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Developing a Food Assistance Informational Graphic and Implementation Plan Based on
Consumer Evaluation

A thesis submitted in partial fulfillment of the requirements for the Dale Bumpers College
of Agricultural Food and Life Sciences Honors Program

by

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Abstract

Food insecurity refers to the uncertainty of having or acquiring enough food to sustain all members of a household. In 2019, 10.5% of households in the United States reported being food insecure. Of that number, 4.1% of households reported ‘very low food security,’ meaning that there were additional periods of time in which one or more household members restricted or forfeited their food intake due to lack of money or other resources (USDA, 2020). Without access to proper nutrition, the health of both adults and children are put at risk for illness including anxiety, high blood pressure, diabetes, and other negative health effects (Feeding America, 2020). Households who meet eligibility standards may enroll in food assistance programs including the Supplemental Nutrition Assistance Program (SNAP) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Although these resources are available, a gap exists between the number of eligible individuals versus the number of individuals who are enrolled. Additionally, those who are enrolled tend to express dissatisfaction with the educational resources available to them. This study aims to identify this gap as well as develop a plan to overcome it.

Introduction

Background and Need

Food insecurity, defined as a lack of consistent access to food for all members of the household, has persisted at prominent levels in the United States. In 2013, an estimated 14.3% of households (1 in 7 Americans) experienced food insecurity during year (USDA, 2020). While the percentage of food insecure Americans has varied over years, it has yet to fall under 10% of the nation's population at the time of this study. Food insecurity is commonly associated with poorer health among adults and children, and it is considered a serious public health challenge.

The United States Department of Agriculture (USDA) oversees 15 nutrition assistance programs that are designed to provide nutrition education to eligible Americans. The largest program is the Supplemental Nutrition Assistance Program (SNAP), serves one in seven Americans. The purpose of SNAP is to reduce food insecurity and to improve the health of low-income individuals through benefits used to purchase food. SNAP eligibility is determined by having a household income less than 130% of the federal poverty level (USDA, 2020). SNAP participation is estimated to reduce the likelihood of a household being food insecure by as much as 30% (USDA, 2020). With an annual budget of more than \$65 billion, SNAP aids more than 40 million low-income Americans each month, half of them being children (Feeding America, 2020). SNAP participants receive supplemental benefits through the Electronic Benefit Transfer (EBT) system. These benefits can be used to purchase approved food and beverages at more than 240,000 authorized retailers across the country.

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) provides federal grants to states for health care referrals supplemental foods, and nutrition and parenting education for low-income women. According to the USDA (2020), women enrolled in

WIC include pregnant, breastfeeding, and non-breastfeeding postpartum women, as well as infants and children up to age five. However, WIC benefits are not limited only to food, participants have access to several resources intended to educate and counsel on health and parenting. Over half of all infants born in the U.S. (53%) participate in WIC, with around 25% of children between the age of one to four and their mothers continuing the use of WIC (Feeding America, 2020). However, breastfeeding mothers are eligible to use WIC benefits longer than non-breastfeeding mothers. If the women breastfeed, they are eligible for benefits for an additional year. Women enrolled in WIC also use EBT cards in order to purchase food and infant-related products. These benefits are accepted wherever SNAP is also accepted and have special benefits at Farmers Markets as a part of the Farmer's Market Nutrition Program.

In Arkansas alone, 372,451 people rely on SNAP each month (Benefits.gov, 2021). This equates to \$0.48 billion that was issued in 2018. Almost half of all households using SNAP benefits have children. This means that out of the 521,490 people (one in six) who struggle with hunger, 162,270 are children. According to the latest census figures, Arkansas is tied with Mississippi as the most food insecure state in the U.S., an increase from 2nd place the previous year (Feeding America, 2020). Both states report 19.2 percent of residents experiencing insufficient amounts of food within the last year. Overall, the child food insecurity rate in Arkansas is 23.2% (164,000 children), the 3rd highest in the country. Food insecurity also affects certain regions of Arkansas differently. Within the population of the 3rd Arkansas Congressional District, including the majority of Northwest Arkansas, around 7% of the population relies on SNAP benefits. However, around 15% of the population is reported to be food insecure.

Statement of the Problem

Although programs like SNAP and WIC provide assistance to many, there is a gap between those who are eligible for food assistance and those who are enrolled in food assistance programs (USDA, 2020). Census studies also show that many individuals who receive food assistance do not feel satisfied with the options available to them. There are many factors that determine individuals' eligibility for SNAP and WIC programs. Additionally, SNAP and WIC outreach and implementation may vary. More research is needed to determine what factor(s) are deterring eligible citizens from enrollment as well as the use of educational materials to increase participation.

Purpose Statement

The purpose of this study was twofold (1) to develop educational marketing materials for SNAP and WIC beneficiaries to highlight healthy foods on the approved list, including a sample shopping list and meal plan guide; and (2) to develop a draft of a survey instrument to seek feedback from SNAP and WIC beneficiaries about their participation in food assistance programs and the effectiveness of the educational marketing materials to increase participation.

Research Objectives

The following objectives guided this study:

1. Develop educational direct marketing materials for using WIC or SNAP benefits.
2. Develop a draft of a survey instrument to seek feedback from SNAP and WIC beneficiaries about their participation in food assistance programs and the effectiveness of the educational marketing materials.

Literature Review

Food assistance programs are available in the United States for those who are eligible according to guidelines set forth by the USDA. Among those who are eligible, certain individuals receive more assistance to the size and income of their household (USDA, 2020). According to USDA (2020) and Feeding America (2016), food insecurity disproportionately affects people of color and families with children. Some educational materials are available for enrolled individuals, but they are not well known or well understood (USDA, 2020)

Food Insecurity

Food insecurity holds many different definitions depending on the organization or resource but is generally referred to as a condition in which households lack access to adequate food because of limited money or other resources (Gunderson, 2015). The USDA measures food insecurity through responses to a series of eighteen survey questions and statements fielded to roughly 45,000 households in the Food Security Supplement of the Census Bureau's Current Population Survey (CPS-FSS). The level of food insecurity in the United States rises and falls based on economic determinants such as recession and inflation. However, the percentage of food insecure Americans tend to fall between 9-14 percent. In 2019, 10.5% of households were food insecure with 4.1% being categorized as 'very low food security' (USDA, 2020). A nationwide percentage does not accurately portray the level of food insecurity among individual states. States will have varying levels of security based on the characteristics of their populations as well as the state-level policies and economic conditions. In a census conducted by the USDA

(2020), the estimated level of food insecurity ranged from 6.6% in New Hampshire compared to 19.2% in Mississippi.

