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Increasing food security: Developing and testing a nutrition education curriculum for a mobile food pantry

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Increasing Food Security: Developing and Testing a Nutrition Education Curriculum for a Mobile Food Pantry

An Honors College Project Presented to
the Faculty of the Undergraduate
College of Health and Behavioral Studies
James Madison University

by Kathleen Kraft and Alexandra Lepecha
May 2019

Accepted by the faculty of the Department of Dietetics, James Madison University, in partial fulfillment of the requirements for the Honors College.

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ABSTRACT

*Background:* The Neighborhood Produce Market (NPM) is a food distribution model similar to a mobile food pantry. NPM stakeholders observed a lack of community engagement and familiarity with produce offered.

*Project Description:* The objective was to develop a nutrition education curriculum for NPM volunteers to better engage families and community members by providing food samples, recipes, and nutrition education. A stakeholder steering committee guided the needs assessment, curriculum development, volunteer training, and pilot test. The curriculum consisted of food safety, cultural considerations, and nutritional information for nine produce items and food tasting procedures and recipes. Seven student volunteers were trained to use the curriculum. The effectiveness of the curriculum was evaluated using qualitative feedback from NPM volunteers, stakeholders, and community members.

*Outcomes:* Volunteers stated they felt the curriculum and training adequately prepared them to create food samples and provide nutrition education. NPM stakeholders reported the food samples increased community members’ engagement and excitement about the market and community members enjoyed trying new foods.

*Conclusion:* Food samples, recipes, and nutrition education positively contributed to the NPM by increasing participation and interest.
Introduction

The Neighborhood Produce Market (NPM) is a collaboration between the Blue Ridge Area Food Bank (BRAFB) and the James Madison University Institute for Innovation in Health and Human Services (IIHHS) Gus Bus, a mobile literacy program. The NPM is a food distribution model similar to a mobile food pantry and provides fresh, free produce and non-perishable food items to community members who may face food insecurity throughout the Harrisonburg and Page County community in Virginia. When initiating the NPM, it was anticipated that parents or caregivers would be involved, as they are likely in charge of food preparation in the household. This assumption was not the case however, as youth from the Gus Bus were primarily the population who came to the NPM because of its association with Gus Bus. Additionally, the NPM committee members identified a need to increase community member engagement and increase consumption of certain produce items that were seldom chosen at the markets. This increased community engagement was desired because unlike the Gus Bus that only serves youth, the NPM is trying to appeal to parents and caregivers of children as well as community members of all ages.

The purpose of this capstone project is to combine both a research and creative component to develop a well-rounded comprehension and intervention on food insecurity as it relates to Harrisonburg, especially the diverse community served by the NPM. The “Neighborhood Produce Market Nutrition Education Curriculum,” which serves as the intervention for food insecurity, was created for NPM volunteers. The goal of the NPM curriculum is to incorporate food and nutrition education into the NPM to increase community member engagement thus increasing the amount and variety of produce selected by community
members. The objectives to reach this goal were: to conduct a literature review of food insecurity, and to develop and implement a nutrition curriculum for the NPM.

The research component of this project involved the review of literature and available data to assess social determinants of health with regards to food security, socioeconomic status, ethnic and cultural diversity, and health status of immigrant, refugee, and low socioeconomic status populations in the Rockingham County and Harrisonburg area. The further purpose of this component of the capstone project was to assess the needs of the community as they relate to food access, food security, and nutrition. The information from this review was used to create an appropriate nutrition education curriculum for the NPM.

The creative project involved developing the nutrition education curriculum for the Neighborhood Produce Market (NPM) in Harrisonburg. Its goal was to increase the engagement of adults at the NPM and the amount and variety of produce selected by families in the community by developing a nutrition education curriculum for volunteers to provide “food experiences.” The food experiences included providing food samples of prepared produce items seldom chosen with accompanying recipes, and nutrition information about these produce items made for volunteers to educate the community members. Though there have been curricula in the past used to increase produce consumption in communities, the NPM model is unique as it is a mobile program that delivers free produce to a diverse audience. The challenge with this mobile market was that any food experience created for the community had to be easily implemented and safely transferred to three different neighborhoods daily within a specific time frame, while appealing to ethnically diverse audiences amongst the neighborhoods.

Over the course of this capstone project, the curriculum has been revised for use ongoing to further positively impact food insecurity in the Harrisonburg community. It is anticipated that
this model of nutrition education could be expanded and even be applicable to similar communities in the United States.
Part I: Research Component

Harrisonburg City Demographics

Harrisonburg is a culturally diverse community that has grown exponentially over the years with over 50,000 residents.¹² The United States Census Bureau estimates that 83% of residence are white which includes Harrisonburg residents of European, Arab, Middle Eastern, and North African origin; 19.8% are Hispanic or Latino which includes Harrisonburg residents from El Salvador, Honduras, Puerto Rico, and Mexico; 8.8% are black or African American which includes Harrisonburg residents, 0.8% are American Indian and Alaska Native, 4.5% are Asian, 0.2% are Native Hawaiian and Other Pacific Islanders, and 2.7% are two or more races.¹² There are over 55 different languages spoken in the Harrisonburg City Public Schools which attests to the cultural diversity in Harrisonburg. Many of the neighborhoods visited by the Neighborhood Produce Market are ethnically diverse and have increased ethnic minority, immigrant, and refugee populations compared to other neighborhoods throughout Harrisonburg.¹²³

The Harrisonburg poverty rate is 31.8%, much higher than the national average of 12.3%.⁴ The median household income of Harrisonburg is $38,048 which is about $18,468 lower than the national median household income and 33.7% of households in Harrisonburg have an income below $25,000.¹³⁴ These incomes can contribute to food insecurity, defined as “household-level economic and social condition of limited or uncertain access to adequate food”.⁵ In Harrisonburg, 18.4% of residents are considered to be food insecure and 37.3% are eligible for Supplemental Nutrition Assistance Program (SNAP) benefits, though only 7.7% of Harrisonburg’s population receive SNAP benefits.³ The National School Lunch Program and the
Supplemental Program for Women, Infants, and Children Program (WIC) also play a significant role in benefiting Harrisonburg residents with 71.3% of Harrisonburg City Public School students receiving free or reduced lunches and about 2,000 women and children receiving WIC benefits in both Harrisonburg and Rockingham county as of 2017.\(^3\)

**Social Determinants of Health in Relation to Harrisonburg**

In order to better address needs within a community or population, it is important to understand how economic stability, neighborhood and built environment, health and health care, social and community context, and education, play a role in health status and health disparities.\(^6\) Healthy People 2020 defines social determinants of health as “conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.”\(^6\) These areas of social determinants are all interconnected and are not typically addressed in a linear fashion, as they all play an equally important role in health. Health disparities can be defined as “differences that exist among specific population groups in the United States in the attainment of full health potential that can be measured by differences in incidence, prevalence, mortality, burden of disease, and other adverse health conditions.”\(^7\) These health disparities can be based on race, ethnicity, immigrant/refugee status, disability, sex/gender, sexual orientation, geography, income, and social determinants of health. Since the publishing of the “Heckler Report,” a report which first addressed health disparities for ethnic minorities over 30 years ago, substantial literature has identified numerous additional factors that attribute to health disparities in immigrant, ethnic, minority, and refugee populations.\(^7,8\) Though there has not been an abundance of literature acknowledging health disparities and social determinants of health specifically in Harrisonburg
City or Rockingham County, it is important to address how these national level trends can apply to local levels as well.\textsuperscript{8,9,10,11,12,13}

Employment, food insecurity, housing instability, and poverty are also factors which may contribute to health disparities and determine health status.\textsuperscript{6} Harrisonburg has a relatively low unemployment status of 3.2\% when compared to the national level of 4.0\%, however 31.8\% of Harrisonburg is in poverty when compared with 11.3\% nationally, potentially affecting food security in the area.\textsuperscript{2,3} Poverty not only affects food access and food security, but is also associated with increased crime rates, lack of recreation space, unemployment, family dysfunction, psychosocial stress, geographic location (rural vs urban), and higher rates of substance abuse and chronic health conditions due to a lack of health coverage. All of these factors contribute to health disparities such as higher rates of chronic diseases like obesity, for example, in lower socioeconomic populations.\textsuperscript{13,14} The “Community Stakeholder Survey Results 2015: The Most Important Health Challenges in the Community” from the Sentara Rockingham Memorial Hospital (RMH) Community Health Needs Assessment (SCHNA), identified the top ten most important health challenges in order of greatest to least as followed: adult obesity, substance abuse (illegal drugs), childhood obesity, diabetes, mental health (other than depression), depression, heart disease, alcohol use, teen pregnancy, and substance abuse (prescription drugs) in Harrisonburg.\textsuperscript{15} Several of these health challenges are related to multiple unhealthy lifestyle factors, one major contributor being diet. Contributing factors noted by stakeholders in the SCHNA that may lead to the prevalence of these challenges included, “poor lifestyle choices (underlying issues related to no access to healthful food, little exercise, and smoking), lack of mental/behavioral health access, and rural areas posing a challenge to transportation.”\textsuperscript{15} The SCNHA identified challenges with healthcare access and food access with
regards to the lack of transportation or reliable transportation, and lack of walkable areas due to the rural nature of Harrisonburg. Furthermore, based on the data from the SCHNA, there is a high prevalence of both adult and childhood obesity in the Harrisonburg community. When evaluating lifestyle factors, 79% of adults were consuming less than five servings of fruits and vegetables per day, 65% are overweight/obese, and 51% were not meeting recommendations for physical activity in the past 30 days. Of these adults, 36% had high cholesterol and 9% had diabetes. Black/African Americans between the ages of 45-64 had the highest percentages of being overweight or obese and reported the highest percentage of diabetes.

Similar to adult health risks, only 8% of high school youth (14-19 years) met the guidelines for fruit and vegetable intake, 25% were overweight/obese, and 54% were not meeting the recommendations for physical activity in the past week. Of middle school students (10-14 years), only 23% had met the guidelines for fruit and vegetable intake and 36% were not meeting recommendations for physical activity within the past week. Overall, Hispanic ethnicity and black/African Americans had the highest percentage of overweight/obesity for the youth risk factor.

Early childhood education and development, enrollment in higher education, high school graduation, and language impact health behaviors. Education is associated with enhanced ability to navigate the healthcare system due to increased health literacy, more positive personal health beliefs, increased socioeconomic status and access to resources, and decreased stress with regards to employment, food access, and overall better social environment. Of the age 25+ population in Harrisonburg, 18.5% did not graduate from high school compared to the national rate of 13.9%. In the SCHNA, individuals who were with “low income, non-English speakers, homeless, unable to read/write, and undocumented” were impacted most by the challenges.
associated with food access and healthcare access. Stakeholders also associated these individuals with having a greater “lack of knowledge about available community resources, lack of understanding of the healthcare system, and lack of access to higher quality foods, and lack of insurance coverage.” Lower socioeconomic status is associated with lower levels of education which can factor into health disparities as well among this population.\textsuperscript{15,17}

Both economic status and education level impact a person’s environment as well as social context. Having the access and ability to purchase foods that support healthy eating patterns, the rate of crime and violence, living conditions, and discrimination are all contributing social factors to health status.\textsuperscript{6,13} Rural, minority, low socioeconomic status, and violent neighborhoods and communities may have a greater risk for food deserts, chronic disease, substance abuse, and psychosocial stress which all can affect health status.\textsuperscript{16}

A combination of economic status, education level, social context, and employment status can interfere with access to primary care and insurance coverage along with health literacy. Populations who are most vulnerable to limited health care access include low socioeconomic status pregnant adolescents, children in low-income families, homeless individuals, minority groups, residents of rural areas, and refugees. Harrisonburg is a rural area with a high immigrant, minority, and refugee population that has a higher than national average poverty rate. Social determinants of health have been discussed in a way relating to those of lower socioeconomic status; however, due to the increased immigrant and refugee population in Harrisonburg, it is important to identify common social determinants of health and health disparity trends on a national level that can potentially be applied to Harrisonburg as well. There are 42\% to 52\% of non-citizens that lack health coverage compared to 12.2\% of United States citizens. Just 14\% of native-born families compared to 21\% of children in immigrant families
live in poverty. In conjunction with difficulties for low socioeconomic status of United States residents, immigrant and refugee populations may face an even greater challenge due to the cultural and language barriers that may interfere with health literacy. Further, they may have low health literacy which can interfere with the understanding of their diagnoses or treatment recommendations. Differential treatment and bias has also been documented due to the lack of cultural competence in health care professionals. In addition, this population may come to the United States with different understandings about health and health care in general which can result in mistrust and perceived discrimination. Stakeholders in the SCHNA noted that barriers to achieving good health among immigrant communities were “language barriers, cultural expectations not understood, and lack of cultural coherence.” When working with immigrant populations it is also important to consider the acculturative stress from extreme social, cultural, and economic change along with severe trauma or previous health care related experiences. Currently, there is a lack of data and systems to determine specific health disparity issues among this more vulnerable population, though there are common trends that have been studied on a national basis.

**Food Insecurity**

With 18.4% of Harrisonburg residents being food insecure, it is important to address potential factors that may contribute to it. As immigrant and refugee populations continue to grow in Harrisonburg and the United States, there is an increased need to address the health of immigrants and refugees and address their increased rate of chronic disease compared with those who stay in their home country. It is reported that those who have resettled may have difficulty finding familiar or healthy foods, even with the United States abundance of choices. Language barriers, low acculturation, and post resettlement socioeconomic status
result in difficulty locating and purchasing familiar foods. Furthermore, refugees and other immigrant families often have limited information about foods, ways to shop, resources, and recipe availability which may create a barrier to a healthful diet. When refugees do purchase food in the US, they may tend to have a higher intake of processed and energy dense foods such as, meat, eggs, high-fat food, fast food, and high-sugar beverages, all contributing factors to chronic disease. These foods are typically eaten in higher quantity as they are more accessible and perceived as less expensive than the high cost and low satiety of fresh produce.

