td>
</tr>
<tr>
<td>Male</td>
<td>133 (44.8)</td>
<td>157 (58.4)</td>
<td>187 (66.9)</td>
<td>186 (68.0)</td>
<td>141 (52.8)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>24 (39.1)</td>
<td>25 (39.2)</td>
<td>30 (49.5)</td>
<td>30 (53.7)</td>
<td>24 (39.9)</td>
</tr>
<tr>
<td>25-39</td>
<td>154 (41.9)</td>
<td>181 (54.7)</td>
<td>210 (62.0)</td>
<td>205 (59.8)</td>
<td>171 (50.3)</td>
</tr>
<tr>
<td>40-54</td>
<td>125 (43.6)</td>
<td>151 (51.7)</td>
<td>160 (58.6)</td>
<td>165 (57.1)</td>
<td>129 (47.3)</td>
</tr>
<tr>
<td>55-69</td>
<td>113 (44.1)</td>
<td>123 (46.1)</td>
<td>148 (57.5)</td>
<td>147 (56.7)</td>
<td>135 (51.6)</td>
</tr>
<tr>
<td>70+</td>
<td>37 (46.9)</td>
<td>47 (62.4)</td>
<td>52 (65.0)</td>
<td>57 (75.3)</td>
<td>42 (48.2)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>103 (44.5)</td>
<td>119 (50.7)</td>
<td>133 (61.8)</td>
<td>139 (62.3)</td>
<td>112 (49.7)</td>
</tr>
<tr>
<td>High School</td>
<td>241 (47.0)</td>
<td>264 (51.9)</td>
<td>302 (59.4)</td>
<td>300 (57.9)</td>
<td>255 (49.1)</td>
</tr>
<tr>
<td>College/ Post</td>
<td>106 (34.2)</td>
<td>141 (51.2)</td>
<td>161 (57.2)</td>
<td>159 (57.7)</td>
<td>130 (48.0)</td>
</tr>
<tr>
<td>Grad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>189 (41.7)</td>
<td>225 (50.4)</td>
<td>262 (59.0)</td>
<td>260 (58.1)</td>
<td>210 (48.1)</td>
</tr>
<tr>
<td>Washoe</td>
<td>175 (49.1)</td>
<td>194 (53.5)</td>
<td>219 (61.9)</td>
<td>225 (62.8)</td>
<td>194 (54.3)</td>
</tr>
<tr>
<td>All others</td>
<td>89 (46.0)</td>
<td>108 (56.4)</td>
<td>119 (59.1)</td>
<td>119 (60.8)</td>
<td>97 (48.5)</td>
</tr>
</tbody>
</table>

*a* No statistically significant differences were noted among groups, *P* > 0.05, based on weighted Chi-square test.

*b* Does not include the participants that indicated "No" to topic interest.

*c* Weighted percent row
Table 19. Survey Participants’ Interest in Nutrition Education and Physical Activity Promotion Formats by Select Sociodemographic Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Mail</th>
<th>Internet or website</th>
<th>Television</th>
<th>Telephone</th>
<th>Text message</th>
<th>In-person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>453 (61.6)</td>
<td>320 (42.4)</td>
<td>240 (33.7)</td>
<td>146 (19.0)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>250 (32.7)</td>
<td>237 (31.9)</td>
</tr>
<tr>
<td>Male</td>
<td>190 (68.7)</td>
<td>130 (39.2)</td>
<td>103 (39.1)</td>
<td>73 (27.6)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>102 (35.4)</td>
<td>94 (31.9)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>27 (76.2)</td>
<td>14 (13.6)</td>
<td>15 (33.6)</td>
<td>11 (27.1)</td>
<td>16 (32.8)</td>
<td>16 (34.4)</td>
</tr>
<tr>
<td>25-39</td>
<td>228 (62.5)</td>
<td>155 (41.0)</td>
<td>115 (34.6)</td>
<td>74 (21.6)</td>
<td>124 (34.6)</td>
<td>106 (28.5)</td>
</tr>
<tr>
<td>40-54</td>
<td>178 (61.8)</td>
<td>124 (44.4)</td>
<td>97 (36.8)</td>
<td>68 (25.6)</td>
<td>101 (36.1)</td>
<td>100 (38.0)</td>
</tr>
<tr>
<td>55-69</td>
<td>153 (64.5)</td>
<td>118 (48.8)</td>
<td>87 (38.1)</td>
<td>45 (17.1)</td>
<td>81 (31.6)</td>
<td>80 (31.6)</td>
</tr>
<tr>
<td>70+</td>
<td>57 (65.5)</td>
<td>39 (41.3)</td>
<td>29 (30.9)</td>
<td>21 (20.2)</td>
<td>30 (25.5)</td>
<td>29 (25.9)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>135 (64.3)</td>
<td>92 (36.9)</td>
<td>69 (30.5)</td>
<td>42 (17.7)</td>
<td>72 (30.0)</td>
<td>58 (22.4)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>High School</td>
<td>326 (59.9)</td>
<td>226 (42.1)</td>
<td>178 (37.9)</td>
<td>105 (21.9)</td>
<td>182 (35.5)</td>
<td>180 (33.4)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>College/ Post</td>
<td>177 (71.3)</td>
<td>129 (43.9)</td>
<td>94 (36.0)</td>
<td>71 (25.8)</td>
<td>98 (34.1)</td>
<td>92 (37.3)&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Grad</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>283 (64.3)</td>
<td>193 (40.3)</td>
<td>161 (36.5)</td>
<td>93 (22.1)</td>
<td>154 (33.4)</td>
<td>145 (31.8)</td>
</tr>
<tr>
<td>Washoe</td>
<td>238 (64.2)</td>
<td>160 (41.7)</td>
<td>120 (31.6)</td>
<td>92 (24.0)</td>
<td>129 (33.7)</td>
<td>125 (32.7)</td>
</tr>
<tr>
<td>All others</td>
<td>122 (61.8)</td>
<td>97 (50.2)</td>
<td>62 (32.0)</td>
<td>34 (17.9)</td>
<td>69 (35.2)</td>
<td>61 (31.6)</td>
</tr>
</tbody>
</table>

<sup>a,b</sup>P <0.05, weighted Chi-squared tests used to determine relationships among variables.
<sup>c</sup> Does not include the participants that indicated “No” to format interest.
<sup>d</sup> Weighted percent row
Table 20. Survey Participants’ Interest in Nutrition Education and Physical Activity Promotion Locations by Select Sociodemographic Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Grocery Store</th>
<th>Community or senior center</th>
<th>School</th>
<th>Church</th>
<th>Medical or dental clinic</th>
<th>Parks and Rec</th>
<th>SNAP office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>335 (45.2)</td>
<td>251 (34.2)</td>
<td>258 (34.4)</td>
<td>208 (28.2)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>340 (45.9)</td>
<td>262 (35.6)</td>
<td>380 (55.2)</td>
</tr>
<tr>
<td>Male</td>
<td>136 (50.4)</td>
<td>111 (39.6)</td>
<td>113 (42.3)</td>
<td>101 (35.7)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>143 (51.3)</td>
<td>118 (37.6)</td>
<td>160 (53.9)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>19 (35.5)</td>
<td>13 (25.1)</td>
<td>13 (28.1)</td>
<td>10 (26.9)</td>
<td>19 (39.2)</td>
<td>13 (27.0)</td>
<td>21 (50.9)</td>
</tr>
<tr>
<td>25-39</td>
<td>167 (46.5)</td>
<td>123 (35.0)</td>
<td>127 (38.8)</td>
<td>103 (29.2)</td>
<td>177 (52.2)</td>
<td>133 (34.4)</td>
<td>195 (56.9)</td>
</tr>
<tr>
<td>40-54</td>
<td>136 (50.2)</td>
<td>111 (39.8)</td>
<td>106 (37.1)</td>
<td>94 (31.5)</td>
<td>137 (47.0)</td>
<td>114 (40.3)</td>
<td>149 (53.4)</td>
</tr>
<tr>
<td>55-69</td>
<td>111 (49.2)</td>
<td>90 (39.9)</td>
<td>91 (39.5)</td>
<td>78 (35.1)</td>
<td>117 (49.1)</td>
<td>92 (39.9)</td>
<td>128 (54.2)</td>
</tr>
<tr>
<td>70+</td>
<td>38 (44.7)</td>
<td>25 (28.9)</td>
<td>34 (31.0)</td>
<td>24 (28.4)</td>
<td>33 (29.7)</td>
<td>28 (32.0)</td>
<td>47 (53.6)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; High School</td>
<td>105 (43.3)</td>
<td>80 (32.2)</td>
<td>70 (30.6)</td>
<td>61 (25.0)</td>
<td>92 (38.2)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>77 (33.4)</td>
<td>102 (50.3)</td>
</tr>
<tr>
<td>High School</td>
<td>243 (47.5)</td>
<td>178 (34.3)</td>
<td>197 (37.9)</td>
<td>173 (33.2)</td>
<td>258 (49.2)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>193 (37.0)</td>
<td>279 (53.5)</td>
</tr>
<tr>
<td>College/ Post Grad</td>
<td>121 (49.7)</td>
<td>102 (42.6)</td>
<td>102 (41.5)</td>
<td>74 (32.1)</td>
<td>130 (53.3)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>109 (37.8)</td>
<td>154 (60.3)</td>
</tr>
<tr>
<td>County</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clark</td>
<td>217 (47.6)</td>
<td>160 (36.2)</td>
<td>160 (37.1)</td>
<td>138 (30.9)</td>
<td>218 (48.1)</td>
<td>164 (35.7)</td>
<td>247 (55.5)</td>
</tr>
<tr>
<td>Washoe</td>
<td>171 (44.9)</td>
<td>139 (37.0)</td>
<td>139 (37.0)</td>
<td>118 (31.8)</td>
<td>174 (45.3)</td>
<td>139 (38.0)</td>
<td>196 (52.5)</td>
</tr>
<tr>
<td>All others</td>
<td>83 (43.7)</td>
<td>63 (32.9)</td>
<td>72 (37.8)</td>
<td>53 (29.0)</td>
<td>91 (47.8)</td>
<td>77 (40.2)</td>
<td>97 (50.3)</td>
</tr>
</tbody>
</table>

Abbreviation: SNAP, Supplemental Nutrition Assistance Program.

