MARKETING ANALYSIS ON THE VIABILITY OF A LOCAL FOOD CENTER: EXPERIMENTAL EVIDENCE FROM ARIZONA

by

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Dedication

I am dedicating my thesis to my family, who have always provided me the positive support, financially and mentally. My mother and father have been a lifelong role model of perseverance and breaking out the adversity. They are both the elderly sibling in their born family and sacrificed their education to support their family. As a result, they have always encouraged me to achieve higher education but also pushed me forward on finding my own path. They have taught me the importance of integrity, being humble, never giving up, and following my own interests as living in others' expectation will not help you get through the challenging period. Thank you, mommy, for providing me the mental support and the great example of nothing is impossible. Thank you, daddy, for creating the circumstance on solving my problem by myself and cultivating me as an independent individual who can think of solutions before frustration set in. I could never have completed this thesis without your support, encouragement, and love.

Table of Contents

Abstract

This study analyzes the willingness to pay for different product-oriented and store-oriented attributes of food shopping outlets. It also evaluates the viability of a Local Food Center (LFC) in the remote areas in the United States, such as Yavapai County in Arizona State. For the purpose, a survey experiment has been designed by use with the randomization on discrete choice sets and prize drawing selection and was distributed by Yavapai County Cooperative Extension under College of Agricultural and Life Science in University of Arizona and Prescott Farmers Market group. The same survey was collected with the paper version from on-site farmers markets, other locations, and online platform through social media and local community email lists. Marginal propensity to consume model, probit prize drawing model and bivariate panel discrete choice model are employed in this paper. The result suggested that consumers rely on grocery type of stores and supermarkets as the primary food-at-home source and farmers market frequent shoppers are less price sensitive with a relatively fixed budget on food-at-home expenditure. The prize drawing model has proposed a 16.67% discount rate between prize for farmers markets and prize for grocery stores or supermarkets. The last but not the least, the willingness to pay are highest for a mix basket of local and non-local U.S. only products and purchasing from the outlets with producers' description and photos. Our findings indicate that LFC is only viable if they can reach to consumers at-large, increase the variety of the products, and be price competitive to grocery type of stores.

Chapter I. Introduction

According to the 2015 Local Food Marketing Practices Survey, 167,000 U.S. farms produced for local markets and sold food through direct marketing practices (including direct-to-consumer; direct-to-retailers; direct-to-institution and intermediary business), resulting in $8.7 billion in revenue (U.S. Department of Agriculture [USDA], National Agricultural Statistics Service [NASS], 2017). Pennsylvania led the U.S. in the number of farms selling directly to consumers (over 6,000 operations) while California led in sales with $467 million sales. The survey indicated that more than 80% of all direct market food sales occur within 100 miles of the farm.

Farmers produced and sold around $3 billion in edible food products direct to consumers and 23% of the sales were from "Farmers' Market" (USDA NASS, 2016). This is over a 130.7% growth in direct-to-consumer food sales since 2012 (USDA NASS, 2014). Although "direct-to-consumer" food sales only accounted for 35% of all direct farm sales in 2015, the impact of direct-to-consumer food sales is widespread from higher profit margin to producers (Govindasamy, Hossain, and Adelaja, 1999), community interaction (Hunt, 2007); in addition, according to Hughes, Brown, Miller, and McConnell (2008), the comprehensive type of Farmer's Markets not only is beneficial to local economies in the sense of promoting local food sales but also attracting with distanced tourists/consumers.

Farmers Markets can be especially important for rural areas that often serve as the major marketplace for small farms. Although it is essential to understand what consumers and producers need to improve their current local markets, current studies on direct-to-consumer sales have three fundamental issues:

1) Many consumer surveys on agricultural products from USDA are aggregated into region or national level which have under/over-estimate those states

where they did not receive response. Arizona is often considered as a part of "West" Region in both consumer and producer studies from USDA where it is generally overestimating the situation in Arizona since California has skewed the information.

2) The distribution of direct-to-consumer food sales is not evenly distributed in space for both number of outlets and sales per capita (*see Figure 1-1*). It is particularly difficult to understand the consumer preference and producer supply situation on the direct-to-consumer sales in small area like Yavapai County based on the current studies.

3) Some smaller scale consumer preference studies focused on the West have been conducted by researchers from different Educational Institutions and Government Bureaus. However, most of the studies only targeted on consumers who visited direct food sales in regular base; only acquired their respondents from the online platform; or only obtained their information from those who participated in certain private data pool. A comprehensive and targeted experiment studies can enhance the understanding of current direct-to-consumer food sales situation in Yavapai County.

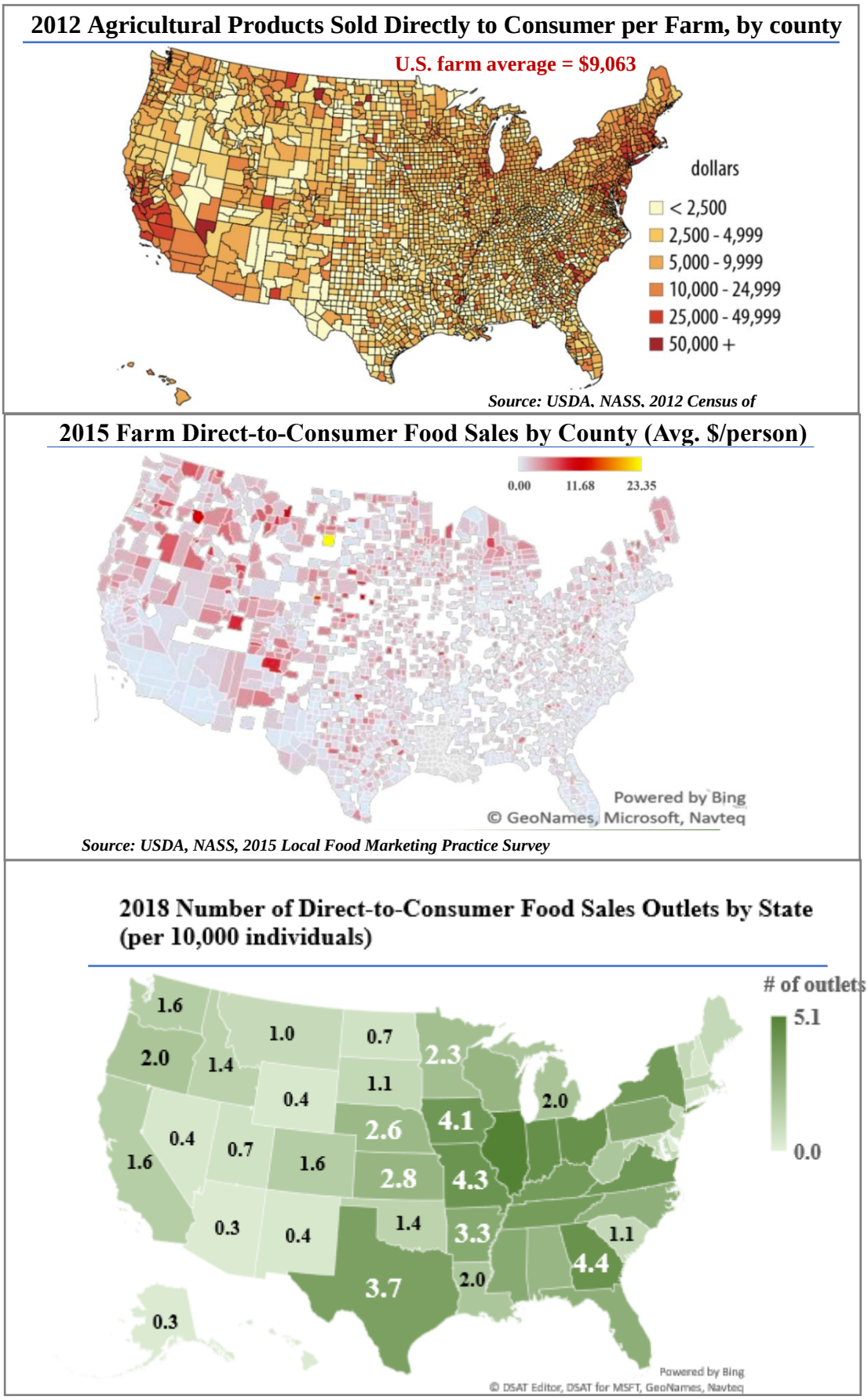


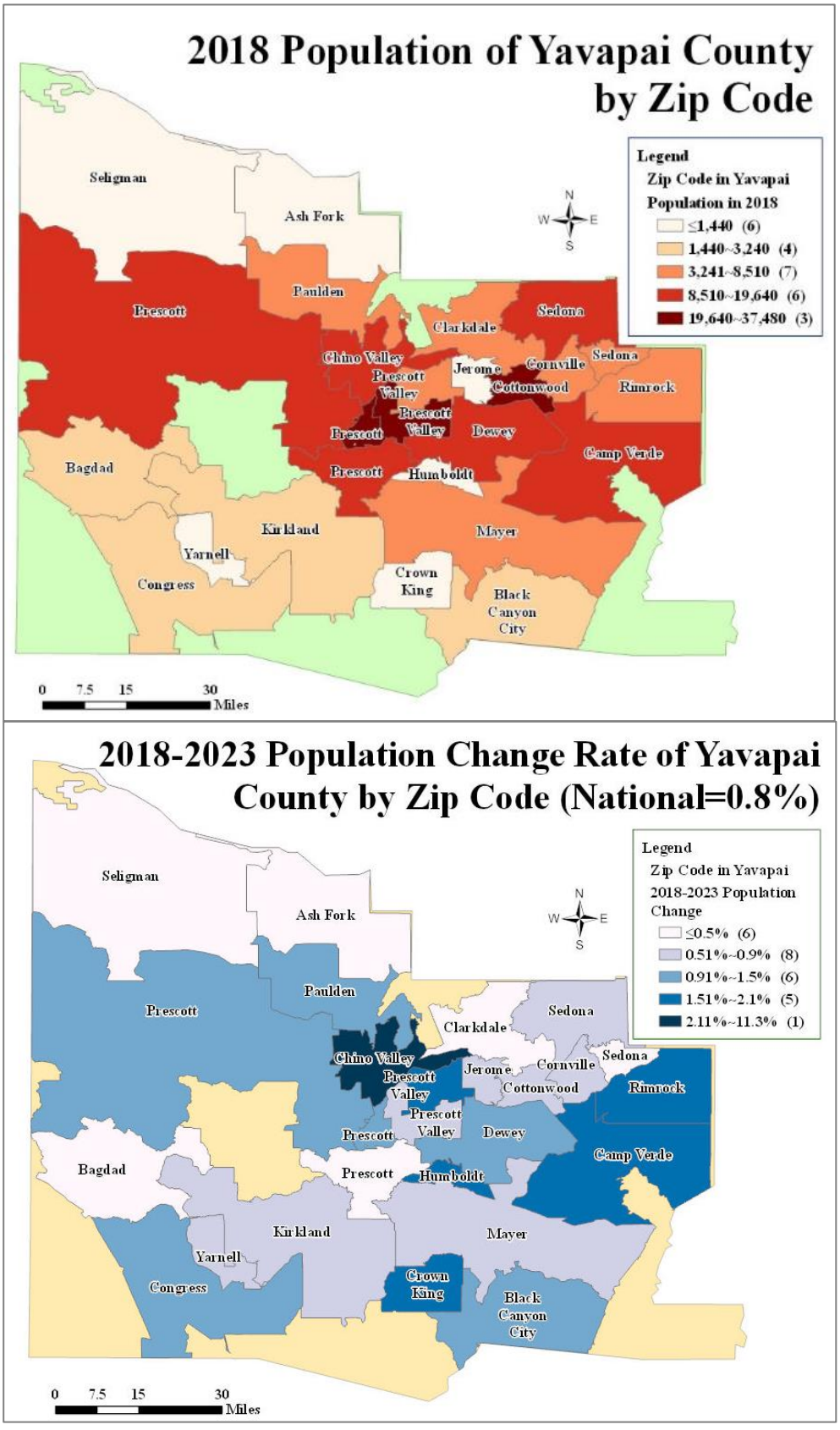
Figure 1-0-1. Map of Direct-to-Consumer Food Sales by sales per county, by sales per capita in county level, and by outlets per state

Yavapai County is in North Central Arizona which is roughly the size of New Jersey with a population of approximately 234,261 residents and is expected to increase by 1.9% annually by 2023 (*see Figure 1-2 & Table 1-1 for information about Yavapai County*). The county is predominantly rural with the urban centers of Prescott and Prescott Valley accounting for nearly 79,000 (37.4% of total Yavapai Population) people. In Table A below, we see that Yavapai County has a greater retired age population, lower median income, higher education attainment, higher unemployment rate, and fewer nutrition program participant compared with the state of Arizona and the US. These differences create a barrier for directly implementing existing consumer studies with aggregated geographic results. The comparison on demographics illustrates the fundamental needs of specialized studies that can improve the understanding of consumers in Yavapai County.

Table 1-0-1. 2017 Demographic Comparison (National vs. Arizona vs. Yavapai)

	National	Arizona	Yavapai
Population (2017 Census)	325,719,178	7,016,270	228,168
Population Growth Rate (2018-2023)	0.8%	1.4%	1.9%
Median Age	38.1	37.7	53.6
Median Household Income	$60,336	$56,581	$50,041
% of Child in Household (age < 18)	31.7%	31.2%	20.3%
Have Some College or above degree	59.5%	61.9%	64.5%
Unemployment Rate (only include age > 16)	5.3%	5.8%	6%
% Household Participant in SNAP (2017 Average)	11.7%	10.8%	8.5%

Figure 1-0-2. The Population in 2018 and 2018-2023 Population Change Rate by Zip Code in Yavapai County



Yavapai County has many small fresh and processed food producers within their local economy. As these producers are not producing enough quality and quantity to supply year-round to the chain food outlets, existing Prescott Farmers Market Group has provided a viable marketplace that allows these small producers to advertise their products to more consumers. However, these businesses can use additional innovations of direct-to-consumer food sales to capture more sales. The Local Food Center Feasibility Study seeks to analyze the demand for local foods from consumers and local restaurants and the supply schedule from the existing Farmers Market Vendors to determine the best framework for direct-to-consumer sales that fulfill the objective of operating a business that provides social impact and can co-exist with the original farmers markets (*see Figure 1-D.*).

Agricultural Marketing Service (AMS) under USDA has categorized Local Food Directories that include:

- **Farmers' Markets**
- **On-Farm Sales**
- **Community Supported Agriculture (CSA)**
- **Food Hubs**

On the other hand, the 2015 Local Food Marketing Practices Survey conducted by National Agricultural Statistic Service (NASS) under USDA has summarized 6 direct-to-consumer food sales outlets that include:

- **Farmers Markets**
- **On-Farm Sales**
- **Roadside Stand away from farm**
- **Community Supported Agriculture (CSA)**
- **Online**

- **Other (Agritourism; Mobile App…etc.)**

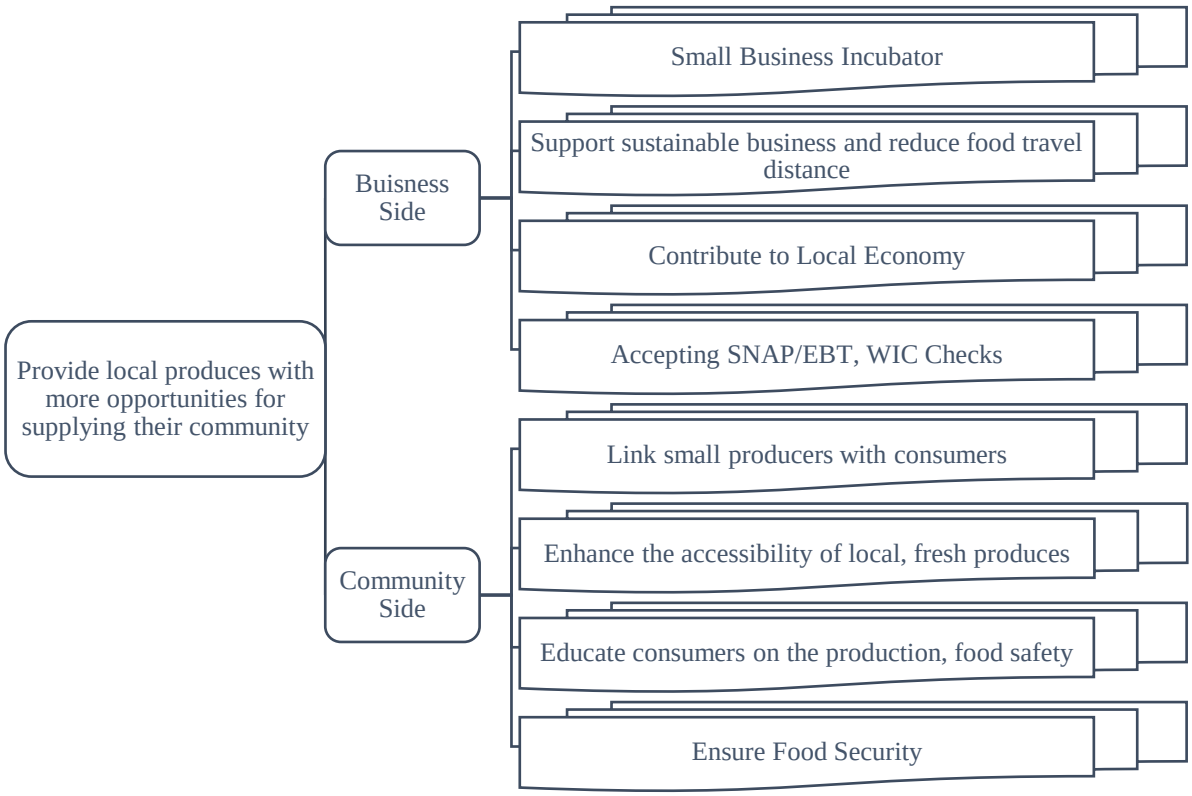


Figure 1-0-3. Local Food Center Objectives
(For more details, please visit: https://www.prescottfarmersmarket.org/about/)

However, almost all these direct-to-consumer food sales outlets are sophisticated for obtaining their economic value as the scales are usually independent and small next to Farmers Markets. Therefore, in this feasibility study, we will only consider the farmers markets as a regular base food shopping outlet which the result in this study is subject to ignore the purchasing behavior in other direct-to-consumer food sales outlets.

A goal of building a Local Food Center is to provide more viable market opportunities for small producers in Yavapai County; therefore, the ideal Local Food Center should provide the following features:

I. Sufficient hours of operation

II. Reduce the cost of producers/vendors on marketing their products by themselves

III. Capture more potential consumers that may not be shopping at the farmers markets

IV. Maintain a more sustainable supply schedule

V. Serve as a hub that connects producers/vendors with local food providers (restaurants)

VI. Provide a marketplace for residents to learn more about their food

As a result, the Local Food Center will need to be innovative and perhaps move toward a grocery store instead of only a traditional direct-to-consumer sales outlets. Enough local consumers may not be willing to purchase local foods from the Local Food Center since it will co-exist with the original farmer markets. Expanding sales to Local Restaurants is another focus of the Local Food Center. Therefore, it is important to learn what kind of shopping environments and attributes consumers prefer to spend their food expenditure budget on and what attributes consumers/ local restaurants desire when choosing where to shop for groceries/ ingredients.

Chapter II. Literature Review and Background

Although farmers markets only account for 23% of sales for total direct-to-consumer food sales (USDA NASS, 2016), farmers markets are a relatively solid marketplace where consumers can treat them as a place to acquire their basket of goods for groceries compared to other direct-to-consumer food sales outlets. Therefore, the most significant elements in learning the food sales of farmers' market from the consumer side can be summarized into five areas: 1) The proportion of the basket of good that are from farmers' markets; 2) Characteristic of the current consumers that shop at farmers markets; 3) The marginal propensity to consume at farmers' market if a consumer increase their spending by $1; 4) Competitors of farmers' markets; and 5) Consumer preferences and willingness to trade-off for food purchasing. Competitors for farmers' market are not other farmers' market in our study since all the farmers' market in Yavapai County are operated through same institution. The competitors that we defined for farmers' market food sales are other marketplace that consumers can purchase groceries, including grocery stores (e.g. WholeFoods, Trader Joe's, and Sprouts), Supermarkets (e.g. Fry's, Safeway), and Supercenters (e.g. Walmart, Costco).

There are several methods to answer the five aspects, such as integrated information from the Census and other reliable sources, scanned data from farmers' markets, consumer surveys and questionnaires, interviews on targeted consumers, on-site experiment and so on. We chose to use the consumer survey and questionnaire method based on the feasibility and budget constraint to obtain the stated preference from consumers.

There is a substantial literature on learning the attributes of the consumer on food purchasing behavior. Table 2-1 below has briefly summarized the selection of farmers'

market Studies that focused on consumer behavior during the past decade.

Table 2-0-1. The Selection of Studies on Consumer Perspective in the last decade

Authors	Research Topic	Year	Data Collection
Wolf, Spittler & Ahern	Profile of Farmers' Market Consumers (Case of San Luis Obispo County, California)	2005	Personal interview with consumers
Hunt	Consumer Interaction and Influences on Farmers' Market Vendors (Case of Maine)	2007	On-Site on Consumers and Producers
Lev & Stephenson	Strengthening Farmers' Markets (Case of Oregon)	2008	On-site Dot Survey on Consumers
Baker, Hamshaw, & Kolodinsky	Characteristic of Consumers in Farmers' Market (Case of Northwestern Vermont)	2009	On-Site Consumer Questionnaire
Fleischmann *et al.*	Farmers Markets and Social Media (Case of Missouri)	2010	Online Consumer Questionnaire
Ragland, Lakins, & Coleman	Result of dot survey in Farmers' Market (Case of D.C. Washington)	2011	On-site Dot Survey on Consumers
Freedman *et al.*	Farmers' Market Use Patterns Among SNAP Recipients (Case of Cleveland, Ohio)	2015	On-site/ telephone Consumer Survey

In Wolf (2005), they only compared attributes between farmers' market consumers to other consumers and concluded that they were more likely to be a married female with post graduate work who care about quality and frequently cook at home. Moreover, consumers perceive farmers' market as a marketplace to seek locally grown, fresh, high-quality, traceability but lack of convenience. On the other hand, Lev (2008) proposed the Rapid Market Assessments (RMA) method for individual local farmers' market to understand consumer preference through the simple and interactive dot survey. In addition, most of the consumers in the farmers' Market would increase their spending if the market offers more organic products. The TJH Research and Strategy (2011) using questionnaires and Richard (2017) using scanned data from local

supermarket both found that household would like to include local food products in their basket of food consumption. One of a latest published paper in Total Quality Management adopted both paper questionnaire and web-interviewing to collect responses from Italian young adults on their attitude to food quality; however, they did not analyze them separately (Savelli et al., 2017).

Although the literature has already provided us outlines of farmers' market consumer in different location, most of them do not have in-depth analysis. The critical issue here can be concluded as: 1) Limited in question type - On-site Survey and Interview is costly, 2) Qualitative question – dot survey can provide great responses rate but only for qualitative question, and 3) Lack of the distinguishing between consumers who frequent shoppers in Farmers' Market to those are who visit occasionally. It is hard to measure if the responses are affected by the interviewers (Duffy et al., 2005). A comprehensive questionnaire that is distributed through on online platform with quantitative questions can enlarge the sample size with a relatively low cost (Duffy et al., 2005); however, as anyone can reach an online survey platform, the online platform has little control on who fill in the questionnaire.

As a result, we will focus on comparing the responses from both On-Site (including in farmers' market and in other location) and Social Media (Online Questionnaire that distributed through social media) for the food purchasing behavior in Yavapai County during the same time period and perform a more quantitative analysis on farmers' market consumers' food purchasing behavior, spending and travel distance to farmers' market, and preference.

Chapter III. Study Design

In considering the feasibility of a LFC, we have segmented the analysis into 3 parts as the diagram in *Figure 3-1 shows*.

Figure 3-0-1. Feasibility Study Design Diagram

The Consumer and Local Restaurant studies are designed to understand the demand for fresh produce and consumer preferences of Yavapai County consumers. In addition, one of the goals of the LFC is to increase the marketing visibility for small producers with individual consumers and not just households. The Local Food Center aims to extend their customers to local food providers, such as restaurants. However, the preferences and tastes of consumers and restaurants can be different, so we also include results of a "Local Restaurant Study" from questionnaire responses collected from several local restaurant owners to understand what triggers can be designed to place local food products into their supply chain.

On the other hand, a Local Food Center is unlike traditional Farmers Markets where small producers only need to bring their available produce to the market without considering the quantity and diversity of their produce. A Local Food Center will need to supply products year-round to maintain their operations. Subsequently, we need to learn the capacity and needs of the small producers for facilities, transportation, storage, and production schedules to fulfill the goal of providing fresh local food year-round.

3-1. Consumer Study

Few consumer studies on consumer attributes of fresh produce have focused on residents of Yavapai County, or even Arizona. Thus, we conduct a comprehensive consumer study that can reveal the preferences and tastes of consumers in Yavapai County in order to learn about the feasibility of a Local Food Center. According to estimates from the 2017 American Community Survey, there are around 98,369 households in Yavapai County. It is not feasible to collect the consumer perspective for all households and even interviewing selected households may also be inefficient as the data collection costs are relatively high given the number of respondents is small. As a result, we have distributed questionnaires to multiple audiences as a more cost-efficient method, and one that is a common research tool used for consumer studies using stated preferences.

The consumer study is intended to learn what consumers prefer in their shopping environment so that a Local Food Center can attract both Farmers Market and non-Farmers Market shoppers. Therefore, the consumer experiment and analysis need to fulfill several fundamental directions as listed below:

- Reach potential new consumers, such as those who are not frequent Farmers Market Shoppers.
- Understand Consumer Food Purchasing Behaviors.
- Obtain the preferences and tastes of consumers regarding their decisions on choosing a food shopping outlet for their grocery purchases.
- Collect the asymptotically true spending for different types of food shopping outlets and their travel distances to these outlets

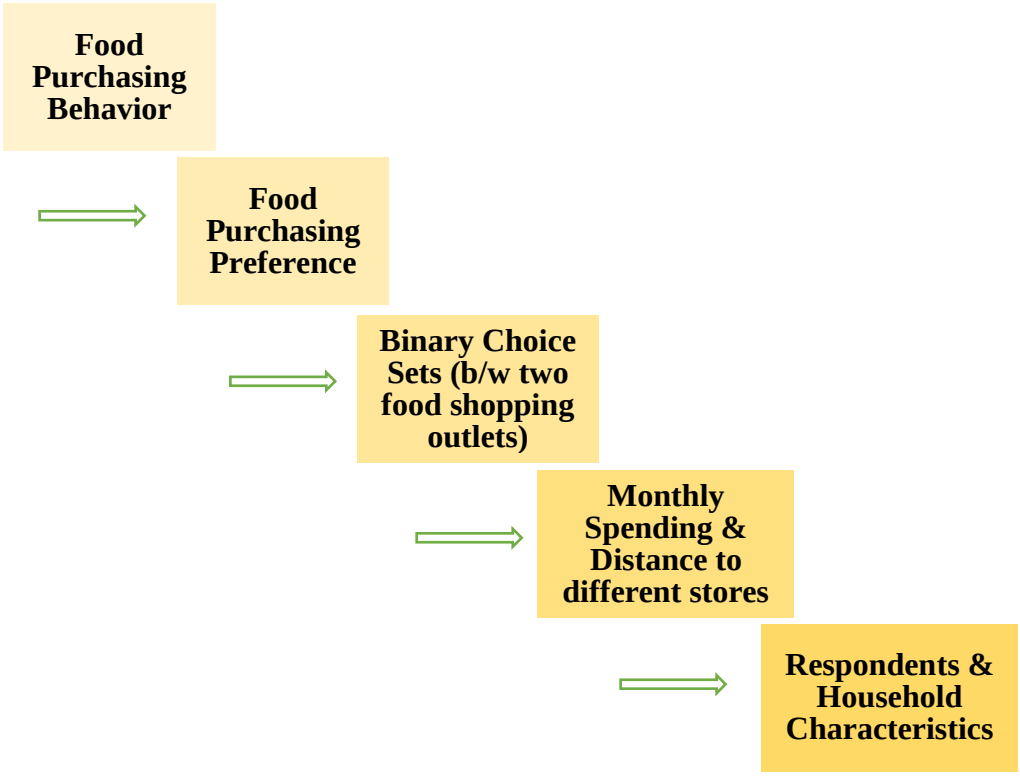


Figure 3-1-1. Questionnaire Design for Consumer Study

The survey experiment has both paper and online questionnaires that contain 5 sections for respondents to answer (*see Figure 3-1-1*). These questions included single choice, multiple choice, binary choice sets and short answers, which allows us to avoid invalid responses of only using a single choice design where respondents can possibly hide their true preferences. *(please see Appendix A. for the example of questionnaire)*

Our survey experiment has two stages: 1) questionnaires are collected from multiple locations and 2) consumers receive different questionnaire versions where they are presented with different binary choice sets on food shopping attributes and environments.

First, since one of the goals for the Local Food Center is to expand local sales by marketing produce to more potential consumers, learning consumer attitudes from only

those who currently shop farmers markets is insufficient. Several studies have found that farmers markets consumers are more likely to be married, female, have a post graduate degree, value quality, and frequently cook at home (Wolf et al.,2005). They are concerned about locally grown, high-quality, traceability over convenience and they are willing to pay premium for local, fresh, and organic produce (Lev, 2008). Therefore, it is not rational to adopt the responses from just farmers markets shoppers for all Yavapai County consumers since both their demographic and food purchasing preferences are not representative for other shoppers. This leads us to the primary stage of the survey experiment where we distribute the survey not only at Prescott Farmers Market locations, but also some local food service stores and public places. In addition, since in-person paper questionnaires are relatively costly to conduct and input data for compared to an online questionnaire, we also use an online questionnaire that has the same questions as the paper version. A web-based survey is low-cost, widespread, less affected by personnel (Duffy et al., 2005), easily capable of multiple attempts, and less prone to have non-valid responses (Kraut et al., 2004). However, sampling and mode effect are highly critical to the credibility of an online survey. We believe that we can minimize the biases on both paper and online responses in our survey experiment by having responses from different locations and survey modes. In this feasibility study, responses are collected through in-person solicitation at Farmers Markets, in-person

solicitation at all non-Farmers Market locations, and the online questionnaire. We analyze the results both together and separately to make better insights regarding the design of a Local Food Center that will attract shoppers from different demographics and preferences.

Second, there are several distinguished methods to discover consumer preferences and tastes, such as stated preference, revealed preference and lab experiments. Revealed preference and lab experiments are relatively labor and capital intensive whereas stated preferences can be simply acquired from a questionnaire. However, the critique of stated preference is that respondents generally overstated their preference when answering a question without having to use money from their wallet as in purchasing from a Local Food Center. As a result, we utilize "Binary Choice Sets" to avoid the overstated situation from the traditional single and multiple-choice question. Binary Choice is a survey design technique where we randomly/non-randomly varied the values of some selected attributes and ask respondents to choose between two possible situations. In our consumer study, we built two food shopping outlets with different product or store attributes in a single choice set and ask respondents to select the food shopping outlet they would purchase their grocery from (*see Table 3-1-1.*).

Table 3-1-1. Example of Binary Choice Set

	Shopping Environment A	Shopping Environment B
Production Method	• Certified Organic	• Conventional (may include GMO)
Sales Type	• Buy directly from growers • Have grower photos & short description of farm • Have Special Products*	• Buy directly from shelf • no information on growers or farms
Hour of operation	• Open only on Saturday • 6 a.m. – noon	• Open everyday • 24 hours
Price/basket**	$ 33	$ 20
Select A or B	Choice A ▫	Choice B ▫

* Special Products, such as Sweet White Corn, Fresh Apricots…etc.
** A typical shopping basket includes 5 fresh fruits and/or vegetables (approximately 5 lbs.), 1 lb. of ground beef, and 1 dozen chicken eggs

There are 6 different attributes and each attribute can take multiple values. In some cases, only one attribute is different in two hypothetical food shopping outlets, as will be shown on the choice set *(see Table 3-1-2)*. However, price is one of the attributes that is provided through all the choice sets since price is the necessary attribute for valuing each set of attributes and everyone is required to purchase their groceries with their wallet. The purpose of this design is to mimic the food shopping environment to understand the decision of trading off the price with other attributes. The price in the choice set is for a typical food shopping basket which includes 5 pounds of fresh fruits and vegetables, 1 pound of ground beef and 1 dozen eggs (*see Appendix B.*).

Table 3-1-2. Attributes and its Possible Value in the Binary Choice Sets

Attributes	Possible Value
Origin & Availability	• Non-local products (including foreign products), available year round • Non-local products only from U.S., available year round • In season local products with limited verities and quantities + Non-local products (including foreign products) • In season local with limited varieties and quantities + Non-local products only from U.S. • In season local products with limited varieties and quantities
Production Method	• Conventional (may include GMO products) • Non-GMO products • Synthetics pesticides & hormone free • Grown with organic method • Certified organic products
Sales Type	• Buy directly from shelf • Buy directly from shelf + Have Special Products *(see Appendix B.)*

	• Buy directly from shelf + Have growers' photos & short description of farm • Buy directly from shelf + Have grower's photos & short description of farm + Have special products • Buy directly from growers + Have grower's photos & short description of farm + Have special products
Hours of Operation	• Open only on Saturday from 6 a.m. to noon • Open from Monday to Friday, 10 a.m. to 6 p.m. • Open Every day from 6 a.m. to 11 p.m. • Open Every day, 24 hours
Location	• Within walking distance • Within 2 miles drive • Within 5 miles drive • More than 10 miles drive
Price	• $14 (mimic on purchasing the basket of good in large supercenters) • $18 (mimic on purchasing the basket of good in chain supermarkets) • $20 (mimic on purchasing the basket of good in chain grocery stores) • $28 (mimic on purchasing the basket of good in Farmers Markets) • $33 (mimic on purchasing the basket of good in Organic Grocery Stores)

From Table 3-1-2. above, there are over 1000 possible unique ways to compose two different food shopping outlets. Thus, decisions on what combinations to show need to be made. Any questionnaire that is very long becomes relatively challenging to complete for respondents. As a result, we built 40 different choice sets that are representative for common shopping environments (i.e., grocery store, supercenter, etc.) and randomly choose 5 choice sets in each questionnaire. In total we utilized, 16 different questionnaire versions with the same choice set questions (*see Figure 3-1D.*).