Some of the refugees who move to the US report that the abundance of food in the United States when compared to the scarce amount of food in their home countries, contributed to their consumption of more food. This population also reported in a survey that even if they were able to use Supplemental Nutrition Assistance Program benefits for their produce, they were concerned that the produce would not be kept fresh for a long enough time. Another social factor affecting family food choices are children. Children, especially school-aged, frequently prefer American fast food. This preference may affect the foods purchased by family in stores, the frequency of eating out, and the food served at the dinner table, which may lead to higher consumption of desserts, pastas, etc. and a loss of ethnic dishes. Wang et al (2016) reported in the “Systematic Examination of Food Intake and Adaptation to the Food Environment by Refugees Settled in the United States” that health and nutrition of immigrant/refugee populations could be improved by learning about healthful foods, having access to recipes, and knowing food market locations.

Being below the poverty level is a major factor for food insecurity, a household-level economic and social condition of limited or uncertain access to adequate food.
increase in health concerns in groups of low socioeconomic status, it is important to note not only limited access to food, but limited access to more nutrient dense foods such as fruits and vegetables.\textsuperscript{18,19} In a study looking at communities with low income in North Carolina, the top 10 barriers to purchasing fresh fruits and vegetables, in order, were: cost, cooking and nutrition knowledge, convenience, quality, personal food preferences, availability, transportation, perishability, variety, and safety (defined as feeling safe when traveling to or from store and during the shopping process).\textsuperscript{23} Other studies have also indicated cost, lack of time and knowledge on how to prepare food, and lack of access to locally grown foods may be barriers.\textsuperscript{24} With these barriers considered, it is important that interventions are created to address these problems to increase food security and decrease health disparities in these groups.

\textbf{Existing Mobile Food Pantry and Market Nutrition Intervention Models}

To overcome food insecurity in low income and impoverished neighborhoods and to decrease prevalence of chronic health disease, mobile food pantries and markets have become more prevalent in the United States.\textsuperscript{25} Access, affordability, and availability are factors to fruit and vegetable consumption that can be overcome by mobile food pantries and markets. There is a difference between a mobile food pantry and market; a mobile food pantry offers free food items, while a mobile food market offers food at a reduced cost and/or accepts SNAP when compared to grocery stores. An example of a mobile food distributor is the mobile produce market called “Veggie Van.” The Veggie Van was pilot tested in underserved communities to see its influence on fruit and vegetable access and intake. The pilot test found that offering weekly boxes of affordable fruits and vegetables, paired with education, could improve their consumption for frequent program users. Volunteers of the markets provided cooking demonstrations, nutrition information, and seasonal recipes to encourage health in these
Customers of the Veggie Van could choose to order a small ($8), or large ($12) box, which could feed 1-2 and 3-5 people per week, respectively. There was an increase in 20.4% of customers who felt that they could afford to buy enough fruits and vegetables to feed their families, however these were not statistically significant changes. In self-reporting, those who shopped at the Veggie Van stated that their intake increased by 1.6 servings per day when compared to those who rarely or never shopped at the Veggie Van, however a food frequency questionnaire did not reveal this impact.\textsuperscript{25}

A similar effort was made in New York to see if access to more affordable food would influence the consumption of fruits and vegetables at senior centers.\textsuperscript{26} This “Veggie Mobile” carries fresh produce to low-income neighborhoods and sells fruits and vegetables at wholesale price. After using the Veggie Mobile, mean intake of fruits and vegetables increased by 0.37 servings/day. Vegetable intake also increased, however half of which was potatoes. Change in fruit consumption was not significant.\textsuperscript{26}

### Use of A Mobile Food Pantry in Harrisonburg

Harrisonburg is a culturally and ethnically diverse, rural area with many individuals living below the poverty level. The Neighborhood Produce Market is an ideal way to provide fresh, free produce to individuals and families in need. Since 2016, The NPM visits neighborhoods and meets families where they are, thus eliminating barriers and challenges that may be presented when going to a grocery store. These barriers include: transportation, language/cultural barriers due to lack of familiarity with local stores, and time constraints. The NPM is able to visit these sites due to the Gus Bus which has previously established relations with the children of these neighborhoods where they have been working to improve literacy.
rates. This NPM collaboration presents an opportunity for children to enjoy literacy activities on the Gus Bus, help their families shop at the market, and engage in food experiences that allows them to see, touch, and taste different types of produce. After its initial startup, the NPM saw a need for increased family engagement at the market as many times children were the primary participants. To aid in this process, our collaboration included the creation of a nutrition education curriculum for NPM volunteers that provides them with information on nine different produce items at the market as well and steps to prepare them to provide food samples of these food items at the produce market. The intention of this curriculum was not only to provide incentive for families to join their children at the NPM, but also to allow community members to try new produce that they may not have tried otherwise such as spaghetti squash, beets, or turnips in hopes to increase overall produce use and consumption, to educate the community on the importance of nutrition, and to provide different methods of food preparation seen at the market.

**Neighborhood Produce Market Needs Assessment: BRAFB Survey Data and Discussion**

To create a curriculum better addressing the needs and concerns of community members participating in the NPM, questions were developed and added to the Blue Ridge Area Food Bank (BRAFB) biannual survey to understand the needs of the community as they relate to participation in the NPM and consumption of produce. The survey was conducted on an iPad and participants, adults only, of the NPM were asked if they wished to participate in the survey. During this survey, there were interpreters on site who could translate Arabic, Spanish, and Kurdish to aid those who were unable to understand the questions. The survey had answers provided for participants to pick either in “multiple choice” form or a “select all that apply” form. The aim was to have a post-intervention survey to assess the effectiveness of the curriculum, however this questionnaire was not performed due to the timeline of when the
BRAFB typically surveys market participants. A total of 80 adults completed the survey and question and data are as follows:

![Bar Chart]

**Figure 1.** The different types of fruit and vegetables that community members like to eat was assessed by asking the question: “What fruits and vegetables does your family like to eat?” A selection of apples, cabbage, carrots, citrus fruit, corn, dry beans, green beans, lettuce, leafy greens, melon, potatoes/sweet potatoes, tomatoes, turnips, winter squash, zucchini/summer squash and other were available for community members to choose. This was a select all that apply question.

Based on the data, items such as turnips, winter squash, zucchini, and leafy greens are among the vegetables less preferred in those participating in the Neighborhood Produce Market. Vegetables such as carrots, potatoes, and cabbage are among the more frequently preferred.
Figure 2. The different places that community members receive most of their fruits and vegetables from was assessed by asking the question: “Where does your family get most of their fruits and vegetables from?” A selection of grocery store, this market, farmers market, food pantry and other were available for community members to choose. This was a multiple-choice question.

Though most participants of the NPM purchase their fruits and vegetables from the grocery store, approximately 18% of these individuals receive most of their produce from these markets. The aim of this question was to increase the amount of produce taken from the NPM rather than the grocery store to aid the community who may have limited resources and would prefer to use this market. The hope was that with increased “food experiences,” more participation would be seen which would lead to an increase in the use of these markets.
Figure 3. The different cooking methods that community members use to prepare food at home was assessed by asking the question: “If you or someone in your home cooks, how do you usually prepare food?” A selection of bake, boil, deep fry, grill, microwave, pan fry, sauté, steam and other for community members to choose. This was a select all that apply question.

Boiling, baking and pan frying are methods of cooking commonly used among adults in the communities served by the NPM. These data informed the type of recipes chosen to provide to community members to increase the likelihood that they would recreate the recipe.

Figure 4. The frequency of fruit and vegetable consumption was assessed by asking the question “If you or someone in your home cooks, how often do you use fresh fruit and vegetables?” A
selection of everyday, a few times a week, about once a week, and once or twice a month, was available for community members to choose. This was a multiple-choice question.

Over half (?) of the respondents reported use of fresh fruit or vegetables in the home on a daily basis though several indicated they were cooked once a week or less.

![Bar chart showing the number of people reporting](image)

**Figure 5.** The tasting of new types of fruits and vegetables was assessed by asking the question “Have you tried new types of fruits and vegetables because of these markets?” A selection of yes and no was available for community members to choose. This was a multiple-choice question only asked if members had indicated on the survey that they had previously been to these markets.
Figure 6. The availability of recipes at the NPM was assessed by asking the question “Have you ever received recipes at these markets?” A selection of yes and no was available for community members to choose. This was a multiple-choice question only asked if members had indicated on the survey that they had previously been to these markets.

As seen in the literature, recipes can be beneficial to increasing consumption of unfamiliar foods. Most had not received recipes at the time the survey was administered.  

Figure 7. The creation of recipes provided at the market was assessed by asking the question “Have you ever made any of these recipes?” A selection of yes and no was available for community members to choose. This was a multiple-choice question only asked if members had indicated on the survey that they had previously received a recipe at these markets.
From the information provided by the BRAFB survey, it was established that turnips, winter squashes, summer squashes, and leafy greens were some of the vegetables that needed to be included in the curriculum to increase the amount taken. Baking, boiling, and pan frying being the most common ways to prepare foods indicated that recipes that would be distributed to the community members should include these cooking methods for familiarity. Due to many of the community members not receiving recipes previously, one of the parts of the curriculum included recipes that were to be provided to the community members for the purpose of replicating the food samples.

In addition to the survey, observations of the NPM markets and discussion with stakeholders throughout the months of May, June, and July offered further insight as to the community needs relevant to a nutrition education curriculum. General lack of nutrition education, language barriers, lack of knowledge about food items, lack of engaging activities at the market, and lack of appropriate recipe presentation were observed. From discussion with the stakeholders, lack of cooking equipment, lack of time for food preparation, and cultural considerations were identified as important variables to consider when developing the curriculum. In addition to the existing literature, outcomes from the needs assessment were used to identify which produce items community members were most unfamiliar with and develop the nutrition education curriculum for the NPM.
Part II: Creative Component

Goals and Objectives

The goal of the nutrition education curriculum for the NPM was to incorporate food and nutrition education into the NPM to increase adult involvement and the amount and variety of produce taken by community members. The objective of the creative component of this project was to develop and implement a nutrition education curriculum for the NPM to help reach the established goal.

Methodology and Timeline for Curriculum Development

Steering Committee Formation:

In April, our initial steering committee was formed which consisted of BRAFB, Gus Bus, and Sentara Rockingham Memorial Hospital (RMH) personnel as well as our Honors Advisor. The BRAFB and Gus Bus created the NPM through their collaboration where BRAFB provides food for the NPM while Gus Bus provides the neighborhoods and community members to these markets by setting up the Gus Bus next to the NPM at each site. Sentara RMH involvement stems from funding the project through a grant for NPM. This committee helped to establish our goals and objectives for the project as well as provided guidance and resources throughout the curriculum development. Throughout the curriculum development process, the steering committee expanded to also include Virginia Cooperative Extension personnel who had prior knowledge of “food experiences” through their work with the community in educating them on nutrition by providing classes and additionally provided the kitchen space for the “food experience” samples to be created and transported to the NPM sites.
After completing the needs assessment and meeting with the steering committee from April 2018 to August 2018, the curriculum content, recruiting process for volunteers, involvement of volunteers, and date of pilot testing for curriculum had been established.

Initial On-site Trial Prior to Curriculum Creation:

In July, before the curriculum was created, a test run of a “food experience” was done with honeydew and cantaloupe. For this experience, the fruits were cut up prior to site arrival, placed in bowls, covered with saran wrap, and placed in ice bowls to maintain safe food temperature. During this trial run, samples of these were available to the community members to taste. Pamphlets with some nutrition information were also available for the community members to look at. These handouts are available in the appendix. This test run was done to best understand how a food experience should be managed when creating the curriculum.

Curriculum Content:

The “Neighborhood Produce Market Nutrition Education Curriculum” was created to for volunteers to best address the needs of the community. After discussion with BRAFB staff and analysis of survey data, the nine vegetables that were included in the curriculum were beets, bell peppers, cabbage, eggplant, leafy greens, radishes, summer and winter squashes, sweet potato, and turnips. These foods were least familiar to community members and often available at the NPM. For each of these foods, nutrition information, cultural specifications (Middle Eastern, Hispanic, African cuisine), and food preparation methods/techniques were included. Food experiences using samples would be based on these items and therefore the curriculum included volunteer training which contained general food safety information, general food sample
preparation methods, food transportation methods, on-site food handling/set-up methods, after site visits food handling methods, and recipe cards for each food item that could be given to NPM participants.

The nine produce items chosen were based on BRAFB survey information and previous knowledge of BRAFB staff observation that these were the most challenging produce items to get community members to take. Based off this information and the needs assessment, it was decided that it was important for volunteers to have background information of the food item with regards to nutrition content and ways/methods for food preparation for volunteers to reference in order to provide nutrition education at the NPM when possible. Cultural specifications were also included to make volunteers aware of the culturally and ethnically diverse population they would be working with and ways they could engage a community member in conversation that may make them more willing to take the produce item. Due to the complex nature of the food sample preparation process, in addition to transporting the food samples and providing them at the sites, it was deemed necessary to have an in-person training session. Not all volunteers had been trained in proper food safety so general food safety information was included for both liability purposes as well as for volunteers to reference. Step by step food preparation methods/techniques for each food item were included to ensure proper and timely preparation of samples and food transportation methods were included for both safety and time purposes as well. Because the setup of the NPM may be unfamiliar and confusing due to the amount of people from different organizations (Gus Bus or BRAFB) present, it was important that procedures for setup at the NPM be included in addition to the cleanup process after the site visits are completed. Having recipe cards was important to ensure that a community member would be able to know how to prepare the food sample they tried at the NPM at home.
**Volunteer Recruitment and Training:**

Volunteers were recruited by sending a mass email to health-based majors, and a total of nine volunteers responded and attended training. During the training session at the end of September, the lecture portion educated volunteers about the purpose of the Neighborhood Produce Market and their role as volunteers which included preparing samples, delivering samples while maintaining food safety to different neighborhood sites and any clean up necessary. In addition to a lecture component, there was also a cooking demonstration which included roasting an acorn squash, sautéing of collard greens, and boiling beets. These three food preparation techniques were chosen to demonstrate the different cooking techniques that may be used when preparing food samples for the Neighborhood Produce Market based on the recipes selected. The foods chosen were included due to their likelihood of being at the market in the month of October- when the curriculum was to be pilot tested.

