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Food Accessibility Related to Double Your Dollar Program

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Abstract

The Double Your Dollar (DYD) Program is a program that gives Supplemental Nutrition Assistance Program (SNAP) beneficiaries and Senior Farmers' Market Nutrition Program (SFMNP) participants match dollars to spend at local farmers markets. Users are able to spend these dollars on fruits, vegetables, eggs, meats, dairy, jam/jelly, honey and food producing plants. DYD's goal is to incentivize healthy eating among individuals of low income, promote local purchases, and increase spending at farmers markets. Food insecurity effects over 60,000 individuals in Washington and Benton county (Map the Meal Gap, 2019). With food accessibility being an area of concern in Northwest Arkansas, programs like SNAP and SFMNP are significant in helping individuals acquire nutritious food. The goal of this study was to assess how the DYD program has impacted users' food accessibility and how the program can be improved for the future. Types of food purchased were assessed because this gives insight on an individual's health. Individuals of lower income are known to generally have poorer health status which is related, in part, to the food they are consuming. By assessing how DYD users altered their purchases because of the program, inferences can be made on how this program is affecting their nutritional status. Food accessibility was evaluated through analyzing how much food users are able to purchase. Additionally, customer shopping patterns were studied because this gives insight to how the program can be improved in the future. A survey was created to address these areas and was distributed to participants taking part in the DYD program at farmers markets in Washington and Benton county. A total of 80 surveys were obtained and results were analyzed using Qualtrics Survey Software. The results indicated that the vast majority of current DYD users had increased purchases and consumption of fresh fruits, vegetables, eggs, meat, and dairy. Main motivations for shopping at the farmers market included the ability to buy fresh, healthy,

and quality foods. Main obstacles for shopping at the farmers market included price and type of food available. Previous research has shown that purchases made to locally owned businesses and farmers create more jobs and improves local wealth. Therefore, the purchases made through DYD potentially contributes additionally to improve the local economy. Overall, the DYD program suggests being successful in improving food accessibility. This study indicates that food assistance programs such as DYD could be replicated throughout the country to improve local food accessibility and as a result, improve nutritional status among individuals of low income. Future studies should assess the awareness of the program within the community since this study only assessed participants that were already participating and the impacts of those purchases on buying and eating behaviors.

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Introduction and Literature Review

Millions of Americans each year are faced with the issue of food insecurity. In 2018, 11.1 percent (14.8 million) of households were classified as food insecure (USDA Economic Research Services, n.d.). When addressing the issue of food security, the term as a whole must be fully understood. Food security is not just the availability of food itself. The World Food Summit describes food security existing when, "... all people, at all times, have the physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (World Food Summit, 2008). From this definition, both availability and accessibility are found to be necessary components. Food availability is defined as the consistent physical supply of food. Increased efforts in America have been made with food availability through improving farming techniques, which has proven a great deal of success. Food accessibility, on the other hand, deals with an individual's ability to acquire safe and nutritious food both physically and economically. America has made strides in this area as well through the use of government food funding programs to individuals of low income. However, there are some areas that need to be addressed. Healthy and fresh food products tend to be more expensive, marketed less, and therefore less accessible to those of low-income status. This may be the key aspect of food security that America needs to desperately improve. The types of food purchased and consumed greatly affect one's overall health as well. By having adequate access to purchase nutritious food, individuals have the power to improve their personal health. The status of both food availability and accessibility are key components for an individual to be food secure (World Food Summit, 2008).

The number of American households that are food insecure has fluctuated within in the past twenty years. A peak was hit in 2008 at 14.9 percent of households being considered food

insecure. Since then, rates have been declining. In 2018, 11.1 percent (14.3 million) of U.S. households were considered food insecure at a period of time during the year. Today, 37.2 million people are considered food insecure, six million of those being children (Fields, 2004).

To address this issue, government food assistance programs have been implemented.

Supplemental Nutrition Assistance Program (SNAP), previously known as Food Stamps, was renamed with the passing of the 2008 Farm Bill. SNAP's purpose is to aid purchasing of food for low income families (SNAP to Health, n.d.). SNAP benefits recipient can use the resource only for the purchase of any food product for home consumption or nuts and seeds which produce food for consumption. These mainly consist of meats, poultry, seafood, fruits and vegetables, dairy products, sweetened beverages, and breads and cereals. SNAP excludes the purchases of alcoholic beverage, tobacco products, or any foods sold for on-site consumption (Garasky et al., 2016).

Approximately \$70 billion dollars was spent on SNAP during the 2017 year (Stebbins, 2018). Each month, over 40 million Americans are able to afford more groceries (Stebbins, 2018). With Arkansas having the second highest rate of food insecurity in the nation, this is especially important. SNAP benefits provided in Washington and Benton county in Arkansas has declined from \$72 million in 2012 to now \$35 million in 2018 (DHS Annual Statistical Reports, n.d.). SNAP participation grew significantly between 2007 and 2011 as a result of the recession and eligibility requirements expanding. Participation has been declining since 2014 which is also a result from the improving economy (Rosenbaum & Keith-Jennings, 2019) and changing federal policies. With increased eligibility restrictions recently being put into effect, this number is projected to continue to decline (Supplemental Nutrition, 2019). The fluctuation in funds and participation has impacted programs supporting SNAP users, such as the Double Your Dollar

program, which will be discussed later. With this fluctuation, research has been conducted to see how SNAP and related programs have impacted users. While efforts have been made to increase individual's ability to purchase food, surprisingly, adverse effects on health status have been found. Individuals health is declining even with an increase of food availability and accessibility.

Multiple studies (Gibson, 2003; Townsend et al., 2001; Jones, 2018) have concluded that current nutrition assistance program users were significantly more likely to be obese than non-users. Not only this, but those same participants were also more likely to be obese long-term and continually gain weight over an extended period of time (Gibson, 2003). Even though efforts have been made towards helping those of low income increase the quantity of their food, the quality of that food is lacking which is leading to poorer health status (USDA Economic Research Services, n.d.).

While one may believe that households with the status "food insecure" would reflect malnourished and therefore underweight family members, the opposite has actually been found. A study conducted reported that households that were fully food secure reported the lowest BMI's and lowest rates of overweight and obese women (Townsend et al., 2001). In addition, multiple year weight gain of 5-10 lbs. was significantly higher in women of food insecure homes than of those in food secure households (Wilde & Peterman, 2006). A steady weight gain over a long period of time has been linked to an increased risk for developing Type II Diabetes, stroke, and coronary heart disease (Colditz et al., 1995; Rexrode, 1997; Huang et al., 1998). Multiple studies have found similar outcomes; suggesting a relationship between lower socioeconomic status, food stamp participation, and risk for becoming obese. (Gibson, 2003; Townsend et al., 2001; Jones, 2018)

Obesity in the United States has become an epidemic. Serious health consequences are associated with obesity such as heart disease, hypertension, cancer, diabetes and premature death. Obesity is suggested to be responsible for 300,000 premature deaths per year, compared to alcohol and illegal drugs being responsible for approximately 120,000 combined (Gibson, 2003). In addition, negative pregnancy outcomes have been linked to parents who are obese. Babies born of obese or overweight mothers have an increased risk of preterm birth, large for gestational age, and congenital abnormalities. Not only are rising rates of obesity affecting the current generation but also leaving effects on the generation to come. Obesity is directly related to an increase in medical cost and a decrease in productivity. An estimated \$342.2 billion was spent in total medical costs associated with obesity in 2013. These numbers were projected to continue to increase (Biener et al., 2017). Decreased productivity tied to obesity cost the nation an estimated \$8.65 billion per year. (Andreyeva et al., 2014). Because of the multitude of negative implications, this issue cannot be further overlooked and is prompting questions about how it can be corrected.