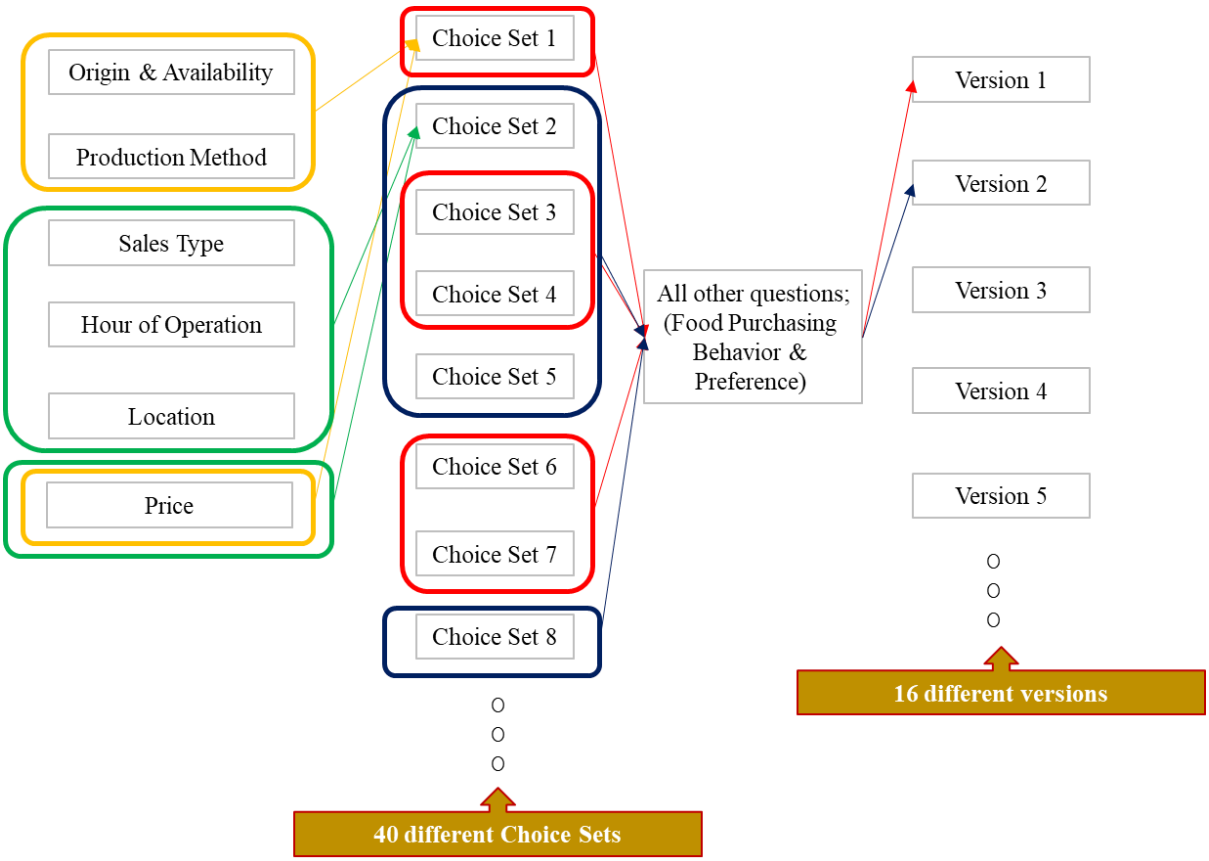


Figure 3-1D. Diagram of the Randomization of the Version of Questionnaire

At the end of the questionnaire, we have provided a prize option for the respondents where they can choose to enter a drawing of a gift certificate or not participate. The gift certificate included "$150 gift certificate to Farmers Market" or various amount **($125, $100, $75, $50)** of gift certificate to Trader Joe's or Fry's depending on the version of questionnaire. The prize not only served as an incentive for respondents to complete the questionnaire, but also served as the proxy of revealed preferences between farmers' markets, grocery stores, and supermarkets. The combination of binary choice sets and the choice between different prize drawings are designed to overcome the overestimating problem associated with questionnaire

responses. That is, respondents may express that they prefer fresh, local and organic food, but generally select the food shopping outlet that provides conventional grown produce and no information regarding the grower since the outlet is closer and cheaper.

In our study, we have asked the zip code of respondents and collected their GPS coordinate location from the online survey platform. We found that the location can be quite different from where they filled the survey to their reported zip code (*See Figure 3-1E)*. The reason behind the huge difference from where they took the survey and their zip code (Home address) can be summarized for the following 3 reasons:

1) The respondents were traveling since they can access to the survey as long as they have internet

2) Their work place is located at a different area from their home (less likely to have the situation of different county and state)

3) the GPS coordinate is incorrect.

As our survey is a one-time collection, there is no way that we can verify each response. However, this finding has provided us a great insight that neither the online platform nor self-reported information is absolute perfect. Cross validation is needed to ensure the quality of the data. However, zip code is an aggregated geographic level using 5 digits number where

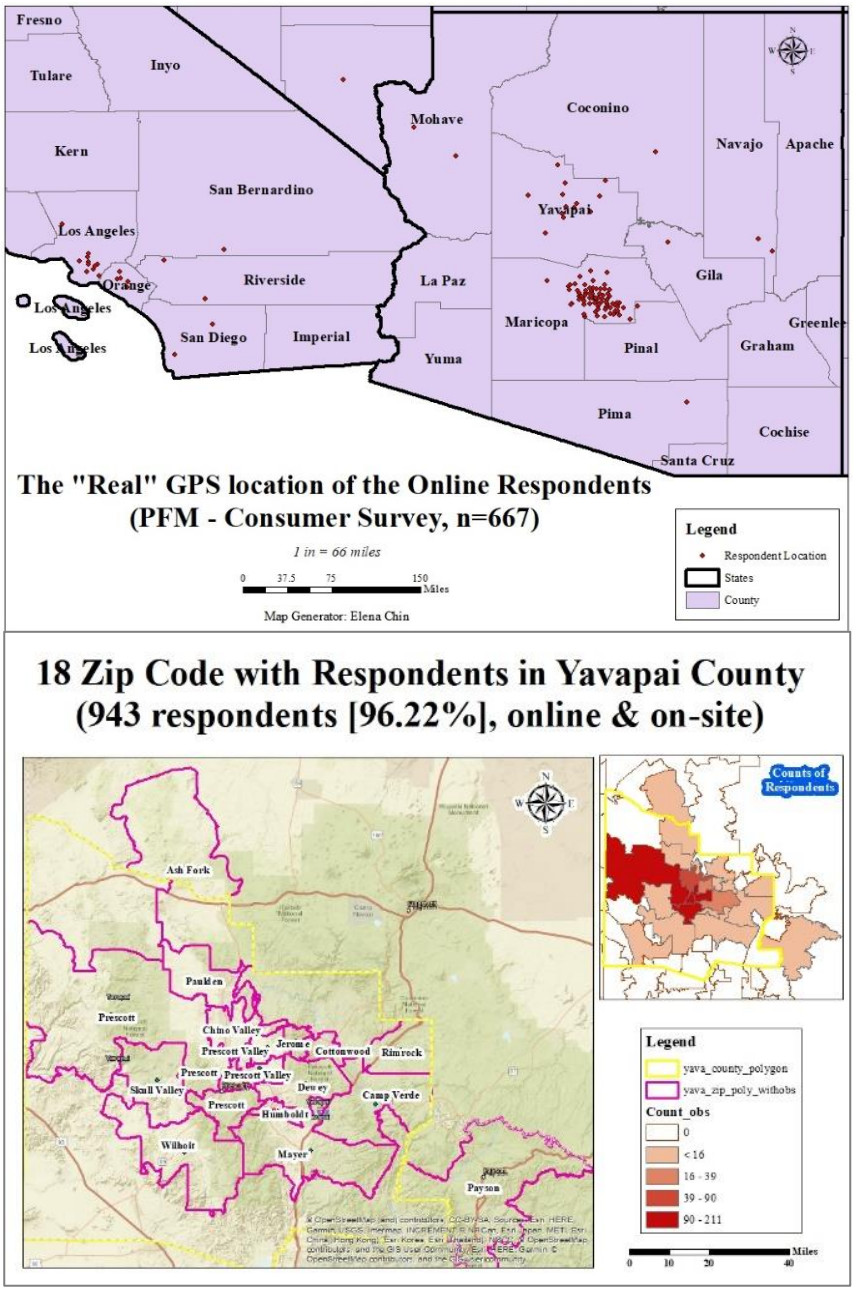


Figure 3-1E. GPS Coordinate Locator Map (Top) & Zip Code Locator Map (Bottom)

3-2. Local Restaurant Study

One of the goals for the Local Food Center is to provide a hub that can integrate the local food supply chain for small producers and small food service providers. As we have discussed in the beginning of this chapter, the demand and preference for small food service providers can be significantly different from individual consumers and households. We cannot simply implement the result from the consumer study and believe that it can also attract local food service providers that would continuously consider the Local Food Center as their supplier. The specific and simple design of a Local Restaurant Survey can provide insights on both understanding what triggers a Local Food Center and how to promote that there is an upcoming Local Food Center in town. In addition, small producers who currently supply to the Prescott Farmers Markets are mainly small-scale producers and only a few of them have the experience of supplying to a local food service provider.

Although it is feasible to conduct the interview type of research on Local Restaurants since their numbers are smaller, we decided to design a questionnaire as with the Consumer Study for consistency. In addition, since we did not reside in the county, labor and capital are intensive and not all the local restaurants may be friendly to the idea of purchasing from local producers. We think they are more likely to convey

their negatives of purchasing from a Local Food Center with a questionnaire than an interview as well.

The purpose of the Local Restaurant Study part is to learn how feasible it is for a Local Food Center to become a hub to link the small producers to local restaurants and the reason that local restaurants are not already purchasing from local producers. Therefore, the questionnaire needs to fulfill several fundamental functions as listed below:

- Provide information on Local Producers and the Local Food Center.
- Realize current competitors.
- Understand the reason(s) that Local Restaurants do not already purchase from local producers.
- Obtain the general attitude and preferences from Local Restaurants toward the idea of a Local Food Center.

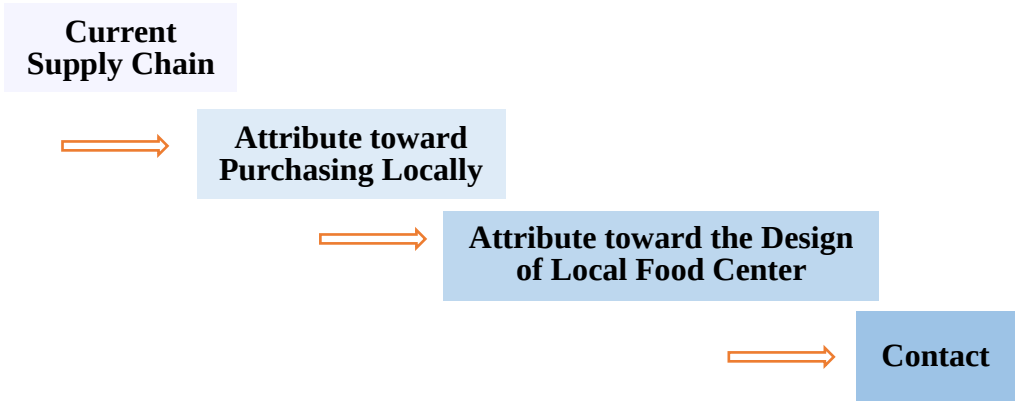


Figure 3-2F. Questionnaire Design for Local Restaurant Study

Therefore, the survey was conducted using both paper and online questionnaire versions, containing 4 sections for local restaurants to answer (*see Figure 3-2F*.). These questions included single choice, multiple choice, and short answer with only 11 questions which allows local restaurant owners to complete and receive the message of a Local Food Center in an efficient way.

The Local Food Center can be a breakout linkage for connecting small producers with local restaurants systematically where the Local Restaurant Study is critical to evaluate the feasibility of this idea. Although the survey was not completely randomly distributed, we found that most of the valid respondents are from the city of Prescott, which is also the center of high food service marketing opportunities (*see Figure 3-2G*.). The location of active local restaurants has provided the Local Food Center with the message that the Prescott City or its surrounding area is most beneficial.

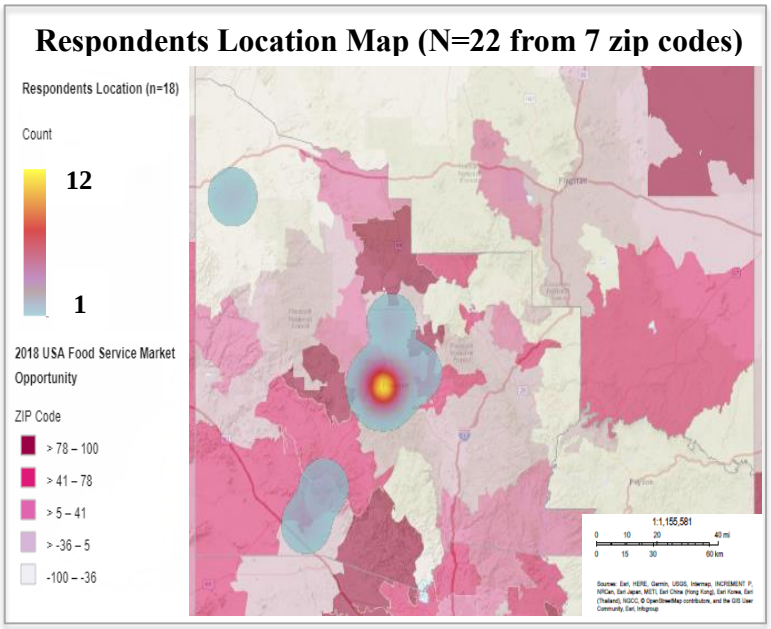


Figure 3-2G. The Zip code Locator map of Respondents from Local Restaurants Study

3-3. Vendor/ Producers Study

Other goals for the Local Food Center are to provide sustainable and diverse fresh products and processed food year-round. However, it could be a challenge for small producers as production may be infeasible and yields may be much less in winter if production is possible for cold season crops. Therefore, it is important for the Local Food Center to organize a production schedule from within the region and outside the region to ensure year-round supply. In addition, most of the producers from original Farmers Markets are positive on having a Local Food Center but not all the vendors are possible and willing to supply daily to the Local Food Center. As the result, the Vendor/Producer Study can verify the number of vendors who are willing to shift their supply to a Local Food Center and reach those small producers in Yavapai County that are not currently sell in Farmers Markets. Although the Local Food Center provides a great marketing channel for small producers, they are no longer able to set the price of their products, they cannot keep 100% of sales, and they may need to compete with other small producers on some products. It is critical to acquire vendors/producer's preference and interests as a successful Local Food Center needs high quality and a certain minimum quantity available throughout the year.

It is feasible to conduct the interview type of research on the Vendor/Producer Study; however, producers might hesitate to tell the truth or overestimate their interests. As a result, we decided to design and implement another questionnaire.

The purpose of the Vendor/Producers Study part is to acquire the interests of supplying to Local Food Center and the business framework and store design that can facilitate their interests. Therefore, the questionnaire needs to fulfill several fundamental directions as listed below:

- Discover the interest of supplying to a Local Food Center.
- Understand local producers' current sales and production schedules.
- Analyze the type of business framework that producers preferred for a Local Food Center.
- Obtain the functions needed for on-site facilities.

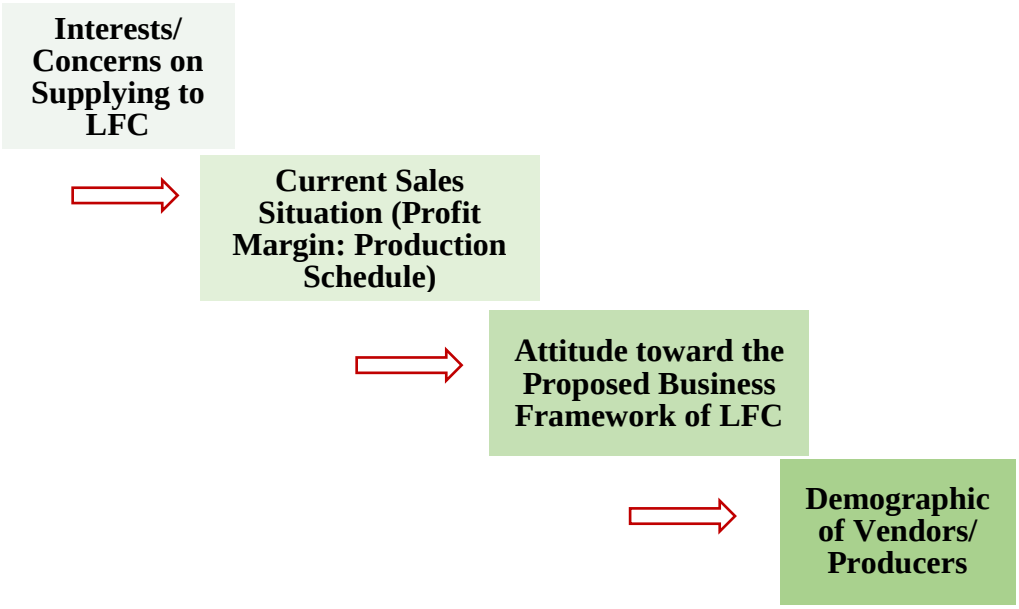


Figure 3-3H. Questionnaire Design for Vendors/Producers Study

The Vendor/Producer Study is also designed with both paper and online questionnaires, which contains 4 sections for vendors/ producers to answer (*see Figure 3-3H*.). These questions included single choice, multiple choice, and short answer with roughly 26 questions. This allows us to have a good picture of what small producers are facing and what are their major concerns on extending their supply to a Local Food Center.

One of the objectives of the Local Food Center is to serve as a small food-related business incubator. Therefore, the Vendor/Producer Study is especially important to evaluate the feasibility of a Local Food Center as small producers are the major group in this discussion. If small producers are capable and willing to supply to the Local Food Center, it can potentially enlarge their business and bring a positive economic impact to Yavapai County and Prescott Area. Although the survey was not completely randomly distributed, we found that most of the valid respondents are from the city of Prescott which is also the center of high food service marketing opportunity (*see Figure 3-3J*.). The location of current small producers that supply to Prescott Farmers Market and a few potential suppliers are located mostly around Prescott City, but some are northern part of Yavapai County. Therefore, a pick-up schedule or cooperation framework may be needed as transportation daily or bi-daily would be a huge challenge for these small producers that generally have labor intensive operations and demands.

In addition, as many of the small producers are already living upon a profit margin, it is very critical to learn their current profit margin and their ideal commission if they decide to supply to Local Food Center from the Vendors/Producers Survey.

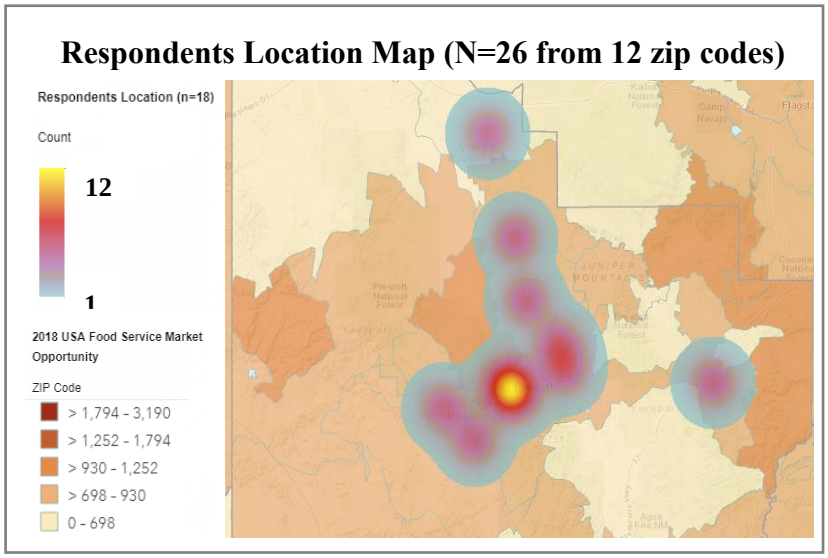


Figure 3-3J. The Zip code Locator map of Respondents from Vendors/Producers Study

Chapter IV. Data Collection and Selected Results

In this section, we will discuss responses from our Consumer, Local Restaurant, and Vendor/Producer studies. The selected results include:

1) Understanding our respondents.

2) Comparing respondent's demographics with those of the Yavapai County Census.

3) Analyzing respondents' behaviors to univariate and bivariate stated choice selections, and

4) Summarizing the potential to integrate the local supply chain from local producers to the Local Food Center, and then local restaurants.

4-1. Consumer Study

4.1.1 Data Collection and Survey Experiment Design

As briefly mentioned in Chapter 2, the Consumer Survey was conducted using a 2-step Survey Experiment. First, the same questionnaire (despite different versions of the questionnaire) were collected from different locations, methods, and audiences of:

- On-Site paper questionnaires from Farmers Markets in Prescott, Prescott Valley, and Chino Valley.
- Off-Site paper questionnaires from local food service stores, churches, and Yavapai Cooperative Extension Workshops, and
- Online questionnaires that were distributed from Social Media and Email lists

associated with Prescott Farmers Market.

We received a total of 1,188 responses from October 2017 through November 2018 and 886 responses (72.9%) are valid for further investigation on preferences and purchasing behavior. Although many recent consumer foods purchasing behavior studies which use Nielsen Homescan household panel data usually have more than 28,000 responses, our responses are still considerable as the study area is only for Yavapai County instead of entire U.S. The Prescott Farmers Market and Yavapai Cooperative Extension are two main entities that assisted with our physical data collection. From the Table 4-1A and Chart 4-1A. below, we have provided the number of responses that we have received from different survey locations and methods.

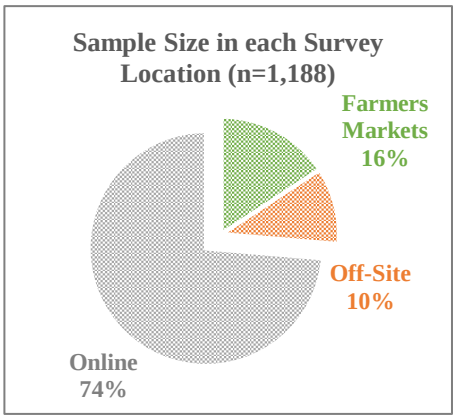


Chart 4-1A. Percentage of Sample from each Survey Location

Table 4-1A. Sample Collecting Location

Collected Location	Sample Size	Valid Reponses for Further Analysis
On Farms' Market	187	149 (79.7%)
Off-site, in-person	126	100 (79.4%)
Online	875	617 (70.5%)

Note: Off-site, in-person means the questionnaire were collected in Yavapai County but not in the farmers' market

The online platform provides us a relatively low cost and fast access to a large number of potential respondents, which is also true in our case where we received one-

third or more responses from the online questionnaire than the paper survey. However, there are a few sampling issues that we also need to consider.

I. Since the online platform is open for any internet user that has a link to the questionnaire, it is possible to have respondents that start the survey without any intent to complete the survey. Although we have mentioned in the questionnaire that our primary interest is for Yavapai County, we still received responses that were not within our study boundaries as the online Platform is open to everyone. There were 80 responses in our Consumer Study that click on the survey but did not respond to any question. In addition, from Table 4-1A. above, the percentage of valid responses from the online platform is around 10% lower than paper survey. It is an interesting finding that indicates the survey environment may have influenced how respondents behave.

II. The characteristic of respondents is highly dependent on how the online questionnaire was distributed. Distributing through Social Media has enforced the bias to those who use this type of social media while distributing through the email list has limited the profile of respondents to only those who have a connection with the survey collectors, mainly the Prescott Farmers Market.

III. Our consumer survey is semi-anonymous since respondents would only leave their information if they would like to participant in the gift card drawing. As a result, respondents from the online platform have even a greater potential to be unreliable as we have no physical contact with the respondents to even estimate their age. Respondents from the online platform may also have less confidence on providing true responses as they may not fully understand that their responses are only for study purposes.

IV. The mode or method of solicitation effect may contribute to our over/under-stated responses. Our paper surveys were collected mostly in a food-related environment while the online platform did not provide the same environment. As a result, respondents from both Farmers Markets and other food-related sites may slightly overstate their preference toward fresh produce while respondents from the online platform were not even thinking about food when they completed the survey.

Information from all questionnaires are self-reported which means that respondents did not have to reveal their preferences through actual monetary purchases. Therefore, there is a significant need to understand the demographics of respondents from different survey locations and compare their responses to our consumer study. This survey

experiment can provide us with great insight on consumer segmentation if there is a difference in the preferences from different survey location groups.

The second step in our survey experiment, as mentioned in the previous chapter, we built 40 different binary choice sets between two food shopping outlets and randomly selected 5 choice sets for each questionnaire. (*please refer to Figure 3-1D. in Chapter II*) The 16 different versions questionnaires were randomly provided to respondents for all survey locations.

From Table III-1B. below, there are no significant differences in sample size between different questionnaire versions. Although we received fewer responses from version A and version B, it is just a result of a random distributed process whereby online respondents that were assigned to answer version A and B left the survey before they were presented with binary choice sets.

Table III-1B. Sample Size in each Questionnaire Version

Collecting Site	Questionnaire Version																
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Total**
Farmers Markets	9	9	12	10	12	14	14	14	14	12	14	11	12	10	10	10	**187**
Off-Site	7	7	8	7	6	6	8	8	8	9	11	7	10	8	8	8	**126**
Online	38	39	50	52	52	51	49	49	53	50	52	51	54	53	53	53	**875**
Total	**54**	**55**	**70**	**69**	**70**	**71**	**71**	**71**	**75**	**71**	**77**	**69**	**76**	**71**	**71**	**71**	**1188**

Note: There are 76 respondents from Online platform that we do not know which versions of questionnaire they have received since they left survey before binary choice sets were presented

4.1.2 Respondents Demographic (All vs. by survey location)

Before we start to analyze the food purchasing behavior and preferences of our respondents, it is important to compare the demographic information of our respondents

with the Yavapai County Census to find out how our sample fits the "true population" as described by the Census.

1) Location of Respondents

In the survey, we collected respondents zip code information so that we can compare the proportion of respondents from the population percentage in each zip code (*see Table 4-2C.*). Since the population for Yavapai County is clustering around the central Prescott City area and Prescott Valley area, we would assume to receive more respondents from these two areas. Interestingly, almost 80% of our respondents are from these 2 urban areas which exceeds the true population percentage from the Census. Although our sample is not representative in terms of geographic location for Yavapai County, the location of our respondents is preferred. The Local Food Center would most likely be in either of these two urban areas so that understanding consumer preferences and purchasing behaviors for these areas would be extremely beneficial for our study.

Table 4-2C. Location of Respondents and Percentage of Population in each zip code area

Zip Code Area	% of Population	% of respondents
Ash Fork CDP[2]	0.4%	0.4%
Black Canyon City CDP[2]	0.1%	0.09%
Camp Verde Town	5.5%	0.2%
Chino Valley Town	7.2%	8.8%
Clarkdale Town	2%	0.09%
Cornville CDP[2]	2.3%	0.09%
Cottonwood City	9.8%	0.7%
Dewey-Humboldt Town	4.8%	3.5%
Jerome Town	0.2%	0.2%
Mayer CDP[2]	2.7%	0.6%
Paulden CDP[2]	2.4%	1.6%
Prescott City	24.5%	59.1%

Prescott Valley Town	18.5%	20.5%
Rest of Yavapai County	18.4%	4.1%

Note$_1$: Population information are collected using ERSI 2018/2023 US Demographic Update
Note$_2$: CDP is an initial of Census Designed Place, is a concentration of population used by U.S. Census for statistical purpose.

2) Gender/ Sex of Respondents

The gender of the primary grocery shopper in a household has been dominated by females for decades. According to PLMA Consumer Research Study in 2013, 65.5% of women identified themselves as primary grocery shoppers; however, another study from Food Marketing Institute in 2016 found that 58% of household identified themselves as co-shopper households where both men and women take roles in grocery shopping. This trend has provided the insight to us that a Local Food Center needs to consider the preferences and purchasing behavior of men in order to capture more potential sales than only considering the population of women. The majority of our respondents in our consumer study identified themselves as women (86.17%) which is not representative of the gender ratio for Yavapai County. However, previous studies have suggested that females are more interested in food-related topics and more likely to voluntarily fill the questionnaire than men.

Of our online respondents, 89.9% identified themselves as women which is 15% higher than our survey from Farmers Markets and 10% higher than our surveys of other food-related outlets. This composition on gender in our sample implies that women are still the primary grocery shoppers in Yavapai County; however, the reality that we received fewer women respondents from the Farmers Markets than other

modes, suggests that men are more engaging in the grocery shopping at Farmers Markets than elsewhere. A study that focuses on the population of men could be conducted after the operations of a Local Food Center are in place to better understand men's purchasing behavior.

3) Age Distribution of Respondents

As we discussed in prior Chapters, Yavapai County has a higher median age than the rest of Arizona and the U.S., which we illustrate in two charts below to further discuss the age group of our respondents (see Figure 4-2B.). We obtained more 26 – 46 years old respondents and fewer respondents of age 75 or more. In addition, it seems that more respondents from the online platform are young while we received more responses with an age of 55 or older from other food-related locations. Overall, our responses seem to be quite representative for all age groups; however, this result may be subject to younger and working age adults from our respondents.

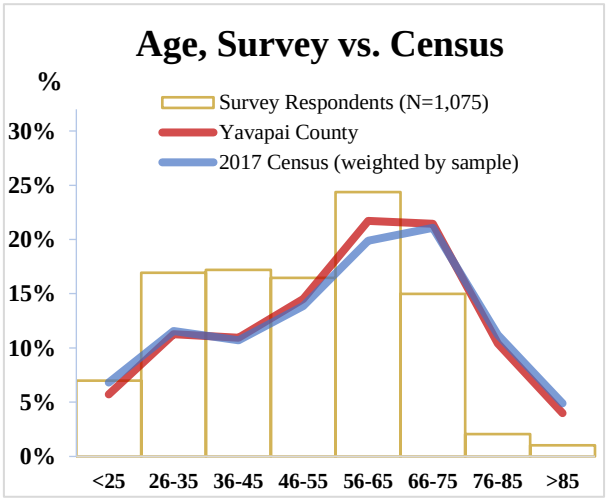


Chart 4-2B. Frequency Distribution of Age: Survey vs. Census (Left)

4) Education Attainment of Respondents

The existing studies have shown that people with higher education are more likely to spend their time on completing a survey (Chang & Krosnick, 2001) where our responses told the same story (*see Figure 4-2C.*). Most of our respondents have at least Some College education. As a result, our analysis on consumer preferences and purchasing behavior would be subject to a more educated population. In addition,

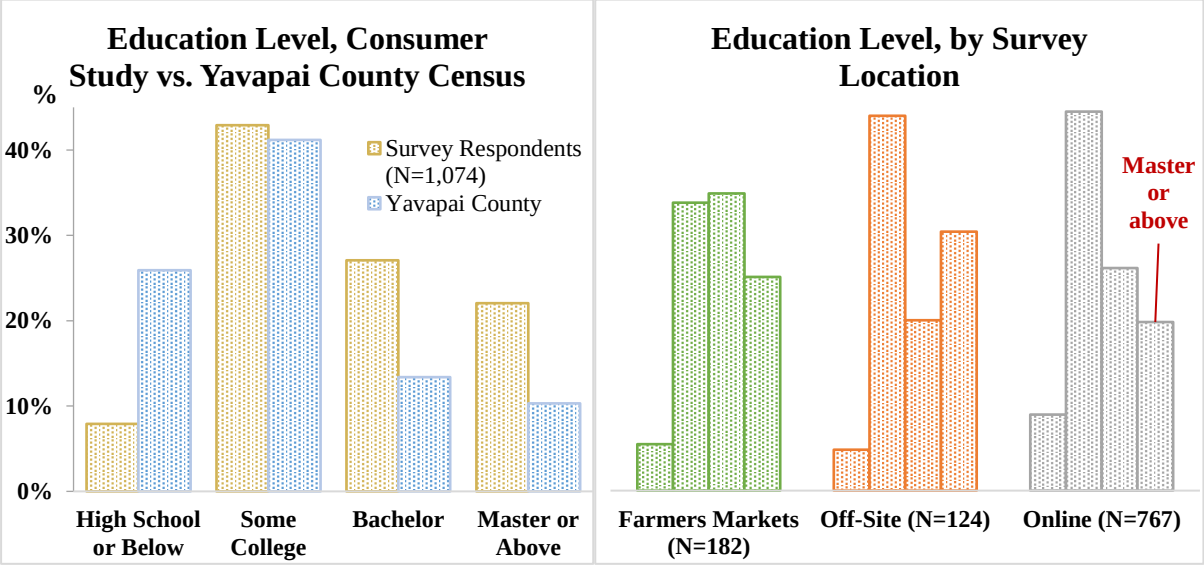


Chart 4-2C. Frequency Distribution of Education Attainment: Survey vs. Census (Left); by survey location (Right)

previous studies have found that Farmers Market Consumers usually have a post-graduate degree (Wolf et al., 2005) which is similar from our respondents (*see Figure 4-2C*).

4) Employment Status of Respondents

Employment is generally a great proxy for age, income, and leisure time. Existing studies suggest that consumers with different time constraints will choose different food shopping outlets for their grocery shopping. As we have mentioned above,

Yavapai County is a retirement area with a high median age and lower income than Farmers Market and Online populations since more than a quarter of our survey respondents indicated that they are retired (*see Chart 4-2D.*). This finding could potentially be good news for the viability of a Local Food Center as consumers that do not need to work with a tight schedule are more likely to visit the Local Food Center. In addition, it is an interesting that we received more retired respondents from other food related outlets and churches versus more self-employed respondents from our Farmers Markets and Online populations. Other food-related respondents are not frequent shoppers toward Farmers Markets and not necessarily Farmers Market Friendly; therefore, our survey respondent's demographics show that there is still food potential promoting the Local Food Center to retirees. On the other hand, self-employed respondents are more actively participating in Farmers Markets. Where these group of consumers are usually active on the Internet in terms of managing

their own business is where the Local Food Center would better off running Internet ad campaigns.

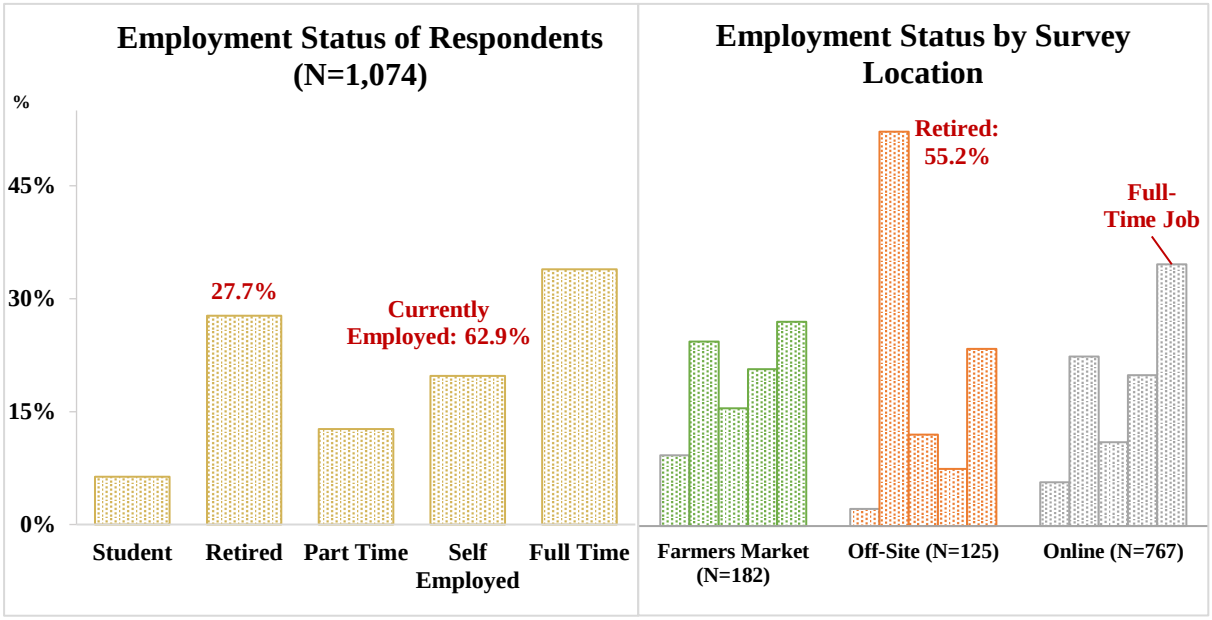


Chart 4-2D. Frequency Distribution of Employment Status: All Respondents (Left); by survey location (Right)

5) Household Composition of Respondents

Most households share their food-at-home expenditures. It is significant to control for the household size in any consumer study; besides, larger households might have very different preferences in their food purchasing compared with small households.

We found that our respondents belong to larger households than the County average from the Census. Although around 45% of our respondents have 2 people in their household, which reflects a retired household size, some respondents live in larger households. Survey participation is voluntary and slightly incentivized with the gift card drawing for different food shopping outlets. Thus, we can have an assumption that our respondents were consumers that are interested in food topics or

at least the grocery-related gift card drawing. We could conclude that larger households are more interested in the food related topics; however, this would suggest that our results are under-representing smaller households and we need to interpret this with caution.