<sup>a,b</sup>P <0.05, weighted Chi-squared tests used to determine relationships among variables.
<sup>c</sup>Does not include the participants that indicated "No" to location interest.
<sup>d</sup>Weighted percent row
Chapter 5
Discussion

The purpose of this thesis study was to describe the opinions and experiences of adults enrolled in SNAP, in order to assess the nutrition and physical activity needs of SNAP participants in Nevada. This chapter includes a discussion of the research findings presented in Chapter 4, and the strengths and limitations of this study. Additionally, this chapter contains conclusions that describe the implications of this study and future research.

Research objectives that guided this study were: To evaluate their relative level of concern regarding achieving household food security, a healthful diet, and a physically active lifestyle; To assess their perceived barriers related to achieving household food security, a healthful diet, and a physically active lifestyle including select intrapersonal, interpersonal, and environmental influences; To identify their preferences for nutrition education and physical activity promotion; and To examine the relationships among select demographic/household characteristics, and the perspectives of adults enrolled in SNAP.

The results from this study identify important characteristics and needs of Nevada’s SNAP population, which are described below.

Overall, survey participants perceived their diet as healthy and that they were engaging in physical activity. These results are similar to information presented in Phase I of Nevada’s Statewide Needs Assessment. Approximately 69% of low-income adults in Nevada reported engaging in physical activity. Additionally, 67% of SNAP-eligible households in Nevada reported to have at least
one serving of fruit per day, and 74% reported consuming at least one vegetable serving a day.\textsuperscript{35}

Overwhelmingly, participants of this study agreed that it was important to them to choose healthy foods and drinks, and to exercise and be physically active. This is also congruent with results from Phase I, as top health concerns reported by Nevadans in 2015 were obesity, physical activity and nutrition. Specific concerns included food insecurity, lack of nutrition education and limited access to affordable healthy foods.\textsuperscript{35} Furthermore, similar findings were reported in Alaska’s 2014 SNAP-Ed Needs Assessments, as 77% of respondents reported it was very important to them to eat healthy.\textsuperscript{87}

In this study, households experienced high rates of food insecurity. Although, no significant differences were noted among sociodemographic groups, 74% were categorized as food insecure and 38% experienced very low food security. Previous research assessing food security status among economically disadvantaged groups reported lower rates of food insecurity.\textsuperscript{26,32,71,102-104} A study assessing the effect of SNAP participation on food security of low-income adults (n=107), reported that 52% were food insecure at baseline.\textsuperscript{32} In another study evaluating the long-term impact of SNAP-Ed interventions on household food security of low-income adults with children living in the home (n=575), approximately 40% of households were classified as food insecure at baseline.\textsuperscript{26} Just over one-third of participants reported to have utilized emergency food services in the last year, indicating that many
households struggled to acquire enough food and relied on other resources for assistance.

High rates of food insecurity observed in this study exemplifies the need for additional programs and interventions in Nevada that reduce food insecurity among SNAP households. Previous research assessing the implications of food insecurity reported that food insecurity was associated with a higher probability of chronic diseases, and is even more significant when assessing the range of household food security (high, marginal, low and very low).\textsuperscript{57} Other research indicates food insecurity is associated with elevated body mass index and obesity, particularly among certain demographic groups.\textsuperscript{71,102,103,105} In a study by Nguyen et al,\textsuperscript{103} researchers report that although no relationship was noted between BMI and SNAP participation, children from households with very low food security had significantly greater BMI than children from food secure households.\textsuperscript{103} As previously mentioned, 18.5\% of youths in the US were obese in 2015-2016, while Nevada’s youth population (\(<\ 18\)) had an obesity prevalence of 26.5\% overall in 2015.\textsuperscript{9} Nutrition assistance programs have an important role to play in attenuating the negative effects of food insecurity, particularly among households with very low food security, that include children.

Relative level of concern regarding a healthy diet was evaluated in this survey. Nearly all participants reported that it was important to them to choose healthy foods and drinks and most appraised their diet as being healthy (moderately or very healthy). Although social desirability could have influenced
responses, the disparity between the high rates of food insecurity and positive perceptions of their diet was unexpected. Research indicates that low-income households, including those participating in SNAP, who experience high rates of food insecurity are also likely to have lower diet quality, particularly among certain food/nutrient groups.\textsuperscript{18,20,104} For example, research by Leung et al\textsuperscript{18} evaluating diet of adults enrolled in SNAP, reported 43\% of households experienced food insecurity, compared to 18\% of non-participant households. Dietary recalls of study subjects found that approximately 13-22\% of adults did not meet nutrient guidelines, with SNAP participants consuming fewer whole grains, more fruit juice and more red meat, compared to non-participants. Additionally, the diet scores of SNAP participants, as measured by the 2005 Healthy Eating Index, were lower (44.4) than non-participants (47.9).\textsuperscript{18} Similar findings have been reported in other studies assessing dietary quality and food purchases of SNAP households.\textsuperscript{20} Previous research also indicates that racial and ethnic disparities in food and beverage purchases may exist among SNAP households, suggesting certain groups may experience lower diet quality.\textsuperscript{106} Incongruities regarding survey participants’ evaluation of diet quality and high rates of food insecurity observed among households in this study, may indicate a response bias in how diet was reported. This could also indicate limitations in survey questions.

This study assessed barriers that have the potential to prevent or deter an individual from carrying out healthful behaviors. A large proportion of participants in this study reported a number of barriers to acquiring the food they needed,
including not having access to a personal vehicle and relying on other forms of transportation to shop for food. Furthermore, many households reported shopping for groceries less than three times a month and a small number shopped primarily at a convenience store. Previous research by Taillie et al\textsuperscript{107} reported similar food shopping patterns among low-income households. Researchers reported that a majority of households purchased food from grocery stores and supermarkets, while few households shopped for groceries at a convenience store. However, it was reported that SNAP participants were more likely to shop at a convenience store when compared to income-eligible non-participants and higher income groups.\textsuperscript{107} Additionally, research suggests that convenience stores in low-income communities offer produce that is typically more expensive and of poorer-quality than other store types.\textsuperscript{55} Disparities in food retail environments including the availability, price and quality of foods in low-income communities may explain these differences in shopping patterns and subsequent diet quality.\textsuperscript{108} Not surprisingly, previous research indicates that individuals from communities with greater access to stores that sell healthy foods, and less access to unhealthy food retail establishments (i.e., fast-food restaurants and convenience stores), tended to have healthier diets.\textsuperscript{108} In order to improve diet quality and alleviate food insecurity among this population, food procurement barriers noted in this research should be considered.

Significant relationships were noted among sociodemographic and food procurement characteristics. Shopping less than three times per month was related to age, race/ethnicity, marital status, education, household income, household size,
county of residence and if they had children in the home. Shopping without a personal vehicle was related to these sociodemographic characteristics, as well as gender. Shopping for groceries at a convenience store was related race/ethnicity, marital status, income, household size, county of residence, and the presence of children. No full-service grocery store nearby was related to gender, age, education level, income, household size and county of residence. Patterns observed here suggests that males experienced more food procurement challenges. Older participants also reported to have experienced food procurement challenges. Older and younger participants reported shopping less than three times a month. Participants with lower educational attainment, living alone, without children, and households with lower expected incomes, were associated were more likely to report procurement characteristics that potentially impact food access. Additionally, widowed persons experienced greater challenges compared to other marital status groups.

As reported by survey participants, the most common barriers to achieving a healthful diet were cost, convenience of unhealthy foods, foods spoiling too quickly and social influence of those around them. The least commonly reported barriers were access, time, planning meals, taste preferences and knowledge of healthy foods. These findings suggests that environmental influences (i.e., convenience, access and cost) may be more significant than intrapersonal influences (i.e., preferences and knowledge) in this population. On average, those with lower educational attainment, those living with less people in the household, and
households without children experienced a greater number of nutrition-related barriers. These findings suggest specific groups that may benefit from targeted nutrition interventions addressing nutrition barriers reported in this study.