**Curriculum Pilot Testing:**

In October, the curriculum was pilot tested using the trained volunteers in addition to at least one of the project leaders, the creators of the curriculum. The markets were on October 3rd, 16th, 24th, and 29th. On the 3rd, spaghetti squash was the vegetable prepared, beets were to be prepared on the 16th, cabbage on the 24th, and bell peppers on the 29th. Project leaders were notified about which vegetable to prepare the day before the NPM or the day of the NPM. The volunteers were made known which day they would be volunteering and on the day of the market they were emailed information regarding the specific neighborhood sites, location of the Virginia Cooperative Extension kitchen, the timeline of events for that day beginning at 2:30pm-7:30pm, the vegetable to be prepared, the recipe of the vegetable, and the section of the
curriculum that included food safety information, food preparation methods/techniques, food transportation methods, and on-site setup and cleanup. This step in the process demonstrates the complexity of this project and the adaptability required of project leaders and volunteers. Project leaders purchased vegetables and other recipe ingredients needed from Walmart using a gift card provided by the Gus Bus because produce could not be taken from the BRAFB due to timing and its distance from the Virginia Cooperative Extension kitchen. After purchasing the produce, volunteers and project leaders went to the Virginia Cooperative Extension Kitchen at approximately 2:30 pm to begin food sample preparation. The spaghetti squash included roasting spaghetti squash and adding pasta sauce to emulate spaghetti; beets were boiled and pickled; the cabbage was shredded, and a dressing was made to create a nutrient dense salad; and lastly, the bell peppers were served raw with hummus. Once the food was prepared, they would be placed into large hotel food pans that fit into the Cambro, a specialized piece of equipment used for insulated food transportation. Volunteers and project leaders would then clean the Virginia Cooperative Extension kitchen and pack up all materials to put into their own vehicles to travel to the first neighborhood site beginning at 4:00pm. On site, volunteers placed bite sized amounts of the recipe into sample Dixie cups for community members to try. Recipes of the food sample that day would also be set out for community members to take if they enjoyed the samples. Each site visit lasted one hour ending at 7:00 pm after the last site. Volunteers would then clean up and properly dispose of trash and food samples. All equipment would be given back to the project leaders to leave in the Gus Bus loading dock room until the next NPM.
Evaluation

Based on volunteer responses, the volunteer training was effective and the inclusion of a live food demonstration training was beneficial for volunteers who may not have initially been comfortable preparing those food samples. From volunteer observation, it can be determined that community members were relatively engaged, but it was mostly children who collected the food from the NPM and tried food samples. Based on comments, volunteers seemed to enjoy their experience and found it to be rewarding. Most were surprised by cultural diversity and the amount of children participating in food collection and tasting (Table 1).

**Table 1:** Evaluation Results of six NPM Volunteer Experiences during pilot testing of curriculum

<table>
<thead>
<tr>
<th>Neighborhood Produce Market Volunteer Evaluation</th>
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<tbody>
<tr>
<td>(6 respondents)</td>
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</table>

| Did the training session prepare you for the Food Experiences? (On a scale from 1-5, 5 being well prepared) | 83.3% responded 5  
  16.7% responded 4 |
<table>
<thead>
<tr>
<th>Question</th>
<th>Responses</th>
</tr>
</thead>
</table>
| Why or why not? (follow up question to preparation for training session) | "We prepared a recipe they showed us in the training session, so I knew exactly what to expect”  
- "I felt like everything was explained pretty well; however, a lesson in proper cutting technique would have been helpful because I felt like I was doing it a lot slower than other people because I haven’t taken dietetics classes before!”  
- "The combination of being shown the recipes beforehand and also just already knowing how to cook pretty well.”  
- "I think it was helpful having everything explained in person!” |
| How satisfied were you with your volunteer experience? (On a scale from 1-5, 5 being very satisfied) | 83.3% responded 5  
16.7% responded 4 |
| Do you feel as though the community members participated in the food experiences? (On a scale from 1-5, 5 meaning community members were very engaged) | 100% responded 5 |
| If you felt community members were not engaged, what do you think would improve community engagement/involvement? | "I feel that they did”  
- "Having punny signs in front of the foods we prepared!”  
- "I think that main problem was the language barrier, so the only solution I have to that is to have a translator/someone who speaks multiple languages, which is likely not possible. Seeing Lexi speak Russian was pretty cool though, and I think that helped the community members be more involved.”  
- "People may be more inclined to try our food samples if we set up our own table (beside the market items) with a sign indicating who we are and what samples we have that day?” |
| Did you feel comfortable preparing the food experience ahead of time? | 100% responded yes |
| How likely are you to continue volunteering for the NPM? (On a scale from 1-5, 5 being very likely) | 66.7% responded 5  
33.3% responded 3 |
Would you recommend this volunteer experience to a friend? · 100% responded yes

Why or why not would you recommend this to a friend?
- “It was a great experience and great idea!”
- “It’s a great way to see how food can impact the lower income community. Also, it’s a good way to connect food with people and bridging some cultural or economic barriers.”
- “It was a lot of fun!”
- “I thought it was a lot of fun & a great way to interact with the Harrisonburg community. I also felt like I got to learn about other cultures and was cued in other ways I could possibly help the community in the future.”
- “I had a great time, and it was a very rewarding experience”
- “I really enjoyed it and felt that it was a rewarding experience!”

Reflecting back on each neighborhood site, what surprised you the most about your experience today?
- “It was surprising how much the kids were involved.”
- “How many kids showed up to get the food for their families.”
- “I was mostly surprised that the parents allowed their young children to just run down the park and collect their bags of groceries by themselves! I also was surprised by how many people actually enjoyed eating the beets.”
- “How much free food was available”
- “I was interested by the diversity of individuals who participated in the neighborhood market. Also, I was surprised by seeing some children who came to get food items for their parents due to language barrier- it was neat to be able to talk with the kids too!”

Three members from the steering committee, two BRAFB staff members and our Honors Advisor, responded to this survey. It can be determined from responses that the incorporation of food samples and volunteer participation enhanced the NPM and met their expectations. Comments with regards to what could be improved involved the addition of certain materials that would aid with the flow and bring more awareness to the NPM. (Table 2)
Table 2: Evaluation Results of NPM Staff composed of two BRAFB staff members and Honors Advisor.

<table>
<thead>
<tr>
<th>Neighborhood Produce Market Staff Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(3 respondents)</td>
</tr>
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</table>

- **Was the Neighborhood Produce Market enhanced with the presence of the food samples?**
  - 100% responded yes

- **Did the nutrition education/food sampling meet your expectations?**
  - 100% responded yes

- **Why did or why didn’t the nutrition education/food sampling meet your expectations?**
  - “Very well presented and prepared. Excellent job!”
  - “Delicious and excellent customer service. Great presentation”

- **What do you think could be improved about the nutrition education/food sampling?**
  - “Table, napkins, handwashing/germ-x, trash can, signage with translation into Spanish and Arabic. Urdu, Kurdish, Russian would be great additions.”
  - “Sample cups, hand sanitizer, smaller pans”
  - “Perhaps a sign to promote the produce item. Note: bring napkins, garbage can, small pans, hand sanitizer, table, bright tablecloth”
Discussion

Research Component:

The research component, including a literature review and needs assessment, was used to better inform and support the need and development of the Neighborhood Produce Market Nutrition Education Curriculum. The social determinants of health were discussed to highlight additional factors other than diet that may affect different populations that the NPM serves. Furthermore, demographics and socioeconomic status of Harrisonburg were provided to indicate what populations the NPM works with, as well as indicate what populations outside of Harrisonburg may be taken into consideration when attempting to generalize interventions for certain groups who may have similar characteristics due to the lack of literature and data on the Harrisonburg community. The Sentara RMH Medical Center Community Health Needs Assessment (SCNHNA) provided data and literature that was similar to the national trends that had been researched among other similar population groups to Harrisonburg.

The sections regarding food security and food access as it related to immigrants and refugees, as well as food security as it related to socioeconomic status was based on demographics and socioeconomic status of those living in Harrisonburg and compared to those on a national level. However, it should be noted that even if demographics are similar between the national and local level, it does not mean that social determinants of health or food security are completely comparable and similar.

Regarding the interventions to food security, which included different models of food markets, it is important to note that these models are not completely comparable either considering they were “for cost” and not an actual food pantry like the NPM. However, this
literature was used to explore what contributed to success or limitations in each, and how these could be overcome with new intervention methods, such as the NPM curriculum, to a mobile market or mobile pantry such as the NPM.

**Curriculum Development and Testing:**

**Initial Development:**

The development of the curriculum posed many challenges. Initially, based on discussion with the steering committee, the aim was to get the community more involved by incorporating on-site food demonstrations at the NPM. However after multiple site visits, observation, and further discussion of the feasibility of mobile food sample preparation, it became evident that preparing food samples ahead of time would be most efficient and beneficial. Knowing there may be language barriers, we wanted community members to be as engaged as possible, so short interaction times was deemed best. After it was established that samples would be made ahead of time, there was great consideration involving what recipes were going to be used, the material that needed to be purchased, and how food samples would be delivered to different neighborhood sites while maintaining food safety. We had to find recipes for each of the nine produce items that were both tasty and appealed to a diverse audience with varying cultures and age ranges, had minimal preparation time, minimal ingredients, and minimal cooking equipment. This approach was done not only to benefit the volunteers time, but also members of Harrisonburg who may only have access to certain ingredients, may have limited time on their hands, and may not have all the cooking equipment that other household have. Once recipes had been established, we had to figure out which equipment to purchase which included: knives, pots and pans, spatulas, ladles, cutting boards, Cambro (mobile food insulator), containers, sample
cups, plastic utensils, plastic bags, trash bags, sanitizing equipment, basic cooking ingredients, etc. Once material items were chosen, a detailed timeline of each market day was prepared from the start of making food samples until the last neighborhood site, a total of five hours beginning at 2:30pm and ending at 7:30pm.

**Volunteer Recruiting/Training:**

There was much contemplation regarding the population this volunteer experience should be advertised to, given the amount of time and work required. A mass email was sent out to health-related majors because of the health focused food sample preparation aspect. Nine volunteers signed up for training, and only seven volunteers participated in the pilot testing process. Due to the complex nature of the NPM in conjunction with the Gus Bus along with food sample preparation, it was deemed necessary to have an in-person training session to best prepare volunteers. This involved the addition of the volunteer training guide to the overall curriculum.

**Implementation:**

As the project leaders, we were present for each of the NPM site visits including the food sample preparation since we oversaw handling the cooking and sanitation equipment, as well as purchasing food items. Upon our experience, we faced multiple challenges regarding communication, timing, transportation, and management.

First, we were not made aware of the featured produce item for food sample preparation until the day before or the day of the NPM. This was difficult because we were responsible for emailing volunteers information on the produce item so they could be best prepared for food sample preparation. In addition to this, the produce item and ingredients had to be purchased, equipment had to be collected from the Gus Bus loading dock, and all items had to be
transported to the Virginia Cooperative Extension kitchen the day of the market which was time consuming and occasionally resulted in delays. Occasionally, we had to provide transportation for volunteers who did not have their own means of transportation and ensure that they arrived at the Virginia Cooperative Extension kitchen on time and understood the schedule of the NPM.

Once arrived at the Virginia Cooperative Extension kitchen, all food and equipment had to be unpacked, approximately 30-50 food samples had to be prepared and depending on the recipe, timing could be an issue. Furthermore, all equipment had to be cleaned before packing up to travel to the first NPM site which added time to the preparation process. On two occasions, we were not able to make it to the first NPM due to unanticipated issues with the recipes, lack of volunteers, and distance from the Virginia Cooperative Extension kitchen to the first NPM site, which could be up to 15-20 minutes away. Furthermore, all equipment had to be placed back into our own vehicles which was heavy, inconvenient at times, and did not always fit properly depending on the type of vehicle.

Even though volunteers had stated in the “NPM Volunteer Evaluation” that they felt they had been prepared enough to complete the volunteer experience on their own, we as the project leaders felt that they would not have been able to complete all tasks without us there due to the complex nature of the experience and the many different NPM site locations that required one to be familiar with the area. However, we do believe that with more hands-on experience and guidance, volunteers would have been able to complete all the tasks required in a timely manner and with ease.

Once we arrived to the NPM site locations, food sample distribution and interaction with community members was executed by the volunteers well. We did note, however, that it would have been more beneficial to have a translator there or have translated recipes to enhance
community interaction. We wanted more feedback from the community with regards to food samples taste and what we could have done to improve the recipes. In addition to comments made by volunteers in the “NPM Volunteer Evaluation,” we as project leaders also agreed with most of their comments in that children were the primary “customers”, and community members were engaged with each other and the food samples, but language barriers made it more difficult to provide the nutrition education aspect of the curriculum.

Data Collection at NPM Sites:

Originally, we intended to count how many food samples were taken at each site, how many children versus adults participated in food sample tasting, how many community members actually took the produce item that was featured, and observational data with regards to general interactions with community members. However, because we had many unexpected challenges and were trying to manage the volunteers, this data collection did not occur.

Strengths and Limitations:

There were a few challenges that became clear throughout the development of this project. Initially, volunteers recruited were only those who were a health-based major. This decreased the amount of potential volunteers that were able to do the project. Another challenge identified earlier included the creation of samples by students. Creating food samples was a time-consuming process which lead to delays in delivering food samples to neighborhood sites and could have affected produce taken and involvement by these community members. With regards to data collection, due to the nature of the NPM and food sample distribution, the original BRAFB survey questionnaire that was supposed to be handed out at the beginning and end of
the NPM season was not handed out at the end which prevented receiving feedback from community members. This prevented data directly from community members to support whether the inclusion of samples increased adults, increased their choices of certain produce items, or increased the amount of recipes taken and replicated by the community members. Furthermore, the survey questions initially submitted by us to include in the BRAFB survey was revised to fit the health literacy of the community which included having close-ended questions with response options versus open-ended questions, which could have affected data. In addition to this adaptation, with regards to our own data collection, we were not able to fill out our on-site evaluation (see appendix).

Though limitations were observed, there were strengths to the implementation of the curriculum. During the NPM nutrition education curriculum initial testing, because volunteers were those interested in health, they were more interested in the project. The creation of this project allowed students from James Madison University to both explore the Harrisonburg community and serve it in a unique way. Most students enjoyed volunteering with the NPM and had various experiences serving with it. Furthermore, it allowed Harrisonburg community members to potentially try new foods or new ways of preparing foods at home which could potentially increase the consumption of produce in the family home. From observation, it was seen that there was an increased amount of family engagement as some of the students of the Gus Bus became excited about samples and ran to their homes to bring their parents and other family members out to try the recipes. Lastly, a major strength of this pilot test was the acknowledgment of the weaknesses which allowed for editing of the curriculum and additions to the stakeholders involved in this process, such as Aramark, discussed in the following section.
Present and Future Implications:

After discussion of the strengths and limitations of the pilot test with the steering committee, Gus Bus decided to collaborate with Aramark, a food service company. Ultimately, the culmination of this capstone project was the impetus for further enhancement of the NPM food experiences. The Aramark partnership involved the creation of food samples which expedited the sample making process and allowed volunteers of the NPM to have an easier role. Aramark also created their own recipes to be translated into various languages seen at the market which could increase the number of recipes taken, ultimately increasing the amount of produce taken from the market and potentially leading to more consumption of vegetables in the home.