When we decompose our respondents by location, we find that over 55% of respondents from other food-related locations have a 2 members household which also follows that there were more retired respondents collected there *(see Figure 4-2F*). However, it is interesting to find that respondents from the online platform have an average household size. There are no existing studies which address the relationship between household size and the behavior of taking an online survey; therefore, this finding is valuable in looking at the feasibility of a Local Food Center. Respondents from the online platform and Farmers Market are considered to be friendly towards a Local Food Center, and more likely to visit the Local Food Center when they have a larger household size.

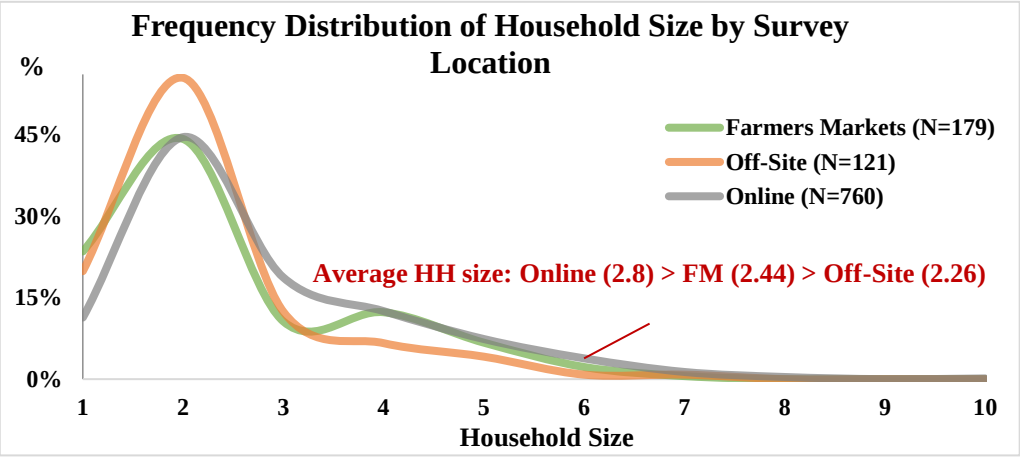


Chart 4-2F. Frequency Distribution of Household Size by Survey Location

Although household size influences food expenditure and food purchasing behaviors, many existing studies suggest that children have a large impact on a household's behavior. There is no significant direction on whether a household with children will increase or decrease their total food expenditure; however, the behavior on purchasing food is different from those without children. There are three notable national-wide food nutrition programs: Supplementary Nutrition Assistance Program (SNAP), Women, Infants, and Children (WIC), and Farmers' Market Nutrition Program (FMNP). The participation rate in these programs is generally 10% - 40% higher for households with children under 18 years of age. In our survey, we collected information on the number of children under 12 years of age and we found that households with more children participated in our research (*see Chart 4-2G*). Respondents from the Farmers Markets have more children than online respondents. Therefore, targeting households with a preferred composition can increase the visibility of a Local Food Center.

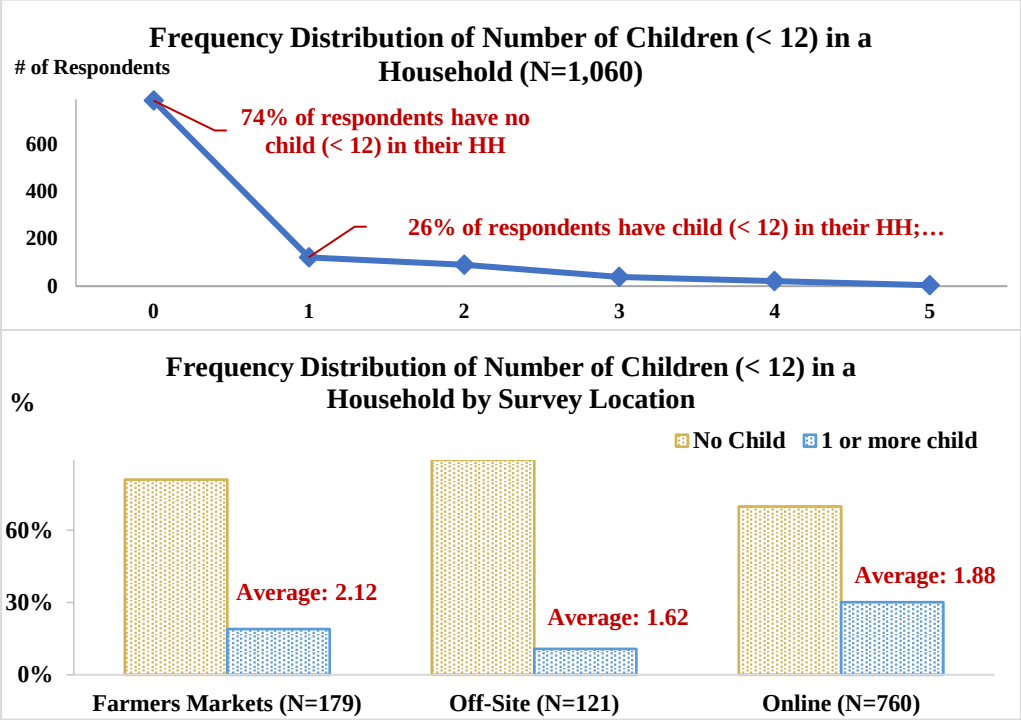


Chart 4-2G. Number of Children in a Household of All Respondents (Top); by Survey Location (Bottom)

6) Monthly Living Expenditure of Respondents

When we designed our questionnaire, we chose not to collect the information of income from our respondents for the following reasons:

- Retired respondents may not consider their retirement fund as income.
- Students and unemployed respondents do not have income but still spend money on food.
- Food expenditures are considered as a necessity such that the relationship between food expenditures and income can be small, and
- People are generally more willing to share expenditure than income data.

Therefore, we collected the information of monthly living expenditure from our respondents and asked them to include Food, Housing, Transportation, Insurance, Education, Healthcare and Entertainment. In order to increase the quality of our responses, we provide increasing categories for respondents to answer. The distribution of the monthly living expenditure is positively skewed since most of our respondents spend less than $3,000 as a household on living expenses each month while there are a few households that spent more than $10,000 per month on living expenditure *(see Chart 4-2H)*. Monthly living expenditures seems to be different for respondents from different survey location sites, whereas respondents from other food-related outlets and the online platform have higher monthly living expenditures than respondents from Farmers Markets. This finding is a bit surprising since previous studies have suggested that consumers at Farmers Markets pay premium prices for their groceries, but it seems that in our survey sample, Farmers Market

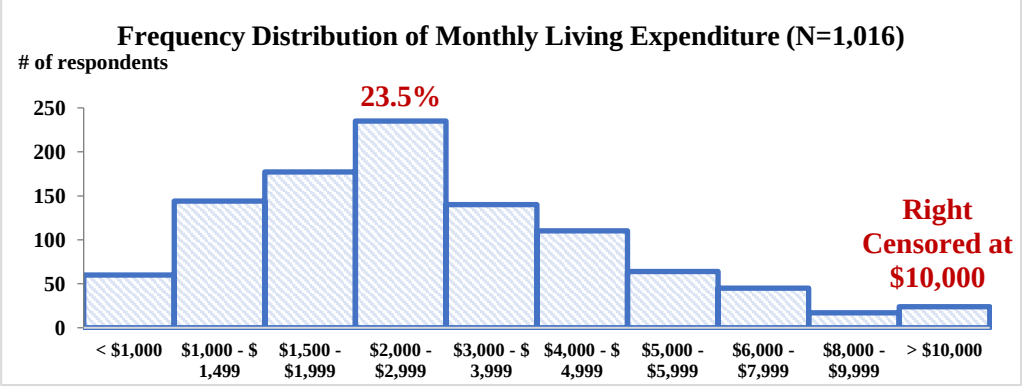


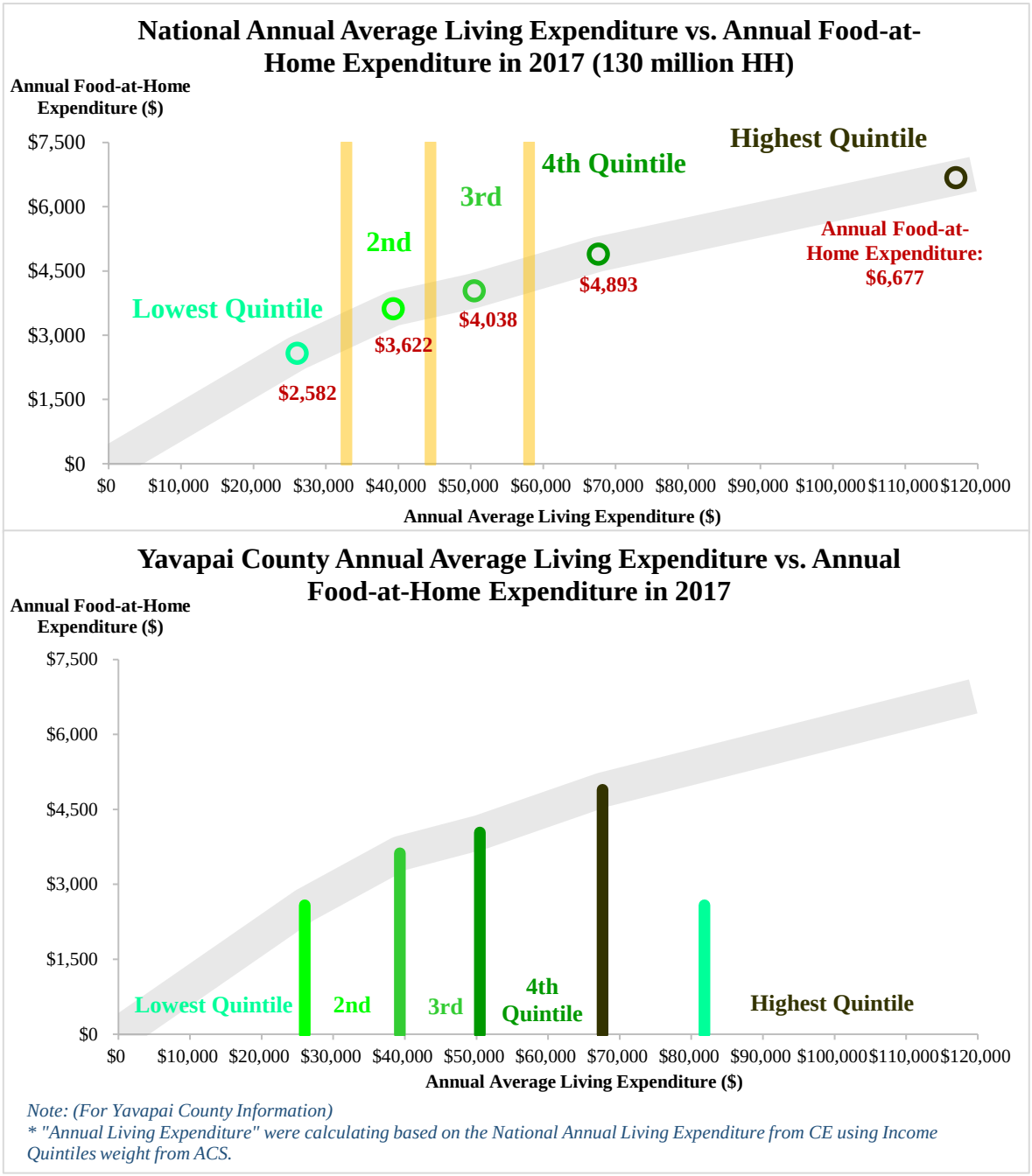
Chart 4-2H. Frequency Distribution of Monthly Living Expenditure of All Respondents (Top)

consumers did not have higher monthly living expenditures than those who did not shop at Farmers Markets.

Although we believe that the monthly living expenditure is a good proxy for disposable income, we do not have information on whether we have sampled evenly among different income quintiles. As a result, we propose some data transformation and interpolation by income quintile to match our survey result with the national annual living expenditure data from the Bureau of Labor Statistic (BLS). From Chart 4-2J. below, the upper chart showing the relationship of national annual average living expenditure and annual food-at-home expenditures by different income quintiles. We can observe that the annual average annual living expenditure increases greatly for the highest quintile. It indicates that the distribution of national annual average living expenditure is also positively skewed. On the other hand, the national annual food-at-home expenditure is relatively flat between different income quintiles. Consumers in lower income quintiles spend around 10% of their living expenditure on food-at-home while consumers in the highest income quintiles still possess a 6% food-at-home spending share.

From the above chart on Chart 4-2J., we imputed both the annual average living expenditure and annual food-at-home expenditure based on the Yavapai County income quintile. We discovered that Yavapai county has much lower annual average

living expenditures but similar annual food-at-home expenditures to the national level. As a result, the food-at-home spending share for Yavapai County will be relatively higher than the national level of 7%.



Note: (For Yavapai County Information)
** "Annual Living Expenditure" were calculating based on the National Annual Living Expenditure from CE using Income Quintiles weight from ACS.*

Chart 4-2J. Annual Average Living Expenditure vs. Annual Food-at-Home Expenditure by Income Quintile of National (Top); interpolation for Yavapai County (Bottom)

Subsequently, we mapped the threshold of monthly living expenditure of different income quintiles for Yavapai County to our survey respondents *(see Chart 4-2K*). If our survey respondents were collected randomly in terms of income, we should receive a fifth of respondents in each income quintile; however, we found that

we over-sampled for the lowest two income quintiles while we under-sampled for the three highest income quintile groups. However, we found that respondents under-reported their monthly living expenditure by not including some infrequent living expenditures, such as semester payments on education and annual payments for house renovations. In addition, survey location can have a mode effect on how respondents approach the questions that they received. On the above chart of Chart 4-2K, we found that respondents from Farmers Markets mostly belonged to the lower

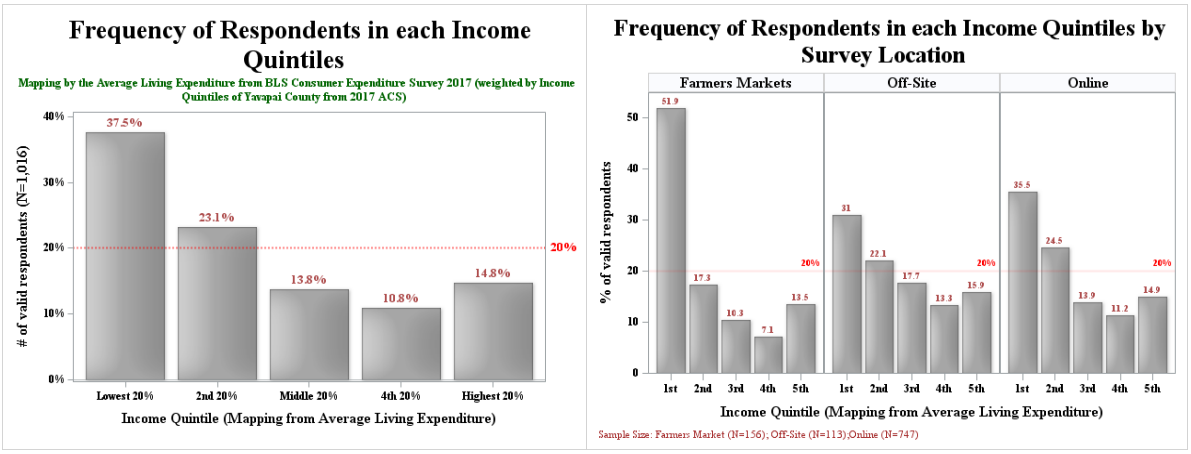


Chart 4-2K. Frequency of Respondents in each Income Quintiles Group of All Respondents (Top); by Survey Location (Bottom)

income quintiles while the other two survey locations did not. This finding could have been influenced by the fact that the respondents from Farmers Markets were in such a food purchasing environment that they only thought of food at the moment. Therefore, we have confidence that our survey respondents are still representative for different income quintile group.

4.1.3 Food Purchasing Behavior (All vs. by survey location)

After we learned more on the demographics of our respondents as discussed, we found that our survey methods are relatively good for representing the population of Yavapai County. In addition, it seems that we collect different groups of consumers from different survey locations. This is good since the goal of the Local Food Center is to keep the original Farmers Markets shoppers while increasing visibility toward potential new consumers. Next, we will continue discussing the food purchasing behavior from all respondents by survey location.

1) Frequency of Visiting Farmers Markets

Understanding the frequency of visiting farmers markets can provide us information on the following:

- Whether or not the respondents are frequent shoppers at Farmers Markets.
- Consumer attitudes toward Local and Fresh Produce.

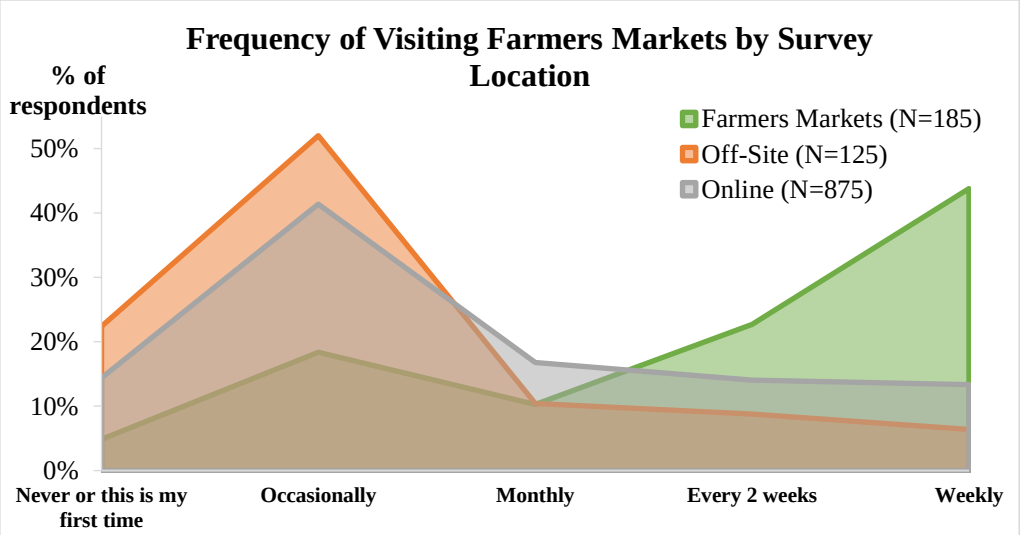


Chart 4-3L. Frequency of Visiting Farmers Markets by Survey Location

From Chart 4-3L above, over 40% of the respondents from Farmers Markets visited Farmers Markets in a weekly base while over half of the respondents from other food-related outlets only visited Farmers Market occasionally. However, it is interesting that respondents from the online platform seemed to be in the middle of the other two groups. It reminds us that online respondents might not be the best representation of the population as they seem to be Farmers Market friendly even though they don't visit Farmers Markets very frequently.

2) Frequency of General Grocery Shopping and Meals Away from Home

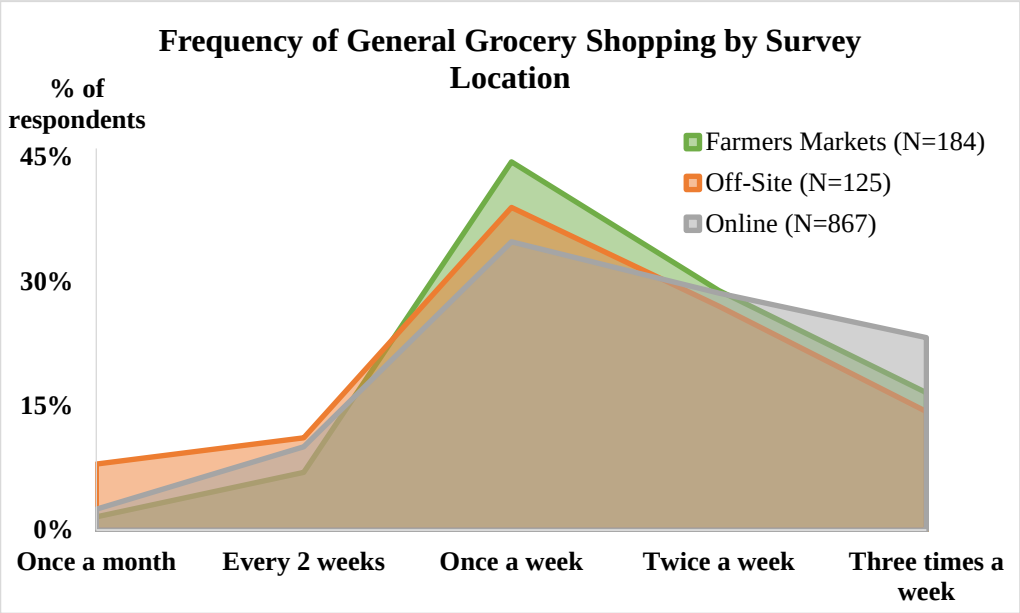


Chart 4-3M. Frequency of General Grocery Shopping by Survey Location

We also collected the frequency of general grocery shopping to learn about the grocery shopping behavior of our respondents. In addition, the Local Food Center

will provide processed products and might include a commercial kitchen for small vendors to prepare their products onsite so that it would be important to learn consumers food consuming behaviors. From Chart 4-3M below, more than 85% of the respondents in our sample do their grocery shopping at least once a week. Although there are slight differences among respondents by survey location, we still received a good representative of primary shoppers.

Most of our respondents consumed less than 2 meals away from home in a week and respondents from Farmers Markets consume the least meals away-from-home while respondents from other food-related outlets consume up to 2-3 meals away from home in a week (*see Table 4-3D*). Therefore, including more varieties of prepared food in the Local Food Center could potentially attract consumers that spend more on meals away-from-home.

Table 4-3D. Meals Away from Home Statistic

Collected Location	Median	Average
On Farms' Market (N=185)	1	1.83
Off-site, in-person (N=126)	1.5	2.40
Online (N=855)	1.5	1.82
All (N=1,166)	1.5	1.88

Note: Off-site, in-person means the questionnaire were collected in Yavapai County but not in the farmers' market

3) Participation of Food Nutrition Program

Prior studies have suggested that Supermarkets and Supercenters are the primary shopping choice for consumers no matter their Food Nutrition Program or income level (Ploeg et al., 2015). According to the American Community Survey,

households with children, live under the poverty level; Hispanic, African-American, and Native-American ethnicities are more likely to participate in the SNAP Program and we have learned that Yavapai County possesses some of these traits. From Chart 4-3N. below, we found that our survey populations received a similar proportion of respondents that received Food Nutrition Program as the Yavapai County Census.

There are more Food Nutrition Benefit receivers from the respondents at the Farmers Market than the county average from the Census. This indicates that Food Nutrition Participants in Yavapai County also consider Farmers Markets as their primary grocery choice. In addition, the educational presence of Yavapai

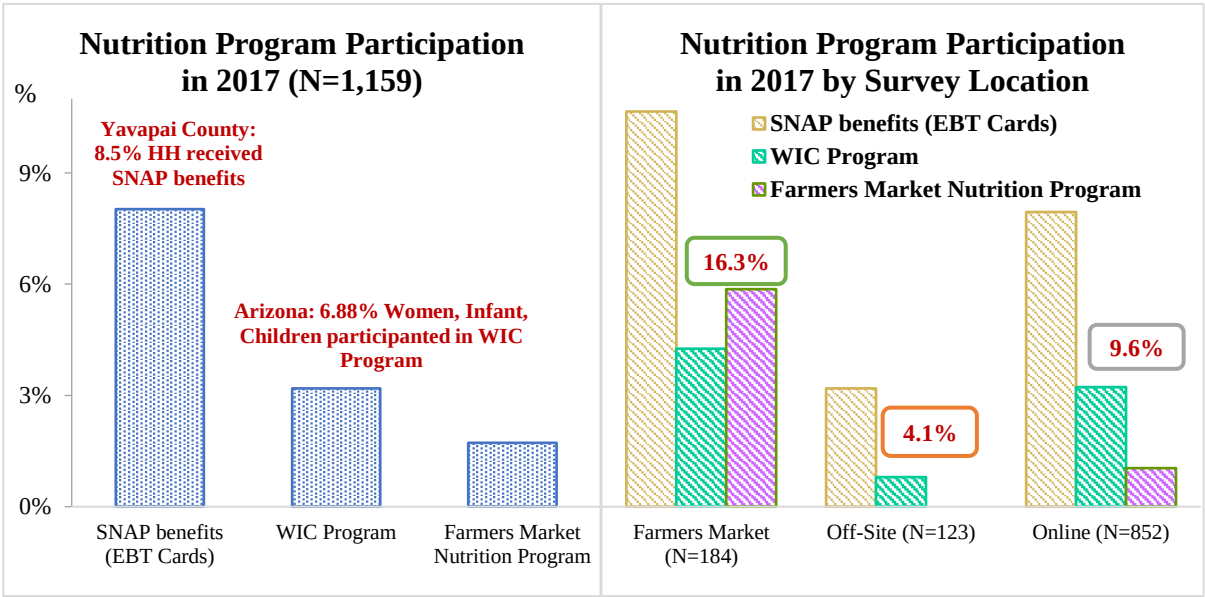


Chart 4-3N. Frequency of Participation in Food Nutrition Program

Cooperative Extension at the Farmers Market assures that individuals who qualify for Food Nutrition Programs are eligible to participate.

4) Grocery Spending Pattern by different Food Shopping Outlets

In this Consumer Study, one of the most important aspects that we hope to learn is the spending patterns of the Yavapai County consumer. There are several reasons why learning this consumer spending pattern is significant:

- Respondents may overstate or understate their preferences and tastes since it is qualitative information requested.
- Spending is a quantitative amount. Even if respondents do not remember with accuracy the amount they spend, they have a good idea within a reasonable error range.
- People are more aware of others asking them on their total income or even total expenditures but are generally willing to share their partial expenditure (like food expenditure by outlets).
- If the respondents from our sample indicated that they only shop in or prefer Supermarkets and Supercenters, this would be a huge challenge for the viability a Local Food Center. A Local Food Center is not able to compete with the price, variety, and convenience that Supermarkets and Supercenters possess.
- Comparing the food spending share between different food shopping outlets can provide us a better idea on the substitution and complementary relationship between different types of food shopping outlets

Most households share their food-at-home products; although the definition of household and families are generally different, but the household in our study can also be considered as families. Therefore, the spending patterns that we discuss below are in relation to the aggregate household level.

Nowadays, there are many different food shopping outlets available; however, we only choose four general food shopping outlets to analyze spending patterns due to the study area and generality. From Table 4-3E. below, there are several existing national datasets on food expenditure that include multiple food shopping outlets since they used scanned data where have more detailed categories. As we asked the respondents to fill in their spending at different food shopping outlets, we believe that too many categories would be confusing and challenging to receive high quality responses. Thus, we chose Farmers Markets, Grocery Type of Stores, Supermarkets and Supercenters as these are four common food shopping outlets that have a great variety of products to satisfy a household's food-at-home basket.

Table 4-3E. Food-at-Home Shopping Outlets Selection

Food-at-Home Shopping Outlets	USDA FoodAPS*	Nielsen Homescan Data**	Our Consumer Study
Farmers Markets	√		√
Grocery type of Stores	√	√	√
Discount Stores		√	Few Selection
Drug Stores		√	Few Selection
Dollar Stores		√	Few Selection
Convenience Stores	√	√	Not food-at-home spend
Supermarkets	√		√
Club Stores (Supercenters)	√	√	√

Online Food Stores	√		Uncommon
Food Banks/ Meals on Wheels	√		Not Spending
Own Production	√		Not Spending
All other stores	√		Not Specific Enough

* The National Household Food Acquisition and Purchase Survey (FoodAPS) is the first unique and comprehensive data about food purchase and acquisitions. The data were collected through Survey, 3 Phone Interview, 2 in-person interviews, and scanned barcodes in a 7 days period from 4,826 household between 2012 and 2013.
** The Nielsen Homescan Data is a panel dataset from 28,109 U.S. households from 2010 to 2015.

From Chart 4-3O. below, we compare the monthly spending for households of all respondents from different food shopping outlets. The chart shows that households spend less at Farmers Market (median: $40/ month) and around twice to three times more in Grocery type of stores (median: $100/ month), Supermarkets (median= $120/ month), and Supercenters (median: $100/ month). Households in Yavapai County rely on Grocery Stores and Supermarkets for their primary choice of purchasing food products. The spending in all different food shopping outlets are positively skewed which means that most of the households spend a small amount to none in each food shopping outlet while some households spend much more on their groceries.

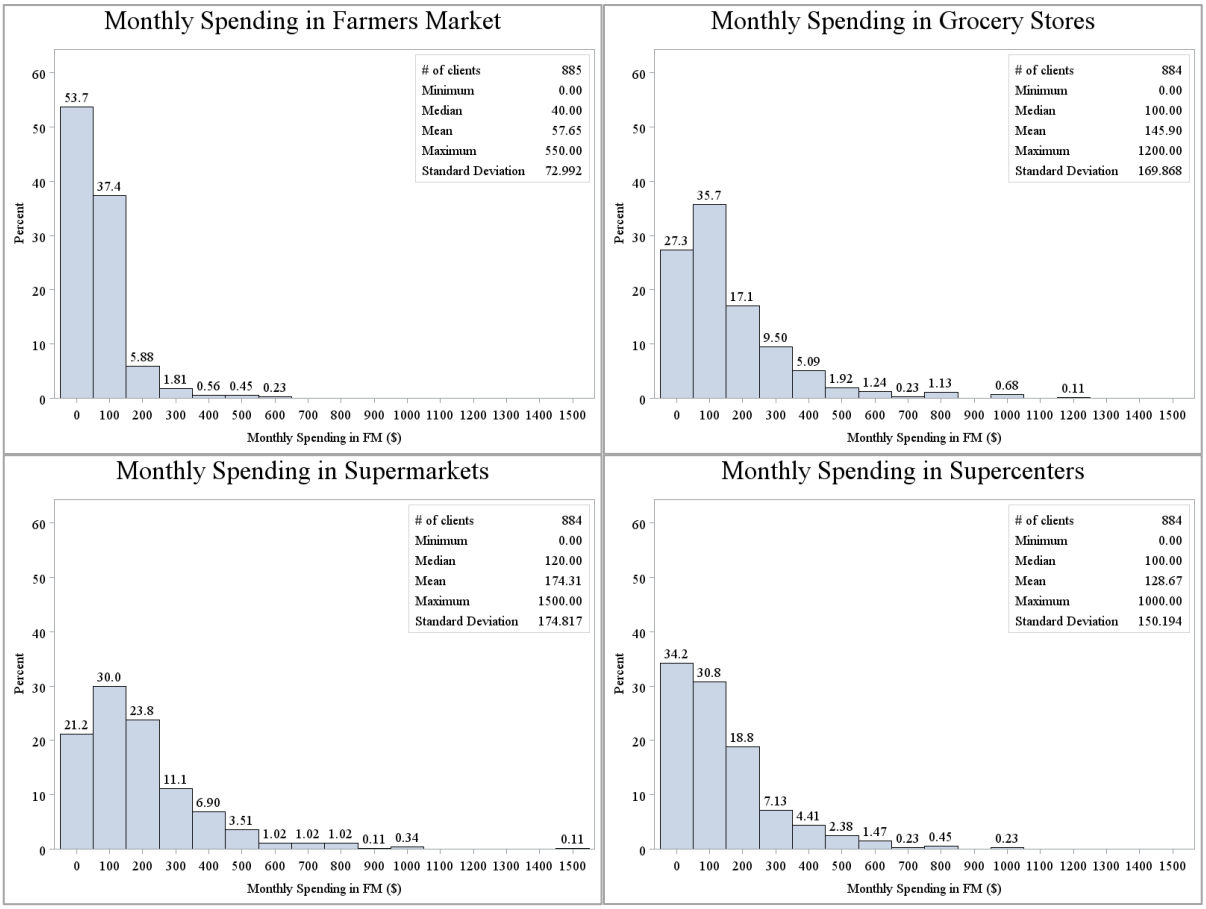


Chart 4-3O. Monthly Spending in Farmers Markets, Grocery type of Stores, Supermarkets, and Supercenters

It is common for households to not visit certain food shopping outlets due to long travel distances, price, product availability, and unpleasant experiences. However, we need to take these zero spenders in each food shopping outlet into consideration since we may over-estimate the spending pattern for those who do not spend while under-estimating for those who do spend. Most of the households in our sample visit Grocery types of Stores and Supermarkets. Less than 15% of respondents indicated that their households do not spend in those two food shopping outlets (*see Chart 4-3P*). We found that online respondents may be a group of consumers that are most concerned with food as almost 80% of these households

visit different food shopping outlets. On the other hand, a strong preference is revealed from other survey location where more than 40% of the respondents from Farmers Markets do no visit Supercenters while more than 45% of respondents from other food-related outlets do not visit Farmers Markets. There is another interesting

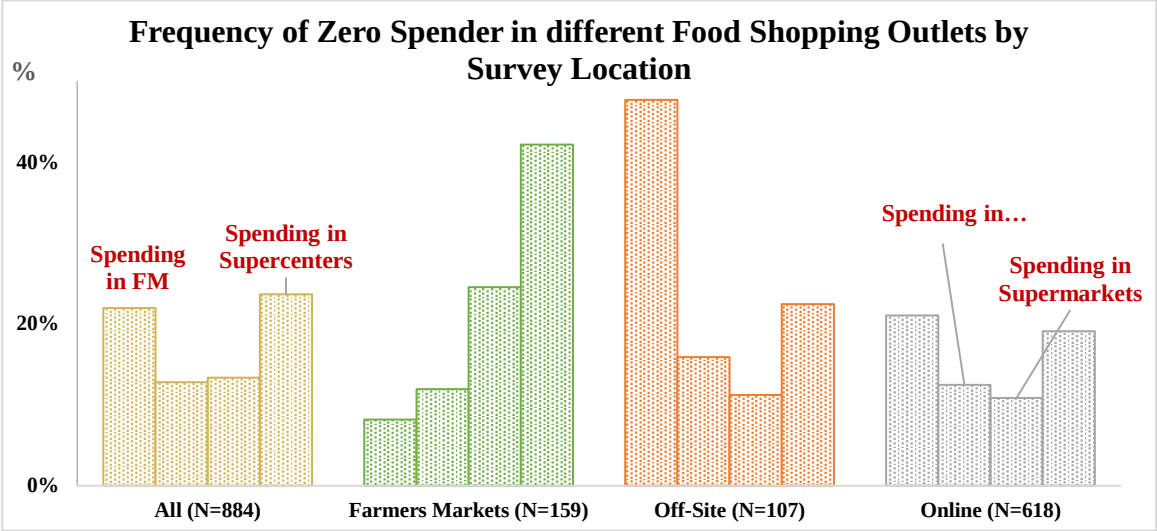


Chart III-3P. Frequency of Zero Spenders in different Food Shopping Outlets by Survey Location (Left to right: Farmers Markets, Grocery Stores, Supermarkets, Supercenters)

result which shows that 8.2% of respondents from Farmers Markets do not spend at Farmers Markets. It would seem uncommon for a consumer to visit a shopping outlet without purchasing; however, it is reasonable for Farmers Markets since they not only served as a marketplace, but also as a place for community interactions where some visitors desire the community and festival atmosphere of Farmers Markets.

In order to analyze the relationship between survey location and spending, Chart 4-3Q. below provides the frequency distribution of monthly spending in different food shopping outlets by survey location. The spending patterns are similar between different survey locations for Grocery Stores and Supermarkets but varied in spending for Farmers Markets and Supercenters.

