

**WILLINGNESS TO PAY FOR LOCALLY GROWN, ORGANIC  
AND NATURAL FOODS: IMPLICATIONS FOR PRODUCERS  
AND STATE-SPONSORED AGRICULTURAL MARKETING  
PROGRAMS**

by

Kathryn A. Onken

A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Science in Agricultural and Resource Economics

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Kathryn A. Onken

Approved: \_\_\_\_\_  
John C. Bernard, Ph.D.  
Professor in charge of thesis on behalf of the Advisory Committee

Approved: \_\_\_\_\_  
John D. Pesek, Ph.D.  
Professor in charge of thesis on behalf of the Advisory Committee

Approved: \_\_\_\_\_  
Thomas W. Ilvento, Ph.D.  
Chair of the Department of Food and Resource Economics

Approved: \_\_\_\_\_  
Robin W. Morgan, Ph.D.  
Dean of the College of Agriculture and Natural Resources

Approved: \_\_\_\_\_  
Charles G. Riordan, Ph.D.  
Vice Provost for Graduate and Professional Education

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## ABSTRACT

A survey of Mid-Atlantic consumers in five states was conducted to determine consumer preference and marginal willingness to pay for the attributes organic, natural, locally grown and state program promoted. The influence of purchasing venue on willingness to pay was examined as well. A key part of this survey was a choice experiment featuring strawberry preserves. The survey also included a variety of questions concerning shopping behavior, awareness and opinion of state marketing programs, and the geographical area that the respondent considered to be local.

The results of the choice experiment portion of the survey were analyzed using a conditional logit model and a nested logit model. Marginal willingness to pay figures were calculated from the results of the nested logit model. These results indicated a price premium for preserves purchased at a farmers' market across five Mid-Atlantic states. The organic attribute was only preferred over natural in one state. In addition, the attributes local and state program promoted were preferred over non-local across all states. The preference ordering between local and state program did vary. Consumers in Maryland and Pennsylvania clearly preferred local, while those in New Jersey seemed to prefer the state program version.

Overall, findings from this study suggest programs in several states should consider focusing on more generic "buy local" promotions, instead of statewide promotional programs. Additional results indicate that consumers from states other than Delaware consider areas smaller than the borders of their state as being local, such as a county or regional area. The results of this study would be of use to state marketing agencies, producers and processors targeting the Mid-Atlantic region.

## **Chapter 1**

### **INTRODUCTION**

#### **1.1 Recent Trends in the Food Sector**

Increases in the organic and natural food sectors, as well as an increased interest in locally grown and state marketing program promoted foods, are four current trends in the U.S. food system. The organic food sector is the largest growing and most promoted of these. Since 2002, the USDA's National Organic Program (NOP) has been certifying organic products, providing labels and standardization. Evidence of organic growth is evident in the amount of farmland set aside for certified organic production, which doubled from 2002 to 2005, and in 2008 alone grew 15% (USDA, ERS, 2010). From 1990 to 2009, sales of organic food products grew \$23.8 billion, growing an average of 5.1% in 2009 (Organic Trade Association, 2010). In addition, organic food sales more than doubled from 2004 to 2008, growing 132% (The Nielsen Company, 2009).

Unlike organic products, products designated as natural are not subject to a certification process and bear no standardized label. The USDA does have a formal definition for the term though, which includes no artificial ingredients, no added color and minimal processing. According to research conducted by The Nielsen Company (2009) food products designated as natural experienced a 37% increase in sales from 2004 to 2008. They also reported 55,000 food products currently feature labeling identifying them as 'natural'. While products bearing the term natural may lack the

standardized label present on their organic counterparts, they certainly are not lacking in growth.

Additionally, from 1994 to 2009, the United States witnessed a 201% increase in the number of operating farmers markets, which mostly sell products that are locally grown and/or locally made (USDA, AMS, 2009). Sales of locally grown foods are projected to reach \$7 billion by 2011 (Packaged Facts, 2007). Unlike products designated as organic or natural, there is no set USDA definition for locally grown. The term's definition is still undefined, often with a different meaning for each person. One's definition for locally grown may be interpreted as a small area, such as a city and its surroundings, or the borders of their state of residence and/or region. In addition, products designated as locally grown are somewhat similar to those labeled as natural in that there is also no formal certification process.

As interest in locally grown foods continues to rise, state-sponsored marketing campaigns have responded by increasing in number. Not surprisingly, many states are attempting to take advantage of this increased interest in locally grown by marketing products from within their own borders. Every state now has in place some type of marketing campaign, which includes logos, slogans and a variety of promotional activities (Onken and Bernard, 2010). Some initial evidence shows such programs have been successful at increasing the sales of local products.

Well established programs such as *Jersey Fresh* have been shown to increase state agricultural sales (Govindasamy et al., 2004) as have some newer programs established after 2000, such as South Carolina's *SC Grown* (Carpio and Isengildina-Massa, 2009). However state marketing programs vary drastically by state

in terms of product eligibility, certification, and the minimum percentage of product ingredients that must come from within that state.

There has also been some evidence that consumers show little preference difference between products identified as locally grown and those identified as grown in-state. A study conducted in Ohio showed consumers showing little preference difference for fresh strawberries identified as grown “in-state” and those identified as grown “nearby” (Darby et al., 2008). However the authors also note that while consumers in larger states like Ohio may see state boundaries as natural demarcations for “local”, individuals from smaller states may not. This brings up an interesting question for regions such as the Mid-Atlantic, where large states such as Pennsylvania border much smaller states such as Delaware. Will Pennsylvanians consider Delaware products to be ‘local’? More likely Delawareans will consider Pennsylvania products to be ‘local’, due to Delaware’s small size and its geographic location to Philadelphia, one of Pennsylvania’s major cities. However such questions, particularly across states, are in need of further research. The geographical extent of ‘local’ in the minds of consumers in regions such as the Mid-Atlantic still needs to be determined.

Understanding these growing trends of organic, natural, locally grown, and state marketing program promoted, as well as how they interact are all areas in need of further exploration. As the trend towards locally grown continues to rise, many state agencies instead might turn towards more generic local promotions, such as the current national *Buy Local, Buy Fresh* program sponsored by FoodRoutes (FoodRoutes Network, 2009). For state marketing programs, current evidence of their effectiveness, and continued justification for their existence and funding will be needed.

Comprehending consumer attitudes towards and preferences between these four trends, as well as determining marginal willingness to pay (mWTP) would be of importance to producers, marketers and state marketing agencies. It would also be important to determine how these preferences and mWTP might differ across states in the same region. While all four trends vary greatly in terms of certification and formal definition, they are all currently present in the food industry and gaining in popularity.

Producers could use this information to help strategically plan what areas of the food industry they need to be producing product(s) for, and whether or not the attributes of their particular product(s) are meeting the needs of consumers in the Mid-Atlantic region. This information could also be extended towards consumers in the New England region, which likewise is a region with states of varying size. Marketers in the food industry could gain useful information that would effectively help them better reach and promote to their targeted audience. Knowing whether or not to market a product at a grocery store versus a farmers' market would be especially helpful information. It would be useful then to determine whether preference and mWTP for these attributes vary by purchasing venue. It would also be helpful to both producers and marketers to identify expectations consumers have for the attributes of locally grown and organic foods.

Lastly, state marketing agencies perhaps have the most to gain. The results of such research could help them determine whether or not their programs are effective in terms of consumer preference and/or awareness. It would be useful to determine the effect the length of a state marketing campaign has on consumer awareness, especially in a region such as the Mid-Atlantic, where programs vary

greatly in length of establishment. It may also be useful in helping state agencies in determining whether or not their state marketing program should be continued, and if so, how they could better promote their program as to better meet the preferences of consumers in not just their particular state, but adjacent states as well.

## **1.2 Objectives**

The primary and secondary goals of this research then are to determine:

1. consumer preference and mWTP for the attributes of locally grown, organic, natural, and promoted by a state marketing campaign,
2. how these preferences and mWTP may be different across states in the same region, and also depending on whether these products were to be purchased at a grocery store or a farmers' market,
3. the expectations consumers have for the attributes of locally grown and organic foods,
4. the geographical extent of 'local' in the minds of consumers, and
5. the effect of the length of the state marketing campaigns on consumer awareness.

To accomplish these goals a large scale mail survey was targeted at consumers from five states in the Mid-Atlantic region: Delaware, Maryland, Virginia, New Jersey, and Pennsylvania. The key part of this survey was a choice-based conjoint analysis, or choice experiment (CE), containing a value-added product, strawberry preserves. CEs have become prominent in marketing studies, especially those examining consumer demand and WTP, such as Lusk and Hudson (2004) and

Carlsson, Frykblom, and Lagerkvist (2007). Mailing lists of 1,000 from each state were purchased for a total potential sample of 5,000. To maximize the response rate, the guidelines of Salant and Dillman (1994) were followed, yielding a response rate of 39.6% at the close of the survey.

### **1.3 Organization of Thesis**

Immediately following this introduction, Chapter 2 provides background information concerning the attributes natural, organic, and local. This chapter also discusses the state marketing programs of each state included in the survey. Chapter 3 next provides the critical literature review discussion, exposing areas in need of further exploration in which this study hopes to fill. Chapter 4 discusses the design of the survey, including the experimental design of the CE, and the mailing process. Also explored are the demographics of the respondents in the survey sample. Next Chapter 5 covers the methods used in analyzing the CE data, in particular the conditional logit model (CLM) and the nested logit model. Hypotheses are also specified at this stage. Chapter 6 presents the results of both models, marginal willingness to pay (mWTP) estimates, and other survey question results. Lastly, Chapter 7 concludes the thesis with a discussion of the findings, as well as implications for future research.

## **Chapter 2**

### **BACKGROUND**

#### **2.1 Organic and Natural Background**

With the passing of the Organic Foods Production Act in 1990, the USDA began developing national standards for organic certification through the creation of the National Organic Program (NOP) (USDA, NOP, 2008). The NOP established a certification program for organic products, along with production and labeling standards. Concerning the meaning behind the term organic, the NOP specifies that crops must have been grown without the use of conventional pesticides, petroleum-based fertilizers, or sewage sludge-based fertilizers. For animals, it means that they must have been fed organic feed, given access to the outdoors, and given no antibiotics or growth hormones. In addition, the NOP states that organic also means no genetically modified ingredients and no irradiation.

A product may bear the organic label if it consists of at least 95% organic ingredients. Products containing at least 70% organic ingredients may display the phrase ‘made with organic ingredients’, but cannot display the USDA organic logo. In addition, anyone who knowingly uses the organic logo on a non-organic product is subject to a fine of up to \$11,000 per offense (USDA, NOP, 2010).

Unlike the term organic, products bearing the term natural do not undergo any formal certification process. However, the USDA’s Food Safety and Inspection Service do have a formal definition for the term under their food labeling guidelines governing meat and poultry. Under these guidelines, natural is defined to mean a

product with no artificial ingredients, no added coloring, and minimal processing (USDA, FSIS, 2010). Although there is a formal definition in place for this term, the USDA does not inspect and certify such products. Therefore, the term natural often can often be found on a variety of food products. There has been some evidence that consumers lack a basic understanding as to the meanings behind the terms organic and natural (Gifford and Bernard, forthcoming). The NOP is concerned enough to state on their program webpage that the two terms are not the same.

## **2.2 Locally Grown Background**

The recent consumer trend towards purchasing local food, referred to by some as the ‘local food movement’ has many attempting to define what consumers consider to be ‘local’. Evidence of this trend towards local can even be seen in the term ‘locavore’ which according to Merriam-Webster means ‘one who eats foods grown locally whenever possible’ (Merriam-Webster Inc., 2010). The term’s first known use is cited as 2005. The term local has a different meaning for each individual, and to date has no formal USDA definition or certification. Products labeled as local therefore may be from within the consumer’s state, county, or a nearby state. As previously mentioned, the trend toward local has also spawned numerous buy local promotions across the country.

## **2.3 Mid-Atlantic State Marketing Programs**

As of early 2010 all 50 states had in place some type of state agricultural marketing program. Although discontinued in early 2010, the Delaware Department

of Agriculture's *Grown Fresh with Care in Delaware* marketing program was officially launched in 2007. While the Delaware Department of Agriculture's Marketing Section promoted the *Grown Fresh with Care in Delaware* program as "the first 'branded program' in Delaware history" (State of Delaware, DDA, 2009) it was not their first logo program. In the mid-1990's, the department attempted to launch and promote a logo identifying Delaware agricultural products. However, this initial effort was also short lived. The *Grown Fresh with Care* logo was allowed to be used on products with ingredients that originated from within the State of Delaware, although an actual percentage of ingredients were not defined.

According to the mission statement for the Delaware program, a product bearing the logo provided "a guarantee of freshness since products are supplied to supermarkets within 48 hours of being picked from the farm" (State of Delaware, DDA, 2009). At the time of the program's discontinuation though, there was no certification process in place to assure this deadline was met. In addition to the *Grown Fresh with Care in Delaware* logo, a *Made Fresh with Care in Delaware* logo was briefly used in 2007 for products produced within the state.

The *Maryland's Best* marketing program was created by the Maryland Department of Agriculture's Marketing and Agribusiness Development Section in 2002. The program's stated mission is to "link Maryland farmers with consumers through...promotions and advertising" (State of Maryland, MDA, 2009). One of the main program venues of the *Maryland's Best* program remains their promotional website. Visitors to the website can search by commodity for local products and farmers' markets. The website also features a wholesale search designed specifically

for retailers, as well as listings for agri-tourism sites and community supported agriculture.

Those interested in joining the *Maryland's Best* program must register online, and are only eligible if they are a grower or processor in Maryland. Once registered, information about their farm will appear on the *Maryland's Best* website. In addition, program members may purchase promotional materials online such as banners and signage. There is little evidence of any type of promotion beyond this. Similar to Delaware's former program, there is no certification process in place, nor is there any minimum percentage requirement in place for products bearing the *Maryland's Best* logo.

In contrast, one of the most well known state marketing programs currently in use, the New Jersey Department of Agriculture's *Jersey Fresh* program has expanded since its initial establishment in 1983 to encompass three additional logos: *Jersey Seafood*, *Jersey Grown* and *Jersey Bred*. Prompting many other states to spearhead their own marketing programs, *Jersey Fresh* began as a radio advertising campaign and was established "to promote and market New Jersey agricultural products" (State of New Jersey, NJDA, 2009). Agricultural products such as fresh fruits and vegetables, shell eggs and egg products, turkey, and chicken are items eligible to bear the *Jersey Fresh* logo.

In order to be permitted to use the logo, interested parties must first register with the Department of Agriculture's Quality Grading Program to ensure their products meet *Jersey Fresh* quality standards. In addition to submitting an application for the *Jersey Fresh* Quality Grading Program, a \$30 fee is assessed as well (State of New Jersey, NJDA, 2009). *Jersey Fresh* program members moreover are eligible to

apply for grants and matching funds, to be used for promotional purposes. The *Jersey Bred* logo was created to allow farmers in the state to market both 4-H market lambs, and horses residing in New Jersey. The *Jersey Seafood* logo program is for use by fish farmers and fishermen based in New Jersey. Lastly, the *Jersey Grown* logo program was created to recognize nursery products such as trees, shrubs, flowers and plants grown within the State of New Jersey. Both the design and construction of the *Jersey Seafood* and *Jersey Grown* programs mimic the state's *Jersey Fresh* program.

Each separate logo has its own website, which contains information for consumers, retailers, and other industry members. Point-of-purchase materials for the various logos are available for purchase, to program members, through the New Jersey Department of Agriculture. Unlike the programs established in Maryland and Delaware, the *Jersey Fresh* program does have in place a formal certification process, and requires that 100 percent of a product's ingredients must be from within the state.

*PA Preferred*, the Pennsylvania Department of Agriculture's marketing logo established in 2004, is currently in use on both processed and unprocessed products. Qualifications in order for fresh, unprocessed food products, nursery and other various agricultural items to carry the logo include that they must be either 100% Pennsylvanian, or grown at least 75% of the time in Pennsylvania. Processed products must receive their final packaging and processing in Pennsylvania, and if the primary ingredients of the product are grown in Pennsylvania, the processor must agree to buy as many Pennsylvania grown ingredients as possible, subject to availability (Commonwealth of Pennsylvania, PDA, 2009). In order to obtain a license to use the *PA Preferred* logo, as well as become a program member, interested parties must complete an online contact form, and then be personally contacted by a *PA Preferred*

representative. Industry associates such as retailers, distributors, restaurants and food service operators may become licensed program members as well. Although there is a minimum percentage requirement in place, there is no formal certification process. The *PA Preferred* program appears to be more active than programs in both Delaware and Maryland.

Lastly the Virginia Department of Agriculture and Consumer Services' *Virginia's Finest* trademark program was introduced in 1989 as a way for the state to "differentiate and promote top quality Virginia-produced and processed agricultural products" (Commonwealth of Virginia, VDACS, 2009). In order for interested parties to use the logo, they must first be a Virginia agricultural producer, or food processor, with a product that meets the program's quality standards. While there is no associated fee involved with participating in the *Virginia's Finest* program, potential participants must first meet their specific industry's standards, as well as receive certification from the Virginia Department of Agriculture and Consumer Services. Processed food products wishing to utilize the logo must also be approved by a special review committee. Once certified to use the *Virginia's Finest* logo, participants are then listed in the searchable Virginia's Finest Directory, which is available online and appears to be the program's primary vehicle of promotion. There is no set minimum percentage requirement for a product to be able to bear the program logo.

All five of these state marketing programs vary greatly in terms of program length, level of establishment and promotion, as well as certification and percentage requirements. With such drastic variation evident among programs, it would be interesting to see if consumer preference differs for locally grown compared to state program promoted foods by state. Halloran and Martin (1989) witnessed an

earlier rise in state promotional programs during the 1980's, and discussed how states were unlikely to witness long-term benefits from a state sponsored marketing program unless that state held a substantial share of the market for a particular product. As New Jersey is particularly well known for their fresh produce, it would be interesting to see if consumer preference for *Jersey Fresh* foods was higher when compared to consumer preference for state program promoted foods in neighboring states.

Perhaps length of program establishment though is an important factor, or perhaps consumers have little preference difference between locally grown and state program promoted foods. Whether or not state marketing programs are in fact important in helping shape consumer preference would be a key piece of information for these state marketing agencies.

## **Chapter 3**

### **LITERATURE REVIEW**

#### **3.1 Introduction**

Once the general topic area of interest was defined, a thorough literature review was conducted to help identify opportunities for further research. The first section of the literature review discusses previous research related to consumer interest in locally grown, as well as consumer preference and WTP for the local attribute. The next section of the literature review concerns past research attempting to define locally grown, only one of which was conducted within the Mid-Atlantic region over a decade earlier. Subsequent literature review sections include previous studies concerning the effectiveness of state marketing programs at increasing consumer demand, as well as consumer preference and WTP for the attributes organic and natural.

#### **3.2 The Trend Towards Locally Grown**

##### **3.2.1 Consumer Interest in Local**

Evidence of consumer demand for locally grown products continues to grow. The trend towards local can even be witnessed in the marketing activities of snack-food giant Frito-Lay, who in 2009 made “Lay’s Local” their primary promotional campaign (Horovitz, 2009). First Lady Michelle Obama has been cited advocating “the need for fresh, unprocessed, locally grown food...” (Martin, 2009). In July 2009, 60 Minutes star Andy Rooney filmed a segment while produce

shopping, declaring throughout that fresh produce should be local (CBS Videos Online, 2009).