BRAFB also decided to create a “Produce of the Month” rather than provide different samples at each Market Day which made it easier for Aramark to plan ahead as to which recipes they would be creating for the markets. During the months of March and April 2019, there was and is a second implementation of the project that we facilitated with these new project elements.

Volunteers were recruited by sending a mass email to the entire student body which allowed for more volunteers to sign up. This approach was done because food samples did not have to be prepared by the volunteers anymore which may have initially deterred students who were not interested in cooking. As stated earlier, this partnership allowed for a smaller time commitment by volunteers because need for volunteers to prepare food samples was omitted.
Conclusion

Overall, the Neighborhood Produce Market Nutrition Education Curriculum added a new component to the already established NPM. Though no objective data was collected with regards to increased produce consumption, the evaluation of the process of this project provides meaningful outcomes. The pilot test in October using the NPM Nutrition Education Curriculum allowed the steering committee, as well as us, to identify the flaws in the process and create an even more efficient and productive method to provide food samples, recipes, and nutrition education. Based on the positive feedback from volunteers and NPM stakeholders, it has been predicted that the addition of food samples with recipes and nutrition education will most likely have a future impact on produce consumption. The addition of this curriculum provided an opportunity for increased community engagement for James Madison University students and current and previous volunteers for the NPM have had positive experiences thus far. The steering committee was pleased with the outcomes of the curriculum and are looking forward to how the NPM will continue to progress and grow as Aramark and more volunteers become involved.

It is hoped that the Neighborhood Produce Market Nutrition Education Curriculum, accompanied by recipes and nutrition education, will increase the amount of produce consumed in Harrisonburg and decrease the diet related health challenges seen in the community. This capstone project was a significant step toward increasing the engagement of adults at the NPM and the amount and variety of produce selected by families in the community, which was the initial goal of the project. In the future, this unique food distribution and nutrition education model may be of great importance and use to other communities throughout the United States.
Authors note

As dietetics majors and future health care professionals, this project demonstrated for us the importance of preventative health care the complexity of community nutrition programs. This is the first time an opportunity like this has been presented to us, and we are grateful for the steering committee as well as our volunteers who dedicated their time to the development of this project. We hope that the Neighborhood Produce Market Nutrition Education Curriculum can be used for years to come and will continue to aid the Harrisonburg community.
Funding Acknowledgements

This work has been supported by the Honors College Small Grant, Sentara RMH, 21st CCLC Grant, Food Lion, and Martin’s.

List of Deliverables

- Preliminary handouts for needs assessment market
  - Cantaloupe Pamphlet
  - Honeydew Pamphlet
- Neighborhood Produce Market Nutrition Education Curriculum
- Neighborhood Produce Market Volunteer PowerPoint
Cantaloupe

**Benefits**
- Improves Eye Health
- Fights off Cold and Flu
- Keeps Skin Glowing
- Fights Cancer
- Boosts Bone Health
- Reduces Cholesterol
- Lowers Risk of Stroke

**Low in Calories**
- High in Vitamin A and C
- High in Fiber

**Enjoy it**
- Fresh
- Fruit Salad
- Smoothie
- With prosciutto (Italian style ham)

**Pick a melon that:**
- Seems heavy for its size
- Sounds hollow when tapped
- Smells sweet
HONEYDEW

Low in calories and high in Vitamin C and Potassium

Why Eat Honeydew
• Boosts immune system
• Can help reduce blood pressure
• Hydrates the body
• Healthy skin

How to Enjoy It
• Eat it fresh
• Make a smoothie
• Make a fruit salad
• Pair it with other meats and vegetables.

How to Choose
• Should be heavy, firm, and have a flower-like smell.
• Knock on the melon and listen for deep, thick sound. If this sound is heard then the Honeydew is ripe.
Neighborhood Produce Market

Volunteer Nutrition Education

Curriculum
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I. **Introduction**

   A. The purpose of this curriculum is to increase adult and community involvement in the Neighborhood Produce Market while increasing nutrition education in Harrisonburg. This Curriculum provides step by step instructions on how to create food experiences for different produce items, from creating the food samples, transporting food samples, to engaging with community members about the food samples provided that day. It also provides recipes for the community members to enjoy in the comfort of their own home. The nutrition education component is voluntary upon request from community members who may be curious to know more about samples they taste.

II. **Creating and Setting up for the Food Experience**

   **Creating Food Experiences:**

   The goal of these food experiences is for community members to learn about the produce preparation, try the food sample, take the food item being presented, and collect a recipe card.

   All food will be prepared at the Virginia Cooperative Extension kitchen before arriving to the sites of the Neighborhood Fresh Produce Market. This curriculum will provide a background of the vegetable, nutrition information of the vegetable, ways it can be prepared, and some culturally relevant information regarding the vegetable. Recipe directions and procedures for transportation of food, setting up the food experience, and what to do after the site visits will all be included for each vegetable as well.

   **Setting up the food experience:**

   The curriculum will provide the details of setting up the food experience and what to do during site visits and after site visits, however, these are some general guidelines for safely transporting both hot and cold food items.

   **Safely Transporting Food Items:**

   Hot Temperature Foods:
   -Wear oven mitts when moving pans in and out of the Cambro.
   -Once on site, measure temperature of food item.
   -Keep pans in Cambro as often as possible.

   Cold Temperature Foods
   -Place ice packs on hotel pan and around the containers of food.
   -Keep pans in Cambro as often as possible.
What to do on-site:

- Disinfect table with disinfectant wipe.
- Place table cloth onto table.
- Place sample plate onto table cloth.
- Place recipe cards on tables.
- Place trash bag near table.
- Prior to spooning out spaghetti squash, measure and record temperature of spaghetti squash. Clean thermometer as indicated in the 3-compartment spray for thermometers directions above.
- Using a spoon, scoop 2 spoonfuls of spaghetti squash from the baking pan into cup and add a fork to each cup. Prepare 5 of these cups ahead of time. Have parmesan on the side in a separate container in case community members want to place it into their sample. Have a small spoon, try and sprinkle it for them.
- Keep pan in Cambro as often as possible to help retain hot temperature.
- As samples are taken, put out more samples so that there are always 5 on the table.
- 15 minutes prior to switching sites, stop setting out samples unless community member approach the food experience area.
- Repeat the steps above at the next two sites.

III. Food Safety

General Hygiene tips for Proper Food Safety:

- Use disinfectant wipe to clean any surfaces that you will be using.
- Wash any cutting boards, knives, or other equipment in the 3-compartment sink.
- Tie hair back, away from face, and use hair net while preparing food. You do not have to wear a hairnet while at the Neighborhood Fresh Produce Market but should have long hair tied back.
- Remove nail polish, keep nails short and free of dirt, wear gloves while preparing food and while preparing food samples on site.
- Remove any rings, watches, bracelets, or long necklaces
- Before preparing food, and at any time you leave the food preparation area or switch food preparation tasks, wash hands with soap and warm running water for 20 seconds, then dry hands with a paper towel before preparing food.
- Wear closed toed shoes.
- Avoid wearing loose clothing (ex. long loose sleeves, baggy shirts, etc.)
- Food should not be prepared when feeling unwell (diarrhea, fever, vomiting, or flu-like symptoms)
- On site, use hand sanitizer and hand wipes to clean hands.

**Food Safety for Fresh Produce:**
- When preparing food, make sure to follow all general hygiene tips listed above.
- Examine all produce for bruises, molding/rotting, or other damaged areas. If molded/rotten, the produce must be thrown away, however, bruises and damaged areas may be cut away.
- Wash all produce before preparation thoroughly under running water, without soap. “Firm” produce such as melons, potatoes, turnips, and beets should be washed with a scrub brush that will be provided in the kit.
- Prepare fruits and vegetables on a separate cutting board from other non-produce items.
- When preparing fruits and vegetables using any cooking method, they should be brought to an internal temperature of 135 or higher. However, when reheating these already prepared items, they should reach an internal temperature of 165 or higher. A digital thermometer will be provided in the kit and images of how to properly use the thermometer are provided below.
- Any produce prepared to serve at cool temperatures must maintain a temperature of 40 or below.
- Any produce prepared to serve at hot temperatures should be stored at a temperature of 40 or below but must be reheated to have an internal temperature of 165 or higher.

**IV. Food Sample Information**
Beets

Background:
- The beetroot is the large central root, otherwise known as edible, portion of the beet plant.
- Beets are a root vegetable known for their edible taproots and leaves, and their peak season is March to October.
- In the United States, beetroot is referred to as beets, table beet, garden beet, red beet, or golden beet.
- Beets can be boiled or peeled and roasted, and included in soups and salads, or baked dishes.

Methods of Preparation:
- **Raw:** Beets are usually not eaten raw, but can be included raw in salads.
- **Boiled:** Beets can be boiled and then eaten as a topping on a salad, as a side dish, or mashed with other foods. Beet hummus is a way that mashed beets can be used.
- **Roasted Beets:** Roasted beets can be seasoned and served as a tasty side dish. Roasting the beets results.
- **Pickled:** Pickled beets can be eaten as a snack or can be added to sandwiches.

Culturally Relevant Cuisines:
- **European Cuisine:**
  - **Borscht:** A sour soup that contains beets as one of the main ingredients. It originated in Ukraine, however, borscht is popular in Russian, Polish, Lithuanian, Belarusian, Armenian, and Jewish cuisines as well.
  - In Serbia, beets are commonly used in salads seasoned with salt and vinegar to compliments meat dishes.
  - Beets are often pickled for a tasty side dish.
- **Middle Eastern Cuisine:**
  - Beets can be included in hummus which is a common dip.
  - Beets are often pickled for a tasty side dish.
- Beets pair well with spicy, fragrant, and warm herb spices such as basil, chives, cloves, coriander, cumin, dill, ginger, allspice, and thyme.

Nutrition Information:
- Low in calories and fat
- Beets are a good source of *Folate*, *Vitamin C*, and *Vitamin B6*.
- Beets are high in *potassium, manganese, calcium, and iron*.

*Refer to Appendix for nutrient information*
Beets Food Sample Preparation

• Step 1: Recipe Preparation: Boiled Beets/Pickled Beets
  o Materials needed: chef’s knife, paring knife, peeler, sink for washing, scrub brush, cutting board, large pot, tongs, saucepan, mixing bowl, plate, spoon
  • Ingredients:
    - 8 medium fresh beets
    - 1 cup vinegar
    - ½ cup sugar
    - 1 ½ teaspoons of whole cloves
    - 1 ½ teaspoons of whole allspice
    - ¼ teaspoon of salt
  • Procedure:
    - Scrub the beets and trim the leaves down to approximately 1 inch in length.
    - Place the beets in the pot and add enough water to cover the beets. Cover and bring water to a boil.
    - After boiling, reduce heat and simmer, then cover the pot.
    - Let the beets simmer for 25-30 minutes or until tender. Check the tenderness by using a fork and if tender, remove from water and let cool.
    - Peel beets and slice as shown in the video, then set aside.
    - In a small saucepan, combine vinegar, sugar, cloves, allspice and salt.
    - Bring to a boil and boil for approximately 5 minutes.
    - Immediately pour over beets and refrigerate at least 1 hour. Drain before serving.

• Step 2: Safely Transporting Food Items:

  o Cold Food/Room Temperature Foods:
    • Items needed:
      - Large cooler
      - Ice packs and ice
      - 1 to 3 large containers (depending on the recipe)
      - Spoon, spatula, tongs, or measuring spoons.
    • Place ice or ice packs into bottom of cooler
    • Wearing gloves, place cold food items into the container(s) and put container on top of ice packs.
    • Once arrived at the site, measure temperature of food item.
    • Keep container in cooler as often as possible.
• **Step 3: What you will need to bring to the site:**
  o Dixie cups
  o Forks
  o Trash bags
  o Gloves
  o Cooler with ice packs
  o Recipe cards

• **Step 4: What to do On-Site:**
  o Place Recipe cards on tables
  o Place Trash bag near table
  o Place forks onto table.
  o Prior to spooning out pickled beets, measure and record temperature of the salad.
  o Spoon 2 slices of pickled beets into 5 Dixie cups
    ▪ Keep container in cooler as often as possible to help retain the cool temperature
    ▪ As samples are taken, put out more samples so that there are always 5 samples on the table
    ▪ 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
  o Repeat steps above at next two sites

• **Step 5: When leaving the sites:**
  o Dispose trash bag
  o Place any leftover food into a container and put into refrigerator
  o Properly wash all utensils and materials used in food preparation or site visits
  o Return all items to designated locations.
Recipe:

Pickled Beets

Prep Time: 10 minutes  Cook Time: 30 minutes

Ingredients:

- 8 medium fresh beets
- 1 cup vinegar
- ½ cup sugar
- 1 ½ teaspoons of allspice

Instructions:

1. Scrub the beets and trim the leaves and roots off of the beets using a. Peel beets using a peeler and then cut the beets into either halves or quarters depending on the size of the beet.
   o If the beet is small cut in halves, but if the beet is large cut in quarters
2. Place the beets in the pot and add enough water to cover the beets. Cover and bring water to a boil. Depending on the size of the beets, the boiling time will vary.
   o Smaller beets will take a shorter amount of time and larger beets will take a longer amount of time. Doneness is measured by how easily the beet can be pierced with a fork and the fork should pierce the beets easily.
3. Once beets are fork tender, remove beets and all of water from the pot using a strainer. Then, place the pot back on the stove and add the vinegar, sugar, and allspice and bring mixture to a boil. Once the mixture reaches a boil, add beets back into the pot for 2-3 minutes.
4. After 2-3 minutes, remove beets and let cool.
Creating meaningful food experiences

Peppers

Background:
- Bell Peppers can be referred to as pepper, sweet pepper and capsicum.
- Bell Peppers are botanically a fruit, not a vegetable, because it contains seeds. They come in a variety of colors such as red, yellow, orange and green.
- Peppers are grown in the United States, Central America, Mexico and South America.

