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A MULTIVARIATE ANALYSIS OF CONSUMERS' BELIEFS, ATTITUDES, AND BEHAVIORS ASSOCIATED WITH LOCALLY PRODUCED FOOD AND FARMERS' MARKET PATRONAGE

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
College of Agriculture, Food and Environment
at the University of Kentucky

By

Sara Williamson

Lexington, KY

Director: Dr. Michael Reed, Professor of Agricultural Economics

Lexington, KY

2014

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ABSTRACT OF THESIS

A MULTIVARIATE ANALYSIS OF BELIEFS, ATTITUDES, AND BEHAVIORS ASSOCIATED WITH LOCALLY PRODUCED FOOD AND FARMERS' MARKET PATRONAGE

While farmers' market vendors rely on loyal and frequent patrons to purchase their products, it is unclear how the intrinsic differences among farmers' market shoppers serve as indicators of potential shopping frequency at farmers' markets. The objectives of this thesis are to identify consumers' intrinsic values associated with characteristics of local foods, examine how these values are reflected in consumption behaviors among farmers' market shoppers, and explore the relationship between consumption activities and shopping frequency at farmers' markets. Results suggest that the differences between frequent and infrequent farmers' market shoppers could be explained by the individual's levels of high and low involvement in consumption activities that reflect intrinsic values associated with benefits of locally produced foods. Market patrons who generally exhibit higher levels of involvement in these activities are more likely to be frequent farmers' market shoppers; this is particularly true for those who are drawn to activities associated with public life or group settings. This information can be used by farmers' market managers and vendors to develop targeted marketing strategies for retention of frequent market shoppers and also for increasing market patronage for less frequent market shoppers.

KEYWORDS: Consumer Behavior, Local Foods, Farmers' Markets, Factor Analysis, Food Marketing

Sara Williamson

May 3, 2014

A MULTIVARIATE ANALYSIS OF CONSUMERS' BELIEFS, ATTITUDES, AND BEHAVIORS ASSOCIATED WITH LOCALLY PRODUCED FOOD AND FARMERS' MARKET PATRONAGE

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May 3, 2014

I dedicate this work to Kentucky's food producers, large and small.

ACKNOWLEDGEMENTS

I would like to offer my sincere gratitude to my thesis advisor, Dr. Timothy Woods, for the opportunities and insight he provided over the past four and a half years. Thank you, Dr. Woods, for encouraging solution-focused creativity and for granting me the opportunity to work on projects that can make a difference for Kentucky's food producers. I would also like to thank the other faculty and staff in the Department of Agricultural Economics who have been so helpful during my work to finish this degree; to Dr. Lee Meyer and Steve Isaacs for their mentorship over the years, and to Dr. Roger Brown, Lynn Robbins, and Leigh Maynard for all of their guidance and support. Special thank you's are due to Dr. David Freshwater and Dr. Arnold Stromberg for investing time and tolerance as members of my committee, and to Dr Wuyang Hu and Stan Ernst for sharing their data with me. And, of course, all of the leadership I received from the above mentioned was made possible by the diligent support staff in the Department of Agricultural Economics. Specifically in regard to my academic career, thank you to my "graduate mom," Janene Burke.

I would be remiss to overlook this opportunity to acknowledge two important people who introduced me to my lifelong passion – a very special thank you to Mac Stone and the late Michael Judge for setting me on the right path. I will be eternally grateful and indebted to these people for planting and nurturing a seed which has completely changed my life.

Most of all, I want to acknowledge my family and loved ones – a huge assembly of bossypants who, while encouraging me to persevere, often settled for inadequate time and attention from me over the past couple years. Thank you - I love you all.

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CHAPTER ONE: INTRODUCTION

1.1 Introduction and Background

Locally produced foods (LPF) have become increasingly popular over the past two decades. Today, there is a "buy local" campaign in most states and the federal government has a national "know your farmer, know your food" initiative. Journalists, foodies, activists, and multiple channels of entertainment and media have served as catalysts to what has become "The Local Foods Movement." Although this is not the first time in history where we've observed a spike in consumer demand for LPF (A. Brown, 2001), it is more important than ever to help small and medium scale food producers maximize on this opportunity by improving market sustainability for their products.

Research has proven that the more frequently a consumer purchases LPF, the more likely he/she is to prefer purchasing it through direct markets (i.e. farmers' markets) (Darby, Batte, Ernst, & Roe, 2006; Thilmany, Bond, & Bond, 2008; Thilmany, Bond, & Bond, 2006). As a result, farmers' markets are considered the most widely accepted marketing channel for LPF (Gasteyer, Curry, Cooperband, & Hultine, 2008). Accordingly, the rising popularity of LPF has resulted in an influx of farmers' market locations across the U.S. In 2010, the USDA reported a 114% growth in farmers' market locations when compared to 2000, which translates to 250% growth since 1994. The increasing number of farmers' market locations has granted more consumers better access to farmers' markets than ever before; not only are the markets becoming closer in proximity to home, but many consumers also have choices among more than one market,

which lends more variety in days or hours of operation. This improved access to farmers' markets has lead marketers to expect an increase in market patronage.

Today, there are four farmers markets for every one that existed in the 1970's (Martinez et al., 2010). However, there is no way to be sure that patron numbers have been increasing by the same proportion. In fact, there is reason to think otherwise. While growth in farmers' market locations more than doubled from 2000 to 2010, the estimated average annual growth in sales of LPF was approximately 2.5% during this time, which suggests an overall decrease in average sales per farmers' market. Even when seasonal produce is available at the farmers' market, most market patrons still purchase the majority of their produce somewhere else (L. Kirby, 2007).

What are the barriers to farmers' market patronage? Several studies have found the main deterrents of farmers' market shopping to be a matter of convenience or accessibility (Andreatta & Wickliffe, 2002; Bukenya & Wright, 2007; G. Stephenson & Lev, 2004; Wolf, Spittler, & Ahern, 2005). Wouldn't the growing number of market locations alleviate these barriers? Not necessarily. Farmers' market patronage signals a commitment to LPF that reaches beyond traditional food procurement. A high farmers' market shopping frequency is indicative of an individual's exceptional commitment to the procurement of LPF through that specific venue, given the additional time, money, and effort that market patronage demands. After all, the market patrons must still go to their usual grocery store to procure items which are unavailable at the farmers market (e.g. spices, hot dog buns, toilet paper). And, in many cases, patrons must travel further distance to reach a farmers' market as opposed to a grocery store. Consequently, a frequent farmers' market shopper must value something about the products at a farmers'

market, or the farmers' market itself, to continue investing time and money to purchase LPF from that venue. So, while increases in farmers' market locations may help to overcome past challenges with accessibility, there is still the issue of convenience.

With so many new farmers' markets (and likely more to come), it is more important than ever to market these venues to the appropriate consumers. The most effective marketing strategy is to strengthen loyalty of current frequent shoppers while also increasing visits from currently infrequent patrons. There is more than ample reason to believe that the market for LPF hasn't matured. Many consumers generally prefer local over non-local foods (Hu, Batte, Woods, & Ernst, 2012; Loureiro, Hine, & Association, 2002; Toler, Briggeman, Lusk, & Adams, 2009; Zepeda & Leviten-Reid, 2004) and are willing to pay a premium for LPF (Adams & Adams, 2008; Andreatta & Wickliffe, 2002; C. Brown, 2003; Carpio & Isengildina-Massa, 2009; Darby et al., 2006; Darby, Batte, Ernst, & Roe, 2008; Hu, Bastin, & Woods, 2009; Hu, Woods, & Bastin, 2009; Kezis, Gwebu, Peavey, & Cheng, 1998; Thilmany et al., 2008). The challenge is to identify the value proposition for LPF.

Why do consumers seek "local" food in the first place? Although consumer motivation to buy LPF reaches beyond the physical proximity of food origin, their conceptualization of what "local" actually means has been proven as inconsistent (Adams & Adams, 2011; C. Brown, 2003; Hartman, 2008). This is likely because "local" is a multi-dimensional credence attribute[1], wherein consumers are not able to evaluate it personally and, consequently, must rely upon the source's claims and social information

[1] Credence goods are goods in which the product attributes cannot be determined before or after a product is purchased (Caswell 1996).

to develop their own perceptions about the product (Vermeir & Verbeke, 2006). Consequently, the consumers' definition of "local food" exists along a continuum of proximity to home (Adams & Adams, 2011; Hu, Batte, Woods, & Ernst, 2010). Because the intangible nature of LPF benefits leaves gaps in the information available, consumers make their own, individual inferences beyond the information given (Kardes, Posavac, & Cronley, 2004). While consumers' expressed food-related values for freshness, quality, taste, and availability hold an important role in decision-making (Fawcett, Fawcett, Watson, & Magnan, 2012), and have been proven to draw a price premium for LPF (C. A. Bond, Thilmany, & Bond, 2008; Fawcett et al., 2012), consumers' willingness to procure locally produced products is also shown to be influenced by a more dimensional effect of their intrinsic value systems (G. Nurse, Onozaka, & McFadden, 2010; Olsen, 2001; Zepeda & Li, 2006).

While previous studies have identified several underlying factors of consumers' beliefs, attitudes, and behaviors associated with LPF, it remains unclear how these factors work collectively to influence consumers' frequency of seeking LPF via farmers' markets. Furthermore, few studies have sought to understand the differences among farmers' market shoppers (Arrington, Dennis, & Mazzocco, 2010), and especially in terms of the relationship between intrinsic values and frequency of market patronage. If the improvements in market access and the growing popularity of LPF have resulted in a substantial growth in the overall quantity of market patrons, then the relatively sluggish annual growth of LPF sales might suggest a deluge of new farmers' market patrons who shop less frequently or spend less per visit (in comparison to veteran market shoppers).

Given what we understand about the nature of farmers' markets, how do we interpret the variations in patrons' shopping frequency at these venues? Although the literature acknowledges variation in shopping frequency among farmers' market patrons (Connell, Smithers, & Joseph, 2008), it does not offer much insight about differences among farmers' market shoppers or the relationship between shopping frequency and those individual differences.

So, how can we best identify consumers who exhibit a higher propensity to be frequent farmer's market shoppers? More importantly, how do we transform the less frequent shoppers into more loyal, frequent shoppers? This thesis provides a starting point for answering these questions, its purpose being two-fold: to explore differences among farmers' market shoppers, and to determine if those differences are related to individuals' frequency of shopping at a farmers' market. This new information is intended to assist marketers in building targeted marketing strategies to maintain the loyalty of frequent shoppers and also encourage increased patronage from infrequent shoppers.

1.2 Conceptual Framework

The attitudes consumers develop toward a good are expressed as negative, neutral, or positive; the strength of these attitudes is related to the amount of attention given to the product characteristics (MacKenzie, 1986). The concept of product attributes as "characteristics" was first proposed by Lancaster (1966) with a model to explain individual choice as a process of choosing bundles of product attributes presented by goods or services. Lancaster's model assumes that consumers seek to maximize utility

(level of satisfaction) by choosing the best bundle of characteristics (relative to a budget constraint). More importantly, the utility experienced is relative to the strength of the characteristics in the chosen bundle, where the collections of characteristics available to a consumer are the "direct ingredients of his preferences and his welfare" (Lancaster, 1966).

Consumers are drawn to characteristics of LPF which can be generalized as private or public benefits. A general consensus in recent literature is that empirical methods in this sphere should account for both public and private benefits of LPF (Aertsens, Verbeke, Mondelaers, & Van Huylenbroeck, 2009; C. A. Bond et al., 2008; Krystallis, Vassallo, Chryssohoidis, & Perrea, 2008; G. Nurse et al., 2010; Thilmany et al., 2008; Weatherell, Tregear, & Allinson, 2003). Thilmany, Bond, and Bond (2008) applied Lancaster's model of consumer behavior to more specifically classify these characteristics of LPF as benefits which could be "*quasi-public*" (environmentally friendly, ethical, locally produced, etc.) or "*privately appropriable in nature*" (convenience, taste, quality, etc). For the sake of simplicity in this thesis, "*private benefits*" are characteristics that present benefits direct to the individual, whereas "*public benefits*" are characteristics that present benefits which could reach beyond consumers' personal gain (and somehow affect society).