Several studies have been conducted concerning consumer preference for locally grown foods as well. Darby et al. (2008) conducted a study featuring a choice experiment of Ohio residents, and found consumers preferred locally grown foods over those grown in the United States, with farm and farmers market shoppers exhibiting almost twice the willingness to pay (WTP) for local products. They also suggested that for larger states, such as Ohio, state boundaries may serve as natural borders in the minds of consumers when it comes to defining what is 'local'. The authors however stressed that this might not be the case for smaller states, such as those in New England. It would be beneficial then to conduct a study across states in the Mid-Atlantic region, which is comprised of both small and large states, and see if state size does matter when defining local, or if perhaps it varies by region.

In an earlier study conducted in Arizona, Patterson et al. (1999) similarly concluded that a majority of consumers prefer to purchase local products, in particular those identified under the *Arizona Grown* logo, compared to those products identified as being from other regions. However, they found little prior consumer awareness of the *Arizona Grown* marketing program. In addition the authors focused on only the grocery store purchasing venue. Both of these studies were one-state studies in rather large states, as opposed to a regional study investigating consumer preference for local across states.

A study by Thilmany, Bond and Bond (2008) surveyed U.S. consumers and concluded a greater value was often placed on local production over organic production. They also found consumers who mainly purchased local foods because

they viewed their purchase as economically supporting agriculture, exhibited a WTP of 7.3% more for local products. This study though examined data from a prior national survey effort that used Likert-scale responses, and did not investigate preference for state marketing program promoted foods. It is realistic to assume that consumers in different regions would have different definitions for what they consider to be 'local'. Therefore a regional study as opposed to a national study might be more accurate in terms of uncovering preference and WTP for local foods.

Hu, Woods, and Bastin (2009) investigated Kentucky consumer's WTP for processed blueberry products, and found consumer preference strongest for products identified as local, as opposed to products identified as organic and products identified as sugar free. The authors employed the use of a choice experiment that featured six different value-added food products. Although they were interested in determining consumer preference for the attributes of local and organic, they were also interested in determining how consumer preference differed among the different blueberry value-added products. They found the attribute organic was not as valued for two of the more value-added products included: blueberry muffin mix and blueberry fruit rollups.

Loureiro and Hine (2002) surveyed Colorado consumers and concluded consumers were willing to pay a higher premium for potatoes designated as *Colorado Grown* compared to potatoes identified as organic or GMO-free. Instead of using a choice experiment, the authors employed the use of a payment card format, where respondents could place 'bids' by choosing a price listed in order to determine WTP. Schneider and Francis (2005) conducted a survey in Nebraska and found 36% of respondents willing to pay at least a 10% price premium for local products from

within their state county. It is important to note that this particular study was conducted in only one county in Nebraska, and therefore only limited conclusions can be made.

A survey of Indiana consumers by Jekanowski, Williams, and Schiek (2000) found the perceived quality of a local product had the strongest impact on one's purchasing likelihood. They also reported that their results suggested a demand for local products that a well planned state marketing program could capture. However they emphasized that if state programs allowed their quality standards to fall below those of competing states, ultimately such a state would quintessentially be branding their products as "lower quality". With such evidence that state programs could be successful at capturing the local consumer, it would be important to include both state sponsored and local food products when investigating consumer preferences.

Additionally Giraud, Bond, and Bond (2005) surveyed consumers from Maine, Vermont and New Hampshire. They found consumers from all three states willing to pay a price premium for local specialty food products from within their state. Specific specialty food products were not identified. Instead respondents were told their 'specialty food product' was either valued at \$5 a unit or \$20 a unit.

While all of these previous studies have investigated consumer preference for local, none have conducted a regional study examining both local and state marketing program promoted foods across states, and none have attempted to define what is 'local'. In addition, only two studies mentioned employed the use of a choice experiment, noted to be particularly useful as they imitate the actual choices consumers face while shopping (Lusk and Hudson, 2004).

### 3.2.2 Defining Locally Grown

Vermont is currently the only known state to have in place a state-specific local logo. Their *Buy Local* program even includes a state definition for local: “a product grown within 30 miles of the place of sale, or within the State of Vermont” (Vermont Agency of Agriculture, 2009). As previously mentioned, a study by Darby et al. (2008) suggested for larger states that consumers may consider the natural geographical borders of their state to be a boundary for defining what is local. Gallons et al. (1997) surveyed Delaware households and found that for fresh produce, when asked what areas defined “locally grown fresh produce” an average of 83% of respondents considered Delaware to be local, with 48% considering Delmarva to be local, 42% Southern New Jersey and 34% Southern Pennsylvania respectfully. Some time has passed since this study was conducted, and the need for more updated research and analysis is evident.

Brown (2003) conducted a survey of households in Missouri, and concluded that when it came to defining locally grown, consumers considered local to be a region smaller than within state borders. She found that the distance a product traveled mattered more than whether it was from within one’s state, and that local can cross state lines. She similarly found a lack of consumer awareness for Missouri’s state marketing program *AgriMissouri*. Households surveyed were limited to the southeastern region of Missouri.

Hand and Martinez (2010) discussed how actual definitions for local can help illuminate consumer demand for local products, but that no one definition would suffice. Should definitions for local foods then be state specific, such as currently is seen in Vermont, or should they be region specific? Such a regional study would be important in helping determine this.

Hu, Batte, Woods, and Ernst (2010) also attempted to determine a definition for local by conducting an online survey of Ohio and Kentucky residents. They found that 73% of consumers in their sample considered food products to be local if they were from a distance of less than 100 miles. The authors similarly concluded that consumers seem to place a higher importance on the local production attribute for fresh food products. It would be interesting to conduct a study across several states of varying size, yet also in the same region.

### **3.3 State Marketing Programs**

With studies showing consumer preference for local, there is increasing evidence that state-sponsored marketing programs are successful in increasing demand and sales for local products. Carpio and Isengildina-Massa (2009) evaluated South Carolina's agricultural marketing program *SC Grown* in which they found consumer demand for South Carolina grown produce had risen 3.4% one year after the program's inception. They further estimated producer surplus from this increase to be around \$2.9 million.

Research conducted by the California Department of Agriculture and the Buy California Marketing Agreement found sales of California agricultural products had increased 7.1% since the start of the *CA Grown* program in 2002, amounting to almost \$900 million (State of California, BCMA, 2009). Govindasamy et al. (2004) estimated that for the year 2000, the *Jersey Fresh* program had increased the sales of fresh produce alone by \$36.6 million. They calculated that for every dollar that year allocated towards the promotion of *Jersey Fresh*, \$54.49 in total economic output was gained for the State of New Jersey. Hanagriff, Lau, and Rogers (2009) conducted a study of the Texas wine industry, mainly supported and promoted under the *Go Texan*

program. They found in 2007, for each dollar spent on promoting Texas wine, total sales increased by \$2.16.

It is important to note that the figures for New Jersey seem especially high in comparison to the other mentioned state marketing programs. These preliminary findings seem to show a promising return for efforts though involved with state marketing programs, and their accompanying local food products. With three of the five state programs targeted in this survey created after 2000, this study provides a unique opportunity to compare previously established programs with newer less established programs. It also provides the opportunity to compare consumer preference for and knowledge of state marketing promoted foods on a regional level. Conducting similar surveys across all five states affords the opportunity to accurately compare and contrast consumer preferences in this region.

### **3.4 Consumer Preferences and WTP for Organic**

Since the labeling and certification of organic products through the National Organic Program (NOP) in 2002, interest in organic foods has prompted numerous studies concerning consumer preference and WTP. Yiridoe, Bonti-Ankomah, and Martin (2005) conducted a review of the current literature, and concluded consumer WTP for organic products appears to decrease with premium level. Hughner et al. (2007) performed a similar compilation, and argued consumer interest in organic products varied much in part to a lack of basic understanding for what 'organic' means.

Batte et al. (2007) conducted a survey of Ohio residents in seven different grocery stores, and concluded consumers were willing to pay a price premium for

organic products, even those with less than 100% organic ingredients. The farmers' market purchasing venue was not investigated in this study.

Bond, Thilmany and Bond (2008) surveyed U.S. consumers, and concluded consumers placed a value on organic production, and may even view organic products as being of higher quality. It would be interesting to see if such a result is the case for a more regional study. Organic products were found by Stegelin (2008) to also make up a significant portion of 'local' products purchased by consumers, although the study was a limited first attempt with a small sample size. It would be interesting to determine if consumer preference for products identified as both local and organic differs from products identified as both local and natural. However does consumer preference for the organic attribute differ by purchasing venue?

Using a similar region as this study, Shuzzler, Govindasamy, and Adelaja (2003) compared the profiles of organic consumers in New Jersey to those in New York and Pennsylvania. Govindasamy and Italia (1999) surveyed New Jersey consumers at several grocery store locations, and found their results suggested consumers were willing to pay a price premium in order to obtain organic fresh produce. Organic value-added products were not included in this particular study. It would be useful to investigate consumer preference for the organic production attribute across purchasing venues (grocery store vs. farmers' market) on a regional level.

Existing literature looking at consumer preference and WTP for natural food is not as prevalent as studies addressing organic, with much room for contribution. A study conducted by Gifford and Bernard (forthcoming), in which

experimental auctions were conducted, found that many consumers have little knowledge as to what the term natural actually means. They also found many consumers believed the terms natural and organic had the same requirements, until presented with the actual standards for each.

### **3.5 Summary**

The literature review conducted above exposed several areas of opportunity for further research, as relates to this project. It was discovered that only a few previous studies employed the use of a CE. In addition, there is also a need for a more recent study examining how Mid-Atlantic consumers define local. The majority of previous studies addressing a definition for local were conducted in primarily large states. Investigating previous studies looking at the effectiveness of state marketing programs found evidence that they increase consumer demand, but the majority of these studies did not address consumer awareness and preference for such programs in nearby states. Lastly, while there is a wide array of available literature concerning preference and WTP for the organic attribute, previous studies investigating the natural attribute have been few.

## **Chapter 4**

### **SURVEY DESIGN**

#### **4.1 Survey Choice Experiment**

As previously noted, a key part of the survey was a choice experiment designed to determine consumer preference and WTP. Prominently used in marketing research, Lusk and Hudson (2004) noted choice experiments are particularly useful because they closely mimic actual consumer shopping behavior. Examples of previous studies using choice experiments includes earlier work by Lusk, Roosen, and Fox (2003), Alfnes et al. (2006), and Carlsson, Frykblom, and Lagerkvist (2007).

The choice experiment here was constructed using SAS software (SAS Institute Inc., 2010) and methods developed by Kuhfeld (2009), and featured the value-added food product strawberry preserves. This product was chosen for several reasons. First, given the five state scope of the survey, strawberry preserves are available locally in each state, as well as under each state's promotional slogan. They are also a familiar product that a majority of consumers should recognize, and is neither considered region-specific or state-specific.

The experimental design used featured four product attributes. They included purchase venue, production method, price and location. The attribute price had three levels (\$2.99, \$3.99, and \$4.99) for strawberry preserves, while purchase venue contained two levels: grocery store and farmers' market. Prices were determined using current market prices from a wide range of purchasing venues.

Production method also had two levels, organic and natural. As the majority of strawberry preserves available on the market are identified as “natural”, the attribute conventional was not included. Lastly location had three levels, which included local, non-local and depending on the state, either the slogan *Jersey Fresh*, *PA Preferred*, *Maryland’s Best*, *Virginia’s Finest*, or *Grown Fresh with Care in Delaware*. The attributes that appeared in the experimental design can be viewed below in Table 4.1:

**Table 4.1. Choice Experiment Attributes**

Attribute	Levels
Location	Local, Non-Local, State Marketing Program ( <i>Grown Fresh with Care in Delaware</i> , <i>Maryland’s Best</i> , <i>Jersey Fresh</i> , <i>PA Preferred</i> , <i>Virginia’s Finest</i> )
Production Method	Natural, Organic
Purchasing Venue	Grocery Store, Farmers’ Market
Price	\$2.99, \$3.99, \$4.99

Note: The level “State Marketing Program” featured the program slogan of the respondent’s state.

Following examples and macros created by Kuhfeld (2009), the choice experiment was constructed as a branded study, allowing for the labeling of each alternative per set, as well as the ability to add a constant ‘none of these’ or no purchase option. The ‘labeling’ used in this design was the attribute location. By specifying the number and level of attributes to be included, a reasonable size for the experimental design, minimizing violations of balance and orthogonality was first generated. From this suggested number of choice sets, an efficient design was next

constructed. This design attempts to optimize D-efficiency, the standard measure of the goodness of the experimental design, by searching for a candidate design in part by using the OPTEX procedure of SAS. At this stage of construction, a balanced and orthogonal design with 100% D-efficiency was identified and the variance matrix for a linear model was optimized.

The linear design was next converted to a choice design by specifying the number of alternatives per set, and the number of attributes to be displayed per alternative. The choice design was evaluated again, but this time to optimize the variance matrix for a multinomial logit model, and the design was restricted to 12 choice sets. At this stage parameters were also specified: price<sup>2</sup> is added, and interactions between price and purchase venue, price and production method, and purchase venue and production method are added. Lastly, the 12 choice sets were blocked into two blocks of 6 sets each, with blocks checked for duplicate choice sets. The SAS code used to create the choice experiment can be found in Appendix IV.

The final experimental design contained four choices per set, with one being the constant "none" alternative. Each respondent was presented with six sets of strawberry preserves to avoid respondent fatigue, with two different choice experiment versions mailed per state. A sample choice set can be viewed below in Figure 4.1:

**Figure 4.1. Sample Choice Set**

**9b) FOOD PRODUCT #2:** One 18 oz. jar of Strawberry Preserves.

For EACH of the 6 choice sets below, please check one box per set :



**SET #1** \_\_\_\_\_

<i>"Grown Fresh with Care in Delaware"</i> Natural Grocery Store \$4.99	Local Natural Farmers Market \$3.99	Non-Local Organic Grocery Store \$2.99	None
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**CHECK ONE** →

## **4.2 Other Survey Components**

In addition to the choice experiment, the survey contained several other questions to gain a better understanding of consumer preferences. These included questions regarding their knowledge and opinion of the five state marketing programs, as well as how often they purchase food products from a grocery store and/or farmers' market. In addition, questions on how they rated local, organic and state program promoted foods in term of factors such as taste, safety and the environment, and the area they considered to be 'local' were also included. Lastly, the survey contained standard demographic questions to use in modeling, and a section where respondents could write comments if they chose. Survey comments and the respondent's state were recorded, and can be viewed in Appendix III.

Accompanying the survey form was an information sheet respondents were asked to read prior to completing the survey. This sheet contained definitions and explanations for five terms appearing throughout the survey. Definitions for the terms organic, natural and conventional were adapted from formal USDA definitions and included. A brief discussion of the terms local and state marketing program were also incorporated. Since exact definitions for these two terms are not available, it was mentioned that the term local is flexible, often with a different meaning for each person, as well as how state marketing program components frequently vary by state.

## **4.3 Survey Piloting**

The survey was initially piloted in September 2009 on about 20 junior and senior undergraduate students over two days in Dr. John Bernard's FREC 404 Food and Fiber Marketing course, as well as on 30 sophomore undergraduate students in

Andrew Carroll's PSYC 200 Research Methods course. Initial feedback was taken into consideration and the choice experiment portion of the survey was then piloted a second time on students in Dr. Bernard's same class. The survey was also piloted on several graduate students in the Department of Food and Resource Economics, as well as various volunteers.

#### **4.4 Survey Sample and Mailing**

Mailing lists of 1,000 households from five states: Delaware, Maryland, Virginia, New Jersey, and Pennsylvania, were purchased through USAData in September 2009, for a total potential sample of 5,000. Following the guidelines of Salant and Dillman (1994) to maximize our response rate, an advance pre-notice postcard was mailed the third week in October announcing the survey. A first mailing of the survey was then sent the first of November. This first mailing included a cover letter explaining the importance of the survey, the survey and accompanying information sheet, a stamped return envelope and a \$1 token of appreciation. A copy of the cover letter can be found in Appendix I. A reminder postcard was next mailed, followed by a second full survey mailing to all who had not yet responded. At the close of the survey the overall response rate was 39.6%. The total sample was 4,661 after bad addresses were removed. Response rates by individual state can be viewed below in Table 4.2:

**Table 4.2. Response Rates by State**

<b>State</b>	<b>Response Rate (%) (No. of Surveys)</b>	<b>Sample</b>
Delaware	45.5 (424)	933
Maryland	39.1 (358)	915
New Jersey	36.7 (343)	934
Pennsylvania	40.5 (382)	944
Virginia	36.3 (339)	935
<b>Total</b>	39.6 (1846)	4661

#### **4.5 Sample Population**

Demographics of the respondents in the survey sample were compared to the population of each state according to the 2000 Census<sup>1</sup>, and can be viewed in Table 4.3. Demographics by state, from the 2000 Census, can be viewed in Table 4.4. Although the population of each state is fairly represented by the survey sample, possible bias include less racial diversity, slightly higher education levels and slightly higher income levels for the survey respondents.

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<sup>1</sup> 2000 Census figures can be viewed online at <http://www.census.gov/>.