Methods of Preparation:
- Pickled: Bell peppers can be pickled and eaten as a snack or added to sandwiches.
- Raw: Bell peppers can be eaten raw, with dip, or in salads.
- Sautéed: Peppers can be sautéed and added to many dishes or used as a side.
- Stuffed: Bell peppers, with seeds removed, can be stuffed with rice or meat.
- Baked/Roasted: Peppers can be roasted to bring out their natural sweetness.

Culturally Relevant Cuisines:
- Hispanic Cuisine:
  - Fujia style peppers are a common addition to many meals.
- Middle Eastern Cuisine:
  - Bell peppers can be roasted and added to hummus for extra flavor.
- American Cuisine:
  - Peppers are commonly eaten as a snack with dips or sautéed and put into sandwiches or burgers.
- Multicultural cuisine:
  - Stuffed peppers are one of the most common ways to eat bell peppers. Variability to this dish comes in what is stuffed as well as the spices used to flavor the dish. Rice and meat are one of the most common ways to stuff peppers.

Nutrition Information:
- Bell peppers are high in fiber and low in calories.
- Peppers are a good source of minerals such as manganese, magnesium, and potassium.
- They are also high in vitamins C, A, and B6.
*Refer to Appendix for nutrient information.
Bell Pepper Food Sample Preparation

- **Step 1: Recipe Preparation: Bell Peppers with Hummus**
  - **Materials needed:** Chef’s knife, cutting board, bowl, sink with running water, cups, plastic spoons and forks, salad tongs, containers, trash bags, ice, ice packs.
    - **Ingredients:**
      - 6 bell Pepper
      - 1 container of store bought hummus or other dip.
    - **Procedure**
      - Wash bell pepper
      - Cut peppers into slices and remove seeds
      - Place pepper slices into a container and place into the cooler
      - Place ice packs on bottom of cooler prior to placing containers with bell peppers into the cooler.
      - Place hummus or dip into cooler as well.

- **Step 2: Safely Transporting Food Items:**
  - **Cold Food/Room Temperature Foods:**
    - **Items needed:**
      - Large cooler
      - Ice packs and ice
      - 1 to 3 large containers (depending on the recipe)
      - Spoon, spatula, tongs, or measuring spoons.
    - Place ice or ice packs into bottom of cooler
    - Wearing gloves, place cold food items into the container(s) and put container on top of ice packs.
    - Once arrived at the site, measure temperature of food item.
    - Keep container in cooler as often as possible.

- **Step 3: What you will need to bring to the site:**
  - Dixie cups
  - Plastic spoons and forks
  - Trash bags
  - Ice and ice packs
  - Cooler
  - Containers with food

- **Step 4: What to do On-site:**
  - Place tablecloth on table
  - Place Recipe cards on table
  - Place Trash bag near table
  - Place forks onto table
  - Measure and record temperature of the bell peppers.
- Spoon 1 tablespoon of hummus or dip into the bottom of 5 cups. Place 3 bell pepper slices into the Dixie cup. Make sure to wear gloves while doing this or use tongs.
  - Keep container in cooler as often as possible to help retain the cold temperature
  - As samples are taken, put out more samples so that there are always 5 samples on the table
  - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
- Repeat the steps above at the next NFPM sites.

- **Step 5: When leaving the sites:**
  - Dispose of trash bag.
  - Place any leftover food into refrigerator.
  - Wash any items used in meal prep.
  - Return all items to their designated locations.
Creating meaningful food experiences

Cabbage

Background:
- Cabbage is closely related to cauliflower, broccoli and brussels sprouts, which are known for their pungent smell during the cooking process.
- There are many different types of cabbages such as: Green Cabbage, White Cabbage, Red Cabbage, Bok Choy, Chey Sum, Napa Cabbage, Savory Cabbage and January King Cabbage.

Methods of Preparation:
- Fermented: Cabbage can be fermented to make sauerkraut.
- Raw: Cabbage can be shredded and included raw in a variety of salads.
- Sautéed: Cabbage can be sautéed, and meat added for a main dish.
- Steamed: Cabbage can be steamed and topped with spices for an easy nutritious side dish or snack.
- Stewed: Cabbage can be stewed to create soup, such as cabbage.

Nutrition Information:
- Cabbage is high in fiber and low in calories.
- It is a good source of minerals such as manganese, calcium, and potassium.
- It also contains large amount of vitamins K, vitamin C, and Folate.

*Refer to Appendix for nutrient information

Ethnic Cuisines that use Cabbage:
- **Korean Cuisine**
  - Kimchi is a popular Korean side dish made from salted and fermented Napa cabbage and includes a variety of seasonings such as chili powder, scallions, garlic, ginger.
- **Middle Eastern Cuisine**
  - Stuffed Cabbage Rolls are a popular Middle Eastern recipe with rice and meat stuffed in cabbage.
- **European Cuisine**
  - Sauerkraut is finely cut cabbage that has been fermented by lactic acid in bacteria.
    - Germany, Poland, Russia, and Belarus are all countries that make variations of sauerkraut.
- **North American Cuisine**
  - Coleslaw is a salad consisting of shredded raw cabbage topped with a salad dressing. It is commonly served in the United States, but originate in the Netherlands.
Cabbage Food Sample Preparation

- **Step 1: Recipe Preparation: Raw Cabbage Salad**
  - **Materials needed:** Chef’s knife, cutting board, bowl, sink, Dixie cups, plastic spoons and forks, salad tongs, containers, trash bags, ice, ice packs.
  - **Ingredients:**
    - 1 head of cabbage
    - ⅛ cup white vinegar
    - 2 tablespoons of oil (vegetable or olive)
    - 2 teaspoons of salt
    - 2 teaspoons of sugar
    - ½ tsp dry dill.
  - **Procedure:**
    - Wash cabbage and remove outer leaves
    - Cut and shred cabbage thinly as discussed in the video and place into a large bowl.
    - In a separate bowl, mix together white vinegar, oil, sugar, dried dill, and salt.
    - Pour dressing over shredded cabbage and mix with salad tongs.
    - Place salad mixture into a container and place into the cooler.
    - Place ice packs on bottom of cooler prior to placing containers with cabbage salad.

- **Step 2: Safely Transporting Food Items:**
  - **Cold Food/Room Temperature Foods:**
    - **Items needed:**
      - Large cooler
      - Ice packs and ice
      - 1 large container
      - Spoon, spatula, tongs, or measuring spoons.
      - Place ice or ice packs into bottom of cooler
      - Wearing gloves, place cold food items into the container(s) and put container on top of ice packs.
      - Once on site, measure temperature of food item.
      - Keep container in cooler as often as possible.

- **Step 3: What you will need to bring to the site:**
  - Dixie cups
  - Plastic spoons and forks
  - Trash bags
  - Ice and ice packs
  - Cooler
  - Containers with food
- **Step 4: What to do On-site:**
  - Place Recipe cards on tables
  - Place Trash bag near table
  - Place forks onto table.
  - Prior to spooning out cabbage salad, measure and record temperature of the salad.
  - Spoon 2 tablespoons of salad into 5 cups
    - Keep container in cooler as often as possible to help retain the cool temperature
    - As samples are taken, put out more samples so that there are always 5 samples on the table
    - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
  - Repeat the steps above at the next two sites.

- **Step 5: When leaving the sites:**
  - Dispose of trash bag.
  - Place any leftover food into a container and place into refrigerator.
  - Wash any items used in meal prep.
  - Return all items to their designated locations.
Recipe:

Cabbage Salad

Prep Time: 20 minutes Marinating time: 20 minutes or more

Ingredients:

1 Head of Cabbage
¼ cup of white vinegar
2 tablespoons oil
2 teaspoons of sugar
2 teaspoons of salt
½ teaspoon of dry dill

Instructions:

1. Scrub the cabbage and remove outer leaves.
2. Cut cabbage in half. Remove core by cutting diagonal V on each side of it. Cut the halves into another half. You should now have quarters.
3. Begin cutting/shredding into ¼ inch slices.
4. Place shredded cabbage into a container.
5. In a separate bowl, measure and mix white vinegar, oil, sugar, salt and dry dill.
6. Pour dressing over bowl containing shredded containing cabbage and mix with salad tongs.
7. Place cabbage salad into refrigerator and let marinade for 20 minutes or more.
8. Serve cold.
Creating meaningful food experiences

Eggplant

Background:
- Eggplant is a fruit that is widely used in cooking and is closely related to the tomato and potato family. It was originally domesticated in southern and eastern Asia since prehistory.
- It has multiple names: aubergine (Britain, German, French, Dutch), maid-apple or guinea squash (U.S. South), and (ال-)بادنجان (Arabic name)
- There are 8 different types and can all be prepared in a variety of ways: Graffiti, Italian, Japanese, Chinese, Fairy Tale, White, Indian, Little Green, and Thai Eggplant.

Culturally Relevant Cuisines:
- **European Cuisine:**
  - Caponata is a popular Italian dish that consists of garlic, onion, peeled and chopped eggplant, tomato, and spices
- **Middle Eastern Cuisine:**
  - Baba Ghanoush is a popular middle eastern dip that contains fresh herbs and sesame paste
- **South Asian Cuisine:**
  - Eggplant is typically used in curries and stews in India and Pakistan
- **North American Cuisine:** Eggplant is typically sautéed, grilled, or baked.

Methods of Preparation:
- **Grilled Eggplant:** Eggplant can be prepared by slicing into rounds, adding oil and desired spices, and placing on the grill.
- **Baked Eggplant:** Eggplant can be included in lasagna or other dishes such as eggplant parmesan.
- **Roasted Eggplant:** Roasted eggplant can be included in pastas, casseroles, or eaten whole and stuffed with meats and vegetables.
- **Sauteed Eggplant:** Sauteed eggplant is a great additive to pastas or stir frys, and is a quick and easy cooking method.

Nutrition Information:
- Eggplants are low in calories and fat, and are a higher protein vegetable.
- Eggplants are a great source of fiber which aids in digestion and bowel health.
- They also contain large amounts of the minerals potassium, magnesium, and manganese.
- Eggplants are also a great source of B vitamins, Folate, and Vitamin K.

*Refer to Appendix for nutrient information*
Eggplant Food Sample Preparation

- **Step 1: Recipe Preparation: Roasted Eggplant**
  - **Materials needed:** Chef's knife, cutting board, bowl, sink, Dixie cups, plastic spoons and forks, salad tongs, containers, trash bags, ice, ice packs.
  - **Ingredients:**
    - 2 eggplants
    - 2 tomatoes
    - 3 tablespoons of oil (vegetable or olive)
    - 1 teaspoon of salt
    - 1 teaspoon of black pepper
  - **Procedure**
    - Preheat oven to 425 degrees F
    - Wash eggplant and tomatoes
    - Cube eggplant and tomatoes and place into a large bowl.
    - Place parchment paper or aluminum foil onto pan and grease with oil
    - Add eggplant to the pan
    - Put on oven mitts
    - Place pan in the oven for 25-30 minutes.
    - Remove eggplant from oven using oven mitts
    - Check doneness by pricking eggplant with a fork or tasting to see that it is juicy and no longer raw.
    - Measure and record temperature of squash onto temperature log.
    - Cover pan with plastic wrap or aluminum foil.
    - Place pan into Cambro for transport.

- **Step 2: Safely Transporting Food Items:**
  - **Hot Temperature Foods:**
    - **Items needed:**
      - Cambro
      - 1 to 3 Pans
      - Oven Mitts
      - Spoon, spatula, tongs, or measuring spoons.
    - Wear oven mitts
    - Place pans into Cambro
    - Once arrived at the site, measure temperature of food item.
    - Keep container in Cambro as often as possible.

- **Step 3: What you will need to bring to the site:**
  - Dixie cups
  - Plastic spoons and forks
  - Trash bags
  - Cambro
- Containers with food
- Dish towels and mitts for heat protectant purposes
- Recipe cards and table tents

**Step 4: What to do On-site:**
- Place Recipe cards on tables
- Place Trash bag near table
- Place forks onto table.
- Prior to spooning out eggplant, measure and record temperature of the eggplant.
- Spoon 2 tablespoons of eggplant or 5 pieces into 5 Dixie cups
  - Keep pan in Cambro as often as possible to help retain hot temperature.
  - As samples are taken, put out more samples so that there are always 5 samples on the table
  - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
- Repeat the steps above at the next two sites.

**Step 5: When leaving the sites:**
- Dispose of trash bag.
- Place any leftover food into a container and place into refrigerator.
- Wash any items used in meal prep.
- Return all items to their designated locations.
Creating meaningful food experiences

Leafy Greens

Background:

- **Rainbow chard**
  - Also known as Swiss chard, it is related to the beet family, but does not produce a tuberous root like the beet.
  - It is known for its wide and flat leaves with crunchy stalks and spinach-like flavor.
  - It is in season during the end of the summer and beginning of fall.

- **Collard greens**
  - Related to the cabbage family and have bright leaves that resemble a cross between mustard greens and kale.
  - Collard greens possess a distinct flavor and have traditionally been used as a poverty staple food in Southern American cuisine.
  - They are typically available all year round, however, their peak season is at the beginning of fall.

- **Baby kale**
  - Baby kale are the immature and more delicate leaves of a kale plant. They have a texture similar to that of spinach or arugula.
  - Baby kale is typically available year-round and is commonly found mixed with other greens such as spinach, arugula, lettuce, and baby chard in grocery stores.

Nutrition Information:

- Leafy greens tend to be low in calories and fat, and higher in fiber.
- Leafy greens are an excellent source of Vitamins A, K, and C.
- They are a great source of the calcium, iron, and potassium.

*Refer to Appendix for nutrient information

Culturally Relevant Cuisines:

- **Northern America:**
  - Collard greens are traditionally slow-simmered with ham, bacon, or any fatty meat until tender.
  - Baby kale has recently become a more popular “superfood” and is typically found mixed with other salad greens such as arugula, spinach, and lettuce.

- **East Africa:**
  - Known as *akamudyikiroro*, collard greens are typically sautéed in oil with onions and salt, and used a side dish with various meats.

- **Indian (Kashmir Valley):**
  - Known as *kaila*, both the roots and the leaves of the collard green are consumed and are usually cooked in water, salt, and oil amongst many other traditional spices of Indian descent and is usually eaten with rice.