Public Benefits.

In the case of direct markets for LPF, such as farmers' markets, product purchasing and consumption offers unique and indirect benefits which are largely associated with public life. LPF consumers are found to demonstrate significant positive attitudes and preferences toward public benefits such as environmental friendliness,

social responsibility, and local economic development (Nie & Zepeda, 2011; G. Nurse et al., 2010; Onozaka, Nurse, & Thilmany McFadden, 2010a, 2010b; Thilmany et al., 2008; Wolf et al., 2005; Zepeda, 2009; Zepeda & Nie, 2012). For example, the perceived public benefit of supporting the local economy is a commonly reported motivational factor for consumers of locally grown food (Eastwood, Brooker, & Gray, 1999; Kezis et al., 1998; Kolodinsky & Pelch, 1997).

Private Benefits.

While frequent buyers of LPF are thought to be more altruistic, thus more influenced by public benefits, they remain aware of price, convenience, quality, and taste (G. A. Nurse, 2010; Thilmany et al., 2007). After all, these products are food, and the direct benefits of food are largely rival (private, direct). In fact, some consumers are not concerned with impact of LPF consumption on farm businesses or farmland at all (J. K. Bond, Thilmany, & Bond, 2009; Bregendahl & Flora, 2006; Darby et al., 2006; Toler et al., 2009; Zepeda & Li, 2006). Where some studies have found consumers to be more likely to pay a premium price for altruistic reasons (G. Nurse et al., 2010; Sunding, 2003; Umberger, Thilmany McFadden, & Smith, 2009), others concluded that higher price premiums for LPF are likely yielded by private benefits than by the consumers' support for local farmers (C. A. Bond et al., 2008; Fawcett et al., 2012; Nie & Zepeda, 2011).

Intrinsic Values for LPF Characteristics

Beliefs, attitudes, and behaviors associated with LPF characteristics are influenced by consumers' social, emotional, physical, and psychological relationships with food (Block et al., 2011). Furthermore, those who exhibit a higher willingness-to-pay for

alternative foods, such as LPF, are more likely to be influenced by intrinsic principles rather than product characteristics (Bell & Marshall, 2003; Olsen, 2001). Previous studies support the notion that intrinsic values drive our perceptions, preferences, and purchasing motivations associated with food (Krystallis et al., 2008; Nie & Zepeda, 2011; Xie, Bagozzi, & Troye, 2008). To this extent, my thesis proposes that consumers express their intrinsic values by choosing product characteristics that are congruent with beliefs and attitudes toward LPF.

Summary of Conceptual Framework

As an adaptation of Lancaster's original model, the farmers' market shopper possesses an ordinal utility function for their *intrinsic values* associated with LPF characteristics and will seek to maximize U(z) by choosing goods and participating in consumption activities that yield public and private benefits. As a result, frequency of farmers' market shopping will increase with the magnitude of the consumers' value for public benefits, whereas the a lower frequency of farmers' market shopping will be observed for consumers with lower magnitude of value for public benefits.

1.3 Objectives

This thesis aims to provide new knowledge to assist marketers, food vendors, extension specialists, and researchers by exploring the differences among LPF consumers' beliefs, attitudes, and behaviors that may serve as indicators of their propensity to be a frequent or infrequent farmers' market shopper. Specifically, I examine consumers' beliefs, attitudes, and behaviors associated with LPF and farmers' markets with the objectives to: 1) explore consumers' intrinsic values associated with local foods,

2) describe the differences among farmers' market shoppers' behaviors related to these values, 3) examine the value-related behaviors as quantifiable indicators of shopping frequency at farmers' markets, and 4) apply knowledge gathered from objectives 1, 2, and 3 to present unique segments of current farmers' market shoppers.

This is accomplished by identifying central themes for beliefs and attitudes consumers express toward local foods and applying those findings to a survey which explores farmers' market patrons' expression of those beliefs and attitudes via behavior, all while taking into consideration the impacts of socioeconomic and demographical characteristics of these consumers. Self-reported farmers' market shopping frequency is used to represent the consumers' relative loyalty to shopping at farmers' markets, with the assumption that an individual's total expenditures at farmers' markets is closely correlated with their frequency of visiting farmers' markets.

1.4 Significance of Research

Farmers' markets are considered the most widely accepted marketing channel for LPF (Gasteyer et al., 2008) and have a particularly large economic impact for small farmers and rural communities (Otto & Varner, 2005). With 40% of all food producers selling some portion of their products through local market channels (Shute, 2011), local food systems rely on successful farmers' markets. The net growth of market locations does not reflect the retention/attrition rates for farmers' markets or vendors. In reality, there are several farmers' markets that have opened and failed during the influx of market locations. For example, 25% of farmers' markets in Oregon closed after their first year of operation between 2002 and 2005 (L. Stephenson & Brewer, 2007).

Further complicating our ability to develop business strategies for farmers' markets, the net change in market locations does not reflect estimates or changes in total patron numbers or consumer behavior associated with LPF. Furthermore, large-scale research does not exist to tell us how many patrons are required to sustain a market vendor or how frequently these patrons must visit a farmers' market. Nevertheless, market and vendors' sales volume depends on a critical mass of loyal patrons who shop frequently (L. Stephenson & Brewer, 2007). Thus, the economic sustainability of farmers' markets is hinged upon marketers' insight into behavioral outcomes of farmers' market patrons (Govindasamy et al., 1998). Specifically, understanding patrons' value for LPF can assist vendors with targeted marketing strategies and meaningful product differentiation.

Despite exponential growth in farmers' market locations, the overall average annual market sales has decreased. Measures must be taken to help vendors and marketers maximize on LPF consumer behavior in this domain. Why do some patrons shop at the farmers' market more frequently than others? What is the most effective strategy to stimulate farmers' market shopping frequency? The answers to these types of questions can assist vendors in more effectively maximizing on the purchasing behavior of their customer base for LPF at farmers' markets (Gasteyer et al., 2008). If consumers who demonstrate different frequencies of farmers' market shopping are also different in terms of intrinsic values, then vendors have the opportunity to apply segmented marketing strategies.

In a survey of farmers' market managers, Ragland & Tropp (2009) discovered that those who took measures to learn about their patrons' preferences (27% of the total sample) reported higher average sales than those who did not. However, many markets

do not have the resources to pay a full time manager or to conduct a consumer study. Yet, all farmers' markets can benefit from effective strategies for targeted marketing. And, while a "one size fits all" approach cannot address the plethora of differences among farmers' markets across the country, a large sample of market patrons would likely represent the continuum of characteristics exhibited by most consumers.

1.5 Interdisciplinary links

This thesis explores consumer behavior as a multi-dimensional science. While neo-classical economic theory provides a foundation from which I build, this research considers theory and empirical methods used in psychology, sociology, marketing, statistics, and other disciplines which also provide a body of knowledge to support consumer behavior research.

The concept of "Food Well-being" may best describe how our personal relationship with food is experienced at both private and public levels (Block et al., 2011). Proposed by Block et al. (2011), the role of food in daily life is hypothesized as having five core constructs: *food socialization, food literacy, food marketing, food availability, and food policy*. To this extent, the individual's ability to achieve Food Well-being is contingent upon the cultural, environmental, economic, political, social, and human factors in a society. Just as Food Well-being is contextual, so is food decision making (Bettman, Luce, & Payne, 1998), which is an important consideration for this investigation into consumers' LPF-related beliefs, attitudes, and behavior.

CHAPTER TWO. LITERATURE

There is a strong body of recent literature which presents LPF-related consumer research (Adams & Adams, 2011; Adams & Salois, 2010; C. A. Bond et al., 2008; J. K. Bond et al., 2009; Darby et al., 2006, 2008; Hu et al., 2010; Hu et al., 2012; Hu, Woods, et al., 2009; Katchova & Woods, 2010; Nie & Zepeda, 2011; G. Nurse et al., 2010; Onozaka et al., 2010a, 2010b; Thilmany et al., 2008; Williamson, Ernst, Woods, & Hu, 2012).

2.1 Public Benefits of LPF

Some consumers use their money to make a public statement (of activism) (Gill, 2006; Vermeir & Verbeke, 2006) wherein the consumer's preference for LPF is influenced by their perceived effect of their choice on the general welfare of others (G. Nurse et al., 2010; Onozaka et al., 2010b). This response is commonly known as "Perceived Consumer Effectiveness" (PCE) (Ellen, Wiener, & Cobb-Walgren, 1991; G. Nurse et al., 2010; Vermeir & Verbeke, 2006). High PCE is necessary to evoke consumers to translate their positive attitudes into actual purchase (Ellen et al., 1991; Berger and Corbin, 1992; Roberts, 1996; Lee and Holden, 1999). In order to motivate behavioral changes, consumers must be convinced that their behavior has an impact on some societal factor such as environmental sustainability or social justice (Roberts 1996).

Attributes which have been said to elicit PCE overlap the consumers' expressed preferences for attributes of LPF; examples are "eco-friendly," "socially responsible," and of course, "locally produced". As part of an expanded conceptual framework of the Theory of Planned Behavior, Nurse et al. (2010) hypothesized that utility gained from

LPF is relative to the consumers' PCE. This study concluded that a significant relationship exists between PCE and consumers' marginal values of the characteristics "local" and "organic", where consumers' levels of PCE are influenced by four components of public benefits attributed to sustainable food: *economy, environment, social fairness,* and *social responsibility* (G. Nurse et al., 2010).

In contrast to more recent literature (Block et al., 2011; Nie & Zepeda, 2011), Zepeda and Li (2006) concluded that while attitudes or behaviors related to food and shopping may have significant effects on shoppers to buy local, consumers' attitudes and behaviors associated with environmental and health factors are not significant contributors to LPF purchases. Furthermore, in contrast to the positive influences of PCE, some researchers have debated the negative impacts from this type of consumerism (DeLind, 2010), as it has historically manifested into "selective patronage," a market which becomes contradictorily exclusionary for socially disadvantaged consumers (Hinrichs & Allen, 2008). An alternative explanation is that places with higher average levels of social capital are more likely to have residents who, having more personal social capital, act as "political consumers" (Neilson & Paxton, 2010) and exhibit high PCE.

There is literature to suggest that PCE is difficult to accurately measure with a consumer survey. Auger and Devinney (2007) present a compelling argument against studies on ethical consumer behavior, accusing survey instruments of overestimating consumer intentions to purchase ethical products, due to the social desirability bias in response data; as survey participants may provide answers that seem more "socially acceptable," their true intentions cannot be accurately measured. Consequently, it is possible that previous research has overestimated consumers' intention to make

purchases and exaggerates the observed gap between intention and behavior to purchase ethical products (Auger & Devinney, 2007).

2.2 Private Benefits of LPF

Private benefits such as health factors, taste, flavor, cleanliness, and absence of pesticides have been found drive consumer demand for LPF (Govindasamy et al., 1998). Several studies have found that LPF consumers make choices based on the price and quality of produce (Bukenya, Mukiibi, Molnar, & Siaway, 2007; Martinez et al., 2010; Sommer, Schlanger, Hackman, & Smith, 1984). But, is this true in the case of farmers' market shoppers? These studies did not consider the public and private benefits that would be unique to farmers' market patrons (Adams & Adams, 2011).

Bond et al. (2008) did consider both types of benefits and discovered that LPF consumers exhibit a higher willingness to pay for private benefits, as opposed to public benefits. On the other hand, (Thilmany et al., 2008) found that benefits such as production processes or product source were driving the consumers' preferences when considering purchases from direct markets (vs conventional grocery). Although these characteristics have direct benefits to the consumer, they also present public benefits to the environment and economy by reducing food miles and increasing revenue for local businesses.