**Table 4.3. Demographics of Respondents in the Survey Sample**

	<u>Delaware</u>		<u>Maryland</u>		<u>New Jersey</u>		<u>Pennsylvania</u>		<u>Virginia</u>	
	Number	%	Number	%	Number	%	Number	%	Number	%
<b>Gender:</b>										
Male	164	43.16	172	51.50	142	46.71	162	46.96	155	51.33
Female	216	56.84	162	48.50	162	53.29	183	53.04	147	48.67
<b>Age (in years):</b>										
Under 25	5	1.32	10	3.00	2	0.66	6	1.74	4	1.32
25-34	34	8.97	36	10.81	30	9.84	25	7.27	31	10.23
35-44	63	16.62	41	12.31	60	19.67	66	19.19	56	18.48
45-54	89	23.48	78	23.42	78	25.57	82	23.84	77	25.41
55-59	45	11.87	53	15.92	33	10.82	46	13.37	28	9.24
60-64	43	11.35	33	9.91	25	8.20	35	10.17	36	11.88
65-69	40	10.55	32	9.61	24	7.87	21	6.10	24	7.93
70-74	31	8.18	15	4.50	20	6.56	20	5.81	16	5.28
75-79	12	3.17	18	5.41	12	3.93	19	5.52	12	3.96
80 or above	17	4.49	17	5.11	21	6.88	24	6.99	19	6.27
<b>Education:</b>										
< High school graduate	13	3.45	4	1.21	10	3.28	6	1.73	20	6.60
High school graduate	76	20.16	47	14.15	63	20.66	99	28.61	39	12.87
Some college, no degree	98	25.99	63	18.97	53	17.38	64	18.51	60	19.80
Associate degree	37	9.81	31	9.34	27	8.85	29	8.38	24	7.92
Bachelor degree	79	20.96	82	24.70	73	23.93	88	25.43	92	30.37
Graduate or professional degree	74	19.63	105	31.63	79	25.90	60	17.34	68	22.44

	<u>Delaware</u>		<u>Maryland</u>		<u>New Jersey</u>		<u>Pennsylvania</u>		<u>Virginia</u>	
	Number	%	Number	%	Number	%	Number	%	Number	%
<b>Children under the age of 18 in household?:</b>										
Yes	120	32.34	85	25.76	110	36.55	101	29.28	97	32.33
No	251	67.66	245	74.24	191	63.45	244	70.72	203	67.67
<b>Race:</b>										
White	335	85.24	254	77.44	254	80.13	330	90.66	258	81.65
Black, African American	28	7.13	48	14.63	24	7.57	11	3.02	39	12.34
Hispanic or Latino	7	1.78	4	1.22	21	6.62	4	1.10	3	0.95
American Indian/Alaskan	4	1.02	0	0.00	1	0.31	0	0.00	0	0.00
Asian	12	3.05	14	4.27	13	4.10	13	3.57	10	3.16
Native Hawaiian/Other Pacific Islander	1	0.25	2	0.61	1	0.32	0	0.00	0	0.00
Other	6	1.53	6	1.83	3	0.95	6	1.65	6	1.90
<b>Income:</b>										
Less than \$10,000	14	3.86	5	1.63	8	2.67	8	2.44	17	5.70
\$10,000 to \$14,999	10	2.75	8	2.61	7	2.33	23	7.01	15	5.03
\$15,000 to \$24,999	22	6.06	20	6.54	22	7.33	30	9.15	14	4.71
\$25,000 to \$34,999	37	10.19	15	4.90	18	6.01	40	12.21	24	8.05
\$35,000 to \$49,999	58	15.98	39	12.75	34	11.33	52	15.85	24	8.05
\$50,000 to \$74,999	92	25.34	59	19.28	53	17.67	54	16.46	66	22.15
\$75,000 to \$99,999	56	15.43	44	14.38	49	16.33	43	13.11	52	17.45
\$100,000 to \$124,999	18	4.96	42	13.72	37	12.33	39	11.89	24	8.05
\$125,000 to \$149,999	17	4.68	25	8.17	20	6.67	11	3.35	18	6.05
\$150,000 to \$199,999	24	6.62	19	6.21	25	8.33	17	5.18	22	7.38
\$200,000 to \$249,999	6	1.65	16	5.23	16	5.33	9	2.74	13	4.36
\$250,000 or more	9	2.48	14	4.58	11	3.67	2	0.61	9	3.02

**Table 4.4. 2000 Census, Source: U.S. Census Bureau**

	<u>Delaware</u>	<u>Maryland</u>	<u>New Jersey</u>	<u>Pennsylvania</u>	<u>Virginia</u>
	%	%	%	%	%
<b>Gender:</b>					
Male	48.6	48.3	48.5	48.3	49.0
Female	51.4	51.7	51.5	51.7	51.0
<b>Age (in years):</b>					
15-19	7.1	6.7	6.2	6.9	6.8
20-24	6.6	5.9	5.7	6.1	6.8
25-34	13.9	14.1	14.1	12.7	14.6
35-44	16.3	17.3	17.1	15.9	17.0
45-54	13.3	14.3	13.8	13.9	14.1
55-59	5.0	5.1	5.0	5.0	5.1
60-64	4.1	3.8	3.9	4.2	3.9
65-74	7.2	6.1	6.8	7.9	6.1
75 or above	5.7	5.3	6.4	7.7	5.1
<b>Education:</b>					
< High school graduate	17.4	16.2	17.9	18.0	18.5
High school graduate	31.4	26.7	29.4	38.1	26.0
Some college, no degree	19.5	20.3	17.6	15.6	20.4
Associate degree	6.6	5.3	5.3	5.9	5.6
Bachelor degree	15.6	18.0	18.8	14.0	17.9
Graduate or professional degree	9.4	13.5	11.0	8.4	11.6

	<u>Delaware</u>	<u>Maryland</u>	<u>New Jersey</u>	<u>Pennsylvania</u>	<u>Virginia</u>
	%	%	%	%	%
<b>Children under the age of 18 in household?:</b>					
Yes	24.2	25.0	24.3	23.2	24.1
No	75.8	75.0	75.7	76.8	75.9
<b>Race:</b>					
White	74.6	64.0	72.6	85.4	72.3
Black, African American	19.2	27.9	13.6	10.0	19.6
Hispanic or Latino	4.8	4.3	13.3	3.2	4.7
American Indian/Alaskan	0.3	0.3	0.2	0.1	0.3
Asian	2.1	4.0	5.7	1.8	3.7
Native Hawaiian/Other Pacific Islander	0.0	0.0	0.0	0.0	0.1
Other	2.0	1.8	5.4	1.5	2.0
<b>Income:</b>					
Less than \$10,000	7.1	6.9	7.0	9.7	7.9
\$10,000 to \$14,999	5.1	4.2	4.7	7.0	5.3
\$15,000 to \$24,999	11.3	9.5	9.3	13.7	11.4
\$25,000 to \$34,999	12.2	10.7	10.0	13.3	12.1
\$35,000 to \$49,999	16.9	15.4	14.3	16.9	16.5
\$50,000 to \$74,999	21.3	21.5	19.8	19.5	20.3
\$75,000 to \$99,999	12.0	13.5	13.5	9.6	11.4
\$100,000 to \$124,999	6.4	7.6	8.2	4.6	6.2
\$125,000 to \$149,999	3.0	4.0	4.5	2.1	3.3
\$150,000 to \$199,999	2.5	3.5	4.2	1.8	2.9
\$200,000 or more	2.1	3.0	4.3	1.9	2.7

## Chapter 5

### METHODS

#### 5.1 The CLM Model

The collected data for all five states was first analyzed in SAS Version 9.2 (SAS Institute Inc., 2010) using a conditional logit model (CLM). The CLM uses the characteristics of the outcomes to predict the selected choice and to fit the data (Long, 1997, So and Kuhfeld, 2009). The predicted probability of the choices in the CLM is defined as:

$$\Pr(y_i = d \mid z_i) = \frac{\exp(z_{id}\gamma)}{\sum_{c=1}^4 \exp(z_{ic}\gamma)}$$

(1)

where  $y_i$  is the choice for respondent  $i$  coded 1, 2, 3 or 4 to refer to state program, local, non local or none respectively,  $z_{id}$  is the vector of covariates for the  $d$ -th choice and  $\gamma$  is the common coefficient vector for all choices.

Conditional logit models are often the first approach when analyzing data collected from a CE. Examples of this can be seen in previous CE studies examining cottonseed choice (Banerjee, Hudson, and Martin, 2007), blueberry products (Hu, Woods, and Bastin, 2009), and incentive framing (Mazur and Bennett, 2010).

## 5.2 CLM Model, Strawberry Preserves

An overall joint-test was performed on the effect of state to determine if all five states should remain in the model, which was significant. Next likelihood ratio tests were performed on the overall effect of Organic, overall effect of Price, and overall effect of Market. As these three tests were significant, individual interactions were next tested. Likelihood ratio tests for Price<sup>2</sup>, the interaction Price\*Market, the interaction Price\*Organic, and the interaction Organic\*Market were next performed. The effect of the interaction between Price\*Organic and the interaction Organic\*Market was not significant, and these two terms were removed from the model. Next overall joint-tests were performed for the effect of each of the choice variables, which were Local, NonLocal, and NoPurchase, which were all significant.

Overall joint-tests were next performed for the effect of state by each of the eight variables still present in the model at this point. State interaction terms with the variables Price<sup>2</sup>, NoPurchase, Market, and the interaction Price\*Market were removed. Demographic covariates were at first included in the model, but later removed due to issues with their ability to accurately represent the analyzed data. The SAS code used to generate the CLM model, as well as perform the likelihood ratio tests mentioned above, can be viewed in Appendix V.

The final CLM model for strawberry preserves includes 20 variables, and the predicted probability for each choice,  $\Pr(y_i = d | z_i)$ , is more clearly interpreted by instead stating the CLM in terms of the utilities of each choice. The utilities for the final CLM model are given by:

$$U(\text{State Program}) = \beta_{12} \text{Market}_i + \beta_{13} \text{Price}_i \text{Market}_i + \beta_{14} \text{Price}_i + \beta_{15} \text{Price}_i^2 + \beta_{16} \text{Organic}_i + \beta_{17} \text{MD}_i \text{Organic}_i + \beta_{18} \text{NJ}_i \text{Organic}_i + \beta_{19} \text{PA}_i \text{Organic}_i + \beta_{20} \text{VA}_i \text{Organic}_i + \varepsilon_i$$

$$U(\text{Local}) = \beta_1 \text{Local}_i + \beta_2 \text{MD}_i \text{Local}_i + \beta_3 \text{NJ}_i \text{Local}_i + \beta_4 \text{PA}_i \text{Local}_i + \beta_5 \text{VA}_i \text{Local}_i + \beta_{12} \text{Market}_i + \beta_{13} \text{Price}_i \text{Market}_i + \beta_{14} \text{Price}_i + \beta_{15} \text{Price}_i^2 + \beta_{16} \text{Organic}_i + \beta_{17} \text{MD}_i \text{Organic}_i + \beta_{18} \text{NJ}_i \text{Organic}_i + \beta_{19} \text{PA}_i \text{Organic}_i + \beta_{20} \text{VA}_i \text{Organic}_i + \varepsilon_i$$

$$U(\text{Non-Local}) = \beta_7 \text{NonLocal}_i + \beta_8 \text{MD}_i \text{NonLocal}_i + \beta_8 \text{NJ}_i \text{NonLocal}_i + \beta_9 \text{PA}_i \text{NonLocal}_i + \beta_{10} \text{VA}_i \text{NonLocal}_i + \beta_{12} \text{Market}_i + \beta_{13} \text{Price}_i \text{Market}_i + \beta_{14} \text{Price}_i + \beta_{15} \text{Price}_i^2 + \beta_{16} \text{Organic}_i + \beta_{17} \text{MD}_i \text{Organic}_i + \beta_{18} \text{NJ}_i \text{Organic}_i + \beta_{19} \text{PA}_i \text{Organic}_i + \beta_{20} \text{VA}_i \text{Organic}_i + \varepsilon_i$$

$$U(\text{No Purchase}) = \beta_{11} \text{None}_i + \varepsilon_i$$

(2-5)

where the variables are as defined in Table 5.1 below. Reference coding is used throughout.

It is important to note that a concern with the CLM involves handling the independence from irrelevant alternatives (IIA), which can be tested for in the CLM but not addressed, as the model assumes IIA is not an issue. A perhaps superior model in that IIA can be addressed is the Nested Logit Model, where choices in the choice experiment are viewed as a decision tree, and the structure of the tree is specified as a sort of hierarchy. The Nested Logit Model therefore is a natural extension from the CLM, and is explored next.

**Table 5.1. Variable Names and Descriptions, CLM Model**

<b>Variable Name</b>	<b>Description</b>
Local	1 if the respondent selected the Local choice option <sup>1</sup>
NonLocal	1 if the respondent selected the Non-Local choice option <sup>1</sup>
NoPurchase	1 if the respondent selected the No Purchase choice option <sup>1</sup>
Market	1 if the respondent chose the farmers' market venue <sup>1</sup>
Price	Price for an 18 oz. jar of strawberry preserves
Organic	1 if the respondent chose the organic attribute <sup>1</sup>
MD	1 if the respondent is from Maryland <sup>1</sup>
NJ	1 if the respondent is from New Jersey <sup>1</sup>
PA	1 if the respondent is from Pennsylvania <sup>1</sup>
VA	1 if the respondent is from Virginia <sup>1</sup>

<sup>1</sup>Dummy variable where value is zero otherwise

### **5.3 The Nested Logit Model**

While the simplest approach to modeling a choice experiment is to use a CLM, this model assumes the independence of irrelevant alternatives (IIA). However, the no purchase option is very different from the options where preserves are purchased, and therefore it seems unlikely that IIA would hold. A natural extension beyond the CLM described above would be a two-level nested logit with state program, local and non-local in one nest, and no purchase in the other. This allows choices within nests to be correlated and is a partial relaxation of the IIA assumption. Nested logit models of similar form have been used to model CE data in a variety of closely related fields. Examples include green energy electricity (Borchers, Duke, and

Parsons, 2007), ethnic food (Camarena and Sanjuan, 2009), and public vs. private dentists (Kiiskinen, Suominen-Taipale, and Cairns, 2010).

According to Hensher and Greene (2002) care must be taken in normalizing such a nested model. The authors present three possible normalizations entitled RU1, RU2 and RU3. They additionally argue that the RU2 approach is generally the best, especially when the nested logit has a degenerate branch, meaning a branch in which there is only one choice. Therefore, a nested logit model with an RU2 normalization was next fitted.

Again referring back to Hensher and Greene, the choices themselves are called *elemental alternatives*. The choices State Program, Local, Non-Local and No Purchase are represented by  $k=1, 2, 3$  and  $4$  respectively. The *elemental alternatives-level probabilities* are given by:

$$P(k | i) = \frac{\exp(\mu(i)U(k))}{\sum_1^{K_i} \exp(\mu(i)U(k))} = \frac{\exp(\mu(i)U(k))}{\exp(IV(i))}$$

(6)

where  $\mu(i)$  is the normalization constant for branch  $i$  and,

$$IV(i) = \ln\left(\sum_1^{K_i} \exp(\mu(i)U(k))\right)$$

(7)

is the inclusive value for branch  $i$ . The branch level probabilities are given by:

$$p(i) = \frac{\exp(IV(i) / \mu(i))}{\sum_1^2 \exp(IV(i) / \mu(i))}$$

(8)

The probabilities of choices  $k = 1,2,3,4$  are given by  $\Pr(k) = P(k | i)p(i)$ .

#### **5.4 Nested Logit Model, Strawberry Preserves**

As dictated by the experimental design discussed earlier, the original model included a quadratic functional form for Price as well as the interactions Price\*Market, Price\*Organic, and Organic\*Market. Additionally, state interactions with each of the variables Price, Price<sup>2</sup>, Market and Organic were also included. A series of likelihood ratio tests showed that a number of these terms were insignificant, and therefore were excluded from the model. If an interaction with state and an effect was significant, then all states were kept, even if individual state terms themselves were not significant. Since regionally the area of interest consisted of all five states, it seemed rational to include either all of the states or none at all. The series of likelihood ratio tests performed were similar to those discussed for the CLM earlier above. The utilities for the final Nested Logit Model are also the same as those previously stated for the CLM, with the variables as defined in Table 5.1.

Computations for the nested logit model were performed using NLOGIT 3.0 (Greene 2003). In order to gain convergence, price was scaled by dividing by 5 so that it varied between 0 and 1 like the dummy variables present in the model. It is important to note that in the forthcoming table of results, scaling was restored to the original.

#### **5.5 Hypotheses**

Prior to the modeling discussed above, hypotheses for both models were made and are discussed below. It is hypothesized that the estimates of the CLM and

nested logit will differ, since it is assumed that IIA is a concern with the CLM that the nested logit addresses. Both local and state program versions were expected to be preferred over non-local versions, although the ranking between these two was uncertain, and could possibly vary by state. Some earlier studies discussed suggested state borders may serve as a definition of local for consumers. However, a state marketing program may need to do more than just state identification to match consumer preference for local. State size might also matter, since the larger the state, the greater the chance consumers may view only a portion of the state as being local. Therefore, it is expected that differences between states will be observed across choices.

It is also hypothesized that consumers will be willing to pay a higher price premium for strawberry preserves purchased at a farmers' market versus purchased at a grocery store. The ambiance and experience of visiting a farmers' market, as well as the feeling of a connection with area farmers could help explain this outcome. Onianwa, Mojica, and Wheelock (2006) identified several areas where consumers had a preference for farmers' markets over grocery stores, including the atmosphere. Zepeda and Leviten-Reid (2004) noted similar advantages for farmers' markets, such as being seen as a form of entertainment or chance to interact with area farmers.

It is likewise expected that consumers will exhibit preference and higher mWTP for organic preserve versions versus natural preserve versions. This would make sense given the extra, and generally favorably viewed, requirements organic certification imposes on production. However, while information was included on an information sheet accompanying the survey, it may still be that consumer understanding of the differences between these two attributes is limited, as seen in

Gifford and Bernard (forthcoming). If full understanding is lacking, it could be that no significant difference between organic and natural appears.

Since it can be difficult to understand the relationships between the choices and attributes by examining the coefficients alone, a table of hypotheses on individual coefficients is omitted from this section. Rather probabilities will be computed from the estimated coefficients, which will be discussed further in the following chapter.

## Chapter 6

### RESULTS

#### 6.1 CLM and Nested Logit Results, Strawberry Preserves

Table 6.1 shows the results of the CLM, and the variables in bold are statistically significant at the 5% level. The variable Local was significant when interacted with both Maryland and Pennsylvania. The variable NonLocal was significant both by itself and when interacted with both Maryland and Pennsylvania. The variables Market, Price<sup>2</sup>, and the interaction between Price\*Market were also significant, as was the variable NoPurchase. Lastly the variable Organic was significant both by itself and when interacted with Maryland.

Table 6.2 shows the results of the subsequent nested logit model, and the variables in bold are statistically significant at the 10% level. In terms of significance, all of the variables significant in the CLM were also significant in the nested logit, as well as the interaction between NonLocal and Virginia and Organic and Virginia. The normalization constants for the two branches of the nested logit can also be viewed in Table 6.2. Since not all of the normalization constants are equal to 1, the nested logit model as opposed to the CLM was overall a better fit, as it relaxes the IIA assumption. The nested logit model therefore will be examined from here forward.

**Table 6.1. CLM Results, Strawberry Preserves**

<b>Variable</b>	<b>Estimated Coefficient</b>	<b>Standard Error</b>	<b>Pr &gt; ChiSq</b>
Local	-0.00653	0.05577	0.9068
<b>MD*Local</b>	0.37054	0.07980	<b>&lt;.0001</b>
NJ*Local	-0.13139	0.08142	0.1066
<b>PA*Local</b>	0.20941	0.07861	<b>0.0077</b>
VA*Local	0.06784	0.08158	0.4057
<b>NonLocal</b>	-1.28961	0.07421	<b>&lt;.0001</b>
<b>MD*NonLocal</b>	0.44309	0.10420	<b>&lt;.0001</b>
NJ*NonLocal	-0.09288	0.11066	0.4013
<b>PA*NonLocal</b>	0.27456	0.10357	<b>0.0080</b>
VA*NonLocal	0.20127	0.10739	0.0609
<b>NoPurchase</b>	-2.66418	0.53194	<b>&lt;.0001</b>
<b>Market</b>	-0.45756	0.13667	<b>0.0008</b>
<b>Price*Market</b>	0.09046	0.03749	<b>0.0158</b>
Price	0.04969	0.28034	0.8593
<b>Price<sup>2</sup></b>	-0.13577	0.03575	<b>0.0001</b>
<b>Organic</b>	-0.11226	0.05423	<b>0.0384</b>
<b>MD*Organic</b>	0.24377	0.07735	<b>0.0016</b>
NJ*Organic	0.04432	0.07967	0.5780
PA*Organic	-0.09850	0.07681	0.1997
VA*Organic	-0.08495	0.07943	0.2849

Note: Variables in bold are significant at the 5% level

**Table 6.2. Nested Logit Results, Strawberry Preserves (RU2)**

<b>Variable</b>	<b>Estimated Coefficient</b>	<b>Standard Error</b>	<b>Pr &gt; ChiSq</b>
Local	-0.0088	0.0414	0.8318
<b>MD*Local</b>	0.2478	0.0697	<b>0.0004</b>
NJ*Local	-0.0946	0.0611	0.1212
<b>PA*Local</b>	0.1293	0.0670	<b>0.0536</b>
VA*Local	0.0563	0.0666	0.3980
<b>NonLocal</b>	-0.9030	0.1246	<b>&lt;.0001</b>
<b>MD*NonLocal</b>	0.3063	0.0875	<b>0.0005</b>
NJ*NonLocal	-0.0456	0.0794	0.5661
<b>PA*NonLocal</b>	0.2107	0.0867	<b>0.0151</b>
<b>VA*NonLocal</b>	0.1979	0.0864	<b>0.0219</b>
<b>NoPurchase</b>	-2.5286	0.4109	<b>&lt;.0001</b>
<b>Market</b>	-0.2886	0.1133	<b>0.0108</b>
<b>Price*Market</b>	0.0579	0.0301	<b>0.0543</b>
Price	-0.0608	0.2168	0.7794
<b>Price<sup>2</sup></b>	-0.0840	0.0312	<b>0.0072</b>
<b>Organic</b>	-0.0808	0.0408	<b>0.0474</b>
<b>MD*Organic</b>	0.1259	0.0618	<b>0.0418</b>
NJ*Organic	0.0356	0.0584	0.5423
PA*Organic	-0.0012	0.0626	0.9853
<b>VA*Organic</b>	-0.1345	0.0644	<b>0.0368</b>
<b>Normalization Constants <math>\mu(i)</math>:</b>			
<b>Purchase</b>	0.6877	0.0882	<b>&lt;.0001</b>
NoPurchase <sup>1</sup>	1.0000	.....	.....