Food Insecurity in Arkansas

On average, Arkansas exceeds the average national food insecurity rates. Approximately 19.2% of Arkansans are food insecure, with a 23.2 % childhood food insecurity rate. A recent study to assess changes in state's food insecurity in response to the COVID-19 pandemic reported 47.4% out of 95 Arkansans tested as food insecure when given the USDA Adult Food Security Survey. This suggests that the level of food insecurity among Arkansans has increased dramatically due to difficulties posed during the COVID-19 pandemic (Fitzpatrick, Harris, Willis, & Drawve, 2020). In a previous study, food insecure individuals in Northwest Arkansas described their main issues to be in the quality and freshness of available food sources as well as a lack of education of the resources available (Fitzpatrick, 2018).

Food Insecurity History and Demographics

Food insecurity is a problem with many factors and does not exist in solely among low-income families. Many who face food insecurity also struggle with issues such as affordable housing, medical costs, and low wages. Food insecurity is greater among certain populations including seniors, children, Latin American, African American, and rural communities (Feeding America, 2020). Studies show that on average, 7.3% of seniors in the U.S. suffer from food insecurity, although state-level studies report up to 14.3 percent (Gundersen, 2020). Of those seniors, roughly two-thirds report an income higher than the federal poverty line and thus, do not qualify for many food assistance programs (Gundersen, 2020). The most common reason for

food insecurity among seniors is the lack of proper healthcare options. Many seniors report being forced to choose between groceries and medication (Gundersen, 2020).

In 2019, 13.6% of U.S. households with children were food insecure. In about half of those food-insecure households with children, only the adults experienced food insecurity. But in 6.5% of households with children, both children and adults were food insecure sometime during the year (USDA, 2020). Children facing hunger are more likely to encounter issues with emotional and motor development (Weinfield, 2014). Adolescents and children have shown to have a greater potential to developing mental disorders, such as depression, anxiety, and social disfunction (Burke, 2016). Additionally, single-parent households headed by women are 28.7% food insecure compared to a single-parent household headed by a male at 15.4% (USDA, 2020). Although many of the communities produce food items as their career, people who live in rural areas often face hunger at higher rates due to the unique challenges they face. These challenges include lack of transportation when the nearest grocery store, a 'food desert' regarding the lack of available food and grocery options, as well as higher rates of unemployment or underemployment (Weinfield, 2014).

Non-Hispanic, African Americans encounter hunger and food insecurity at double the rate of the national standard (Weinfield, 2014). This data is positively correlated with the poverty rates between African Americans and Caucasian individuals, with African Americans experiencing poverty at double the rate of Caucasians (Weinfield, 2014). Urban neighborhoods that are both low-income and predominantly African American tend to have limited access to healthy food sources as well as options accepting SNAP or WIC assistance (Vedovato, 2016).

In a study conducted by Feeding America, data shows that Latinx/Hispanic families receive less food assistance than Caucasian or African American families (Zedlewski, 2010),

even while having a higher percentage of food insecurity than the national average (USDA, 2020). In addition, research suggests that on average, Latinx/Hispanic families are less likely to receive help from SNAP compared to other demographics. Different Hispanic origin groups have varying levels of poverty and food insecurity, which stem from changes in immigration and labor laws pertaining to certain countries (USDA, 2020). In all, 1 in 6 Latinx/Hispanic individuals suffer from food insecurity (Zedlewski, 2010).

Food Assistance Programs: SNAP and WIC

Two of the largest food assistance programs in the U.S. are the Supplemental Nutrition Assistance Program (SNAP) and the Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC) (USDA, 2020). Eligibility for enrollment in either of the programs requires income and resource prerequisites. The eligibility of a household is based on the household income as well as number of residents. States report varying levels of enrollment in a food assistance program. In 2016, an estimated 13.9 million people were eligible to receive benefits from WIC in a given month. Of that group, 55% actually participated in the program (USDA, 2020). According to a 2019 survey, SNAP served an average of 10.9% of Americans. The percent of residents receiving SNAP benefits ranged from 19.8% in New Mexico to 4.2% in Wyoming (USDA, 2020). However, there are many states which report high levels of food insecurity but fall into the lower percentiles of enrollment in food assistance programs. This data suggests there is a gap between food insecure individuals and enrollment in food assistance programs.

Nutrition Value of SNAP WIC

SNAP and WIC provide food benefits to those who are eligible and enrolled. However, a common critique of the food assistance programs is perceived low nutritional value of the foods available (Food Research and Action Center, 2011). There have been numerous studies conducted to determine the effectiveness of SNAP and WIC, primarily relating to health and obesity. A study in California observed obesity rates among SNAP participants were 30% higher than among non-participants, when adjusted for socio-demographic characteristics, food insecurity, and participation in other programs (Leung, 2011). For adults, reports show that there is typically some measure of weight gain and increased probability of obesity when joining one of the food assistance programs (USDA, 2020). However, similar studies conducted among children report higher levels of essential vitamins and minerals, like iron, zinc, niacin, thiamin, and vitamin A (Ver Ploeg, 2008). The same children also have lower rates of nutritional deficiency than children at comparable economic levels. The Supplemental Nutrition Assistance Program–Education (SNAP-Ed) is the nutrition promotion and education component of SNAP. This program is aimed to increase awareness of opportunities, updates, and policies regarding SNAP while also producing educational material regarding nutrition (USDA, 2020). A recent study about the effectiveness of SNAP-Ed found that individuals reported more intake of fruits and vegetables as well as more involvement in the farmer’s market SNAP-Ed classes (Rebecca L Rivera, 2019). While the benefits of SNAP-Ed are effective, participation requires awareness and motivation, which have been found to hinder involvement (USDA, 2020).