Methods of Preparation:

- **Sautéed**: All leafy greens can be sautéed and are typically paired with garlic, olive oil, and other various spices to enhance their natural flavors and are a great side dish.
- **Steamed**: All leafy greens can be steamed. This is the fastest and easiest way to make tasty and tender greens.
- **Raw**: Collard greens, baby kale, and rainbow chard can all be eaten raw, however, baby kale is most commonly eaten as a salad green.
- **Boiled**: Boiling collard greens is one of the more popular method of preparation. Boiling makes collard greens more tender and enhances their natural flavor.
- **Slow-cook**: This method of preparation is traditional in southern U.S. cooking and usually contains a fatty meat to compliment the flavor of the collard greens.
Leafy Green Food Sample Preparation

- **Step 1: Recipe Preparation: Sautéed Rainbow Chard**
  - **Materials needed:** chef’s knife, sink for washing, scrub brush, cutting board, tongs, skillet, bowl
  - **Ingredients:**
    - 3 bunches of rainbow chard
    - 6 tablespoons of olive oil
    - 6 teaspoons of minced garlic
    - 1 pinch of crushed red pepper flakes
    - 1 tablespoon of lemon juice
  - **Procedure:**
    - Wash rainbow chard and cut according to “how to cut greens video”
    - Collect all ingredients
    - Heat the olive oil in a large skillet to medium heat. Add garlic, red pepper flakes, and the rainbow chard stems, and cook for about 3 minutes, or until garlic can be smelled. Add the shredded rainbow chard, cover skillet, and turn to medium-low heat for about 5 minutes, or until rainbow chard is tender
    - Add lemon juice to rainbow chard and serve

- **Step 2: Safely Transporting Food Items:**
  - **Hot Temperature Foods:**
    - **Items Needed:**
      - Cambro
      - 1-3 Pans
      - Oven Mitts
      - Spoon, spatula, tongs, or measuring spoons
    - Wear oven mitts
    - Place pans into Cambro
    - Once arrived at the site, measure temperature of food item.
    - Keep container in Cambro as often as possible

- **Step 3: What you will need to bring to the site:**
  - Dixie cups
  - Plastic spoons and forks
  - Trash bags
  - Cambro
  - Containers with food
  - Dish towels and mitts for heat protectant purposes
  - Recipe cards and table tents

- **Step 4: What to do On-Site:**
- Place recipe cards on tables
- Place trash bags near table
- Place forks onto table
- Prior to spooning out rainbow chard, measure and record temperature of rainbow chard.
  - Spoon 2 tablespoons (1 tong full) of rainbow chard into 5 Dixie cups.
    - Keep pan in Cambro as often as possible to help retain hot temperature.
    - As samples are taken, put out more samples so that there are always 5 on the table.
    - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
- Repeat the steps above at the next two sites.

**Step 5: When leaving the site:**
- Dispose of trash bag
- Place any leftover food into a container and place into refrigerator.
- Wash any items used in meal prep.
- Return all items to their designated locations.
• Step 1: Recipe Preparation: Sautéed Collard Greens
  o Materials needed: chef’s knife, sink for washing, cutting board, tongs, skillet, pot, bowl
  • Ingredients:
    ● 2 ½ pounds collard greens
    ● 2 teaspoons of minced garlic
    ● 1 tablespoon of unsalted butter
    ● 1 tablespoon of olive oil
    ● 1 teaspoon of fresh lemon juice
  • Procedure:
    ● Collect all ingredients
    ● Bring one pot of water to a boil and add the collard greens to cook for 15 minutes and then drain the water from the pot into a colander. Use a spoon to press out the remaining liquid out.
    ● Heat the olive oil and butter in a large skillet to medium heat until butter becomes foamy, then add the garlic, collard greens, salt, and pepper.
    ● Continue to stir until heat is evenly distributed (for about 5 minutes).
    ● Add the lemon juice to the greens and toss well using tongs, then serve.

• Step 2: Safely Transporting Food Items:
  o Hot Temperature Foods:
    • Items Needed:
      ● Cambro
      ● 1-3 Pans
      ● Oven Mitts
      ● Spoon, spatula, tongs, or measuring spoons
    • Wear oven mitts
    • Place pans into Cambro
    • Once arrived at the site, measure temperature of food item.
    • Keep container in Cambro as often as possible

• Step 3: What you will need to bring to the site:
  o Dixie cups
  o Plastic spoons and forks
  o Trash bags
  o Cambro
  o Containers with food
  o Dish towels and mitts for heat protectant purposes
  o Recipe cards and table tents

• Step 4: What to do On-Site:
- Place recipe cards on tables
- Place trash bags near table
- Place forks onto table
- Prior to spooning out collard greens, measure and record temperature of collard greens.
- Spoon 2 tablespoons (1 tong full) of collard greens into 5 Dixie cups.
  - Keep pan in Cambro as often as possible to help retain hot temperature.
  - As samples are taken, put out more samples so that there are always 5 on the table.
  - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
- Repeat the steps above at the next two sites.

**Step 5: When leaving the site:**
- Dispose of trash bag
- Place any leftover food into a container and place into refrigerator.
- Wash any items used in meal prep.
- Return all items to their designated locations.
• **Step 1: Recipe Preparation: Sautéed Baby Kale**
  - **Materials needed:** chef’s knife, sink for washing, cutting board, tongs, skillet, pot, bowl
    - **Ingredients:**
      - 2 lbs of baby kale
      - 1 teaspoon of garlic
      - 1 tablespoon of olive oil
      - Pinch of red pepper flakes
      - ¼ teaspoon of ginger
      - Pinch of salt
    - **Procedure:**
      - Wash baby kale and remove stems using hands/knife
      - Collect all ingredients
      - Heat the olive oil in a large skillet to medium heat and then add garlic. After 1-2 minutes add baby kale, red pepper flakes, and ginger and stir until wilted.

• **Step 2: Safely Transporting Food Items:**
  - **Hot Temperature Foods:**
    - **Items Needed:**
      - Cambro
      - 1-3 Pans
      - Oven Mitts
      - Spoon, spatula, tongs, or measuring spoons
    - Wear oven mitts
    - Place pans into Cambro
    - Once arrived at the site, measure temperature of food item.
    - Keep container in Cambro as often as possible

• **Step 3: What you will need to bring to the site:**
  - Dixie cups
  - Plastic spoons and forks
  - Trash bags
  - Cambro
  - Containers with food
  - Dish towels and mitts for heat protectant purposes
  - Recipe cards and table tents

• **Step 4: What to do On-Site:**
  - Place recipe cards on tables
  - Place trash bags near table
  - Place forks onto table
  - Prior to spooning out baby kale, measure and record temperature of baby kale.
- Spoon 2 tablespoons (1 tong full) of baby kale into 5 Dixie cups.
  - Keep pan in Cambro as often as possible to help retain hot temperature.
  - As samples are taken, put out more samples so that there are always 5 on the table.
  - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
- Repeat the steps above at the next two sites.

**Step 5: When leaving the site:**
- Dispose of trash bag
- Place any leftover food into a container and place into refrigerator.
- Wash any items used in meal prep.
- Return all items to their designated locations.
Radishes

**Background:**
- Radishes are a root vegetable with a peppery flavor and crisp texture that come in a variety of colors including white, black, and many shades of red, most having a white interior.
- Radishes are most commonly eaten raw as a crunchy salad ingredient and can be used as a garnish. They can also be steamed, stir-fried, or pickled.
- Radishes are available all year round and can be categorized by the seasons they are grown in, shape and length, color, and size.
- The most common radishes in North America are red radishes which are typically small and round with leafy greens on the

**Methods of Preparation:**
- **Raw:** can be tossed in with salads, salsas, can be used as garnishes, and can also be served raw with seasonings or dips.
- **Sautéed:** can be heated in oil or butter in a skillet until they are golden and tender.
- **Steamed:** can be steamed by microwaving and tossing in butter.
- **Grilled:** can be grilled and eaten as a side dish and dressed with a variety of seasonings.
- **Roasted:** can be used as an easy to make side dish by tossing with oil, and seasoning and roasting until golden and tender.
- **Radish Leaves:** Radish leaves can be boiled or sautéed and are great for pairing with any radish dish.

**Culturally Relevant Information:**
- **European Cuisine:**
  - In France and Russia, radishes are typically eaten raw with salted butter.
- **Asian and Middle Eastern Cuisine**
  - It is common for Korean, Japanese, and Middle Eastern cuisine to pickle radishes. Middle Eastern cuisine includes raw radishes in salad as well.
- **Best spices to pair with:** basil, chives, dill, garlic, ginger, or oregano.
Radish Food Sample Preparation

- **Step 1: Recipe Preparation: Raw Radishes with Dip**
  - **Materials needed:** chef's knife, paring knife, peeler, sink for washing, scrub brush, cutting board, one large mixing bowl, one medium sized mixing bowl, one bag of ice, one small container, plastic wrap/aluminum foil, large tray
  - **Ingredients:**
    - 10 sliced radishes
    - 1 container of hummus
    - 1 container of sour cream
  - **Procedure:**
    - Wash radishes using scrub brush to scrub the radish bulb. Use warm water and rinse for 30 seconds. Cut into rounds as shown in the video.
    - Place the cut radishes into a container.
    - The hummus and the sour cream can be bought from the store and transferred into 2 small containers for overnight refrigeration as well, or leave them in their original containers since some will be transferred into Dixie cups for serving purposes.

- **Step 2: Safely Transporting Food Items:**
  - **Cold Food/Room Temperature Foods:**
    - **Items needed:**
      - Large cooler
      - Ice packs and ice
      - 1 to 3 large containers (depending on the recipe)
      - Spoon, spatula, tongs, or measuring spoons.
    - Place ice or ice packs into bottom of cooler
    - Wearing gloves, place cold food items into the container(s) and put container on top of ice packs.
    - Once arrived at the site, measure temperature of food item.
    - Keep container in cooler as often as possible.

- **Step 3: What you will need to bring to the site:**
  - Dixie cups
  - Forks
  - Trash bags
  - Gloves
  - Cooler with ice packs
  - Recipe cards

- **Step 4: What to do On-Site:**
  - Place Recipe cards on tables
  - Place Trash bag near table
  - Place forks onto table.
- Prior to spooning out radishes and dip, measure and record temperature of each and record in the temperature log.
- Spoon 1 tablespoon of hummus into 3 Dixie cups
- Spoon 1 tablespoon of sour cream into 3 Dixie cups
- Spoon 2 radishes into each Dixie cup
  - Keep container in cooler as often as possible to help retain the cool temperature
  - As samples are taken, put out more samples so that there are always 5-6 samples on the table
    - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area.
- Repeat the steps above at the next two sites.

- **Step 5: When leaving the site:**
  - Dispose trash bag
  - Place any leftover food into a container and put into refrigerator
  - Properly wash all utensils and materials used in food preparation or site visits
  - Return all items to designated locations.
Creating meaningful food experiences

Squash

Background:
- There are two main types of squash: winter and summer squash.
- Summer squash is harvested when the squash is younger and has soft skin and seeds. At this point, the squash can be eaten either cooked or raw. Zucchini and yellow squash are amongst the most common summer squashes.
- Winter squash is harvested in the fall and has hard skin and hard seeds and is typically cooked. They also have a higher sugar content than summer squashes. Butternut squash, acorn squash, pumpkin, and spaghetti squash are common winter squashes.

Methods of Preparation:
- Raw: Summer squashes can be sliced and included raw in a variety of salads.
- Sauteed: Both summer and winter squashes can be sauteed, and meat added for a main dish.
- Steamed: Both summer and winter squashes can be steamed and topped with spices. Winter squash typically require more cooking time.
- Baked/Roasted: Both types of squash can be prepared in this method, however this method is more typically seen with winter squashes.
- Boiled: Winter squashes can be boiled, and their contents blended to create a thick and creamy soup.

Culturally Relevant Cuisines:
- Mediterranean Cuisine:
  - In the Mediterranean area, summer squashes are often stuffed with meat, grains and spices.
- European Cuisine:
  - In Russia and Ukraine, zucchini is coated in flour and then fried or baked and served with sour cream.
  - In France, zucchini is common in ratatouille (vegetable stew).
- North American Cuisine:
  - Zucchini “Fries” are a common squash recipe which consists of zucchini cut, floured, and fried as a French fry would be.
  - Spaghetti squash and zucchini “noodles” have become popular alternatives to pasta due to their low calorie content and high nutrient content.
  - Pumpkin pie: a common American dessert, especially during Thanksgiving and Christmas.

Nutrition Information:
Both winter and summer squashes are high in fiber and low in calories.
- Winter and summer squash are both high in vitamin A, C and B vitamins.
- Both are high in the minerals potassium, manganese and magnesium.

*Refer to Appendix for nutrient information
Squash Food Sample Preparation

- **Step 1: Recipe Preparation: Warm Roasted Squash Salad**
  - **Materials needed:** Chef’s knife, cutting board, bowl, sink, baking sheet, cups, plastic spoons and forks, rubber spatula, containers, trash bags, ice, ice packs.
  - **Ingredients:**
    - 1 Butternut squash
    - 2 tablespoons of oil (vegetable or olive)
    - 1 tablespoon of maple syrup (or sugar)
    - 1 teaspoon of salt
    - ½ teaspoon of pepper
    - ¼ cup cranberries
  - **Procedure:**
    - Preheat oven to 400 degrees F.
    - Wash and peel squash.
    - Cut into cubes as indicated by video.
    - Place squash into large bowl.
    - Put in oil, maple syrup (or sugar), salt, and pepper and mix together.
    - Grease baking sheet.
    - Pour butternut squash mixture onto a greased baking sheet.
    - Put on oven mitts
    - Place squash into preheated oven for 25-30 minutes.
    - Keep an eye to make sure squash does not burn.
    - Test for readiness by piercing with a fork.
    - Remove squash from oven using oven mitts
    - Test for readiness by piercing with a fork or tasting the squash.
    - Measure and record temperature of squash onto temperature log.
    - Cover pan with plastic wrap or aluminum foil.
    - Place pan into Cambro for transport.