2.3 LPF-related Involvement

Several studies have discovered a causal link between consumer behavior and the concept of involvement (Bezençon & Blili, 2011; Bloch, 1982; Celsi & Olson, 1988). Involvement is a construct that influences brand loyalty, product information search

processing, responses to advertising communications, and product choice decisions (Bell & Marshall, 2003). Involvement, in this context, is a characteristic of an individual, existing at "high" or "low" levels. Intentions for consumption of sustainably produced food are influenced by the consumers' attitudes toward these products, which is significantly impacted by the individual's level of involvement with that product (Vermeir & Verbeke, 2006). High levels of consumer involvement are associated with increased likelihood of consumption for organic (Aertsens et al., 2009), sustainable (Bell & Marshall, 2003; Vermeir & Verbeke, 2006), and fair trade (Dubuisson-Quellier & Lamine, 2008) foods, as well as foods sold within local networks (Dubuisson-Quellier & Lamine, 2008).

Consumers' overall level of involvement is born from a combination of intra-individual and situational factors (Celsi & Olson, 1988). This type of involvement is an inner state of the individual that reflects a long term product interest or attachment (Bloch, 1982). And, in some cases, a segment for "uninvolved" food consumers has been found (Hamlin, 2010; Nie & Zepeda, 2011). These "uninvolved" food consumers exhibit a lack of interest in local and organic foods, likely due to lack of convenience or budget constraints (Nie & Zepeda, 2011).

2.4 Consumer Segmentation Studies

Previous studies of consumer demand for LPF have employed consumer segmentation methods to more clearly define unique dimensions of LPF consumers' beliefs, attitudes, and behaviors. Bond et al. (2008) set out to evaluate motivation and preferences for purchasing fresh produce by quantifying the interaction between public

and private benefits of LPF. Using data from a 2006 national survey of grocery shoppers (N= 1,269), this study applied a varimax rotated factor analysis to reveal four underlying factors: *aesthetics and economics, health and nutrition, privately appropriable product attributes,* and *public good product attributes*. These results were used to calculate a k-means[2] cluster analysis, which further categorized the sample into four consumer segments: *Personal Value Buyers, Quality and Safety Consumers, Urban Assurance Seekers,* and *Price Conscious Consumers*. In general, there were only minor differences between groups in terms of shopping venue preferences and for importance placed on (in order most to least) support for local farmers, nutritional benefits and food safety, and support for organic production practices. Across all clusters, a relationship existed between local production, perceived quality, and safety. Results of the WTP analysis suggested that while support for local farmers is a significant determinant of higher WTP, private benefits (taste, quality) are likely to yield higher price premiums than public benefits.

Nie and Zepeda (2011) developed the "Food Related Lifestyle" framework to explore contextual factors which were hypothesized to interfere with consumers' ability to follow through with intention to purchase organic or local foods. A k-means cluster analysis revealed four consumer segments, identified as *rational, adventurous, careless,* and *conservative-uninvolved*, all of which exhibited significant differences in organic and local food consumption. Similar to results from Bond et al. (2008), these clusters were correlated with respondents' concerns, knowledge and practices regarding health and

[2] With k-means clustering, respondents can be isolated into subgroups according to their stated preferences while still demonstrating similar attitudes as other sub groups.

environmental factors, as well as some demographic characteristics (race, gender, age, education, income) and variables that measured access to local and organic foods. According to the Food Related Lifestyle framework, *rational* consumers emphasize taste, nutrition, value, children, and enjoyment of cooking; *adventurous* consumers value health, fitness, and freshness, and ethnic foods; *careless* (highest income group) and *conservative-uninvolved* (lowest income group) consumers favor convenience, food safety, and health. Results suggested that patrons who are relatively more likely to shop at farmers' markets, specialty stores, and purchase organic foods are also more likely to pay attention to product labels (for quasi-public benefits such as environmental friendliness), while being less likely to value particular brands or convenience (private benefits).

The core constructs of the "Food Related Lifestyle" framework are supported by conclusions from Krystallis et al. (2008), which proposed that consumers are driven by two underlying factors: *individual* and *societal* motivators. This study employed an abbreviated (17-item) version of the Portrait Value Questionnaire to explore motivators for organic food purchasing. Exploratory factor analysis revealed that individual (private) and societal (public) motivators could be used to evaluate consumer segments more accurately. Similar to aforementioned studies, consumers were clustered into five groups based on beliefs regarding price, taste, healthiness, environmental friendliness, and naturalness of organic foods. Results suggested that consumers with the strongest similarities regarding their societal and individualistic values were more likely to be regular organic buyers (of those who bought organic) and also more likely to have considered buying organic products (of those who did not buy organic at the time). In

contrast to Thilmany et al. (2008) who discovered four clusters which all exhibited some combination of value for both public and private benefits, this study by Krystallis et al. revealed some groups of consumers who identified with *only* public or private benefits.

2.5 Farmers' Market Shoppers

Demographic characteristics have been the emphasis of many farmers' market studies in the past (Bukenya et al., 2007). The general consensus is that the average shopper tends to be older, female, married, employed, live in urban areas and have higher levels of education and income (Conner, Colasanti, Ross, & Smalley, 2010). Little has been done to explore segments among farmers' market consumers. One notable exception to this is found in Arrington et al. (2010), an investigation which conducted intercept surveys at farmers' markets in Indiana and Illinois and used multi-step factor and cluster analyses to discover four preference-based segments of farmers' market shoppers: Recreational (42%), Minimalists (27%), Enthusiasts (23%) and Time-challenged (8%). Each cluster had a unique set of preferences based on the actual attributes of the farmers' market, ranging from overall convenience to the presence of nearby stores.

In general, LPF consumers are drawn to farmers' markets for reasons associated with social capital, such as support for local farmers (G. Stephenson & Lev, 2004) and concern for equity (Zepeda & Leviten-Reid, 2004). Adams & Adams (2011) conducted surveys at two Florida farmers' markets to explore FM consumer segments and found three distinct segments. The cluster with highest frequency of market shopping was less wealthy and more highly motivated than the other clusters, and these consumers were also less restrictive in their definition of "local food" (in terms of proximity). The high

frequency cluster was also willing to pay a higher premium for LPF and perceived LPF as less difficult to access and less costly than the other clusters did. Thus, attitudes toward LPF are better predictors of farmers' market shopping frequency than are traditional demand factors such as cost and willingness to pay (Adams & Adams, 2011).

CHAPTER THREE. ECONOMIC MODEL

Farmers' markets are experiential. Subsequently, consumers' utility maximizing choices associated with farmers' market shopping are best described with Lancaster's model of consumer behavior, also known as the "product attributes model" (Gwin & Gwin, 2003). Lancaster (1966) poses that consumers derive utility from the characteristics and consumption activity associated with a bundle of goods, and not an actual good, itself. Consumers maximize their utility by seeking goods with "characteristics" and "consumption activities" that appeal to their intrinsic values (Gwin & Gwin, 2003; Lancaster, 1966). Accordingly, the magnitude of a consumer's value for a particular good and its characteristics (for example, a locally produced tomato) can be influenced by the "consumption activity" (for example, a venue such as farmers' markets) and by the individual's relative level of involvement for that activity (cumulatively amounting to the opportunity costs associated with purchasing and consuming the locally grown tomato). Lancaster supports the notion that consumers' LPF preferences are contextual – subject to the type of market venue, the array of goods available at that venue, the process of preparing and eating the product or products. Thus, consumers' choices are driven by the entire experience of purchasing and consuming a good.

3.1 Lancaster's Model of Consumer Behavior

In seeking to maximize utility, the consumer will purchase as many preferred characteristics as possible, looking for the combination of goods that offers the best total combination of characteristics. If the utility derived from a specific characteristic is

relative to the combination of goods in a bundle, then increasing a characteristic for that bundle may change the total utility derived from the bundle, even if the price or income does not change (Ladd & Suvannunt, 1976). Thus, according to this theory, an individual's utility function for any particular characteristic will vary according to the bundle of goods, the characteristics among those goods, the particular consumption activity for each bundle, and the level of that activity.

Goods (x).

The collections of goods available to the consumer represent "the individuals' relationship with the rest of the economy" (Lancaster 66, p 136). The vector of total goods required for a given activity vector:

$$x = Ay$$

Where

x = good or goods required for given activity
y = level of activity
A= the total intrinsic properties of the goods

Consumption activity (k).

A level of consumption activity, k, is associated with any individual good or collection of goods, where the relationship between the activity level for consumption and the goods consumed during that activity are "linear and objective".

$$x_j = \sum_k a_{jk} y_k$$

Where

x_j = the jth commodity in a collection of goods
k = activity
y_k = level of activity k
a_{jk} = the coefficient determined by the intrinsic properties of the good(s)

Characteristics (z).

Each consumption activity (k) is assumed to produce a fixed vector of characteristics (z) with a linear relationship. It is assumed that the individual possesses an ordinal utility function on these characteristics and will seek to maximize U(z), so:

$$z_{i=} \sum_{k} b_{ik} y_k$$

$$z = By$$

Where

z_i = magnitude of the ith characteristic
b_{ik} = coefficient determined by intrinsic properties of the good, given the activity[3]

Consumption Activity Level (y).

The relationship between the collections of characteristics and the collections of goods is indirect[4], because it is manifested through the activity vector (y). If it were a direct relationship, then U(z) = U(x) which is impossible unless there are the same number of goods as characteristics and activities. Rather than ask if the consumer prefers characteristic x_1 or x_2, the "better" question is if preference is toward characteristics z_1 or z_2 because they are contextual.

Ultimately, the consumer must have a positive attitude toward the consumption activity (i.e., shopping at farmers' market) in order to maximize utility by participating at higher levels. Attitudes are the consumers' perception toward a particular activity, and they are influenced by beliefs of expected outcomes for that activity (Ajzen, 1991).

[3] Assumption: coefficients are objectively determined for some arbitrary choice of the units of z_i.
[4] Contrary to "traditional model" which draws direct, one-to-one relationship. This is only possible if characteristics = activity = goods.

Model.

A consumer in a free market, and with a linear budget constraint ($px \leq k$), seeks to maximize U(z) subject to $px \leq k$ with z=By, x=Ay, and $x,y,z \geq 0$.[5]

Summary.

Consumers' choices will be based on their goal to maximize utility, which is not only derived from characteristics of LPF but also from the relative influence of a particular consumption activity (Lancaster, 1966). So, how does the consumer choose an activity and at what level to participate? Given the collection of characteristics (z) associated with a bundle of goods (x), the consumer will seek to maximize utility, U(z), and as such, will choose the activity (k) and level of participation (y_k) which yields the most utility when associated with the characteristics (z) in play.

3.2 FM Patrons' Values for LPF Characteristics & FM Shopping Frequency

Building upon what we know about the nature of farmers' markets and Lancaster's consumer behavior theory, we should expect that patrons with higher levels of involvement associated with public benefits of LPF will visit a farmers' market more frequently than patrons who prefer private benefits. More specific to Lancaster's consumer behavior model, the magnitude of farmers' market shoppers' preferences for public or private benefits (z_i) is expected to increase with frequency of farmers' market shopping (y_k) and with the presence of other LPF-related values which are embedded in attitudes and behavior (b_{ik}).

[5] This is a non-linear solution that would be difficult to measure. According to Lancaster, we should focus on the properties of solution and ignore actual solution.

CHAPTER FOUR. METHODS & ANALYSIS

Two internet surveys provide the data for this thesis. The first survey, conducted in 2011, served as a preliminary study of underlying factors associated with LPF beliefs, attitudes, and behavior. The second survey was designed for confirmatory analysis to further explore the preliminary results from Survey 1. Both instruments were developed according to best practices set forth by (Dillman, 2007). The principal investigators of this project have conducted five previous surveys of similar design, objective, and sample size; the questionnaire was developed according to the research needs revealed from studies in the past, feedback collected during focus groups, and interviews with industry experts. To confirm clarity and operability, a pilot test was conducted for each instrument (N=25). The sample populations were recruited via a survey panel managed by Market Tools, Inc., an affiliate of Zoomerang.com. Invitations to the survey were sent to a random selection of panelists registered in their master database.