<sup>1</sup>Normalization constants for a branch with one choice are fixed at 1.  
 Note: Variables in bold are significant at the 10% level

It can be difficult to understand all the relationships between the choices by examining the coefficients. Graphical representations can make these more apparent. Using the probabilities for the choices calculated from the coefficients in Table 6.2, graphs were created by state for the probability of each choice by price, for both purchasing venues and both production methods.

Figures 6.1a-1e show the probabilities of each choice by price for the natural attribute and farmers' market purchasing venue, for all five states respectively. As will be seen, the natural, farmers' market combination held the highest value for consumers across all five states. Figures 6.2a-2e show the probabilities of each choice by price for the natural attribute and grocery store purchasing venue, for each state. Figures 6.3a-3e show the probabilities of each choice by price for the organic attribute, farmers' market venue, and Figures 6.4a-4e similarly shows choice by price for the organic attribute, grocery store venue, again by state. As can be seen, the graphs across combinations did not show any unique differences. However, there were some apparent differences between states.

As hypothesized, local and state program preserves were clearly preferred over non-local preserves across all five states. The two former choices were typically the preference of over 35% of consumers for each, with non-local the choice of only around 20% of consumers, across most price levels. Differences between states include the probability ranking between local and state program. As can be seen in Figures 6.1c, 6.2c, 6.3c, and 6.4c, New Jersey was the only state with respondents exhibiting a stronger preference for preserves identified under a state program over those identified as local. This preference order was consistent across purchasing venues and production methods. While not quite significantly different at the 10%

level, these results do suggest that the *Jersey Fresh* program, one of the most established and longest-running programs, has been able to successfully attract consumers and be competitive against the generic concept of local.

Delaware however was the only state where little preference difference is shown between preserves identified as local and those identified with *Grown Fresh with Care in Delaware*, across purchasing venues and production methods. As displayed in Figures 6.1a, 6.2a, 6.3a, and 6.4a, the probabilities for the two choices were virtually indistinguishable across all price levels. Delaware's now discontinued program was therefore unable to gain a higher preference rating over local, although it was able to reach an even level. It is an open question whether further promotion and increased effort would have been able to create the preference difference seen for state program preserves that was witnessed for *Jersey Fresh*.

For Maryland, Pennsylvania, and Virginia, respondents exhibited a stronger preference for preserves identified as local compared to those identified under each states' marketing program. As with the other states, these relationships held across both purchasing venues and production methods. Pennsylvania as a state was a near average of the probabilities for Maryland and Virginia, where the consumer probability of purchase for local compared to state program preserves was concerned. Maryland had the greatest probability of purchase for local compared to state program, while Virginia had the smallest of the three states, and was not significantly different. The benefits of these state programs relative to their costs should likely be carefully considered by state policy makers. Virginia was perhaps the largest surprise in that like New Jersey, its state program has been in establishment since the 1980's. Other

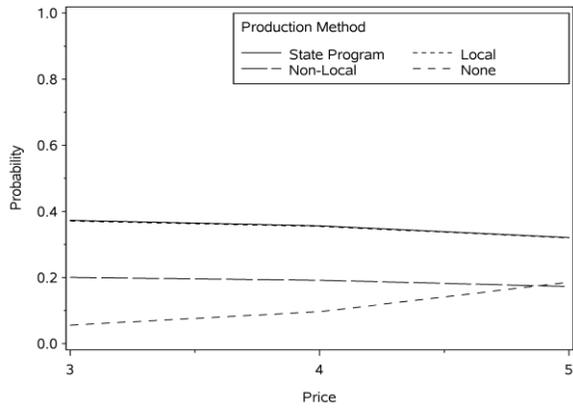
factors, such as program funding and promotional effort, could likely account for some of the differences between these two older programs.

Respondents from Maryland, Pennsylvania and Virginia also exhibited a smaller preference difference between state program and non-local preserves relative to Delaware, again across both purchasing venues and production methods. This preference difference between state program and non-local was smallest for respondents from Maryland. This result indicates an additional challenge for state programs in these three states, who will likely find it more difficult to gain consumer preference for state program promoted foods.

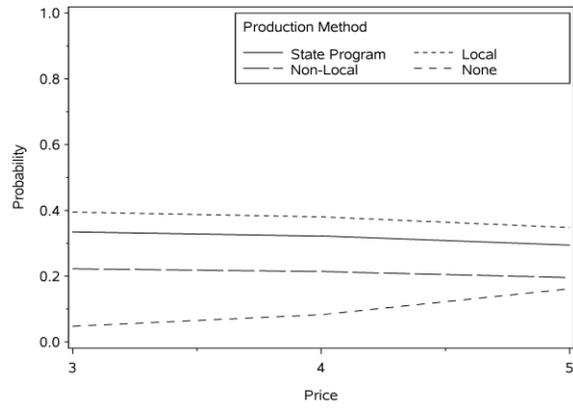
Another key element in the aforementioned comparisons may be the geographical size of each state. As previously hypothesized, the larger the state, the more likely consumers may view only a portion of their state to be local, and the more difficult it may be for state programs to compete with local on just state recognition alone. The two state programs that fared the best in comparison to local, which were Delaware and New Jersey, also happened to be the two smallest of the five.

**Figures 6.1a.-6.1e. Probability of Choice by Price; Natural and Farmers' Market Attributes**

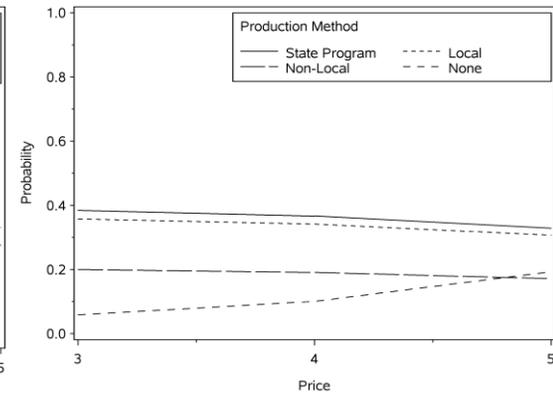
**Figure 6.1a. Delaware**



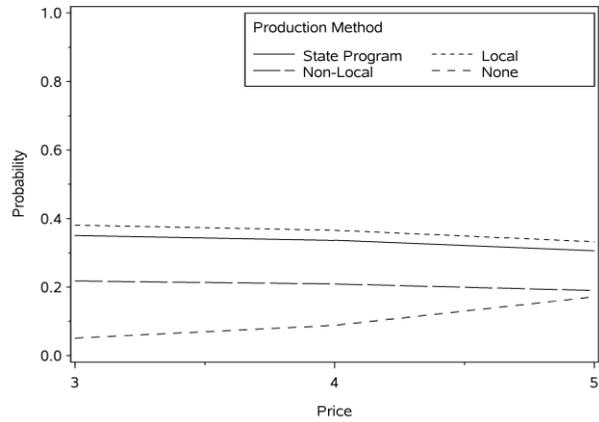
**Figure 6.1b. Maryland**



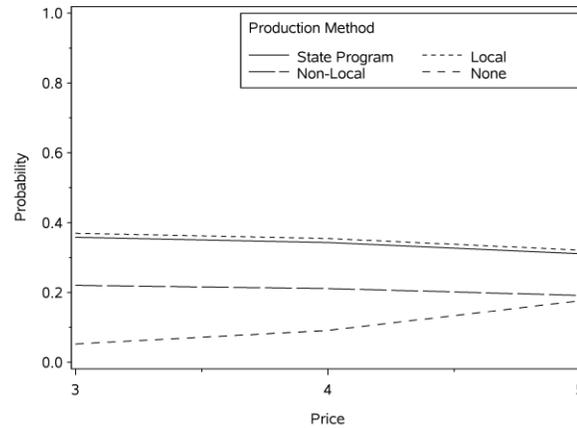
**Figure 6.1c. New Jersey**



**Figure 6.1d. Pennsylvania**

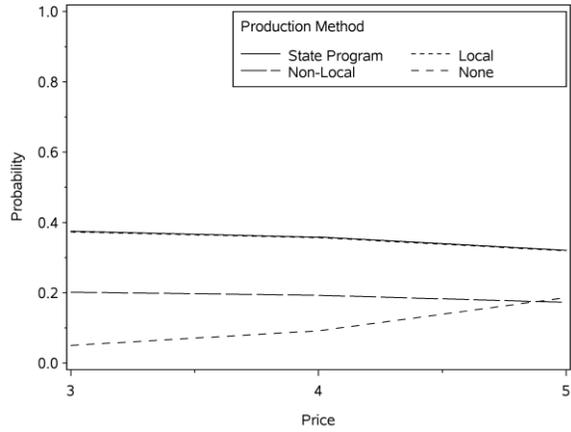


**Figure 6.1e. Virginia**

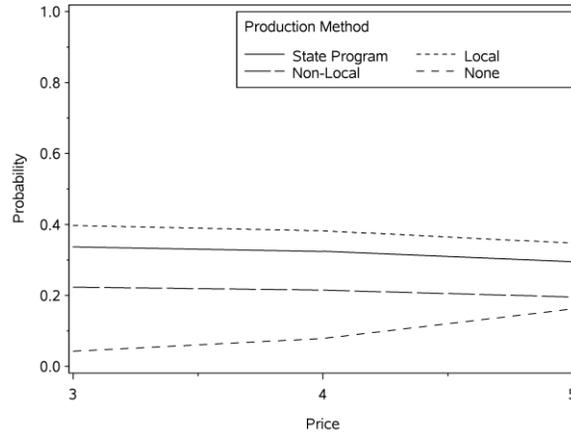


**Figures 6.2a-6.2e. Probability of Choice by Price; Natural and Grocery Store Attributes**

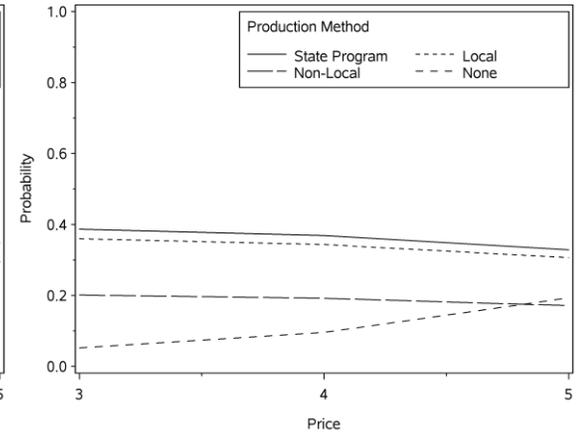
**Figure 6.2a. Delaware**



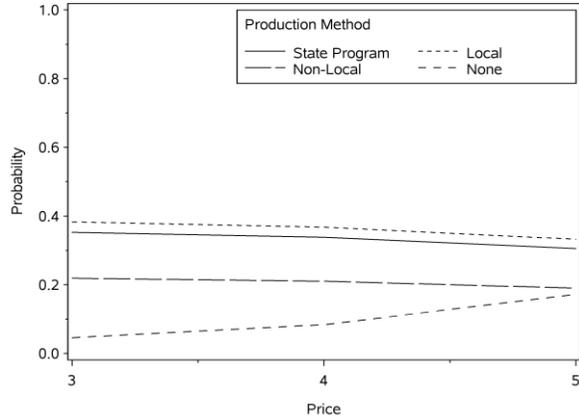
**Figure 6.2b. Maryland**



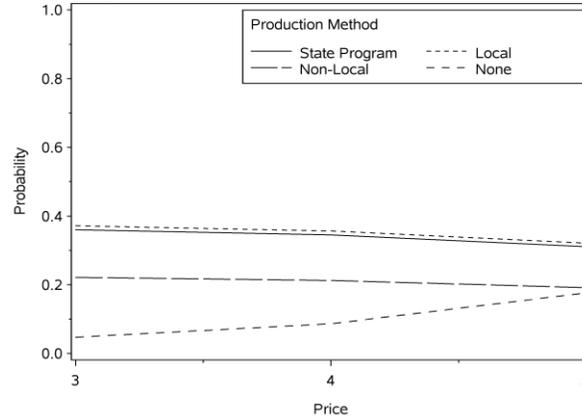
**Figure 6.2c. New Jersey**



**Figure 6.2d. Pennsylvania**

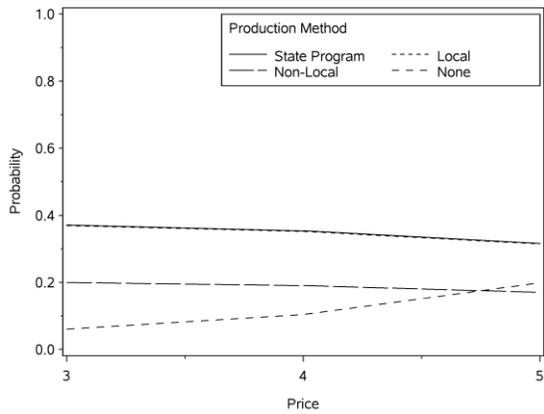


**Figure 6.2e. Virginia**

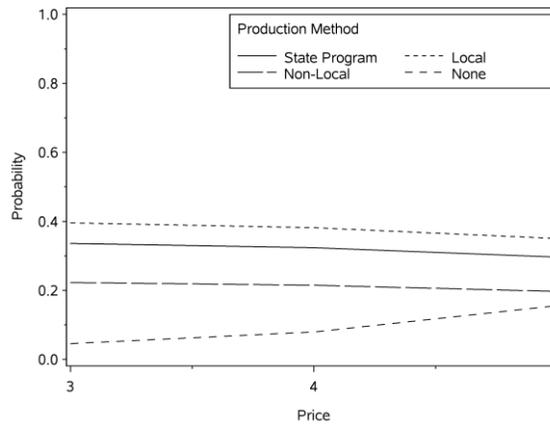


**Figures 6.3a-6.3e. Probability of Choice by Price; Organic and Farmers' Market Attributes**

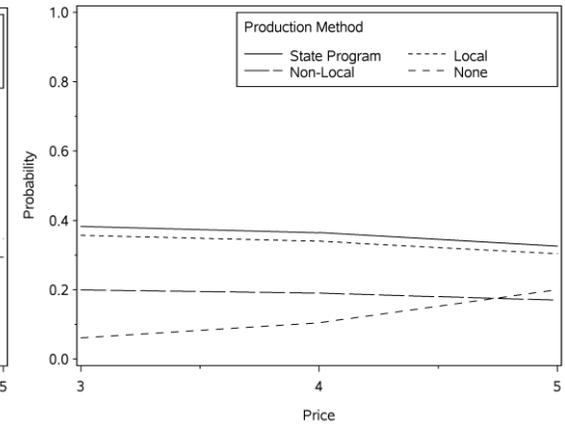
**Figure 6.3a. Delaware**



**Figure 6.3b. Maryland**

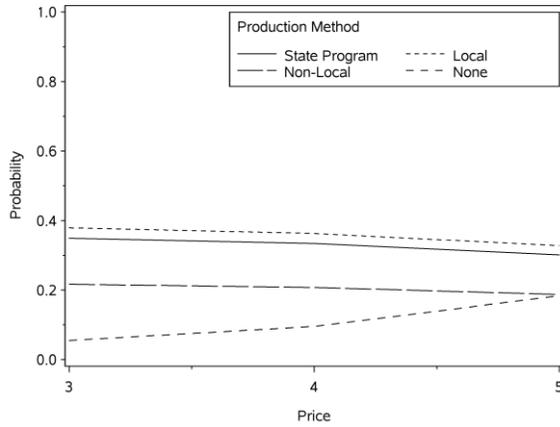


**Figure 6.3c. New Jersey**

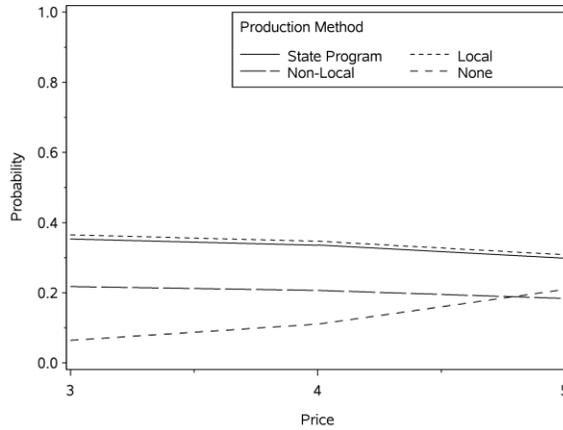


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**Figure 6.3d. Pennsylvania**

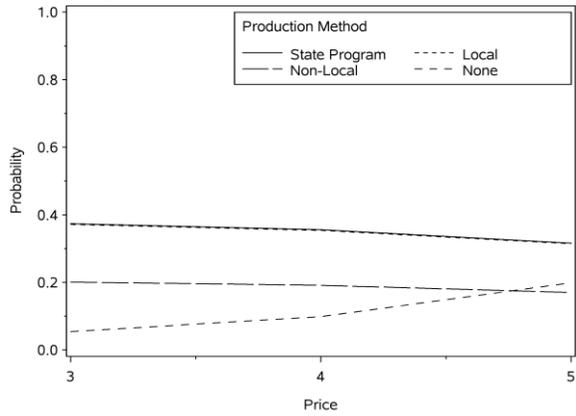


**Figure 6.3e. Virginia**

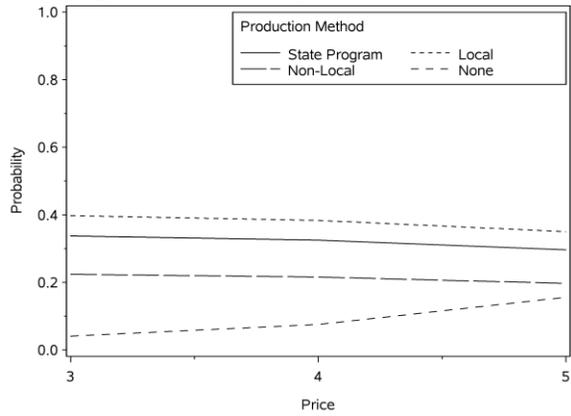


**Figures 6.4a-6.4e. Probability of Choice by Price; Organic and Grocery Store Attributes**

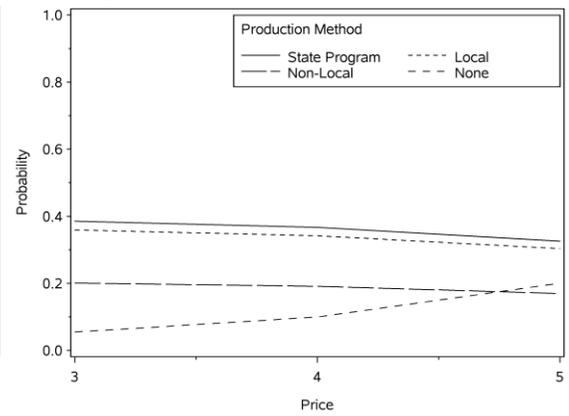
**Figure 6.4a. Delaware**



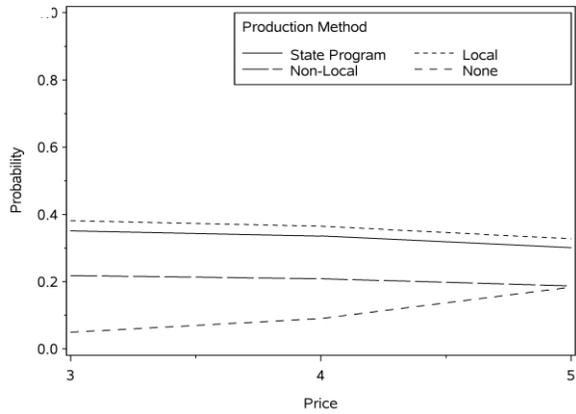
**Figure 6.4b. Maryland**



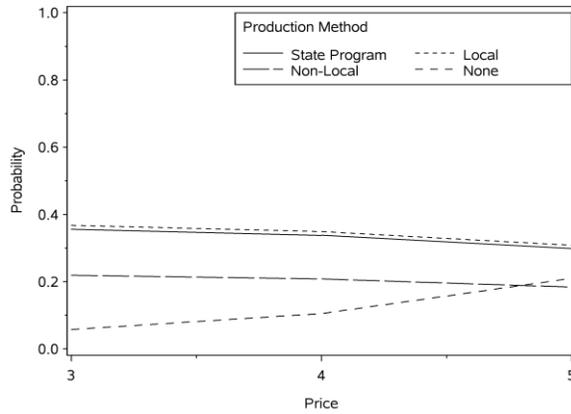
**Figure 6.4c. New Jersey**



**Figure 6.4d. Pennsylvania**



**Figure 6.4e. Virginia**



OS

There has been some evidence that consumers may consider local to be an area smaller than just within a state's borders, such as a state county for example. Hu, Batte, Woods, and Ernst (2010) suggested many consumers may define local to mean within less than 100 miles, and Brown (2003) found in Missouri that local was often viewed as a region smaller than within a state's border. Local may come across as more supportive of a consumer's area than a state-wide promotion for larger states would. Therefore, it may take additional effort for promotional programs in Maryland, Pennsylvania, and Virginia to effectively capture the local consumer.