- **Step 2: Safely Transporting Food Items:**
  - **Hot Temperature Foods:**
    - **Items needed:**
      - Cambro
      - 1 to 3 Pans
      - Oven Mitts
      - Spoon, spatula, tongs, or measuring spoons.
    - **Wear oven mitts**
    - Place pans into Cambro
    - Once arrived at the site, measure temperature of food item.
    - Keep container in Cambro as often as possible.
• **Step 3: What you will need to bring to the site:**
  - Cups
  - Plastic spoons and forks
  - Trash bags
  - Cambro
  - Containers with food
  - Dish towels and mitts for heat protectant purposes
  - Recipe cards and table tents

• **Step 4: What to do On-site:**
  - Place Recipe cards on tables
  - Place Trash bag near table
  - Place forks onto table.
  - Prior to spooning out sweet potato, measure and record temperature of sweet potato.
  - Spoon 4 pieces of butternut squash into 5 Cups.
    - Keep pan in Cambro as often as possible to help retain hot temperature.
    - As samples are taken, put out more samples so that there are always 5 on the table
    - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area
  - Repeat the steps above at the next two sites.

• **Step 5: When leaving the site:**
  - Dispose of trash bag.
  - Place any leftover food into a container and place into refrigerator.
  - Wash any items used in meal prep.
  - Return all items to their designated locations.
Background:
- Sweet potatoes originated in Central and South America.
- There are many different types of sweet potatoes. Some are orange inside and out, others may be purple inside and out or purple on the outside and yellow inside.
- Yams and sweet potatoes are different vegetables, however, at grocery stores sweet potatoes with lighter flesh may be labeled as yams.
- Sweet potatoes peak season is late October through December.

Methods of Preparation:
- Baked/Roasted: Sweet potatoes can be baked whole or cut into pieces and roasted in the oven.
- Sauteed: Sweet potatoes can be sauteed; however, this process can take a while due to the low water content of the potato.
- Steamed: Sweet potato can be steamed and topped with spices for an easy nutritious side dish or snack.
- Boiled: Sweet potatoes can be boiled and mashed to make sweet potato mash.
- Grilling: Sweet potatoes can be placed on the grill for a smoky side dish.

Culturally Relevant Cuisines:
- **African Cuisine**
  - In Africa, sweet potatoes can be sun dried and served with a peanut sauce.
- **Asian Cuisine**
  - Many times cooked sweet potatoes are sold as snacks and street food in a multitude of Asian countries.
  - They can also be eaten in a variety of curries.
- **North American Cuisine**
  - Candied sweet potatoes, sweet potato pie, and mashed sweet potatoes are all common American dishes.
  - Sweet potato fries are also a common side dish at many restaurants.

Nutrition Information:
- Sweet Potatoes are high in fiber.
- It is a good source of manganese, potassium, and magnesium.
- It's a great source of Vitamin A, C, and B6.

*Refer to Appendix for nutrient information.
Recipe:

Spaghetti Squash Marinara

Prep Time: 10 minutes  
Cook Time: 1 hour

Ingredients:

1 Spaghetti Squashes
1 ½ cups of marinara/pasta sauce
Oil (as necessary)
3 teaspoons of minced garlic
¼ teaspoon of dry oregano
¼ teaspoon of dry basil
Parmesan (to taste)
Salt (to taste)
Pepper (to taste)

Instructions:

1. Preheat the oven to 420 °F
2. Cut the squash in half and de-seed using a spoon.
3. Lightly coat each half with oil. Sprinkle salt and pepper on each half.
4. Cover a baking sheet with aluminum foil and coat with oil. Place the squash halves cut side down.
5. Once the oven is preheated, place the baking sheets into the oven.
6. Heat up marinara sauce:
   a. Add garlic and marinara sauce to a microwave safe bowl; microwave for 2 minutes
   **OR**
   b. Use a small pot, add garlic and marinara/pasta sauce and heat on medium high heat till a low simmer is reached.
7. The squash should be ready in 40-50 minutes or when it can easily be pierced with a fork.
8. Remove the squash and let cool for 10 minutes.
Sweet Potato Food Sample Preparation

**Step 1: Recipe Preparation: Sautéed Sweet Potatoes**
- **Materials needed:** Chef’s knife, cutting board, skillet, bowl, cups, plastic spoons and forks, containers, trash bags.
- **Ingredients:**
  - 3 large sweet potatoes
  - 3 tablespoon oil (vegetable or olive)
  - 1.5 teaspoon salt
  - 1 teaspoon pepper
  - 2 teaspoon garlic powder
- **Procedure:**
  - Wash sweet potato under warm water and scrub with brush to remove dirt and debris.
  - Cut sweet potato into coin shaped round pieces ½ inch thick. Cut these rounds into quarters.
  - Preheat skillet to medium high heat.
  - Pour oil into the skillet.
  - Place potato rounds in a single layer into the oil.
  - Sprinkle with salt, pepper and garlic powder. Cook for 3-5 minutes and flip.
  - Cook until outside is slightly crispy and inside is soft (or fork tender).
  - Remove sweet potatoes from skillet and place into hotel pan.
  - Take temperature of the sweet potato by piercing into one of the pieces and record on temperature log.
  - Cover with plastic wrap or aluminum foil.
  - Place pan into Cambro for transport.

**Step 2: Safely Transporting Food Items:**
- **Hot Temperature Foods:**
  - **Items needed:**
    - Cambro
    - 1 to 3 Pans
    - Oven Mitts
    - Spoon, spatula, tongs, or measuring spoons.
  - Wear oven mitts
  - Place pans into Cambro
  - Once arrived at the site, measure temperature of food item.
  - If food item is below 135 °F, reheat using portable pan, plugged into the Gus Bus.
  - Keep container in Cambro as often as possible.

**Step 3: What you will need to bring to the site:**
- Cups
- Plastic spoons and forks
- Trash bags
- Cambro
- Containers with food
- Dish towels and mitts for heat protectant purposes
- Recipe cards and table tents

**Step 4: What to do On-site:**
- Place Recipe cards on tables.
- Place Trash bag near table.
- Place forks onto table.
- Prior to spooning out sweet potato, measure and record temperature of sweet potato.
- Spoon 4 pieces of sweet potato into 5 cups.
  - Keep pan in Cambro as often as possible to help retain hot temperature.
  - As samples are taken, put out more samples so that there are always 5 on the table
  - 15 minutes prior to switching sites, stop setting out samples unless community member approaches the food experience area
- Repeat the steps above at the next two sites.

**Step 5: When leaving the sites:**
- Dispose of trash bags.
- Place any leftover food into a container and place into refrigerator.
- Wash any items used in meal prep.
- Return all items to their designated locations.
Creating meaningful food experiences

Turnips

**Background:**

- The turnip, also known as the white turnip, is a hardy root grown plant. Turnips are thought to have originated in middle and eastern Asia and northern Europe, and they are typically grown during cooler seasons. The skin of a turnip can be colored white, yellow, golden, or red-veined. The roots, greens, and bulbs of the turnip have all been used in food preparation by many different cultures.

**Culturally Relevant Cuisines:**

- **Middle Eastern:**
  - Pickled turnips are the most common way to prepare turnips in the middle east. Spices such as cumin, coriander, and cardamom are commonly used spices in the middle east that compliment the flavor of turnips and rutabaga well.

- **American Cuisine:**
  - The turnip bulb and rutabaga is commonly used like a potato because of its variety of preparation. Turnips and rutabagas can be used in vegetable soups, can be mashed with potatoes, or can be sautéed and roasted like a potato as well. However, the turnip greens are parts of the turnip that can also be used and are commonly used in southeastern U.S. cuisine. They can be eaten fresh or by boiling with fat or stewing as well.

**Methods of Preparation:**

- Raw: typically included in salads
- Roasted: can be eaten as a side dish and can be seasoned a variety of ways
- Sautéed: can be eaten as a side dish and can be seasoned a variety of ways
- Boiled: typically boiled to soften in order to be used in other products such as casseroles or mashed products.
- Mashed: typically boiled and then mashed in with potatoes to add extra flavor.
- Pickled: can be eaten as a side dish

**Nutrition Information:**

- Low in calories
- High in dietary fiber.
- Great source of vitamin C, and contains both folic acid and B vitamins.
- High in manganese, potassium, and copper as well.

*Refer to Appendix for nutrient information*
Turnip Food Sample Preparation

- **Step 1: Recipe Preparation: Sautéed turnips**
  - **Materials needed:** chef's knife, pairing knife, peeler, sink for washing, scrub brush, cutting board, skillet, spatula, stove top, cambro, trash bags
  - **Ingredients:**
    - 1 tablespoon minced garlic
    - 2 tablespoons olive oil
    - 3 turnips
  - **Procedure:**
    - Wash turnips using scrub brush to scrub the turnip bulb and use warm water and rinse.
    - Cut the turnip into rounds as shown in the video.
    - Add oil and heat the skillet to medium high heat
    - Add minced garlic
    - After 1-2 minutes add turnip rounds and wait until golden brown
    - Remove turnip rounds, and place in the designated pan that will be put in the Cambro to keep warm.
    - Once food has been placed inside the Cambro, use the digital thermometer to record the temperature.

- **Step 2: Safely Transporting Food Items:** refer to Hot Food Safe Transportation Guidelines

- **Step 3: What you will need to bring to the site:**
  - Dixie cups, forks, and serving spoon (or tongs) for samples
  - dish towels and mitts for heat protectant purposes
  - recipe cards

- **Step 4: What to do On-Site:**
  - Set up the recipe cards and trash bags
  - Remove the pan from the Cambro and record the temperature and record in temperature log
  - Use tongs to place 2 slices of turnips into 5 Dixie cups.
    - When not making samples, place pan back in Cambro to keep food at the proper temperature.
  - Repeat for the next 2 sites

- **Step 5: When leaving the site:**
  - Dispose any trash and place Cambro back in vehicle to move to next site
  - At the end of the night, properly wash all utensils and place ingredients back.

V. Appendix
Basic Nutrition Information about Macronutrients:

**Carbohydrates**

- A carbohydrate is an organic compound that is composed of either starch, cellulose (fiber), or sugars.
  - Starch: A starch is a type of complex carbohydrate and is usually found in:
    - Starchy vegetables such as peas, lima beans, corn, and potatoes
    - Legumes such as dried beans, lentils, pinto beans, kidney beans, and black-eyed peas
    - Grains such as oats, wheat, barley, rice, crackers, bread pasta, etc.
      - Whole grains are preferred over refined grains because they are higher in fiber.
  - Sugar: A sugar is known as a simple/fast-acting carbohydrate.
    - There are two main types of sugar:
      - Naturally occurring sugar in fruits and milk
      - Added sugars that are included in processing such as canned fruit with syrup or cookies.
  - Fiber
    - Fiber is a form of carbohydrate that the body cannot digest. Fiber helps regulate blood sugar and hunger.
    - There are two forms: soluble and insoluble.
      - Soluble fiber dissolves in water and can lower glucose and cholesterol levels. Foods with soluble fiber includes oatmeal, nuts beans lentils, apples and blueberries
      - Insoluble fiber does not dissolve in water and can help food move through the digestive system, preventing constipation. Foods with insoluble fiber include wheat, whole wheat bread, whole grain couscous, brown rice, legumes, carrots, cucumbers and tomatoes.
    - Fiber reduces the risk of heart disease, diabetes, diverticular disease, and constipation.

**Protein**

- Protein is found everywhere in the body, and is what makes us, us. Makes up enzymes which power reactions in the body and makes up hemoglobin, which carries oxygen in the blood.
- Lack of protein can lead to loss of muscle mass, weakened heart and respiratory system, and death.
- Proteins are composed of amino acid, 8 of which are essential to humans. Animals provide all of the amino acids we need while non-animal sources (fruit, vegetable, grains, nut and seeds) may not contain all of the amino acids and therefore must be paired for all amino acids to be obtained.
Grains and legumes, Nuts/Seeds and legumes create a complete protein with all amino acids.

Eating proteins from chicken, fish, beans or nuts in place of red meat can lower the risk of several diseases and premature death.

**Fats**

Fats are an essential part of our diet and aid our body in many metabolic processes. There are two types of fat:

- **Saturated Fat:**
  - Saturated fats include lard, butter, and solid shortening. Saturated fats are high in LDL cholesterol (bad cholesterol) which can increase cholesterol levels in the body.
  - Trans-fat: Trans-fat is another type of saturated fat that is typically found in vegetable shortenings, cookies, crackers, fried foods, and some margarines.
  - Unsaturated Fats include olive oil, sesame oil, or canola oil and contain the good fats that include Omega-3 and Omega-6 fatty acids that help increase our HDL (good cholesterol) which in turn lowers our LDL levels.