Barriers to achieving a healthy diet noted by participants corresponded with barriers reported in previous research. Haynes-Maslow et al.,\textsuperscript{109} studied barriers to fruit and vegetable consumption using focus groups and identified cost, convenience and perishability of fruits and vegetables as top barriers. Additionally, participants reported food quality, personal preferences, availability, neighborhood safety and cooking/nutrition knowledge as barriers to fruit and vegetable consumption.\textsuperscript{109} Findings from Alaska’s 2014 SNAP-Ed Needs Assessment\textsuperscript{87} similarly indicated cost, availability of unhealthy foods and food spoiling too quickly as barriers to healthy eating.\textsuperscript{87}

In another study by Blumenthal et al.,\textsuperscript{110} stakeholders with working knowledge of nutrition, health and food insecurity provided opinions and perceptions of strategies to improve the diets of SNAP participants. It was reported the top barriers to healthy eating for low-income individuals was the availability of unhealthy foods, the costs of healthy foods and limited access to food retailers. Additionally, stakeholders were asked to provide their opinion regarding ways to improve the nutrition outcomes for SNAP participants. Stakeholders reported that partnerships with local community organizations, incentivizing healthy foods, and enhancing the food retail environment as approaches to improve the nutrition and health of participants. A majority also agreed that restricting certain foods and
drinks eligible for purchase using SNAP benefits as a possible strategy in improving diet quality.\textsuperscript{110}

Survey participants here, indicated the most common barriers to achieving a physically active lifestyle were cost, schedule conflicts and social influence of those around them. The least common physical activity barriers were weather, neighborhood safety and physical ability. Similar physical activity barriers were reported in previous research, including a study by Shelton et al,\textsuperscript{81} indicating social factors as significant predictor of physical activity among low-income adults. Social networks and close ties with others, predicted whether or not low-income individuals achieved the recommended amount of physical activity. Thus, suggesting social influences as a key factor in achieving physical activity among this population.\textsuperscript{81} Additionally, findings from research evaluating barriers to physical activity among low-income adults indicated lack of time and cost as important.\textsuperscript{111} Childcare was also indicated as a limiting factor, particularly when there were no close family members or partners to care for the child, signifying another form of social support necessary for physical activity engagement among populations with young children.\textsuperscript{111} Congruently, input from key informants in Phase II of Nevada’s Statewide Needs Assessment, indicated similar physical activity barriers among SNAP households, including lack of childcare and unsafe neighborhoods. Key informants also indicated that individuals residing in rural areas, lacked resources such as a gym.\textsuperscript{36} Furthermore, results from Phase I of the Statewide Needs...
Assessment reported that less than half of Nevadans living in low-income communities had access to recreational facilities.\textsuperscript{35}

Interestingly, previous research evaluating the association between physical activity environments of adults living in rural communities, reported an inverse associations between physical activity levels and both distance and density of gyms in the area. Additionally, it was indicated that a lack of sidewalks, bike lanes, parks and affordable recreation facilities were barriers to physical activity. Characteristics such as unsafe neighborhoods were also identified as physical activity barriers, including high crime rates, no street lights and heavy traffic, suggesting that environmental influences play a key role in physical activity levels.\textsuperscript{112} Economic constraints, in addition to limited access to physical activity facilities and resources in low-income communities should be considered in order to increase physical activity engagement.

Level of educational attainment was significantly associated with the number of physical activity barriers reported by participants of this study. Those with less than a high school education reported more barriers on average, signifying a population that may benefit from targeted physical activity promotion efforts that addresses barriers noted in this study. Despite the finding that a majority of SNAP participants described their physical activity level as very active or moderately active, about half agreed that it was hard to find affordable ways to be physically active, indicating opportunities for education regarding inexpensive physical activity options and the development of additional options for SNAP participants.
This survey included questions to identify the needs of particular groups that may be at higher risk for poor health outcomes. Almost one-third of survey participants indicated that they or someone in the household was on a special diet for health-related reasons. A majority of the diets described by participants related to diabetes. Diets for health-related conditions reported in this study are consistent with results from Phase I, as Nevadans experienced high rates of preventable chronic diseases including asthma, diabetes, coronary heart disease, and precursors for chronic diseases, such as high blood pressure and high blood cholesterol. This is particularly concerning, as many survey participants of this study reported that it was difficult to get to a store that sells the foods, and the foods required for the diet were too expensive. This suggest that individuals with condition(s) that require a special diet, may struggle to adhere to the diet necessary to maintain or prevent further complications from the condition(s). Additionally, nutrition education efforts should consider those with dietary restrictions, as they may face challenges not experienced by other households.

A disability, described here as the presence of a self-reported physical, mental or emotional condition that impacts daily life, was indicated among 44% of participants. This rate was identical to information gathered in Phase I of the Statewide SNAP-Ed Needs Assessment. Using 2015 data, the prevalence of disabilities among SNAP households in Nevada was estimated to be 44%, which was nearly twice the disability rate among all households in Nevada. Disabled individuals in this study reported that it was difficult to shop for and prepare food,
providing additional evidence that individuals living with a condition may face challenges beyond having limited resources. Previous research on food insecurity and functional limitations of older adults had reported that food insecurity was higher among adults ≥ 60 years of age with impaired function, signifying those of advanced age may need additional support if they live with a disability. \textsuperscript{114} Survey participants with disabilities reported significantly more nutrition-related barriers, indicating that they may be more vulnerable to nutritional insufficiencies and in greater need of support. Additionally, 66\% of those on a special-diet for health reasons reported a disability. Disabled participants also reported significantly more physical activity barriers compared to those without a disability, indicating physical activity may be a greater challenge among those with a reported condition. In order to address nutrition and physical activity barriers, education efforts should consider the challenges for those living with a disability.

Preferences for nutrition education and physical activity assessed in this study, indicated interest in topics that corresponded with barriers previously noted. For example, participants indicated interest in learning about ways to make food last all month, ways to prepare meals quickly and preparing meals on a budget. These nutrition education topics aligned with reported barriers including cost, convenience and food perishability.

Physical activity topics of interest to survey participants, included ways to improve overall fitness, ways to exercise at home without equipment and how to exercise without hurting yourself. Learning about ways to exercise at home could
alleviate cost identified as a barrier to physical activity. Additionally, how to fit exercise into the day, could help to address scheduling barriers. Interest in educational topics that related to barriers suggests that education addressing such barriers is not only warranted, but desired among this population.

In addition to the specific topics, participants reported having interest in receiving nutrition and physical activity information by mail, Internet or website, and television. Similar educational preferences were reported in Alaska’s SNAP-Ed Needs Assessment. Respondents there indicated Internet and mail pamphlets as desired ways to learn about nutrition. Previous research supports the use of online and smartphone-based education for low-income individuals that are familiar with technology. The use of web-based nutrition education was reported as a promising intervention method among low-income participants living in rural communities, as a majority reported access to the Internet (76%) and smartphone devices (92%). Considerable differences were observed by age group, as seniors reported the least Internet usage, access and interest in receiving information, and would not likely benefit from online education. In this study, almost 42% of participants completed surveys online, indicating Internet and computer or smart device access by many, but not all. Additionally, almost half (49%) of participants indicated interest in free activity trackers and apps, suggesting the use of technology among some SNAP households in Nevada. These findings indicate web-based education efforts may be effective in reaching those that currently use the Internet
and technology, but more research is needed to evaluate the use of web-based education in this population.

The top locations for receiving educational information were SNAP or welfare office, a medical or dental clinic and at a grocery store. Findings from Alaska’s SNAP-Ed Needs Assessment\textsuperscript{87} reported that one-third of survey respondents indicated that nutrition education classes are hard to find, suggesting that awareness and convenience of education information is important among low-income individuals. Locations identified in this study are promising sites for implementing nutrition education, as they are available in most low-income communities and may provide opportunities for participants to receive other services in addition to nutrition education and physical activity promotion information.

The social-ecological model (SEM) guided this research. Current SNAP-Ed guidance\textsuperscript{5} emphasizes the use of SEM to develop approaches that address several or all levels of influence. PSE interventions implemented at multiple levels of influence are thought to be important in reaching all sectors of society and must be guided by current research. The needs and characteristics of SNAP households identified in this research, included barriers that influenced SNAP households at intrapersonal, interpersonal and environmental levels. All are thought to be important in implementing interventions that result in long-term health behavior change.
Strengths

Strengths of this study include the large, representative sample of SNAP households in Nevada. The 1,014 survey participants were randomly selected from all SNAP households in the state, and stratified by county (35% Washoe, 50% Clark and 15% all others), to better represent the population distribution. Additionally, the data were weighted to better reflect Nevada’s SNAP population. Additionally, demographic information was obtained from the application for assistance submitted to Nevada Division of Welfare and Supportive Services, and is a strength of this study, presumably because it may be more accurate. Assessing household food security using a standardized food security module is a strength of this study. The use of two survey formats, online and telephone options, is also a strength of this study. The two survey formats allowed participants that may not have access to a computer or the Internet, to complete the survey over the phone. Additionally, translating the survey to Spanish helped to minimize sampling error.

Limitations

Limitations of this study include the use of self-reported data, which is always subject to response bias. Additionally, the duration of the survey was intentionally limited to 10-15 minutes to reduce the burden on participants. Due to this time constraint, participants did not have the opportunity to elaborate or provide details regarding their responses. Due to a lapse in time during data collection, it could not be determined whether or not 126 households included in this survey had children. Additionally, the research team could not assess all
potential nutrition and physical activity barriers this population may face and therefore other barriers may exist. It is important to note that the 18-item and 10-item food security survey modules are recommended for use in assessing food insecure households when possible. In an attempt to reduce the response burden of participants, the six-item abbreviated version was selected for use in this survey. It is also important to note that the six-item food security module used in study does not directly assess child food security and does not assess severe adult food insecurity that is likely to reduce the food intake of children living in the household.

Conclusions

The purpose of this study was to evaluate the food security, nutrition, physical activity and educational needs of Nevada’s SNAP population in order to better inform the efforts of Nevada’s SNAP-Ed. The results of this study will be used by the Nevada Division of Welfare and Supportive Services to guide state SNAP-Ed plans. Overall, the findings from this study, as well as findings reported in Phase I and Phase II of Nevada’s Statewide Needs Assessment, described barriers that existed for low-income communities, that potentially made it difficult for Nevadans to live a healthy lifestyle. Experiences of households in this study indicated educational priorities regarding food security, nutrition and physical activity. Additionally, these results suggest opportunities for Policy, Systems and Environmental (PSE) approaches and/or interventions that affect all levels of SEM. Ideally, these PSE approaches would address the barriers this population was reported to have experienced, such as food insecurity. High rates of food insecurity
observed and the use of emergency food resources indicates households that may need additional support. In order to increase the likelihood that persons eligible for SNAP will make healthy food choices, per the goal of SNAP-Ed, food insecurity must be addressed, as it is related to almost every aspect of health and nutrition. Improvement in dietary quality, obesity and other chronic disease rates are not likely to be addressed if households do not have sufficient food. Furthermore, concerns regarding physical activity, which plays an important role in obesity prevention, will also not likely be addressed if the basic, most fundamental needs of the population are not addressed (i.e., enough food to eat). Interventions aimed to increase access to healthy foods and drinks, while reducing barriers associated with their costs are justified in the food environments of Nevada’s low-income communities.