Daily Nutrition Requirements

The USDA (2020) recommends consuming a healthy eating pattern within an appropriate caloric level. A healthy eating pattern includes:

- A variety of vegetables from all of the subgroups—dark green, red and orange, legumes (beans and peas), starchy, and other
- Fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Fat-free or low-fat dairy, including milk, yogurt, cheese, and/or fortified soy beverages
- A variety of protein foods, including seafood, lean meats and poultry, eggs, legumes, oils

A healthy eating pattern limits:

- Saturated fats and trans fats
- Added sugars
- Sodium

In adults, the caloric intake recommendation falls in a range from 1,600 to 2,400 calories per day for adult women and 2,000 to 3,000 calories per day for adult men. However, pregnant women have different caloric recommendations for each trimester: about 1,800 calories per day during the first trimester. About 2,200 calories per day during the second trimester. About 2,400 calories per day during the third trimester. As adolescents, boys require an average of 2,800 calories a day, while girls require an average of 2,200 calories a day due to rapid growth and development. Similarly, growing children also require 1,000 to 2,000 calories per day, depending on their age and activity level (USDA, 2020).

Designing Effective Educational/Marketing Materials

Communicating with an established target audience is one of the primary goals of marketing. The way that communication is executed determines its success or failure, meaning that marketers are continuously trying to discover the most efficient means of distributing their

messages (Milovanovic, 2014). When designing an infographic, the first thing one should have in mind is the end-user (Yuk, 2014). The most important qualities of good visual data presentation are usefulness, because people use them to make decisions, and desirability, because it gives them satisfaction to use data arranged in a pleasant way. Smiciklas (2012) defined informational content and graphics as visually presented data or ideas, used to present complex information in a way that makes it easier and faster for audience to understand and adopt it. The visualization and design of visually presented data are universally available today, and their efficiency and effectiveness have made it so that they are being utilized in nearly all aspects of life. Additionally, visual processing of a picture consumes less time and energy than visual processing of textual data (Smiciklas, 2012).

Food insecurity is an issue with multiple variables across a vast array of demographics. Without proper nutrition, an individual can develop long-term and life-altering deficiencies. While simply providing a method of food assistance may seem like a solution, many related issues could arise through a lack of knowledge about foods available, opportunities within the programs, or even awareness of the program itself. Information and understandable options regarding food within assistance programs must be readily available and easily obtainable in order to succeed at the fullest capacity.

Development Plan

Food insecurity is an issue that persists across the nation despite the creation of assistance programs. Studies show that almost 13% of households in the United States remain food insecure. To alleviate some of the struggles citizens face to afford adequate food, the U.S. implemented supplemental programs that allow those who qualify to receive assistance to

purchase nutritional food. Even while SNAP and WIC are used by approximately 10% of U.S. households, the stigma of relying on food assistance still exists. Additionally, there are too few sources of information or documents readily available to participants regarding specific nutritious food options available through SNAP and WIC. This study aimed to create educational materials to benefit communities enrolled in food assistance programs and seek feedback from consumers. The steps involved with creating the educational materials and seeking feedback are described in this section.

1. For this project, the researcher referred to data from the USDA and collaborated with a campus nutrition expert to identify nutritional requirements, foods available through SNAP and WIC, as well as the foods most typically bought or requested from supplemental food services in the Northwest Arkansas area. These foods included primarily shelf stable items such as canned vegetables or dry pasta. Individuals enrolled in SNAP and WIC typically spend around \$0.40 of each food purchase dollar on basic grocery items such as meat, fruit and vegetables, and bread (USDA, 2020). Therefore, implementation of these requested ingredients was considered when developing recipe cards.
2. The researcher collaborated with a campus nutrition expert to create 3-4 individual recipe cards following the nutritional requirements described in the literature review. Recipe cards consisted of the name of the recipe as well as the directions and ingredients needed. Information regarding prep time, serving size, and cook time was added in order to provide a structured timeline for when and how to prepare the meal. Additionally, the recipe cards were developed to allow users to substitute certain foods based on

preference. For example, if a consumer does not prefer, or is allergic to, bell peppers, they can be substituted with onions. This is also true for other ingredients such as grains and dairy. There was space on the recipe card to warn against potential allergens if the meal included one of the 'Big Eight': milk, eggs, peanuts, tree nuts, fish, shellfish, wheat and soy. The back of the card listed sources to find more information on the programs available through SNAP and WIC as well as local options such as food pantries or community gardens.

- a. Each card included information to prepare a meal to satisfy the preferences and caloric needs of a family of four consisting of two adults and two children. This would equal around 4,000 calories per one-day portion of the meal.
 - b. Information to batch prepare the food was available on the card, as well as information regarding how many days the food will remain safe to eat as leftovers.
 - c. Allergen warnings options were added to the recipe card. Although some recipes may not necessitate a warning, they will be present for consistent design.
3. A meal preparation calendar was selected as a tool for users. The meal plan calendar consisted of three weeks of available space along with additional information such as notes, preparation reminders, etc. The calendar left plenty of room for the user to plan out each day the meals will be prepared and consumed as leftovers. Colorful shapes were used to create a visual organization pattern within the calendar, such as using red squares for preparation days and orange squares for each day that the leftovers will last.
 - a. The calendar was outlined with individual space for each day of a 3-week plan, for a total of 21 days.