Other nutrition related info:

- Antioxidant- substance that protects cells from damage caused by free radicals and can help prevent the development of some chronic diseases like cancer.
- Free radicals- compounds formed when our body converts the food we eat into energy. We are exposed to free radicals in the environment from cigarette smoke, air pollution and UV light from the sun.
### Vitamins:

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Functions</th>
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</table>
| Choline          | - Nutrient found in many foods.  
<p>|                  | - Brains and nervous system needs it to regulate memory, mood, muscle   |
|                  |   control and other functions.                                            |
|                  | - Necessary for proper liver function.                                    |
| Vitamin A        | - Fat Soluble Vitamin.                                                    |
|                  | - Involved in immune function, cell growth and communication, and vision |
|                  |   reproduction.                                                           |
| Vitamin B2 (Riboflavin) | - Water soluble.                                                            |
|                  | - Important for growth, development and function of the cells in the   |
|                  |   body.                                                                   |
|                  | - Important for conversion of food into energy.                           |
|                  | - May help prevent migraine headaches.                                    |
| Vitamin B3 (Niacin or Nicotinic Acid) | - Water-soluble vitamin.                                                 |
|                  | - Excess amounts leave the body through the urine.                        |
|                  | - Needed daily in the diet.                                               |
|                  | - Helps with the digestive system, skin and nerves function and has an   |
|                  |   important role in converting food to energy.                            |
|                  | - Can help with low HDL and high LDL cholesterol and triglycerides.       |
| Vitamin B5 (Pantothenic) | - Important in helping the body convert food into   |
|                  |   energy and is especially crucial in the breakdown of fats.              |
| Vitamin B6 (Pyridoxine) | - Water soluble vitamin.                                                 |
|                  | - Allows the body to better utilize protein and plays a role in cognitive |
|                  |   development.                                                            |
|                  | - Involved in the formation and breakdown of glucose, production of      |
|                  |   lymphocyte (white blood cells) that aid in immune function, and in     |
|                  |   formation of red blood cells that transport oxygen throughout our body |
|                  |   and contain iron.                                                       |
| Vitamin B9 (Folic Acid) | - Needed to form DNA and other genetic materials that are important in   |
|                  |   cell reproduction.                                                      |
| Vitamin C        | - Water soluble vitamin.                                                  |
|                  | - Acts as an antioxidant which protects the body from free radicals.      |
|                  | - May decrease risk of cancer if consumed from fruit and vegetable       |
|                  |   sources (not supplements).                                              |
|                  | - Lowers the risk of cardiovascular disease.                              |
|                  | - Lowers the risk of cataracts and other damages to the eye.              |
|                  | - Can reduce length of cold if consumed regularly.                        |
| Vitamin D        | - Fat soluble vitamin.                                                    |
|                  | - Vitamin D formation takes place in the body when the body encounters   |
|                  |   UV-Rays.                                                                |</p>
<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Description</th>
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</table>
| Vitamin E        | - Fat soluble nutrient.  
|                  | - Acts as an antioxidant, protecting the body from free radicals.            |
|                  | - Boosts the immune system to fight off invading bacteria and viruses.      |
|                  | - Can help widen blood vessels and keep blood from clotting within them.    |
|                  | - May decrease risk of developing heart disease.                            |
|                  | - Can prevent or slow down decline of mental function.                      |
| Vitamin K        | - Fat soluble vitamin                                                       |
|                  | - Important for the formation of proteins in the blood that help with blood clotting during an injury. |
## Minerals:

<table>
<thead>
<tr>
<th>Minerals</th>
<th>Description</th>
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| **Calcium**  | - Required by the body for strong bones and teeth.  
               - Necessary for muscle movement and for nerve function.  
               - Important for movement of blood through the blood vessels and for the release of hormones that are required for bodily function. |
| **Chromium** | - Found in small amounts in the body that aids in the storage of carbohydrates, fat, and protein.                                         |
| **Copper**   | - Aids in formation of red blood cells by increasing iron absorption.                                                                         |
| **Iron**     | - Necessary for growth and development because the body uses iron to make hemoglobin, a protein in red blood cells that carries oxygen from the lungs to the body.  
               - Needed for the creation of hormones and connective tissues.                                                                               |
| **Magnesium**| - Crucial to many biochemical reactions in the body that involve the formation of protein, aid with muscle and nerve function, and helps control blood glucose and blood pressure levels.  
               - Crucial for bone structure and formation of DNA and RNA which are important in cell reproduction.                                               |
| **Manganese**| - Essential nutrient involved in the formation of bones.  
               - Involved in amino acid, cholesterol, and carbohydrate metabolism.                                                                          |
| **Phosphorous**| - Present in every cell in the body and its main function involves the proper formation of bones and teeth.  
                            Phosphorus is also important in helping regulate our body’s use and storage of energy. Phosphorus also works well with B vitamins to maintain proper kidney function and muscle contraction. |
<p>| <strong>Potassium</strong>| - Present in all tissues throughout the body and plays a large role in proper heart and kidney function and also plays a crucial role in muscle contraction. |</p>
<table>
<thead>
<tr>
<th>Sodium</th>
<th>-Can help reduce risk of high blood pressure, strokes, and is important in controlling blood glucose levels.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-Fluid balance, muscle contraction and nervous system function</td>
</tr>
<tr>
<td></td>
<td>-Occurs naturally in many foods but most of dietary intake comes from table salt. Too much sodium increases the risk for high blood pressure.</td>
</tr>
</tbody>
</table>
Curriculum Bibliography

Beets:

Bell Peppers

Cabbage Sources:
Leafy Greens:

-Baby Kale:

-Collard Greens:

-Rainbow Chard:
**Radishes:**

**Squash Sources**

**Sweet Potato:**


**Turnips:**

**Nutrition Component:**
Neighborhood Produce Market Volunteer PowerPoint
https://docs.google.com/presentation/d/1Nm61QsBugf3t0F0vmT3RSd1rLofN-nJwMnU_jZb2Z2w/edit?usp=sharing
Appendix

On Site Data Collection Templates

Date:
Food Sample Prepared:

Site 1:

How many participants take a food sample?

Children:

Adults:

How many of these participants that take a food sample actually take the featured produce item?

Ethnicity:

General interactions with community members:
Journal of Progress

April 2018

April 5th: Our involvement in the Neighborhood Produce Market (NPM) began in April. During this time, we met with the Gus Bus and Blue Ridge Area Food Bank staff to formalize the need for our project with the NPM. The project was then chosen to be collaborative, with both creative and research components.

Reflection: Beginning to meet with all of the different stakeholders of the NPM and learning more about what the NPM does and how well established it was seemed intimidating at first when taking on this project. However, as the steering committee began to form and we became more familiar with each other and the NPM process, we felt more comfortable and more confident.

May 2018

May 7th: Attended NPM to get a better understanding of the process and our involvement
May 24th: Created a questionnaire for the community members to add into the Blue Ridge Area Food Bank survey
May 30th: Received list of produce items not commonly taken at the NPM

Reflection: Observed many children coming to the markets and their families less so. We also saw the various demographics present in Harrisonburg at the sites. This made us realize that there is increased need to involve family and create a curriculum more suited for the participants of NPM. Due to preferences of certain fruits and vegetables in various communities, a list of produce items not commonly taken at the NPM was provided to us which was interestingly produce items that many people would not prepare unless it’s a main part of their cultural dishes.

June 2018

June 27th: meeting with Gus Bus and Blue Ridge Area staff to receive advice, feedback, and more information on how to provide food samples on site

Reflection: These discussions included more of the BRAFB staff and some people brought in from the Virginia Cooperative Extension to come in and discuss with us what they have observed when they have done nutrition education. It was interesting to hear their feedback and it was great to have all of their advice because they were really the determining factor for why we chose to not do food sample preparation on site. They gave us tips such as: minimizing cooking
equipment/ingredients when choosing recipes, they discussed conversational tips when there are language barriers, how time-consuming food sample prep on site is, the attention span of audience, and safety issues that could be presented if children are involved. The safety reasons and pace of the NPM made us realize that food sample prep on site was not going to be feasible.

**July 2018**

**July 3rd:** Received survey data, evaluation of Gus Bus  
**July 10th:** Went to market with samples of cantaloupe and honeydew. Created fliers/info sheets about these fruits during this time  
**July 17th:** Received money for Walmart gift card  
**July 19th:** Informed about Harrisonburg demographics  
**July 26th:** Sent out information videos on how to cut cabbage and turnips, and vitamin description, cabbage experience, minerals for curriculum, table of contents, turnip experience and a list of supplies needed.

**Reflection:** Receiving data allowed us to get a better understanding of the differences between what the market has to offer and what the community thinks they are being offered. For example, we saw that there were recipes at each market, however, because they were in a location not easily visible, many individuals did not know these were things available to them. Providing samples of honeydew and cantaloupe gave us insight for the need of nutrition education as one of the community members who tasted the fruit stated they were her favorite vegetable. Furthermore, during this time we were informed of the major demographics seen in Harrisonburg which aligned with the demographics the NPM serves. We began working on the curriculum and sent it to our stakeholders for feedback.

**August 2018**

**August 27th:** received updates market schedule  
- Meeting with steering committee  
- Received feedback for which recipes to use  
**August 30th:** got confirmation that we could use Virginia Cooperative Extension kitchen to prepare food samples

**Reflection:** We were extremely relieved to hear that the Virginia Cooperative Extension could accommodate food sample preparation. At this point we were concerned about recruiting volunteers and deciding what the best method for that would be and how we would advertise the NPM. We knew that we had to plan adequately for the month of September considering school was about to start and our steering committee would be busy. We felt a lot of pressure and stress entering the months of September and October.
**September 2018**  
**September 19th:** email sent to recruit volunteers  
**September 25th and 27th:** Hands on training

**Reflection:** During this time, we recruited and trained volunteers for the NPM. Much of our time was spent figuring out how to create this volunteer training guide and what we thought we needed to do to properly prepare the volunteers. We were concerned about the number of volunteers that had signed up for the training considering we wanted 2-3 people per volunteer session and there were 4 volunteer opportunities. It may have been a bit overwhelming at first, but most participants stated they enjoyed the cooking aspect of the training which was a relief for us to hear. Additionally, most of the volunteers could do any of the days and times we had offered which was a relief. We also were excited to see some of our classmates supporting us and providing feedback.

**October 2018**  
**October 2nd:** Received NPM food item and emailed volunteers  
**October 3rd:** First day of NPM, prepared spaghetti squash

**Reflection:** It was just Lexi and one other volunteer, as Kat could not be there to prepare food samples due to class. The vegetable was spaghetti squash and we had not prepared a recipe or portion of curriculum for this because it had never been at the market and ended up not being at the market because they told us the wrong vegetable and it was actually radishes. The spaghetti squash took long to cook, and the pans did not fit all 3 pans, therefore, we were delayed by an hour and ended up only going to 2 sites. We realized that we need to organize the bin because it was difficult to find all of the utensils needed, for future purposes we need to just have exactly what they need for the recipe with labels. In addition to this, opening the packaging also took time (therefore had to wash stuff that had not been used before). We needed to clean the container after each use so that when we put back clean utensils such as knives, cutting boards, etc. we know that they are clean. We decided that a checklist for the container would be beneficial so that people know what to do with certain items and adding labels to everything would be nice. We also realized we didn’t really need to worry about the temperature of the product because the Cambro was such a good insulator. We noted that we need a brighter table cloth, more signs, trash cans, napkins, and picture of produce. The kids were more interactive and they all absolutely loved the spaghetti squash which was so amazing for us to hear. Some kids took more than 2 samples home for their families to try and recipes were taken. However, we were really frustrated that the spaghetti squash was not there because it created a disconnect in that the children loved the food samples, but they couldn’t make the food at home since there was no squash. As our first NPM experience, though stressful, everything turned out okay and the volunteer enjoyed her time.
October 16th: prepared beets

Reflection: During this NPM day, we had two volunteers and both of us. Because we wanted to get to the markets as soon as possible, 3 of the 4 went to the first market while the other person stayed back to clean up for efficiency purposes. While at the markets, it was interesting to see that the produce items served were golden beets, not red beets. The beets we had prepared were red and therefore people had trouble believing the two were similar vegetable items. The first site we went to really enjoyed the beets due to the fact that many community members stated they prepared beets at home, but the remaining sites were not as pleased and we think that this may be due to cultural food preferences. We also had trouble finding some of the site locations and it was difficult having multiple volunteers with multiple cars because there wasn’t always room to park. We were stressed at first about everything at first, but once again the volunteers enjoyed their experience and we were able to distribute samples.

October 24th: prepared cabbage

Reflection: During this NPM day, it was observed that many of the kids did not enjoy the cabbage recipe, but those who did enjoy it absolutely loved it. Due to many kids disliking the samples, one of the BRAFB volunteers recommended we sprinkle a little sugar on top, which we did. This increased the number of participants who enjoyed the samples. We also went back to the site where we handed out spaghetti squash and it was amazing to see how the children remembered who we were, and they kept asking for spaghetti squash which really made us feel like we had some sort of an impact. We also had some nutrition conversations with a few of the children with regards to eating moderately and why too much sugar may be bad for us, but why eating plenty of cabbage and spaghetti squash is a really good thing to do. The kids seemed really interested in what we had to say, and parents of the children seemed to be more involved this time. They even suggested ways we could improve the recipe which was nice.

October 29th: prepared bell peppers

Reflection: Due to class schedules, no one was able to dedicate enough time to prepare a cooked version of bell peppers on this NPM day. Therefore, bell peppers were sliced and placed into small cups with hummus. This is also where we met a woman who was very thankful for the presence of the NPM because her home had just been flooded, her storage house burnt down, and she was happy to be able to get free produce which made us feel happy and proud to be serving her. As this was the last market day, we felt both a sense of relief and accomplishment.

November 2018
November 12th: meeting with steering committee

Reflection: This meeting was mostly about coming together to discuss the issues that we had throughout our process. We discussed how challenging the process was and how we needed to find ways to make the entire process more efficient in order for this to be sustainable long term. We had issues with finding out the produce the day before, driving all the way to the Virginia Cooperative Extension, the issues with lack of recipe translations, the issues with transporting all of the equipment, and the overall time dedication to it in general may prevent volunteers from wanting to do it. We had a really great conversation on ways this could be improved and what this would look like in the future. A committee member mentioned discussing with Aramark about seeing if they could provide the samples.

January 2019

January 22nd: met with Daniel Fulk and Claire Strack to discuss their potential food item recipes and how we would connect with them to get the food samples

Reflection: Once we discovered that Aramark was now partnering with the project to help create the food samples and the BRAFB created a “food of the month” we were happy and relieved. We wanted to meet with the Executive Chef and the Head Catering Chef of Aramark to discuss the best methods for recipe preparation and what they intended to do with the food items. This influenced our training curriculum and excluded any preparatory steps that had been previously included in the curriculum such as food safety, cooking processes, and the use of cooking equipment. We discussed the process of how the volunteers would drive to the festival catering area to pick up the food samples using the Cambro. We were excited that this was going to be a much easier and more efficient process.

February 2019

February 19th and 21st: training session for new NPM volunteers

Reflection: Recruited and trained volunteer for the April and March markets. Training was a lot simpler because we did not have to show any cooking techniques or provide information on how to cook since samples were to be made by Aramark. Role was now to collect samples from Festival Catering Center and deliver it to each NPM site while interacting with the community members. We wanted to really emphasize to the community members the uniqueness of this project and how this is a great volunteer opportunity.
Summary

This was a life changing experience for us as we were able to both serve the community of Harrisonburg while learning about ourselves and the community in the process. Our communication, leadership, time management, and creativity skills have been greatly enhanced. We also have a greater appreciation for the complexity of community nutrition education programs and the profound impact that they can have. This was the most challenging project we have been a part of and we cannot believe how far it has come. We never expected Aramark to get involved or for us to be featured on the local TV station as well. We have mixed emotions about leaving this project as we leave JMU, but we are excited for what the future holds. As dietetics majors and future health professionals, food security and preventative health care through nutrition education is important to us. We hope that we have had as much of an impact on the Harrisonburg community and the Neighborhood Produce Market as it has on us.
Bibliography


3. PDF Document: Everyone at the Table, a community food equity assessment in Harrisonburg