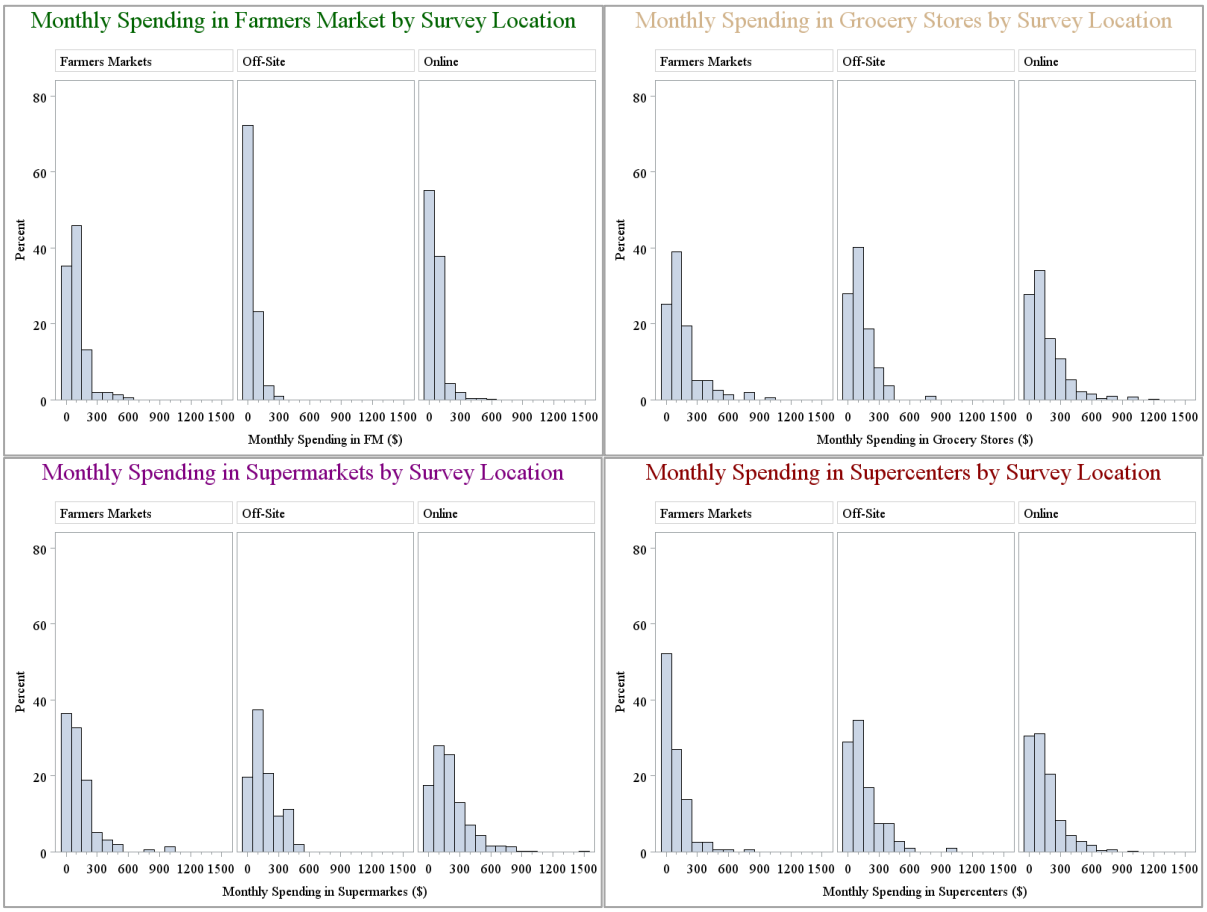


Chart 4-3Q. Monthly Spending in Farmers Markets, Grocery type of Stores, Supermarkets, and Supercenters by Survey Location

As previously mentioned in the "Respondents Demographic" section, we chose to collect consumer monthly living expenditure information instead of income to calculate the food spending share over total living expenditures in this section. However, as we only collected the monthly spending of the four general food

shopping outlets, the total food spending share is subject to the spending from only these four outlets where we may have omitted some food-at-home expenditures from other outlets (e.g. convenience stores). Thus, we need to interpret the following results under caution as the real food-at-home share can be higher than what is presented in this section.

From Chart 4-3R., the green square represents Farmers Markets Responses, the red star represents other food-related site Responses, and the blue circle represents Online Responses. The median monthly living expenditure from all household in our sample is $3,000 while the median monthly total grocery spending for away-from-home food is $450. Thus, the median food spending share over all living expenditure is around 15%. According to U.S. Bureau of Labor Statistics, food-at-home composed 7% of average living expenditure for the U.S., which is lower than what we found in our sample. Our result points out that consumers in Yavapai County either do spend more for their food-at-home expenditures since they prepare more meals at home or we have sampled more respondents from the lower income quintile group. Engel's law is stated as "The poorer a family, the greater the part of total expenditures must be spent on food". In addition, we observed that households from Farmers Markets and Online spend more on groceries than other food-related site respondents. Which we can emphasize again that Online respondents were more

interested in food-related topic than the general public. In addition, the higher the monthly living expenditure is, the larger heterogeneity there is on monthly grocery spending. As food is a necessity, people need to consume a minimum amount for survival which does not depend on their capacity to spend. However, even though two households may have the same ability to consume, their food-at-home spending can be extremely different based on their preferences and choices.

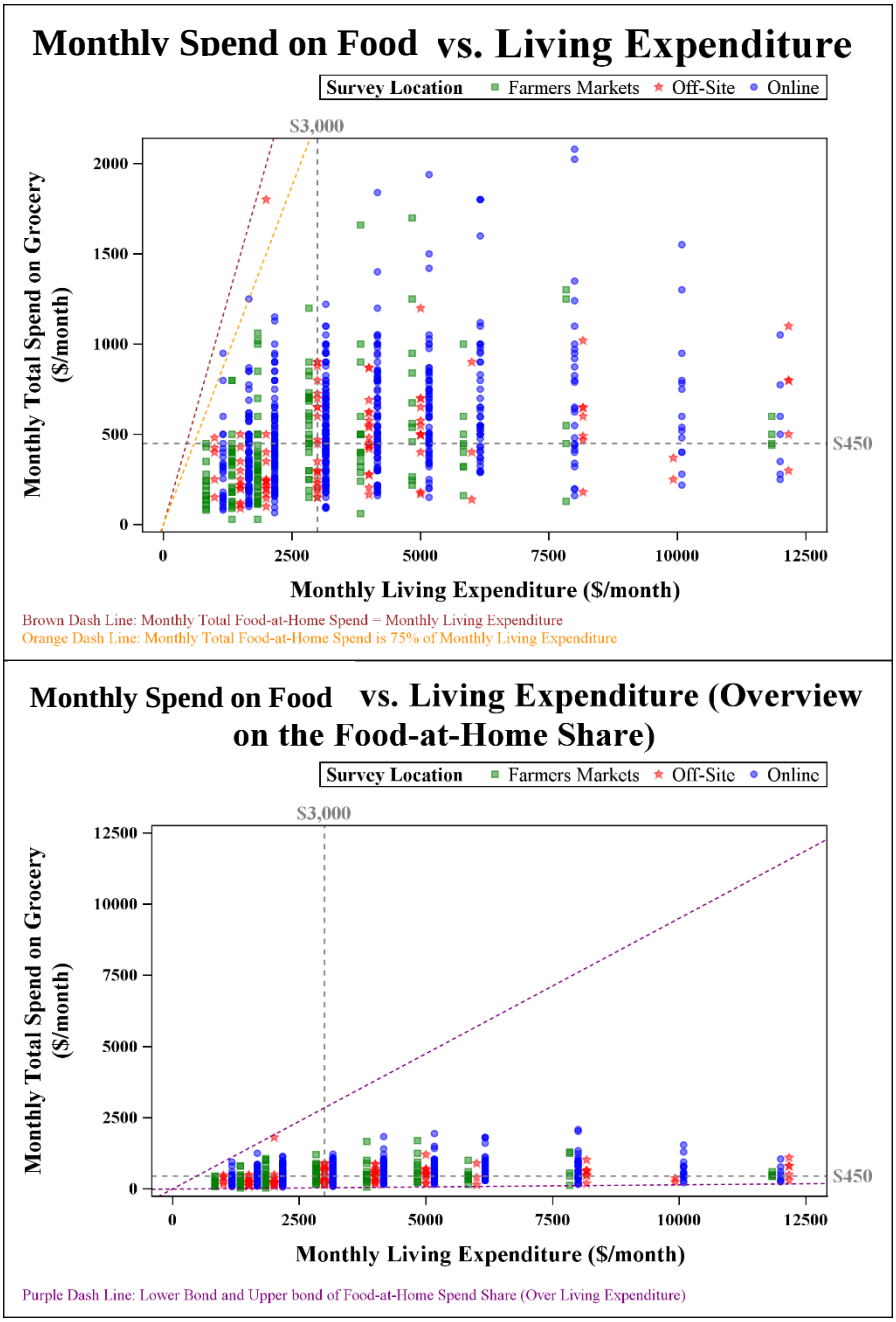


Chart 4-3R. Monthly Living Expenditure vs. Monthly Spend on Grocery by Survey Location

In order to acquire more insights on food purchasing behaviors, Chart 4-3S. shows a scatterplot between the share of food spent and monthly living expenditure by survey location. We see that all survey locations have a negative sloping pattern which means that household food spending decreases as monthly living expenditures

increase. In addition, although food spending becomes more heterogenous as monthly living expenditures increase, the food spending share is more heterogenous for the lower monthly living expenditure households. For a household with low monthly living expenditures, they can live in survival mode spending mainly on groceries. Since their living expenditures are low, a small increase or decrease in spending on groceries will cause their entire food spending share to change a lot. On the other hand, a household with high monthly living expenditures, their food spending share would not change much regardless of their grocery spending. As a result, we learned that total grocery spending is more sensitive toward the lower monthly living expenditure households. We also found that households from other food-related site respondents have a lower median food share by almost 4% than the other two survey locations. This result indicates that consumers from Farmers Markets and Online either consume more food products or prefer to pay premium prices on their groceries. The Local Food Center would be beneficial to have an attractive and efficient Internet marketing channel and a better pricing strategy to capture the share of those who are not Farmers Market Friendly to visit Local Food Center.

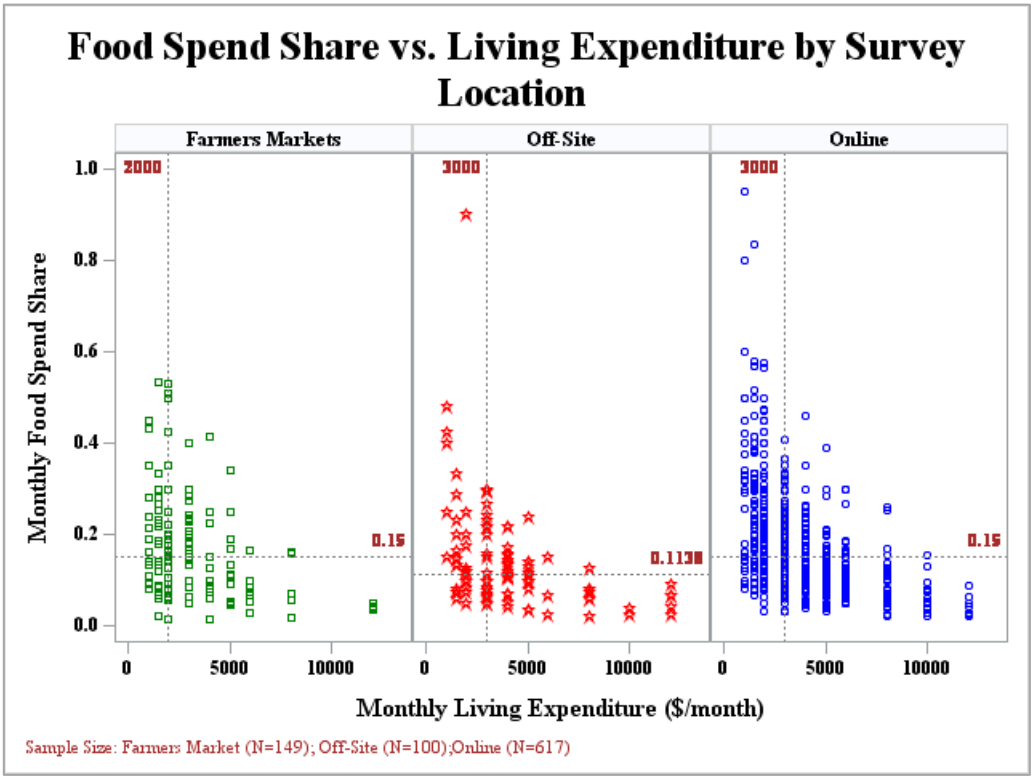


Chart 4-3S. Monthly Living Expenditure vs. Food Spend Share by Survey

5) Travel Distance to different Food Shopping Outlets

If knowing the spending pattern is a way to understanding consumer purchasing behaviors and preferences, the travel distance to a food shopping outlet can provide us the willingness to trade their convenience for receiving groceries from that outlet. From Chart 4-3T. above, we observe that consumers from our sample generally travel further to purchase their groceries. Half of the consumers travel less than 5 miles for visiting farmers markets and grocery types of stores while travel within 3 miles to supermarkets. The distance to food shopping outlets is generally further than previous studies as Ver Ploeg et al (2015) suggest that consumers usually travel 3.4

miles for grocery shopping. In addition, the food shopping outlets in Yavapai County are clustered in Prescott City, Chino Valley, and Prescott Valley. This leads consumers from other areas to travel the same distance to multiple food, clothing, hardware, and other non-food related shopping outlets.

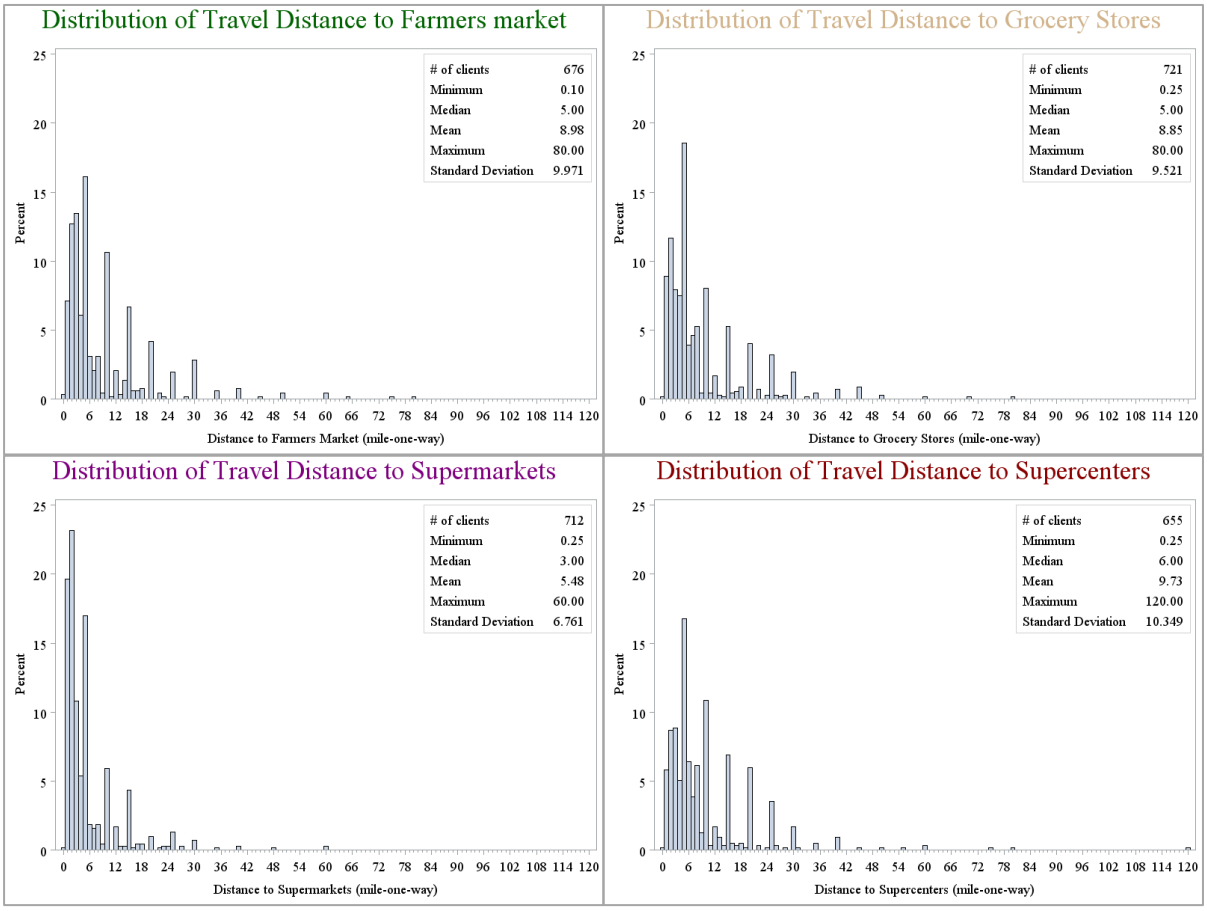


Chart 4-3T. Travel Distance to different Food Shopping Outlets

Subsequently, we would like to learn whether distance has a relationship with spending. We find a negative relationship between travel distance and monthly spending in all food shopping outlets under all survey locations (*see Chart 4-3U.*). However, it seems that travel distance has a greater effect on spending at Farmers Markets and Grocery type stores than Supermarkets and Supercenters. If the Local

Food Center will be displaying and operating similar to grocery stores, an ideal distance of being within 5-10 miles of target consumers would be more beneficial for obtaining more monthly spending from them.

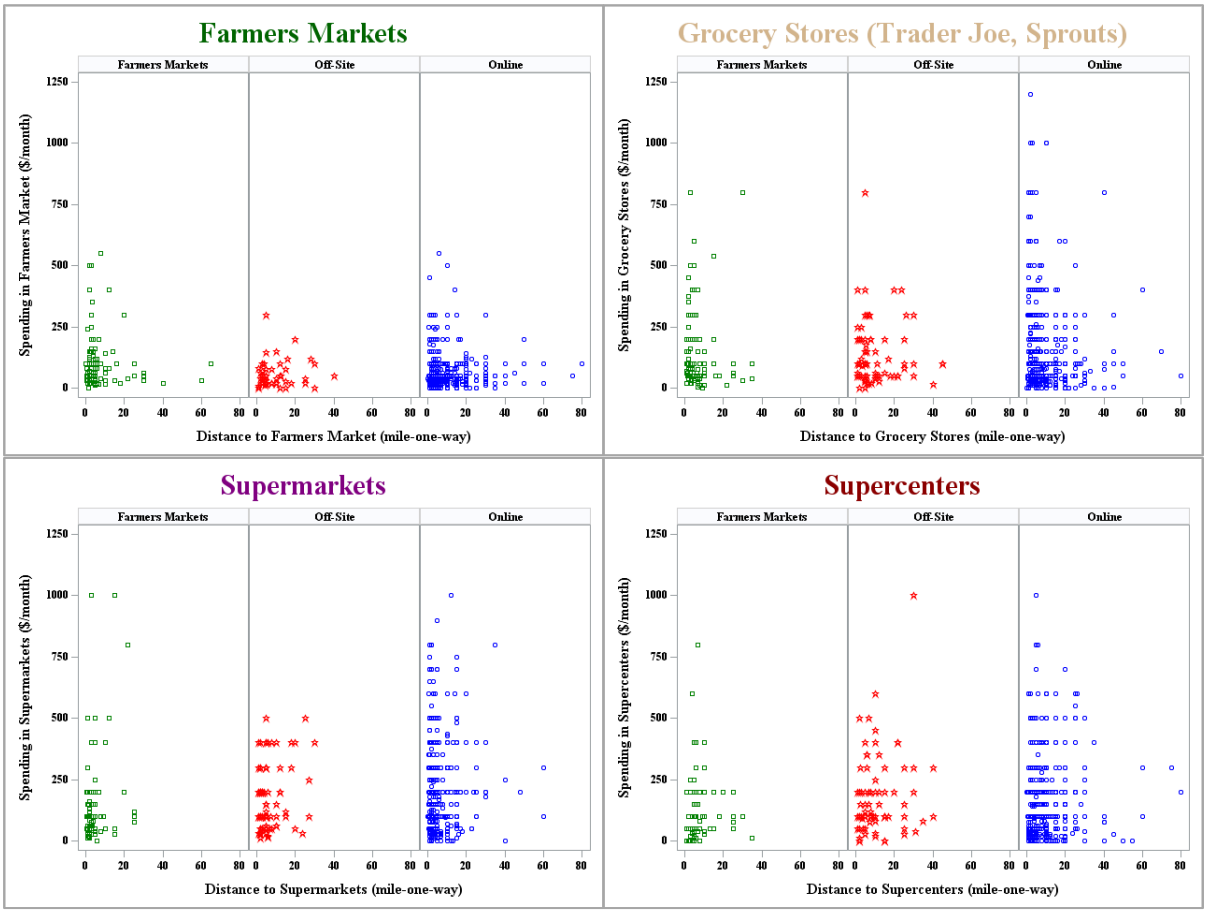


Chart 4-3U. Travel Distance vs. Monthly Spending in different Food Shopping Outlets by Survey Location

Although Chart 4-3U. above provides useful insights in that consumers tend to spend less in those food shopping outlets that are far from their location such that the relationship between distance and spending might be non-linear. Therefore, it might be more feasible to discuss it in relative terms. The relative travel distance and monthly spending with Supermarkets as the base food shopping outlet is presented in Chart 4-3V. below. We can observe that consumers spend less at farmers markets

relative to supermarkets and when the travel distance between farmers markets and supermarkets increases, consumers decrease dramatically their spending at farmers markets. As for Grocery Stores, when the distance to grocery type of stores is close to supermarkets, the spending pattern is significantly diverse. A few households spend $7000 more in Grocery Stores than Supermarkets in a month while a few households spend $500 more in Supermarkets. The distance seems to play a smaller role for consumer spending patterns of Grocery Type Stores than Farmers Markets. Therefore, potential exists to attract consumers who spend more on grocery type of stores than supermarkets to visit the Local Food Center if the Local Food Center can locate in a place that is not too far from existing Supermarkets. As we have mentioned above, travel distance seems to not be critical to the spending pattern of consumers in Yavapai County; however, the relative travel distance may be important to consumers as most of the consumers might prefer to fill in all they need for their household into a single trip.

4.1.4 Food Purchasing Preference (All vs. by survey location)

The food purchasing pattern from the last section shows how the respondents obtained are what we desire from those who are involved in their household grocery shopping and spend most of their meals at home. In addition, we examine their frequency distribution on visiting Farmers Markets where we have received frequent shoppers from Farmers Market, infrequent shoppers from Online, and some Farmers

Market unfriendly consumers. This mixture of food shopping behavior satisfies the goal of this feasibility study where we would not only desire to learn the preferences of

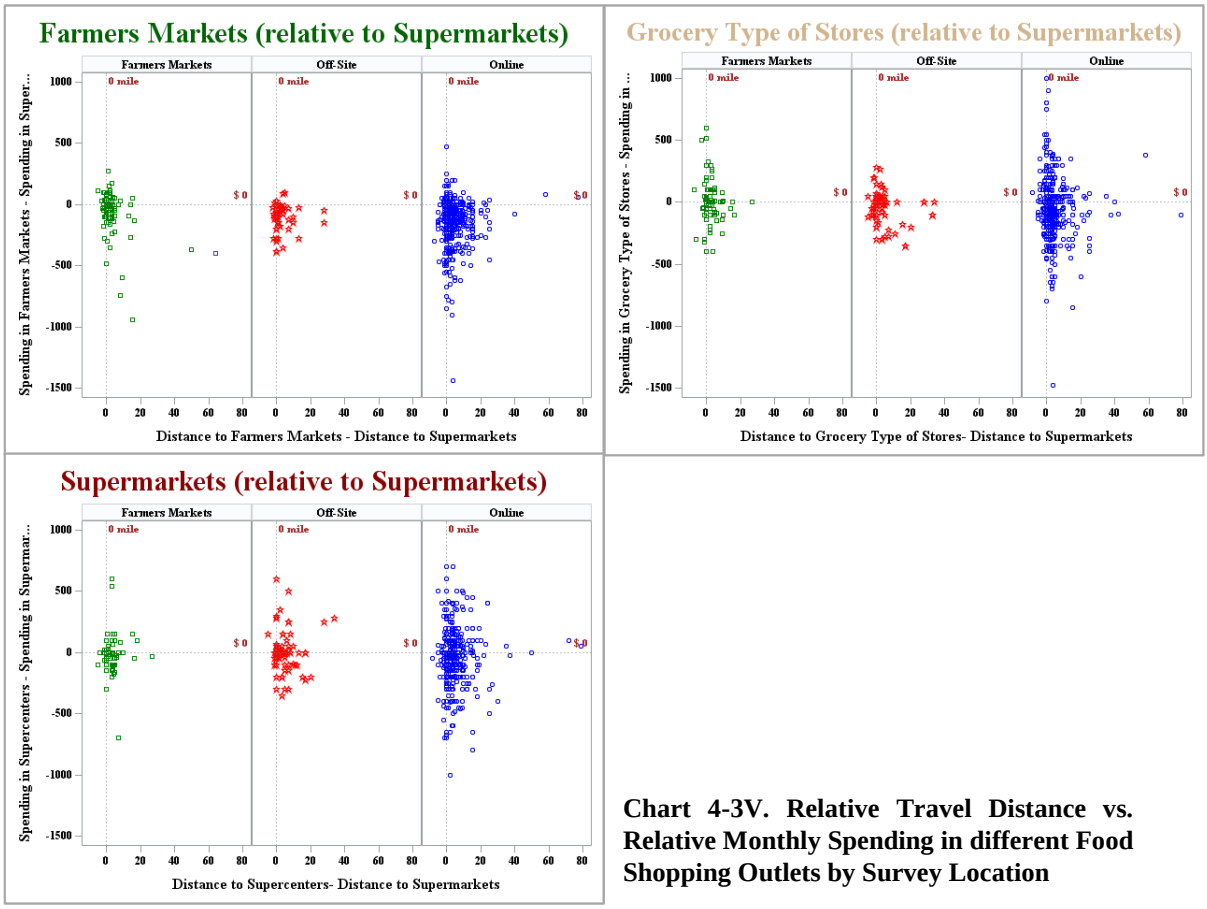


Chart 4-3V. Relative Travel Distance vs. Relative Monthly Spending in different Food Shopping Outlets by Survey Location

existing Farmers Markets consumers, but also expand the Local Food Center visibility to potential consumers. Subsequently, we will analyze the food purchasing preference from our respondents.

1) Willingness to Visit Local Food Center

One of the most important questions that we want to learn from consumers is: Whether they will want to visit a Local Food Center? If most of the consumers indicate that they do not want to visit a Local Food Center, we probably need to re-

consider on other type of food shopping outlets or marketing channels to integrate the local supply chain. Fortunately, over 70% of the respondents in our study

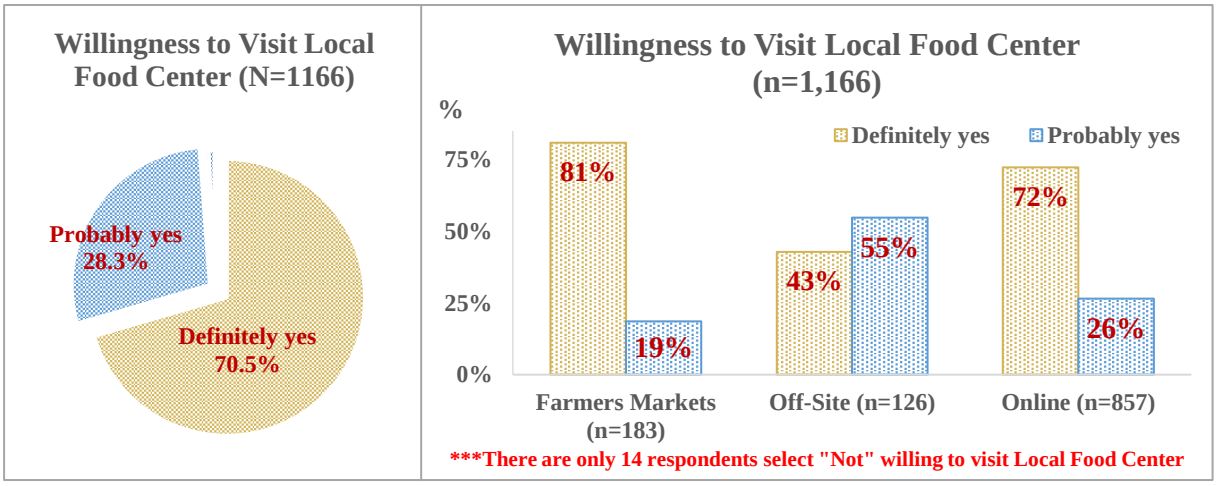


Chart 4-4W. Willingness to Visit Local Food Center of all Respondents (Left); by Survey Location (Right)

indicated that they are "Definitely" willing to visit a Local Food Center and 28% of respondents indicated that they are "Probably" willing to visit Local Food Center (*see Chart 4-4W*).

Consumers in Yavapai County are friendly to the idea of having a Local Food Center and are willing to visit it. If we considered "Definitely" as a stronger commitment while "Probably" only represented as might or might not visit, we found that respondents from the other food-related sites did not possess the strong positive opinion of the Local Food Center. Respondents from Farmers Markets and the Online platform are mostly Farmers Market friendly. That is, they are much more likely to visit the Local Food Center as the trust linkage has already been established. On the other hand, we would recommend building diverse marketing channels and some sort

of fan page, loyalty program, and word of mouth to acquire the trust from general consumers for receiving higher visibility and sales for the Local Food Center.

2) Attributes Desired when Purchasing Food Products

When there are same products in different stores with possibly different price, quality, shelf-life and so on, why would consumers choose to purchase one and not the other one has always been a question for researchers to answer. The consumer preference is extraordinary difficult to measure as every consumer has his/her own utility function that is not revealed when making decision. However, consumer preference is important for the feasibility of Local Food Center since it is crucial to understand what can attract consumers and lead them to allocate their food expenditure from other existing food shopping outlets to the new Local Food Center. From Chart 4-4X. below, the upper blue bar is the attributes related to stores/outlets while the lower golden bar is the attributes related to products themselves. We found that consumers in our sample preferred Fresh, Local, Organic Products with a great variety. Besides, price and location are the two most concerned attributes in all store-related attributes. The original Farmers Markets have already possessed characteristics of "Fresh, Locally-Grown, and Grown with Organic Method", but the new Local Food Center could attract more potential consumers or sales with more

variety of products, competitive price and a location that is within 3-5 miles to most of the target consumers.

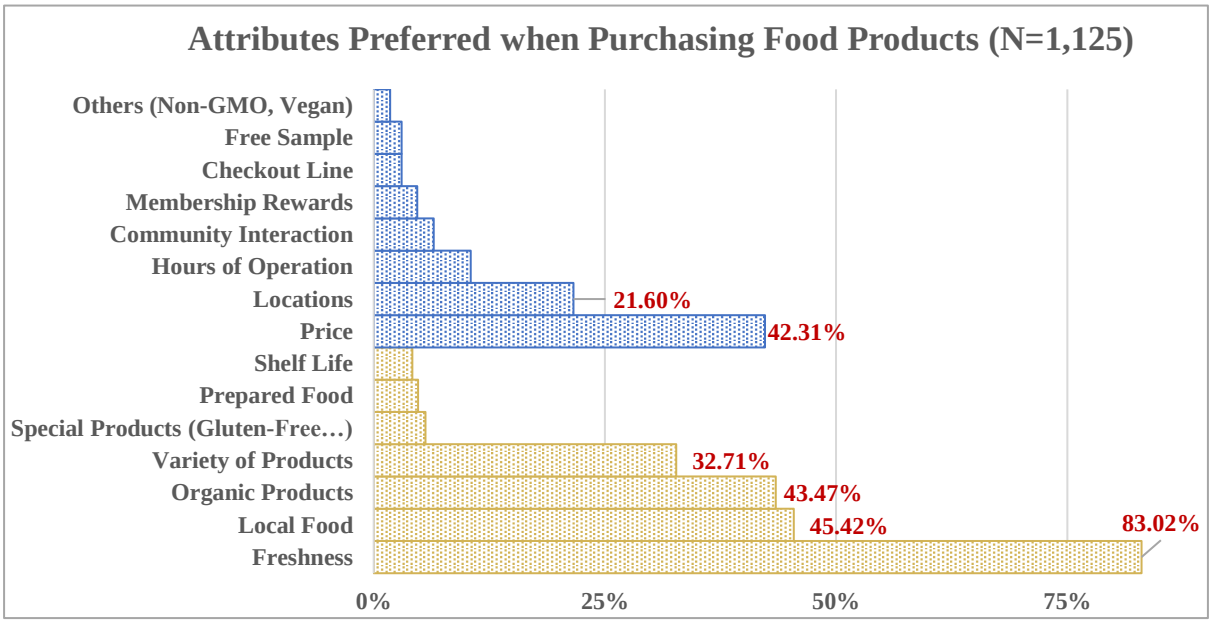


Chart 4-4X. Attributes Desired when Purchasing Food Products from all respondents
(Note: Gold = Products-Oriented; Blue = Stores-Oriented)

Subsequently, since we have learned that respondents from different survey location can be considered as different populations with different demographic backgrounds and food purchasing patterns, we would also discuss the attributes desired by different survey locations. From Chart 4-4Y. below, we observe that respondents from Farmers Markets desire Freshness, Local and Organic products which are all product-related attributes. This finding is consistent with the previous studies where Farmers Markets consumers value freshness and quality over other attributes and are willing to pay premium for acquiring those attributes. On the other hand, respondents from other food—related outlets are concerned more on freshness, variety of products and price while respondents from online platform value more on

freshness, organic products and price. We learned that for non-farmers markets shoppers, they are not only concerned about quality, but they also like to balance it with price. Therefore, the challenges for Local Food Center is how to maintain the quality of products with a little bit lower price to attract more potential consumers.

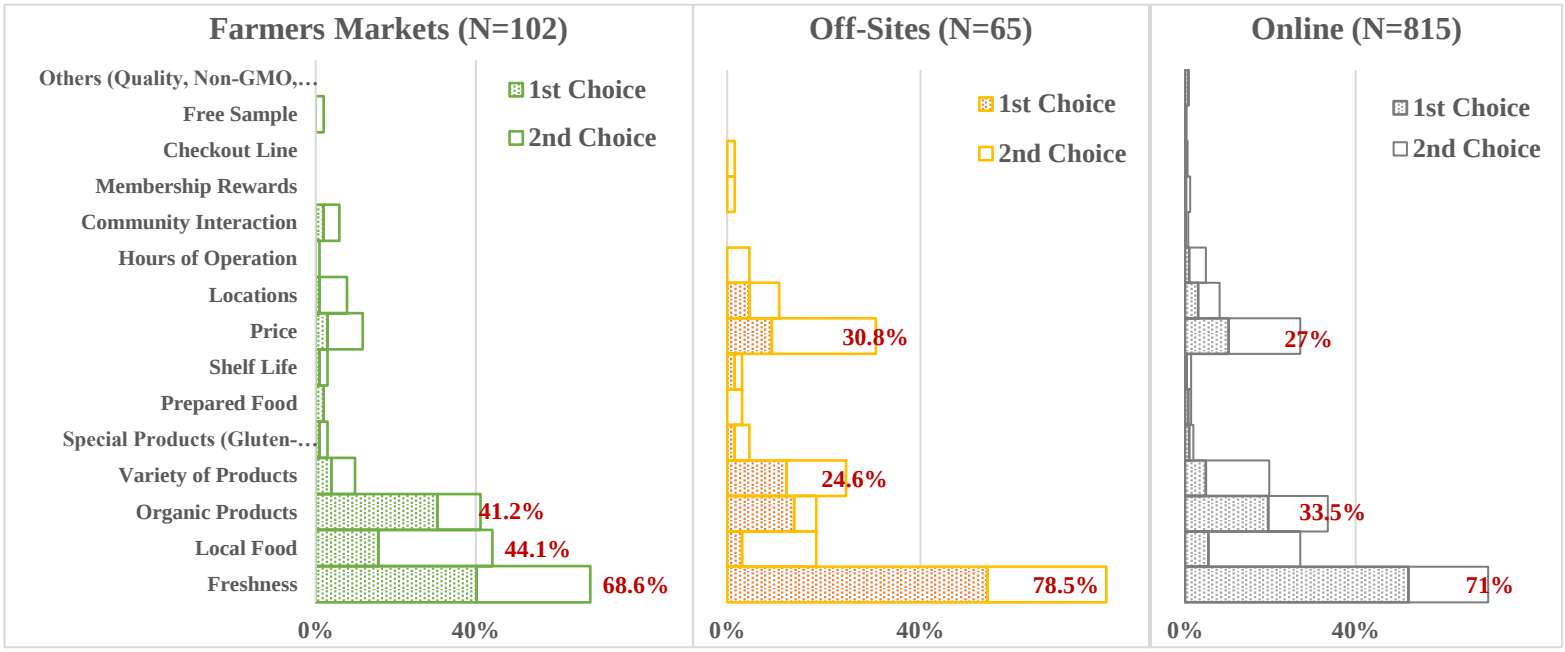


Chart 4-4Y. Attributes Desired when Purchasing Food Products by Survey Location

4-2. Local Restaurant Study

4.2.1 Data Collection

The purpose of conducting the Local Restaurant Study is to understand reasons that the local food providers do not currently purchase from local producers, realizing competitors exist (current food suppliers to the local restaurants), and obtain the attitudes of local restaurants toward a Local Food Center. There is no strong evidence show that restaurant owners who fill in the paper survey would be different from those that filled in the online survey as their choice on the version are based on their convenience. Therefore, we will analyze the responses from both survey methods together.