As of 2019, Arkansas ranked third highest in obesity rates in the United States. An estimated 37.1% of adults in Arkansas have a BMI over 30, which is considered obese (Explore Obesity in the United States, 2019). The rise of obesity in the United States, specifically Arkansas and among low income families, suggests that the problem of food security may not be in the amount of food people are able to access but the quality of that food. This is an issue that stems from the Great Depression and efforts made to help keep Americans food secure. The effort to stabilize farmers and crop prices through subsidies and support programs has led to a neglect of growing and promoting fruits and vegetables. The market is now flooded with products made from highly subsidized crops because their cost of production has been driven

down (Fields, 2004). This unintentionally created a problem because as production of wheat, soy, and corn increased, foods containing hydrogenated fats, high fructose corn syrup, and corn-fed meats also expanded in the market. Such foods are very energy dense, containing a high number of calories without essential micronutrients needed for proper growth and function of the body. Vitamins and minerals found in fruits and vegetables are necessary for a healthy metabolic profile. Fruits and vegetables have become relatively more expensive than energy dense foods, such as highly processed grain and corn products, prepackaged meals, fast-food, and sugar sweetened beverages (Fields, 2004). Those individuals that are stretched to spend money on groceries are filling their carts with cheap, convenient foods that are flavorful and appealing to their children. A diet without fruits and vegetables lacks dietary fiber, vitamins, minerals, and antioxidants. Lower fruit and vegetable consumption have also been associated with increased risk for coronary heart disease and diabetes (Slavin & Lloyd, 2012). Many countries have made suggestions for healthy eating guidelines. MyPlate which is a food chart created by the USDA, suggests that half of each plate should include fruits and vegetables because daily consumption can lower the risk for developing Type II Diabetes, heart attack, stroke and some cancers (USDA ChooseMyPlate, n.d.). For these reasons, suggestions have been made to evaluate ways in which fruits and vegetables could be made more available through food assistance programs (Wilde & Peterman, 2006).

A program with this specific goal in mind was developed called Double Up Food Bucks (DUFBS; Double Up Food Bucks, n.d.). DUFBS started in five farmers markets in Detroit Michigan in 2009. The goal was to make healthy food more accessible, increase local farmers profit, and support the local economy (Double Up Food Bucks, n.d.). DUFBS doubles SNAP dollars spent on fresh produce, incentivizing healthy eating. The program has been successful

and has grown to over 250 locations across Michigan. It also has recently been implemented into grocery stores (Double Up Food Bucks, n.d.). A study looking at supermarkets in a low-income community found that while SNAP customers spent more overall within the supermarket, they had lower fruit and vegetable expenditures. Meaning, SNAP customers were on average purchasing less fruits and vegetables compared to other customers shopping at the same supermarket. An average of \$8.12 per month was spent on fruits and vegetables by SNAP users. With an incentive of DUFEB, an increase of \$0.40 per month was spent on fruits and vegetables and after the program had ended, fruit and vegetable purchases declined by \$0.27 per month (Steele-Adjognon & Weatherspoon, 2017). Even with this small study, incentivizing fruit and vegetable purchases has shown to have an impact to those using food assistance programs. In addition, another Michigan study found that markets who accepted SNAP and participated in the Double Up program had an increase in their percentage of SNAP redemptions by 64%, translating to an increase of farmers market sales of \$240,000 across a four year period (Goddeeris et al. 2017). Farmers markets in New York found similar results as well. Between the years of 2006-2009, an average of \$170 more per day was spent in farmers markets participating in incentive programs than markets that did not (Baronberg et al., 2013). Many suggestions were made to continue to refine and improve these programs, one of them addressing the link between EBT spending and fresh produce purchases (Baronberg et al., 2013). This suggestion was made because, as stated above, medical costs associated with obesity are rising. Another suggestion was to look at shopping patterns, so that markets could meet the needs of their consumer basis better.

The USDA published a report addressing the main motivations of SNAP users shopping at farmers markets (Karakus et al., 2014). They found that there was a preference for fresh fruits

and vegetables over frozen and canned. The main reason customers did not shop at the farmers market was because of the lack of convenience, higher prices, and simply because many were not aware that farmers markets accepted EBT cards. Many did not know that incentives were available. Respondents concluded that their main reason for shopping at the farmers market was because of the high-quality produce available, supporting local growers, and the use of incentive programs. Household reports also showed that fruit and vegetable consumption increased as a result of the use of incentive programs at farmers market (Karakus et al., 2014). With knowledge of customer shopping patterns, programs similar to Double Up Food Bucks and others can continue to be improved to meet the needs of SNAP individuals.

This study focused on participants in the Double Your Dollar (DYD) program at farmers markets in Washington and Benton counties in Arkansas. Currently, Arkansas is estimated to have 519,000 individuals who are food insecure. Because Arkansas has the second highest rate of food insecurity in America, it is necessary to address these issues and implement changes (Map the Meal Gap, 2019). Previous incentive programs, as outlined above, have suggested to be very successful in increasing low-income individuals purchasing power in obtaining fruits and vegetables (Goddeeris et al., 2017; Milchen, n.d.). Additionally, farmers market annual sales have increased as a result of such programs. The focus of this study was to determine how SNAP and SFMNP users expressed their locally grown food consumption with the DYD program and how that has changed, and to assess motivations and obstacles for the SNAP and SFMNP users shopping at local farmers markets. Because fresh produce (mainly fruits and vegetables) is closely related to health status, this is the marker chosen to determine the nutritional benefit of DYD. Shopping patterns, including main motivations and obstacles, of participants were also assessed in order to provide areas of focus to improve the program. While taking into

consideration the key components food security, accessibility was the main area of focus. Food security is being addressed as it relates to an individual's, "physical and economic access to sufficient safe and nutritious food that meets their dietary needs" (World Food Summit, 2008). This includes the types of food they purchase (fresh produce and locally grown food) and their physical ability to access that food. Food accessibility is the next necessary step in Americas efforts to improve overall food security. Additionally, the goal of this study was to provide a model for other regions in America to improve and duplicate incentive programs within their local markets.

Materials and Methods

Objectives and Sample Population

The objective of this project was to determine how the food accessibility of SNAP and SFMNP users was affected by the Double Your Dollar program (DYD) at local farmers markets in Northwest Arkansas. The following research and study objectives were set:

1. Determine how DYD affected the types of food SNAP and SFMNP beneficiary consumers purchased at local farmers markets
2. Determine how consumers' purchases at local farmers markets changed because of the DYD program
3. Assess SNAP and SFMNP beneficiary consumers shopping patterns within the farmers market
4. Assess the DYD programs' overall impact on food accessibility to SNAP and SFMNP recipients
5. Identify ways in which the participating Northwest Arkansas farmers market could be made more accessible to DYD users

The focus of this study was farmers markets in Washington and Benton counties in Northwest Arkansas, currently composed of eight markets. Because not all markets have a large number of SNAP users, the markets with the most SNAP sales throughout previous years were studied. These markets included Fayetteville, Bella Vista, Bentonville, Rogers, Downtown Rogers, and Springdale.

In a free option survey, feedback was obtained from Washington and Benton county DYD users, which included individuals receiving SNAP dollars as well as seniors participating in SFMNP. Participants were asked if they took part in the DYD program and if they would be willing to take part in a survey that assessed how the DYD program had impacted them. Individuals who were at farmers markets doubling their dollars or attending events where they could receive DYD tokens were asked to participate in the survey. Any participant that gave verbal consent to participate was given a survey.

Survey Design and Distribution

Survey questions were derived from the objectives stated above and were reviewed by committee members (Appendix 1). The survey was created using Qualtrics Survey software (www.qualtrics.com). IRB (Institutional Review Board) approval was obtained by the University of Arkansas before distribution of the survey (Appendix 2). The survey included basic demographic questions including; age, gender, race, household composition, and approximate living distance from farmers market vs. grocery stores (Appendix 3). The survey included two questions including a 5-point hedonic scale assessing main motivations and main obstacles for shopping at the farmers market. Other questions included multiple choice, check all that apply, and one optional open-ended question.