Although the use of online surveying has raised questions regarding selection bias and authenticity of the sample population (Lindhjem & Navrud, 2011b), technology and accessibility have made this type of method more effective over time. In fact, some studies have shown that survey results obtained online can be as effective as conventional methods such as mail surveys and phone interviews (J. Kirby, 2003). In addition to similar or better response rates for internet panel surveys (Hu et al., 2010; Smyth, Dillman, Christian, & O'Neill, 2010), some studies have found the socio-demographic make-up of web respondents was not statistically different from a paper survey (Fleming & Bowden, 2009) or face-to-face interview (Lindhjem & Navrud, 2011a). Furthermore, the socio-demographic characteristics for LPF consumers have been inconsistently

supported by mail, phone, and internet survey methods. Furthermore, while some studies find demographics to be a significant indicator of LPF consumer behavior (Bell & Marshall, 2003), others have concluded they are not (Bregendahl & Flora, 2006; Thilmany et al., 2008).

4.1 Preliminary Survey: LPF-related Beliefs and Attitudes

An online survey of adult consumers in Kentucky and Ohio was conducted during the summer of 2011 to assess consumer insights regarding local, fresh, and healthy food products.

Demographic Data

The survey sample included 2,024 eligible responses. Descriptive statistics for this sample revealed a representative response upon comparison of sample demographic statistics to the 2007 US Census Bureau data for Kentucky and Ohio (Table 1). As the sample closely mirrors its parent population and the demographic profile is complementary to previous LPF surveys conducted online (Hu et al., 2010), the researchers opted not to weight these data.

Table 1. Sample Descriptive Statistics for Preliminary Survey

	All response		KY		OH	
	Sample	US	Sample	State	Sample	State
Number of respondents	2024	*	1001	*	1023	*
Female (%)	68.8%	50.8%	69.3%	50.8%	68.3%	51.2%
White (%)	90.8%	74.3%	91.1%	88.3%	90.5%	83.3%
Age: mean category (range 18 to >65years)	35-44	37**	35-44	37.9**	35-44	38.6**
Age: ≥ 65 years	17.0%	12.9%	16.0%	13.2%	19.0%	13.9%
Education:BS/BA or more (% of ≥ age 25)	35.8%	28.0%	34.9%	20.5%	36.6%	24.4%
Education: HS diploma or more (% of ≥ age 25)	97.6%	85.3%	97.4%	81.6%	97.8%	87.8%
Hhold Income: mean category (range <15 to 200+, in $1000)	35.0 to 49.99 **	70.12*	35.0 to 49.99 **	55.34*	35.0 to 49.99 **	61.34*

* State and US population statistics are based on the 3-year estimates of the 2008-2010 American Community Survey (U.S. Census Bureau).

**Mean age for consumers age > 20 years.

*** Household income presented as 2010 inflation-adjusted dollars.

LPF Perception Measurement

To gather information regarding consumers' values for public and private benefits, previous studies have often employed surveys with opinion type statements and a Likert scale of five or seven points. Although this survey instrument was not originally designed for typological analysis of consumer values, it contained a series of variables that incorporated opinion statements about LPF which were scored on a five-point Likert scale. The statements covered a range of public and private benefits of LPF, as supported by previous literature (Chapter 2). Participants responded to these statements by indicating strongly disagree (1) to strongly agree (5), where response value for "neutral" was three. The 13 variables used to measure LPF opinions yielded scales with acceptable Cronbach's alpha scores between .81 and .89. Table 2 provides a summary of these variables and the outcome of survey participants' response.

Table 2. Summary of Results for Preliminary Survey: LPF-Related Beliefs and Attitudes

Response as a proportion of total sample, n = 2024

		Strongly disagree (%)			Strongly Agree (%)			
Variable	Statement	1	2	3	4	5	Mean Rating	St. dev.
Healthy	Food grown in my local community is healthier.	0.71	3.37	36.31	42.49	17.11	3.72	0.81
Lifestyle	I buy food locally to improve my family's lifestyle.	2.10	9.35	43.03	34.06	11.45	3.43	0.89
Energy	We can save lots of energy resources by producing our food nearby.	0.90	2.43	24.24	45.05	27.38	3.96	0.83
Salad	I must have my fresh salad year 'round.	3.77	10.12	31.28	32.57	22.25	3.59	1.06
Economy	Producing food locally significantly improves our local economy.	0.57	1.20	16.83	45.32	36.09	4.15	0.78
Availability	Local fruits and vegetables are readily available where I buy groceries.	3.48	14.14	38.76	32.38	11.24	3.34	0.97
Organize	I have helped organize groups or meetings in my community related to food supply and/or production issues.	53.74	22.80	16.99	4.43	2.05	1.78	1.01
Discuss	I am actively involved in public discussions of food policy issues.	44.86	28.85	19.28	5.24	1.78	1.90	1.00
Farmers	Buying food locally keeps small farmers in business.	0.67	0.77	15.13	45.44	37.99	4.19	0.77
Groups	It's important to be involved in organizations that support local food production.	5.13	6.62	50.58	26.92	10.75	3.32	0.93
Bigag	Most of America's food is grown by large farm corporations.	0.91	4.56	28.56	42.15	23.81	3.83	0.87
Kids	I think all children should learn to grow their own food.	1.39	3.60	26.13	39.98	28.91	3.91	0.90
School	School lunches must include locally produced foods, even when they cost a little more.	3.30	9.91	37.98	31.66	17.15	3.49	0.99

**All variables are statistically independent (p<.0001) according to chi-squared tests at alpha = .05.*

The survey response yielded interesting results regarding the 13 LPF variables. Overall, respondents were most neutral regarding *groups* (51%) and *lifestyle* (43%). Among all responses, the variables with highest percentage of agreement were *farmers* (83%) and *economy* (81%) while the variables with highest percentage of disagreement were *organize* (76%) and *discuss* (74%); the total overall disagreement was less than 20% for all other variables.

Although the survey instrument was not originally designed to establish a comprehensive array of consumer attitudes and beliefs toward LPF, these 13 variables were further evaluated to explore the underlying factors of general consumers' values for LPF characteristics (z_i). Ideally, the statements used in this instrument would have been more explicit about relating the particular attitudes or behaviors to consumers' likelihood of purchasing or not purchasing LPF, or to their frequency of visiting farmers' markets. However, the variables, as they are, grant a valuable insight into the LPF related beliefs that might lead to LPF-related behavior.

Exploratory Factor Analysis

Previous studies of consumers' values for public and private attributes of LPF have often employed multivariate methods such as principle components analysis, exploratory factor analysis, or clustering methods; all of which share a common objective of maximizing the variation among data in order to consolidate the number of original variables and/or to find common patterns in the data. For all three methods, it is the researcher who decides how many principle components, factors, or clusters are retained for evaluation. Additionally, these results can be derived from an orthogonal or oblique rotation of principle components, which determines if the groupings are considered independent or interdependent, respectively (Krzanowski & Krzanowski, 2000).

In the case of factor analysis, the factor loadings are essentially correlation coefficients, thus the magnitude of the loadings can be understood similarly (Costello & Osborne, 2005). An orthogonal rotation (commonly "varimax"), as applied by Nurse et al. (2010), produces factor loadings and factor scores which must be interpreted as

independent of each other. Under the conceptual framework for this thesis, I expected to observe correlation among the underlying factors because our variables are psychological constructs, thus an oblique rotation was applied to produce factors which are interpreted as interrelated (Hampson & McGoldrick, 2011; Krystallis et al., 2008); this practice is consistent with methods and findings from previous studies (Hampson & McGoldrick, 2011; Krystallis et al., 2008; Nie & Zepeda, 2011). An oblique rotation allows variables, even those which are similarly loaded onto more than one factor, to be considered in magnitudes relative to other variables within a factor and more importantly, relative to its loading among factors. It is important to note that a properly calculated oblique rotation will reproduce an orthogonal solution, but not vice versa (Costello & Osborne, 2005).

The scree plot from a robust principle components analysis of the 13 LPF statements was used to estimate an appropriate number of underlying factors for further exploration. The plot suggested that 2, 3, or 4 factors could be a defensible solution. A quartimin rotated exploratory factor analysis revealed the best solution was four underlying factors, which explain 98% of the variance in our sample; this is to say that our data is not 13 dimensional, rather, it is four-dimensional under this analysis. The factor loadings yielded scales with highly reliable Cronbach's alpha scores between .81 and .85 and communality estimates above the generally acceptable threshold of 0.4 (Costello & Osborne, 2005). Factor loadings are indicated as bold in Table 3.

Table 3. Summary of Results from Preliminary Survey: Exploratory Factor Analysis

n=2024

Variable	Factor 1	Factor 2	Factor 3	Factor 4
healthy	-0.052	0.214	**0.442**	0.183
lifestyle	-0.030	-0.068	**1.055**	-0.012
energy	-0.016	**0.411**	0.134	**0.318**
salad	0.092	**0.215**	0.151	0.117
economy	-0.039	**0.915**	0.028	-0.031
availability	0.129	**0.141**	**0.185**	0.005
organize	**0.778**	-0.149	0.007	-0.008
discuss	**0.891**	0.037	-0.019	-0.042
farmers	-0.105	**0.614**	0.067	0.194
groups	**0.383**	**0.237**	0.025	**0.284**
bigag	-0.062	0.133	-0.034	**0.381**
kidsgrow	-0.015	-0.070	0.027	**0.814**
schoolfood	0.130	0.010	0.143	**0.547**
*Variance Explained (%)**	*14.43*	*29.01*	*25.97*	*29.17*

p<.0001 at alpha = .05

**Cumulatively, the four factors explain 98% of the variation in these data.*

The result of this four-factor analysis is particularly noteworthy. While our factors explain 98% of the total variance in these survey data, similar studies which have employed factor analysis have explained less than 70% of the total variance in data (Fotopoulos, Athanasios, & Pagiaslis, 2011; Nie & Zepeda, 2011; G. Nurse et al., 2010).

In this case, results from oblique rotation were similar in loading and accounted for more variance than did the more commonly used varimax rotation. According to a common threshold for a minimum factor loading value of 0.32 (Tabachnick & Fidell, 2001), some variables in this analysis are weakly loaded across all four factors. This limitation is likely due to the instrument being designed for a different purpose or because some of the opinion statements could be interpreted various ways; either reason

could explain the unclear scree plot from the original principle components analysis. Nevertheless, these variables generally loaded in a clear pattern within each factor (Table 4).

Underlying factors of consumer values associated with LPF

Four underlying factors were identified and classified according to the LPF opinion statements which loaded heaviest onto each factor. Table 4 summarizes the variables that loaded onto these four underlying factors.

Table 4. Underlying Factors of Consumers' LPF-related Beliefs and Attitudes

*VE: Variance explained	**Local Food Statements**
"CITIZEN" **Factor 1: VE: 14.4%**	I have helped organize groups or meetings in my community related to food systems and/or supplies.
	I am actively involved in discussions of food policy issues.
	It's important to be involved in organizations that support local food production.
"ECON-IMENT" **Factor 2: VE: 29%**	Producing food locally significantly improves our local economy.
	Buying food locally keeps small farmers in business.
	We can save lots of energy resources by producing our food nearby.
	I must have my fresh salad year 'round.
"CONSUMER" **Factor 3: VE: 26%**	Food grown in my local community is healthier.
	I buy food locally to improve my family's lifestyle.
	Local fruits and vegetables are readily available where I buy groceries.
"HERITAGE" **Factor 4: VE: 29%**	Most of America's food is grown by large farm corporations.
	I think all children should learn to grow their own food.
	School lunches must include locally produced foods, even when they cost a little more.

The **CITIZEN** factor represents LPF variables *organize, discuss*, and *groups*. This underlying factor is interpreted as an individual's beliefs, attitudes, and behaviors pertaining to societal involvement or individual advocacy associated with supporting local food production.

The **CONSUMER** factor represents LPF variables *healthy, lifestyle,* and *availability*. This underlying factor is interpreted as an individual's beliefs, attitudes, and behaviors pertaining to individual preferences or privately appropriable benefits associated with locally produced foods.

The **ECONIMENT** factor represents LPF variables *economy, farmers,* and *energy.* This underlying factor is interpreted as an individual's beliefs, attitudes, and behaviors pertaining to perceived public benefits or societal advantages of supporting local food systems.

The **HERITAGE** factor represents LPF variables *bigag, kidsgrow,* and *schoolfood.* This underlying factor is interpreted as an individual's beliefs, attitudes, and behaviors pertaining to responsibilities toward public welfare and private sustenance associated with locally produced foods.