The remaining elements of the probability graphs were more consistent. The probability of choosing the No Purchase option was less than 5% at the lowest price level for all cases shown. As expected, the probability of a no purchase did increase as price increases. By the time the upper price limit of five dollars was reached, the percentage of respondents selecting no purchase was consistently near 20%. For New Jersey and Delaware, the no purchase option even surpassed the option of purchasing non-local preserves. One reason for this occurrence may be that at those price levels, consumers in those states are expecting something extra from the product, such as being local.

## 6.2 Determining mWTP

When price and the effect for which willingness to pay is desired both have linear functional forms, the marginal willingness to pay (mWTP) is:

$$-\beta_{\text{effect}} / \beta_{\text{price}}$$

(9)

This is the price increase needed to keep the utility of the good the same after a unit increase in effect. This mWTP depends neither on the current price nor the current level of effect. If price happens to have a quadratic functional form, as seen here, more care must be taken. In the expression for utility let  $\beta_{\text{price}}$  and  $\beta_{\text{price}^2}$  be the coefficients for *Price* and *Price*<sup>2</sup> respectively. Let *C* be the current price and let  $\Delta u$  be the change in utility caused by the changes in the other attribute. (This may be a unit change in a continuous attribute or perhaps a change from one level of a dummy variable to the other). The mWTP is the price change needed to equalize the utilities, and is a solution to the equation:

$$(\beta_{\text{price}} (C + \text{WTP}) + \beta_{\text{price}^2} (C + \text{WTP})^2) - (\beta_{\text{price}} C + \beta_{\text{price}^2} C^2) = -\Delta u$$

(10)

This can be rewritten as the quadratic equation:

$$a \text{WTP}^2 + b \text{WTP} + c = 0$$

(11)

where  $a = \beta_{\text{price}^2}$ ,  $b = \beta_{\text{price}} + 2C\beta_{\text{price}^2}$ , and  $c = \Delta u$ . The quadratic formula gives:

$$m \text{WTP} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

(12)

Additionally, the mWTP equation can be written using the quadratic formula as:

$$mWTP = \frac{-(\beta_{13} + \beta_{14} + 2\beta_{15}P_j) \pm \sqrt{(\beta_{13} + \beta_{14} + 2\beta_{15}P_j)^2 - 4\beta_{15}U}}{2\beta_{15}}$$

(13)

where  $P_j$  is the price per jar of strawberry preserves,  $j = \$3.00, \$4.00$  or  $\$5.00$ , and  $U$  is the calculated gain in utility determined by the coefficient estimates.

In the nested logit model, both  $\beta_{\text{price}}$  and  $\beta_{\text{price}^2}$  are negative. This implies that the desired solution is the one with the minus sign, as solutions with the positive sign before the terms are infeasible and therefore ignored. A table of computed mWTP values can be seen in Table 6.3. Quadratic functional forms such as this and mWTP have been considered before (see Roe et al, 2004).

The mWTP estimates in Table 6.3 show the different price amount a consumer would be willing to pay from the base price for the change in the given attribute. As expected, these mWTP estimates decline as the base price increases. For example, consider the mWTP to switch from non-local preserves to state program preserves, grocery store purchasing venue, for Delaware. At a base price of \$3, the Delaware consumer would be willing to pay \$1.33 more for this change, but is only willing to pay \$0.90 more if the base price is \$5. The proceedings below discuss these mWTP estimates in more detail.

### 6.3 mWTP Estimates, Grocery Store vs. Farmers' Market

Overall, the calculated mWTP estimates indicate a higher willingness-to-pay across all five states for preserves from the farmers' market purchasing venue,

compared to the grocery store purchasing venue. Consumers appear willing to pay a price premium for preserves from a farmers' market location, as was earlier hypothesized. Possible explanations for this higher mWTP could be the ambiance of the farmers' market, as well as the ability to personally interact with local farmers. As previously discussed, prior research involving farmers' markets uncovered some intangible benefits to shopping at farmers' market venues (See Onianwa, Mojica, and Wheelock, 2006, and Zepeda and Leviten-Reid, 2004).

#### **6.4 mWTP Estimates, Organic vs. Natural**

With the exception of Maryland, all of the states surveyed failed to exhibit a higher mWTP for organic preserves compared to natural preserves. This finding was unexpected, as the opposite was earlier hypothesized. For the organic attribute, grocery store purchasing venue, Maryland respondents exhibited a mWTP of 2.7% more for preserves priced at \$3.00, a mWTP of 1.5% more for preserves priced at \$4.00, and a mWTP of 1% more for preserves priced at \$5.00. For the organic attribute, farmers' market purchasing venue, Maryland respondents exhibited a mWTP of 3% more for preserves priced at \$3.00, a mWTP of 1.8% more for preserves priced at \$4.00, and a mWTP of 1% more for preserves priced at \$5.00. While the price premium for organic was evident in Maryland, even here it was not especially high.

For Delaware, the attributes of natural and organic appear to be viewed about the same by consumers. This result seems to follow the earlier findings of Gifford and Bernard (forthcoming), in that consumers cannot distinguish differences between these two. For Pennsylvania and Virginia respondents, the results of why

natural was preferred over organic are more difficult to explain. Perhaps consumers simply prefer the more familiar natural product, or fail to see the advantage of buying an organic processed product. Or, even though an information sheet was included with the survey, they may still be confused as to the meanings of these two terms. Further investigation comparing these two attributes is needed, especially a study that included both fresh and processed products.

**Table 6.3. Marginal WTP by State and Price Level**

	Delaware			Maryland			New Jersey		
	Price			Price			Price		
	\$3.00	\$4.00	\$5.00	\$3.00	\$4.00	\$5.00	\$3.00	\$4.00	\$5.00
<b>Grocery Store Purchasing Venue:</b>									
Non-Local to State Program	1.33	1.10	0.90	0.93	0.75	0.63	1.39	1.15	0.97
Non-Local to Local	1.32	1.09	0.92	1.25	1.02	0.86	1.26	1.03	0.87
Local to State Program	0.02	0.02	0.01	-0.45	-0.34	-0.27	0.18	0.14	0.11
Natural to Organic	-0.02	-0.01	-0.01	0.08	0.06	0.05	-0.08	-0.06	-0.05
<b>Farmers' Market Purchasing Venue:</b>									
Non-Local to State Program	1.44	1.17	0.98	1.01	0.80	0.66	1.50	1.22	1.02
Non-Local to Local	1.43	1.16	0.97	1.35	1.09	0.91	1.36	1.10	0.92
Local to State Program	0.02	0.01	0.01	-0.52	-0.37	-0.29	0.20	0.15	0.12
Natural to Organic	-0.02	-0.01	-0.01	0.09	0.07	0.05	-0.09	-0.07	-0.05

	Pennsylvania			Virginia		
	Price			Price		
	\$3.00	\$4.00	\$5.00	\$3.00	\$4.00	\$5.00
	1.06	0.86	0.72	1.08	0.88	0.73
	1.22	1.00	0.84	1.14	0.93	0.78
	-0.22	-0.17	-0.14	-0.09	-0.07	-0.05
	-0.15	-0.11	-0.09	-0.41	-0.31	-0.25
	1.15	0.92	0.76	1.17	0.94	0.78
	1.32	1.06	0.89	1.23	0.99	0.83
	-0.25	-0.18	-0.15	-0.10	-0.07	-0.06
	-0.17	-0.12	-0.10	-0.46	-0.33	-0.26

## **6.5 mWTP Estimates, Local, Non-Local, and State Program Promoted**

The mWTP estimates comparing local, non-local and state program promoted followed the earlier results examining the probabilities for these choices. Across all states, there was clearly a higher mWTP for the attributes local and state program over non-local, as was earlier hypothesized.

In Delaware, only negligibly higher mWTP estimates of \$0.02, \$0.01 and \$0.01 are exhibited for preserves identified with the *Grown Fresh with Care in Delaware* slogan over preserves identified as local, for both purchasing venues. With Delaware respondents exhibiting a mWTP of only 0.67% more for state program preserves over local preserves priced at \$3.00, for both purchasing venues, evidence in support of the program is not found. As Delaware's state marketing program was discontinued in early 2010, this decision would have been more than feasible looking at these estimates.

For the local attribute, grocery store purchasing venue, Delaware respondents exhibited a mWTP of 44% more for preserves priced at \$3.00, a mWTP of 27.3% more for preserves priced at \$4.00, and a mWTP of 18.4% more for preserves price at \$5.00, compared to non-local preserves. For the local attribute, farmers' market purchasing venue, Delaware respondents exhibited a mWTP of 47.7% more for preserves priced at \$3.00, a mWTP of 29% more for preserves priced at \$4.00, and a mWTP of 19.4% more for preserves priced at \$5.00, compared to non-local preserves.

Respondents in Maryland, Pennsylvania and Virginia all exhibited a higher mWTP for preserves identified as local compared to their state's marketing slogan, as well as compared to non-local preserves. As hypothesized, perhaps

consumers in larger states such as these three fail to define local as within the borders of their state.

For the local attribute, grocery store purchasing venue, Maryland respondents exhibited a mWTP of 41.7% more for preserves priced at \$3.00, a mWTP of 25.5% more for preserves priced at \$4.00, and a mWTP of 17.2% more for preserves price at \$5.00, compared to non-local preserves. For the local attribute, farmers' market purchasing venue, Maryland respondents exhibited a mWTP of 45% more for preserves priced at \$3.00, a mWTP of 27.3% more for preserves priced at \$4.00, and a mWTP of 18.2% more for preserves priced at \$5.00, compared to non-local preserves. Even though Maryland exhibited the lowest mWTP to move from local to non-local preserves, consumers were still willing to pay a premium of over 40% for preserves priced at \$3.00.

Compared to local, for state program promoted, Maryland respondents exhibited a mWTP of 15% less for preserves priced at \$3.00, a mWTP of 8.5% less for preserves priced at \$4.00 and a mWTP of 5.4% less for preserves priced at \$5.00, for the grocery store purchasing venue. For the farmers' market purchasing venue, Maryland respondents exhibited a mWTP of 17.3% less for preserves priced at \$3.00, a mWTP of 9.3% less for preserves priced at \$4.00 and a mWTP of 5.8% less for preserves priced at \$5.00, for state program over local.

For the local attribute, grocery store purchasing venue, Pennsylvania respondents exhibited a mWTP of 40.7% more for preserves priced at \$3.00, a mWTP of 25% more for preserves priced at \$4.00, and a mWTP of 16.8% more for preserves price at \$5.00, compared to non-local preserves. For the local attribute, farmers' market purchasing venue, Pennsylvania respondents exhibited a mWTP of 44% more

for preserves priced at \$3.00, a mWTP of 26.5% more for preserves priced at \$4.00, and a mWTP of 22.3% more for preserves priced at \$5.00, compared to non-local preserves.

Comparing state program to local, Pennsylvania respondents exhibited a mWTP of 7.3% less for preserves priced at \$3.00, a mWTP of 4.3% less for preserves priced at \$4.00 and a mWTP of 2.8% less for preserves priced at \$5.00, for the grocery store purchasing venue. For the farmers' market purchasing venue, Pennsylvania respondents exhibited a mWTP of 8.3% less for preserves priced at \$3.00, a mWTP of 4.5% less for preserves priced at \$4.00 and a mWTP of 3% less for preserves priced at \$5.00, again for state program over local.

For the local attribute, grocery store purchasing venue, Virginia respondents exhibited a mWTP of 38% more for preserves priced at \$3.00, a mWTP of 23.3% more for preserves priced at \$4.00, and a mWTP of 15.6% more for preserves price at \$5.00, compared to non-local preserves. For the local attribute, farmers' market purchasing venue, Virginia respondents exhibited a mWTP of 41% more for preserves priced at \$3.00, a mWTP of 24.8% more for preserves priced at \$4.00, and a mWTP of 16.6% more for preserves priced at \$5.00, compared to non-local preserves.

Lastly comparing mWTP for state program over local for Virginia, respondents exhibited a mWTP of 3% less for preserves priced at \$3.00, a mWTP of 1.8% less for preserves priced at \$4.00 and a mWTP of 1% less for preserves priced at \$5.00, for the grocery store purchasing venue. For the farmers' market purchasing venue, Virginia respondents exhibited a mWTP of 3.3% less for preserves priced at \$3.00, a mWTP of 1.8% less for preserves priced at \$4.00 and a mWTP of 1.2% less

for preserves priced at \$5.00 for state program over local. Considering that Virginia's state marketing program *Virginia's Finest* has been in existence since the late 1980's, it was somewhat surprising to see that local was preferred over state program.

New Jersey was the only state with respondents clearly exhibiting a higher mWTP for preserves identified with the *Jersey Fresh* slogan compared to preserves identified as local or non-local, for both purchasing venues. In New Jersey, mWTP estimates of \$0.18, \$0.14 and \$0.11 were exhibited for *Jersey Fresh* preserves over local preserves for the grocery store purchasing venue, with slightly higher estimates of \$0.20, \$0.15 and \$0.12 for the farmers' market venue. In other words, for state program over local, New Jersey respondents exhibited a mWTP of 6% more for preserves priced at \$3.00, a mWTP of 3.5% more for preserves priced at \$4.00, and a mWTP of 2.2% more for preserves priced at \$5.00, grocery store purchasing venue.

For the farmers' market purchasing venue, New Jersey respondents exhibited a mWTP of 6.7% more for preserves priced at \$3.00, a mWTP of 3.8% more for preserves priced at \$4.00 and a mWTP of 2.4% more for preserves priced at \$5.00 for state program over local. For the state program promoted attribute, grocery store purchasing venue, New Jersey respondents exhibited a mWTP of 46.3% more for preserves priced at \$3.00, a mWTP of 28.8% more for preserves priced at \$4.00, and a mWTP of 19.4% more for preserves price at \$5.00, compared to non-local preserves. For the local attribute, farmers' market purchasing venue, New Jersey respondents exhibited a mWTP of 50% more for preserves priced at \$3.00, a mWTP of 30.5% more for preserves priced at \$4.00, and a mWTP of 20.4% more for preserves priced at \$5.00, compared to non-local preserves. Considering that *Jersey Fresh* is one of the

most well known state programs in the country, that state program was preferred over local was not a surprising result.

## 6.6 Other Survey Question Results

### 6.6.1. Purchasing Frequency of Food Products

The percentage of survey respondents who identified themselves as the primary purchaser of food products for their household can be viewed below in Table 6.4. Overall, about 78% of survey respondents were primary purchasers, with Delaware having the highest percentage of primary purchaser respondents averaging around 81%, and New Jersey the lowest at around 76%.

**Table 6.4. Primary Purchaser of Food Products, by State**

State	Yes		No	
	Number	%	Number	%
Delaware	325	80.85	77	19.15
Maryland	259	77.08	77	22.92
New Jersey	242	75.63	78	24.37
Pennsylvania	283	78.18	79	21.82
Virginia	241	76.02	76	23.98
<b>Overall</b>	1350	77.72	387	22.28

Respondents from each state additionally were asked how often in an average month they purchased food products from the following locations: grocery store and farmers' market, on a scale from 1 to 5 with 1 meaning never and 5 meaning very often. Across all five states, respondents on average purchased from a grocery

store location ‘often’ or ‘very often’ and from a farmers’ market location ‘seldom’ or ‘occasionally’, the results of which can be viewed in Table 6.5.

**Table 6.5 Purchasing Frequency of Food Products by Venue<sup>1</sup>**

State	Grocery Store			Farmers’ Market		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
Delaware	4.45	0.77	405	2.53	1.13	383
Maryland	4.56	0.73	337	2.23	1.01	323
New Jersey	4.43	0.86	321	2.57	1.10	300
Pennsylvania	4.47	0.82	365	2.41	1.01	337
Virginia	4.52	0.75	320	2.21	0.97	284
<b>Overall</b>	<b>4.49</b>	<b>0.79</b>	<b>1748</b>	<b>2.40</b>	<b>1.06</b>	<b>1627</b>

<sup>1</sup>1 meaning never and 5 meaning very often

Expanding upon the purchasing frequency by venue question, respondents were next asked how often in an average month they purchased food products labeled or advertised as locally grown, organic, natural, and under each of the five states’ promotional program slogan. Results from this question, by state and overall, can be viewed in Table 6.6. Respondents were asked again to respond on a scale from 1 to 5, with 1 meaning never and 5 meaning very often. Purchasing frequency of food products labeled or advertised as locally grown, organic, and natural were very similar across all five states. For locally grown and natural food products, respondents from all five states indicated in an average month that they purchased these products ‘occasionally’. Organic food products were purchased slightly less frequent, with respondents from all five states indicating they purchased organic food products ‘seldom’ or ‘occasionally’ in an average month.

While the purchasing frequency of locally grown, organic and natural food products were consistent across all five states, this was not the case for food products identified under each state's promotional program slogan. Not surprisingly, purchasing frequency was highest for program promoted foods in the program's home state. *Jersey Fresh* food products had the highest purchasing frequency across all five states, with respondents indicating that products were purchased 'seldom'. New Jersey respondents though indicated purchasing *Jersey Fresh* food products 'occasionally'. It is important to note that this was also the highest purchasing frequency indicated for promotional program foods within a program's home state. Delaware respondents indicated purchasing *Jersey Fresh* 'seldom', with Pennsylvania respondents indicating 'never' or 'seldom', and Maryland and Virginia respondents indicating a purchasing frequency of 'never'. Considering that Maryland and Virginia are the two states that do not border New Jersey, this could help explain the above mentioned results.

*Virginia's Finest* was the promotional program with the next highest overall purchasing frequency indicated at 'seldom' or 'occasionally'. Perhaps since programs in both New Jersey and Virginia were established back in the 1980's, they are more familiar and better known across this five state area. Virginia respondents indicated a purchasing frequency of 'seldom' or 'occasionally', with Delaware and Maryland respondents indicating 'never' or 'seldom', and New Jersey and Pennsylvania respondents indicating 'never'.