The six highest SNAP-user markets were visited by the researcher between two and six times during the 2019 season. While individuals participating in the DYD program were receiving their match dollars at the market, they were asked to take part in an optional survey that asked about how DYD had impacted them. With verbal consent, participants were then given a survey. Surveys were distributed using an iPad with one-to-one interaction between the customer and the researcher. Assistance was offered to participants who were not comfortable using the iPad. For these participants, the researcher would read the questions and answer choices, then the participants' responses were marked. For the first two months of distribution, only iPads were used to complete the surveys. For the last month of the survey period, printed copies of the survey were used to obtain responses in addition to the iPad. This was done to help improve efficiency of gaining survey responses. The completed paper surveys were then entered into Qualtrics by the researcher.

Data Collection and Analysis

Data collection occurred between mid-June through September. Surveys were completed by the participant either on the iPad or on paper copies. Once all data were obtained, the survey results were interpreted using Qualtrics Survey software.

Data were analyzed based upon the five objectives stated previously. Qualtrics Survey software was used to analyze results of each question. Graphs were created using Excel. Data were compared between age of respondents, living distance from farmers markets and grocery stores, and length of participant usage of DYD. A total of 80 survey responses were obtained. Of the respondents, 49 participants were between the age of 18 and 64, and 31 participants were over the age of 65. For the purpose of this paper, respondents over 65 years of age are discussed as seniors throughout results and discussion.

Results and Discussion

Survey Data

Objective 1. Determine how DYD affected the types of food SNAP and SFMNP beneficiary consumers purchased at local farmers markets.

The main types of food purchased at the farmers market were fruits and vegetables (Table 1, Figure 1). Of the respondents, 77 out of 80 stated that one of the main products they regularly purchase at the farmers market are vegetables. Sixty-four out of 80 respondents selected fruits.

The age of customers altered the variety of food purchased (Table 1, Figure 1). There were 31 respondents in the senior category (over the age of 65) and 49 respondents in the younger category (ages 18-64). Younger individuals tended to buy a larger variety of foods than seniors. Within the senior category, 6.5% selected that they mainly purchased eggs, meats, and dairy, 25.8% selected honey, 9.7% selected bread, and 0% selected food producing plants. In the younger category, 28.6% selected that they mainly purchased eggs, 24.5% selected meats and dairy, 42.9% selected honey, and 26.5% selected bread and food producing plants. When addressing where DYD users regularly purchased their fresh produce, research found that 64% of respondents bought majority of their fresh produce at the farmers market while 36% bought majority from grocery stores (Table 2). It can be noted that while participants were interacting with the researcher during survey distribution, many verbalized, as a result from this question, that location of fresh produce purchase changed for them depending on the season. These participants stated that they bought almost all of their produce from the farmers market in the summer, however, in the winter they bought majority of fresh produce from the grocery store. They also verbalized that they preferred purchasing from the farmers market and did so when it was available. These participants were not documented and were instructed to mark where they purchased majority of fresh produce throughout the full year on average.

Objective 2. Determine how consumers' purchases at local farmers markets changed because of the DYD program.

The survey question stated in Table 3 (Appendix 1) was asked to determine if the DYD program had any effect on users' nutrition status through the increase of fresh food purchases. Fifty-nine out of 94 (63%) responses reported that purchases of produce had slightly or significantly increased while 12 out of 94 (13%) responses reported that purchases did not change (Table 3). With an increase of fruit and vegetable purchases, it can be inferred that consumption was also increasing. While no data were obtained of customers physical or nutritional status, it is known that increased fruit and vegetable consumption has been shown to correlate with improved health and decreased risk for many diseases.

Age played a role in the change of purchases (Table 3). Older individuals were found to be more consistent with their purchases compared to younger individuals. Of the survey responses, 22.6% of seniors stated that their purchases did not change because of DYD whereas 10.2% of younger individuals stated that their purchases did not change. In addition, only 6.5% of senior respondents stated that their purchases of eggs, meat and dairy increased, whereas 22.4% of younger individuals stated that their purchases of eggs, meat and dairy increased.

The DYD program made a significant enough impact upon future choice of respondents that 15% of survey participants stated they would not shop at the farmers market if the DYD program was not available (Table 4). Twenty-six percent stated they would regularly continue to shop at the farmers market but 41.3% of customers would shop less frequently at the farmers market. This indicated that customers value the program and it was essential for many in their ability to afford farmers market products. Yet, even exposure to the market through the use of DYD may encourage individuals to return without the program.

Respondents that used the program for a longer amount of time were found to be purchasing a wider variety of food (Table 5). Fruits and vegetables were consistently high for all users whether they had just begun the program or had been using it for over three years. An increase in purchases of honey, meats, and food producing plants was found with longer usage of DYD. Honey purchases for those using the program for less than three months constituted of 22% while those using the program for over three years, constituted for 43%. In addition, only 5.6% of first-time user responses (less than three months) reported purchasing meat while 20% of long-term user responses reported purchasing meat. Eleven percent of first-time user responses reported purchasing food producing plants and 20% of responses from those using DYD over three years reported purchasing food producing plants.

Objective 3. Assess SNAP and SFMNP beneficiary consumers shopping patterns within the farmers market.

Users strongest motivations for shopping at the farmers markets included healthier, higher quality, more fresh food and ability to use DYD tokens (Figure 2). Eighty-six percent of responses included the response that healthier options were either somewhat significant or very significant reasons for shopping at the farmers market. Eighty-two percent of responses reported higher quality food, 85% reported fresher food, and 85% reported using DYD tokens. There was a strong emphasis on how much individuals valued the quality of their food.

Surprisingly, special dietary needs and medical conditions were of more significance for younger individuals than for seniors. Forty-nine percent of responses from participants ages 18-64 stated that having a special dietary need was a somewhat or very significant motivation for them shopping at the farmers market. Forty-eight percent of responses from the same age category stated that having a medical condition was somewhat or very significant in their shopping at the farmers market. On the other hand, only 25% of responses from those over 65

stated that having a special dietary need was a somewhat or very significant motivation and 29% of responses stated that having a medical condition was significant. Majority of seniors recognized medical conditions and special dietary needs to be an insignificant motivation for their shopping at the farmers market.

The biggest obstacles for individuals shopping at the farmers market included the price of products and types of food offered (Figure 3). Fifty-three percent of responses stated that the obstacle of higher pricing was either somewhat or very significant in shopping at the farmers market. Forty percent of responses stated that types of food offered was a significant obstacle.

For seniors, the convenience of the farmers market was less of an issue than for younger individuals. Of seniors, 71% stated that the convenience of buying foods from grocery stores or pre-packaged foods was a very insignificant obstacle. Where 34% of responses from individuals between 18-64 years of age, stated that buying foods from grocery stores and pre-packaged foods was a very insignificant obstacle. In addition, the hours the farmers market was open was more of an issue for younger individuals than for seniors. Of seniors, 14% stated that the hours the farmers market was open was a somewhat or very significant obstacle for them in shopping at the farmers market. For younger individuals, however, 42% of responses stated that the hours the farmers market was open was a somewhat or very significant obstacle. The convenience of buying pre-packaged food from grocery stores and the hours the farmers market was open was more of an obstacle for younger individuals than it was for seniors.

For individuals who lived greater than five miles away from the farmers market, their biggest obstacles were the hours that the farmers market was open, price, and location of the farmers market. Forty-seven percent of responses from individuals that lived greater than five miles away stated that the hours that the farmers market was open was either a somewhat or very

significant obstacle. Fifty-three percent of responses of the same group stated the same for location of farmers market. On the other hand, only 22% of responses from individuals who lived 0-3 miles from the farmers market indicated that the hours the farmers market was open, and the location was a somewhat or very significant obstacle.

Objective 4: Assess the DYD programs' overall impact on food accessibility to SNAP and SFMNP recipients.

In an open response question asking, "How has the DYD program impacted your food stability" (Appendix 1), 23 out of the 61 responses included the word 'fresh' or 'quality' referring to produce. Sixteen of 61 responses included the term 'more', mostly relating to more fresh produce and food. However, the phrase 'more choices' and 'more access' were also used. There was a surprising emphasis on how much people valued the quality of their food.