4.2 Confirmatory Survey: Consumption Behaviors of Farmers' market Shoppers

An online survey of 3,378 adult consumers in 8 states[6] was conducted in January 2012 to assess consumer insights regarding food sampling at farmers' markets.

[6] IN, IL, KY, MO, OH, TN, VA, WV

Incomplete observations were excluded from our analysis, which left 3,012 eligible responses. As the sample closely mirrors its parent population and the demographic profile is complimentary to previous LPF surveys conducted online (Hu et al., 2010), the researchers opted not to adjust these data. Descriptive statistics are summarized in Table 6 and can be compared with preliminary survey and general population statistics presented in Table 1.

Table 5. Sample Descriptive Statistics for Confirmatory Survey

	Sample	US
Number of respondents	3012	
Female (%)	62.13	50.8
White (%)	97.99	88.3
Age: mean category (range 18 to >65years)	45-54	37 yrs
Education: BS/BA or more (%)	40.99	28
Household Income: mean category (range <15 to >200, in thousand $)	50-75K	70.12K

To draw a connection between consumer behavior and intrinsic values for public and private LPF characteristics (z_i), ten statements were structured to represent behaviors associated with the underlying factors discovered in preliminary analysis of data from the preliminary survey. These ten randomized behavioral statements were measured on a 3 point scale of frequency (rarely=1, sometimes=2, frequently=3) and addressed consumer values associated with personal economizing, environmental awareness, community involvement, kids, and health. Due to the potential discrepancies between intentions toward economizing versus being eco-friendly (general perceptions of saving resources may apply to both), the ECONIMENT factor from the preliminary survey was thought to

actually exist as two potential factors that could separately represent "economy" and "environment". As a result, the ten behavioral statements were constructed to reflect five underlying factors. Table 5 shows the ten behavioral variables and hypothesized factors for each.

Table 6. Description of Consumption Behavioral Variables in Confirmatory Survey

Variable	Expected Factor Loading
I buy in bulk to save money.	Economy
I take extra time to shop for the lowest price between vendors.	Economy
I recycle.	Environment
I ask market vendors about their farming practices.	Environment
I monitor my caloric intake.	Consumer
I watch or read health-related media.	Consumer
I take kids to the farmers market.	Heritage
I volunteer with youth organizations.	Heritage
I attend social functions organized in my community.	Citizen
I help organize groups or meetings in my community.	Citizen

LPF-related behaviors. The behavioral variables yielded scales with acceptable Cronbach's alpha scores between 0.7 and 0.85. Table 7 summarizes survey response for these variables. Over all, the respondents in this sample are most likely to "frequently" **recycle** (58%) and least likely to "frequently" **organize** (7.5%). In general, a high proportion of the sample answered "rarely" for **askfarm** (49.3%), **kids_fm** (53.4%), **kids_vol** (64.3%), and **organize** (72.5%).

Table 7. Summary of Results from Confirmatory Survey: LPF-related Consumption Behavior

n = 3012

Variable	Description	Response (%) *Rarely*	*Sometimes*	*Frequently*	Mean	Std Dev
Bulkbuy	I buy in bulk to save money.	24.2	51.1	24.7	2.01	0.70
Priceshop	I take extra time to shop for the lowest price between vendors.	14.0	50.9	35.1	2.21	0.67
Recycle	I recycle.	11.1	30.9	58	2.47	0.69
Askfarm	I ask market vendors about their farming practices.	49.3	37.5	13.2	1.64	0.70
Calories	I monitor my caloric intake.	33.9	43.8	22.3	1.88	0.74
Healthmedia	I watch or read health-related media.	24.1	50.6	25.3	2.01	0.70
Kids_fm	I take kids to the farmers market.	53.4	30.2	16.4	1.63	0.75
Kids_vol	I volunteer with youth organizations.	64.3	24.5	11.1	1.47	0.69
Participate	I attend social functions organized in my community.	34.1	50.2	15.7	1.82	0.68
Organize	I help organize groups or meetings in my community.	72.5	20.1	7.5	1.35	0.61

**All variables are statistically independent at alpha=0.05 (p<.0001)*

It is important to note that some behavioral variables will naturally be limited in frequency. For example, people who **organize** will represent only a small portion of the people who **participate** in an organized group. Furthermore, those who have children are more likely to report a high frequency for the **kids_fm** and **kids_vol** variables. This topic brings a weak point of the survey instrument to the surface; although participants could

respond with “rarely,” they could not respond with “never.” Thus, respondents without children may be inaccurately portrayed. “Rarely” in this case was used to reflect both never and infrequently.

Confirmatory Factor Analysis. In an effort to extend results from the exploratory factor analysis in the preliminary survey with these ten behavioral variables, a maximum-likelihood principle components analysis and confirmatory factor analysis with quartimin rotation were applied. Based on the questionnaire’s intention to reveal the five dimensions which were discovered in analysis of survey 1, my expected outcome for this analysis was a five-factor solution with two variables loading onto each factor, as previously illustrated in Table 5.

The best solution for this confirmatory factor analysis was not identical to expectations. Instead, it was a four-factor solution which explains 64.32% of the variance in these data; that is to say that the data are not ten-dimensional, rather, a four-dimensional solution best describes this sample. Factor-specific variables are indicated as bold in Table 8. The factor loadings yielded scales with highly reliable Cronbach’s alpha scores above 0.65 and communality estimates above 0.4, which both exceed the generally acceptable thresholds (Costello & Osborne, 2005). In this case, results from oblique rotation were similar in loading and accounted for more variance in data than did the more commonly used orthogonal (varimax) rotation. These factors are further discussed in the next chapter.

Table 8. Summary of Results from Confirmatory Survey: Confirmatory Factor Analysis

	Factor 1	Factor 2	Factor 3	Factor 4
Bulkbuy	0.042	0.055	**0.320**	0.184
Priceshop	-0.019	-0.016	**0.673**	-0.061
Recycle	-0.038	0.265	**0.041**	0.032
Askfarm	0.189	**0.282**	0.046	0.206
Calories	0.175	**0.474**	0.039	-0.176
Healthmedia	-0.041	**0.778**	-0.053	0.040
Kids_fm	0.159	0.009	0.049	**0.573**
Kids_vol	**0.634**	-0.020	0.014	0.134
Participate	**0.504**	0.142	0.009	0.065
Organize	**0.832**	-0.067	0.007	-0.051
% Variance	*20.299*	*15.405*	*10.454*	*10.583*

**p<.0001 for chi-squared tests at alpha = .05.*

Consumer Segmentation. To better understand the role of the 10 behavioral variables, a k-means cluster analysis was applied to individuals' factor scores; the result was a five cluster solution. The clusters were identified according to frequency of LPF-related consumption behavior (Table 9)[7] and further explained according to farmers' market shopping frequency, demographic, and socioeconomic characteristics (Table 10).

Exploring the relationships between shopping frequency, consumer characteristics, and their LPF-related behavior presents a clearer understanding of what may be the difference among individuals who shop more or less frequently at a farmers' market. A clear difference among clusters was the likelihood to "frequently" participate in an LPF behavior. The frequency of a particular LPF behavior may suggest a particular level of involvement in LPF (where high frequency is high involvement and low frequency is low involvement). In terms of behavioral frequency among clusters, it is

[7] According to the probability of answering "frequently" to the ten original behavioral statements

observed that some groups more frequently participate in behaviors associated with private benefits, whereas others exhibit higher frequency for public benefits. The potential role of involvement and public/private benefits can be observed in Table 9. These results are further discussed in the next chapter.

Table 9. Probability of "frequently" for Consumption Behaviors, by Cluster

Cluster	High Involved Public	Involved Citizen	High Involved Private	Involved Consumer	Uninvolved
Bulkbuy	0.655	0.169	0.483	0.158	0.089
Priceshop	0.693	0.141	0.742	0.310	0.139
Recycle	0.780	0.449	0.676	0.650	0.442
Askfarm	0.551	0.125	0.193	0.068	0.015
Calories	0.568	0.151	0.242	0.301	0.036
Healthmedia	0.693	0.117	0.431	0.296	0.005
Kids_fm	0.610	0.175	0.369	0.003	0.042
Kids_vol	0.592	0.241	0.062	0.003	0.012
Participate	0.645	0.262	0.144	0.067	0.026
Organize	0.516	0.149	0.000	0.000	0.004
N	287	497	534	916	778
%	9.5%	16.5%	17.7%	30.4%	25.8%

** p<.0001 for chi-squared tests at alpha =0 .05*

Another interesting difference among clusters is farmers' market shopping frequency, and how that relates to involvement. Basic summary statistics are reported in Table 10. These results are further discussed in the next chapter.

Table 10. Sample Summary Statistics, by Cluster

	High Involved Public	Involved Citizen	High Involved Private	Involved Consumer	Uninvolved
N	287	497	534	916	778
% sample	9.5%	16.5%	17.7%	30.4%	25.8%
FM Low	0.164	0.312	0.262	0.393	0.458
FM Med	0.314	0.318	0.348	0.329	0.326
FM High	0.523	0.370	0.390	0.278	0.216
Age					
18-24	0.081	0.093	0.068	0.038	0.060
25-34	0.277	0.234	0.165	0.117	0.161
35-44	0.267	0.248	0.267	0.163	0.192
45-54	0.211	0.222	0.244	0.257	0.247
55-64	0.119	0.107	0.154	0.212	0.163
65 or older	0.046	0.097	0.102	0.212	0.177
Income					
Under $15,000	0.080	0.068	0.077	0.075	0.073
$15,000 to $24,999	0.066	0.072	0.122	0.096	0.100
$25,000 to $34,999	0.122	0.105	0.112	0.121	0.123
$35,000 to $49,999	0.125	0.171	0.167	0.142	0.168
$50,000 to $74,999	0.220	0.197	0.228	0.197	0.202
$75,000 to $99,999	0.171	0.145	0.140	0.119	0.121
$100,000 to $149,999	0.087	0.113	0.064	0.107	0.080
$150,000 to $199,999	0.045	0.034	0.013	0.023	0.028
$200,000 and up	0.031	0.034	0.009	0.012	0.010
Caucasian	0.955	0.966	0.974	0.988	0.990
Female	0.617	0.618	0.703	0.640	0.540
Bachelor's degree or more	0.505	0.463	0.318	0.443	0.362
Employed part time or more	0.693	0.662	0.532	0.522	0.548
Rural (not metro or suburban)	0.251	0.368	0.410	0.360	0.384
Kids older than 18yrs	0.596	0.503	0.547	0.169	0.283

**With exception of* Rural *and* Employed, a*ll other variables are significant (p<.0001)*

The relationship between cluster type and likelihood to "frequently" participate in one of the behavioral variables can be observed in Table 11. The correlation coefficients suggest that for *Uninvolved* consumers, a negative correlation exists among all consumption behaviors except for **healthmedia**, **calories**, and **recycle** whereas a much higher and significant positive correlation exists among all consumption behaviors for the *High Involved* clusters. These results are further discussed in the following chapter.

Table 11. Correlation Between Clusters and "frequent" Consumption Behavior

	Bulkbuy	Priceshop	Recycle	Askfarm	Calories	Healthmedia	Kids_fm	Kids_vol	Participate	Organize
Cluster										
Hi Involved Public	.309**	.233**	.132**	.395**	.267**	.323**	.394**	.493**	.429**	.547**
Involved Citizen	-.080**	-.195**	-.119**	-.004	-.074**	-.135**	.013	.187**	.126**	.129**
Hi Involved Private	.251**	.387**	.098**	.094**	.039*	.215**	.246**	-.071**	-.003	-.134**
Involved Consumer	-.212**	-.257**	-.170**	-.201**	-.268**	-.334**	-.190**	-.185**	-.211**	-.158**
Uninvolved	-.140**	-.071**	.091**	-.134**	.112**	.041*	-.286**	-.227**	-.171**	-.188**

*Correlation is statistically significant from zero at: * alpha = .05, ** alpha = .01*

4.3 Extension of Confirmatory Survey: Farmer's Market Shopping Frequency

Although the survey instrument was not designed exclusively for this thesis, it incorporated various questions about farmers' market shopping and product sampling experiences. A key component of the survey was the requirement that participants must have visited a farmers' market or on-farm retail venue at least once in the past 12 months[8]. The sample mean number of visits was 5.6, however, the distribution was not normal, with a standard deviation of 6 visits. The quantiles for this variable are summarized in Table 12.