We received a total of 21 responses from Local Restaurants in the first two quarters of 2018 and 17 (80.9%) restaurants filled in all the questions (*see Chart 4-2A*.). We received fewer online responses of the Local Restaurant Survey than the Consumer Survey. The Online platform provides us relatively low cost and fast access to potential respondents; however, we have a group of target audiences for the Local Restaurant Survey so that the online platform may not be as efficient as it was for the consumer study.

Table 4-2A. Sample Size

Collected Location	Sample Size	Valid Reponses
Paper Survey	16	13 (81.3%)
Online	5	4 (80%)

Questionnaire information is self-reported as with the Consumer Study which means that we can only assume that the Local Restaurants expressed their true preferences. Therefore, it is critical for the Local Food Center operators to judge the logic of their answer.

4.2.2 Selected Results from the Questionnaire

In this section, we will discuss the answers from the Local Restaurants qualitatively, including current competitors, their needs, reasons for not purchasing local, and willingness to purchase from a Local Food Center under certain condition(s).

1) Current Competitors

A goal of a Local Food Center is to become a hub that integrates the local food supply chain to ensure that local small producers can receive higher profits with their products. Since such a local food supply chain has not yet been well established, it is

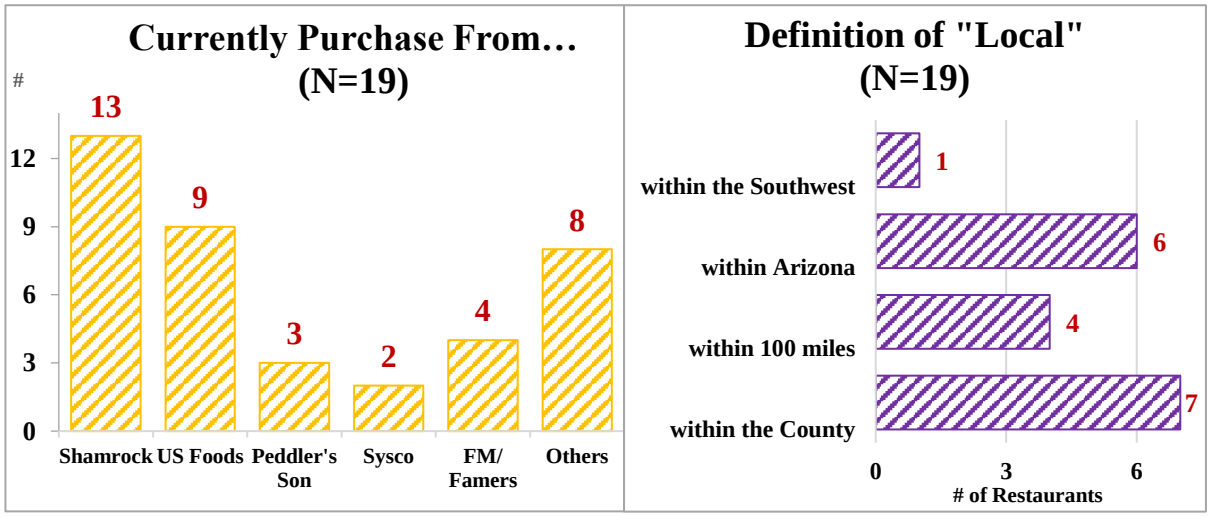


Chart 4-2A. Current Food Suppliers to Local Restaurants (Left); Definition of Local for Local Restaurants (Right)

important to learn what ingredients restaurants are currently utilizing in Yavapai County.

Local restaurants indicated that they mostly purchase their ingredients from Shamrock and U.S. Food (*see Chart 4-2A*). Shamrock is a restaurant supplier and wholesale grocer that is based in Arizona while U.S. Food is a national-wide food distributor that has many local locations. It would be a huge challenge for a Local Food Center to compete with these well-known food providers. From the right chart in Chart 4-2A. below, we learned that for local restaurants in Yavapai County, "Local" can be within Yavapai County, up to 100 miles or even as long as it's from Arizona. Therefore, some local restaurants might be purchasing their food ingredients from Phoenix or Yuma but still feel that they are using local produce. From our survey, 7 local restaurants indicated that they are currently purchasing local ingredients and there are only 4 local restaurants that purchase directly from farmers or Farmers Markets. Therefore, for a Local Food Center become the food hub for integrating the local food supply chain, the education and promotion on the definition of local is needed. Incentives, samples, and promotion on supporting Local Products could be a good place to start penetrating their supply chain. However, four local restaurants indicated that they have purchased from Farmers Markets or Local Farmers directly. This is very positive as a Local Food Center can directly promote

to these restaurants and provide them with more convenient delivery and/or pick up options.

2) Produces/ Products that Local Restaurants Desired

If a food marketplace does not provide food products that a local restaurant wants, they cannot purchase from the Local Food Center even when they would like to support this endeavor. Therefore, it is not enough to only identify the competitors but also the needs from the local restaurants. From Chart 4-2B., we found that the

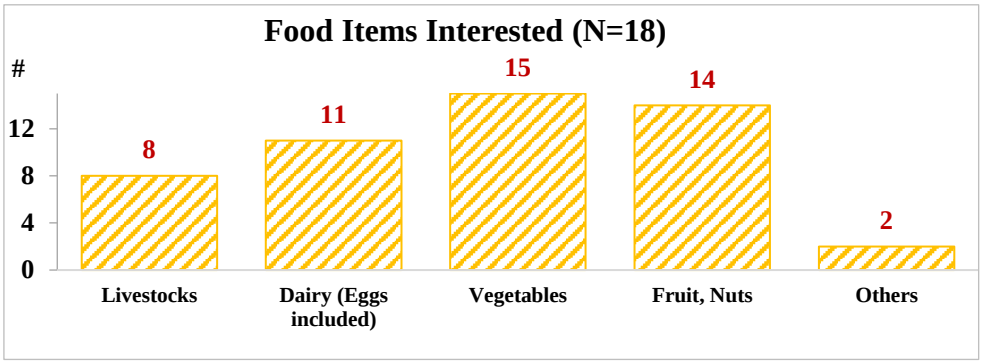


Chart 4-2B. Food Items that Local Restaurants interested in Purchasing from Local Producers

local restaurants are mostly interested in purchasing dairy, eggs, fresh vegetables and Fruits from local producers. These products are mostly already provided by small producers to the Prescott Farmers Market which if the Local Food Center can provide these products on a daily basis under reasonable prices that Local Restaurants can accept, they have a high probability of giving the Local Food Center a try.

3) **Reasons do not currently purchase from local producers**

Based on our Local Restaurant Survey, there are only 39% of the local restaurants indicated that they are currently purchasing any local ingredients regardless of how

they defined “Local”. Therefore, it is significant to the feasibility of a Local Food Center to learn the reasons that prevent Local Restaurants from purchasing local produces. The Local Restaurants from our sample think that Transportation (Delivery Issue), Price, and Inconsistency of Supply are the most critical issues (*see Chart 4-2C*). These concerns can mostly be solved by the Local Food Center as the Local Food Center can be a vehicle to provide a consistent marketplace that is located close to center of the Yavapai County and could maybe provide some delivery services. As a result, the price would be the challenge for Local Food Center as the local restaurants may not willing to pay the premium for the freshness and organic features as consumers do.

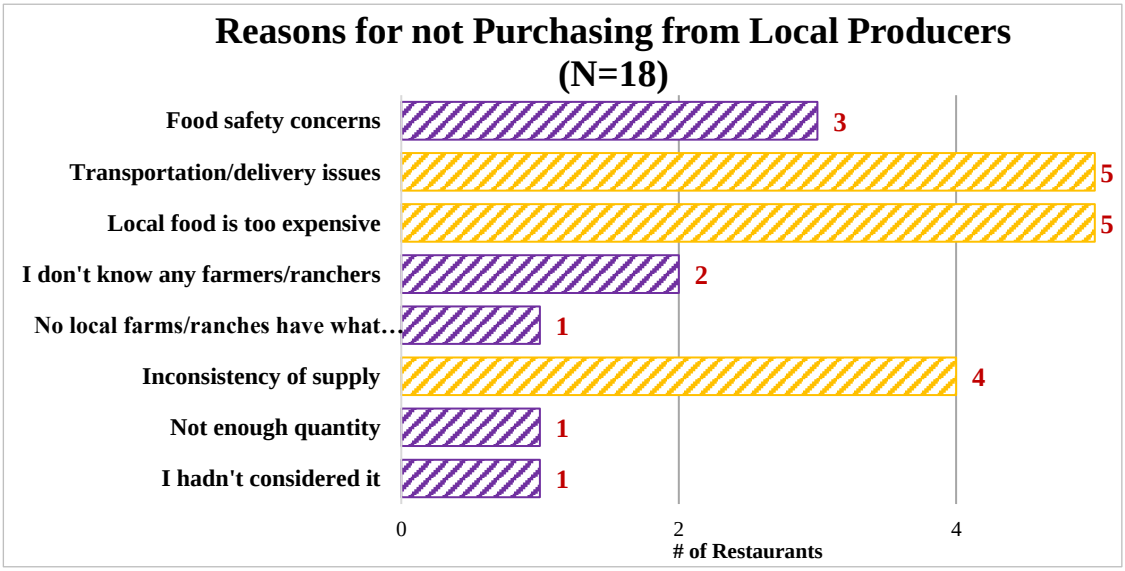


Chart 4-2C. Reasons that Prevent Local Restaurants from Purchasing Local Produces

4) **Willingness to Purchase from Local Food Center with certain services**

A Local Food Center is aiming to be a stable marketplace, pick-up and delivery services might be accomplished from cooperation of small producers and Local Food

Center staffs. Therefore, we solicited the attitude of local restaurants on their willingness to purchase from a Local Food Center if these services are provided. The willingness to purchase from the Local Food Center if a certain location pick-up service is provided is around 88% of all local restaurants (*see Chart 4-2D*). Most of the local restaurants are willing to travel up to 10 miles for picking up local produce. If the Local Food Center located in the city of Prescott, almost all the local restaurants in Prescott that are willing to pick up local produce from the Local Food Center would be okay with the travel distance. The willingness to purchase from the Local Food Center if the delivery service is provided is 100% from the local restaurants. If a close to market price and the consistent supply can be fulfilled by the Local Food Center, many local restaurants are positive with purchasing from a Local Food Center if delivery is provided.

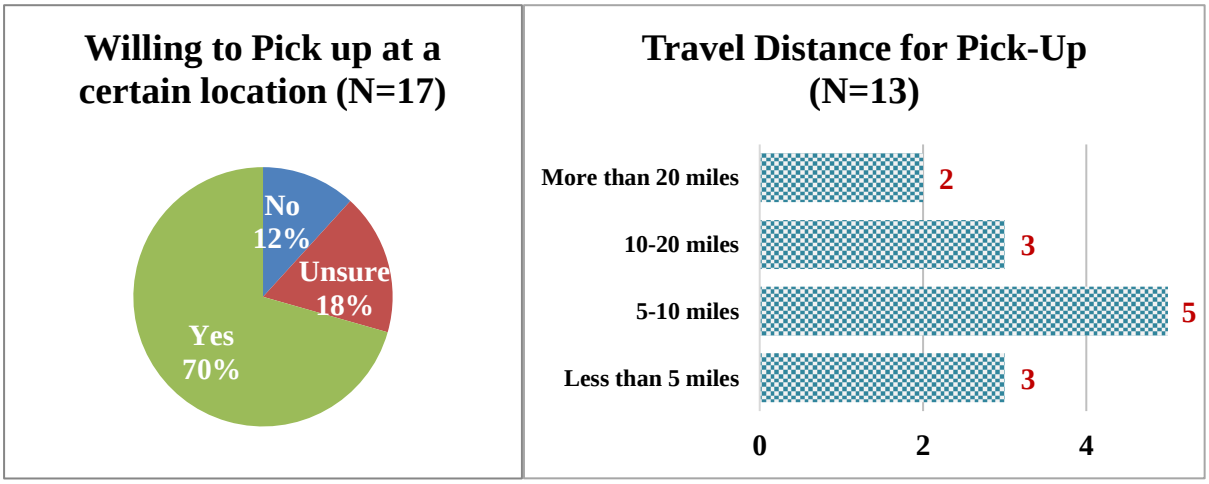


Chart 4-2D. Willingness to Pick up at Certain Location for Local Produces (Left); Travel Distance that Local Restaurants can accept for picking up Local Produce

We also collect information on whether a Local Restaurant requires any Food Safety Certificate from the Local Producers when they decide to purchase from a Local Food Center. We unexpectedly found that only 24% of the local restaurants make the Food Safety Certificate as a requirement. In other words, some of the relatively small-scale producers do not need to worry about the high cost on the food safety certificate to be one of the suppliers to the Local Food Center. However, in order to be able to supply to all local restaurants, the Local Food Center should still encourage and help facilitate small producers to participate in the Good Agriculture Practice (GAPs) and Good Handling Practice (GHPs) program and receive the certificate for their own liability and the safety of consumers.

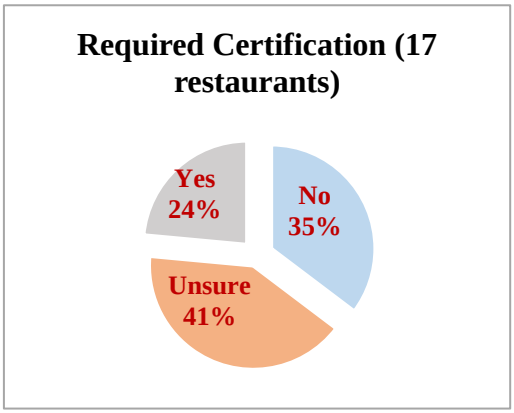


Chart 4-2E. Attitude toward the Requirement of Food Safety Certificate

4-3. Vendors/ Producers Study

4.3.1 Data Collection

Goal of conducting the Vendor/ Producer Study are to discover the interests of small producers in Yavapai County of supplying to a Local Food Center, understand the current sales and production schedules of local producers, analyze the possible business framework that local producers preferred for a Local Food Center, and obtain the needs for on-site facilities. There is no strong evidence to show that producers who

fill in the paper survey would be different from those that filled in the online survey as their choice on the version was based on their convenience like with restaurants. In addition, we also provided a Spanish version of the same questionnaire to facilitate those small producers that may not be English literate. Therefore, we will analyze the responses all together as with the Local Restaurants Study.

We received a total of 37 responses from current small producers with the Prescott Farmers Market and some local producers during the first two quarters of 2018. 26 (70.3%) respondents filled in all the questions (*see Chart 4-3A*.). We received almost all responses from the online instrument, and we selected our sample to only those who are small producers in the Yavapai County. As it is a relatively comprehensive questionnaire that takes at least 10 minutes to complete, the valid responses rate is very good. We can take the valid responses rate as a positive signal that small producers are positive towards the idea of having a Local Food Center where they can market their local produce in a non-Farmers Market environment.

Table 4-3A. Sample Size

Collected Location	Sample Size	Valid Reponses
Paper Survey	2	1 (50%)
Online	35	25 (71.4%)

Information is self-reported as with both the Consumer and Local Restaurant Studies which means that we can only assume that producers and vendors expressed

their true preferences and production schedules. Therefore, it is critical for the Local Food Center operators to examine the information that we received in the survey.

4.3.2 Vendors/ Producers Demographic

Although producer demographic probably would not really influence their decision on supplying to a Local Food Center, it might be useful information for the Local Food Center operators to communicate with small producers. In the vendor/ producer survey, we received a mixture of responses between farmers, ranchers, and vendors (*see Chart 4-3A*). It can provide us more opinions and concerns that cover different kinds of producers. In addition, most of the existing small producers supply

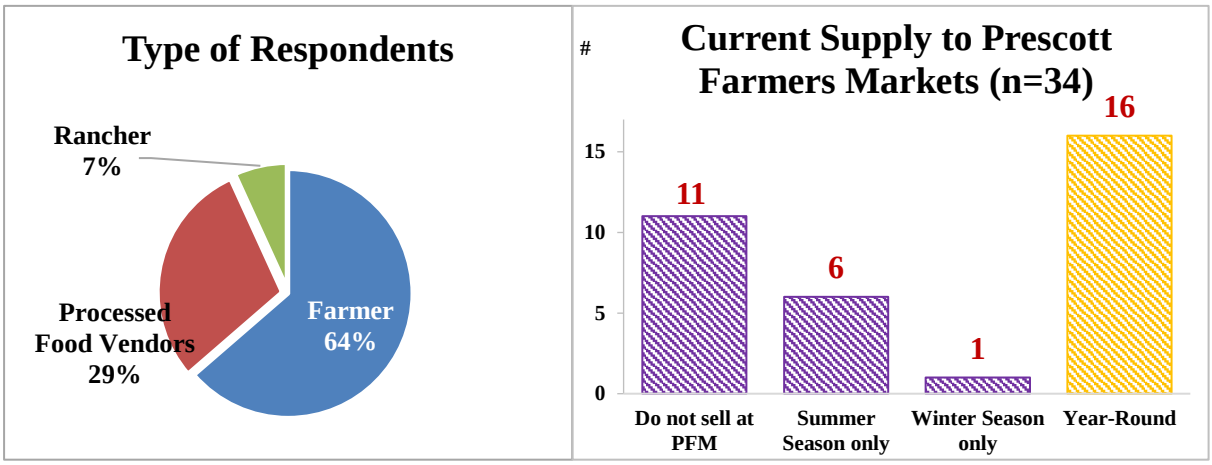


Chart 4-3A. Respondents Type in Vendors/Producers Survey (Left); Current Supply Situation to Prescott Farmers Markets (Right)

year-round to the Prescott Farmers Markets which means that regardless of the yield that these producers can receive in winter, produce can be supplied to the Local Food Center during the winter.

1) Ages of Vendors/ Producers

The vendors or producers in our survey are of all different ages; however, most of the producers are between 46 and 65 years old (*see Chart 4-3B).* Respondents indicate that the small producers in Yavapai County are aging. Thus, the Local Food Center might be beneficial to attract the younger generation if a continuous supply of local produce is more sustainable at the marketplace.

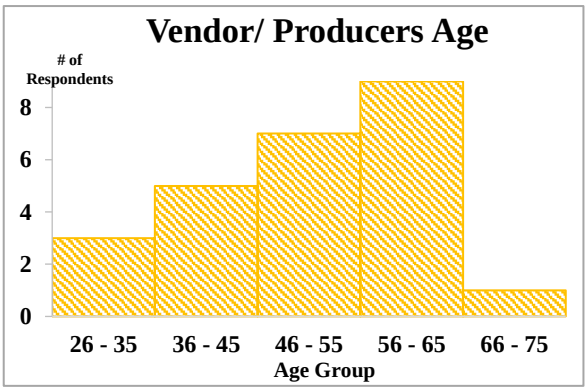


Chart 4-3B. Frequency Distribution Respondents Age

2) Education Attainment of Vendors/ Producers

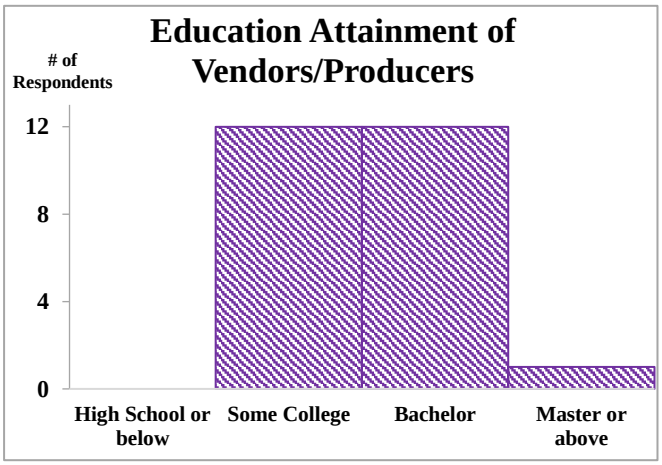


Chart 4-3C. Frequency Distribution Respondents Education Attainment

The education level of the small producers associated with the Prescott Farmers Markets and Yavapai County are relatively high whereas all the respondents in our survey indicated that they have at least Some College degree (*see Chart 4-3C*). It is a positive signal for the feasibility of a Local Food Center since the producers with higher education have more opportunities to learn the importance of marketing and establishing a sustainable marketplace.

4.3.3 Selected Results from the Questionnaire

In this section, we analyze the answers provided from the producers and vendors, including their interests in selling to a Local Food Center, the feasibility of co-existing with the original Farmers Markets, potential business framework, and attitude toward a Local Food Center.

1) Interests in selling to Local Food Center

Chart 4-3D. Producers/Vendors Interests in Supplying to Local Food Center

From our survey, there were 5 producers/ vendors that indicated they are not interested in supplying to a Local Food Center (*see Chart 4-3D*). These producers might change their decision after a Local Food Center has been built. Overall, producers are positive toward the Local Food Center as 85% of them show interest in supplying to the Local Food Center. We organized the reasons that encourage and discourage producers from considering selling their produce through a Local Food Center in Table III-3B below. The most attractive feature of the Local Food Center for producers is the exposure of their produce while the most critical problem that prevents producers from considering selling their produce through a Local Food Center is the limited labor and yield. It is critical for the feasibility of a Local Food Center if the

production of certain common produce in winter is not enough. For a Local Food Center to attract more consumers, these consumers will be looking for a shopping environment that can fulfill their needs year-round. As a result, further investigation on production schedules is needed for the assessment of a sustainable supply for Local Food Center.

Table 4-3B. Reasons of interested vs. not interested to sell through Local Food Center (Rank by frequency)

Reasons of interested in selling through LFC	Reasons of not interested in selling through LFC
Access to more customers	Limited labor
Better and/or cost-effective marketing opportunities	Limited Production
Convenience (Cost-Effective)	Do not trust LFC
Exchange resources & information	Profit Margin
	Selling everything Online
	Prefer Direct Sales
	Transportation
	Limited Time to Supply

2) Co-existing with the current Farmers Markets

Since the Local Food Center operating team is interested in keeping the original Farmers Markets which only operate once a week in the morning, it is important to acquire the attitude of producers if they would consider supplying to both places. From our survey, 47.6% of producers indicated that they would still attend the weekly farmers markets and only 10% of the producers expressed that they would probably not attend. Although there will be many challenges when it comes to reality that producers might not think of when they fill in the survey, the attitude of producers on the co-existence of markets is very positive. In Table 4-3C. below, the concerns from producers on selling their products through a Local Food Center have

been listed. The major concern from producers are quality and the information about their products. Small producers usually grow or make their products completely by themselves where they may have less confidence with others handling their products. As a result, the Local Food Center operating team may need to pay more attention on the communication and build more trust between the staff and the producers.

Table 4-3C. Concerns about selling products through Local Food Center
(Rank by frequency)

Concern of selling through LFC
Staff members are not familiar with my products
Quality control
Competition of similar products
Lower price margins
Would affect my business on Saturday at Prescott Farmers Market

3) **Business Framework of the Local Food Center**

As the Local Food Center would be operating under a single stores model, similar to a Grocery Type of Store where producers are no longer needed to sell their products by themselves. Therefore, the Local Food Center and producers need to settle on a business framework that satisfy both parties. In our survey, we proposed two types of business frameworks:

- Commission Basis: Local Food Center sells your products and keep a certain percentage for operation
- Wholesale: Directly sell all your products to Local Food Center at a discounted rate

Both business frameworks have received half of the support from the producers which the Local Food Center might be able to have a mixture of both pricing frameworks and have individual contracts with different suppliers. In addition, we also collected information on whether producers preferred a percentage commission basis business framework. We found that 85% of the producers would accept the commission basis framework with a 20% commission rate.

In addition, we also want to learn the attitude of producers on the type of marketers that they can trust for selling their produce. Most of the producers trust original Farmers Markets staff and future Local Food Center staff while around 40% of the producers do not desire to have other vendors sell their produce (*see Chart 4-3E*). Therefore, when a Local Food Center recruit's other vendor as volunteers for marketing in the store, they need to consider the attitude of other producers. As a

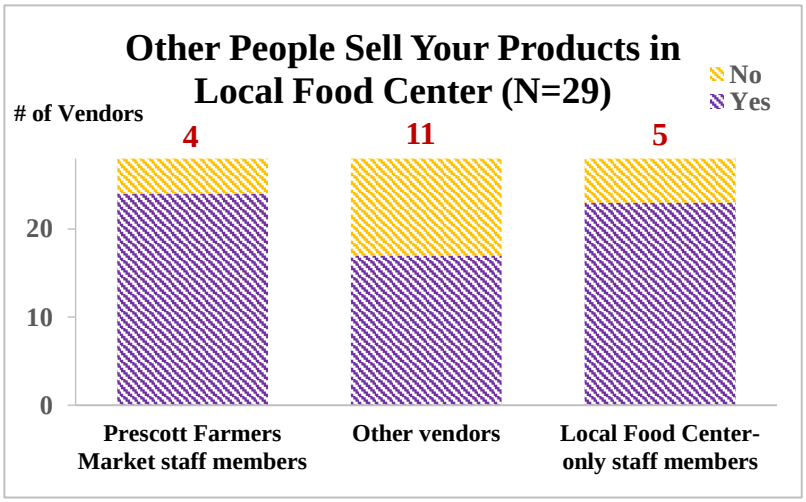


Chart 4-3E. Producers/ Vendors Attitude toward Others Sell their products

Local Food Center is similar to the grocery stores where similar products are usually

presented with the same display as competitors, it might be critical to prevent any producers/vendors to get involved with the decision of outlet display and marketing.

In addition, since the Local Food Center has a high probability of displaying the same type of produce together, producers that have or have not received the GHP/GAP certificates could be displayed differently. As a result, the Local Food Center may set up some minimum requirements on food safety. The Local Food Center can serve as an educational center to help those small producers without the

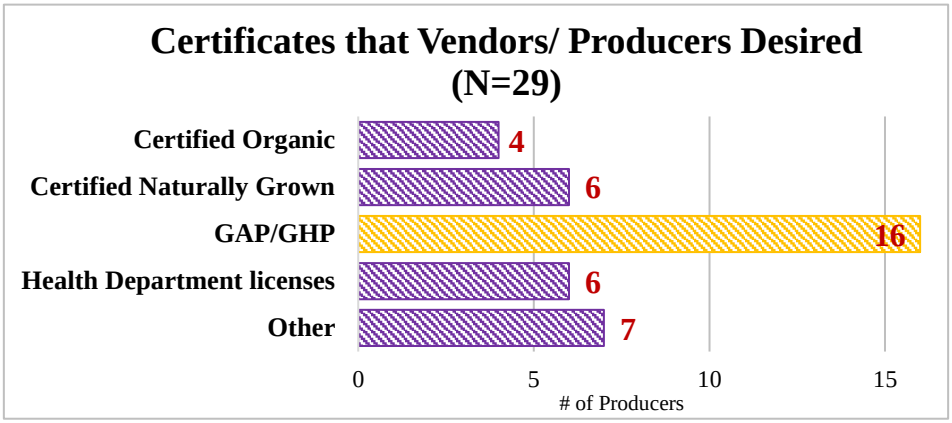


Chart 4-3F. Certificate that Vendors/Producers Desired

basic food-related certificate to receive one. From our survey, producers are most interested in getting the Good Agriculture Practice (GAP) and Good Handling Practice (GHP) certificate (*see Chart 4-3F*).

Last but not least, transportation is also a concern for small producers and the feasibility of a Local Food Center. Most of the small producers from our survey expressed that 10% of their sales were devoted to transportation costs. Although many of the producers have their own fridge truck facilities, the Local Food Center

needs fresh produce to be delivered to the store frequently, which a small producer with limited labor would find extremely challenging. Therefore, a cooperative system or pick-up service likely needs to be provided to ensure the supply to the Local Food Center. As the Local Food Center is a non-profit marketplace, a pick-up service might be difficult at the beginning stage where the cooperation between producers is the best solution. From our survey, 77% of the vendors/ producers are willing to cooperate with other vendors on transporting their products. The remaining 23% of the vendors/ producers expressed either having enough labor to deliver their products daily or not trusting other producers to handle their products. In terms of cost-efficient concept for having a Local Food Center, a better communication and arrangement between producers, future Local Food Center staffs and original Farmers Markets is the key for cooperation.

From Chart 4-3G. below, we found that producers/ vendors are generally willing to travel up to 25 miles or even above to sell their produces. We believe that most of the producers in Yavapai County can transport their produce to Prescott City, Prescott Valley town or Chino Valley where most of the consumers and local restaurants are located. From the previous section, we have discussed that the city of Prescott is the best location for a Local Food Center from the local restaurant survey

and 75.9% of vendors/ producers also indicated that they believe the ideal location for Local Food Center is “Prescott City” area.

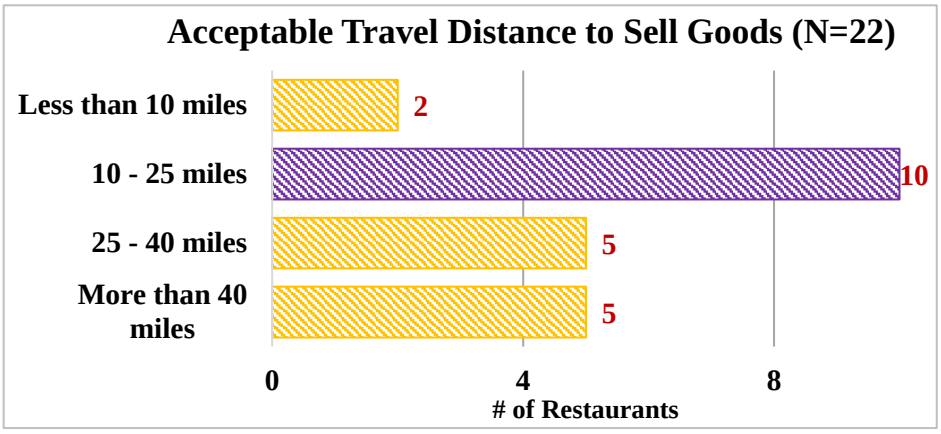


Chart 4-3G. Producers/ Vendors Willingness to Travel to sell goods

4) **Vendors/ Producers Attitude toward the Local Food Center**

One of the objectives for Local Food Center is to be the small business incubator where Local Food Center is aiming to improve accessibility of local consumers to fresh produce and cultivating the local business. Although some of the small producers have already grown impressively through the farmers markets, there are still opportunities for producers to grow and expand through a Local Food Center. Vendors/ Producers can reach more consumers, receive more up-to-date production information, reduce marketing costs, and distract risk through a Local Food Center. We collected the attitudes of vendors/ producers on the impact of a Local Food Center to their business and found that 90% of them believe that there will be positive impact (*see Chart 4-3H*). However, there are a few vendors/ producers think that there will be no impact to their business and all of them are food processed vendors.

For a processed food vendor, they have many diverse marketing channels and longer product shelf-life than farmers and ranchers where the existence of a Local Food Center might not be critical to enlarge their business. Overall, most vendors/ producers believe that a Local Food Center can create a positive impact to their business, especially for fresh produce producers.

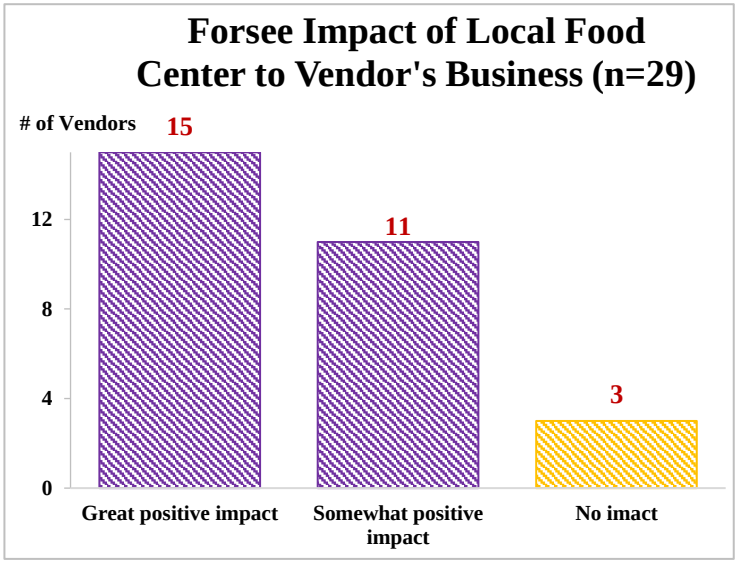


Chart 4-3H. Producers/ Vendors Foresee Impact of Local Food Center to their Business

Chapter V. Methodology and Result

In this section, we analyze consumer preferences using more quantitative methods to understand Yavapai County consumer preferences and tastes. When a consumer decides to visit a certain food shopping outlet, they do not make the decision based on only one element; in another word, the decision-making process in consumers mind is integrated with multiple attributes. As a result, we aim to calculate the margin effect of each attribute when assuming other elements unchanged. The following models will be presented in this section:

1) **Drawing/ Prize Binary Model**
2) **Marginal Propensity to Consume (MPC) Model**
3) **Discrete Choice Set Model**

First, we describe the descriptive statistics of all questions used as a variable in any model that we present in this study. Although we have demonstrated some selected descriptive statistics in Chapter IV., Table 5A. below has organized all the variables in a comparable fashion by survey location.

The number of respondents or sample size varies by variables since not all respondents completed the entire questionnaire, a big portion of respondents did not state their monthly living expenditure, monthly spending on different food shopping outlets, and distance to different food shopping outlets. Travel distance to different food

shopping outlets is one group of question where we received a poor response rate. We received the comment that a group of respondents didn't fill in distance since they simply did not visit that food shopping outlet while the other group of respondents do not have a clue on how far they usually travel to these food shopping outlets. However, no matter whether a household purchases from a certain food shopping outlet or not, that food shopping outlet is still located at a certain distance in miles from their house. We worked at interpolating the distance to food shopping outlets for missing responses by taking the median distance of those responses from their zip code. Although some studies use the geographic mid-point of a zip code to certain food shopping outlets to impute the missing responses, zip codes usually contain a huge area in the western U.S. where there might be multiple food shopping outlets of the same type within the same zip code. In addition, one study using The National Household Food Acquisition and Purchase Survey (FoodAPS) suggests that "Consumers usually travel 3.4 miles for grocery shopping which bypass the nearest stores (2 miles)" (Ver Ploeg et al., 2015), where using the median travel distance by zip code is relatively reasonable to impute. Although, interpolating travel distance prevents us from losing many responses in our model, we need to interpret our distance results with more caution.