- b. Spaces were created for the user to write additional information such as notes and preparation time. An optional space was created for users to list other personal items to be purchased during the grocery trip.
4. This project called for digital versions of both the recipe and meal plan calendar which could be easily converted to physical copies if needed.
 - a. The researcher utilized Canva, a graphic design platform, to create draft options for both the recipe card and meal plan calendar.
 - b. These initial designs were subject to critique and criticism from communication experts as well as specialists in supplemental food programs.
5. A survey was developed for future use to seek details about the experiences of participants and feedback about the educational materials.
 - a. Questionnaire items were developed to inquire about participants' experiences and usage of SNAP and WIC using a 5-point Likert-scale with additional open response questions. Some examples of questionnaire items included:
 - i. When you go to shop, how often do you prepare a list?
 - ii. How important is the use of fresh and healthy purchasing options to you?
 - iii. How comfortable would you feel using a physical or online copy of this graphic in the grocery store setting?
 - iv. In your opinion, how beneficial would this document be for others enrolled in SNAP or WIC?
 - b. The researcher's committee and additional social sciences faculty were consulted to review the survey for content and face validity.

- c. Input was considered, and changes were implemented to the survey for ease of use and understanding.
- 6. After meeting with a nutrition expert with experience working with food assistance programs, a list of possible recipes was developed for the researcher to consider.
 - a. These recipes were developed to adhere to SNAP and WIC food guidelines. Additionally, many of the recipes can be utilized with only a microwave, which prevents exclusion of participants who may not have reliable access to a stove or oven.
 - b. The researcher chose a mix of recipes with two options for dessert, two options for dinner, and two options for breakfast.
 - i. Dessert options: peanut butter and chocolate hummus, flour-less brownies.
 - ii. Dinner options: primavera ramen pasta, mug Moroccan carrot soup with yogurt.
 - iii. Breakfast options: mug omelet, mug sweet potato chicken breakfast hash.

Design Process and Creative Works

The following section further describes the implementation of the development plan and any changes that occurred during the design process. Images of the creative works are in Appendix A.

1. The first step of the design process involved creating templates of the meal calendar and recipe cards within Canva.
 - a. The researcher searched for examples of digital calendars as well as printable recipe cards to determine a typical design format.

- b. In Canva, the researcher started with a landscape-oriented design. A size of 11 inches by 8.5 inches was chosen to maintain printability on standard sized paper.
 - i. Three rows of seven rectangles were aligned to create the three-week calendar days.
 - ii. The title of the design was placed above the calendar days, reading “Plan Your Plate.”
 - iii. Graphical elements of a fork and spoon were also added to the title to accomplish an interesting design composition.
 - iv. Colors within the green and brown family were chosen to maintain a sense of reliability, health, and tranquility (Braam, 2020).
 - v. See figure (11).
- c. In Canva, the researcher began with a portrait-oriented design. A size of five inches by seven inches was chosen to maintain convenience for carrying and transportation and the standard size of index cards.
 - i. Two rectangle shapes were made within the design. One rectangle was labeled “Ingredients,” while the other was labeled “Directions.”
 - ii. The title of the design was placed about the labels, reading “Read Your Recipe.”
 - iii. Graphical elements of a fork and spoon were also added to the title to accomplish an interesting design composition.
 - iv. Text was added below the rectangles to indicate cooking time required as well as the number of individuals it serves.

- v. Colors within the green and brown family were chosen to maintain a sense of reliability, health, and tranquility (Braam, 2020).
 - vi. See figure (1).
- 2. After input from a member of the research committee, the designs for the meal calendar and recipe cards were revisited. The following changes were made:
 - a. The Recipe Card
 - i. Space was made for a recipe name to be entered.
 - ii. Additional information was added below the rectangles including preparation time needed for the dish, nutritional content approximations, as well as space to indicate if one of the “Big Eight” allergens would be present (milk, eggs, peanuts, tree nuts, fish, crustacean/shellfish, wheat, and soy).
 - iii. A graphic was added to be implemented to the back of the recipe card. This space provided information on additional resources. These resources include SNAP-Ed, local farmers markets, local food pantries, and SNAP-approved recipes. This section was titled “Information.”
 - iv. See Figure (2), (9).
 - b. The Meal Calendar
 - i. Below and to the right of the three-week calendar, additional sections were added. These sections include: “Notes,” “Additional Items,” and “Prep Ahead of Time.” Users can use these spaces to record notes, add

any additional items they may need to purchase, and to indicate any other preparations.

- ii. See Figure (12)
3. The researcher shared the design drafts with additional faculty with expertise in communications, marketing, and graphic design.
4. Input was considered, and changes were implemented to the design for ease of understanding.
 - a. See Figure (13), (10).
5. Recipes were added to the final recipe card template.
 - a. See Figure (3), (4), (5), (6), (7), (8).

Discussion

While low and very low food security levels have varied between 14% and 10% in the United States (USDA, 2020), data suggests that health issues such as obesity, high blood pressure, and heart problems are increasing among SNAP participants (Leung, 2011). This means that while roughly the same amount of people does not have access to enough food, they are also eating foods which are not nutrient dense or well balanced (Food Research and Action Center, 2011). A study was conducted by the USDA (2007) determining that even while increasing the benefits within SNAP and WIC, there was no significant change in purchasing decisions. These previous studies reinforced the basis of this research. The prevalence of hunger and hunger-related health issues within SNAP and WIC cannot be solved by simply raising benefits or restricting available food items. As seen in the case of the underutilized SNAP-Ed program, simply creating educational material is not sufficient either. Rather, progress is made

when additional resources and guides are communicated effectively among enrolled individuals. As stated previously, the way that communication is executed determines the success or failure of a project (Milovanovic, 2014).

During the development of the survey and graphic design elements, the researcher determined that elements highlighting both in-person and online resources were important to consider. Additionally, while caloric value is an important measurement in determining which foods to include in recipes, other nutritional values, such as vitamins, proteins, and minerals, are important to consider as well. Initially, the recipe mix provided would adhere to a caloric minimum, the overall caloric intake was less focused on to allow for a balanced representation of nutritional values as well as customization to the consumer's preferences. It was important to allow options within the recipe for the consumer to substitute ingredients based on taste preferences or even allergens. Additionally, nutritious ingredients and customization tips included on the recipe cards ensure that caloric needs will be met.

Conclusions and Recommendations

In order to make progress in the battle against hunger, the gap between eligibility and enrollment in food assistance programs must be bridged through outreach, communication, and education. This section will present the conclusions in order of the research objectives. The following objectives were developed for this study to meet this need.