[8] Survey participants were also required to be at least 18 years old.

Table 12. Quantiles for Frequency of Farmers' Market Visits

n = 3012		**visits**
100.0%	maximum	100
99.5%		40
97.5%		24
90.0%		12
75.0%	quartile	6
50.0%	median	4
25.0%	quartile	2
10.0%		1
2.5%		1
0.5%		1
0.0%	minimum	1

Farmer's Market Patrons' Values for LPF-related Characteristics

Rather than compare FM shoppers to non-shoppers, we can use the farmers' market shopping variable to examine subtleties among current market patrons. To this extent, shopping frequency is explored as a transformed categorical variable that represents farmers' market shopping as a consumption activity (k). Based on the distribution of total visits in the past 12 months,[9] this new variable represents three categories of shopping frequency: LOW: 1 or 2 visits (n=1058), MEDIUM: 3 to 5 visits (n=989), and HIGH: 6 or more visits (n=965). Table 13 summarizes the demographic and socioeconomic characteristics of consumers according to frequency of farmers' market shopping (low, medium, or high). As the frequency of farmers' market shopping increases, so does the likelihood of being employed, having kids younger than 18 years old, having a household income greater than $100,000 per year, and living in a rural area (any dwelling other than metro or suburban).

[9] For the entire sample, the mean number of visits was 5.29, the median was 3, the first quartile (25%) and mode was 2, and the fourth quartile (75%) was 6 visits.

Table 13. Summary Statistics Within FM Shopping Frequency Groups

FM Shopping Frequency	Low	Medium	High
FM visits in past 12 months	*1 or 2*	*3 to 5*	*6 or more*
N	1058	989	965
% of total sample	36.0%	32.0%	32.0%
Age			
18-24	0.067	0.064	0.055
25-34	0.179	0.151	0.184
35-44	0.221	0.214	0.202
45-54	0.224	0.253	0.250
55-64	0.156	0.172	0.161
65 or older	0.152	0.146	0.148
Income			
Under $15,000	0.080	0.072	0.070
$15,000 to $24,999	0.097	0.082	0.106
$25,000 to $34,999	0.113	0.123	0.116
$35,000 to $49,999	0.164	0.150	0.155
$50,000 to $74,999	0.206	0.220	0.191
$75,000 to $99,999	0.134	0.130	0.133
$100,000 to $149,999	0.083	0.093	0.098
$150,000 to $199,999	0.022	0.015	0.044
$200,000 and up	0.011	0.017	0.022
Race: Caucasian (vs. all others)	0.981	0.981	0.978
Gender: Female (vs. Male)	0.627	0.629	0.603
Education: Bach degree + (vs. less than BS)	0.400	0.380	0.444
Employment: Employed (vs. not employed)	0.560	0.563	0.582
Dwelling: Rural (vs. urban)	0.338	0.373	0.390
Kids: under 18yrs	0.344	0.364	0.377
N (of total response = 3,012)	1058	989	965
% of Total Response	35.1%	32.8%	32.0%

Behavior of FM Shoppers. Table 14 summarizes frequency of behavior as it relates to frequency of farmers' market shopping. Overall, respondents are more likely to "frequently" **recycle** than any other behavior. Furthermore, the respondents are less likely

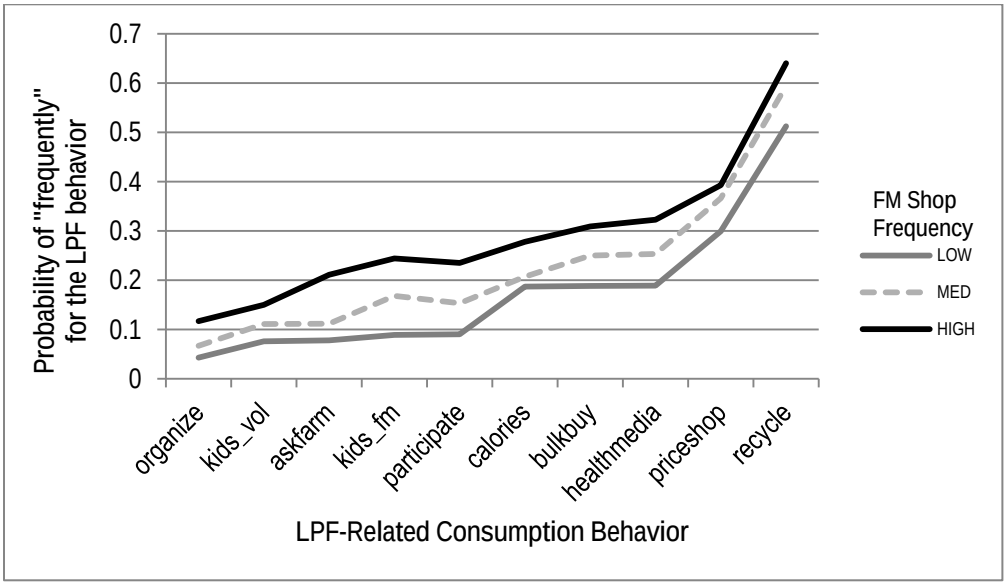
to “frequently” **organize** than any other behavior, which is a logical result, as any organized group has fewer organizers than group members, thus the proportion of organizers to non-organizers should be low.

Table 14. Probability of "frequent" for Consumption Behavior, by FM Frequency

LPF-related Consumption Behavior	FM Shopping Frequency		
	LOW	MED	HIGH
Bulkbuy	0.188	0.250	0.309
Priceshop	0.299	0.366	0.393
Recycle	0.512	0.594	0.640
Askfarm	0.078	0.112	0.211
Calories	0.187	0.207	0.278
Healthmedia	0.189	0.253	0.323
Kids_fm	0.089	0.168	0.244
Kids_vol	0.076	0.111	0.150
Participate	0.090	0.153	0.235
Organize	0.043	0.067	0.117

Of particular note in regard to farmers’ market shopping is the positive trend for frequency of LPF-related behavior, which is better illustrated in Figure 2. As the consumers’ frequency of farmers’ market shopping increases, so does the likelihood of answering “frequently” for any of the ten consumption behavior variables.

Figure 1. Probability of "frequently" for LPF-Related Consumption Behavior, by FM Frequency



Looking at the correlation between behavioral variables and farmers' market shopping frequency (Table 15), we can observe a highly significant (p<.0001) positive relationship between HIGH frequency of farmers' market shopping and HIGH frequency of the behavioral variables. In contrast, there is a highly significant (p<.0001) negative relationship between LOW frequency shoppers and HIGH frequency for the consumption behavior variables.

Table 15. Correlations for "frequent" LPF-Related Consumption Behavior, by FM Frequency

	Bulkbuy	Priceshop	Recycle	Askfarm	Calories	Healthmedia	Kids_fm	Kids_vol	Participate	Organize
FM Frequency										
High	.098**	.060**	.084**	.162**	.091**	.111**	.147**	.085**	.148**	.111**
Med	.004	.022	.019	-.040*	-.026	.000	.007	.000	-.008	-.021
Low	-.101**	-.081**	-.101**	-.118**	-.063**	-.108**	-.150**	-.083**	-.136**	-.087**

*Correlation is statistically significant from zero at: * alpha = .05, ** alpha = .01*

The correlation coefficients are essentially insignificant and nearly zero for MEDIUM frequency farmers' market shoppers; while the coefficients might appear as low for the HIGH and LOW frequency shoppers, we can see that there must be significant relationship here due to the absence of significance for the MEDIUM group.

Consumer segments and farmers' market shopping frequency. The segments identified in our 5 cluster k-means solution reveal interesting trends in frequency of farmers' market shopping. Results are summarized in Table 16, Table 17, and Figure 3. As frequency of farmers' market shopping increases, so does the probability of being a *High Involved: Public, High Involved: Private, Involved Citizen;* in contrast, the probability of being an *Involved Consumer* or *Uninvolved* decreases as shopping frequency increases. Figure 3 illustrates the significant relationship between farmers' market shopping frequency and cluster type.

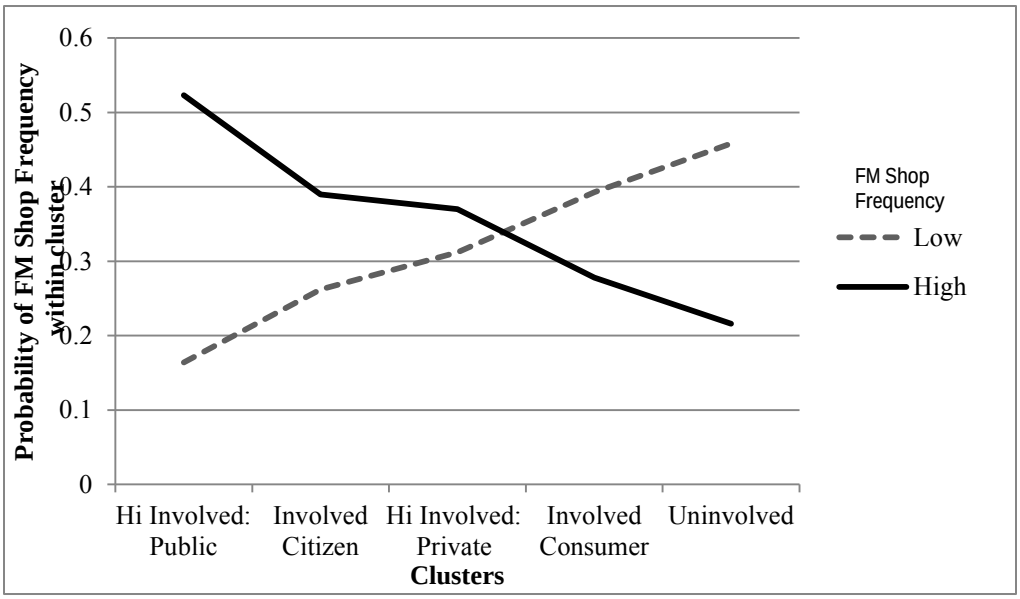
Table 16. Probability of FM Shopping Frequency, Within Cluster

	FM Freq		
Cluster	Low	Med	High
High Involved: Public	0.044	0.091	0.155
Involved Citizen	0.132	0.188	0.216
High Involved: Private	0.147	0.160	0.191
Involved Consumer	0.340	0.304	0.264
Uninvolved	0.336	0.257	0.174
N	1058	989	965

Table 17. FM Shopping Frequency, as a Proportion of Cluster

FM Freq	*Hi Involved: Public*	*Involved Citizen*	*Hi Involved: Private*	*Involved Consumer*	*Uninvolved*
Low	0.164	0.262	0.312	0.393	0.458
Med	0.314	0.348	0.318	0.329	0.326
High	0.523	0.390	0.370	0.278	0.216
N	287	916	497	778	534

Figure 2. Probability of FM Frequency, within Clusters



Segmentation According to Farmers' Market Shopping Frequency. Based on these analysis results for the farmers' market shopping variable, a k-means cluster analysis for each of three groups of farmers' market shoppers (according to shopping frequency) was conducted. Results revealed key behavioral characteristics of the five

original clusters within each group. Results are summarized in Table 18 and key findings are discussed in the next chapter[10].