Table 5A. Descriptive Statistic of Selected Variables

Descriptive Statistic	Farmers Market				Off-Site				Online			
	N	Median	Mean	Max	N	Median	Mean	Max	N	Median	Mean	Max
Monthly Spending in Food Shopping Outlets												
Monthly Spending in Farmers Market ($)	159	$60	$89	$550	108	$15	$32	$300	618	$40	$54.3	$550
Monthly Spending in Grocery Stores ($)	159	$100	$146	$1,000	107	$80	$115	$800	618	$100	$151.2	$1,200
Monthly Spending in Supermarkets ($)	159	$60	$118	$1,000	107	$100	$154	$500	618	$150	$192.2	$1,500
Monthly Spending in Supercenters ($)	159	$40	$79	$800	107	$100	$142	$1,000	618	$100	$139.2	$1,000
Monthly Spending at All Food Shopping Outlets ($)	160	$380	$432.1	$1700	107	$400	$443	$1800	618	$480	$537	$2,080
Farmers Markets Share	159	19.9%	31.6%	100%	107	3.2%	7.5%	46.5%	618	8%	11.2%	100%
Grocery Stores Share	159	33.3%	46.9%	85.7%	107	23.8%	27.2%	100%	618	21.7%	21.2%	100%
Supermarket Share	159	22.2%	43.5%	100%	107	33.33%	35.4%	100%	618	35.9%	36.8%	100%
Supercenter Share	159	10%	28.6%	80%	107	25%	29.9%	100%	618	21.6%	24.8%	100%
Food Expenditure Share (over Living Expenditure)	149	15%	23.3%	53.3%	100	11.4%	14.33%	90%	617	15%	17.9%	95%
Food Purchasing Related Variables												
Number of times visit Farmers Markets in a month	185	2	2.36	4	125	0.25	0.67	4	875	0.25	1.09	4
Number of times of food purchasing in a month	184	4	6.33	12	125	4	5.78	12	867	8	6.75	12
Number of Meals away from home in week	185	1	1.83	18.5	126	1.5	2.4	11.5	855	1.5	1.82	18.5
Nutrition Program												
SNAP Nutrition Program *(County Estimate= 8.5%)*	184	-	0.11	1	123	-	0.67	1	852	-	0.08	1
WIC Nutrition Program *(State Estimate= 6.88%)*	184	-	0.43	1	123	-	0.008	1	852	-	0.03	1
Farmers Market Nutrition Program	184	-	0.6	1	123	-	0	0	852	-	0.01	1
All Nutrition Program	184	-	0.16	1	123	-	0.407	1	852	-	0.01	1
Food Purchasing Preference												
Freshness of Products	185	-	0.81	1	125	-	0.90	1	815	-	0.83	1
Prepared Food Products	185	-	0.07	1	125	-	0.10	1	815	-	0.03	1
Local Products	185	-	0.68	1	125	-	0.33	1	815	-	0.42	1
Organic Products	185	-	0.63	1	125	-	0.35	1	815	-	0.04	1
Variety of Products	185	-	0.27	1	125	-	0.38	1	815	-	0.33	1
Product Shelf Life	185	-	0.65	1	125	-	0.09	1	815	-	0.03	1
Hours of Operation	185	-	0.87	1	125	-	0.08	1	815	-	0.11	1
Price of Products	185	-	27.6	1	125	-	0.73	1	815	-	0.46	1
Checkout Line	185	-	0.49	1	125	-	0.22	1	815	-	0.11	1
Community Interaction	185	-	1.73	1	125	-	0.04	1	815	-	0.04	1

Special Products (Gluten Free, Kosher…)	185	-	8.11%	1	125	-	12%	1	815	-	4.05%	1
Membership Reward	185	-	3.24%	1	125	-	6.4%	1	815	-	4.79%	1
Free Sample	185	-	9.73%	1	125	-	4%	1	815	-	1.35%	1
Location	185	-	18.38%	1	125	-	31.2%	1	815	-	20.86%	1
Travel Distance to Food Shopping Outlets												
Distance to Farmers Market (one-way, mi)	133	4	7.23	65	59	5	9.52	40	484	5	9.39	80
Distance to Grocery Stores (one-way, mi)	116	5	7.07	35	85	6	10.86	45	520	5	8.93	80
Distance to Supermarkets (one-way, mi)	100	3	4.5	25	90	5	6.94	30	522	3	5.42	60
Distance to Supercenters (one-way, mi)	83	5	7.66	35	83	8	11.32	40	489	6	9.81	120
Interpolated Distance to Farmers Market (one-way, mi)	184	5	7.1	65	125	8	10.12	62.5	865	8	9.08	80
Interpolated Distance to Grocery Stores (one-way, mi)	181	5	7.31	35	125	6	11.5	60	863	6	9.1	80
Interpolated Distance to Supermarkets (one-way, mi)	185	3	3.9	32.5	126	3.25	5.95	30	866	3	4.93	60
Interpolated Distance to Supercenters (one-way, mi)	182	5	8.36	35	125	8	11	55	866	7	10.28	120
Respondents Characteristics												
Women	182	-	75.27%	1	126	-	79.37%	1	769	-	89.86%	1
Men	182	-	25.63%	1	126	-	19.84%	1	769	-	10.01%	1
Age *(Census County Median = 53.7)*	180	50.5	52.17	90.5	126	60.5	54.71	80.5	769	50.5	48.38	90.5
African American *(County Estimate= 0.53%)*	178	-	0.56%	1	122	-	1.64%	1	767	-	0.78%	1
Asian *(County Estimate= 0.96%)*	178	-	2.25%	1	122	-	3.28%	1	767	-	1.43%	1
Caucasian *(County Estimate= 91.98%)*	178	-	88.2%	1	122	-	89.34%	1	767	-	89.7%	1
Hispanic *(County Estimate= 14.1%)*	178	-	8.43%	1	122	-	9.02%	1	767	-	6%	1
Native American *(County Estimate= 1.7%)*	178	-	2.81%	1	122	-	1.64%	1	767	-	1.83%	1
Pacific Islander *(County Estimate= 0.03%)*	178	-	0%	0	122	-	0%	0	767	-	0.26%	1
Household Size *(County Average= 2.78)*	179	2	2.44	7	121	2	2.26	7	760	2	2.8	10
Percentage of Household Have Child (%)	179	-	18.99%	1	121	-	10.74%	1	760	-	30.13%	1
Some College *(County Estimate= 41.2%)*	182	-	34.07%	1	124	-	44.35%	1	768	-	44.79%	1
Bachelor's Degree *(County Estimate= 13.4%)*	182	-	35.16%	1	124	-	20.16%	1	768	-	26.3%	1
Master's Degree and Above *(County Estimate= 10.3%)*	182	-	25.27%	1	124	-	30.65%	1	768	-	19.92%	1
Full-time Employed *(County Estimate= 49%)*	182	-	28.57%	1	125	-	24.8%	1	767	-	36.64%	1
Self Employed	182	-	21.98%	1	125	-	8%	1	767	-	21.12%	1
Part-time Employed	182	-	16.48%	1	125	-	12.8%	1	767	-	11.73%	1
Retire *(County Estimate= 29.2%)*	182	-	25.82%	1	125	-	55.2%	1	767	-	23.73%	1
Student	182	-	9.89%	1	125	-	2.4%	1	767	-	6.13%	1
Monthly Living Expenditure (Including rent, education expenses, healthcare …) ($)	156	$2,000	$3,196	$12,000	113	$3,000	$4,022	$12,000	747	$3,000	$3,606	$12,000
Drawing Participation Rate (%)	177	-	13.6%	1	123	-	17.9%	1	672	-	9.8%	1

Percentage that Chose Farmers Market for Prize (%)	153	-	90.85%	1	104	- 58.65%	1	606	-	84.49%	1
Percentage that Chose Trader Joe's for Prize (%)	153	-	5.2%	1	104	- 17.3%	1	606	-	9.4%	1
Percentage that Chose Frys' for Prize (%)	153	-	3.9%	1	104	- 21.15%	1	606	-	6.1%	1

* Note: The Food Purchasing Preference Question was originally designed as ranking from 1,2,3; however, as we reported it as dummy in this table where if a respondent chose "freshness" no matter in which ranking.

**The number in () is the Yavapai County/ Arizona State estimate, median, or average from the American Community Survey (ACS) that was conducted by the US Census.

***The information from US census were collected under the age group to 18 years old.

5.1 Drawing/ Prize Binary Model

We provided an incentive for respondents to complete our questionnaires with an opportunity to win a gift card of "$150 Gift Certificate to Prescott Farmers Market" or different lesser dollar gift prizes to Trader Joe's and Frys' Supermarket, depending on their choice. The prize information is displayed on the beginning of the questionnaire where every respondent learns the incentive before they answer the first question. There are several reasons that we create this incentive:

- Our budget was constrained so that we were unable to cover administration costs and a small incentive for every respondent.
- A prize drawing is a known cost and we can possibly attract more consumers to take the survey than if doing individual small incentives.
- The choice between our "$150 Gift Certificate to Prescott Farmers Market" and various lesser prize amounts with other food shopping outlets in the survey experiment design can provide insights on revealed preferences of consumers as they may receive the prize or monetary reward.
- The differences in prize amount and shopping outlets allows us to analyze the trade-off in dollars between certain food shopping outlets. If consumers value all food shopping outlets the same, they will always choose the outlet with the highest monetary prize.

Respondents can decide if they want to enter the drawing by leaving their contact information or not, and then decide what prize they would like to receive. There were 8 different versions of prize amounts and shopping outlets that were randomly assigned to each questionnaire. In Table 5-1B. below, we see that the prize for Trader Joe's and Frys' is always lower than Prescott Farmers Markets since we wanted to promote the Farmers Market and calculate consumer preferences using a common trade-off between farmers markets and other food shopping outlets.

Table 5-1B. Possible Combination of Prize Choice

Choice 1	Choice 2
$150 Gift Certificate to the Prescott Farmers Markets	$125 Gift Certificate to Trader Joe's
	$100 Gift Certificate to Trader Joe's
	$75 Gift Certificate to Trader Joe's
	$50 Gift Certificate to Trader Joe's
	$125 Gift Certificate to Frys'
	$100 Gift Certificate to Frys'
	$75 Gift Certificate to Trader Frys'
	$50 Gift Certificate to Trader Frys'

In our sample, 11.5% of respondents chose not to participant in the drawing due to the privacy issue or not interested in both prizes and so on (*see Chart 5-1A*). We will analyze what contributes to the decision of not joining the drawing later in this section. Since the prize to the Prescott Farmers Market is always greater than the other shopping environment, more respondents selected to receive the Farmers Market than Trader Joe's or Frys' for their prize.

We are also interested in the prize choice of respondents by different locations. From Chart 5-1A. above, we found that less than half of the respondents from other food-related outlets chose the "$150 Gift Certificate to Farmers Market," which shows these respondents are more likely to be the group of consumers that have never had a previous experience with Farmers Market. Therefore, it is important to learn preferences independently from other food-related outlet respondents because the Local Food Center will need to attract more potential consumers who have never shopped at a Farmers Market to increase the viability of the Local Food Center. From the paper questionnaire, where we had surveyors distribute the survey, it is highly possible that a respondent may not be interested in the prize but would still fill in the survey since they want to be respectful. However, it is interesting that 66 or 8.2% of respondents from online platform did not want to enter the prize drawing after they took 10-15 minutes voluntarily to complete our survey. Although the reason behind this could be that they do not want to leave their email address, since many companies harvest email addresses and sell them. Even though we stated we would not use their email address for anything other than

the prize drawing, individuals are less likely to trust us without having a personal or face-to-face connection.

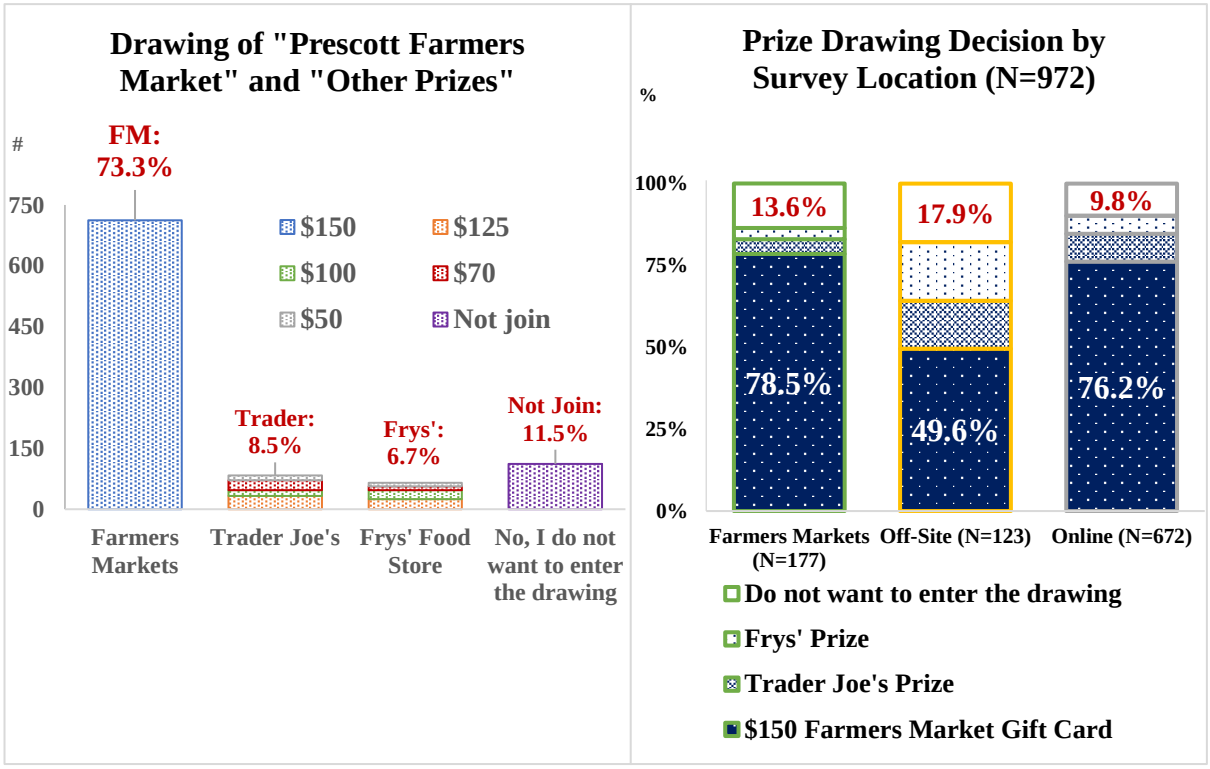


Chart 5-1A. Frequency of Prize Drawing of All Respondents (Left); by Survey Location (Right)

The prize binary model that we presented below has 2 steps:

1) Factors that influence a respondent's decision on whether to participate for our prize drawing, and
2) If respondents chose to participate, what are factors that encourage them to choose the "$150 Gift Certificate to Farmers Markets" over the lesser dollar denominated Trade Joe and Fry's shopping outlets.

The binary model is aimed to display some of the triggers or demographic factors that are statistically significant for increasing the probability of respondents in choosing to participate in the drawing and choosing to receive a Farmers Market prize.

1) Choice to participate in prize drawing

Before we start to analyze the factors that influence a respondent's decision to receive one prize over another, we are interested in examining whether respondents who chose to participate in the prize drawing are different from those who decide not to participate. 89.5% of the respondents chose to participate in the drawing and from Table 5A. and Chart 5-1A. we found few differences between locations.

From Table 5-1C. below, we see that if the Trader Joes' Prize was offered to respondents, they were 3.9% less likely to participate in the drawing. Although our model suggests that respondents are more likely to participant in the drawing when the drawing choice is between Farmers Markets and Frys', the magnitude is very small. In addition, our model also suggests that respondents who received Nutrition Benefit, regardless of SNAP, WIC, or Farmers Market Nutrition Program, are more likely to participate in the drawing than respondents not associated with any of these programs. This result reinforces the notion that securing food outweighs privacy issues for those that qualify for these programs. It may seem controversial that respondents who eat out more are more interesting to participate in the prize drawing for a gift certificate at food shopping outlets; however, it might also indicate that those with proper incentive who consume more meals away from home would willing to change their behavior. Overall, we did not find any significant differences between respondents who chose to participate in the prize drawing from those who did not. We concluded that those respondents who were not willing to participate in the drawing were mainly more concerned about their privacy than those who chose to participate.

Table 5-1C. Prize Binary Choice Result for Participation in Drawing

Estimated Coefficient	Dependent Variable =1, when respondents decided to participate in the drawing
	Marginal Effect of All Respondents
Sample Size (n)	916
Percentage of Participation in Drawing	89.5%
Presented Trader Joe's Prize (D)	-0.039*
Collected from Other Sites (D)	NS
Collected from Online Platform (D)	NS
Number of times visit Farmers Market in a month	NS
Number of times of Food Purchasing in a month	NS
Number of meals away from in a week	0.011*
Nutrition Program Receiver (D)	0.089*
Men (D)	NS
Age	NS
Household Size	NS
Have Child under 12 years old (D)	NS
Hispanic (D)	NS
Own bachelor's degree or above (D)	NS
Retired (D)	NS
Student (D)	NS
Monthly Living Expenditure (per $1000)	NS

Note1: * significant at 0.1 probability level; ** significant at 0.05 probability level; *** significant at 0.01 probability level; NS = Not Significant

2) Choice in type of prize to receive

Although we designed the drawing choice to encouraged respondents to choose a Gift Certificate from the Farmers Market over Frys' and Trader Joes through monetary incentives, we still had a small group of respondents' that desired to receive gift certificates from Frys' and Trader Joes over the Farmers Market. We excluded respondents who did not chose to participant in a drawing and as discussed previously, the self-reported questionnaire is a methodology that provides us consumer stated preference where we may receive over-stated or under-stated preferences. However, the prize binary model has collected the choice that respondents will really receive the prize if they win the drawing and the results for this model is viewed as revealed preferences of consumers.

In Table 5-1D. below, we present model results with all respondents by survey location. We find that when the prize for the Farmers Markets is $25 higher than the prize for other outlets, respondents are 10.1% more likely to choose Farmers Markets prize. This provides us a discount rate for respondents on Farmers Markets which means that after accounting for all demographic factors in the model, consumers do not consider that a $125 gift certificate

value from Supermarkets and Grocery Stores as the same from Farmers Markets. Consumers think that a $125 gift certificate is worth less in Farmers Markets. In another words, the Local Food Center needs to provide more shopping amenities of a Frys and Trader Joes to attract more potential consumers without discounting prices. A 16.67% discount rate ($25 prize difference over $150 base rate of a Gift Certificate to Prescott Farmers Market) increases the probability that consumers will choose the Farmers Market shopping environment by 10.1%. Consumers from other food related outlets and the online platform are less likely to choose the Farmers Markets Prize which has shown that our sample is a reasonable representation of respondents from farmers markets and shoppers/supporters of farmers markets and respondents from other sites and potential consumers that may not be familiar with farmers markets. In addition, the more the respondents visit Farmers Markets, the more likely that they will choose a farmers markets prize which follows that frequent shoppers at farmers markets are happy to receive the farmers market prize that is a higher prize amount. Respondents who receive assistance from a nutrition program are less likely to choose the farmer's market prize which has been confirmed in other studies which show that Supermarkets and Supercenters are the primary choice for the nutrition program receivers (Ver Ploeg et al., 2015). Another interesting finding from this model is that respondents with additional $1,000 per month in living expenditures are 3.1% less likely to choose a gift certificate for the farmers markets. Since we generally consider that consumers of farmers markets have higher disposable incomes and higher living expenditures since the price in farmers markets are often higher than traditional supermarkets, we originally hypothesized that respondents with higher living expenditure would be more likely to choose the farmers market prize. This result implies two different situations: 1) Respondents with lower living expenditures are attracted to the larger prize amount for Farmers Markets, and 2) Farmers Markets in the Prescott area are serving many lower living expenditure

households. This is a positive finding for the viability of a Local Food Center since consumers in the area with lower living expenditures are willing to purchase from farmers markets, and consumers with higher living expenditures may be also willing to purchase from a Local Food Center with more convenience attributes associated with Grocery Store and Supermarket shopping environments.

Subsequently, we analyze our results by location. Here we see that at-large consumers were less likely to choose the Farmers Market gift certificate regardless of their purchasing behavior, demographics and prize they are presented. This result demonstrates that the value that farmers markets provided have a discount rate in non-farmers market shopper's preference.

Table 5-1D. Prize Binary Choice Result for Choosing Farmers Market Prize

Marginal Effect	**Dependent Variable =1, when respondents chose to receive "$150 Gift Certificate of Prescott Farmers Market" over another prize**			
	All Respondents	**Farmers Markets**	**Off-Site**	**Online**
Sample Size (n)	823	135	90	599
Percentage of Participation in Drawing	82.3%	89.6%	56.6%	84.3%
Amount different between 2 prizes	0.004***	-0.0004	0.003	0.0002***
Presented Trader Joe's Prize (D)	-0.044**	-0.024	0.089	0.030
Collected from Farmers' Market Sites (D)	0.035	---	---	---
Collected from Consumers At-Large (D)	-0.292***	---	---	---
Number of times of Food Purchasing in a month	-0.004	0.009	-0.018	-0.0003
Number of meals away from in a week	0.005	-0.004	0.023	0.0007
Nutrition Program Receiver (D)	-0.202**	-0.045	0.293	0.194***
Men (D)	0.029	0.014	0.154	-0.470***
Age	0.001	-0.0007	0.006	0.0002
Household Size	-0.010	0.043	-0.242	-0.003
Household Size^2	---	---	---	---
Have Child under 12 years old (D)	0.016	-0.027	-0.102	0.010
Own bachelor's degree or above (D)	0.029	---	---	---
Currently Working (D)	0.050	-0.009	0.253	0.005
Monthly Living Expenditure (per $1000)	-0.031***	-0.027*	-0.058	-0.003***
Monthly Living Expenditure^2	---			

Note$_1$: * significant at 0.1 probability level; ** significant at 0.05 probability level; *** significant at 0.01 probability level; NS = Not Significant

Respondents with additional $1,000 monthly living expenditures are 2.7% less likely to choose a gift certificate for farmers market consumers and 0.3% for respondents from online platform. This shows that these consumers who are not frequent shoppers at farmers

markets are more likely to choose other food shopping environments. This result also implies two more possible explanation: 1) Those who are not frequent shoppers at farmers markets are not very positive toward the idea of shopping at farmers markets due to convenience, price, diverse products, and so on, and 2) Households with higher living expenditures may also be larger households and the higher valued prize or gift certificate at the farmers markets is not much per person compared to the conveniences of a prize for the other food shopping outlets. Both scenarios suggest that the Local Food Center needs to increase its convenience and provide shopping environment amenities of a grocery store or supermarket to attract potential consumers. In addition, this result also provides us with the insight that if a Local Food Center can learn from grocery stores and supermarkets, it enhances the willingness of non-farmers market consumers to shop at a Local Food Center regardless of the price of products available.

We found that respondents from the online platform have a 16.67% discount rate ($25 prize different over $150 base rate of Gift Certificate to Prescott Farmers Market) which is equal to a 0.6% probability in their willingness to visit a Local Food Center. This is a prize amount where it may have larger impact in terms of dollar amount. Besides, respondents are 3% less likely to choose the prize for farmers markets if the alternative prize selection is a gift certificate to Trader Joe's, regardless of the difference in prize amount. In another words, online respondents value grocery stores more than farmers markets. The reason behind could be convenience, variety of products, and price. Thus, if a Local Food Center can provide similar functions as grocery stores, it can increase the visibility for more consumers. Online respondents that receive nutrition program benefits are less likely to choose a farmers market prize as their primary choice for grocery shopping is supermarkets and supercenters.

In conclusion, we find several shopping environment amenities and product attributes that a Local Food Center can refer to when planning for what its future store should look like and consider when opening:

- Discount rates on the original product prices from the farmers market can stimulate the willingness to visit and shop at a Local Food Center.
- Consumers in Yavapai County are in favor of grocery type of stores and a Local Food Center can learn from their operations and hopefully capture a share of their food sales.
- Although Farmers Markets accept tokens provided from nutrition programs, it seems that supermarkets and supercenters are still the primary choice for food shopping of these consumers. Therefore, the Local Food Center should work with county cooperative extension and/or food nutrition local authorities to provide education at the Local Food Center to increase the exposure of services that the Local Food Center possesses.
- Convenience is a key to attracting more consumers to a Local Food Center with more hours of operation and a location that can be easily accessed; and
- Higher living expenditure consumers are less likely to be attracted by the higher prize amount associated with the Farmers Market and generally prefer grocery stores and supermarkets. It is suggested that the Local Food Center needs to learn from other food shopping outlets and improve from the basic shopping amenities and conveniences of a farmers market operation.

5.2 Marginal Propensity to Consume (MPC) Model

Marginal Propensity to Consume (MPC) is a method for quantifying induced consumption where the main concept is that when the disposable income increases, personal consumer spending will also increase. In another words, when a household earns an extra dollar in

disposable income, what proportion of that dollar will the household spend is the marginal propensity to consume. However, our objective for this feasibility study is not about total consumption, nor do we collect disposable income information. We only borrow the concept of marginal propensity to consume where the MPC in this study represents the marginal propensity to purchase on different food shopping outlets from monthly living expenditures. From Table 5A. above, we learned that the median monthly living expenditure from our sample is between $2,000 to $3,000 and all respondents spend the most on Supermarkets while spending the least at Farmers Markets.

We have separated our results into four sections:

1) Relationship with total food expenditure and monthly living expenditures.

2) Step-wise spending regression model to evaluate the quality of responses and select the best model to calculate the Marginal Propensity to Consume (MPC) for different types of food shopping outlets.

3) Analyzing the Marginal Propensity to Consume for four different types of food shopping outlets; and

4) Comparing the Marginal Propensity to Consume for 4 different types of food shopping outlets for responses from different survey locations.

These steps lead us to our consumer's purchasing behaviors and quantify the marginal propensity to consume for each food shopping outlet when consumers' increase their monthly living expenditures.

1) Total Food Expenditure vs. Total Living Expenditure

As we learned from Chapter III., the food-at-home spending share of income at the national level is between 6%~10% for different income quintiles group. We used the ratio between the national income quintile and the corresponding Yavapai County income quintile to interpolate the food spending expenditures for Yavapai County and receive the food-at-

home share to be between 6.5%~10% for Yavapai County. We already mentioned that we received more responses from the lower income quintile group, which indicates that the food-at-home spend share should be higher in our sample. From Table 5A., the median food expenditure share from our sample is between 11.4% ~ 17.9% which is higher than the Yavapai County Census. The Marginal Propensity to Consume (MPC) model in this section aims to examine the changes on how spending on food will occur when a household's total living expenditure increases before and after considering all other possible variables that can influence the decision of their food expenditures.

In Table 5-2E. below, results of the Marginal Propensity to Consume for Food from household monthly living expenditure for all respondents and by survey location is presented. We found that before we took respondents demographic differences and food purchasing behavior into account, 4.3% out of each additional $1 of monthly living expenditure contributed to food-at-home expenditures for all respondents. This seems to be lower than the county and national average. However, since we only collected grocery expenditures from four food shopping outlets without knowing other food expenditures of convenience stores, self-production and online stores, the 4.3% estimate from our results should be interpreted as the proportion of monthly living expenditures allocated to our 4 major food shopping outlets and not all food expenditures. We also discovered that respondents from the online platform spend more of their monthly living expenditures on major food shopping outlets (4.6%) than farmers markets respondents (4.3%) and other food-related outlets (3.2%). From the previous chapter, we learned that respondents from the online platform seem to be quite passionate about food-related topics, which our model also suggests that they allocate more of their living expenditures on food-at-home while it is interesting that respondents from other food-related outlets spend 25.6% less at major food shopping outlets than average. Respondents from other food-related outlets are less farmers

markets friendly but are the most important group to understand as for the viability of a Local Food Center. It will need to reach more consumers in Yavapai County than those that currently shop at the Farmers Markets. More diversity of products and options for prepared food will be things to consider for attracting these consumers that generally spend less on food-at-home.

We also analyze demographics, food purchasing behaviors, and food purchasing preferences of respondents in the model to examine if monthly living expenditures are statistically significant in relation to consumer food expenditures. We find that monthly living expenditures have a positive influence on food expenditure for major food shopping outlets with non-Farmers Market respondents and online respondents. As the MPC for food is positive towards living expenditures, this suggests that consumers in Yavapai County consider food-at-home expenditure as a normal good and there is potential growth in food-at-home sales when they decide to spend more. However, the MPC becomes insignificant for farmers markets respondents when we control for demographic and food purchasing behaviors. This result indicates that respondents from the Farmers Markets, of which most are frequent shoppers for Farmers markets have relatively fixed spending on food-at-home expenditures. Therefore, the co-existing of a Local Food Center with the Saturday Farmers Market may force frequent shoppers for farmers markets to reduce their spending at the Saturday markets if they have already purchased their groceries from the Local Food Center. This result reinforces the concern of vendors/producers that the Local Food Center may impact their sales at the Farmers Markets (*please see chapter 4-3*). The viability of a Local Food Center hinges greatly on whether a Local Food Center can attract more non-farmers markets consumers when the co-existing framework of the original farmers markets and Local Food Center is to be maintained. After we have controlled for more factors that can influence consumers' decisions on how much to spend on food, the MPC drops to 3%, which

means that if a consumer increases their monthly living expenditure by $1,000, they will allocate $30 more dollars to spend at our 4 major food shopping outlets. Although 3% is much lower than the median food expenditure share from our sample (11.4%~15%), the 3% from the model is the additional spending after the median food expenditure has already been fulfilled. In addition, we find that respondents from the online platform generally spend $52.61 more in a month on major food shopping outlets than responses obtained from farmers markets. The Local Food Center may need to utilize some form of an online advertising campaign to capture the spending from these group of consumers.

In addition, the model's results suggest that consumers who visit the farmers market more or do more grocery shopping generally spend more on food-at-home. If a Local Food Center has the kind of operation that is open multiple days and more hours in a week and we assume that consumers visit twice in any month, the potential spending for a single consumer can be up to $25 dollar more. However, after adjusting for expenditures and demographics, food nutrition receivers spend a lot less than non-receivers. This could be because these consumers have already excluded the food nutrition benefit from their spending so that our model shows that they spend less on food at our 4 major shopping outlets. Our model also shows that spending on food-at-home decreases at an increasing rate with age. This result may reflect that the capability to consume food decreases by age, but the survival amount of food consumption still needs to be satisfied. Besides, we found that if a household has one more member, they would spend $68.2 more in a month at our 4 major food shopping outlets. If at least 1 child under 12 years old is in the household, they would spend $60.30 on food-at-home regardless the household size. As a result, having a Local Food Center that is child-friendly with some promotions toward households that have children can provide a higher potential to increase the sales. We also found that self-employed respondents spend more on food-at-home; however, we do not have an intuition on the reason behind this other than

self-employed consumers have more flexible hours to prepare their meals at home which increases their spending on food-at-home compared with others. As for consumer preferences, none of the product-related attitudes influence consumers' decisions on spending at food shopping outlets. Respondents who value checkout line length, location, and community interaction tend to have lower food-at-home expenditures. Therefore, convenience is one of the factors that influences consumers' decisions on doing their grocery shopping or not. However, it is unexpected that respondents who value the community interaction also tend to spend less on their groceries. We did not find any previous research or news articles that found this result. Thus, a future study may be designed to address and answer this question. Last but not the least, respondents who preferred membership rewards spend $102.7 more in a month at major food shopping outlets. This result suggests that the management team for a Local Food Center should consider a loyalty reward program to increase and retain their spending.

Subsequently, we found that the factors that are statistically significant are different between survey locations. We can conclude that respondents from different survey locations in our Consumer Study represent different groups of consumers who value food shopping environments differently. From the respondents that we collected at the Farmers Markets, a larger percentage of these individuals are nutrition program receivers, men, non-Caucasian, retired, prefer community interactions, and tend to spend less on food-at-home. For the respondents not obtained from the Farmers Markets, those who are older in age, non-Caucasian, and retired tend to spend less on food while those who do more grocery shopping and have a larger household size spend more. Finally, the respondents from the online platform who visit farmers markets more, do more grocery shopping, have larger household sizes, have received a bachelor or higher education degree, and are retired spend more on food than those who receive nutrition benefits are non-Caucasian, prefer community

interactions, and free samples spend less on food. Overall, this MPC model for food expenditures at major food shopping outlets is informative where we found that Local Food Center sales would be competing with sales from farmers markets on frequent farmers market shoppers. Thus, expanding the consumers base is necessary for the co-existing for both outlets. Frequent grocery shoppers, larger households, households with children under 12 years old, online activists, self-employed consumers, and consumers who value membership rewards are good target consumers for a Local Food Center.

Table 5-3E. Step-Wise MPC Results for Four Major Food Shopping Outlet Expenditures

	Dependent Variable: Monthly Total Food Expenditures at Major Food Shopping Outlets							
	All Respondents		Farmers Markets		Off-Site		Online	
Estimated Coefficient	LE only (1)	(1) + Attributes (2)	LE only (1)	(1) + Attributes (2)	LE only (1)	(1) + Attributes (2)	LE only (1)	(1) + Attributes (2)
Sample Size (n)	866	854	149	143	non100	95	617	616
Monthly Living Expenditure (per $1,000)	$43.01***	$30.42***	$42.9***	$22.46	$31.74***	$25.08*	$45.53***	$31.69***
Survey Location								
Other Food-Related Outlets (D)	-	NS	-	-	-	-	-	-
Online (D)	-	52.61*	-	-	-	-	-	-
Food Purchasing Behavior								
No. time visit Farmers Market per month	-	15.24**	-	NS	-	NS	-	19.65**
No. time purchasing food per month	-	12.26***	-	NS	-	21.58**	-	11.22***
No. Meals away from home in a week	-	NS	-	NS	-	NS	-	NS
Nutrition Program Participant (D)	-	-132.89***	-	-155.65**	-	NS	-	-121.99***
Respondent's Characteristics								
Gender (Male=1)	-	NS	-	-148.97**	-	NS	-	NS
Age (Years)	-	-5.25*	-	NS	-	-21.69*	-	NS
Age^2 ($Year^2$)	-	0.05*	-	NS	-	0.26**	-	NS
Non-Caucasian (D)	-	-82.94***	-	-138.4*	-	-175.12*	-	-67.03**
Household Size (person)	-	68.21***	-	NS	-	225.81*	-	73.8**
Household $Size^2$ (person)		NS	-	NS	-	-34.8**	-	NS
Have Child under 12 (D)	-	60.28**	-	NS	-	N	-	NS
Bachelor and Above Degree (D)	-	NS	-	NS	-	NS	-	38.58*
Retired (D)	-	NS	-	-191.09**	-	-253.11**	-	58.24*
Student (D)	-	NS	-	NS	-	NS	-	NS
Self-Employed (D)		46.38*	-	NS	-	NS	-	NS
Food Purchasing Preferences								
Freshness (D)	-	NS	-	NS	-	NS	-	NS
Prepared Products (D)	-	NS	-	NS	-	NS	-	NS
Local Products (D)	-	NS	-	NS	-	NS	-	NS
Organic Products (D)	-	NS	-	NS	-	NS	-	NS
Shelf Life Length (D)	-	NS	-	NS	-	NS	-	NS
Hours of Operation (D)	-	NS	-	NS	-	NS	-	NS

Price of Products (D)	-	NS	-	NS	-	NS	-	NS
Checkout Line (D)	-	-74.58**	-	NS	-	NS	-	NS
Community Interaction (D)	-	-78.28***	-	-137.84*	-	NS	-	-151.87*
Special Products (Gluten Free…) (D)	-	NS	-	NS	-	NS	-	NS
Membership Reward (D)	-	102.69*	-	NS	-	NS	-	NS
Free Sample (D)	-	NS	-	NS	-	NS	-	-271.36
Location (D)	-	-47.26**	-	NS	-	NS	-	NS
Whites' Test (Chi-square)	20.31	616.73***	9.03	142.62	0.13	94.98	16.64***	359.11
R-Square	0.101	0.295	0.098	0.346	0.09	0.45	0.1	0.34
Root Mean Square Error (RMSE)	290.29	262.24	292.42	284.03	270.98	249.19	289.64	257.05
F-Test on adding more variables	-	< 0.001		<0.001		<0.001		<0.001

Note$_1$: * significant at 0.1 probability level; ** significant at 0.05 probability level; *** significant at 0.01 probability level; NS = Not Significant

Note$_2$: (1) Simple Model where Living Expenses (LE) are the only regressor; (2) Multivariate Model where respondents preference and characteristic have been included

Note$_3$: Significance in the table matches the Heteroscedasticity Consistency if the model rejects the null hypothesis specification test (White Test) which implies the errors are not homoscedastic and not independent of the regressors.