RO 1: Develop educational direct marketing materials for using WIC or SNAP benefits.

There are resources available within SNAP and WIC that many enrollees simply are not aware of, such as the Farmers Market Nutrition Program and SNAP-Ed courses (USDA, 2020). However, using educational materials such as the meal calendar and recipe cards, information about how best to utilize SNAP and WIC to prepare nutritious, easy-to-make dishes, as well as information about other resources available, can be easily distributed or shared with individuals who are enrolled or are considering enrollment. These materials may be distributed digitally via email to program participants or physically through grocery stores, food banks, school offices, etc., which would allow for the spread of information to consumers who may not have access to reliable internet browsing. By including online resources as well as in-person resources, an individual could find additional assistance regardless of their technological access or capabilities. Local resources are also subject to change based on the location of distribution. Current local resources are based in the Washington County, Arkansas area.

This study focused on developing resources which can be given to individuals in need. In addition to educational information, recipes adhering to assistance options, and structures for planning meals, the materials developed within this study are meant to be distributed directly to individuals, rather than forcing individuals to find help on their own. With the information provided, consumers can be aware of options available to them within foods, meal planning, and further assistance. Once individuals are both aware of and able to find the help they need, steps toward closing that gap can finally be taken.

RO 2: Develop a draft of a survey instrument to seek feedback from SNAP and WIC beneficiaries about their participation in food assistance programs and the effectiveness of the educational marketing materials.

This study was limited to the creative and developmental stages. Due to issues gathering a representative sample of participants, as well as time constraints, the researcher was unable to move forward with the survey process. The survey questions were developed based on previous literature which indicated a gap between food assistance and enrollment in the food assistance programs available. Each question was developed to determine demographics, food and shopping habits, and the perceptions of enrolled individuals regarding their feelings about SNAP and WIC. For example, Likert scale (agree to disagree) options are provided for questions including 'I understand what SNAP offers me as a participant.' This question would be utilized to follow up the literature from the USDA study which was previously referenced as data supporting that many SNAP enrollees are unaware of additional services such as SNAP-Ed. Additionally, questions regarding the participant's opinion of the meal calendar and recipe card graphics were included. Finally, the questions were reviewed and are attached (See Appendix B). The opportunity for more in-depth research regarding the determinants of enrollment into SNAP and WIC remain valid, along with research into the enrollee's perception of educational resources. This project holds potential for further development in the future, should a researcher wish to distribute graphical elements and record data based on the survey questionnaire.

Future methods of distribution should be chosen to get the most input from participants as possible. In the initial phases of this study, methods such as focus groups or distribution through mass contact lists were considered but eliminated due to aforementioned limitations and constraints. It is important to consider how to collect data without infringing on the participants feelings or personal information as much as possible, as the subject material may be sensitive to some individuals. Using a survey format can allow for participants to maintain anonymity, which

could help to make participation more comfortable for them to complete. The implementation plan for this survey was to be conducted and distributed digitally. By removing the physical barriers to participation, an online format would appeal to any other enrollees who were considering participation in the study.

Recommendations for Further Research

Opportunities to expand the reach and representation found in this study are abundant. This project holds potential for further development in the hands of future researchers.

The following recommendations are suggested for further phases of this study:

- Addressing limitations of the study.
 - Future phases of the study should include distributing the survey with a larger and more diverse sample in order to seek consumers' perceptions.
 - As previously stated, it would benefit future research to establish a sample pool which is not limited by location. Initially, the researcher could conduct sampling from an existing pool at the University of Arkansas. Future phases are recommended to expand this pool to a much more representative sample.
 - A limitation perceived for this study included potential low participation due to a lack of incentive from voluntary sampling. In the future, it would benefit the research to offer a monetary incentive such as gift cards. Future researchers should utilize funding resources to assure an adequate amount of participation so that results are impactful.
- Addressing uses of the graphical material.

- The meal calendar is eligible for distribution without location limitations.
However, the information section found on the back of the recipe card indicates more food assistance resources which can be found in the Washington county area. While helpful for Washington county residents, this limits the usefulness of some included information. Creating a version of the recipe cards which could be distributed without location discrepancies would be ideal.
- In future research, a distribution plan for graphical material would be pertinent to include within the development outline. The materials were created to work both printed to be distributed physically while also functioning as a digital document. Researching the best places to utilize these documents would be beneficial in determining how to go about sharing the information.
- Additionally, edits to the digital version to allow for interactive and editable text boxes would benefit users of the digital formatted document.

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Appendix A: Design Process and Creative Works

Figure 1

Recipe Card First Draft

READ YOUR RECIPE

INGREDIENTS **DIRECTIONS**

RECIPE : 4
SERVES : 4
COOK TIME : 1 HR

Figure 2

Recipe Card Second Draft (Front)

READ YOUR RECIPE

RECIPE NAME:

INGREDIENTS	DIRECTIONS

RECIPE SERVES : 4 **PREP TIME : 30 MINS**

COOK TIME : 1 HR **NUTRITIONAL CONTENT**

THIS DISH CONTAINS: BIG 8 ALLERGENS

Figure 3

Recipe Card Final Draft First Recipe (Front)

READ YOUR RECIPE

RECIPE NAME: MUG MOROCCAN CARROT SOUP

INGREDIENTS	DIRECTIONS
2 JARS (EACH 4.5 OZ) CARROT BABY FOOD PURÉE	STEP 1: IN MUG, USE A FORK TO WHISK CARROT PURÉE, BROTH, HONEY, CUMIN, PUMPKIN PIE SPICE, AND HOT PEPPER SAUCE.
1 TBSP. PLAIN YOGURT, STIRRED TO LOOSEN	STEP 2: MICROWAVE ON HIGH FOR 1.5 TO 2.5 MINUTES (CHECKING AT 1.5 MINUTES) OR UNTIL HEATED THROUGH.
1 TSP. LEMON JUICE	STEP 3: STIR IN LEMON JUICE AND BUTTER UNTIL BUTTER MELTS. SEASON TO TASTE WITH SALT AND PEPPER, AND DRIZZLE WITH YOGURT.
1 TSP. BUTTER OR OLIVE OIL	TIP: THINLY SLICED GREEN ONIONS, CHOPPED FRESH CILANTRO OR PARSLEY ACCOMPANY THE DISH WELL!
1/2 TSP. LIQUID HONEY	
1/2 TSP. GROUND CUMON AND PUMPKIN PIE SPICE	
1/2 TSP. HOT PEPPER SAUCE	
1/4 CUP READY-TO-USE CHICKEN OR VEGETABLE BROTH	