Future research is warranted to reevaluate the needs of this population overtime, to assess progress in addressing the needs recognized here, and to ensure that newly emerging needs are identified. Additionally, objective data regarding the health, diet quality, and physical activity of this population overtime, could be helpful in understanding the needs of SNAP participants. Furthermore, considering the findings from this study, additional research may be of benefit to develop targeted interventions, to improve the nutrition and health outcomes. For example, among participants that experienced food insecurity, many are also living with a disability and follow a diet for health-related reasons. Results indicated that these groups also experienced more challenges in regards to achieving a healthy diet and
a physically active life, which indicates a need for further attention. Additional research may be necessary to develop effective education and PSE approaches/interventions, particularly those that addresses food insecurity, obesity and chronic disease.
References


26. Rivera RL, Maulding MK, Abbott AR, Craig BA, Eicher-Miller HA. SNAP-Ed (Supplemental Nutrition Assistance Program-Education) Increases Long-Term Food Security among Indiana Households with Children in a Randomized Controlled Study. (1541-6100 (Electronic)).


36. Schwartz M. Perceptions of key informants regarding the educational needs of the Supplemental Nutrition Assistance Program Education (SNAP-Ed) target audience Nutrition, University of Nevada, Reno; 2017.


57. Gregory CA, Coleman-Jensen A. *Food Insecurity, Chronic Disease, and Health Among Working-Age Adults.* USDA. Economic Research Service; 2017. ERR 235.


59. Leung CW, Epel ES, Willett WC, Rimm EB, Laraia BA. Household food insecurity is positively associated with depression among low-income


71. Sanjeevi N, Freeland-Graves J, Hersh M. Food insecurity, diet quality and body mass index of women participating in the Supplemental Nutrition


95. Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System Survey Questionnaire. U.S. Department of Health and


APPENDIX A: SURVEY INSTRUMENT
language pref

In which language would you prefer to take this survey?

¿En qué idioma preferirías tomar esta encuesta?

☐ English
☐ Español

confirm language

You selected English. Is this correct?

Usted seleccionó Inglés, ¿Es esto correcto?

☐ Yes
☐ No

INTRO
This survey asks questions about food, nutrition, and physical activity.

As a way of saying thank you for your time, we will email you a $10 gift card that can be used at places like Amazon, Target, and Best Buy. At the end of the survey you will be asked to enter an email address where you would like the gift card to be sent.

Your participation in this survey is completely voluntary and will have no impact on your SNAP benefits now or in future. You may skip any survey questions you do not want to answer and may quit the survey at any time. Your survey responses will be kept confidential and your name will never be included in any reports.

If you have questions about the study please call Dr. Jamie Benedict at (775)-784-6445. To report survey errors or technical difficulties call Dr. Veronica Dahir at 1-(800)-929-9079 (Mon.-Fri. 9am-9pm; Sat., Sun., and holidays 9am-5pm). If you have any concerns about the conduct of the study call the Research Integrity Office at (775)-327-2368.
To ensure and maintain your confidentiality, please complete the survey in one sitting and make sure to submit your responses. You will receive a message once the survey is complete informing you that your responses have been submitted.

If you do not complete the survey in one sitting, please know that anyone with a link to the survey using the same computer can view your responses. You can clear your browser's cookies to avoid this problem but you will not be able to go back and complete the survey where you left off if you do.

If you are 18 years or older and wish to participate in the study, please indicate that you agree to participate by clicking the button below.

- I agree to participate
- I do not agree to participate

Per health/beh

In general, how would you describe your health? Would you say your health is...

- Excellent
- Good
- Fair
- Poor

In general, how would you describe your level of physical activity? Physical activity includes any body movement, other than your regular job duties, that works muscles and requires energy.
Would you say you are…

- Very Active
- Moderately Active
- Not Active

In general, how would you describe the foods and drinks you consume? Healthy foods and drinks include those that contain little or no saturated fat, sugar, or salt and are high in nutrients. Examples of healthy foods include fruits, vegetables, whole grains, low-fat dairy, and lean meats. Examples of unhealthy foods include cookies, chips, soda, candy and fried foods.

Would you say the foods and drinks you consume are…

- Very Healthy
- Moderately Healthy
- Not Healthy

Food shopping

Please answer the following questions about food shopping for your household. We define “household” as anyone who lives in your home and shares most meals or food.

WHO usually does the grocery shopping in your household?
From what KIND of store does your household get most of their groceries? Would you say….

- A grocery store (like Safeway, Raley's, Vons or WinCo)
- A convenience store, corner store or dollar store (like 7-Eleven, Tembles or Dollar Tree)
- A super store or wholesale club (like Wal-Mart, Target or Costco)
- Or some other kind of store (specify)

What form of transportation is most often used to get groceries for your household?

- Personal vehicle
- Taxi or ride-sharing services
- Public transportation
- Walking
- Biking
- Other (specify)

Please indicate which statement best describes how often your household shops for groceries.
At least once a week  
Less than once a week but at least once a month  
Less than once a month  
Never

How many times per week does your household shop for groceries?  

How many times per month does your household shop for groceries?  

Do you have a working stove available where you live?  
Yes  
No

Do you have a working refrigerator available where you live?  
Yes  
No
Food security

These next questions are about the food eaten in your household in the last 12 months, since DECEMBER of last year and whether you were able to afford the food you need.

Please read the following statements that people have made about their food situation. For these statements, please indicate whether the statement was often true, sometimes true, or never true for you in the last 12 months—that is, since last DECEMBER.

The food that I bought just didn’t last, and I didn’t have money to get more.

Was this often true, sometimes true or never true for you in the last 12 months?

- Often true
- Sometimes true
- Never true

I couldn’t afford to eat balanced meals.

Was this often true, sometimes true or never true for you in the last 12 months?

- Often true
- Sometimes true
In the last 12 months, since last DECEMBER did you or other ADULTS in your household ever cut the size of your meals or skip meals because there wasn’t enough money for food?

- Yes
- No

How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months

In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food?

- Yes
- No

In the last 12 months, were you ever hungry but didn’t eat because there wasn’t enough money for food?

- Yes
- No
In the last 12 months, has anyone in your household received a meal or food assistance from a food bank, food pantry or community kitchen? This includes at a senior center, adult daycare or religious charity.

○ Yes
○ No

Is anyone in your household on a special diet for health-related reasons?

○ Yes
○ No

What is the special diet?

☐

On a scale from 1 = Strongly agree to 5 = Strongly disagree indicate the extent to which you agree or disagree with each statement about the food and drinks required or recommended for special diets.

The foods and drinks for the special diet are too expensive.
It’s difficult to get to a store that has the special foods and drinks that are needed for the diet.

1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree

I have access to reliable and/or affordable transportation to get to the grocery store

1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree

There is a full-service grocery store near my home that sells uncooked meats, fresh fruits, vegetables, AND baked goods.

1. Strongly agree
2. Agree
3. Neither agree nor disagree
Do you have a physical, mental or emotional condition that impacts your daily life?

- Yes
- No

On a scale from 1 = Strongly agree to 5 = Strongly disagree please indicate the extent to which you agree or disagree with each of the following statements about physical, mental, and emotional conditions.

My physical, mental or emotional condition makes it difficult to shop for food.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
- 4-Disagree
- 5-Strongly disagree

My physical, mental or emotional condition makes it difficult to prepare food.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
My physical, mental or emotional condition makes it difficult to eat or drink.

1-Strongly agree
2-Agree
3-Neither agree nor disagree
4-Disagree
5-Strongly disagree

My physical, mental or emotional condition prevents me from exercising and being physically active.

1-Strongly agree
2-Agree
3-Neither agree nor disagree
4-Disagree
5-Strongly disagree

Barriers to healthy

On a scale from 1 = Strongly agree to 5 = Strongly disagree please indicate the extent to which you agree or disagree with each of the following statements about healthy foods and drinks.
Healthy foods and drinks are those that contain little or no saturated fat, sugar, or salt and are high in nutrients. Examples of healthy foods include fruits, vegetables, whole grains, low-fat dairy, and lean meats. Examples of unhealthy foods include cookies, chips, soda, candy and fried foods.

It is important to me to choose healthy foods and drinks.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
- 4-Disagree
- 5-Strongly disagree

It’s hard for me to get to a store that sells healthy foods and drinks.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
- 4-Disagree
- 5-Strongly disagree

It costs too much for me to eat healthy foods and drinks.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
- 4 Disagree
- 5-Strongly disagree
Healthy foods and drinks taste good.

☐ 1-Strongly agree
☐ 2-Agree
☐ 3-Neither agree nor disagree
☐ 4-Disagree
☐ 5-Strongly disagree

I know what foods and drinks at the grocery store are healthy.

☐ 1-Strongly agree
☐ 2-Agree
☐ 3-Neither agree nor disagree
☐ 4-Disagree
☐ 5-Strongly disagree

I buy unhealthy foods more often BECAUSE they are more convenient than healthy foods.

☐ 1-Strongly agree
☐ 2-Agree
☐ 3-Neither agree nor disagree
☐ 4-Disagree
☐ 5-Strongly disagree

I know how to plan meals that include healthy foods and drinks.

☐ 1-Strongly agree
2-Agree
3-Neither agree nor disagree
4-Disagree
5-Strongly disagree

It takes too much time to prepare healthy foods and drinks.