Not only was there a notable amount of quality food users were able to purchase but also the way this program has changed the way users think about their food choices. One open response stated, "I think more about what I buy and eat". DYD also helped users' kids venture out in trying new, healthy foods. One respondent stated, "I love this program, kids have new things to try". Other statements in the open response section included, "this is a lifesaver for us" and, "I would not be able to afford farmers market food at this time without double your dollar".

Seven out of 61 responses in the open response question were neutral. Meaning they included phrases similar to "none", "neutral", "1st time using". No responses pointed towards any type of negative impact.

Objective 5. Identify ways in which the participating Northwest Arkansas farmers market could be made more accessible to DYD users.

Survey findings concluded that recipe ideas would be the best way to make the farmers markets more accessible to DYD users (Figure 4). Forty-two respondents marked that recipe

ideas would help make using DYD easier for them. Twenty-six respondents marked cooking demonstrations and 23 marked cooking classes and expanded food options. Older individuals also stated they would mostly benefit from recipe ideas, product price list, increased public transportation and expanded food options. Some of the markets have already implemented cooking demonstrations. This may mean that the advertisements of these demonstrations are not reaching DYD users or they are scheduled at times unavailable to DYD users. Along with the cooking demonstrations, recipes are given to those attended and posted on the Northwest Arkansas farmers market website. The ability of these resources to reach DYD users' needs to be made through a wider variety of communication and contact. Not only providing more recipe ideas and cooking demonstrations, but also increasing the communication to users of where and when to utilize these resources would be an area that the DYD program could improve.

SNAP and DYD Funds

With an improving economy and increased eligibility requirements, SNAP participation has been continually declining (Rosenbaum & Keith-Jennings, 2019). As stated previously, SNAP funds distributed to Arkansas have decreased during the past seven years. In Washington and Benton counties, 74,800 persons were provided with SNAP benefits in 2012 and 45,088 persons were provided with benefits in 2018 (DHS Annual Statistical Reports, n.d.). The decrease of individuals using SNAP has impacted programs related to their users. The DYD program participation in Washington and Benton counties began in 2011. The DYD program steadily grew as it gained awareness yet, the decrease in persons receiving SNAP and reduced private party support for the program effected DYD sales and match dollars.

Figure 5 represents the funds distributed to the DYD program compared to the total funds that were used to match SNAP dollars and SFMNP coupons. Figure 6 represents the distinction

between the total match funds; quantities matched to SNAP dollars vs. SFMNP coupons. Funds distributed to the DYD program hit a peak in 2015 when \$75,000 was allocated to DYD to use for matching SNAP dollars and SFMNP coupons at the eight Northwest Arkansas farmers markets. That same year, DYD sales peaked when \$75,730 was matched at farmers markets. From there, funding has gradually decreased and DYD match dollars have followed. A greater sum of DYD funds was continually given to match SFMNP coupons while less DYD funds were given to match SNAP dollars. This has helped buffer the fluctuation in overall match throughout the years because DYD has not been solely dependent on SNAP users.

The DYD program spending would have positive impacts on the local economy. Multiple studies have shown that sales made to locally-owned businesses produce two to three times more economic activity than purchases made to absentee-owned businesses. Buying locally, generates more jobs, better usage of land, and a bigger return into the local economy (Milchen, n.d.; Hardesty et al., 2016). Therefore, DYD has been impacting its' users in both direct and indirect ways by helping the local economy which may in-turn have benefits to SNAP users. DYD participants feel that they are able to acquire more fresh, quality, and healthy foods as a result of this program. By purchasing locally, DYD users are generating economic activity while supporting local growers.

Limitations

This study faced limitations including sample profile, data collection process, and validity of responses. While obtaining responses, the survey (Appendix 1) did not include a question that distinguished SNAP users from SFMNP users. Within the results, the seniors (ages 65+) are a combination of those individuals receiving SNAP dollars and those individuals who were participating in SFMNP. Because qualification requirements are more restrictive for seniors

to be eligible for SNAP than for SFMNP, there has been a low SNAP participation rate amongst seniors and, conversely, no SFMNP participants in the lower age group. Even without the distinguishing question, the separation was expected to be small. This did not affect the data collected but could have been a helpful distinction to further analyze responses.

The data collection method was not consistent throughout the duration of survey collection. Surveys were distributed from the researcher to the participant via iPad for the first two months. Then, surveys were printed and distributed to the market managers who administered the survey to DYD users. This was done for the purpose of obtaining more responses since the researcher could only be physically present at one market at a time. The managers were instructed to ask SNAP and SFMNP users that were matching their dollars to take part in an optional survey that assessed their perceived impact the DYD program had on their food security. This was the same way individuals were approached when the researcher was distributing surveys previously, except it was done through the market manager. The way participants were approached by market managers could not be verified as being synonymous with the way the researcher approached participants.

A limitation that resulted from the change of survey distributor was the validity of responses. While the researcher was distributing surveys to participants, they were able to directly ask the researcher about specific interpretations of the questions. The market managers could have had altering interpretations of the questions and may have translated to the participant an explanation that varied from what the researcher had stated to previous participants.

Conclusion

The DYD impact survey showed that majority of users were purchasing mainly fruits and vegetables at the eight Northwest Arkansas farmers market. Users that had been participating in

DYD for a longer period of time and younger individuals were more likely to buy a wider variety of food products. We can infer that users prefer buying produce from the farmers market rather than the grocery store and do so when the market is in season. The survey respondents preferred fresh, locally sourced food. More than half of survey participants noticed an increase in the amount of fresh produce they purchased because of their ability to use DYD. This increase of fruit and vegetable intake was notable because it is a marker for improved nutritional status. A majority of respondents also stated that they would continue to shop at the farmers market if DYD was not available, however, a large percentage of those individuals would not be able to shop as frequently. It was clear that DYD made an impact on how often users were able to shop at the eight Northwest Arkansas farmers markets.

When incentivizing healthy food, naturally, consumers become more conscious of their food choices. The simple change in awareness causes individuals to consume healthier foods and purchase a wider variety of foods. Because of the high reported purchase of fruits and vegetables, it was assumed that DYD users and their family members benefit from becoming exposed to produce.

Not only could the DYD program potentially impact user's health and purchasing power, but the DYD program has the potential to impact the local community's economy. Incentivizing local purchasing creates much more money cycling back into the local economy and has shown to create more jobs and local wealth. SNAP and SFMNP users participating in DYD are supporting their opportunity for jobs and wealth through purchasing locally. Further research is needed to know the multiplier for this category of purchasing within the Northwest Arkansas Region.

Overall, the DYD program has suggested to have made a positive impact on its' users. Through providing individuals of lower income the resources to make healthier purchases, they are presumably increasing their fresh produce consumption and clearly supporting their local economy. They are able to feel more food secure by having increased purchasing power through Double Your Dollars and the ability to purchase fresh, locally sourced foods. As funding for SNAP program fluctuates, the DYD program usage follows. With greater funding and promotion of the DYD program, sales and match dollars would also increase. Many SNAP users may not be aware the DYD program is available to them which could greatly impact total sales. Further research is needed to know how awareness of this program impacts its' usage.

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Table 1

The relationship between age of DYD survey participants and main product categories purchased at eight farmers markets in Northwest Arkansas, 2019.

Marked responses	Products								
	Total Count	Bread	Dairy	Eggs	Plants	Fruits	Honey	Meats	Vegetables
Total Respondents	80	20.0%	17.5%	20.0%	16.3%	80.0%	36.3%	17.5%	96.3%
Respondents ages 18-64*	49	26.5%	24.5%	28.6%	26.5%	85.7%	42.9%	24.5%	95.9%
Respondents age 65+*	31	9.7%	6.5%	6.5%	0.0%	71.0%	25.8%	6.5%	96.8%

* Respondents were instructed to select all that apply; thus, percentage totals exceed 100%

Figure 1

The frequency of product category purchases by two broad age groups of DYD survey participants at eight farmers markets in Northwest Arkansas, 2019.