For Delaware, Maryland, and Pennsylvania promotional programs, within each program's home state, respondents on average purchased these food products 'seldom'. For *Grown Fresh with Care in Delaware*, respondents that were not from

Delaware on average indicated a purchasing frequency of ‘never’. Similarly for *PA Preferred*, respondents not from Pennsylvania also indicated a ‘never’ purchasing frequency. Lastly for *Maryland’s Best* food products, respondents from New Jersey, Pennsylvania, and Virginia indicated a purchasing frequency of ‘never’, with respondents from Delaware indicating ‘never’ or ‘seldom’. Additional results not mentioned here can be viewed in Table 6.6.

**Table 6.6. Purchasing Frequency of Food Products in an Average Month<sup>1</sup>**

Labeled or Advertised as....	Delaware			Maryland			New Jersey		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
Locally Grown	3.24	0.98	373	3.13	1.03	327	3.08	1.03	304
Organic	2.47	1.13	365	2.56	1.17	326	2.57	1.24	300
Natural	2.98	1.09	365	2.89	1.16	322	3.00	1.13	297
<i>Grown Fresh with Care in Delaware</i>	2.16	1.24	349	1.21	0.64	305	1.21	0.59	288
<i>Maryland's Best</i>	1.54	0.91	350	2.10	1.25	320	1.18	0.51	290
<i>Jersey Fresh</i>	2.04	1.14	353	1.29	0.75	306	3.16	1.09	302
<i>PA Preferred</i>	1.39	0.77	348	1.21	0.62	303	1.20	0.53	290
<i>Virginia's Finest</i>	1.42	0.80	348	1.39	0.83	305	1.18	0.51	290
	Pennsylvania			Virginia			Overall		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
	3.19	0.95	340	2.96	1.04	285	3.13	1.01	1629
	2.39	1.11	339	2.53	1.17	284	2.50	1.16	1614
	2.86	1.09	334	2.92	1.07	282	2.93	1.11	1600
	1.23	0.64	325	1.16	0.54	272	1.42	0.89	1539
	1.29	0.68	328	1.34	0.76	274	1.50	0.93	1562
	1.65	1.04	329	1.17	0.50	271	1.88	1.18	1561
	2.08	1.26	327	1.23	0.61	275	1.44	0.88	1543
	1.25	0.63	328	2.56	1.20	283	1.54	0.96	1554

<sup>1</sup>1 meaning never and 5 meaning very often

### **6.6.2. State Marketing Program Awareness and Opinion Rating**

In order to determine consumer awareness of each promotional program, respondents were asked first if they were aware of each program, and if they were their opinion of that promotional program. The percentage of respondents not aware of each program, by state and overall can be viewed in Table 6.7. Overall, the percentage of respondents not aware of the *Grown Fresh with Care in Delaware* program was greatest averaging 77%. *Jersey Fresh* was the program with the highest overall consumer awareness, with respondents not aware averaging 58%.

Interestingly Delaware was the only state surveyed where respondents from that state were more aware of another program, *Jersey Fresh*, than their own state's program. This could be because the *Grown Fresh with Care in Delaware* program was the youngest program out of the five. In Maryland, New Jersey, Pennsylvania, and Virginia, each state's home program had the most consumer awareness, across all five programs.

Respondents who had awareness of a state program were asked to rate their opinion of that program on a scale from 1 to 5, with 1 meaning 'very poor' and 5 meaning 'excellent'. The results of this question, by state and overall, can be viewed in Table 6.8. Excluding Virginia, in each state consumers indicated their opinion rating was highest for the *Jersey Fresh* program, with a rating of 'fair' or 'good'. In Virginia, the program with the highest opinion rating was their own *Virginia's Finest*, also with a rating of 'fair' or 'good'. Overall respondents had the highest opinion of the *Jersey Fresh* program, with the *Virginia's Finest* program receiving the second highest overall opinion rating, both with a rating of 'fair' or 'good'.

Delaware respondents indicated an opinion rating of their own state's program of 'fair' or 'good'. They also indicated an average opinion rating of 'fair' for Maryland, Pennsylvania, and Virginia's promotional programs. Maryland respondents indicated on average an opinion rating of 'fair' for all five programs. New Jersey respondents on average rated their opinion of *Jersey Fresh* to be 'fair' or 'good', with an opinion rating on average of 'fair' for the remaining four programs. Pennsylvania respondents had an average opinion of 'fair' for every program but *Jersey Fresh*, which as previous mentioned received a rating of 'fair' or 'good'. Lastly, Virginia respondents similarly rated every program excluding Virginia's Finest as 'fair', and rated their own *Virginia's Finest* as 'fair' or 'good'.

**Table 6.7. Percentage Not Aware of State Marketing Programs, by State**

State Marketing Program	Delaware		Maryland		New Jersey		Pennsylvania	
	Number	%	Number	%	Number	%	Number	%
<i>Grown Fresh with Care in Delaware</i>	196	49.62	271	86.86	246	82.55	289	85.25
<i>Maryland's Best</i>	263	67.78	162	49.09	245	82.21	273	80.77
<i>Jersey Fresh</i>	180	45.92	255	81.73	51	15.94	231	66.96
<i>PA Preferred</i>	285	73.64	271	87.42	245	82.49	183	51.40
<i>Virginia's Finest</i>	285	73.64	234	75.24	247	83.16	279	82.54
					Virginia		Overall	
					Number	%	Number	%
					263	89.15	1265	77.18
					216	73.47	1159	70.33
					254	85.52	971	58.28
					257	86.24	1241	75.30
					97	31.60	1142	69.63

**Table 6.8. Opinion Rating of State Marketing Programs<sup>1</sup>**

State Marketing Program	Delaware			Maryland			New Jersey		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
<i>Grown Fresh with Care in Delaware</i>	3.43	1.10	199	3.19	1.05	41	2.75	1.17	52
<i>Maryland's Best</i>	3.15	1.02	125	3.27	1.10	168	2.89	1.09	53
<i>Jersey Fresh</i>	3.59	0.96	212	3.33	1.08	57	3.83	0.91	269
<i>PA Preferred</i>	2.84	1.07	102	2.90	1.05	39	2.73	1.12	52
<i>Virginia's Finest</i>	3.09	1.05	102	3.26	1.01	77	2.78	1.09	50

	Pennsylvania			Virginia			Overall		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
	3.18	1.02	50	3.16	0.85	32	3.25	1.10	374
	3.15	1.00	65	3.22	0.98	78	3.17	1.05	489
	3.57	0.98	114	3.09	1.13	43	3.63	0.98	695
	3.33	1.11	173	3.02	0.65	41	3.06	1.08	407
	2.86	0.96	59	3.77	0.95	210	3.35	1.07	498

<sup>1</sup>1 meaning very poor and 5 meaning excellent

### **6.6.3 Comparing State Program, Organic, and Local Foods**

Respondents were asked on a scale from 1 to 5, with 1 meaning strongly disagree and 5 meaning strongly agree, to rate their agreement with several statements comparing organic foods with state program foods using their state's program slogan. Results from this question can be viewed in Table 6.9. These statements included more nutritious, safer to consume, better tasting, of higher quality, and more environmentally friendly. Using these same statements, respondents were also asked to similarly compare local foods with organic foods, the results of which can be viewed in Table 6.10.

When asked to compare organic foods with their state's promotional program foods, respondents in all five states agreed most with the statement that organic foods are more environmentally friendly than state program foods, with an average rating between 'neutral' and 'agree'. After more environmentally friendly, respondents from each state next agreed strongest with the statement that organic foods are safer to consume than state program foods, again with an average rating between 'neutral' and 'agree'. For the remaining statements, respondents from each state averaged a rating slightly above 'neutral', suggesting that across this five state region, consumers compare organic with state program foods in a similar manner. Perhaps perceived safety and environmental friendliness are two additional attributes needing to be explored further when attempting to target this Mid-Atlantic region.

Comparing local foods with organic foods, using the same set of statements mentioned above, respondents from each state agreed strongest with the statement that local foods are better tasting than organic foods with a rating between 'neutral' to 'agree'. Respondents from each state next agreed strongest with the

statements that local foods were of higher quality, and more environmentally friendly than organic foods, with ties for these two statements in the case of two states. Similar to the results from comparing organic foods to state program foods, respondents across all states averaged a rating of 'neutral' for the remaining statements. Overall, the two statements that received the highest agreement when comparing local foods to organic were better tasting and of higher quality. Stakeholders marketing and promoting local food products within this region no doubt could use these two characteristics to their advantage when targeting the local foods consumer.

**Table 6.9. Compared with State Program Foods<sup>1</sup>, Organic Foods<sup>2</sup> are.....**

	Delaware			Maryland			New Jersey		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
More nutritious	3.10	0.94	349	3.18	0.83	301	3.10	0.95	301
Safer to consume	3.36	0.95	349	3.32	0.86	302	3.33	1.01	302
Better tasting	3.10	0.93	348	3.11	0.82	303	3.01	0.94	300
Of higher quality	3.18	0.93	349	3.24	0.82	303	3.20	0.97	300
More environmentally friendly	3.50	0.95	349	3.49	0.88	302	3.58	1.00	298

	Pennsylvania			Virginia			Overall		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
	3.16	0.93	318	3.03	0.88	279	3.11	0.91	1548
	3.28	0.93	317	3.26	0.90	279	3.31	0.93	1549
	3.10	0.92	318	3.07	0.88	280	3.08	0.91	1549
	3.25	0.93	317	3.13	0.86	280	3.20	0.91	1549
	3.53	0.98	317	3.47	0.91	278	3.51	0.94	1544

<sup>1</sup>State program foods referring to each state's individual state marketing program

<sup>2</sup>1 meaning strongly disagree and 5 meaning strongly agree

**Table 6.10. Compared with Organic Foods, Local Foods are<sup>1</sup>....**

	Delaware			Maryland			New Jersey		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
More nutritious	3.02	0.86	364	3.05	0.85	313	2.96	0.83	301
Safer to consume	3.00	0.86	364	3.03	0.88	315	2.91	0.86	299
Better tasting	3.28	0.87	361	3.35	0.86	312	3.18	0.92	301
Of higher quality	3.12	0.82	362	3.17	0.85	310	3.08	0.91	301
More environmentally friendly	3.15	0.93	360	3.17	0.96	310	3.04	0.91	300

	Pennsylvania			Virginia			Overall		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
	3.14	0.90	336	2.94	0.86	286	3.03	0.86	1600
	3.14	0.91	338	2.98	0.91	283	3.01	0.89	1599
	3.41	0.87	337	3.21	0.92	286	3.29	0.89	1597
	3.24	0.90	337	3.11	0.93	280	3.15	0.88	1590
	3.24	0.94	334	3.03	0.90	281	3.13	0.93	1585

<sup>1</sup>1 meaning strongly disagree and 5 meaning strongly agree

#### **6.6.4 Defining Local**

Another area of considerable interest was how Mid-Atlantic consumers defined local, in terms of distance and geographical location, as well as what percentage of product ingredients need to be local for the product itself to be considered local. Respondents were asked to identify the percentage that a product needs to be produced and/or grown locally for them to consider it to be a local food product, the results of which can be viewed in Table 6.11.

Across all five states, the majority of consumers identified that 81-100% of a product must be locally produced and/or grown for it to be local. An average of 77% of Delaware respondents identified the 81-100% percentage for local, making up the largest percentage of respondents across states within this category. Pennsylvania respondents made up the smallest percentage of respondents within this 81-100% local percentage averaging 67%. Overall an average of 72% of respondents identified the 81-100% category for a product to be considered local, with 15% of respondents identifying the 61-80% category for local ingredients.

Also of interest was determining from how many miles away a food product could originate from for it still to be considered local. Results from this question can be viewed in Table 6.12. Maryland and Virginia respondents provided the largest mileage distance averaging 84 miles, with Delaware respondents having the next largest mileage distance averaging 78 miles. As Pennsylvania respondents reported a mileage averaging 75 miles, it is difficult to make a generalization between mileage and state size from these results. New Jersey respondents reported the smallest mileage distance averaging 68 miles. Overall, across all five states the average mileage distance reported was around 78 miles.

**Table 6.11. “For you to consider a food product to be "local", what percentage of that product needs to be produced and/or grown locally?”**

State	0-20%		21-40%		41-60%		61-80%		81-100%	
	Number	%	Number	%	Number	%	Number	%	Number	%
Delaware	6	1.49	12	2.99	20	4.99	55	13.72	308	76.81
Maryland	0	0.00	8	2.42	25	7.58	47	14.24	250	75.76
New Jersey	3	0.96	11	3.53	23	7.37	53	16.99	222	71.15
Pennsylvania	6	1.68	10	2.8	40	11.2	61	17.09	240	67.23
Virginia	7	2.27	8	2.6	36	11.69	48	15.58	209	67.86
<b>Overall</b>	22	1.29	49	2.87	144	8.43	264	15.45	1229	71.96

**Table 6.12. “I consider a food product to be local if it is \_\_\_\_ miles away.”**

Respondents	Mean	Standard Deviation	Number
Delaware <sup>1</sup>	78.10	74.45	376
Maryland	83.83	57.35	308
New Jersey	67.71	50.08	285
Pennsylvania	75.10	78.38	344
Virginia	83.72	66.34	301
<b>Overall<sup>1</sup></b>	77.76	67.27	1614

<sup>1</sup> 1Outlier with a value of 3,000 removed

In addition to defining what is local from a mileage standpoint, it was of importance to determine whether other geographical boundaries such as state, county and nearby states could be used to help define local. Respondents were asked to rate their agreement with a series of statements on a scale from 1 to 5, with 1 meaning strongly agree and 5 meaning strongly disagree, for the question “I consider a food product produced and/or grown within this area to be ‘local’”. These statements, as well as results by state and overall, can be found in Table 6.13.

For each state, respondents exhibited the strongest agreement for a food product from ‘in my county’ as being local with an average response of ‘agree’. For every state but Delaware, respondents next agreed strongest with the statement ‘up to 100 miles away in my state’ for a food product to be considered local, again with an average rating of ‘agree’. Delaware respondents, however, agreed the next strongest with the statement ‘anywhere in my state regardless of distance’ with a rating of ‘agree’. As Delaware is the smallest state out of the five surveyed, it makes sense that respondents from this state might consider a food product from anywhere in the state as local. For every state but Pennsylvania, respondents gave the statements ‘in my county’, ‘up to 100 miles away in my state’, and ‘anywhere in my state regardless of distance’ an average rating between ‘neutral’ and ‘agree’.

For the statement ‘up to 100 miles away in a surrounding state’, respondents across all five states on average were neutral as to whether food products from this geographical location were local. Respondents from each state additionally gave a rating of ‘disagree’ to ‘neutral’ for the statement ‘anywhere in a surrounding state regardless of distance’.

An additional component to this question was whether or not respondents considered a food product to be local if it came from any of the other four individual states included. Delaware respondents gave the highest agreement rating for ‘in Maryland’ with an average agreement of ‘neutral’ for food products from in Maryland. As Maryland is the state which primarily borders the largest geographical area of Delaware, this result is not surprising. Delaware respondents also gave an average rating of ‘neutral’ to food products being considered local from New Jersey and Pennsylvania, which are Delaware’s other two neighboring states, and an average rating of ‘disagree’ for food products from Virginia being local.

Respondents from the four remaining states exhibited a slightly lower agreement for each state than was seen in Delaware. Maryland, New Jersey, and Pennsylvania respondents on average rated their agreement with food products being local from each of the listed states between ‘disagree’ to ‘neutral’. Virginia respondents exhibited some of the lowest agreement ratings for each state, averaging around ‘disagree’ when asked to consider whether food products from within these states were local.

**Table 6.13. "I consider a food product produced and/or grown within this area to be 'local'...."<sup>1</sup>**

	Delaware			Maryland			New Jersey		
	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
In my county	3.85	1.32	368	3.90	1.41	322	3.75	1.38	299
Up to 100 miles away, in my state	3.62	1.08	361	3.63	1.20	318	3.65	1.09	298
Anywhere in my state, regardless of distance	3.75	1.06	370	3.26	1.24	324	3.46	1.16	299
Up to 100 miles away, in a surrounding state	3.13	1.19	363	3.12	1.28	322	2.91	1.13	295
Anywhere in a surrounding state, regardless of distance	2.50	1.02	365	2.50	1.14	319	2.44	1.00	295
In Delaware	.....	.....	.....	2.47	1.24	319	2.20	1.02	294
In Maryland	2.90	1.11	365	.....	.....	.....	2.00	0.89	293
In New Jersey	2.83	1.16	364	2.13	1.06	318	.....	.....	.....
In Pennsylvania	2.79	1.12	365	2.40	1.18	319	2.34	1.02	293
In Virginia	2.40	1.03	365	2.60	1.24	319	1.99	0.89	293

Pennsylvania			Virginia			Overall		
Mean	Standard Deviation	Number	Mean	Standard Deviation	Number	Mean	Standard Deviation	Number
3.83	1.33	341	3.95	1.33	287	3.85	1.35	1617
3.63	1.07	338	3.75	1.10	286	3.65	1.11	1601
2.83	1.09	339	3.06	1.12	290	3.28	1.18	1622
2.99	1.18	337	2.85	1.22	284	3.01	1.21	1601
2.36	1.05	335	2.27	1.00	289	2.42	1.05	1603
2.28	1.11	334	1.85	0.95	282	2.21	1.11	1229
2.22	1.06	336	2.21	1.14	285	2.36	1.11	1279
2.38	1.16	337	1.80	0.93	283	2.32	1.15	1302
.....	.....	.....	1.88	0.98	283	2.38	1.13	1260
2.10	1.01	336	.....	.....	.....	2.28	1.08	1313

<sup>1</sup>1 meaning strongly disagree and 5 meaning strongly agree

### 6.6.5 Health and Diet

Lastly, it was of interest to determine how healthy consumers in this region considered their diet. The results of this question can be viewed in Table 6.14, as well as broken down by percentages in Table 6.15. Respondents were asked to rate how healthy they considered their diet on a scale from 1 to 4, with 1 meaning poor and 4 meaning excellent. Respondents from each state were very similar in that on average they rated their diet as being ‘good’. While the majority of respondents from each state rated their diet within the ‘good’ category, the next largest percentage of respondents for each state rated their diets to be within the ‘poor’ category.

Looking at individual differences between states, Virginia was the state with the highest percentage of respondents within the ‘poor’ category, as well as the largest percentage within the ‘excellent’ category. It appears Virginia consumers display the widest variation when it comes to the health of their diet. Additionally, New Jersey respondents had the highest percentage of ratings within the ‘good’ category.

**Table 6.14. “How healthy do you consider your diet?”<sup>1</sup>**

<b>Respondents</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Number</b>
Delaware	2.88	0.63	381
Maryland	2.90	0.68	334
New Jersey	2.88	0.61	305
Pennsylvania	2.88	0.63	348
Virginia	2.88	0.70	304
<b>Overall</b>	2.88	0.65	672

<sup>1</sup>1 meaning poor and 4 meaning excellent

**Table 6.15. “How healthy do you consider your diet?” (Breakdown of responses)**

<b>State</b>	<b>Poor</b>		<b>Fair</b>		<b>Good</b>	
	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
Delaware	4	1.05	88	23.10	239	62.73
Maryland	6	1.80	78	23.35	193	57.78
New Jersey	6	1.97	59	19.34	205	67.21
Pennsylvania	2	0.58	85	24.42	213	61.21
Virginia	8	2.63	73	24.01	171	56.25
<b>Overall</b>	26	1.56	383	22.91	1021	61.06

<b>Excellent</b>	
<b>Number</b>	<b>%</b>
50	13.12
57	17.07
35	11.48
48	13.79
52	17.10
242	14.47

## Chapter 7

### DISCUSSION AND CONCLUSIONS

#### 7.1 Conclusions and Implications

Undoubtedly consumer preference for local exists in the Mid-Atlantic region. The CE results of this study indicate more generalized buy local promotions would be more effective than state specific promotions, and could be targeted by county and/or state region. Other survey question results suggest that the Mid-Atlantic consumer considers an area in their county, as well as up to 100 miles away in their state, to be local. This supports earlier findings by Hu et al. (2010) who found consumers considered local to be an area less than 100 miles, as well as previous work by Brown (2003) who also uncovered that consumers consider an area smaller than the borders of their state to be local.