2) Step-wise procedure to evaluate the quality of our responses

Since we are interested in calculating the Marginal Propensity to Consume (MPC) for four types of food shopping outlets as monthly living expenses change, we began with analyzing the relationship between just spending and total living expenditures.

- **Simple Model:**

$$\textbf{Monthly Total Food Expenditure} / \textbf{Monthly Spending in t food shopping outlets}_{i} = \mathbf{f}\left(\textbf{Monthly Living Expenditure}_{i}\right)$$

Where,

$\mathbf{t} = \textbf{farmers markets}, \textbf{grocery stores}, \textbf{supermarkets and supercenters}$

$\mathbf{i} = \mathbf{1}, \mathbf{2}, \mathbf{3} \ldots \ldots \mathbf{n}$ **households**

The reasons for collecting total monthly living expenditures instead of monthly income is to accommodate the nature of our study area which we discussed earlier in Chapter IV. above. In short, we believe monthly living expenditures are a better proxy of their disposal income than income itself.

In Table 5-2F., results of the simple model for four different types of food shopping outlets is presented in (1). We performed a Whites' Test for heteroscedasticity where the null hypothesis assumes that the errors are homoscedastic and independent of the explanatory variables. Therefore, if our model rejects the null hypothesis from White's Specification test, we have evidence of the existence of heteroscedasticity. Thus, if present we would need to calculate White's Standard Errors to obtain the correct significance of our estimated coefficients for all explanatory variables. Besides monthly spending at the farmers market, all other three food shopping outlets rejected White's Specification test so that errors are not independent to total monthly living expenditures. As we mentioned above, food is a necessity so that every household has their minimum or a survival level of spending on food spending. When a household's living expenditures are relatively low, we can assume that most of their living expenditure go towards food purchases, and vice versa. Households that have relatively high living expenditures can allocate their spending towards minimum food expenditures or survival food, more food, and even luxury food as they have more flexibility

in their ability to spend on food. However, since our dependent variable is not necessarily all food expenditure but the spending from our four different food shopping outlets, the finding that there is no heteroscedasticity on spending at farmers markets is valuable information. This shows that the differences in spending at farmers markets are not influenced by household living expenses, which implies that consumers for farmers markets in Yavapai county are not within a certain income quintile group.

Without controlling for the household characteristics and their behaviors/preferences on food purchases, the Marginal Propensity to Consume in Farmers market, Grocery Stores, Supermarkets, and Supercenters is $3.5, $14.8, $14.58, $10.14 per $1,000 increase in total monthly living expenses for all respondents. All these MPCs are highly statistically significant at a 0.01 level and indicate that when a household raises their monthly living expenditures for any reason, they will allocate at least a small portion to each of these four food shopping outlets. We have found that when a household increases their monthly living expenditure by $1, they will spend $0.043 of this dollar on food-at-home purchases from the last section where we also found that they will increase their spending at all four food shopping outlets. This result indicates that none of the major food shopping outlets are inferior goods for the consumers in Yavapai County. In addition, we also find that households will spend 4 times more of their additional living expenditures at grocery stores and supermarkets. A Local Food Center needs to consider having the design and functions that are similar with grocery stores or supermarkets than the original farmers markets to capture more of the food spending share of Yavapai County consumers.

Table 5-2F. Step-Wise MPC Results for Spending at Farmers Markets, Grocery Stores, Supermarkets, and Supercenters

	Sample: All Respondents											
	Spending at Farmers Markets			Spending at Grocery Stores			Spending at Supermarkets			Spending at Supercenters		
Estimated Coefficient	LE only (1)	(1) + Attributes (2)	(2) + Distance (3)	LE only (1)	(1) + Attributes (2)	(2) + Distance (3)	LE only (1)	(1) + Attributes (2)	(2) + Distance (3)	LE only (1)	(1) + Attributes (2)	(2) + Distance (3)
Sample Size (n)	865	852	848	865	853	843	865	853	850	865	853	846
Monthly Living Expenditure (per $1,000)	$3.5***	$2.12**	$2.18**	$14.8***	$10.44***	$10.62***	$14.58***	$12.52***	$13.13***	$10.14***	$5.35**	$5.57**
Survey Location												
Other Food-Related Outlets (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	47.02**	42.34*
Online (D)	-	NS	NS	-	NS	NS	-	NS	24.59*	-	26.37*	23.41*
Food Purchasing Behavior												
No. time visit Farmers Market per month	-	23.72***	23.82***	-	6.83*	NS	-	-10.88***	-10.55***	-	NS	NS
No. time purchasing food per month	-	NS	NS	-	9.07***	8.67***	-	4.01**	4.12**	-	NS	NS
No. Meals away from home in a week	-	NS	NS	-	NS	NS	-	4.52*	4.54*	-	-4.17**	-4*
Nutrition Program Participant (D)	-	-15.48**	-16.03**	-	-75.9***	-69.91***	-	NS	NS	-	-63.3***	-61.82***
Respondent's Characteristics												
Gender (Male=1)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Age (Years)	-	-1.39*	-1.38*	-	NS	NS	-	NS	NS	-	NS	NS
Age^2 ($Year^2$)	-	0.01*	0.01*	-	NS	NS	-	NS	NS	-	NS	NS
Non-Caucasian (D)	-	NS	NS	-	-28.45*	-31.66**	-	-52.48***	-49.81***	-	NS	NS
Household Size (person)	-	NS	NS	-	NS	NS	-	NS	NS	-	30.37**	28.35**
Household $Size^2$ ($person^1$		NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Have Child under 12 (D)	-	NS	NS	-	26.79*	NS	-	NS	NS	-	NS	21.6*
Bachelor and Above Degree (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Retired (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Student (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	42.74*	43.21**
Self-Employed (D)		9.01*	8.83*	-	29.82**	28.94**	-	NS	NS	-	NS	17.93*
Food Purchasing Preferences												
Freshness (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Prepared Products (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	-35.44**	-35.89*
Local Products (D)	-	8.4*	NS	-	NS	NS	-	NS	NS	-	-19.81*	-18.88*
Organic Products (D)	-	NS	NS	-	69.25***	69.82***	-	-44.69***	-44.18***	-	NS	NS

Variety of Products (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Shelf Life Length (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Hours of Operation (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Price of Products (D)	-	-14.94***	-15.3***	-	-28.27**	-27.59**	-	NS	NS	-	NS	NS
Checkout Line (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Community Interaction (D)	-	NS	NS	-	NS	NS	-	-37.51**	-36.26**	-	-22.72*	NS
Special Products (Gluten Free…) (D)	-	NS	NS	-	39.94*	40*	-	NS	NS	-	NS	NS
Membership Reward (D)	-	NS	NS	-	NS	NS	-	94.54***	90.722***	-	NS	NS
Free Sample (D)	-	NS	NS	-	NS	NS	-	-52.26**	-53.73**	-	NS	NS
Location (D)	-	NS	NS	-	NS	NS	-	NS	NS	-	NS	NS
Distance to Food Shopping Outlets												
Distance to FM (one-way, mi)	-	-	NS	-	-	-	-	-	-	-	-	-
Distance to Grocery Stores (one-way, mi)	-	-	-	-	-	-1.49**	-	-	-	-	-	-
Distance to Supermarkets (one-way, mi)	-	-	-	-	-	-	-	-	NS	-	-	-
Distance to Supercenters (one-way, mi)	-	-	-	-	-	-	-	-	-	-	-	0.69*
Whites' Test (Chi-square)	1.92	441.33	526.5	15.79***	482.24	551.79	8.28**	624.24***	603.39**	14.09***	555.86*	482.44
R-Square	0.01	0.33	0.33	0.098	0.217	0.221	0.04	0.20	0.20	0.02	0.16	0.16
Root Mean Square Error (RMSE)	73.02	61.06	61.23	292.42	155.1	154.91	172.75	160.92	160.78	149.37	141.48	141.77
F-Test on adding more variables	-	< 0.001	<0.001		<0.001	<0.001		<0.001	<0.001		<0.001	<0.001

Note$_1$: * significant at 0.1 probability level; ** significant at 0.05 probability level; *** significant at 0.01 probability level; NS = Not Significant

Note$_2$: (1) Simple Model where Living Expenses (LE) are the only regressor; (2) Multivariate Model where respondents preference and characteristic have been included; (3) Model includes all variables in model (2) and the distance to the food shopping outlets.

Note$_3$: The significance in the table for Heteroscedasticity of the model is such that we reject the null hypothesis (White Test) when the Chi-square test is significant, and the errors are not homoscedastic or not independent of the regressors.

- **Multivariate Model with Respondent's Preferences and Characteristics:**

$$\textbf{Monthly Spending in t food shopping outlets}_{i} = \mathbf{f}\left(\begin{array}{c}\textbf{Survey Location, Respondent's Characteristics,}\\ \textbf{Food Purchasing Behaviors and Preferences,}\\ \textbf{Monthly Living Expenditure}\end{array}\right)_{i}$$

Where

$\mathbf{t = farmers\ markets, grocery\ stores, supermarkets\ and\ supercenters}$

$\mathbf{i = 1, 2, 3 \ldots\ldots n\ households}$

In Table 5-2F, results of multivariate model from four different types of food shopping outlets has been presented in (2). We examine multicollinearity of our explanatory variables as we have included joint food purchasing preferences that a group of consumers may. That is, consumers may likely prefer both "freshness" and "local" at the same time. We chose to calculate the Variance Inflation Factor (IF) as it measures how large the variance of an estimated coefficient of the explanatory variable may increase due to collinearity. The explanatory variables have all received small VIF which indicates that there are no severe multicollinearity problems in our models.

After controlling for respondents' characteristics, food purchasing behaviors and preference, the MPC for spending in farmers markets drops to $2.12 when monthly living expenditures increase by $1,000. This shows that monthly living expenditure are not economically significant to the amount spent in farmers markets. Age is related to the spending at farmers markets in both linear and quadratic form. Respondents who identified themselves as "Self-Employed" tend to spend $9.01 more at farmers markets than other consumers. Furthermore, respondents who are concerned about the price of products will spend $15 less at farmers markets compared to others while they will spend $8.4 more if they value local products. These results indicate that farmers markets consumers are local products advocators that may have more flexibility with time but are less price sensitive than non-farmers market shoppers.

For spending in grocery stores, the MPC is $10.44 when monthly living expenditures increase by $1,000, after controlling for other factors. This shows that consumers value and

prefer grocery stores as they will still increase a visible portion of their additional living expenditures on spending at grocery stores even when survival or a minimum level of food-at-home expenditure has been reached. We found that consumers who visited the farmers market more frequently and did grocery shopping more often spend more at grocery stores. This is an important finding that will be discussed more in last section. In the last section, we find that frequent shoppers for Farmers Markets have relatively fixed amounts for food-at-home expenditures and with the co-existing of a Local Food Center with the current Farmers Markets would likely be a competitive situation for many of the same consumers. However, results here indicate that one additional trip to the Farmers Market increases respondents spending in grocery stores by $6.83 in a month. Thus, results indicate that farmers markets and grocery stores are complementary. Therefore, if a Local Food Center can provide different products or more variety than the farmers market; in another words, the market differential is important for the design of Local Food Center. Respondents with children under 12 years old that are self-employed and prefer organic and specialty products spend more in Grocery stores. The magnitude for these consumers attributes is important since a consumer that values organic and specialty products will spend $69.25 and $39.94 more, respectively, in a month at grocery stores. Our results indicate that consumers who prefer organic products spend 47.3% of the average monthly spending in grocery stores than other consumers who do not value organic products. On the other hand, respondents who receive nutrition benefits and are non-Caucasian and price sensitive spend less in grocery stores. Although Whole Foods, Trader Joe's and some other grocery stores do accept EBT Cash, our finding shows similarity with existing literature that Supermarkets and Supercenters are the primary choice of consumers regardless of nutrition program and income level (Ver Ploeg et al., 2015).

As for spending in supermarkets, the MPC is $12.52 when monthly living expenditures increase by $1,000 after controlling for other factors. This shows that consumers rely on supermarkets to fill much of their grocery basket. When a survival level of food-at-home expenditure has been reached, they will still purchase either higher quality food products or more quantity from supermarkets. Respondents who visit one addition time to farmers markets spend $10.88 less in a month at supermarkets. It seems that there is a substitution effect between farmers markets and supermarkets. Moreover, respondents tend to spend more in supermarkets if they have more grocery shopping trips and more meals away-from-home. Students and working adults (Monsivais, Aggarwal & Drewnowski, 2014) are two of the major groups who consume food away-from-home with the situation that they have the least amount of time for food preparation. As for these respondents that have the least time available for food preparation, supermarkets are a more appealing outlet that provides a great variety of products ranging from fresh produce, drinks, prepared food, and snacks. Therefore, if a Local Food Center can provide more options on food items and conveniences of shopping outlets, a Local Food Center can potentially capture some spending share of supermarkets from the frequent grocery shoppers and food-away-from home expenditures. Respondents that prefer organic products, community interactions, and free samples spend less in supermarkets while respondents who value membership awards spend $94.54 more in a month at supermarkets than others. The membership reward usually comes with several forms, such as gas discounts, credit card bonuses, free products, and store discounts for some days. This result suggests that a loyalty program and accompanying incentives are an efficient marketing campaign to attract more spending Although it is not feasible for a Local Food Center to provide gas discounts, a cost-benefit can be calculated for designing a discount percentage for promotions.

For spending at supercenters, the MPC is $5.35 when monthly living expenditures increase by $1,000, after controlling for other factors. This shows that consumers will allocate a small portion of their additional living expenditure on spending at supercenters. Although the magnitude on the increase of spending at supercenters is small, it is still larger than the MPC for spending at farmers markets. Student respondents and those with larger households spend more at supercenter while those who consume more meals outside spend less at supercenters. Supercenters like Walmart (not neighbor stores), and Costco are usually located further away from the city center where convenience has been traded off with price. Therefore, this result has shown that consumers who value convenience are less likely to spend in supercenters while those who are price sensitive are more likely to spend in supercenters. Respondents who value local products, prepared products, and community interaction spent less at supercenters. Surprisingly, we found that Nutrition Program Recipients spend $63.6 less in supercenters per month than others which is not the same finding as Ver Ploeg et al. (2015). However, our study area is only Yavapai County in Arizona and the previous literature was from a National Household Food Acquisition and Purchase Survey. Our result indicates that "Supermarkets" are the primary choice for nutrition program precipitants in Yavapai County

- **Multivariate Model including Travel Distance:**

$$\textbf{Monthly Spending in t food shopping outlets}_{i} = \mathbf{f}\left(\begin{array}{c}\textbf{Survey Location, Respondent's Characteristics,}\\ \textbf{Food Purchasing Behaviors and Preferences,}\\ \textbf{Monthly Living Expenditure,}\\ \textbf{One}-\textbf{way Travel Distance,}\end{array}\right)_{i}$$

Where

$\mathbf{t} = \textbf{farmers markets, grocery stores, supermarkets and supercenters}$

$\mathbf{i} = \mathbf{1, 2, 3} \ldots\ldots \mathbf{n}\ \textbf{households}$

In model (2) where we controlled for individual's characteristic and food purchasing behavior and preference, we want to also incorporate the travel distance to food shopping outlets for model (3). From Chapter III. above, the larger the distance to a certain food

shopping outlet, the lower the spending will occur. However, the original responses on the distance to food shopping outlets were not all completed so we adopted the median zip code travel distance to interpolation or estimate their distance from their reported zip code to food shopping outlets. In Table 5-1F, we found that only distance to grocery stores and distance to supercenters have a statistically significant influence on consumer spending. Our results indicate that if respondents are one mile closer to grocery stores, they will spend $1.49 more in a month at grocery type of stores. However, if respondents are one mile closer to supercenters, they will spend $0.69 less in a month at supercenters. Distance seems to have different effect to different food shopping outlets where it is not always the closer the better. Since Local Food Center will have a design that is more toward Grocery Type of Stores than Supercenters. Therefore, if Local Food Center is designed to be similar to Grocery stores, 5 miles closer to consumers would potentially encourage consumers to spend $7.45 more in a month at a Local Food Center.

3) Analyzing the Marginal Propensity to Consume for four different types of food shopping outlets

From model (3) and model (2) in Table 5-2F., we observe that our results are fairly robustness where the significance of factors in model (3) are similar to model (2). Overall, we believe that the model accounting for respondent's preferences, household characteristics, Food Purchasing Behaviors, and distance to food shopping outlets is the most complete model to acquire the marginal propensity to consume. From model (3), the MPC for farmers markets, grocery stores, supermarkets, and supercenters are $2.18, $10.62, $13.13, $5.57 per month, respectively, if the monthly living expenditure increases by $1,000. This result suggests that supermarkets and grocery stores can capture a larger share of additional living expenditures as consumers are more likely to enhance the quality or increase the quantity of their grocery basket.

4) Comparing the Marginal Propensity to Consume for 4 different types of food shopping outlets for responses from different survey location

Subsequently, we would like to obtain the Marginal Propensity to Consumer by survey location (*see Table 5-2G.*). From our discussion in the previous section, we concluded that model (3) with consumer characteristics, purchasing preferences and behaviors, and travel distance will be the model that we used to compare the MPC by survey location. Since the sample would be separated into three sub-samples, there are multicollinearity issues as some factors only capture a small number of respondents. As a result, we eliminated the local product and community interaction attributes in our models for this section to avoid erratic changes in our result. Our results suggest that the MPC is mostly only significant for other sites and online respondents which means that monthly living expenditure have a marginal to no effect on consumers spending at food outlets. Respondents from farmers markets would only increase their spending in supermarkets by $18.75 when they have additional $1,000 living expenditure in a month. When the monthly living expenditure increases by $1,000 for respondents from other food-related sites, they will spend $2.76 more at farmers markets, $8.35 more at grocery stores, and $14.63 at supercenters. From our result, it shows that spending in supermarkets for respondents from other sites are fixed against monthly living expenditures. Moreover, spending increases by $1.63 in farmers markets, $10.19 in grocery stores, $16.27 in supermarkets, and $4.71 in supercenters when they have an additional $1,000 in their monthly living expenditure.

This result has provided us with the insight that food expenditures of frequent shoppers at farmers markets are less sensitive to living expenditures, but if they have an additional dollar to spend, they will only increase a visible amount of their spending in supermarkets. When we combine this finding with previous results, the Local Food Center needs to be functional more like grocery stores and supermarkets to capture the additional spending from frequent farmers markets shoppers. However, the display and product types need to be

different with the Farmers Markets to avoid direct competition with the farmers markets. As for respondents from other sites, we consider them as less farmers markets friendly since they allocate more of their additional monthly living expenditures to spending at supercenters. However, this group of consumers still appears to spend statistically significantly more in grocery stores, so they are potential shoppers for a Local Food Center. From Table 5-2G. below, we see that other site respondents value the variety of products such that they would spend $57-$66 more in a month to supermarkets and supercenters for this variety. Although it is not feasible for a Local Food Center to display as many different products as supermarkets and supercenters, it is highly recommended that a Local Food Center recruit more suppliers so that it can provide different types of products. Last but not the least, respondents from the online platform tend to spend more on all kinds of major food shopping outlets when they have additional monthly living expenditures. It appears that those respondents who voluntary took our survey online spend more on food and would allocate more of their living expenditures to groceries. In addition, we observe that additional spending on grocery stores and supermarkets are much higher than the other 2 food shopping outlets of farmers markets and supercenters. Therefore, if a Local Food Center can operate more toward the style of grocery stores and supermarkets while running an attractive online marketing campaign, the probability of increasing sales at the Local Food Center is favorable.

Table 5-2 G. MPC Results for Spending at Farmers Markets, Grocery Stores, Supermarkets, and Supercenters by Survey Location

	Model (3): Including monthly living expenditure, purchasing behavior and preference, demographic and distance to own shopping outlets											
	Spending in Farmers Markets			Spending in Grocery Type of Stores			Spending in Supermarkets			Spending in Supercenters		
Estimated Coefficients	**Farmers Markets**	**Off-Site**	**Online**	**Farmers Markets**	**Off-Site**	**Online**	**Farmers Markets**	**Off-Site**	**Online**	**Farmers Markets**	**Off-Site**	**Online**
Sample Size (n)	141	94	613	138	94	611	141	95	614	138	94	614
Monthly Living Expenditures (per $1,000)	$3.43	$2.67*	$1.63*	$5.28	$8.35*	$10.19***	$18.75***	-$0.1	$16.27***	$2.64	$14.63*	$4.71*
Food Purchasing Behavior												
No. times visit Farmers Market per month	27.53***	33.4***	22.58***	NS	NS	10.71*	NS	NS	-11.86**	NS	NS	NS
No. times purchasing food per month	NS	NS	NS	16.82***	8.67**	7.67***	-8.38*	NS	5.41***	NS	9.72*	NS
No. Meals away from home in a week	NS	NS	NS	NS	NS	-5.17*	NS	NS	6.35**	-11.92*	-11.42*	NS
Nutrition Program Participant (D)	-40.87*	-37.67*	NS	-99.7**	NS	-62.74***	NS	NS	NS	NS	-183.31*	-74.29***
Respondent's Characteristics												
Gender (Male=1)	-49.61**	NS	NS	NS	NS	-25.02*	NS	NS	48.09*	NS	71.45*	NS
Age (Years)	NS	-3.68**	-1.74**	NS	NS	-3.59*	NS	NS	NS	NS	-16.11*	NS
Age^2 ($Year^2$)	NS	0.04**	0.01*	NS	NS	NS	NS	NS	NS	NS	0.18**	NS
Non-Caucasian (D)	NS	NS	NS	NS	-78.65*	-36.53**	-91.58**	NS	-47.9**	NS	NS	NS
Household Size (person)	NS	NS	NS	NS	NS	NS	-59.94*	107.53*	NS	65.69*	NS	35.83**
Household $Size^2$ ($person^1$	NS	NS	NS	NS	NS	NS	16.72**	-19.27**	NS	NS	NS	NS
Have Child under 12 (D)	NS	NS	NS	NS	NS	NS	NS	NS	27.87*	NS	NS	NS
Bachelor and Above Degree (D)	NS	34.24***	NS	-49.69*	NS	NS	NS	NS	NS	NS	NS	NS
Retired (D)	-80.27***	-26.88*	NS	NS	-89.64*	NS	NS	NS	NS	NS	-88.38*	NS
Student (D)	NS	NS	NS	NS	NS	NS	NS	142.33*	NS	-56.12*	NS	67.07*
Self-Employed (D)	NS	33.61**	NS	NS	NS	25.39*	NS	NS	NS	NS	NS	NS
Food Purchasing Preferences												
Freshness (D)	NS	NS	NS	-62.06*	NS	NS	NS	NS	NS	NS	NS	31.98*
Prepared Products (D)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Organic Products (D)	NS	NS	NS	NS	NS	88.32***	-61.85**	-76.33**	NS	NS	NS	30.14*
Variety of Products (D)	NS	NS	NS	NS	NS	NS	NS	67.42**	27.36*	NS	55.74*	33.06**
Shelf Life Length (D)	NS	NS	NS	NS	NS	NS	NS	NS	NS	-105.91*	NS	61.2*
Hours of Operation (D)	NS	NS	-14.87*	NS	NS	NS	NS	NS	NS	NS	NS	NS
Price of Products (D)	-33.01*	NS	-23.71***	-64.73*	NS	-26.8*	107.37***	NS	29.91*	NS	NS	39.83***

Checkout Line (D)	NS	NS	NS	NS	NS	-46.63*	NS	NS	NS	NS	NS	NS
Special Products (Gluten Free…) (D)	NS	NS	NS	NS	NS	65.44*	NS	NS	NS	NS	NS	55.38*
Membership Reward (D)	NS	NS	NS	154.66*	NS	NS	NS	NS	125.83***	NS	NS	NS
Free Sample (D)	47.49*	NS	NS	NS	NS	-88.7***	-119.17**	NS	NS	NS	NS	-52.96*
Location (D)	NS	-15.79**	-9.45*	NS	NS	NS	-69.7*	NS	NS	NS	NS	NS
Distance to Food Shopping Outlets												
Distance to Farmers Markets (one-way, mi)	NS	NS	NS	-	-	-	-	-		-	-	-
Distance to Grocery Stores (one-way, mi)	-	-	-	NS	NS	-1.66**	-	-		-	-	-
Distance to Supermarkets (one-way, mi)	-	-	-	-	-	-	4.36*	5.56**		-	-	-
Distance to Supercenters (one-way, mi)	-	-	-	-	-	-	-	-		-3.88*	3.82*	NS
Whites' Test (Chi-square)	137.44	88.31	269.54	137.76	89.7	455.57***	138.41	94.64	435.92**	133.66	92.4	449.48***
R-Square	0.38	0.62	0.3	0.33	0.37	0.24	0.39	0.43	0.19	0.23	0.41	018
Root Mean Square Error (RMSE)	86.86	33.93	57.45	165.09	119.65	157.63	143.19	119.99	167.05	124.21	154.29	142.21

Note$_1$: * significant at 0.1 probability level; ** significant at 0.05 probability level; *** significant at 0.01 probability level; NS = Not Significant

Note$_3$: The significance in the table have matched the Heteroscedasticity Consistent if the model rejects the null hypothesis of specification test (White Test) which the errors are not homoscedastic and not independent of the regressors

5.3 Discrete Choice Set Model

We have already obtained a great amount of information from the last two models. But we will next analyze our random discrete choice set experiments. The example of the binary choice set on the questionnaire was presented as Figure 2C. where every respondent was randomly provided 1 version of questionnaire (total 16 different versions) that have 5 randomly assigned choice sets. Respondents were requested to choose between 2 hypothetical shopping outlets where some products or store related characteristic vary. There were 6 attributes: Origin and Availability, Production Method, Sales Type, Hours of Operation, Location (Distance), and Price. All the possible values for each attribute are presented in Table 2A. above.

Hillier et al. (2017) also adopted the discrete choice model where they used the National Household Food Acquisition and Purchase Survey (FoodAPS) data for their analysis. They took the primary stores that participants used as their relevant store choice and the relevant choice set as all store choices made by participants in his/her shopping cluster. This study has found that store size, full-service supermarkets, and driving distance from home constituted the main influences on store choice. Their sample suggested that consumers were more likely to choose larger stores, conventional supermarkets, and stores close to home. In addition, they also found that; SNAP receivers were most likely to choose larger stores; Hispanic participants were more likely to choose full-service supermarkets; and Caucasian participants were willing to travel further than other races. From our six attributes, we did not collect respondents' attitudes toward store size and type of service; however, we mimic the existing food shopping outlets to where we might still be able to compare our results with national level study.

1) Model Specification

We studied consumers' preferences on purchasing food products by allowing them to choose among a set of binary shopping environment choices that describe food shopping environments from farmers' markets, grocery stores, supermarkets, and supercenters. Consumers' responses will be analyzed using a bivariate panel probit model. Respondents were

asked to choose one environment without the information on types of food shopping outlets. The discrete choice model in this study uses:

- **Random Utility Specification**

$$\boldsymbol{Utility\ (Consumer\ Preference)_i}\begin{Bmatrix}\boldsymbol{U_{ik}(Choice\ A)} = \boldsymbol{(T'_{ikA})\beta + \varepsilon_{ikA}}\\ \boldsymbol{U_{ik}(Choice\ B)} = \boldsymbol{(T'_{ikB})\beta + \varepsilon_{ikA}}\end{Bmatrix}$$

$$\boldsymbol{Consumer\ would\ choose\ "Choice\ A",}$$

$$\boldsymbol{if\ U_{ik}(Choice\ A) - U_{ik}(Choice\ B) = (T'_{ikA} - T'_{ikB})\beta + \varepsilon_{ikA} - \varepsilon_{ikB} > 0}$$

where

$\boldsymbol{i = 1, 2, 3 \ldots\ldots N}$ **individual,**

$\boldsymbol{k = 1, 2, 3 \ldots\ldots K}$ **possible binary choice sets ,**

$\boldsymbol{U_{ik}}$ **= The utility of** $\boldsymbol{i}$ **individual on** $\boldsymbol{k}$ **binary choice table**

$\boldsymbol{T'_{ikB}}$ **= a vector of observed attributes (such as price, …) of individual** $\boldsymbol{i}$ **and choice set** $\boldsymbol{k}$

$\boldsymbol{\varepsilon_{ikA}}$ **= random error term**

The implication of the model above is that explanatory variables in regression models for estimating β should be "the differences in attributes" presented in each choice set.

Based on the questionnaire design, the bivariate probit model is adopted to quantify consumers' preferences on their food shopping outlet choice.

- **Bivariate Probit Model**

$$\boldsymbol{y^*_{ik} = X_{ik}\beta' + u_{ik};} \quad \boldsymbol{y_{ik}} = \begin{Bmatrix}\boldsymbol{1, y^*_{ik} > 0}\\ \boldsymbol{0,\ y^*_{ik} \le 0}\end{Bmatrix}\ \mathbf{i = 1, 2, 3 \ldots\ldots N; k = 1, 2 \ldots\ldots K}$$

If $y^*_{ik} > 0$, a consumer will choose A shopping outlet over B shopping outlet. X_{ik} is the set of attributes presented in the choice sets, u_{ik} is general error term here the error term is assumed to have the distribution of $\boldsymbol{u_{ik} \sim N(0, 1)}$.

The probability that a respondent choose food shopping outlets A over B is $\text{prob}(y_{ik} = 1) = \Phi[X_{ik}\beta']$.

- **The Likelihood Function**

$$\boldsymbol{L_i = [p(y_{ik} = 0)]^{1-y_{ik}}[p(y_{ik} = 1)]^{yik}}$$

$$\boldsymbol{L_i = \sum_{i=1}^{N} lnL_i \cong \sum_{i=1}^{N}(1 - y_{ik}) \bullet \ln\Phi[-X_{ik}\beta'] + \sum_{i=1}^{N} y_{ik} \bullet \ln \Phi[X_{ik}\beta']}$$

We use the maximum likelihood estimate to obtain the coefficient that is associated with each difference in attributes. The specific regression in our study is used for estimating parameters for the choice sets.

- **Empirical model**

$$\begin{aligned} y_{ik}^{*} = {} & \beta_0 + \beta_1(Origin\ \&\ Avaliability_{ikA} - Origin\ \&\ Avaliability_{ikB}) \\ & + \beta_2(Production\ Protocol_{ikA} \\ & - Production\ Protocol_{ikB}) \\ & + \beta_3(Sales\ Types_{ikA} - Sales\ Types_{ikB}) \\ & + \beta_4(Hours\ of\ Operation_{ikA} - Hours\ of\ Operation_{ikB}) \\ & + \beta_5(Location_{ikA} - Location_{ikB}) \\ & + \beta_6(Price_{ikA} - Price_{ikB}) \end{aligned}$$

As the objective of the Consumer Study is to find out what are the attributes consumers prefer when choosing between various food shopping outlets and the feasibility of having Local Food Center, we will obtain the marginal effect of each attribute and the willingness to pay for acquiring each attribute. These results can allow us to observe how much an increase/decrease on the willingness to purchase at a food shopping outlet if that particular attribute is displayed.

2) Key Findings

In Table 5-3H., results from the discrete choice set are presented for all respondents and by survey location. Since we randomly assigned different hypothetical shopping environments for choice A and choice B, there should be no preference biases associated with the design of the questionnaires. Our results find that around 50%~60% of respondents chose “Choice A” regardless of the survey location and version of choice sets that they received. We presented the marginal effects (M.E.) in Table 5-3H instead of our estimated coefficients since the marginal effects can provide us the willingness to visit Choice A shopping environment when it has given attributes. In addition, we also calculate the “Willingness to Pay” (WTP) for each attribute since we have provided the price of a basket

of goods *(see Appendix B.)* in all choice set so we can examine how much consumers are willing to trade-off for hours, location, organic products and so on.

We found that respondents are 6.2% less likely to visit a shopping outlet that only provides non-local products and their willingness to pay drops by $14.49 for a basket of goods. The average price for a basket of goods that includes 5 fresh fruits and/or vegetables (approximately 5 lbs.), 1 lb. of ground beef, and 1 dozen chicken eggs is $20. Although the willingness to pay seems to be very dramatic compared with the average price of a basket of goods, respondents may over-state their preferences on a questionnaire. Therefore, the comparative magnitude of willingness to pay between different attributes would be more accurate than the absolute magnitude. Among all other types of origin and availability of product attributes, our respondents are 17.7% more likely to shop in grocery stores with a mixture of products (including both local and foreign production); 27.8% more likely to shop when there is a mixture of products from local and non-local U.S. production places; 18.4% more likely to shop in an environment with only local products compared to a grocery store that only provides foreign products or no origin information. This result shows that consumers in Yavapai County value local products while they also desire to have a basket with a diversity of products, even if that means including both local and non-local U.S. products. From our questionnaire, we are not able to obtain the reason that consumers preferred not just only local products but a mixture of local and non-local U.S. products; however, the availability and variety of products that satisfy the needs of consumers is likely the major reason (Richard et al., 2017). The willingness to pay of grocery stores with local and non-local U.S. products is $65.2 per basket more than a store with just non-local foreign products. Although the objective for a Local Food Center is to cultivate small businesses and provide a marketing channels for producers/ venders in Yavapai County, our findings on consumer preferences for origin and availability can be a critical insight for a future Local

Food Center. If a Local Food Center can cooperate with some producers from other places in Arizona and provide more variety of products so that they satisfy the need of a basic grocery basket for a household, the Local Food Center can capture up to 50% more than just the original sales of only serving Local products.