Table 18. Probability of "frequent" LPF-Related Consumption Behaviors, by Clusters within FM Frequency Groups

FM Freq	Cluster	Bulk buy	Price shop	Re-cycle	Ask farm	Cal-ories	Health media	Kids_ fm	Kids_ vol	Partici -pate	Org-anize	N	Prob
LOW	Hi Involved: Public	0.489	0.734	0.734	0.404	0.521	0.606	0.372	0.479	0.394	0.340	94	0.089
	Involved Citizen	0.150	0.126	0.395	0.072	0.120	0.114	0.174	0.180	0.156	0.078	167	0.158
	Hi Involved: Private	0.328	0.586	0.473	0.032	0.048	0.005	0.140	0.016	0.043	0.000	186	0.176
	Involved Consumer	0.177	0.351	0.635	0.077	0.368	0.401	0.000	0.003	0.057	0.000	299	0.283
	Uninvolved	0.045	0.038	0.413	0.010	0.032	0.010	0.013	0.003	0.022	0.003	312	0.295
												1058	
MED	Hi Involved: Public	0.683	0.756	0.841	0.537	0.537	0.695	0.707	0.622	0.610	0.585	82	0.083
	Involved Citizen	0.207	0.178	0.431	0.092	0.098	0.075	0.230	0.259	0.236	0.098	174	0.176
	Hi Involved: Private	0.465	0.701	0.733	0.182	0.385	0.663	0.289	0.032	0.198	0.000	187	0.189
	Involved Consumer	0.157	0.349	0.642	0.044	0.189	0.163	0.020	0.009	0.052	0.000	344	0.348
	Uninvolved	0.069	0.089	0.421	0.010	0.035	0.000	0.035	0.025	0.025	0.005	202	0.204
												989	
HIGH	Hi Involved: Public	0.669	0.732	0.782	0.585	0.599	0.746	0.627	0.556	0.676	0.486	142	0.147
	Involved Citizen	0.181	0.130	0.542	0.198	0.215	0.169	0.220	0.288	0.367	0.237	177	0.183
	Hi Involved: Private	0.549	0.679	0.654	0.210	0.086	0.259	0.593	0.049	0.154	0.000	162	0.168
	Involved Consumer	0.230	0.399	0.734	0.181	0.452	0.532	0.004	0.020	0.121	0.000	248	0.257
	Uninvolved	0.106	0.182	0.521	0.030	0.081	0.008	0.042	0.008	0.047	0.008	236	0.245
												965	

[10] LPF behavioral variables in this analysis were transformed as dummies to represent “frequently” behaving (1) versus “sometimes” or “rarely” behaving (0).

CHAPTER FIVE: RESULTS

5.1 Factor Analysis of LPF-related Consumption Variables

Although the confirmatory survey did not yield anticipated results for confirmatory factor analysis, many of the variable loadings were in line with their individual predicted outcome (of loading together onto a factor). Notably strong is the loading for organize and participate, which loaded onto the same factor as did kids_vol. This factor could be identified as a hybrid of the original CITIZEN and HERITAGE factors and accounts for the most variance in this analysis. According to previous research presented in Chapter 2, these characteristics may represent consumer preferences for public benefits when considered as part of the same factor.

A summary of variables according to factor loading are presented in Table 19. Overall, it is observed that variables loaded according to *public* and *private* benefits in a unique manner.

Table 19. Consumption Behavior Variables According to Factor Analysis Loadings

Factor 1: Citizen	Factor 2: Consumer	Factor 3: Econiment	Factor 4: FM specific
		bulkbuy	
		priceshop	
		recycle	
	askfarm		
	calories		
	healthmedia		
			kids_fm
kids_vol			
Participate			
Organize			

While some variables seem displaced, there is a logical explanation in each case. Table 19 shows the askfarm variable loaded heaviest onto CONSUMER rather than the predicted outcome ENVIRONMENT. Logically, asking vendors about their farming practices is associated with consumerism because it potentially reflects respondents' tendency to inquire about products during the purchasing process. Thus, when the variables calories, healthmedia, and askfarm are considered jointly under this interpretation, factor 2 exhibits characteristics of the original CONSUMER dimension. Furthermore, recycle, a variable predicted to load onto an ENVIRONMENT factor, actually loaded onto a factor 3 which otherwise represents the predicted ECONOMY factor variables, bulkbuy and priceshop. When recycle, bulkbuy, and priceshop are jointly considered within the same factor, it could be logically interpreted as consumers' tendency toward resource allocation, where the nature of these resources are economic or environmental. Thus, factor 3 represents the original ECONIMENT factor.

In terms of the HERITAGE factor, it is understandable that kids_fm is the lone variable that loaded heaviest onto factor 4, of which explains the least variance because the frequency for this variable requires two circumstances: A) the respondent most likely has kid(s) and B) visits the farmers' market frequently. That is why this factor is identified as "FM Specific." Although kids_fm was predicted to load onto a HERITAGE factor with kids_vol, the additional limitation of farmers' market shopping frequency could explain the result for this factor analysis. Consequently, it is more logical to consider kids_fm to be endogenous with farmers' market shopping frequency as opposed to the underlying HERITAGE factor.

5.2 Consumer Segmentation of Farmers' Market Shoppers

Several interesting consumer characteristics are revealed with this five-cluster k-means solution. Demographic variables and the consumers' reported number of visits to a farmers market in the past 12 months are summarized according to cluster in Table 10. According to trends of high, medium, and low probabilities for the LPF-related behavioral variables, socio-demographics, and frequency of farmers' market shopping, the five clusters were identified as ***High Involved: Public***, ***High Involved: Private***, ***Involved Citizen***, ***Involved Consumer***, and ***Uninvolved***.

"High Involved: Public" represent 9.5% of the sample population. These individuals demonstrate a higher probability of answering "frequently" for all ten behavioral variables, with the exception of shopping for the lowest price between vendors (see "***High Involved: Private***"). Consumers in this segment are the most likely to be high-frequency farmers' market shoppers and the least likely to be low-frequency farmers' market shoppers. Compared to the other clusters, this group includes the largest proportion of non-white respondents (4.5%), those with bachelor's degrees or more (50.5%), those who are employed at least part-time (69.3%), and households with kids younger than 18 years old (59.6%). The *High Involved: Public* consumer segment also exhibits the smallest proportion of rural dwellers (25.1%), and have the youngest distribution of age. Individuals in this cluster are more likely than any other cluster to report a household income over $100,000.

The ***"Involved Citizen"*** cluster represents 16.5% of the sample population. This cluster's identifying quality is the relatively high probability of answering "frequently"

for behavioral variables associated with the CITIZEN dimension, when compared to the other clusters and to this group's frequency of other behaviors, while also demonstrating a low probability of frequency for the other behavioral variables. Frequency of farmers' market shopping is spread among the group, with a similar probability of being low (31.2%), medium (31.8%) or high (37.0%). In comparison to clusters other than the *High Involved: Public* cluster, the *Involved Citizens* are more likely to be employed at least part-time (66.2%) and have a bachelor's degree or more (46.3%).

The ***"High Involved: Private"*** cluster represents 17.7% of the sample population. This cluster is very similar to the *High Involved: Public* group in terms of behavioral frequency, but very different in terms of demographical and socioeconomic dynamics. Consumers in this segment are economizers with low frequency of behaviors associated with public benefits. This group's identifying qualities are the combination of a low to zero probability of "frequently" for behavioral variables associated with public involvement and a relatively high probability to frequently behave according to all other consumption behaviors, especially buying in bulk to save money and shopping for the lowest price between vendors. Similar to the *High Involved: Public* cluster, consumers in this segment exhibit a relatively higher probability of being a frequent farmers' market shopper and relatively lower probability of being an infrequent farmers' market shopper. The group has a larger proportion of households with kids younger than 18 years old (54.7%), rural dwellers (41.0%) and females (70.3%), a low proportion of individuals employed at least part-time (53.2%), and the lowest proportion of individuals having a bachelor's degree or more (31.8%). This result could support the high ratio of households with kids younger than 18 years old and the high probability of "frequently"

price shopping and buying in bulk. These individuals may be more likely to home-parent, home-school, live in an economically repressed rural community, and/or be more price sensitive. Thus, if shopping at a farmers' market is perceived to be costly due to time and fuel required for a visit, consumers in this group could make fewer trips to the market but purchase more per trip.

The ***"Involved Consumer"*** cluster represents 30.4% of our sample population. This group is somewhat self-serving, and demonstrates a mid-level probability of "frequently" for all behavioral variables associated with consumption, while having a low to zero probability for any consumption behaviors associated with public involvement. This group has one of the higher proportions of low-frequency farmers' market shoppers, a relatively high age distribution, and a notably low probability of having kids younger than 18 years old. These variables, in combination with the lower likelihood of being employed, could suggest a large proportion of this group is retired.

The ***"Uninvolved"*** cluster represents 25.8% of this sample population. The proportion of those who answer "frequently" to the consumption behavior statements, as well as the ratio of frequent farmers' market shoppers, are consistently and significantly below the sample average and the results for all other clusters. In fact, this cluster exhibits almost zero probability of "frequently" for any behavioral variables except **recycle** (44.2%), shopping for the lowest price between vendors (13.9%), and buying in bulk to save money (8.9%). *Uninvolved* individuals also have the lowest probability of being a frequent farmers' market shopper. This group has the highest proportion of male (46.0%) and Caucasian (99.0%) respondents, and consumers in this group are (relatively) more likely to be rural dwellers (38.4%). Compared to the *High Involved* clusters, the

Uninvolved group has a lower proportion of respondents with a bachelor's degree or more (36.2%), households with kids under 18 years old (28.3%), and individuals who are employed at least part-time (54.8%). Some characteristics of this cluster could be a result of using an online survey service, as the participants may be completing online surveys out of boredom or to compensate for being unemployed. On the other hand, previous studies exist to identify segments of uninvolved food consumers (as discussed in Chapter 2).

5.3 Consumer Segmentation within Farmers' Market Frequency Groups

A k-means cluster analysis was conducted to explore responses within each of the three levels of farmers' market shopping frequency. These were based on responses to "frequently" participate in the LPF-related behavioral variables. Analysis reveals that key behavioral characteristics of the five original clusters exists within each group. Results (Table 18) suggest that as frequency of farmers' market shopping increases, so does the proportion of:

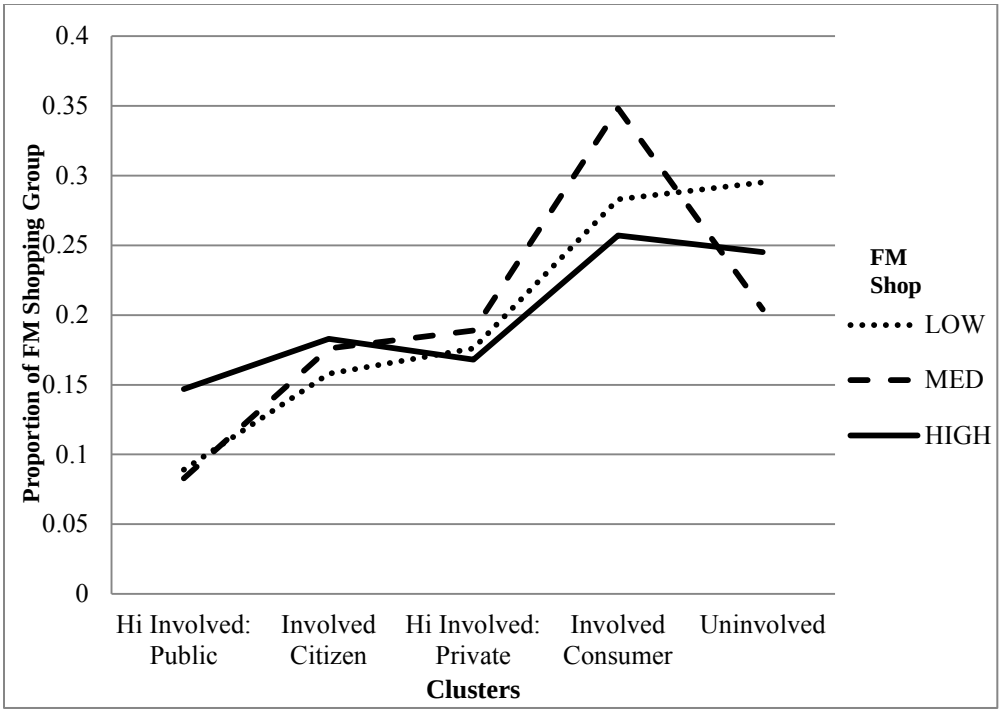
- *High Involved: Public* consumers who frequently ask vendors about their farming practices, monitor caloric intake, and watch or read health-related media
- *Involved Citizens* who frequently recycle, ask vendors about their farming practices, volunteer for youth organizations, or organize groups or meetings in their community
- *High Involved: Private* consumers who frequently buy in bulk to save money, ask vendors about their farming practices, take kids to the farmers' market, or

volunteer for youth organizations *Involved Consumers* who frequently recycle or volunteer for youth organizations

- *Uninvolved* consumers who frequently buy in bulk to save money, recycle, ask vendors about their farming practices, monitor caloric intake, take kids to the farmers' market, or participate in community social functions

As previously established, there is a significant positive relationship between frequency of LPF-related behaviors and farmers' market shopping frequency. Among all five segments, *High Involved: Public* consumers exhibited the highest proportion of frequent farmers' market shoppers; of all individuals in this segment, 52.3% are high-frequency farmers' market shoppers, compared to 21.6% of the *Uninvolved* group. Figure 4 illustrates the proportion of consumers per cluster within each farmers' market shopping frequency group.