This study suggests that especially for larger states, consumers' definition of what they consider to be local is likely a region smaller than just the borders of their state. Delaware, the smallest state surveyed (and second smallest in the country) had a higher agreement rating with anything in their state being local, regardless of distance. This suggests that for many larger states, state promotional promotions may not be effectively capturing the local foods consumer. It would be more beneficial for these state marketing agencies then to focus on local promotions on a county and regional level rather than just statewide. Perhaps in the future more county promotional programs will be seen than statewide promotional programs.

Additional findings from this study suggest programs in Delaware, Maryland, and Pennsylvania would need to focus on consumer awareness if their programs were to succeed. There is an additional opportunity for state promotional programs in all five states to improve Mid-Atlantic consumers' opinion of them. Delaware's state marketing agency is likely headed in the right direction by choosing to discontinue their program, as the results of this study would have supported their earlier decision. State marketing agencies in these three states then may decide their programs are not worth continuing, as was the case in Delaware.

The results of this study also suggest an additional challenge for programs in Maryland, Pennsylvania, and Virginia. With respondents from these states exhibiting a smaller preference difference between state program and non-local than was seen in the other two states, it will be difficult for these programs to succeed. As consumer interest in local continues, it will be interesting to follow whether these state marketing programs do as well.

As New Jersey's program *Jersey Fresh* is well established and more heavily promoted than programs in other states, New Jersey will likely continue building off of their program's current success. The results of this study suggest New Jersey is presently the only Mid-Atlantic state with a marketing program that is successfully capturing the local foods consumer. Producers and marketers eligible to use the *Jersey Fresh* slogan on their food products would be wise to do so when targeting the New Jersey consumer. Whether or not consumers in other Mid-Atlantic states would be willing to pay a price premium for *Jersey Fresh* products would be useful information for producers and marketers both.

Only one state in this study exhibited a higher consumer preference for organic over natural, indicating consumers in the Mid-Atlantic region likely lack a full understanding as to the meaning behind these terms. Consumer preference for organic over natural could be seen in the future as interest in organic continues to grow, however, consumers would first need to be better educated as to the definitions of these terms. In this study, consumers did agree the most with organic foods being more environmentally friendly and safer to consume than state program foods. These two product attributes could be important when marketing organic products to the Mid-Atlantic consumer. Producers and marketers looking to gain a price premium for their organic products would need to incorporate some type of educational component into their promotional activities.

Additionally, this study suggests that there is an opportunity for farmers' markets to capture more shoppers than they are presently. The results of this survey indicate that consumers across all five states consider their diet to be of 'good' health. Therefore, the Mid-Atlantic consumer might be particularly drawn to the types of fresh, unprocessed products that farmers' market venues typically purvey. Similarly, the findings here indicate higher price premiums for products identified as local at farmers' market venues, compared to grocery store venues. Producers and marketers then should be actively targeting farmers' market venues in the Mid-Atlantic region. State marketing agencies likewise should also be promoting local products at these venues, as well as actively encouraging the establishment of such farmers' markets within their state borders. It would also be wise for state marketing agencies to focus on the promotion and consumer awareness of farmers' markets within their state.

If the intangible benefits consumers associate with the farmers' market venue can be uncovered, perhaps grocery stores could better appeal to these same consumers. For example, if consumers are attracted to farmers' markets because of the opportunity to meet area farmers, grocery stores in this same area could similarly host local producers whose products they carry in-store. Farmers' markets in many areas of the country are often seasonal venues with limited hours and/or days of operation. It would be helpful information then for grocery store venues, which are open to consumers year round and with more extended hours, to be able to take advantage of this increased price premium. It is also quite possible that consumers in this region associate an aspect of health with products from a farmers' market venue.

Knowing whether or not similar price premiums exist for fresh products at a farmers' market venue, as compared to value-added products would be helpful information for marketers, producers and processors. The results of this study indicate a price premium is present for value-added products purchased at a farmers' market venue. Perhaps an even higher price premium would be uncovered for fresh products, which are traditionally associated with a farmers' market.

## **7.2 Limitations**

Possible limitations of this study include the use of only a processed food product in the design of the choice experiment. It would be useful to see if differences in the results arise from the inclusion of both a fresh and value-added food product. In attempting to define locally grown, a more detailed study focusing on just this might yield additional results. Although a definition for the term 'state marketing program' was included on the information sheet accompanying the survey, it could have been more helpful for respondents if the logo for each state program had been included as

well. Unfortunately, approval from each state agency for including such logos was not able to be obtained.

### **7.3 Suggestions for Future Research**

Whether or not state marketing programs in larger states, such as Maryland, Pennsylvania, and Virginia should be continued is a topic open for debate. Certainly *Jersey Fresh* has been the most successful Mid-Atlantic program in terms of both consumer awareness and preference. However, they seem to be the exception rather than the norm. It would be wise for states to explore whether their own promotional program should be continued, or if a county and/or regionally specific local program would be more effective. In addition, whether or not consumers in other Mid-Atlantic states are willing to pay a price premium for *Jersey Fresh* products is an area in need of current exploration.

As previously mentioned, a study including both a fresh and value-added product would be a natural extension from the research conducted here. The results of this study indicate that a majority of consumers consider a product to be local if it is between 81-100% locally grown and/or processed. Whether or not consumers are more stringent or lenient with this percentage, based on whether the product in question is fresh or value-added, is an area requiring further research.

Investigating whether consumers are more interested in locally grown, as opposed to organic and/or natural could also be a natural extension of this study and potentially useful contribution. In the future, as consumers become more educated as to the meaning behind organic, a price premium for a product both local and organic could be seen. If such a finding was evident in the future, it would be of importance to a variety of stakeholders in the Mid-Atlantic region.

While previous research has been conducted on the advantages of farmers' markets (Zepeda and Leviten-Reed, 2004), uncovering exactly what benefits consumers are responding to would be an area in need of further investigation. Once uncovered, the door opens for a multitude of research opportunities, one of which is whether these same benefits can be captured in a grocery store setting.

## REFERENCES

- Alfnes, F., A. Guttormsen, G. Steine, and K. Kolstad. 2006. "Consumers' Willingness to Pay for the Color of Salmon: A Choice Experiment with Real Economic Incentives." *American Journal of Agricultural Economics* 88(4): 1050-1061.
- Banerjee, S.B., D. Hudson, and S.W. Martin. 2007. "Effects of Seed and Farm Characteristics on Cottonseed Choice: A Choice-Based Conjoint Experiment in the Mississippi Delta." *Journal of Agricultural and Applied Economics* 39(3): 657-669.
- Batte, M., N. Hooker, T. Haab, and J. Beaverson. 2007. "Putting Their Money Where Their Mouths Are: Consumer Willingness to Pay for Multi-ingredient, Processed Organic Food Products." *Food Policy* 32(2): 145-159.
- Bond, C.A., D. D. Thilmany, and J. K. Bond. 2008. "What to Choose? The Value of Label Claims to Fresh Produce Consumers." *Journal of Agricultural and Resource Economics* 33(3): 402-427.
- Borchers, A.M., J.M. Duke, and G.R. Parsons. 2007. "Does willingness to pay for green energy differ by source?" *Energy Policy* 35: 3327-3334.
- Brown, C. 2003. "Consumers' Preferences for Locally Produced Food: A Study in Southeastern Missouri." *American Journal of Alternative Agriculture* 18(4): 213-224.
- Camarena, D.M., and A.I. Sanjuan. 2009. "The influence of psychographic variables on consumer preferences. The case of ethnic food in Spain." Presented at the 113<sup>th</sup> EAAE Seminar, Chania, Crete, Greece (September 3-6).
- Carlsson, F., P. Frykblom, and C. Lagerkvist. 2007. "Consumer Benefits of Labels and Bans on GM Foods--Choice Experiments with Swedish Consumers." *American Journal of Agricultural Economics* 89(1): 152-161.
- Carpio, C.E., and O. Isengildina-Massa. 2009. "Measuring the Potential Impact of a Regional Agricultural Promotion Campaign: The Case of South Carolina." Presented at the 2009 Southern Agricultural Economics Association Annual Meeting, Atlanta, GA. (January 31-February 3).

- CBS Videos Online. 2009. "Andy Rooney Goes Fruit Shopping, Talks Local Food." (July) Available online at <http://www.cbs.com/video/>.
- Commonwealth of Pennsylvania. 2009. "PA Preferred-Description." Department of Agriculture (PDA), Commonwealth of Pennsylvania, Harrisburg. PA. Available online at [http://www.agriculture.state.pa.us/portal/server.pt/gateway/PTARGS\\_0\\_2\\_24476\\_10297\\_0\\_43/http%3B/10.41.0.36/AgWebsite/ProgramDetail.aspx?name=PA-Preferred%c2%ae&navid=12&parentnavid=0&palid=80&](http://www.agriculture.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_24476_10297_0_43/http%3B/10.41.0.36/AgWebsite/ProgramDetail.aspx?name=PA-Preferred%c2%ae&navid=12&parentnavid=0&palid=80&). (accessed July 2009).
- Commonwealth of Virginia. 2009. "What is Virginia's Finest?" Department of Agriculture and Consumer Services (VDACS), Commonwealth of Virginia, Richmond, VA. Available online at <http://www.vdacs.virginia.gov/vafinest/>. (accessed July 2009).
- Darby, K., M. Batte, S. Ernst, and B. Roe. 2008. "Decomposing Local: A Conjoint Analysis of Locally Produced Foods." *American Journal of Agricultural Economics* 90(2): 476-486.
- FoodRoutes Network. 2009. "About the 'Buy Fresh, Buy Local' Chapter Program." Available online at [http://www.foodroutes.org/bfbltoolbox\\_1.jsp](http://www.foodroutes.org/bfbltoolbox_1.jsp). (accessed January 2010).
- Gallons, J., U. Toensmeyer, J.R. Bacon, and C.L. German. 1997. "An Analysis of Consumer Characteristics Concerning Direct Marketing of Fresh Produce in Delaware: A Case Study." *Journal of Food Distribution Research* 28: 98-106.
- Gifford, K., and J.C. Bernard. "The Effect of Information on Consumers' WTP for Natural and Organic Chicken." *International Journal of Consumer Studies*, forthcoming.
- Giraud, K., C. Bond, and J. Bond. 2005. "Consumer Preferences for Locally Made Specialty Food Products across Northern New England." *Agricultural and Resource Economics Review* 34(2): 204-216.
- Govindasamy, R., and J. Italia. 1999. "Predicting Willingness-to-Pay a Premium for Organically Grown Fresh Produce." *Journal of Food Distribution Research* 30: 44-53.

- Govindasamy, R., B. Schilling, K. Sullivan, C. Turvey, L. Brown, and V. Puduri. 2004. "Returns to the Jersey Fresh Promotional Program: The Impacts of Promotional Expenditures on Farm Cash Receipts in New Jersey." Rutgers University: Department of Agricultural, Food and Resource Economics, Food Policy Institute Publication Number: RR-0404-006.
- Greene, W.H. 2003. NLogit Version 3.0. Plainview, NY: Econometric Software Inc.
- Haaijer, R., W. Kamakura, and M. Wedel. 2001. "The 'no-choice' alternative in conjoint choice experiments." *International Journal of Market Research* 43(1): 93-106.
- Halloran, J.M., and M.V. Martin. 1989. "Should States be in the Agricultural Promotion Business?" *Agribusiness* 5: 65-75.
- Hanagriff, R., M. Lau, and S. Rogers. 2009. "State Funded Marketing and Promotional Activities to Support a State's Winery Business; Are There Economics Returns?: A Case Study Using Texas Senate Bill 1370's support of the Texas Wine Industry." Presented at the Southern Agricultural Economics Association Annual Meeting, Atlanta, GA. (January 31-February 3).
- Hand, M.S., and S. Martinez. 2010. "Just What Does Local Mean?" *Choices* 25(1).
- Hensher, D.A., and W.H. Greene. 2002. "Specification and Estimation of the Nested Logit Model: Alternative Normalisations." *Transportation Research Part B* 36: 1-17.
- Horovitz, B. 2009. "Frito-Lay Pitches its Lay's Potato Chips as Locally Made." *USA Today* (May 12).
- Hu, W., Batte, M., Woods, T. and S. Ernst. 2010. "What is Local and for What Foods Does it Matter?" Presented at the 2010 Southern Agricultural Economics Association Annual Meeting, Orlando, FL (February 6-9).
- Hu, W., T. Woods, and S. Bastin. 2009. "Consumer Acceptance and Willingness to Pay for Blueberry Products with Nonconventional Attributes." *Journal of Agricultural and Applied Economics* 41(1): 47-60.
- Hughner, R. S., P. McDonagh, A. Prothero, C.J. Shultz II, and J. Stanton. 2007. "Who are Organic Food Consumers? A Compilation and Review of Why People Purchase Organic Food." *Journal of Consumer Behaviour* 6(2-3): 94-110.

- Jekanowski, M.D., D.R. Williams, and W.A. Schiek. 2000. "Consumers' Willingness to Purchase Locally Produced Agricultural Products: An Analysis of an Indiana Survey." *Agricultural and Resource Economics Review* 29(1): 43-53.
- Kiiskinen, U., A.L. Suominen-Taipale, and J. Cairns. 2010. "Think twice before you book? Modelling the Choice of Public vs. Private Dentist in a Choice Experiment." *Health Economics* 19: 670-683.
- Kuhfeld, W. F. 2009. "Marketing Research Methods in SAS." SAS Institute Inc., Technical Papers. Available online at <http://support.sas.com/techsup/technote/mr2009.pdf>.
- Long, J. 1997. *Regression Models for Categorical and Limited Dependent Variables*. Advanced Quantitative Techniques in the Social Sciences Series, vol. 7.
- Loureiro, M.L. and S. Hine. 2002. "Discovering Niche Markets: A Comparison of Consumer Willingness to Pay for Local (Colorado Grown), Organic, and GMO-Free Products." *Journal of Agricultural and Applied Economics* 34(3): 477-487.
- Lusk, J., and D. Hudson. 2004. "Willingness-to-Pay Estimates and Their Relevance to Agribusiness Decision Making." *Review of Agricultural Economics* 26(2): 152-169.
- Lusk, J., J. Roosen, and J. Fox. 2003. "Demand for Beef from Cattle Administered Growth Hormones or Fed Genetically Modified Corn: A Comparison of Consumers in France, Germany, the United Kingdom, and the United States." *American Journal of Agricultural Economics* 85(1): 16-29.
- Martin, A. 2009. "Is a Food Revolution Now in Season?" *The New York Times* (March 22).
- Mazur, K., and J. Bennett. 2010. "Framing incentive compatibility in choice modeling." Presented at the 54<sup>th</sup> Annual Conference of the Australian Agricultural and Resource Economics Society, Adelaide, Australia (February 10-12).
- Merriam-Webster Inc. 2010. *Merriam-Webster Dictionary.com*. Available online at <http://www.merriam-webster.com/>.
- Onianwa, O., M. Mojica, and G. Wheelock. 2006. "Consumer Characteristics and Views Regarding Farmers Markets." *Journal of Food Distribution Research* 37(1): 119.

- Onken, K.A., and J.C. Bernard. 2010. "Catching the "Local" Bug: A Look at State Agricultural Marketing Programs." *Choices* 25(1).
- Organic Trade Association (OTA) 2010. "Industry Statistics and Projected Growth" Available online at <http://www.ota.com/organic/mt/business.html>. (accessed July 2010).
- Packaged Facts. 2007. "Locally Grown Foods Niche Cooks Up at \$5 Billion as America Chows Down on Fresh!" (June 20). Available online at <http://www.packagedfacts.com/about/release.asp?id=918>.
- Patterson, P.M., H. Olofsson, T.J. Richards, and S. Sass. 1999. "An Empirical Analysis of State Agricultural Product Promotions: A Case Study on Arizona Grown." *Agri-business: An International Journal* 15(2): 179-196.
- Roe, B., E.G. Irwin, and H.A. Morrow-Jones. 2004. "The Effects of Farmland, Farmland Preservation, and Other Neighborhood Amenities on Housing Values and Residential Growth." *Land Economics* 80(1): 55-75.
- Salant, P., and D.A. Dillman. 1994. *How to Conduct Your Own Survey*. New York: John Wiley & Sons, Inc.
- SAS Institute Inc. 2010. *SAS OnlineDoc® 9.2*. Cary, N.C: SAS Institute Inc.
- Schneider, M.L., and C.A. Francis. 2005. "Marketing Locally Produced Foods: Consumer and Farmer Opinions in Washington County, Nebraska." *Renewable Agriculture and Food Systems* 20(4): 252-260.
- Shuzzler, A., R. Govindasamy, and A. Adelaja. 2003. "A Comparative Evaluation of Organic Produce Consumers in New Jersey to New York and Pennsylvania." *Journal of Food Distribution Research* 34(1):153-162.
- So, Y., and W.F. Kuhfeld. 2009. "Multinomial Logit Models." SAS Institute Inc., Technical Papers. Available online at <http://support.sas.com/techsup/technote/ts722g.pdf>.
- State of California. 2009. "Research." Buy California Marketing Agreement (BCMA), State of California, Sacramento, CA. Available online at <http://www.californiagrown.org/licensing/research.asp> (accessed July 2009).
- State of Delaware. 2009. "Marketing-Our Services." Department of Agriculture (DDA), State of Delaware, Dover, DE. Available online at <http://www.delawarefresh.com>. (accessed July 2009).

- State of Maryland. 2009. "Maryland's Best." Department of Agriculture (MDA), State of Maryland, Annapolis, MD. Available online at <http://www.marylandsbest.net>. (accessed July 2009).
- State of New Jersey. 2009. "Jersey Fresh Quality Grading Program." Department of Agriculture (NJDA), State of New Jersey, Trenton, NJ. Available online at <http://www.state.nj.us/agriculture/divisions/md/prog/jfqgp.html>. (accessed July 2009).
- Stegelin, F. 2008. "Consumer Understanding of Buying Local, Fresh, and Safe." Presented at the 2008 Conference of the Food Distribution Society, Dublin, OH. (October 11-15).
- The Nielsen Company. 2009. "Natural" Beats "Organic" in Food Sales According to Nielsen's Healthy Eating Report." *NielsenWire* (January 21). Available online at <http://blog.nielsen.com/nielsenwire/consumer/%e2%80%9cnatural%e2%80%9d-beats-%e2%80%9corganic%e2%80%9d-in-food-sales-according-to-nielsen%e2%80%99s-healthy-eating-report/>.
- Thilmany, D., C.A. Bond, and J. K. Bond. 2008. "Going Local: Exploring Consumer Behavior and Motivations for Direct Food Purchases." *American Journal of Agricultural Economics* 90(5):1303-1309.
- U.S. Department of Agriculture. 2008. "National Organic Program Background Information." National Organic Program (NOP), U.S. Department of Agriculture, Washington, D.C. Available online at <http://www.ams.usda.gov/nop>.
- U.S. Department of Agriculture. 2009. "Farmers Market Growth: 1994-2009." Agricultural Marketing Service (AMS), U.S. Department of Agriculture, Washington, D.C. Available online at <http://www.ams.usda.gov/>.
- U.S. Department of Agriculture. 2010. "Data Sets-Organic Production Overview." Economic Research Service (ERS), U.S. Department of Agriculture, Washington, D.C. Available online at <http://www.ers.usda.gov/data/organic/>.
- U.S. Department of Agriculture. 2010. "Meat and Poultry Labeling Terms." Food Safety and Inspection Service (FSIS), U.S. Department of Agriculture, Washington, D.C. Available online at <http://www.fsis.usda.gov/>.