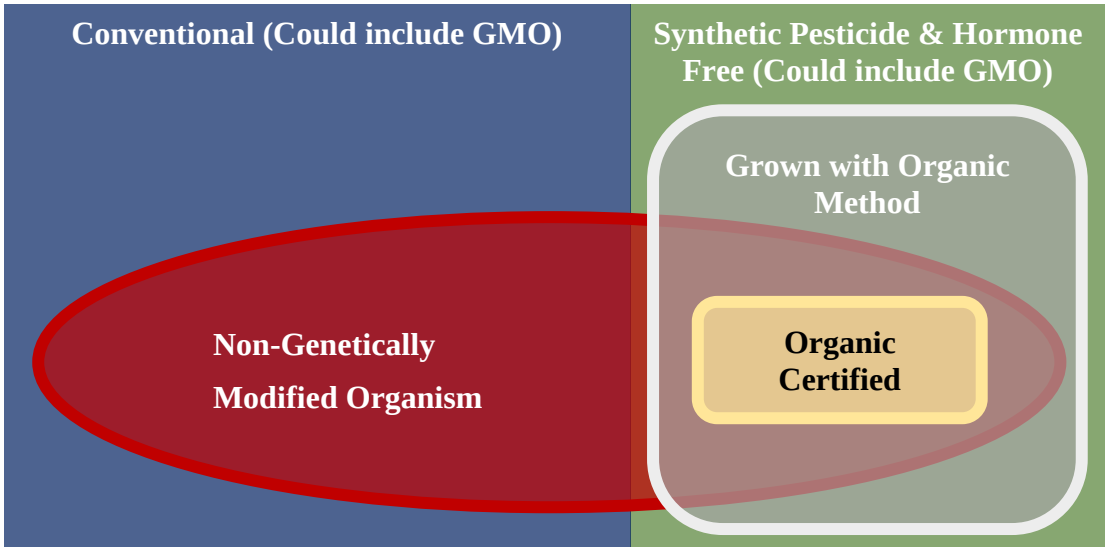


Chart 5-3B. Venn Diagram of Production Method

In analyzing production methods, we find that respondents are 9.2%, 14.3%, 12.5%, 17% more likely to purchase in a grocery store that provides Non-GMO, Synthetic Pesticide and Hormone Free, Grown with Organic Method, and Organic Certified products than other grocery stores that provide Conventionally produced products or no information on production methods. A simple production method Venn Diagram illustrates the relationship between different production methods where they are not mutually exclusive (*see Figure 5-3B.*). Although the classification on the production methods are overlapping, we generally consider "Certified Organic" to have the strictest regulations. Therefore, it is more appropriate to interpret the results as the information of the production method than the production method itself as Certified Organic Products must also be Grown with Organic Methods, free of Synthetic Pesticides and Hormone Free, and Non-GMO. Our results provide an interesting finding in that consumers in Yavapai County value a little bit more for a product to be free of Synthetic Pesticides and Hormone Free than Grown with Organic

Methods. We would recommend Local Food Center to not only emphasize that the products from small producers/vendors are Grown with Organic Methods, but also include information regarding free of Synthetic Pesticides and Hormone free and Non-GMO as consumers may not be well educated on the relationships between these terms and Grown with Organic Methods. The willingness to pay for Certified Organic Products is $39.9 per basket of grocery goods and $33.4 for Synthetic and Hormone Free Products. Although the absolute magnitude for willingness to pay can be overstated, relative results show that consumers are willing to pay 36.3% more for a basket of goods if they are Certified Organic than only Grown with Organic Methods (not certified). Therefore, if a Local Food Center can encourage small producers to have their products be USDA Certified Organic, consumers are willing to pay up to a third more for these products. On the other hand, consumers are also willing to pay 14.2% more on a basket of goods if the products are Synthetic Pesticide & Hormone Free than Grown with Organic Methods. As Synthetic Pesticide & Hormone free is included as a part of Grown with Organic Methods but consumers are not entirely aware of all the practice or are suspicious on being Grown with Organic Methods and not being certified organic. A Local Food Center may increase sales and attract more consumers if the information of Synthetic Pesticide & Hormone Free is provided. Last but not the least, consumers are 22.6% more likely to shop in a grocery store that has free range products than a place with does not provide and offer this information. This result suggests that consumers value free range products regardless of whether other groceries are certified organic or just non-GMO. The Local Food Center may also be able to do a self-certification label on free range for poultry and egg producers.

We find that consumers are 9.8% more likely to choose a food shopping outlet where they can purchase from growers; 23.6% more likely to shop in a grocery store that has grower/farmer information; and 9.8% more likely to purchase from a grocery stores that

provides special/ unusual products. This result is a positive finding that supports the feasibility of Local Food Center since producers are not going to directly sell their products but allow Local Food Center staff to market their products. In addition, if the Local Food Center can provide specialty products that small producers provide to Farmers Markets in the store, they can also attract more consumers. The willingness to pay for having growers/ farmers photos and farm descriptions is $55.3 per basket of grocery goods which is 186.4% more for a basket of goods that is directly purchased from producers. This suggests that consumers would not discount the value of their groceries when they purchase from the shelf instead of growers if the growers/producer's information is provided near the shelf.

Convenience has been found by many consumer studies to be the major reason that prevents consumers from shopping at Farmers Markets. Since a Local Food Center is aimed to be open more hours, choosing a store location that is visible to more target audiences is important. It is significant for us to learn how much consumers are willing to trade off between different conveniences. If a food shopping outlet is open 1 more hour, consumers are 0.04% more likely to shop in that store. In another words, if a Local Food Center decides to be opened every weekday from 10 a.m. to 6 p.m., which equals to 40 hours per week, consumers are 1.4% more likely to shop at a Local Food Center than the Prescott Farmers Market (open only Saturday from 6 a.m. to noon). Although 1.4% does not seem to be an economically significant number compared with being open only once a week for 5 days a week, the willingness to pay for these 34 additional hours is $3.3 per basket of grocery goods. It means that consumers are willing to pay 16.5% more than the average basket of grocery goods for the additional hours that a Local Food Center could provide. As mentioned above, the choice sets only provide stated preference of consumers and consumers tend to overstate their preference as there is no monetary payment involved to reveal their true preferences and purchasing behaviors. While we have reason to believe that if a Local Food Center has

40 hours of operation during a week that this will increase consumers' willingness to pay by $3.3 per basket of goods. But the magnitude in the willingness to pay may be subject to change based on other unobserved reasons from our study. Location is another important attribute that has been analyzed in other consumer studies which analyze a consumer's decision on where to shop (Hillier et al., 2015; Liu et al., 2015). Travel mode has been found to be a critical reason for why consumers decide which shopping outlets to shop; however, Yavapai County and Prescott Area consumers live in an area where almost all consumers drive to purchase their groceries. Therefore, we did not account for travel mode in our Consumer Study. Regarding location, we find that consumers are 0.8% more likely to visit a grocery store if it is a mile closer to where they locate. Although this marginal effect also did not seem to be economically significant, it is significant when we consider our study area. The willingness to pay for a grocery store to be a mile closer to a consumer's location is $1.6 per basket of goods; therefore, if the Local Food Center can be in the Prescott City center where most of the consumers work and live, consumers may be more willing to shift their spending from Supermarkets and Grocery Stores as their willingness to pay has increased and might be compensated for a higher basket price at the Local Food Center.

Last but not the least, price is always an important attribute for consumers when they choose their food shopping outlets. Our results suggest that when the price of a basket of groceries increases by $1, consumers are 0.4% less likely to purchase from that food shopping outlet. The estimation of a typical basket of goods at the Prescott Farmers Market is $28 while the average price of a basket of goods from all major food shopping outlets is $20. Consumers are 3.2% less likely to purchase from Farmers Markets than grocery stores given this price differential. Therefore, if a Local Food Center can match the price with the average prices of grocery stores, it would increase the willingness of consumers to visit the Local Food Center over the original farmers markets by 3.2%.

3) Consumer Preferences and Willingness to Pay by Survey Location

For Farmers Market respondents, we found that price is not a significant reason for them in choosing their food shopping outlet. This finding is confirmed with our previous findings from the Marginal Propensity to Consume Model which found that Farmers Markets consumers are less price sensitive. Our results also found that Farmers Markets respondents were rather indifference between non-GMO products, Conventional (may including GMO) products, and products with no production information provided. However, it is surprising that respondents from Farmers Markets did not significantly value purchase directly from growers. Our original intuition was that consumers from Farmers Markets would be more likely to visit a food shopping outlet where they could purchase directly from growers as they do at a Farmers Market, but our study results show that this is not the case. Controversially, this is positive information for a Local Food Center as a Local Food Center does not need to be concerned about a loss regarding farmers market shopper's attention when the sales type changes to shelf from producer.

For non-Farmers Market respondents, we find that they are indifferent between non-local U.S. products, non-local foreign products, and no information on product origin and availability. In addition, off-site respondents did not value Grown with Organic Methods but do value Organic Certified and Synthetic Pesticide Free and Hormone Free products. This is an important finding for a Local Food Center, and we suggest as above that marketing the products from a Local Food Center with the label or slogan of "Synthetic Pesticide and Hormone Free" can capture $16.9 additional willingness to pay per basket than "Grown with Organic Methods". Furthermore, respondents from other food-related sites also did not value the attribute of purchasing from growers. Respondents from other food-related sites were indifferent on the hours of operation where being open for more hours did not encourage their willingness to visit the food shopping outlet. However, we believe that there might be some underlining unobserved attribute that consumers from other sites would trade the hours

of operation with which we do suggest that more hours of being open for a Local Food Center can still influence a consumer likelihood to visit it.

Online respondents have a similar likelihood for visiting a grocery store and a willingness to pay as discussed for all respondents. However, we find that they value organic products more in that they are 14% and 17% more likely to visit a grocery store that has Grown with Organic Methods and Organic Certified Products. In addition, if a food shopping outlet is open 1 more hour, online respondents are 0.06% more likely to shop in that store. In another word, consumers are 2% more likely to shop at a Local Food Center than the Farmers Market, given their limited hours of operation. The willingness to pay for these 5 days or 40 hours of operation are $3.9 per basket of grocery goods. In summary, we find that consumers from farmers markets are relatively price indifferent with grocery stores, and non-farmers markets shoppers value convenience, certified organic, synthetic pesticide and hormone free, and a mixed basket of local and non-local goods.

Table 5-3H. Bivariate Probit Model Results for Discrete Choice Sets b/w Two Hypothetical Food Shopping Outlets

Attributes	Dependent Variable =1, when respondents chose "Choice A" over B on the Discrete Choice Set						
	All Respondents		Farmers Markets	Off-Site		Online	
	M.E	WTP	ME	ME	WTP	ME	WTP
Sample Size: (*1 respondent can answer up to 5 choice sets)*	5386		864	589		3933	
Percentage of "Choice A" been selected	55.25%		58.56%	56.2%		54.39%	
Origin & Availability							
Non-Local Products only from U.S., available year-round (D)	-0.062***	-$14.49**	-0.103**	NS	NS	-0.048*	NS
In season local products with limited quantities + Non-local (including foreign products) (D)	0.177***	$41.47***	0.251***	0.142**	$13.48*	0.168***	$34.72***
In season local with limited quantities + Non-local only from U.S. (D)	0.278***	$65.15***	0.234***	0.253***	$23.96**	0.287***	$59.15***
In season local products with limited quantities (D)	0.184***	$43.04***	0.23***	0.153*	$14.51**	0.179***	$36.98***
Production Method							
Non-GMO (D)	0.092***	$21.51***	NS	0.092*	NS	0.1***	$20.76***
Synthetic Pesticide & Hormone free Product (D)	0.143***	$33.41***	0.135***	0.179***	$16.92**	0.138***	$28.54***
Grown with Organic Method (D)	0.125***	$29.25***	0.125**	NS	NS	0.142***	$29.26***
Organic Certified Product (D)	0.17***	$39.87***	0.12**	0.194**	$18.32**	0.172***	$35.55***
Free Range (D)	0.226***	$52.91***	0.189***	0.167***	$15.84*	0.242***	$49.86***
Sales Type							
Buy Directly from Growers (D)	0.082***	$19.3***	NS	NS	$11.16*	0.086***	$17.65***
Have Growers/ Farmers Photos & Short Description (D)	0.236***	$55.28***	0.203***	0.237***	$22.43**	0.239***	$49.4***
Have Special Products (D)	0.098***	$22.94***	0.083*	0.162***	$15.33**	0.087***	$18.03***
Hours of Operations (per 10 hours)	0.004***	$0.98**	NS	NS	NS	0.006***	$1.15**
Travel Location (one-way, per mile)	-0.008***	-$1.58***	NS	-0.01**	-$0.92*	0.007***	-$1.42***
Price ($ per basket)	-0.004***	-	NS	-0.011**	-	-0.005***	

Note$_1$: * significant at 0.1 probability level; ** significant at 0.05 probability level; *** significant at 0.01 probability level; NS = Not Significant
Note$_2$: Special Products, such as Sweet White Corn, Fresh Apricots, Jerusalem Artichokes, Rainbow Carrots, Watermelon Radishes, Sweet Purple Basil, Tatsoi, Fresh …etc.
Note$_3$: A typical shopping basket includes 5 fresh fruits and/or vegetables (approximately 5 lbs.), 1 lb. of ground beef, and 1 dozen chicken eggs

Chapter VI. Conclusion

As our main objective for this study is the marketing analysis on the viability of a Local Food Center, especially in Yavapai County, our conclusion would be based the effect of each marketing devices.

1) **Hours of Operation: Weekend and Extended Hours after normal office hours**

From the discrete choice set in the consumer study, hours of operation appear to only impact the decision of visiting a certain food shopping outlet for online consumers. The effect is less about how many hours a Local Food Center is open compared with the farmers markets but rather how convenient the hours of operation are for consumers. The online consumer demographics provides us information that this group of consumers are similar to urban family consumers where more than 50% of the respondents have full-time or self-employed jobs and they have more household members. Therefore, a Local Food Center may want to attract these potential consumers by operating through hours after normal business office hours. For the farmers market and all other consumers, we found that these groups of consumers are mostly retired or are still students. Thus, they are more flexible with when they go grocery shopping. In order to capture more demand from urban families, we recommend that the Local Food Center will need to stay open some hours at night during the week to attract these consumers.

On the other hand, as the producers/ vendors are no longer obligated to present to sell at the Local Food Center as they are with the farmers market, they can schedule when to deliver products to the Local Food Center. Local restaurants prefer to either pick-up products using a standard schedule or have the Local Food Center deliver to them.

We also find that consumers (households) who do one additional grocery shopping per month spend $12.26 more at major food shopping outlets. Therefore, when a Local Food Center is open for hours and attracts non-farmers market consumers, these potential consumers will either re-allocate their spending to the Local Food Center or increase their current food expenditure. This result suggests that hours of operation are very important so that potential consumers can and are willing to do their grocery shopping at the Local Food Center.

2) Product Attributes: Mixture of Local and Non-local U.S. produce + Special Products + Synthetic Pesticide and Hormone free are the advantage for Local Food Center

Study results reveal that a Local Food Center is better off to offer shopping attributes that are a mixture of grocery stores and supermarkets rather than those of a farmer's market. An important finding from our analysis is that consumers are willing to pay 51.37% more for their basket of goods (defined in *Appendix B*) if the food shopping outlets provide both local and non-local U.S. products with product variety than only local products with limited products available. In another words, local products are usually limited in quantity and product variety at some points in the year and it is difficult for a consumer to find all the food products they desire for their daily needs. As a result, if the Local Food Center wants to co-exist with local farmers markets and avoid direct competition, a greater variety of products available is critical. Although an objective for the Local Food Center is to provide small producers in Yavapai County with an additional and consistent market platform, it also needs to recruit more producers from other adjacent counties. As the Local Food Center is a year-long sustainable marketplace where fresh supply is needed even when production in Yavapai County is relatively low, it is relevant to consider cooperation with more

small producers in Arizona to allow the Local Food Center to be a food shopping outlet that can satisfy the needs of a consumers' entire food basket.

On the other hand, the Local Food Center also needs to keep their uniqueness so they can distinguish the Local Food Center from existing grocery stores. As farmers market respondents indicated that they prefer "Fresh, Local, and Organic" products, the Local Food Center should try to preserve these attributes. Most of the organic products at the farmers markets are "Grown with organic methods" without third-party USDA certification which may create an issue when selling these products at the Local Food Center. As the Local Food Center will be more similar to grocery stores where consumers are not accustomed to reading or conversing with employees on how food may be grown with organic methods. In addition, the Local Food Center as a marketplace would likely bear the liability associated with food claims instead of producers. As a result, it is very risky to keep promoting produce as "Grown with Organic Methods" at the Local Food Center. On the other hand, we found that consumers are actually willing to pay more for the claim of "Synthetic Pesticide and Hormone Free" products than "Grown with Organic Methods" which the Local Food Center may want to encourage producers to follow and possibly obtain third-party verification and certification for.

Moreover, when consumers think of farmers markets, they generally make a connection with the availability of specialty products. From our binary choice set analysis, we found that consumers are willing to pay $22.94 per basket if a food shopping outlet has special products over no specialty products. Although the dollar amount on the willingness to pay is quite high, we still must recognize that consumers value special products in a food shopping outlet and are willing to visit those outlets to obtain special products.

3) Store Attributes: Growers/ Producers Information & Membership Rewards attract consumers

One of the unique features of a farmers market is that consumers and producers can meet in the marketplace and interact with face-to-face dialogue regarding production methods and attributes consumers desire. However, our binary choice set analysis concludes that consumers mainly care about whether they have information on growers and their products, but not necessarily talking one-on-one with the producers. Consumers are willing to pay 186.42% more for food shopping outlets with producers' product information than purchasing directly from producers. Interestingly, farmers market consumers even indicated that purchasing directly from producer did not influence their willingness to visit a food shopping outlet. As a result, the Local food Center can learn from grocery stores, such as Trader Joe's and Sprouts, that display producer's information on or near their products. As most of the suppliers for the Local Food Center are intended to be nearby producers, the Local Food Center can ongoingly update producers' photos and stories about a farm's history and production practices to attract consumers.

Membership rewards have grown and been added as an essential element for everything from rental cars to gas and food purchases. Even small dessert stores will ask customers to join their membership program so they can collect points and earn rewards. In another words, membership rewards have moved being just an extra incentive to an expectation for loyal consumers. From our marginal propensity to consume analysis, we find that consumers who consider "Membership Reward" as a trigger for them to visiting a certain food shopping outlet will spend $102.69 per month more on grocery shopping than otherwise. Membership rewards are particularly significant for spending at supermarkets. Since the Local Food Center need to capture consumers that shop at supermarkets and grocery stores, membership

rewards would be a good approach for attracting new consumers and establishing loyalty.

4) Price: competitive pricing with grocery stores and supermarkets is important

In general, prices at the farmers markets are higher than other food shopping outlets. Although farmers market consumers are less price sensitive and are willing to pay a price premium for freshly picked products, this price sensitivity does not apply to non-farmers market consumers at a grocery store. The Local Food Center needs to co-exist with the existing farmers markets and even though producers will overlap in supplying products to both shopping outlets, pricing in both markets becomes critical. If farmers market prices are used at the Local Food Center, the Local Food Center will be unable to attract non-farmers markets consumers as they are very price sensitive. On the other hand, if the Local Food Center sets a lower price for the same products and level of freshness as the farmers market, consumers buying at the farmers market will eventually shift to the Local Food Center where they can purchase the same items at a lower price. We suggest that products always picked the day before being sold at the farmers market whereas products at the Local Food Center are more likely to be at least a few days old. Furthermore, when the price of our shopping basket increases by $20, consumers are approximately 10% less likely to visit a grocery store, supermarket, or super center. Thus, the Local Food Center needs to work on being competitive on price with competitors to attract consumers.

Chapter VII. Reference

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Appendix A. Sample of Questionnaire

A-1. Consumer Study

The questionnaire for our consumer study was designed with 16 different versions where we randomly selected 5 binary choice sets out of 40 total binary choice sets (Q7 below) and we also randomly populated a binary prize choice as $150 of goods at the farmers market or an

alternative shopping environment prize ($125, $100, $75, $50 of either Trader Joe's or Frys' Gift Certificate) at the end for each questionnaire. The questionnaire below is an example of 1 version.

==========

Prescott Farmers Market Questionnaire 2017/2018

Prescott Farmers Market (PFM) would like to learn more about your grocery shopping routine. Our team wants to assess the demand for local food, assist local farmers, and enhance the local economy. Thank you for taking the time to share your opinion with us!

Please indicate your first name and preferred contact method at the end of this questionnaire to be entered in a drawing for a **$150 gift certificate** to the Prescott Farmers Market or **alternative gift certificate**.

Q1: How often do you purchase goods at the farmers' market?

☐ Never or this is my first time ☐ Occasionally ☐ Monthly ☐ Every 2 weeks ☐ Weekly

Q2: How often does your household purchase food from all places for in-home food needs?

☐ Once a Month ☐ Every 2 weeks ☐ Once a Week ☐ Twice a week ☐ Three times a week

Q3: A Local Food Center is a place that provides fresh produce, meat, and prepared foods from local growers and small businesses. If a Local Food Center will open in your area, would you be willing to shop at such a Local Food Center with certain attributes?

☐ Definitely not ☐ Probably not ☐ Probably yes ☐ Definitely yes

Q4: How many meals do you typically consume away-from-home in a week?

☐ None ☐ 1 meal ☐ 2-3 meals ☐ 4-7 meals ☐ 8-15 meals ☐ 16-21 meals

Q5: Are you a participant of any of the following programs? (Please check all the apply)

☐ SNAP benefits (EBT Cards) ☐ Farmers Market Nutrition Program ☐ WIC Program ☐ None

Q6: Please rank the three most important features of your food purchases? (Please rank 1,2,3)

__ Fresh Produce __ Prepared Food __ Produced locally __ Organic Products
__ Variety of Products __ Product Shelf Life __ Hours of Operation __ Price
__ Short/no checkout line __ Community Interaction
__ Gluten-Free, Kosher foods, and related products
__ Membership Rewards __ Free Samples __ Location __ Other_____

Q7: What shopping environment would you prefer between choice A and choice B in the following tables?

* Special Products, such as Sweet White Corn, Fresh Apricots, Jerusalem Artichokes, Rainbow Carrots, Watermelon Radishes, Sweet Purple Basil, Tatsoi, Fresh Pimentos, …etc.

** A typical shopping basket includes 5 fresh fruits and/or vegetables (approximately 5 lbs.), 1 lb. of ground beef, and 1 dozen chicken eggs

	Shopping Environment A	Shopping Environment B
Production Method	• Grown with Organic Methods	• Certificated Organic
Sale Type	• No information on growers or farms • No Special Products*	• Have grower photos & short description of farm • Have Special Products*
Location	Within 5 miles	More than 10 miles
Price/basket**	$ 14	$ 28
Select A or B	**Choice A** ☐	**Choice B** ☐

	Shopping Environment A	Shopping Environment B
Hour of operation	• Open only on Saturday • 6 a.m. - noon	• Open Every day • 6 a.m. – 11 p.m.
Location	Within Walking distance	More than 10 miles
Price/basket**	$ 18	$ 14
Select A or B	Choice A ☐	Choice B ☐

	Shopping Environment A	Shopping Environment B
Sale Type	• Have photos of growers & short description of farms • Have special products*	• No information on growers or farms • No special products*
Price/basket**	$ 33	$ 28
Select A or B	Choice A ☐	Choice B ☐

	Shopping Environment A	Shopping Environment B
Origin & Availability	• In season local products with limited varieties and quantities + Non-local products (including foreign products)	• In season local products with limited varieties and quantities
Production method	• Conventional (may include GMO)	• Grown with organic methods
Hour of operation	• Open Every day • 24 hours	• Open only on Saturday • 6 a.m. - noon
Price/basket**	$ 20	$ 20
Select A or B	Choice A ☐	Choice B ☐

	Shopping Environment A	Shopping Environment B
Origin & Availability	• Non-local products (including foreign products), available year-round	• Non-local products only from U.S., available year-round
Production method	• Non-GMO	• Conventional (may include GMO)
Price/basket**	$ 18	$ 18
Select A or B	Choice A ☐	Choice B ☐

Q8: What is your 5-digit zip code?

_____

Q9: What is your gender?

☐ Male ☐ Female ☐ Other

Q10: What is your age in years?

☐ <25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ 66-75 ☐ 76-85 ☐ > 85

Q11: Please describe your race/ethnicity (Please select all that apply).

☐ African-American ☐ Asian ☐ Caucasian ☐ Hispanic/Latino ☐ Native American

Q12: What is the highest level of education you have completed?

☐ High School or below ☐ Some College ☐ Bachelor ☐ Master or above

Q13: Current employment (Please select all that apply).

☐ Not Employed ☐ Student ☐ Retired ☐ Part-time ☐ Self-Employed ☐ Full-time

Q14: How many individuals are in your household and how many are under 12 years of age?

_____ Total individuals (including yourself), and _____ children under 12

Q15: What are the monthly living expenses for your household? (Including Food, Housing, Transportation,

Insurance, Education, Healthcare and Entertainment)

☐ <$1,000 ☐ $1,000- $1,500 ☐ $1,500-$2,000 ☐ $2,000-$3,000
☐ $3,000-$4,000 ☐ $4,000-$5,000 ☐ $5,000-$6,000 ☐ $6,000-$8,000
☐ $8,000-$10,000 ☐ >$10,000

Q16: Please describe the typical monthly grocery shopping of your household.

	$ / month	**How far do you typically travel to the following shopping outlets? (one-way)**
Farmers' Market	**$**	**mi**
Stores like Sprouts, Trader Joe's	**$**	**mi**
Supermarkets like Fry's, Safeway	**$**	**mi**
Supercenters like Walmart, Costco	**$**	**mi**

※ If you want to enter the drawing, please select your preferred prize and provide your contact information below. *(Please select only 1 and your information will only be used for this drawing)*

☐ $150 gift certificate to the Prescott Farmers' Market ☐ $125 gift certificate to Trader Joe's

First Name: _____ Email or Phone: _____

A-2. Local Restaurant Study

The Local Restaurant Questionnaires were collected by the Prescott Farmers Market Team through both paper survey and online questionnaires.

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Local Foods Survey

Prescott Farmers Market is conducting a feasibility study for a Local Food Center (LFC) through a grant from the USDA. This LFC would ideally contain the following: cold storage for farmers and ranchers to aggregate their goods and sell to restaurants; a fully-equipped commissary kitchen for processed food businesses to use; a public marketplace for consumers to purchase locally grown, raised and processed foods.

1. **What is the zip code of your restaurant?** _____

2. **What food service provider do you currently use?** (check all that apply)
   - ☐ Shamrock
   - ☐ US Foods
   - ☐ Stern Produce
   - ☐ Peddler's Son
   - ☐ Other _____

3. **What do you consider to be "local"?**
   - ☐ Grown/raised within the County

- ☐ Grown/raised within 100 miles
- ☐ Grown/raised within Arizona
- ☐ Grown/raised within the Southwest
- ☐ Other _____
- ☐ Not sure

4. Which of the following are you interested in purchasing food from Yavapai County farms and/or ranches? (check all that apply)

- ☐ Beef
- ☐ Poultry
- ☐ Pork
- ☐ Eggs
- ☐ Dairy
- ☐ Vegetables
- ☐ Fruit
- ☐ Tree nuts
- ☐ Other _____
- ☐ Not interested in purchasing local foods

5. Do you currently purchase food from a Yavapai County farm and/or ranch?

☐ Yes ☐ No ☐ Unsure

If yes, how often? _____
How many pounds? _____
What items? _____
_____

6. Have you ever purchased food from a Yavapai County farm or ranch?

☐ Yes ☐ No ☐ Unsure

7. If you do not currently buy from local farmers or ranchers, what barriers keep you from doing so? (check all that apply)

- ☐ I hadn't considered it
- ☐ Not enough quantity
- ☐ Inconsistency of supply
- ☐ No local farms/ranches have what I need
- ☐ I don't know any farmers/ranchers
- ☐ Issues with ordering
- ☐ Local food is too expensive
- ☐ Transportation/delivery issues
- ☐ Food safety concerns
- ☐ The quality isn't good enough
- ☐ Other, such as_____

8. Do you require any certifications in order to use local produce? Ex. GAP Certification

☐ Yes ☐ No ☐ Unsure

9. Would you purchase local foods if you could pick them up at a central location?

☐ Yes ☐ No ☐ Unsure

If yes, how far would you be willing to travel to do so?

☐ Less than 5 miles ☐ 5-10 miles ☐ 10-20 miles ☐ More than 20 miles

10. Would you purchase local foods if they were delivered to your restaurant?

☐ Yes ☐ No ☐ Unsure

11. How would you prefer to order local foods?

☐ Phone
☐ Email
☐ Website
☐ Newsletter replies
☐ Other method: _____

If you'd like to learn more about purchasing from local farms and/or ranches, please share your name and email. _____

A-3. Vendors/ Producers Study

The Vendors/ Producers questionnaire was collected by the Prescott Farmers Markets Team through both paper survey and online questionnaires. In order to better facilitate the language different among producers and receive more responses from producers, we provided both English and Spanish versions using the same questions.

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Prescott Farmers Market – Feasibility Study Vendor Survey 2018

Prescott Farmers Market is conducting a feasibility study for a Local Food Center (LFC) through a grant from USDA/RD. The LFC would have a permanent location for the market with meeting, office, and education space, as well as cold storage for produce and meats, commercial kitchen for processed food businesses, demonstration garden, and marketplace for consumers to purchase local foods. The LFC would be open year-round on weekdays and Prescott Farmers Market would continue hosting the Saturday market. Please fill out this survey to help PFM prioritize the needs of its vendors. *Note that there are 3 sections: 1) All Vendors, 2) Farmers/Ranchers, and 3) Processed Food Vendors. Please fill out all the sections that apply to your business.

◆ All Vendors:

Q1: Do you currently sell at the Prescott Farmers Market (PFM)?

□ Year-Round □ Summer Season only □ Winter Season only

□ Do not sell at PFM

Q2: Are you interested in selling your product through a Local Food Center (LFC)?

□ Yes, please answer Q2A □ No, please answer Q2B

Q2A: If yes, what are the reasons that you are interested in selling your product through LFC? (Select all that apply)

□ Better experience on Marketing □ Convenience (Cost-Effective)
□ Language advantages □ Access to more customers
□ Saving the cost on branding □ Resource & Information
□ Other, such as _____

Q2B: If no, what are the reasons? (Select all that apply)

□ Limited production □ Transportation □ Limited Labor □ Profit margin
□ Only grow seasonally □ Do not trust LFC □ Limited time to supply
□ Prefer direct sales □ Other, such as_____

Q3: If you were to sell at a LFC would you still attend weekly markets? (Please skip Q3A, if you choose "Definitely Yes" or "Probably Yes")

□ Definitely Yes □ Probably Yes □ Probably Not □ Definitely Not

Q3A: If no, what would prevent you from selling at the markets after selling at a Local Food

Center (LFC)? (Select all that apply)

□ Limited production □ Transportation □ Limited labor
□ Only grow seasonally □ Limited time to supply to both places
□ Want to spend more time on production
□ Others, such as_____

Q4: Do you have any concerns about selling your products at the Local Food Centers (LFC)?

□ Quality control □ Lower price margins □ Competition of similar products
□ Staff members are not familiar with my products
□ Would affect my business on Saturday at the Prescott Farmers Market

□ Other, _____

Q5: Where do you believe is the ideal location for a LFC?

□ Prescott □ Prescott Valley □ Chino Valley □ Paulden
□ Other, such as_____

Q6: What is the approximate yearly profit of your business? (how much do you have after deducting all your costs, such as labor, fertilizer, packaging, transportation etc.)

☐ Less than $0 □ $1 - $999 □ $1,000 - $4,999 □ $5,000 - $9,999
□ $10,000 - $24,999 □ $25,000 - $49,999 □ More than $50,000

Q7: Numbers of employees at your business:

✧ Year-Round: Full-time: _____, Part-time: _____
✧ Seasonal: Full-time: _____, Part-time: _____

Q8: What are your most profitable items? And about what percentage of your sales on these items is profit (sales – expenses)?

_____,
profit margin ($\frac{Profit\ of\ Item}{Sales\ of\ Item}$)? _____%
□ No, insufficient records to determine for this item.

Q9: An important element of the feasibility of a Local Food Center (LFC) is determining the potential for year-round supply of a variety of products. What kind of products would you be interested in supplying to the LFC? (Select all that you would supply to the LFC)

☐ Vegetables □ Fruits □ Dairy Products □ Nuts
☐ Meats □ Prepared Food □Other, such as_____

Q10: What percentage of your current sales are made outside of PFM markets?

□ None □ Less than 10 % □ 10% - 20% □ 20% - 50% □ 50% - 75% □ More than 75%

Q11: Would you be interested in volunteering your time Monday – Friday at the Local Food Center (LFC) to help with staffing, marketing, deliveries, pick-ups?

□ Yes, please circle how often: (1 time/week, 2 times/week, 3 times/week)
□ No

Q12: Would you feel comfortable having other people sell your products at the Local Food Center?

- ✧ **If they were Prescott Farmers Market staff members?**
  □ Yes □ No, why_____
- ✧ **If they were other vendors?**
  □ Yes □ No, why_____
- ✧ **If they were Local Food Center-only staff members?**
  □ Yes □ No, why_____

Q13: Would your business be able to make deliveries of your product(s) to the LFC?

- ✧ **Mid-week? (Monday – Friday)**
  □ Yes, please circle how often (1 time/week, 2 times/week, 3 times/week)
  □ No
- ✧ **Saturdays after the Prescott Farmers Market?**
  □ Yes
  □ No. Why? _____

Q14: Would your farm or business be able and willing to meet food safety requirements and certifications if necessary, to sell your product at the Local Food Center (LFC) including obtaining necessary licenses, and/or permits?

□ Yes, please circle all you are willing to obtain (Certified Organic, GAP/GHP, Certified Naturally Grown, Health Department licenses, Other _____)

□ No. Why? _____

Q15. Would you utilize cold storage at the LFC to sell your goods? (Please select all that apply)

□ Freezer □ Refrigerator □ Not sure yet □ No

Q16. How do you think that the LFC will impact your farm/business?

□ Great positive impact □ Somewhat positive impact □ No impact □ Worse off

◆ Profile

Q1: What is the 5-digit zip code of your business? _____

Q2: What is your age in years?

□ Younger than 25 □ 26-35 □ 36-45 □ 46-55 □ 56-65 □ 66-75
□ 76-85 □ Older than 85

Q3: Please describe your race/ethnicity (Please select all that apply).

□ African-American □ Asian □ Caucasian □ Hispanic/Latino
□ Native American □ Other

Q4: What is the highest level of education you have completed?

□ High school or below □ Some college □ Bachelor □ Master or above

◆ Farmers & Ranchers

Q1: What percentage of your total production is sold at farmers markets?

☐ Less than 25 % □ 25% - 50% □ 50% - 75% □ More than 75%

Q2: How much produce/meat in pounds do you grow/raise annually?

✧ _____ pounds/ year

✧ _____acres of crops/ year

Q3: How far are you willing to travel to sell your goods (one-way)?

□ Less than 10 miles □ 10 – 25 miles □ 25 – 40 miles □ More than 40 miles

Q4. Would you be willing to cooperate with other vendors to transport your products?

☐ Yes □ No

Q5: If the LFC had cold storage and sold local food to local restaurants and the public (like grocery stores), which method would you prefer?

___ Commission Basis (LFC sells your product and keeps a percentage) & Fixed participation fee.

What is the maximum % of retail sales price you would let LFC keep?

☐ 10% □ 15% □ 20% □ 25% □ 30%

___ Wholesale (selling large amounts of your products to LFC at a discounted price, then LFC sells to the public)

Q5. What would you need to scale up your production; Rank from highest (1) to lowest (5):

___ Lower Interest Rates
___ Additional Land
___ Selling to Restaurants
___ Cheaper or Better Water
___ Additional Laborers
___ Small Scale Farming Equipment
___ Cover Crops for Soil Building
___ Lower Cost on Transportation
___ Better Access to Credit/Loans
___ Marketing Channels
___ Scaling up Production
___ Education on Production
___ Better Access to Technology
___ Good Source for Composts/Feeds
___ Pest/Disease Control

Q6. What percentage of your sales goes to pay for transportation?

☐ Less than 5% □ 5% - 10% □ 10% - 15% □ 15% - 20% □ More than 20%

◆ Processed Food Vendors

Q1. How much money do you currently spend per month on kitchen space?

$_____/ use of space or

$_____/ month

Q2. Do you currently use Cottage Law to bake your products?

□ Yes □ No

Q2A. If yes, would you use the LFC commercial kitchen instead of baking at home?

□ Yes □ No

Q3. What equipment do you need to make your goods? (Please select all that apply)

□ Mixer □ Refrigeration □ Oven □ Stove Top □ Freezer
□ Storage □ Canning Supplies □ Fryer □ Packaging
□ Other_____

Q4. What other food processing costs do you incur in addition to ingredients and equipment? (Please select all that apply)

□ Labeling □ Permits □ Packaging □ Marketing
□ Transportation □ Other_____