RECIPE • **4** **PREP** • **30 MINS**
SERVES • **4** **TIME** • **30 MINS**

KEEPS • **3 DAYS** **COOK** • **30 MINS**
FOR • **3 DAYS** **TIME** • **30 MINS**

Figure 4

Recipe Card Final Draft Second Recipe (Front)

READ YOUR RECIPE

RECIPE NAME: SWEET POTATO MUG HASH

INGREDIENTS	DIRECTIONS
<p>1 EGG</p> <p>1 TBSP. WATER</p> <p>1/4 CUP DICED SWEET POTATO (SUBSTITUTE ANY POTATO)</p> <p>1/2 CUP COOKED, CHOPPED CHICKEN</p> <p>1/4 TSP. PAPRIKA</p> <p>ADDITIONAL TOPPINGS, SALT AND PEPPER TO TASTE.</p>	<p>STEP 1: ADD SWEET POTATOES TO A MUG WITH WATER AND MICROWAVE FOR 2-5 MINS. STIR IN CHICKEN, PAPRIKA, SALT, AND PEPPER</p> <p>STEP 2: MICROWAVE FOR A MINUTE UNTIL WARMED. CAREFULLY CRACK EGG ON TOP. SPRINKLE A LITTLE WATER ON TOP OF EGG AND MICROWAVE FOR ANOTHER 45 SECONDS</p> <p>STEP 3: SERVE WITH TOPPINGS OF CHOICE</p>

RECIPE • 1 **PREP • 15 MINS**
SERVES • 1 **TIME • 15 MINS**

KEEPS • 3 DAYS **COOK • 10 MINS**
FOR • 3 DAYS **TIME • 10 MINS**

THIS DISH CONTAINS: EGGS

Figure 5

Recipe Card Final Draft Third Recipe (Front)

READ YOUR RECIPE

RECIPE NAME: OMELET IN A MUG

INGREDIENTS	DIRECTIONS
<p>2 LARGE EGGS.</p> <p>2 TSP. MILK OR WATER.</p> <p>1/8 TSP. SALT</p> <p>1/8 TSP. PEPPER</p> <p>OPTIONAL: CHEESE, HAM, BACON, CHOPPED GREEN BELL PEPPER, ONION.</p>	<p>STEP 1: IN THE MUG, WHISK EGGS, MILK, SALT, AND PEPPER UNTIL WELL BLENDED. (ADD ANY OTHER TOPPINGS TO TASTE)</p> <p>STEP 2: MICROWAVE ON HIGH FOR 30 SECONDS.</p> <p>STEP 3: STIR.</p> <p>STEP 4: MICROWAVE ON HIGH FOR AN ADDITIONAL 30-45 SECONDS OR UNTIL EGGS ARE PUFFED AND SET AT THE CENTER.</p>

RECIPE • 1 **PREP • 5 MINS**
SERVES • 1 **TIME • 5 MINS**

KEEPS • 2 DAYS **COOK • 3 MINS**
FOR • 2 DAYS **TIME • 3 MINS**

THIS DISH CONTAINS: EGGS, MILK

Figure 6

Recipe Card Final Draft Fourth Recipe (Front)

READ YOUR RECIPE

RECIPE NAME: PRIMAVERA RAMEN PASTA

INGREDIENTS	DIRECTIONS
<p>1 CUP CHOPPED BROCCOLI</p> <p>1 CUP SNOW PEAS</p> <p>1 CUP SLICED RED BELL PEPPER</p> <p>1 TBSP. VEGETABLE OIL</p> <p>2 PACKAGES CHICKEN RAMEN NOODLES</p> <p>1 1/2 CUP WATER</p> <p>1/2 CUP THINLY SLICED CARROT</p> <p>1/2 CUP THINLY SLICED RED ONION</p> <p>1/4 CUP SLIVERED ALMONDS</p>	<p>STEP 1: TOAST ALMONDS IN FRYING PAN UNTIL LIGHTLY BROWN, SET ASIDE.</p> <p>STEP 2: STIR FRY VEGGIES IN OIL FOR 3-4 MINUTES.</p> <p>STEP 3: ADD BROKEN NOODLES AND WATER.</p> <p>STEP 4: STEAM 3-5 MINUTES OR UNTIL NOODLES ARE DONE, STIRRING OCCASIONALLY.</p> <p>STEP 5: STEAM 3-5 MINUTES</p> <p>STEP 6: TOP WITH ALMONDS AND SERVED.</p> <p>TIP: VEGGIES CAN BE SUBSTITUTED TO MATCH YOUR FAVOR PREFERENCES!</p>

RECIPE • 4 **PREP • 30 MINS**
SERVES • 4 **TIME • 30 MINS**

KEEPS • 3 DAYS **COOK • 30 MINS**
FOR • 3 DAYS **TIME • 30 MINS**

THIS DISH CONTAINS: NUTS, WHEAT

Figure 7

Recipe Card Final Draft Fifth Recipe (Front)

READ YOUR RECIPE

RECIPE NAME: FLOUR-LESS BROWNIES

INGREDIENTS	DIRECTIONS
1 (14 OZ) CAN BLACK BEANS, RINSED AND DRAINED	STEP 1: PREHEAT OVEN TO 350 DEGREES FAHRENHEIT.
2 LARGE EGGS	STEP 2: GREASE 9 BY 9 INCH PAN AND LINE WITH PARCHMENT
1 TBSP. ALMOND MILK	STEP 3: BLEND BLACK BEANS, EGGS, COCOA POWDER, SUGAR, OIL, ALMOND MILK, BALSAMIC, BAKING SODA, BAKING POWDER, AND COFFEE IN BLENDER UNTIL SMOOTH AND POUR INTO BOWL.
1 TSP. BALSAMIC VINEGAR	STEP 4: FOLD IN 1/2 CUP CHOCOLATE CHIPS UNTIL COMBINED.
1/2 CUP COCOA POWDER AND CHOCOLATE CHIPS	STEP 4: POUR MIXTURE INTO PAN AND BAKE FOR 30 MINUTES. ALLOW TO COOL BEFORE SLICING INTO SQUARES.
1/2 CUP SUGAR	
1/2 TEASPOON OIL	
1/2 TEASPOON BAKING POWDER AND BAKING SODA	
1/2 GROUND OR INSTANT COFFEE.	