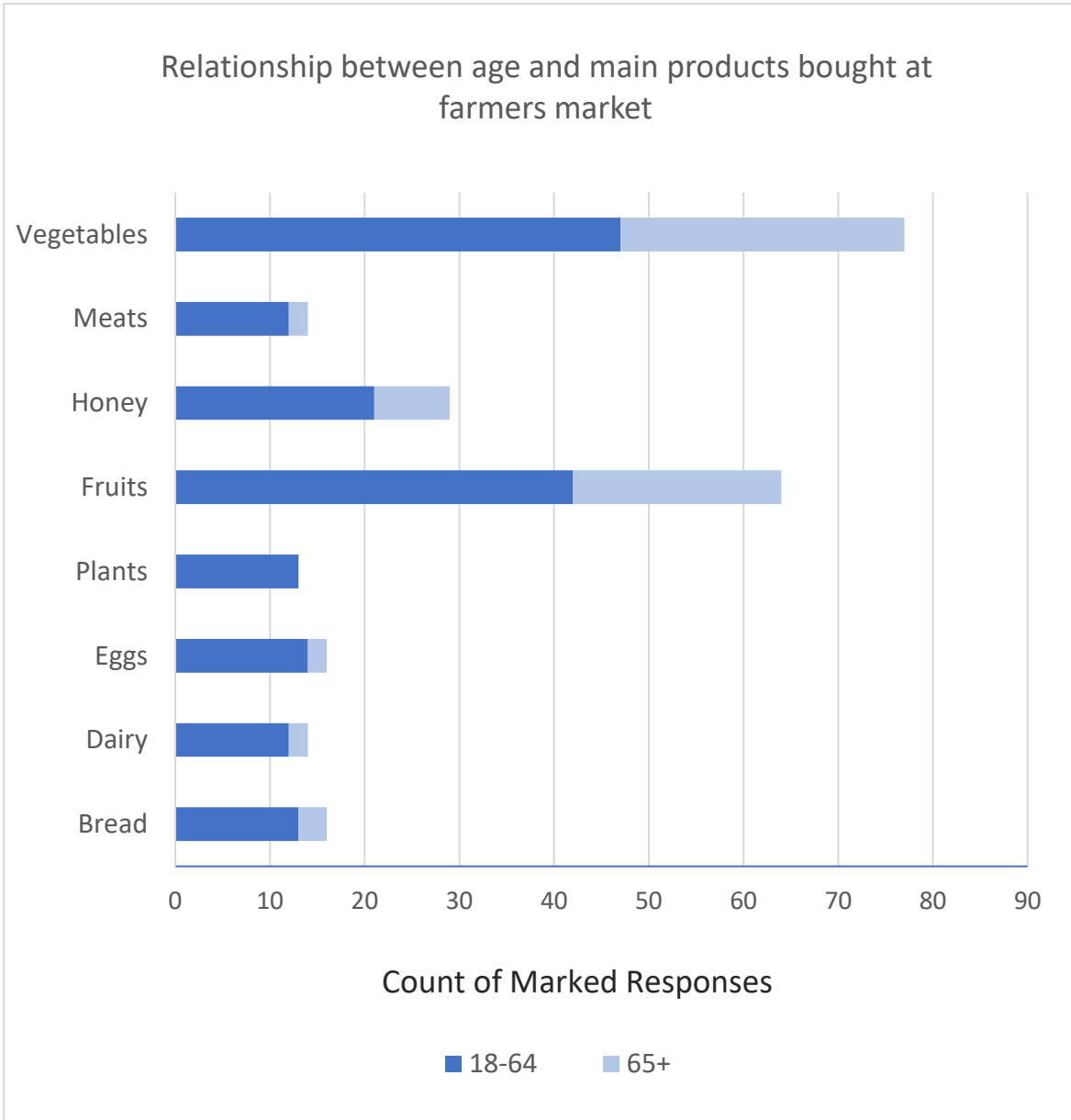


Table 2

The relationship between DYD survey participants and the main location of fresh produce purchase between grocery stores and eight farmers markets in Northwest Arkansas, 2019.

Survey Question: Where do you buy majority of your fresh produce?			
Marked responses	Total count	Farmers Market	Grocery Store
Total Respondents	80	51	29
Total Percentages	80	63.7%	36.3%

Table 3

The relationship between DYD survey participants age group and difference in food purchases at eight farmers markets in Northwest Arkansas, 2019.

Survey Question: Since using Double Your Dollar, have you noticed a difference in the type of food you buy at the farmers market? Select all that apply							
Marked responses	Total	Additional comments	No, my purchases have not changed	Yes, slightly more local produce	Yes, significantly more local produce	Yes, slightly more local eggs, meat, dairy	Yes, significantly more local eggs, meat, dairy
Total Count	94	10	12	16	43	0	13
Total Percentages	80	12.5%	15%	20%	53.8%	0%	16.3%
Responses ages 18-64 (count)	60	8	5	9	27	0	11
Responses ages 65+ (count)	34	2	7	7	16	0	2
Respondents ages 18-64*	49	16.3%	10.2%	18.4%	55.1%	0.0%	22.4%
Respondents ages 65+*	31	6.5%	22.6%	22.6%	51.6%	0.0%	6.5%

* Respondents were instructed to select all that apply; thus, percentage totals exceed 100%

Table 4

The influence of DYD program availability on DYD survey respondent's choice for continued shopping at eight farmers markets in Northwest Arkansas, 2019.

Survey Question: Do you see yourself shopping at the farmers market if the Double Your Dollar program was not available?					
Marked responses	Total	No	Maybe	Yes, less frequently	Yes, regularly
Total count	80	12	14	33	21
Total percentages	80	15%	17.5%	41.3%	26.3%

Table 5

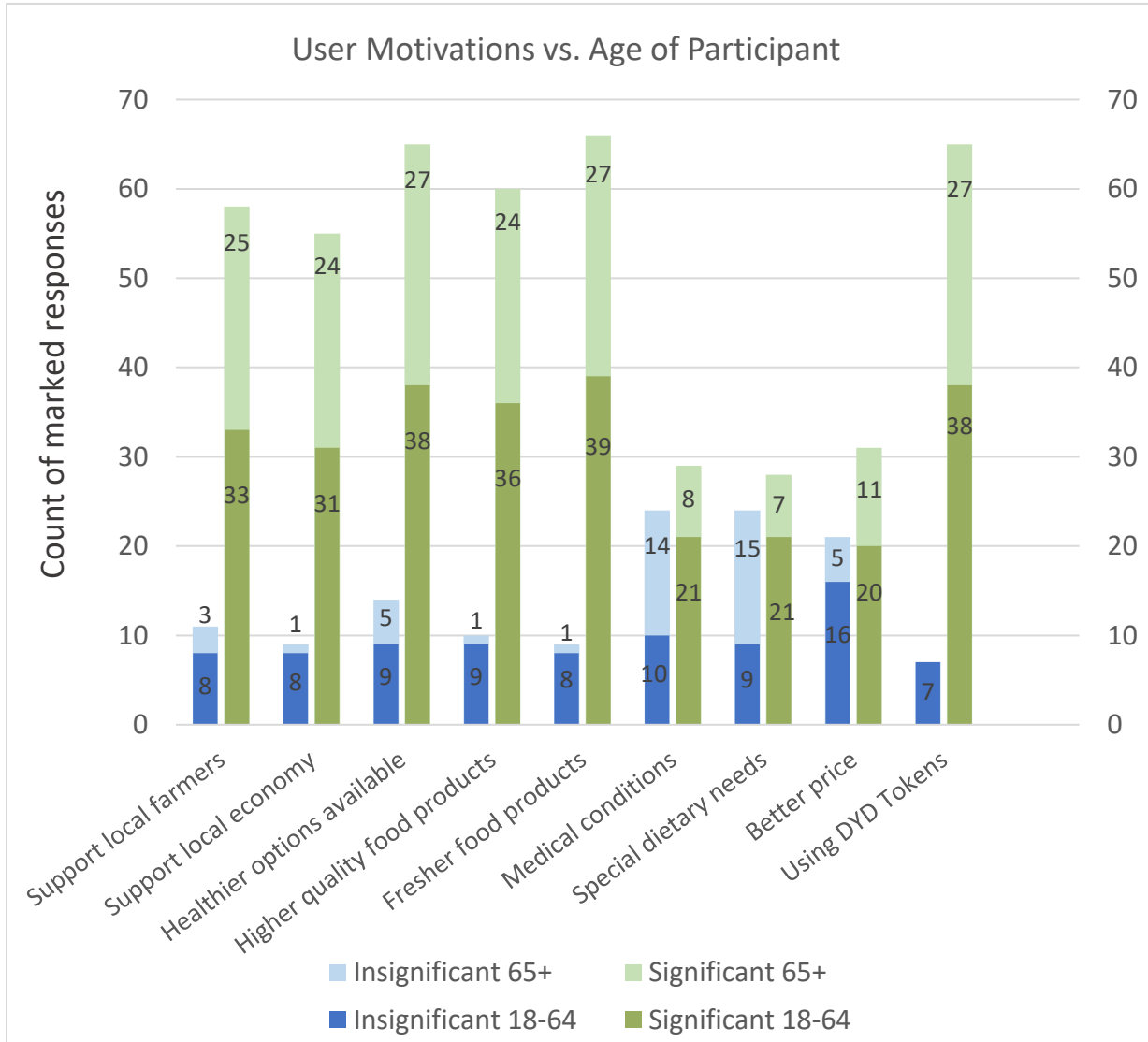
The relationship between length of DYD program participation and the common purchases of DYD survey respondents at eight farmers markets in Northwest Arkansas, 2019.