Figure 3. Proportion of Clusters within FM Frequency Groups



<u>*Low-frequency farmers' market shoppers*</u> (1 to 2 visits in past 12 months). Low-frequency shoppers present the highest proportion of *Uninvolveds* (29.5%) which demonstrate a generally lower frequency of behaving than do other groups' *Uninvolveds*. Additionally, the proportion of *Involved Consumers* and *High Involved: Private* consumers are higher in this group than for high-frequency shoppers (28.3% and 17.6%, respectively). Compared to the medium-frequency shoppers, these *Involved Consumers* are more likely to frequently monitor calories, watch or read health-related media, and ask vendors about their farming practices.

<u>*Medium-frequency farmers' market shoppers*</u> (3 to 5 visits in past 12 months). These patrons present the greatest proportion of *High Involved: Private* consumers within

and among groups (34.8%). *Involved Consumers* are also more strongly presented in this group (18.9%) than in the others.

Among shopping frequency groups, these *High Involved: Public* consumers demonstrate the highest probability of frequently buy in bulk to save money, take extra time to shop for the lowest price between vendors, take kids to the farmers' market, volunteer for youth organizations, and organize groups in the community. A higher proportion of the *Involved Citizens* frequently buy in bulk to save money take extra time to shop for the lowest price between vendors, and take kids to the farmers' market than other groups' Citizens. The medium-frequency shoppers who are *High Involved: Private* consumers are also more likely to frequently buy in bulk to save money, take extra time to shop for the lowest price between vendors, recycle, monitor caloric intake, watch or read health-related media, and participate in community social functions than their counterparts in other shopping groups.

High-frequency farmers' market shoppers (6 or more visits in past 12 months). Among shopping groups, these patrons present the largest proportion of *High Involved: Public* consumers (14.7%) and *Involved Citizens* (18.3%). These *High Involved: Public* consumers are more likely to frequently ask vendors about their farming practices, monitor caloric intake, watch or read health-related media, or participate in community social functions. Furthermore, the *Involved Citizens* in this group are more likely to frequently behave for most variables, with exception of buy in bulk to save money, take extra time to shop for the lowest price between vendors, and take kids to the farmers' market.

High-frequency shoppers exhibit the lowest proportion of *Involved Consumers* and *Uninvolveds*. In comparison to medium and low – frequency shoppers, however, the *Involved Consumers* in this group are more likely to frequently demonstrate LPF-related consumption behavior, with exception of taking kids to the farmers' market and organizing groups in the community. Compared to other shopping groups, the *Uninvolveds* in this group are more likely to "frequently" behave, with exception of watching or reading health-related media and volunteering for youth organizations.

5.4 Summary of Results

LPF-related behaviors are positively correlated with frequency of farmers' market shopping; the more frequent a shopper visits a farmers' market, the more likely he/she is to participate in LPF-related consumption behaviors and at higher levels of frequency.

High-frequency farmers' market shoppers are more likely to more frequently demonstrate LPF-related consumption behavior, in general. Thus, patrons who are frequent market shoppers are also more likely to value public benefits of LPF; further segmentation suggests a higher likelihood for frequent market patrons to belong to the *High Involved* or *Involved Citizen* segments, thus exhibiting stronger tendencies of consumption behavior associated with involvement and citizenship. This result supports previous studies of consumer behavior associated with LPF.

Low-frequency farmers' market shoppers, while being less likely to frequently demonstrate LPF-related behavior, in general, are more likely to demonstrate the consumption behaviors associated with private benefits such as economizing (as opposed to public benefits). Further segmentation suggests a lower likelihood for low-frequency

market patrons to belong to a *High Involved* or *Involved Citizen* segments, thus exhibiting lesser tendencies of behavior associated with involvement and citizenship.

CHAPTER SIX. CONCLUSIONS & DISCUSSION

This study establishes a connection among LPF consumers' intrinsic values, related consumption behaviors, and likelihood to exhibit a particular level of farmers' market shopping frequency. Similar to previous results, consumer segmentation revealed the roles of public and private characteristics of LPF, as well as the differences among LPF consumers according to involvement, in both consumption activities and LPF related behaviors.

6.1 Conceptual framework

The conceptual framework for this thesis provides a context to explore the relationship between LPF-related intrinsic values, consumer behavior, and farmers' market patronage. Specifically:

- LPF related values can be summarized by underlying factors which reveal consumers' preferences for public or private benefits.
- LPF-related values can be observed in farmers' market patrons' day to day consumption behavior.
- The more frequently an individual exhibits LPF-related consumption behaviors, the more likely he/she is to be a frequent farmers' market shopper; consumers who value pubic benefits in greater magnitude will exhibit even greater frequency of farmers' market shopping.

- Among farmers' market patrons, there are unique consumer segments associated with interaction between LPF-related values (exhibited by consumption behaviors) and frequency of farmers' market shopping.

6.2 Dimensions of LPF – related Consumption Behavior

Patrons' frequency of farmers' market shopping is clearly related to the originally stated dimensions of LPF characteristics, with the CITIZEN factor exhibiting the strongest relationship with increasing frequency of farmers' market shopping. This CITIZEN dimension is a key characteristic that differentiates between high-frequency farmers' market shoppers and other groups whereas the CONSUMER, ECONOMY & ENVIRONMENT dimensions characterize medium and low-frequency shoppers. Although the HERITAGE factor seems to be specific to households with children, this result could be attributed to the instrument design.

6.3 Consumer Segments & Shopping Frequency

Consumers' values serve as interdependent moderators of their attraction to LPF characteristics and consumption activities. This explains the broad continuum of shopping frequency for self-proclaimed farmers' market patrons; some consumers go to a FM once per year while others visit every week or more often.

The most intriguing outcome of this analysis was the relationship between farmers' market shopping and cluster type. Shopping frequency is a significant determinant of individual segmentation. Note that farmers' market shopping frequency was not part of the cluster analysis, rather, this thesis used the LPF-related behavioral

variables to find these clusters. Thus, the results from analyses suggest that the LPF related behaviors are predictive of consumers' propensity to shop at a farmers' market.

There are consumer segments with higher probability of frequently engaging in "Citizen"-type behaviors, and these *High Involved: Public* and *Involved Citizens* are also more likely to be high-frequent farmers' market shoppers. There are also segments with higher probability of frequently engaging in "Consumer"-type behaviors, and these *High Involved: Private* and *Involved Consumers* are more likely to be medium-frequency market shoppers. Nevertheless, all segments exist among all three shopping frequency groups (high, medium, and low). To this extent, marketers can implement targeted strategies to increase market visits for low and medium frequency shoppers who are in the *High Involved: Public* and *Involved Citizen* segments. And accordingly, appealing to consumers in the *High Involved: Private* and *Involved Consumer* segments in the low frequency shopping group could increase their shopping frequency.

It is also important to note that *High Involved* and *Involved Citizen* segments exist within the low medium frequency shopper groups, which suggests there is potential to successfully target these consumer segments in the future. Results from this thesis suggest that low-frequency farmers' market shoppers are not necessarily a lost cause – on the contrary, there are low frequency shoppers who otherwise exhibit strong indication of becoming a frequent farmers' market shopper. Future research could explore potential value points of farmers' market shopping to emphasize for these consumers.

This study also revealed a consistent segment of *Uninvolved* patrons across all three market shopping groups; the proportion of uninvolved consumers decreases as

frequency of LPF-related behaviors and farmers' market shopping increases. This suggests that, although involvement serves as an indicator of potential to frequent a farmers' market, it is not the only factor to be considered.

6.4 Limitations

Researchers have drawn attention to the fact that consumers who participate in studies regarding sustainable consumption behavior may be susceptible to social desirability bias (Auger & Devinney, 2007; Carrington, Neville, & Whitwell, 2010). Additionally, as Meyer et al. (2010) put it best, the market is flooded with decisions that are made with consumers and other market channel members in mind; decision makers simply lack the cognitive abilities to "achieve optimization objectives". In other words, a consumer's best intentions to obtain the desired good will not necessarily result in actual obtainment. For this reason, it is important for consumer research in this domain to be diligent about of A) instrument design and B) interpretation of analysis. Although limitations within the instrument exist for this thesis, the interpretation of analysis results has been presented transparently. While values drive our purchasing decision, behavioral analysis lends more useful information to marketers. Accordingly, consumer research in the future should explore improved processes of collecting self-reported or observed behavior associated with LPF.

People emphasize the values they are able to attain and de-emphasize those which they cannot attain (Schwartz, 1999). On this topic, Schwartz (2011) has called for future research which partitions the continuum of value items into "narrower facets" and argues that previous studies' applications of confirmatory factor analyses are contradictory to the

fundamental concept of values theory - that values are arrayed on a continuum (Schwartz, 2011). This conclusion is seemingly based on the assumption that all confirmatory factor analyses are using orthogonal rotation, thus distinguishing values into relatively pure, independent factors.

6.5 Future Research

There are still gaps in the information we have about LPF consumption. Specifically, further research is needed to address:

- *Patron loyalty.* The growth in market locations has certainly resulted in redistribution of market patrons and the implications of this shift could be influential on patron loyalty. Additionally, as retailers sell more LPF, patrons are faced with the choice between farmers' markets and more conventional shopping venues, which could have negative implications for small and medium scale market vendors.
- *Merchandising.* Consumer response to specific promotions, such as product sampling or entertainment, could reveal more information about the differences among LPF consumers. Furthermore, these differences could be assessed among all LPF consumers within various venues (restaurant, grocery, farm stand, etc). Research in this sphere would improve messaging framework for credence attributes and intangible benefits, in general.
- *Survey instrument design.* While values drive our purchasing decision, behavioral analysis lends more useful information to marketers. Accordingly, consumer research in the future should explore improved processes of collecting self-

reported or observed behavior associated with LPF. Particular attention to strategies that evoke response from *Uninvolved* patrons could be useful, as we continue to see information about this large segment of consumers who report suspiciously low involvement in consumption behaviors.

- *Non-FM shoppers.* Although this study did not include non-FM shoppers, including them in future studies for comparison may strengthen the case for individual differences thought to be unique for FM shoppers.
- *Social context of FM shopping.* People may value the "idea" of farmers' markets, or may value these venues as a social outing, while still not making a purchase at the market. Future research could investigate whether increased frequency of visiting a market actually results in increased expenditures at farmers' markets or on LPF, in general.

Beyond consumer behavior: Retention of farmers' markets and market vendors.

Information does not exist to quantify the retention of existing markets or gain/loss of farmers' market vendors within these venues. Based on current market information, either the proportion of infrequent (less loyal) shoppers is increasing or a static base of market shoppers is being redistributed among markets. Either way, it is imperative for farmers' market vendors to understand the implications of marketing through various venues, as it applies to their LPF value proposition and retention of a strong consumer base.

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Program Assistant, Kentucky Sustainable Agriculture Research & Education (SARE) 2009-2011

OTHER EXPERIENCE

Marketing Supervisor, Kentucky Department of Agriculture (Frankfort, KY), 2006-2008

Retail Accounts Manager & Product Marketing Manager, Neogen Corporation (Lexington, KY), 2004- 2006