1-Strongly agree
2-Agree
3-Neither agree nor disagree
4-Disagree
5-Strongly disagree

Healthy foods and drinks spoil too quickly.

1-Strongly agree
2-Agree
3-Neither agree nor disagree
4-Disagree
5-Strongly disagree

People I spend the most time with usually make healthy food and drink choices.

1-Strongly agree
2-Agree
3-Neither agree nor disagree
4-Disagree
5-Strongly disagree
barriers act

On a scale from 1 = Strongly agree to 5 = Strongly disagree please indicate the extent to which you agree or disagree with each of the following statements about exercises and physical activity.

For our purposes, exercise and physical activity mean the same thing. Physical activity and exercise includes any body movement, OTHER THAN YOUR REGULAR JOB DUTIES, that work muscles and requires energy other than resting.

My daily schedule makes it hard for me to exercise and be physically active.

☐ 1-Strongly agree
☐ 2-Agree
☐ 3-Neither agree nor disagree
☐ 4-Disagree
☐ 5-Strongly disagree

I am able to find ways to exercise and be physically active within my abilities.

☐ 1-Strongly agree
☐ 2-Agree
☐ 3-Neither agree nor disagree
☐ 4-Disagree
☐ 5-Strongly disagree
It's hard to find ways to exercise and be physically active that I can afford.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
- 4-Disagree
- 5-Strongly disagree

There are safe places to exercise and be physically active near my home.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
- 4-Disagree
- 5-Strongly disagree

There are safe places where I can exercise and be physically active in all types of weather.

- 1-Strongly agree
- 2-Agree
- 3-Neither agree nor disagree
- 4-Disagree
- 5-Strongly disagree

People I spend time with usually exercise and are physically active.

- 1-Strongly agree
It is important to me to exercise and be physically active.

| 1 | Strongly agree |
| 2 | Agree |
| 3 | Neither agree nor disagree |
| 4 | Disagree |
| 5 | Strongly disagree |

education

The last set of questions pertains to nutrition and physical activity education. Please read the list of educational TOPICS. For each topic, please select YES if it interests you and NO if it doesn't interest you.

Would you be interested in learning more about...

<table>
<thead>
<tr>
<th>Topic</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to prepare healthy meals on a budget</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safe food preparation and handling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ways to make groceries last all month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ways to prepare healthy meals in little time</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Is there anything else you would be interested in learning about (please specify)?

Would you be interested in learning more about...

- How to fit exercise and physical activity into the day
- How to exercises without hurting myself
- Ways to improve overall fitness
- Ways to exercise at home without equipment
- Free activity trackers and fitness apps
- Is there anything else you would be interested in learning about (please specify)?

Modes

Indicate yes or no, would you be interested in receiving nutrition and physical activity information...

- ...in the mail
- ...from the internet or a website
<table>
<thead>
<tr>
<th>Method</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>on television</td>
<td></td>
<td></td>
</tr>
<tr>
<td>by telephone</td>
<td></td>
<td></td>
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<tr>
<td>by text messages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>in-person</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is there any other way you would be interested in receiving information (please specify)?

<table>
<thead>
<tr>
<th>Location</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grocery store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community or senior center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Church or faith organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical or dental clinic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parks and recreation center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The welfare office or SNAP office</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is there anywhere else you would like to receive information (please specify)?

**gift card**
Thank you for your participation in this study! Your responses are very important to us.

As a way of saying thank you for your time, we will email you a $10 Tango gift card that can be used at retailers such as Amazon and Target.

Do you have an email address that we can send the $10 gift card to?

☐ Yes, I have an email address
☐ No, I do not have an email address

Please provide an email address you would like the $10 gift card emailed to:


Please provide a mailing address you would like information about how to obtain the $10 gift card to be sent to:


INTRO - Spanish
Esta encuesta es sobre su alimentación, nutrición, y actividad física. También le haremos preguntas sobre qué clase de información le sería importante a usted.

Como agradecimiento por su tiempo, le mandaremos por correo una tarjeta de regalo con valor de $10, que puede ser usada en lugares como Amazon, Target, y Best Buy. Al final de la encuesta le pediremos una dirección de correo electrónico (email) donde pueda usted recibir la tarjeta de regalo que le mandaremos. La dirección de correo electrónico que nos de no estará conectada a las respuestas de la encuesta que usted nos de.

Su participación en esta encuesta es completamente voluntaria y no tendrá ningún impacto en los beneficios de SNAP que usted recibe o recibirá en el futuro. Usted puede ignorar cualquier pregunta en la encuesta que usted no quiera responder, y usted también tiene el derecho de terminar su participación en la encuesta cuando usted quiera. Sus respuestas se mantendrán de forma confidencial y su nombre nunca será incluido en ningún reporte.
Si usted tiene preguntas sobre esta encuesta, por favor llame a Dr. Jamie Benedict al (775) 784 6446. Para reportar errores en la encuesta o dificultades técnicas, por favor llame a Dr. Veronica Dahir al 1 (800) 929 9079 (Lunes a Viernes: 9am a 9pm; Sábados, Domingos, y días festivos: 9am a 5pm). Si tiene comentarios sobre la forma en la que la encuesta fue administrada, por favor llame al Research of Integrity Office al (775) 327 2368.

Para asegurar y mantener su confidencialidad, por favor complete la encuesta en una sola sesión y asegúrese de enviar sus respuestas. Usted va a recibir un mensaje una vez que la encuesta esté completa informándole que sus respuestas han sido enviadas. Si usted no completa la encuesta en una sola sesión, sepá usted que cualquier persona que tenga la dirección electrónica de la encuesta y acceso a la misma computadora que usted está usando podrá ver sus respuestas. Usted puede borrar las cookies de su navegador para evitar este problema, pero no podrá regresar a la parte de la encuesta que no completó si decide hacer esto.

Si usted tiene mas de 18 años y desea participar en la encuesta, por favor indique que esta usted de acuerdo para participar haciendo click en el botón aquí abajo.

☐ Quiero participar
☐ No quiero participar

**Per health/beh - Spanish**

En general, ¿Cómo describiría su salud? Considere usted que su salud es...

☐ Excelente
☐ Buena
☐ Regular
En general, ¿Cómo describiría su nivel de actividad física? Actividad física include cualquier tipo de movimiento corporal, sin incluir responsabilidades típicas de su trabajo, que trabaja músculos y requiere energía.

Diría que usted es...

- Muy Activo(a)
- Moderadamente Activo(a)
- No Activo(a)

En general, ¿cómo describiría los alimentos y bebidas que usted consume? Alimentos y bebidas saludables incluyen aquellas que contienen poca o nada de grasa, azúcar, sal, y son altos en nutrientes. Ejemplos de alimentos saludables incluyen frutas, verduras, granos integrales, lácteos bajos en grasa, y carnes sin grasa. Ejemplos de comidas no saludables incluyen galletas, papas fritas, soda, dulces, y comida frita.

Diría usted que las comidas y bebidas que usted consume son...

- Muy Nutritivas
- Moderadamente Nutritivas
- No Nutritivas

Food shopping - Spanish
Por favor conteste las siguientes preguntas sobre la compra de alimentos en su domicilio. "Domicilio" incluye a todas las personas que viven en su casa y comparten la mayoría de las comidas o alimentos con usted.

¿QUIEN es usualmente la persona que va a comprar alimentos en su domicilio?

- Usted
- Su esposo(a) o pareja
- Su compañero de casa o habitacion (roommate)
- Alguien mas (especifique)

¿De qué TIPO de tienda su domicilio obtiene la mayoría de sus alimentos?

- Tienda de comestibles (como Safeway, Raley's, Vons, o WinCo)
- Tienda de conveniencia, tienda de la esquina, o tienda de dolar (como 7-Eleven, Terribles, o el Dollar Tree)
- Supermercado o tienda de mayoreo (como Walmart, Target, o Costco)
- Otro tipo de tienda (especifique)

¿Que modo de transporte es el mas usado para ir a comprar alimentos en su domicilio?

- Vehiculo personal
- Taxi o servicios de vehículos de transporte con conductor (Uber, Lyft)
- Transporte publico
Por favor seleccione la declaración que mejor describe que tan seguido se hacen compras de alimentos en su domicilio.

- A pie
- Bicicleta
- Otro (especifique)

¿Cuántas veces a la semana se hacen compras de alimentos en su domicilio?

¿Cuántas veces al mes se hacen compras de alimentos en su domicilio?

¿Tiene usted disponible una estufa que funciona en su vivienda?

- Sí
- No
¿Tiene usted disponible un refrigerador que funciona en su vivienda?

☐ Si
☐ No

**Food security - Spanish**

Las siguientes preguntas son sobre los alimentos que se han consumido en su domicilio en los últimos 12 meses, desde OCTUBRE del año pasado, y sobre si usted pudo costear los alimentos que necesita.

Por favor lea las siguientes declaraciones que personas han hecho sobre sus situaciones alimenticias. En estas declaraciones, por favor indique si la declaración es "a menudo", "a veces", o "nunca" en los últimos 12 meses—es decir, desde OCTUBRE pasado.

La comida que compre simplemente no alcanzo, y no tuve dinero para comprar más.

¿Fue esto a menudo, a veces, o nunca en los últimos 12 meses?

☐ A menudo
☐ A veces
☐ Nunca
No me alcanzo para comprar comidas balanceadas.

¿Fue esto a menudo, a veces, o nunca en los últimos 12 meses?

- A menudo
- A veces
- Nunca

¿En los últimos 12 meses, desde OCTUBRE pasado, tuvo usted u otros ADULTOS en su domicilio que reducir la cantidad de sus comidas o saltarse comidas por que no había suficiente dinero para alimentos?