Survey Question: What are the main products you regularly buy at the farmers market? Mark all that apply						
Marked responses	Total	Fruits	Vegetables	Honey	Meats	Food producing plants
Total count	116	37	47	17	7	8
Total percentages	80	46.3%	58.8%	21.3%	8.8%	10%
Responses from users 0-2 months (count)	38	14	17	4	1	2
Responses from users 3+ years (count)	78	23	30	13	6	6
Respondents using DYD 0-2 months*	18	77.8%	94.4%	22.2%	5.6%	11.1%
Respondents using DYD 3+ years*	30	76.7%	100%	43.3%	20%	20%

* Respondents were instructed to select all that apply; thus, percentage totals exceed 100%

Figure 2

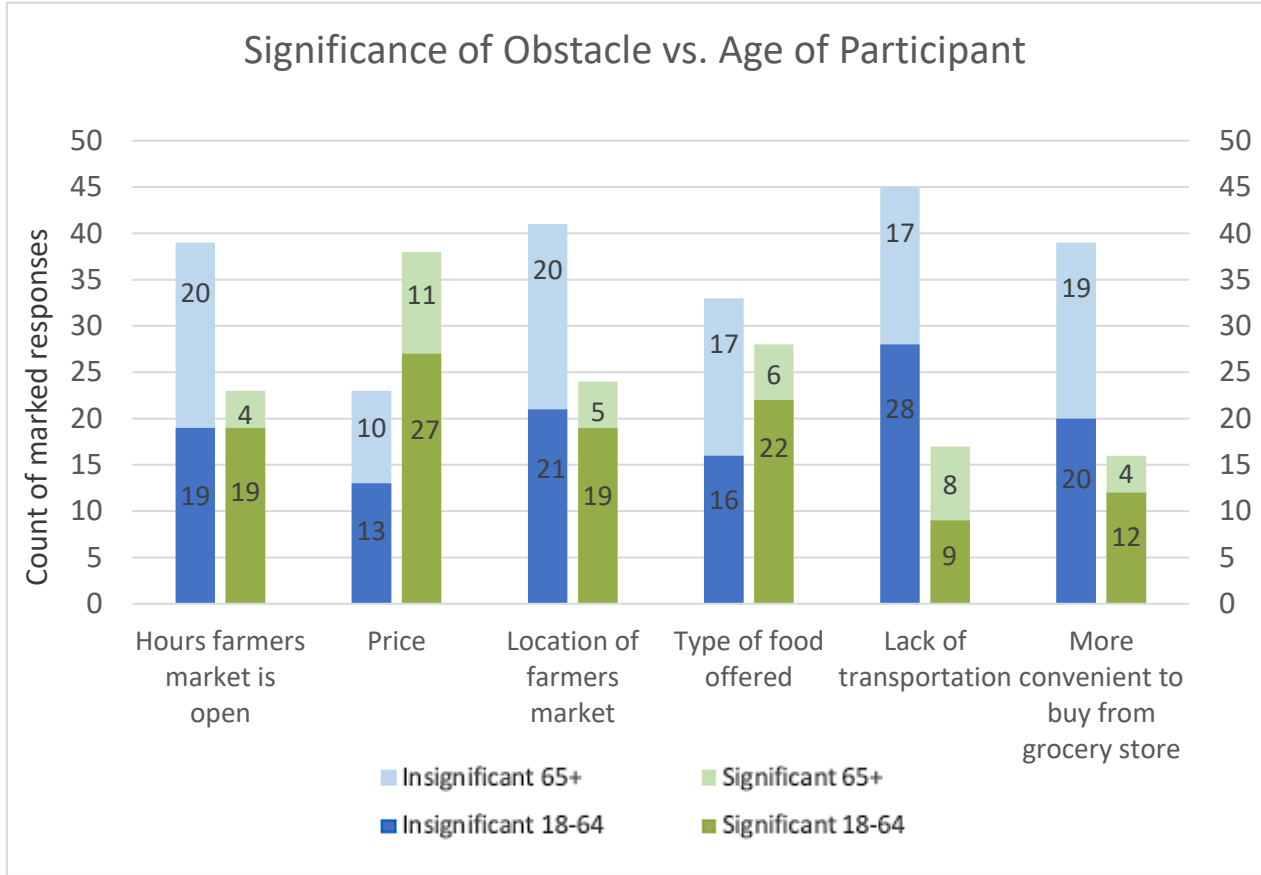
The relationship between age of DYD survey respondents on motivations of using farmers markets at eight farmers markets in Northwest Arkansas, 2019.



Note: Graph does not include 'Neutral' option choice

Figure 3

The relationship between age of DYD survey respondents and perceived obstacles to shopping at the farmers market at eight farmers markets in Northwest Arkansas, 2019.



Note: Graph does not include ‘Neutral’ option choice.

Figure 4

The relationship between age of DYD survey respondents and farmers market accessibility preferences at eight Northwest Arkansas farmers markets, 2019.