RECIPE • 4 **PREP • 20 MINS**
SERVES • 4 **TIME • 20 MINS**

KEEPS • 4 DAYS **COOK • 30 MINS**
FOR • 4 DAYS **TIME • 30 MINS**

THIS DISH CONTAINS: EGGS

Figure 8

Recipe Card Final Draft Sixth Recipe (Front)

READ YOUR RECIPE

RECIPE NAME: DESSERT HUMMUS

INGREDIENTS	DIRECTIONS
<p>1 CAN CHICK-PEAS, DRIED AND STRAINED.</p> <p>3 TBSP. PEANUT BUTTER (ANY NUT BUTTER)</p> <p>3 TBSP. HONEY</p> <p>1/3 CUP MINI CHOCOLATE CHIPS</p> <p>2 TBSP. OF WATER OR MILK</p>	<p>STEP 1: COMBINE CHICKPEAS, PEANUT BUTTER, AND HONEY IN A FOOD PROCESSOR UNTIL SMOOTH.</p> <p>STEP 2: ADD MILK (OR SUBSTITUTE WITH WATER) UNTIL DESIRED CONSISTENCY IS REACHED.</p> <p>STEP 3: STIR IN CHOCOLATE CHIPS.</p> <p>STEP 4: USE GRAHAM CRACKERS FOR DIPPING.</p> <p>TIP: FOR EASY SNACK BALLS, STIR IN 1/4 CUP INSTANT OATS, FORM INTO BALLS, AND FREEZE!</p>

RECIPE SERVES • 4 **PREP TIME • 10 MINS**

KEEPS FOR • 1 WEEK **COOK TIME • 5 MINS**

THIS DISH CONTAINS: NUTS, MILK, WHEAT

Figure 9

Recipe Card First Draft (Back)

INFORMATION

<p>FOR MORE INFORMATION ON RECIPE OPTIONS:</p>	<p>SNAPED.FNS.USDA.GOV/NUTRITION-EDUCATION/RECIPES</p>
<p>TO LEARN ABOUT COURSES AND EXTRA OPTIONS AVAILABLE THROUGH SNAP/WIC:</p>	<p>HTTPS://SNAPED.FNS.USDA.GOV/</p>

IF YOU OR SOMEONE YOU KNOW IS STRUGGLING WITH HUNGER, THESE RESOURCES ARE AVAILABLE TO YOU:

<p>LIST LOCAL PANTRIES? NOT SURE HERE.</p>	<p>MAYBE A WEBSITE?</p>
---	--------------------------------

Figure 10

Recipe Card Final Draft (Back)

INFORMATION

FOR MORE INFORMATION ON RECIPE OPTIONS:

TO LEARN ABOUT COURSES AND EXTRA OPTIONS AVAILABLE THROUGH SNAP/WIC:

SNAPED.FNS.USDA.GOV/NUTRITION-EDUCATION/RECIPES

SNAPED.FNS.USD A.GOV/

IF YOU OR SOMEONE YOU KNOW IS STRUGGLING WITH HUNGER, THESE RESOURCES ARE AVAILABLE TO YOU:

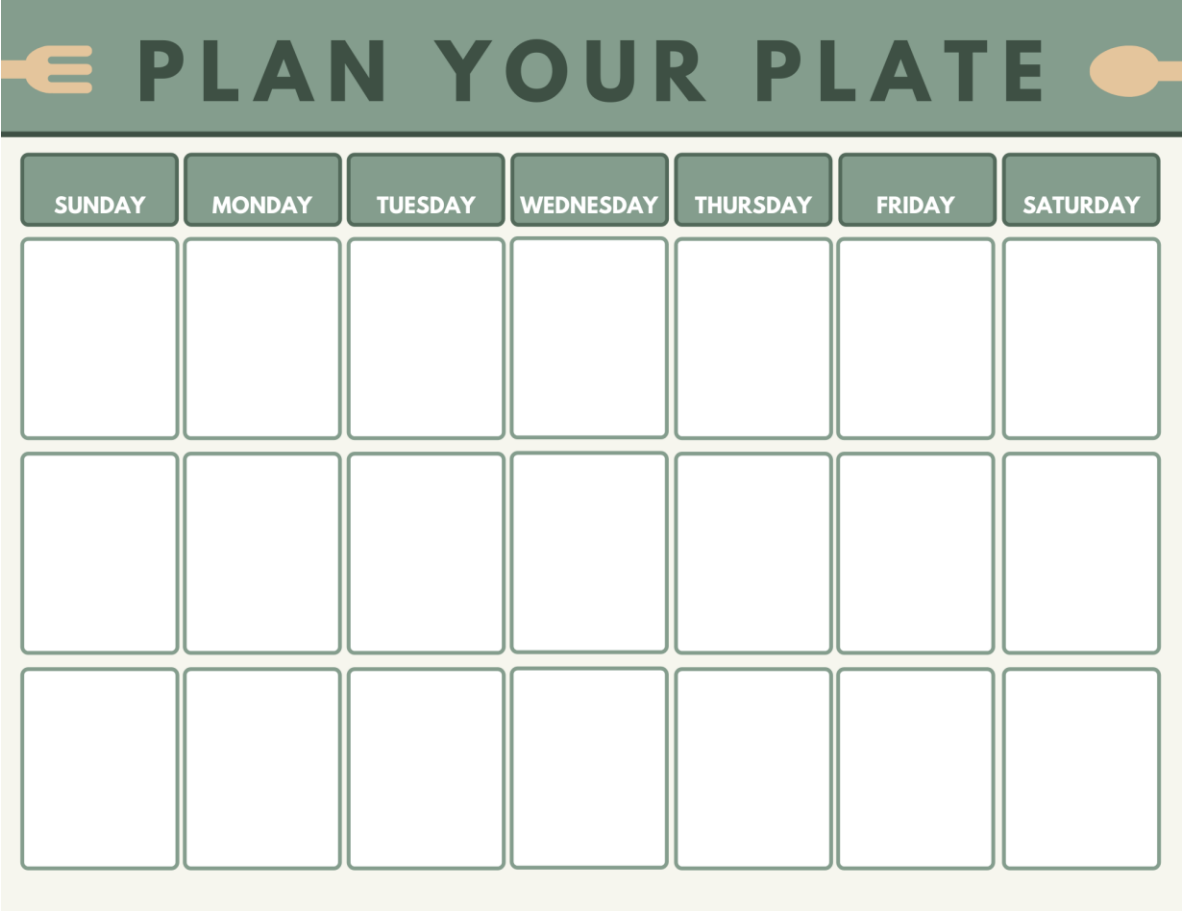
(Services listed are limited to the Washington County area.)