- Sí
- No

¿Que tan seguido paso esto---casi cada mes, algunos meses pero no todos los n

- Casi cada mes
- Algunos meses pero no todos los meses
- Solo 1 o 2 meses

En los últimos 12 meses ¿Tuvo usted que comer una cantidad menor de lo que usted necesitaba por que no había suficiente dinero para comida?

- Sí
- No
En los últimos 12 meses ¿Tuvo usted hambre pero no pudo comer por que no había suficiente dinero para comida?

○ Sí
○ No

En los últimos 12 meses ¿Ha habido alguien en su domicilio que ha recibido una comida o asistencia alimenticia de un banco de comida, despensa de alimentos, o cocina de comunidad, incluyendo centros para adultos mayores, guarderías para adultos, y organizaciones religiosas.

○ Sí
○ No

¿Alguien en su domicilio necesita una dieta especial por razones de salud?

○ Sí
○ No

¿Cuál es la dieta especial?

[Blank]

En una escala del 1 (completamente de acuerdo) al 5 (completamente en desacuerdo), por favor indique que tanto esta usted de acuerdo o en
desacuerdo con las siguientes declaraciones sobre comida y bebidas necesarias para dietas especiales.

La comida y bebidas para la dieta especial son muy costosas.

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
- Completamente en desacuerdo

Es difícil ir a la tienda que tiene la comida y bebidas especiales que se necesitan para la dieta.

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
- Completamente en desacuerdo

Tengo acceso a transporte que es confiable y/o accesible para ir a la tienda de abarrotes

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
- Completamente en desacuerdo
Hay una tienda de abarrotes completa cerca de mi domicilio, que tiene carne fresca, frutas, verduras, y panadería.

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
- Completamente en desacuerdo

¿Tiene usted una condición física, mental, o emocional que afecta su vida diaria?

- Sí
- No

En una escala del 1 (completamente de acuerdo) al 5 (completamente en desacuerdo), pro favor indique que tanto está de acuerdo o en desacuerdo con las siguientes declaraciones sobre condiciones físicas, mentales, y emocionales.

Mi condición física, mental, o emocional me hace difícil ir a comprar alimentos.

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
Mi condición física, mental, o emocional me hace difícil preparar alimentos.

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
- Completamente en desacuerdo

Mi condición física, mental, o emocional me hace difícil comer o tomar líquidos.

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
- Completamente en desacuerdo

Mi condición física, mental, o emocional me hace difícil hacer ejercicio y mantenerme activo(a) físicamente.

- Completamente de acuerdo
- De acuerdo
- Ni de acuerdo ni en desacuerdo
- En desacuerdo
- Completamente en desacuerdo
Barriers to healthy - Spanish

En una escala del 1 (completamente de acuerdo) al 5 (completamente en desacuerdo), por favor indíque que tan de acuerdo o en desacuerdo con las siguientes declaraciones sobre alimentos y bebidas saludables.

Alimentos y bebidas saludables son aquellas que contienen poca o nada de grasa, azúcar, o sal, y son altas en nutrientes. Ejemplos de alimentos saludables incluyen frutas, verduras, granos integrales, lácteos bajos en grasa, y carnes sin grasa. Ejemplos de alimentos no saludables incluyen galletas, papas fritas, dulces, y comida frita.

Para mí, es importante elegir comidas y bebidas saludables.

☐ 1- Completamente de acuerdo
☐ 2- De acuerdo
☐ 3- Ni de acuerdo ni en desacuerdo
☐ 4- En desacuerdo
☐ 5- Completamente en desacuerdo

Para mí, es difícil ir a una tienda que vende alimentos y bebidas saludables.

☐ 1- Completamente de acuerdo
☐ 2- De acuerdo
☐ 3- Ni de acuerdo ni en desacuerdo
☐ 4- En desacuerdo
☐ 5- Completamente en desacuerdo
Para mí, es muy costoso comer alimentos y bebidas saludables.

- 1- Completamente de acuerdo
- 2- De acuerdo
- 3- Ni de acuerdo ni en desacuerdo
- 4- En desacuerdo
- 5- Completamente en desacuerdo

Los alimentos y bebidas saludables son deliciosas.

- 1- Completamente de acuerdo
- 2- De acuerdo
- 3- Ni de acuerdo ni en desacuerdo
- 4- En desacuerdo
- 5- Completamente en desacuerdo

Yo se cuáles alimentos y bebidas en el supermercado son saludables.

- 1- Completamente de acuerdo
- 2- De acuerdo
- 3- Ni de acuerdo ni en desacuerdo
- 4- En desacuerdo
- 5- Completamente en desacuerdo

Yo compro alimentos poco saludables POR QUE son más convenientes que los alimentos saludables.
1- Completamente de acuerdo
2- De acuerdo
3- Ni de acuerdo ni en desacuerdo
4- En desacuerdo
5- Completamente en desacuerdo

Yo se como planear comidas que incluyen alimentos y bebidas saludables.

1- Completamente de acuerdo
2- De acuerdo
3- Ni de acuerdo ni en desacuerdo
4- En desacuerdo
5- Completamente en desacuerdo

Preparar alimentos y bebidas saludables toma demasiado tiempo.

1- Completamente de acuerdo
2- De acuerdo
3- Ni de acuerdo ni en desacuerdo
4- En desacuerdo
5- Completamente en desacuerdo

Los alimentos y bebidas saludables se echan a perder muy rápido.

1- Completamente de acuerdo
2- De acuerdo
3- Ni de acuerdo ni en desacuerdo
4- En desacuerdo
5- Completamente en desacuerdo
Las personas con las que paso más tiempo usualmente preparan alimentos y bebidas saludables.

☐ 1- Completamente de acuerdo
☐ 2- De acuerdo
☐ 3- Ni de acuerdo ni en desacuerdo
☐ 4- En desacuerdo
☐ 5- Completamente en desacuerdo

**barriers act - Spanish**

En una escala del 1 (completamente de acuerdo) al 5 (completamente en desacuerdo), por favor indique que tan de acuerdo o en desacuerdo está con las siguientes declaraciones sobre ejercicio y actividades físicas.

Para nuestros propósitos, ejercicio y actividad física significan lo mismo. Actividad física y ejercicio incluyen cualquier movimiento corporal que trabaja músculos y requiere energía, EXCLUYENDO ACTIVIDADES REGULARES DE SU TRABAJO o actividades de descanso.

Mi horario regular me hace difícil poder ejercitar y mantenerme activo(a) físicamente.

☐ 1- Completamente de acuerdo
☐ 2- De acuerdo
☐ 3- Ni de acuerdo ni en desacuerdo
☐ 4- En desacuerdo
☐ 5- Completamente en desacuerdo
Soy capaz de encontrar maneras de ejercitarme y mantenerme físicamente activo(a) dentro de mis habilidades.

- 1- Completamente de acuerdo
- 2- De acuerdo
- 3- Ni de acuerdo ni en desacuerdo
- 4- En desacuerdo
- 5- Completamente en desacuerdo

Es difícil encontrar formas de ejercitarme y mantenerme físicamente activo(a) que sean baratas.

- 1- Completamente de acuerdo
- 2- De acuerdo
- 3- Ni de acuerdo ni en desacuerdo
- 4- En desacuerdo
- 5- Completamente en desacuerdo

Hay lugares seguros donde puedo ejercitarme y mantenerme físicamente activo(a) cerca de mi domicilio.

- 1- Completamente de acuerdo
- 2- De acuerdo
- 3- Ni de acuerdo ni en desacuerdo
- 4- En desacuerdo
- 5- Completamente en desacuerdo
Hay lugares seguros donde puedo ejercitarme y mantenerme físicamente activo(a) sin importar el clima.

○ 1- Completamente de acuerdo
○ 2- De acuerdo
○ 3- Ni de acuerdo ni en desacuerdo
○ 4- En desacuerdo
○ 5- Completamente en desacuerdo

Las personas con las que convivo usualmente se ejercitan y se mantienen físicamente activos.

○ 1- Completamente de acuerdo
○ 2- De acuerdo
○ 3- Ni de acuerdo ni en desacuerdo
○ 4- En desacuerdo
○ 5- Completamente en desacuerdo

Para mí, es importante ejercitarme y mantenerme físicamente activo(a).

○ 1- Completamente de acuerdo
○ 2- De acuerdo
○ 3- Ni de acuerdo ni en desacuerdo
○ 4- En desacuerdo
○ 5- Completamente de acuerdo

education - Spanish
La última sección de preguntas son sobre nutrición y educación de actividad física. Por favor lea la lista de temas de educación. Por cada tema, por favor seleccione SI si le interesa, y NO si no le interesa.

**Estaría usted interesado(a) en información acerca de...**

<table>
<thead>
<tr>
<th>Tema</th>
<th>Sí</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Como preparar comidas saludables dentro de un presupuesto.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manejo y preparación segura de alimentos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Como hacer que los alimentos duren todo el mes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Como preparar comidas saludables en poco tiempo.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Otro tipo de información (por favor especifique)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Estaría usted interesado(a) en información acerca de...**

<table>
<thead>
<tr>
<th>Tema</th>
<th>Sí</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Como hacer tiempo en el día para ejercicio y actividad física.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Como ejercitarse sin lastimarse.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formas de mejorar la condición física.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Como ejercitarse en casa sin máquinas de ejercicio.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Indique "sí" o "no", ¿estaría usted interesado(a) en recibir información acerca de nutrición y actividad física...

... por correo?
... por internet o página web?
... en televisión?
... por teléfono?
... por mensaje de texto?
... en persona?

De otra forma (por favor especifique)?