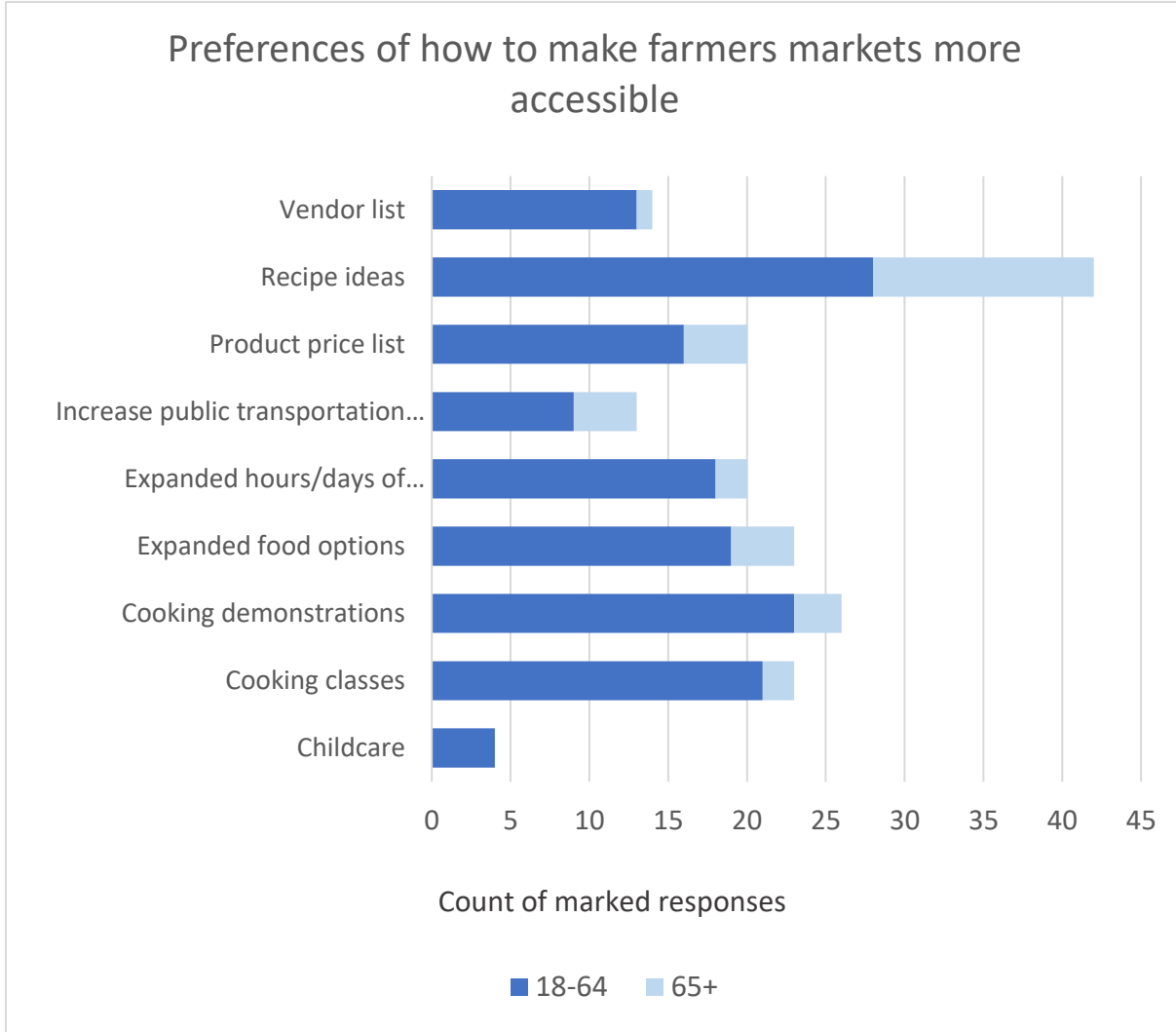


Figure 5

Allocated Double Your Dollar funds compared to total DYD funds matched to SNAP and SFMNP sales at eight Northwest Arkansas farmers markets, 2012 – 2019. DYD funds given to match SNAP dollars could be used only by SNAP recipients spending a minimum of \$10.00 per day at the market.

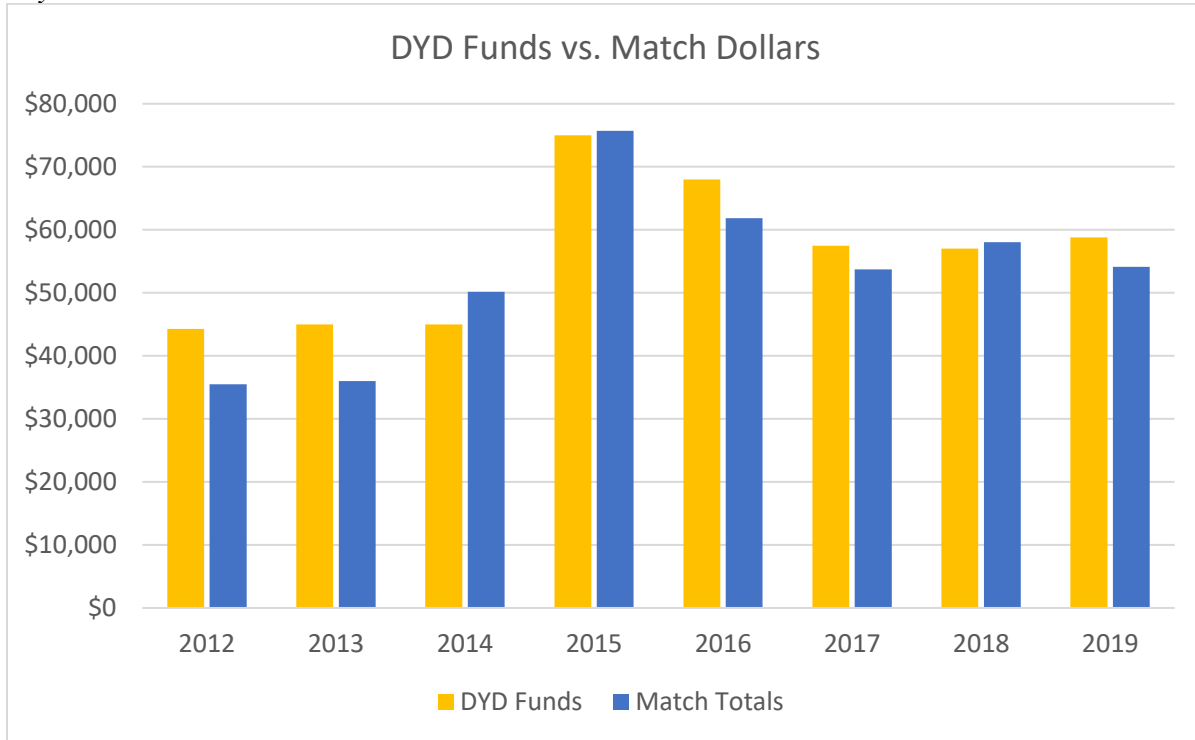
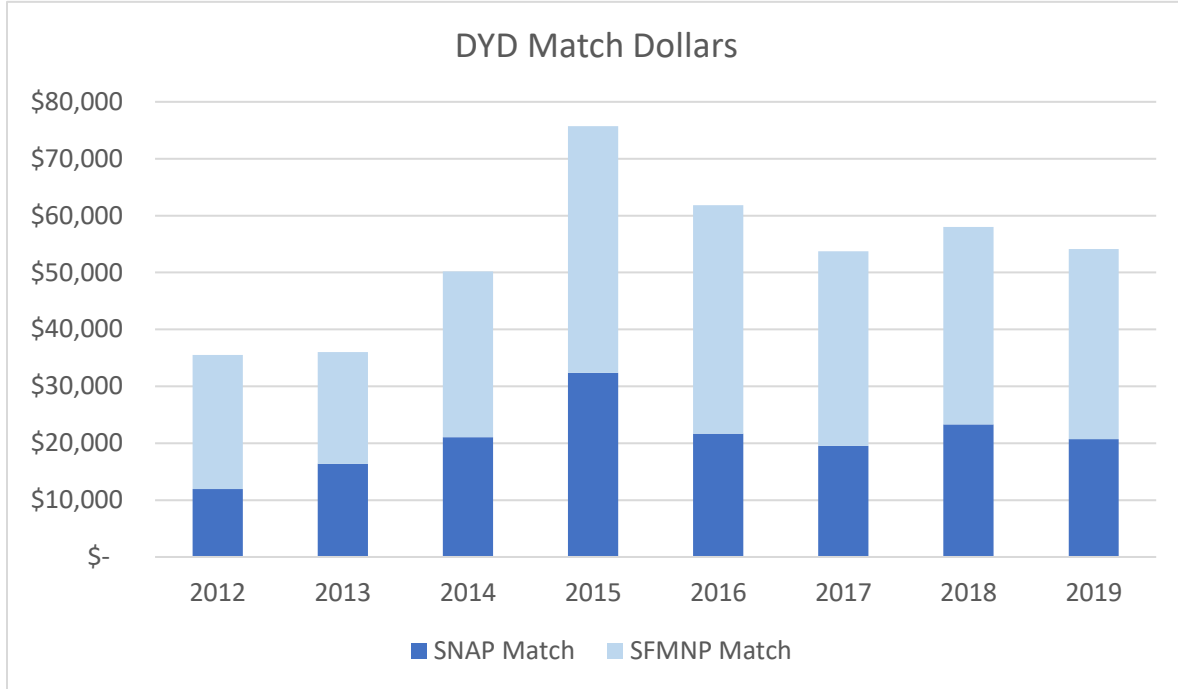


Figure 6

Double Your Dollar funds matched to SNAP expenditures and SFMNP coupons at eight Northwest Arkansas farmers markets, 2012 – 2019. D.Y.D. funds given to match SNAP dollars could be used only by SNAP recipients spending a minimum of \$10.00 per day at the market.