- NORTHWEST ARKANSAS HUNGER RELIEF**
● 554 EAST 15TH STREET
FAYETTEVILLE, AR 72701
(479) 304-4357
- FULL CIRCLE CAMPUS**
● 324 STADIUM DR.
FAYETTEVILLE, AR 72701
479-575-4365
- FEED THE 479 5 PM – 7 PM**
● 3157 W SUNSET
SPRINGDALE, AR 72762
479-717-5662
- WINSLOW COMMUNITY MEALS**
● 1057 ELLA RD.
WINSLOW, AR 72959
479-634-2800

VISIT
WWW.NWAFOODBANK.ORG/FIND-FOOD
FOR MORE OPTIONS

Figure 11

Meal Plan Calendar First Draft



The image shows a meal plan calendar titled "PLAN YOUR PLATE". The title is centered in a dark green header bar, flanked by a fork icon on the left and a spoon icon on the right. Below the header is a grid of 21 empty boxes for meal planning, organized by day of the week and time of day.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY

Figure 12

Meal Calendar Second Draft

The image shows a meal planning template titled "PLAN YOUR PLATE". The title is centered in a dark green header bar, flanked by a fork icon on the left and a spoon icon on the right. Below the header is a grid for the days of the week: SUNDAY, MONDAY, TUESDAY, WEDNESDAY, THURSDAY, FRIDAY, and SATURDAY. Each day has a corresponding empty box for meal planning. To the right of the grid are two vertical sections: "PREP AHEAD OF TIME" and "ADDITIONAL ITEMS", each with a large empty box. At the bottom left, there is a vertical "NOTES" section with a large empty box.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	PREP AHEAD OF TIME
							ADDITIONAL ITEMS

NOTES

Appendix B: Draft Survey Instrument

Draft Survey Items

- Demographics
 - What is your race/ethnicity?
 - Hispanic/Latino
 - Black/African American
 - Native American/American Indian
 - Asian/Pacific Islander
 - White/Caucasian
 - Two or more races
 - Other _____
 - What is your gender?
 - Open Response
 - What is your household income level?
 - \$0 - \$24,999
 - \$25,000 - \$49,999
 - \$50,000 - \$99,999
 - \$100,000 or more
 - In what city and state do you currently reside?
- Which food assistance service(s) are you currently enrolled in? (Check all that apply)
 - SNAP
 - WIC
 - Other (Please indicate)

- How long have you been enrolled in this service(s)? (Years, months)
 - Open Response
- Please indicate the amount of people in your household? (Including yourself and all other who live in your house on a full-time basis)
 - Open Response
- Please indicate the age groups of your household members (select all that apply)
 - Children (0-18 years of age)
 - Adults (19-64 years of age)
 - Seniors (65+ years of age)
- What types of SNAP or WIC approved foods do you normally find yourself repurchasing?
 - Open Response
- When you go to shop, how often do you prepare a list?
 - Never
 - Rarely
 - Sometimes
 - Very Often
 - Always
- When you purchase your items, how often do you construct a meal plan?
 - Never
 - Rarely
 - Sometimes
 - Very Often

- Always
- Please indicate the level of importance you place on each of the following factors when deciding whether to purchase a food item (Matrix table, Likert Scale Unimportant to Very Important)
 - Convenience
 - Cost
 - Availability Where I Shop
 - Fresh
 - Health conscious
 - Locally Grown
- Please indicate the level to which you agree or disagree with the following statements (Matrix Table, Likert Scale agree to disagree)
 - I believe I make the most of my food purchases
 - I understand what SNAP and/or WIC offers me as a participant
 - SNAP and/or WIC communicate clearly about the services they offer
 - I have felt self-conscious while shopping publicly for approved food items
 - I would utilize a meal plan if offered
 - I would utilize recipe cards if offered
- Do you prefer to consume information from a physical document or an online document?
 - Physical
 - Digital
 - Both
 - Doesn't matter

Show the graphic(s)

- Click once on elements you like and click twice on elements you do not like. (Hot Spot Question, placed under each graphic included)
- Please indicate the level you agree or disagree with the following statements (Matrix Table, Likert Scale agree to disagree)
 - I like the color choices in the graphic
 - I like the font choices in the graphic
 - I like the overall design of the graphic
 - The content is easy to understand
 - The content is useful to me
 - I would use this document if offered
 - This document would be useful to others
- What, if anything, should be added to the document?
 - Open Response
- What, if anything, should be taken out of the document?
 - Open Response
- Please share any other thoughts you have.
 - Open Response