Indique "sí" o "no", ¿estaría usted interesado(a) en recibir información en un(a)...
<table>
<thead>
<tr>
<th>Sí</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tienda de abarrotes?</td>
<td></td>
</tr>
<tr>
<td>Centro o comunidad para personas mayores?</td>
<td></td>
</tr>
<tr>
<td>Escuela?</td>
<td></td>
</tr>
<tr>
<td>Iglesia u organización de fe?</td>
<td></td>
</tr>
<tr>
<td>Clínica médica o dental?</td>
<td></td>
</tr>
<tr>
<td>Parque o centro de recreación?</td>
<td></td>
</tr>
<tr>
<td>Oficina de asistencia social (welfare) o SNAP?</td>
<td></td>
</tr>
</tbody>
</table>

Otro tipo de información (por favor especifique)?

---

gift card-spanish

Gracias por su participación en este estudio. Sus respuestas son muy importantes para nosotros.

Como forma de agradecimiento por su tiempo, le mandaremos por email una tarjeta de regalo de Tango con valor de $10, que puede ser usada en establecimientos como Amazon y Target.

Tiene una dirección de correo electrónico que podemos enviar la tarjeta de regalo de $10?

- [ ] Sí, tengo una dirección de correo electrónico
- [ ] No, no tengo una dirección de correo electrónico
Por favor proporcione una dirección de correo electrónico donde gusta que le envíen la tarjeta de $10:


Por favor proporcione una dirección postal que le gustaría información sobre como obtener la tarjeta de regalo $10 para ser enviada a:


confirm lang - spanish

You selected Spanish. Is this correct?

Usted seleccionó Español. ¿Es esto correcto?

○ Sí
○ No
APPENDIX B: INVITATION LETTER
Mr. Smith
1234 Road
Reno, NV 89523

Dear __________________________:

We are writing to invite you to participate in a nutrition study. The purpose of the study is to gain your viewpoints about food, nutrition and physical activity to help improve the health of Nevada’s residents. Everyone who participates will receive a $10 gift card that can be used at places such as Amazon, Target and Best Buy.

Your name was randomly chosen from a list of households enrolled in Nevada’s Supplemental Nutrition Assistance Program (SNAP). Participating in this study is completely voluntary and will have no impact on your SNAP benefits now or in the future. This study is being conducted by the University of Nevada on behalf of the Division of Welfare and Supportive Services (DWSS) and your responses will come directly to the University, not to the DWSS. Your responses will be kept confidential and will not be connected to any personal information.

Because only a small number of households were selected, your participation is very important to us. The survey will take 10-15 minutes to complete. To make it easy for you, the survey can be completed two different ways:

1) Online: To complete the survey online, please enter the website URL shown below into a web browser. At the beginning of the survey, you will be prompted to enter the access code. Please be sure to type in the website URL exactly as it appears below. The website URL is case sensitive.
Website URL: https://tiny.cc/nvfood Access Code:

2) By phone: If you do not complete the survey online within two weeks, one of our interviewers will call you.
If you have questions about the study please call Dr. Jamie Benedict at 775-784-6445. To report survey errors or technical difficulties call Dr. Veronica Dahir at 800-929-9079 (Mon.-Fri. 9am-9pm; Sat., Sun., and holidays 9am-5pm). Please reference the study name, “NV Food”, when calling. If you have any concerns about the conduct of the study call the Research Integrity Office at 775-327-2368.
Thank you for considering this opportunity to improve Nevada’s programs and services.

Sincerely,

Jamie Benedict, Ph.D., R.D.  Veronica Dahir, Ph.D.
Associate Professor  Director, Survey Operations
Department of Nutrition  Nevada Center for Surveys, Evaluation
and Statistics
Sr. Smith 1234 Road
Reno, NV 89523

Estimado(a)______________________________:

Le escribimos para invitarle a participar en un estudio de nutrición. El propósito del estudio es obtener sus puntos de vista sobre alimentos, nutrición, y actividad física para ayudar a mejorar la salud de los residentes de Nevada. Todos los participantes recibirán una tarjeta de regalo de $10 que puede ser usada en establecimientos como Amazon, Target y Best Buy.

Su nombre fue seleccionado al azar de una lista de hogares enlistados en el Nevada’s Supplemental Nutrition Assistance Program (SNAP). Participación en este estudio es completamente voluntaria y no tendrá ningún impacto en sus beneficios de SNAP, ni ahora ni en el futuro. Este estudio es conducido por la University of Nevada en nombre de la Division of Welfare and Supportive Services (DWSS) y sus respuestas vendrán directamente a la Universidad, no a las oficinas del DWSS. Sus respuestas serán confidenciales y no estarán conectadas a ningún tipo de información personal.

Debido a que solo un número pequeño de hogares fueron seleccionados, su participación es muy importante para nosotros. La encuesta le tomará 10-15 minutos. Para su conveniencia, puede participar en la encuesta en dos formas diferentes:

1) Por internet: Para completar la encuesta, por favor entre en la siguiente dirección de sitio web en un navegador de internet. Al principio de la encuesta, le pediremos que ingrese el código de acceso. Por favor asegúrese de escribir la dirección del sitio web como esta escrita aquí.
   Dirección de sitio web: https://tiny.cc/nvfood Código de acceso:

2) Por teléfono: Si no completa la encuesta por internet en dos semanas, uno de nuestros entrevistadores le llamará por teléfono.
Si tiene preguntas sobre el estudio, por favor llame a la Dra. Jamie Benedict al 775-784-6445. Para reportar errores o dificultades técnicas, llame a la Dra. Veronica Dahir al 800-929-9079 (Lunes a Viernes 9am-9pm; Sábados, Domingos y días festivos 9am-5pm). Por favor, haga referencia al nombre del estudio, "NV Food", cuando llame. Si tiene dudas sobre como el estudio es conducido, llame al Research Integrity Office at 775-327-2368.
Gracias por considerar esta oportunidad para mejorar los programas y servicios de Nevada.

Sinceramente,

Jamie Benedict, Ph.D., R.D.
Profesora Asociada
Department of Nutrition and Statistics

Veronica Dahir, Ph.D.
Directora, Operaciones de Encuestas
Nevada Center for Surveys, Evaluation
APPENDIX C: FREQUENTLY ASKED QUESTIONS
Nutrition Survey Frequently Asked Questions
FAQ
Who is sponsoring this study?
This study is a joint effort by the Department of Nutrition and the Nevada Center for Surveys, Evaluation, and Statistics at the University of Nevada. The study is being conducted for the Nevada Division of Welfare and Supportive Services. This state agency administers the Supplemental Nutrition Assistance Program (SNAP) in Nevada.

How was I selected?
Your household was randomly chosen from a list of all those enrolled in SNAP according to the Nevada Division of Welfare and Supportive Services. Only a small number of households from this list was selected making your participation very important.

What is this study about?
Our goal is to improve the health of Nevadans. We are conducting a survey about buying and preparing food; exercise and physical activity; and your interest in educational programs.

How does this benefit me?
Participating in this study poses no more risk than what we experience in our everyday routines. Your participation in this study is completely voluntary and will have no impact on your SNAP benefits now or in the future. There may be no direct benefit to you or your family. By answering the survey questions, you will help to improve programs and services for SNAP households in Nevada.

Will I be paid?
Everyone who completes the survey will get a $10 gift card. The gift card will be sent to the email address you provide us. The gift card can be used online at Amazon, or at many other stores including Target and Kohl’s. For the names of other retailers, please go to https://www.tangocard.com/the-rewards-catalog/.

How do I take part in this survey?
Participation involves taking 10-15 minutes to complete the survey. The survey may be completed online or by telephone. Both survey modes have the same questions.

If you choose to complete the survey online, you can access the survey using the unique code that was mailed to you in a letter. Completing the survey online will take about 10 minutes.

If you choose to complete the survey by phone, it will take about 15 minutes. An interviewer will call to confirm your willingness to participate in the survey. If you agree, they will ask the survey questions.

How will you keep my information secure?
We are committed to protecting your privacy. Personal information, such as your name, address and phone number, will be separated from your
survey answers and immediately destroyed. Your name will never be included in any reports that result from this survey. No more than five years after the study is over, all remaining information will be destroyed.

**How will my information be used?**
Your survey answers will be combined with all others who complete the survey. A report of the results will then be provided to the Nevada Division of Welfare and Supportive Services and ultimately used to improve education programs.

**Who can I contact if I have questions?**
If you have questions, you can contact Dr. Jamie Benedict at 775-784-6445 or Dr. Veronica Dahir at 800-929-9079. If you have questions about your rights as a research survey participant, you can call the UNR Research Integrity Office at 775-327-2368. If no one answers, please leave a message including your name and phone number. Your call will be returned as soon as possible.
Encuesta de Nutrición Preguntas Frecuentes FAQ
¿Quién está patrocinando este estudio? 
Este estudio es un esfuerzo colectivo de el Department of Nutrition y el Nevada Center for Surveys, Evaluation, and Statistics en University of Nevada. El estudio está siendo conducido por el Nevada Division of Welfare and Supportive Services. Esta agencia estatal administra el Supplemental Nutrition Assistance Program (SNAP) en Nevada.

¿Cómo fuí seleccionado(a)?
Su domicilio fue seleccionado al azar de una lista que contiene a todas las personas enlistadas en SNAP, de acuerdo con el Nevada Division of Welfare and Supportive Services. Solo un número muy pequeño de domicilios en esta lista fueron seleccionados, por lo que su participación es muy importante.

¿De qué se trata este estudio? 
Nuestro gol es mejorar la salud de los residentes del estado de Nevada. Estamos conduciendo una encuesta sobre la compra y preparación de alimentos; ejercicio y actividad física; y su interés en programas educacionales.

¿Cómo me beneficio de esta encuesta? 
Su participación en este estudio no constituye un riesgo mayor que las experiencias de la vida cotidiana. Su participación en este estudio es completamente voluntaria y no va a tener ningún impacto en sus beneficios de SNAP ni hoy ni en el futuro. Esta encuesta no tendrá ningún beneficio inmediato para usted o su familia. Responder estas preguntas ayudará a mejorar los programas y servicios para otras personas.