Appendix 1

A sample of the DYD Impact Survey used at eight Northwest Arkansas farmers markets, 2019.

Double Your Dollar Impact

The University of Arkansas Division of Agriculture is evaluating the Double Your Dollar and Senior Farmers Market Nutrition programs to support future funding of such programs. The purpose of this survey is to gauge usage of the programs and how the programs are addressing food security in Washington and Benton county.

If you are currently participating in the Double Your Dollar program, we encourage you to participate in this survey. The survey is completely anonymous. By participating in this survey, you are giving your consent for us to use your answers in our research. The survey should take approximately 10 minutes or less to complete.

This is a voluntary survey and refusing to participate will not adversely affect any other relationship with the Double Your Dollars and Senior Farmers Market Nutrition program participation, with the University or the researchers. You are free to quit the survey at any time. If you have questions about this survey please contact Heather Friedrich, at 479-575-2798 or heatherf@uark.edu. If you have questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University's IRB Compliance Coordinator, at 479-575-2208 or irb@uark.edu.

IRB# 1906201032

1. Select the category that includes your age
 - 18-24
 - 25-44
 - 45-64
 - 65+
2. Indicate your considered gender
 - Male
 - Female
 - Prefer not to respond
3. Indicate your considered ethnicity
 - American Indian or Alaskan Native
 - Asian
 - Black or African American
 - Hispanic or Latino
 - Native Hawaiian or Other Pacific Islander
 - White
 - Prefer not to respond

4. How many adults live in your household?
 - 1-2
 - 3-4
 - 5+
5. How many children live in your household?
 - 1-2
 - 3-4
 - 5+
6. Please enter your zip code
 - Open response
7. Approximately how far do you live from the farmers market?
 - Less than a mile
 - 1-3 miles
 - 4-5 miles
 - >5 miles
8. Approximately how far do you live from the nearest grocery store?
 - Less than a mile
 - 1-3 miles
 - 4-5 miles
 - >5 miles
9. Mark all other food assistance programs you are participating in.
 - WIC
 - Free or reduced school lunches
 - food pantry
 - free community meals
10. How long have you been using Double your Dollar at the farmers market?
 - 0-2 months
 - 3 months – 1 year
 - 1 – 2 years
 - 3+ years
11. How often do you use the Double your Dollar program?
 - 1-3 times per week
 - 1-2 times per month
 - 1-2 times per season
12. Where do you buy majority of your fresh produce (fruits and vegetables)?
 - Farmers market
 - Grocery stores
 - Gas station
 - Dollar store

13. What types of food do you usually purchase at the farmers market?

- Fruits
- Vegetables
- Meat
- Milk products
- Eggs
- Other (describe)

14. Since using Double your Dollar, have you noticed a difference in the type of food you buy at the farmers market? Mark all that apply.

- Yes, significantly more local produce
- Yes, significantly more local eggs, meat, dairy
- Yes, slightly more local produce
- Yes, slightly more local eggs, meat, dairy
- No, my purchases have not changed
- Additional comments

15. How significant are the following obstacles for you in buying at the farmers market. (Very insignificant, somewhat insignificant, neutral, somewhat significant, very significant)

- hours that the farmers market is open
- price
- location of farmers market
- type of food offered
- lack of transportation
- more convenient to buy frozen/canned/packaged from grocery store
- other...

16. What is your motivation for shopping at the farmers market? Indicate how significant each reason is to you for buying at the farmers market. (Very insignificant, somewhat insignificant, neutral, somewhat significant, very significant)

- support local farmers
- support local economy
- healthier options available
- Higher quality food products
- fresher food products
- medical condition
- special dietary needs
- better price
- Using double your dollar tokens
- convenience
- atmosphere/entertainment
- community engagement
- meet new people
- Other ...

17. How has the Double Your Dollar program impacted your food stability (ex. the types of food you buy, how you are able to access food, how much food you are able to purchase, quality of your food)?

- Open response

18. Do you see yourself shopping at the farmers market if the Double your Dollar program was not available?

- Yes, regularly
- Yes, less frequently though
- Maybe
- No

19. What are some ways that would make using SNAP or Double your Dollar at the farmers market easier for you? Select all that apply.

- Cooking classes
- Cooking demonstrations
- Recipe ideas
- Product price list
- Vendor list
- Childcare
- Increase public transportation options
- Expanded hours/days of operation
- Expanded food options
- Other

20. What are the main products you regularly buy at the farmers market? Select all that apply.

- Fruits
- Vegetables
- Meats
- Eggs
- Dairy
- Bread
- Honey
- Food producing plants
- Other

Appendix 2

Institutional Review Board approval of the DYD Impact Survey used for evaluation in eight Northwest Arkansas farmers markets, 2019.



To: Heather Friedrich
PTSC 305

From: Chair, Douglas James Adams
IRB Committee

Date: 06/24/2019

Action: **Specific Minor Revisions Required**

Action Date: 06/24/2019

Protocol #: 1906201032

Study Title: Impact of the Double Your Dollar project.

The IRB Committee that oversees research with human subjects reviewed the above-mentioned protocol and determined that specific minor revisions are required. These revisions are noted below. If you agree with all of the committee's revisions, incorporate them in a revised protocol and/or consent form and submit it to the IRB Committee for expeditious review. If you disagree with the committee's recommendations, you may do the following: Please justify to the IRB Committee why the revisions should not be incorporated.

Correspondence Notes:

- Please add contact information for the IRB to your consent form, as follows, "If you have questions or concerns about your rights as a research participant, please contact Ro Windwalker, the University's IRB Compliance Coordinator, at 479-575-2208 or irb@uark.edu."
- You cannot survey minors without parental/guardian consent, so please remove the Under 18 category from your survey demographics and change the second age category to be 18-24 rather than 19-24.

cc: Curt R Rom, Investigator
Mechelle Bailey, Investigator

Appendix 3

Summary demographic information of DYD users surveyed in eight Northwest Arkansas farmers markets, 2019.

Double Your Dollar Impact

Q1 - Select the category that includes your age

Option #	Answer	%	Count
1	18-24	2.50%	2
2	25-44	28.75%	23
3	45-64	30.00%	24
4	65+	38.75%	31
	Total	100%	80

Q2 - Indicate your considered gender

Option #	Answer	%	Count
1	Male	12.50%	10
2	Female	85.00%	68
3	Prefer not to respond	2.50%	2
	Total	100%	80

Q3 - Indicate your considered ethnicity

Option #	Answer	%	Count
1	American Indian or Alaskan Native	2.50%	2
2	Asian	0.00%	0
3	Black or African American	3.75%	3
4	Hispanic or Latino	6.25%	5
5	Native Hawaiian or Other Pacific Islander	0.00%	0
6	White	78.75%	63
7	Prefer not to respond	8.75%	7
	Total	100%	80

Q4 - How many adults live in your household?

Option #	Answer	%	Count
1	1-2	87.50%	70
2	3-4	10.00%	8
3	5+	2.50%	2
	Total	100%	80

Q5 - How many children live in your household?

#	Answer	%	Count
1	0	58.18%	32
2	1-2	32.73%	18
3	3-4	5.45%	3
4	5+	3.64%	2
	Total	100%	55

Q6 - Approximately how far do you live from the farmers market?

#	Answer	%	Count
1	Less than a mile	22.78%	18
2	1-3 miles	34.18%	27
3	4-5 miles	17.72%	14
4	>5 miles	25.32%	20
	Total	100%	79

Q7 - Approximately how far do you live from the nearest grocery store?

#	Answer	%	Count
1	Less than a mile	32.50%	26
2	1-3 miles	48.75%	39
3	4-5 miles	8.75%	7
4	>5 miles	10.00%	8
	Total	100%	80