¿Seré recompensado(a)?
Todas las personas que completen la encuesta recibirán una tarjeta de regalo con valor de $10. La tarjeta de regalo será enviada a la dirección de correo electrónico que usted nos dé. La tarjeta de regalo puede ser usada en línea en Amazon, o en muchas otras tiendas incluyendo Target y Kohl’s. Para ver en qué otros establecimientos puede usar esta tarjeta de regalo, por favor visite https://www.tangocard.com/the-rewards-catalog/.

¿Cómo puedo participar en esta encuesta? 
Participación require 10-15 minutos para completar la encuesta. La encuesta puede ser completada en línea o por teléfono. Ambos modos de la encuesta tienen las mismas preguntas.

Si usted decide completar la encuesta en línea, puede accesar la encuesta usando el código único que se le envió por correo. Completar la encuesta en línea le tomará aproximádamente 10 minutos.

Si usted decide completar la encuesta por teléfono, le tomará aproximádamente 15
minutos. Un entrevistador(a) le llamará para confirmar si desea participar. Si usted está de acuerdo, el entrevistador(a) le hará las preguntas de la encuesta.

¿Cómo se mantendrá segura mi información? Estamos comprometidos a proteger su privacidad. Información personal, como su nombre, dirección, y número de teléfono, estará separada de las respuestas de la encuesta, y esta información será borrada inmediatamente. Su nombre nunca será incluido en reports que resulten de esta encuesta. Toda la información será destruida en menos de 5 años.

¿Cómo será usada mi información? Sus respuestas serán combinadas con las respuestas de todos los demás participantes. Un reporte de los resultados será proveído al Nevada Division of Welfare and Supportive Services y será ultimádamente usado para mejorar programas de educación.

¿A quién puedo contactar si tengo preguntas? Si tiene preguntas, puede contactar a la Dra. Jamie Benedict al 775-784-6445 o a la Dra. Veronica Dahir al 800-929-9079. Si tiene preguntas sobre sus derechos como participante de estudio de investigación, puede llamar al UNR Research Integrity Office al 775-327-2368. Si nadie responde, puede dejar un mensaje incluyendo su nombre y número de teléfono. Su llamada será repondida lo antes posible.
APPENDIX D: REMINDER LETTER
Mr. Smith  
1234 Road  
Reno, NV 89523

Dear __:

About a week ago, we sent you a letter inviting you to participate in a nutrition study for a $10 gift card that can be used online at Amazon or at other stores such as Target and Best Buy. If you have already completed this survey, thank you, and please disregard this friendly reminder.

We are writing again because your survey is important to us, since only a small number of households were chosen for this study. Hearing from as many people as possible will help us improve the health of Nevada’s residents. If you have not yet completed this survey, we hope you will do so today.

Your name was randomly chosen from a list of households enrolled in Nevada’s Supplemental Nutrition Assistance Program (SNAP). Your participation in this study is completely voluntary and will have no impact on your SNAP benefits now or in the future. Your responses will be kept confidential and will not be connected to any personal information.

The survey can be completed two different ways.

Online: To complete the survey online, please enter the website URL shown below into a web browser. At the beginning of the survey, you will be prompted to enter the access code. Please be sure to type in the website URL exactly as it appears below. The website URL is case sensitive.  
Website URL: https://tiny.cc/nvfood Access Code:

By phone: If you do not complete the survey online within two weeks, one of our interviewers will call you.

If you have questions about the study please call Dr. Jamie Benedict at 775-784-6445. To report survey errors or technical difficulties call Dr. Veronica Dahir at 800-929-9079 (Mon.-Fri. 9am-9pm; Sat., Sun., and holidays 9am-5pm). Please reference the study name, “NV Food”, when calling. If you have any concerns about the conduct of the study call the Research Integrity Office at 775-327-2368.
Thank you for considering this opportunity to improve Nevada’s programs and services.

Sincerely,

Jamie Benedict, Ph.D., R.D.  Veronica Dahir, Ph.D.
Associate Professor        Director, Survey Operations
Department of Nutrition    Nevada Center for Surveys, Evaluation and Statistics
Sr. Smith
1234 Road
Reno, NV 89523

Estimado(a): ____________________________________________:

Hace una semana, le mandamos una carta invitándole a participar en un estudio de nutrición por una tarjeta de regalo de $10 que puede ser usada en línea en Amazon o en tiendas como Target y Best Buy. Si usted ya completó esta encuesta, gracias, y por favor ignore este recordatorio sencillo.

Le escribimos de Nuevo por que sus opiniones son importantes para nosotros por que solo un número pequeño de hogares fueron elegidos para este estudio. Escuchar a la mayor cantidad de personas posible nos ayudará a mejorar la salud de los residentes de Nevada. Si no ha completado la encuesta, esperamos que pueda hacerlo hoy.

Su nombre fue elegido al azar de una lista de hogares enlistados en Nevada’s Supplemental Nutrition Assistance Program (SNAP). Participación en este estudio es completamente voluntaria y **no tendrá ningún impacto en sus beneficios de SNAP**, ni ahora ni en el futuro. Sus respuestas serán confidenciales y no estarán conectadas a ningún tipo de información personal.

Puede completar la encuesta de dos formas diferentes:
Por internet: Para completar la encuesta, por favor entre la siguiente dirección de sitio web en un navegador de internet. Al principio de la encuesta, le pediremos que ingrese el código de acceso. Por favor asegúrese de escribir la dirección del sitio web como esta escrita aquí.

**Dirección de sitio web:**
https://tiny.cc/nvfood
**Código de acceso:**

2) Por teléfono: Si no completa la encuesta por internet en dos semanas, uno de nuestros entrevistadores le llamará por teléfono.
Si tiene preguntas sobre el estudio, por favor llame a la Dra. Jamie Benedict al 775-784-6445. Para reportar errores o dificultades técnicas, llame a la Dra. Veronica Dahir al 800-929-9079 (Lunes a Viernes 9am-9pm; Sábados, Domingos y días festivos 9am-5pm). Por favor, haga referencia al nombre del estudio, "NV Food", cuando llame. Si tiene dudas sobre como el estudio es conducido, llame al Research Integrity Office at 775-327-2368.

Gracias por considerar esta oportunidad para mejorar los programas y servicios de Nevada.

Sinceramente,

Jamie Benedict, Ph.D., R.D.
Profesora Asociada
Department of Nutrition

Veronica Dahir, Ph.D.
Directora, Operaciones de Encuestas
Nevada Center for Surveys, Evaluation and Statistics
APPENDIX E: MESSAGE SCRIPT
To be left on the 1\textsuperscript{st} and 3\textsuperscript{rd} attempt:

“Hello, I’m calling from the University of Nevada in regards to a letter we recently sent, inviting you to participate in a nutritional survey of Nevada residents. At your convenience, please call us back at 1-800-929-9079 and refer to case id: ####”
APPENDIX F: IRB APPROVAL
DATE: November 28, 2018
TO: Jamie Benedict, PhD
FROM: University of Nevada, Reno Institutional Review Board (IRB)

PROJECT TITLE: [1008175-3] Nevada’s SNAP-Ed Statewide Needs Assessment
REFERENCE #: Social Behavioral; Consent waiver
SUBMISSION TYPE: Amendment/Modification

ACTION: APPROVED
APPROVAL DATE: November 28, 2018
EXPIRATION DATE: February 3, 2019
REVIEW TYPE: Expedited Review
REVIEW CATEGORY: Expedited review # 7

The UNR IRB has reviewed and approved in the above-referenced protocol in accordance with the
requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46 and
21 CFR 50 and 56). This approval is based on assessment that the research met all applicable regulatory
criteria. The research must be conducted in accordance with this approved submission. This submission
has received Expedited Review based on applicable federal regulations.

Please prepare a Continuing Review / Progress Report Request at least 4 weeks prior to the approval
expiration date using IRBNet https://www.irbnet.org. IRBNet will send you a courtesy reminder to that
effect. Unless updated, the IRB is only authorized to approve a study activity for 12 months or less. There
is no grace period. The study will be closed on the above stated expiration date unless the IRB receives
and approves your annual update.

Instructions for preparing a modification, continuing review, or status report are located at http://
www.unr.edu/research-integrity/human-research/irbnet. Call our office if you have any questions or
problems with use of IRBNet software.

Approved Documents

• Amendment/Modification - Amendment Requst form 11-26-2018.docx (UPDATED: 11/26/2018)
  This phase is to obtain information directly from SNAP households. The information gained will
  complement the findings of the previous efforts.
• Letter - Appendix C_Reminder Letter_E&S.docx (UPDATED: 11/20/2018)
• Letter - Appendix A_Letter of invitation_E&S.docx (UPDATED: 11/20/2018)
• Other - Appendix B_FAQ_E&S.docx (UPDATED: 11/20/2018)
• Questionnaire/Survey - Appendix D_Telephone Survey Script.docx (UPDATED: 11/20/2018)
• University of Nevada, Reno - Part I, Cover Sheet - University of Nevada, Reno - Part I, Cover Sheet
  (UPDATED: 11/21/2018)

If you have any questions, please contact Nancy Moody at 775.327.2367 or at nmoody@unr.edu.
NOTE for VA Researchers: You are not approved to begin this research until you receive an approval letter from the VASNHCS Associate Chief of Staff for Research stating that your research has been approved by the Research and Development Committee.

Sincerely,

Richard Bjur, PhD
Co-Chair, UNR IRB
University of Nevada Reno

Janet Usinger, PhD
Co-Chair, UNR IRB
University of Nevada Reno

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Nevada, Reno IRB's record.