- Vermont Agency of Agriculture. 2009. "Overview of 'Local' Labels and their Meanings." Buy Local Buy Vermont, Vermont Agency of Agriculture, Montpelier, VT. Available online at <http://www.vermontagriculture.com/buylocal/marketing/buylocal.html>.
- Yiridoe, E.K., S. Bonti-Ankomah, and R.C. Martin. 2005. "Comparison of Consumer Perceptions and Preferences toward Organic versus Conventionally-Produced Foods: A Review and Update of the Literature." *Renewable Agriculture and Food Systems* 20(4): 193-205.
- Zepeda, L., and C. Leviten-Reid. 2004. "Consumers' Views on Local Food." *Journal of Food Distribution Research* 35(3): 1-6.

**Appendix I**  
**SURVEY COVER LETTER**

November 2, 2009

Dear [REDACTED]

I am writing to ask for your assistance in a study I am conducting with my graduate student, Kathryn Onken, as part of a United State Department of Agriculture (USDA) grant. The purpose of this study is to determine consumer willingness to pay for locally grown, organic and natural foods, as well as gather other useful information for both producers and state-sponsored agricultural marketing programs. The data collected from this study will be used by Kathryn for her thesis. Enclosed with this letter you will find a survey being sent to consumers in five states in the Mid-Atlantic region. Your name was one of these 5,000 randomly selected residents from the following five states: Delaware, New Jersey, Pennsylvania, Virginia and Maryland.

As a consumer, you are constantly faced with willingness-to-pay decisions every time you purchase food from your local grocery store or farmers market. We are interested in whether your decision to purchase food products is affected by it being labeled as local, organic or natural, or whether the price of the product affects your decision, or if you are affected by a combination of both.

Your responses to this survey are voluntary and completely confidential. The number appearing on the return envelope is only for the purpose of allowing us to check you off our mailing list as a respondent, and in no way will it be used to personally identify you. Once you return your completed survey, your name will be deleted from our mailing list and never connected to your answers in any way. If we do not receive a response from you, we will be sending out another copy of the survey. A reminder postcard will also be sent to this same address.

In addition to the survey, we have enclosed a small token of our appreciation for your help in our study. Also enclosed you will find an informational sheet with definitions for several types of foods. Please read this sheet before completing the survey. After completing the survey, please fold and return it in the postage-paid envelope provided. If you prefer not to complete the survey for any reason, please indicate this on the survey, and return it in the enclosed postage-paid envelope.

We would be happy to answer any questions or concerns you may have about this study. We can be reached by email at [jbernard@udel.edu](mailto:jbernard@udel.edu) or by phone at (302) 831-1380. You can also write us at the address indicated on the letterhead.

Thank you in advance for your assistance in this important study.

Sincerely,



John C. Bernard  
Associate Professor

## Appendix II

### SURVEY QUESTIONS AND INFORMATION SHEET



Please read this sheet before completing our survey.  
It will help you better understand the  
questions being asked and save you time!

*Below you will find explanations for some labels and wording  
that will appear throughout the survey:*

#### **IMPORTANT TERMS:**

**“Organic”** - contains no synthetic pesticides, hormones or antibiotics, no irradiation, no genetically modified (GM) ingredients, and no petroleum or sewage sludge fertilizers. Organic also means access to pasture (ex: cows) or the outdoors (ex: chicken). Products are inspected and certified by the USDA, and must be at least 95% organic.

**“Natural”** - contains no artificial ingredients or coloring, and has been minimally processed (the raw product has not been fundamentally altered during processing). The label must explain the use of the term natural (ie. no added colorings or artificial ingredients; minimally processed).

**“Conventional”** -most food fits into this category, which means it is not certified organic, is not irradiated, and many contain GM ingredients. It may also have been produced using antibiotics, pesticides, hormones and chemical fertilizers within government standards and limits.

**“Local”** - the definition of local is flexible and has different meaning for each person. Whether or not someone views a food as “local” is often determined by distance traveled from where it was grown, produced or processed. Some interpret local to mean a very small area (such as a city and its surroundings) while others interpret it to mean the borders of their state and/or region.

**“State Marketing Programs”**- these agricultural marketing programs are designed to help identify state-specific products, as well as increase consumer demand for them. While program components vary by state, each currently has at least one state-specific logo in place as a way to gain recognition for their state's products.



**SURVEY BLOCK 1**

<p><b>What Are YOUR Preferences For Local, Organic and Natural Foods?</b></p>
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*Please complete the following survey, answering as many questions as possible. Your answers will remain anonymous.*

1) On a scale from 1 to 5, how often in an average month do you purchase food products from the following locations? (Circle one each):

	<u>Never</u> 1	<u>Seldom</u> 2	<u>Occasionally</u> 3	<u>Often</u> 4	<u>Very Often</u> 5			
a) Grocery Store				1	2	3	4	5
b) Farmers' Market				1	2	3	4	5

2) On a scale from 0 to 5, please rate your opinion of the following state marketing programs. (Circle one each):

	<u>Not Aware of Program</u> 0	<u>Very Poor</u> 1	<u>Poor</u> 2	<u>Fair</u> 3	<u>Good</u> 4	<u>Excellent</u> 5			
a) "Jersey Fresh"				0	1	2	3	4	5
b) "Grown Fresh with Care in Delaware"				0	1	2	3	4	5
c) "PA Preferred"				0	1	2	3	4	5
d) "Virginia's Finest"				0	1	2	3	4	5
e) "Maryland's Best"				0	1	2	3	4	5



3) On a scale from 1 to 5, how often in an average month do you purchase food products labeled or advertised as.....

	<u>Never</u> 1	<u>Seldom</u> 2	<u>Occasionally</u> 3	<u>Often</u> 4	<u>Very Often</u> 5
a) Locally Grown?				1	2 3 4 5
b) Organic?				1	2 3 4 5
c) Natural?				1	2 3 4 5
d) "Jersey Fresh" ?				1	2 3 4 5
e) "Grown Fresh with Care in Delaware" ?				1	2 3 4 5
f) "PA Preferred"?				1	2 3 4 5
g) "Virginia's Finest"?				1	2 3 4 5
h) "Maryland's Best"?				1	2 3 4 5

4) On a scale from 1 to 5, please rate your agreement with the following statement, for each statement listed below:

*"Compared with GROWN FRESH WITH CARE IN DELAWARE foods, ORGANIC foods are....."*

	<u>Strongly Disagree</u> 1	<u>Disagree</u> 2	<u>Neutral</u> 3	<u>Agree</u> 4	<u>Strongly Agree</u> 5
a) More nutritious				1	2 3 4 5
b) Safer to consume				1	2 3 4 5
c) Better tasting				1	2 3 4 5
d) Of higher quality				1	2 3 4 5
e) More environmentally friendly				1	2 3 4 5

5) On a scale from 1 to 5, please rate your agreement with the following statement, for each statement listed below:

*"Compared with ORGANIC foods, LOCAL foods are....."*

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>			
	1	2	3	4	5			
a) More nutritious				1	2	3	4	5
b) Safer to consume				1	2	3	4	5
c) Better tasting				1	2	3	4	5
d) Of higher quality				1	2	3	4	5
e) More environmentally friendly				1	2	3	4	5

6) On a scale from 1 to 5, please rate your agreement with the following statement, for each area listed below: *"I consider a food product produced and/or grown within this area to be "local"."*

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Neutral</u>	<u>Agree</u>	<u>Strongly Agree</u>			
	1	2	3	4	5			
a) In my county				1	2	3	4	5
b) Up to 100 miles away, in Delaware				1	2	3	4	5
c) Anywhere in Delaware, regardless of distance				1	2	3	4	5
d) Up to 100 miles away, in a surrounding state				1	2	3	4	5
e) Anywhere in a surrounding state, regardless of distance				1	2	3	4	5
f) In New Jersey				1	2	3	4	5
g) In Maryland				1	2	3	4	5
h) In Pennsylvania				1	2	3	4	5
i) In Virginia				1	2	3	4	5

7) Please complete the statement below:

I consider a food product to be "local" if it is *within* \_\_\_\_\_ *miles* away.

8) For you to consider a food product to be "local", what percentage of that product needs to be produced and/or grown locally?

- 0-20%       41-60%       81-100%  
 21-40%       61-80%

9) Which choice would you purchase for each food product?  
(Please note prices and attributes vary.)

**SAMPLE:**

SET #5

<i>"Grown Fresh with Care in Delaware"</i> Conventional Grocery Store \$5.49	Local Conventional Farmers Market \$3.99	Non-Local Organic Grocery Store \$2.49	None
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CHECK ONE →

9a) FOOD PRODUCT #1: One quart (about 5) of medium-sized Red Tomatoes. For EACH of the 6 choice sets below, please check one box per set :



SET #1

<i>"Grown Fresh with Care in Delaware"</i> Conventional Grocery Store \$5.49	Local Conventional Farmers Market \$3.99	Non-Local Organic Grocery Store \$2.49	None
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CHECK ONE →

SET #2

<i>"Grown Fresh with Care in Delaware"</i> Conventional Grocery Store \$2.49	Local Organic Farmers Market \$2.49	Non-Local Organic Grocery Store \$5.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #3

<i>"Grown Fresh with Care in Delaware"</i> Conventional Farmers Market \$2.49	Local Conventional Grocery Store \$5.49	Non-Local Organic Farmers Market \$5.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #4

<i>"Grown Fresh with Care in Delaware"</i> Conventional Farmers Market \$5.49	Local Conventional Grocery Store \$2.49	Non-Local Organic Farmers Market \$2.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #5

<i>"Grown Fresh with Care in Delaware"</i> Organic Farmers Market \$2.49	Local Organic Grocery Store \$5.49	Non-Local Conventional Farmers Market \$3.99	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #6

<i>"Grown Fresh with Care in Delaware"</i> Organic Grocery Store \$3.99	Local Conventional Farmers Market \$5.49	Non-Local Conventional Grocery Store \$2.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9b) FOOD PRODUCT #2: One 18 oz. jar of Strawberry Preserves.

For EACH of the 6 choice sets below, please check one box per set :



SET #1

	"Grown Fresh with Care in Delaware" Natural Grocery Store \$4.99	Local Natural Farmers Market \$3.99	Non-Local Organic Grocery Store \$2.99	None
CHECK ONE →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #2

	"Grown Fresh with Care in Delaware" Natural Grocery Store \$2.99	Local Organic Farmers Market \$2.99	Non-Local Organic Grocery Store \$4.99	None
CHECK ONE →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #3

	"Grown Fresh with Care in Delaware" Natural Farmers Market \$2.99	Local Natural Grocery Store \$4.99	Non-Local Organic Farmers Market \$4.99	None
CHECK ONE →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #4

	"Grown Fresh with Care in Delaware" Natural Farmers Market \$4.99	Local Natural Grocery Store \$2.99	Non-Local Organic Farmers Market \$2.99	None
CHECK ONE →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #5

<i>"Grown Fresh with Care in Delaware"</i> Organic Farmers Market \$2.99	Local Organic Grocery Store \$4.99	Non-Local Natural Farmers Market \$3.99	None
<b>CHECK ONE</b> → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #6

<i>"Grown Fresh with Care in Delaware"</i> Organic Grocery Store \$3.99	Local Natural Farmers Market \$4.99	Non-Local Natural Grocery Store \$2.99	None
<b>CHECK ONE</b> → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10) What is your gender?

- Male       Female

11) What is your current age?

- Under 25       45-54       65-69       80 or above  
 25-34       55-59       70-74  
 35-44       60-64       75-79

12) How healthy do you consider your diet?

- Poor       Fair       Good       Excellent

13) What is the highest level of education you have completed?

- Less than high school graduate       Associate degree  
 High school graduate       Bachelor degree  
 Some college, no degree       Graduate or professional degree

14) Are there any children under the age of 18 living in your household?

- Yes       No

**15) What is your race or nationality? (Check one or more)**

- |   |   |
|---|---|
| <input type="checkbox"/> White                      | <input type="checkbox"/> Asian                                  |
| <input type="checkbox"/> Black, African American    | <input type="checkbox"/> Native Hawaiian/Other Pacific Islander |
| <input type="checkbox"/> Hispanic or Latino         | <input type="checkbox"/> Other                                  |
| <input type="checkbox"/> American Indian or Alaskan |   |

**16) Are you the primary purchaser of food products in your household?**

- Yes       No

**17) Which of the following categories best describes your total household income annually? (Check one)**

- |   |   |
|---|---|
| <input type="checkbox"/> Less than \$10,000   | <input type="checkbox"/> \$75,000 to \$99,999   |
| <input type="checkbox"/> \$10,000 to \$14,999 | <input type="checkbox"/> \$100,000 to \$124,999 |
| <input type="checkbox"/> \$15,000 to \$24,999 | <input type="checkbox"/> \$125,000 to \$149,999 |
| <input type="checkbox"/> \$25,000 to \$34,999 | <input type="checkbox"/> \$150,000 to \$199,999 |
| <input type="checkbox"/> \$35,000 to \$49,999 | <input type="checkbox"/> \$200,000 to \$249,999 |
| <input type="checkbox"/> \$50,000 to \$74,999 | <input type="checkbox"/> \$250,000 or more      |

**Thank you for your participation!**

**If you have any comments, please write them in the space below:**

**Please return your completed survey in the enclosed envelope to:**

**Dr. John C. Bernard  
Department of Food and Resource Economics  
University of Delaware  
229 Townsend Hall  
Newark, DE 19716**

*Additional questions about this survey may be directed to Kathryn Onken at [konken@udel.edu](mailto:konken@udel.edu)*

## SURVEY BLOCK 2

7) Please complete the statement below:

I consider a food product to be "local" if it is *within* \_\_\_\_\_ *miles* away.

8) For you to consider a food product to be "local", what percentage of that product needs to be produced and/or grown locally?

- 0-20%       41-60%       81-100%  
 21-40%       61-80%

9) Which choice would you purchase for each food product?

(Please note prices and attributes vary.)

**SAMPLE:**

SET #5

	<i>"Grown Fresh with Care in Delaware"</i> Conventional Grocery Store \$5.49	Local Conventional Farmers Market \$3.99	Non-Local Organic Grocery Store \$2.49	None
CHECK ONE →	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9a) FOOD PRODUCT #1: One quart (about 5) of medium-sized Red Tomatoes. For EACH of the 6 choice sets below, please check one box per set :



SET #1

	<i>"Grown Fresh with Care in Delaware"</i> Conventional Farmers Market \$2.49	Local Conventional Grocery Store \$5.49	Non-Local Organic Grocery Store \$2.49	None
CHECK ONE →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #2

<i>"Grown Fresh with Care in Delaware"</i> Organic Grocery Store \$5.49	Local Conventional Grocery Store \$2.49	Non-Local Organic Farmers Market \$3.99	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #3

<i>"Grown Fresh with Care in Delaware"</i> Organic Farmers Market \$5.49	Local Organic Grocery Store \$3.99	Non-Local Conventional Grocery Store \$5.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #4

<i>"Grown Fresh with Care in Delaware"</i> Conventional Grocery Store \$3.99	Local Organic Farmers Market \$2.49	Non-Local Conventional Farmers Market \$5.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #5

<i>"Grown Fresh with Care in Delaware"</i> Organic Grocery Store \$2.49	Local Organic Farmers Market \$5.49	Non-Local Conventional Farmers Market \$2.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #6

<i>"Grown Fresh with Care in Delaware"</i> Organic Farmers Market \$5.49	Local Conventional Farmers Market \$2.49	Non-Local Conventional Grocery Store \$3.99	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #2

<i>"Grown Fresh with Care in Delaware"</i> Organic Grocery Store \$5.49	Local Conventional Grocery Store \$2.49	Non-Local Organic Farmers Market \$3.99	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #3

<i>"Grown Fresh with Care in Delaware"</i> Organic Farmers Market \$5.49	Local Organic Grocery Store \$3.99	Non-Local Conventional Grocery Store \$5.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #4

<i>"Grown Fresh with Care in Delaware"</i> Conventional Grocery Store \$3.99	Local Organic Farmers Market \$2.49	Non-Local Conventional Farmers Market \$5.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #5

<i>"Grown Fresh with Care in Delaware"</i> Organic Grocery Store \$2.49	Local Organic Farmers Market \$5.49	Non-Local Conventional Farmers Market \$2.49	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #6

<i>"Grown Fresh with Care in Delaware"</i> Organic Farmers Market \$5.49	Local Conventional Farmers Market \$2.49	Non-Local Conventional Grocery Store \$3.99	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grocery Store \$3.99	\$2.99	\$4.99	
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #5

<i>"Grown Fresh with Care in Delaware"</i> Organic Grocery Store \$2.99	Local Organic Farmers Market  \$4.99	Non-Local Natural Farmers Market  \$2.99	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SET #6

<i>"Grown Fresh with Care in Delaware"</i> Organic Farmers Market \$4.99	Local Natural Farmers Market  \$2.99	Non-Local Natural Grocery Store  \$3.99	None
CHECK ONE → <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10) What is your gender?

- Male       Female

11) What is your current age?

- Under 25       45-54       65-69       80 or above  
 25-34       55-59       70-74  
 35-44       60-64       75-79

12) How healthy do you consider your diet?

- Poor       Fair       Good       Excellent

13) What is the highest level of education you have completed?

- Less than high school graduate       Associate degree  
 High school graduate       Bachelor degree  
 Some college, no degree       Graduate or professional degree

14) Are there any children under the age of 18 living in your household?

- Yes       No

**Appendix III**  
**SURVEY COMMENTS**

<b>State</b>	<b>Comments</b>
PA	#17 That's not anyone's business. What does that have to do with a food survey?
MD	#4 is impossible to answer if you don't know what "Maryland's Best Foods" is. I wasn't aware of that program. Good luck! Buena suerte!
PA	98% of food purchases are at the local grocery store. Natural-organic etc. mean nothing to me. I eat one meal a day usually dinner. But thanks for asking good luck.
PA	Age, education and income do not matter. Since questions were not answered, did not pertain to our purchasing practices.
VA	All of this seems very silly, but I've answered the survey because the University of Delaware was kind enough to admit me twice - undergraduate and graduate - although I didn't attend.
DE	All the best in your research. Hope it's not too late. Sorry!!
MD	Answered to the best of my ability. Good luck on thesis paper, or survey. Sorry this is late.
PA	Are you posting the completed thesis on the web? These days food price is very important. I would never pay \$5.49 for ANY tomatoes...
MD	As I am handicapped, I don't think my answers are really fair as I have to make a list for someone else to shop.
DE	As much as I would prefer to purchase organic products, the cost of the items casue me to make alternative choices.
MD	As much as I'd like to eat healthier, the cost for local, natural, and organic food deters me. In my opinion, people who have lower incomes will purchase foods that are more affordable. I strongly believe more people would purchase organic , natural and local foods if it was more comparable in price to products in grocery store.
VA	At first, questions 9a and 9b were confusing, but I think it all depends on how important some foods are to you. But I might still be confused. Otherwise, hope I could be of some help to you.
NJ	At least give 2-5 dollars. \$1.00 is a bit cheap.

State	Comments, Cont.
VA	Best wishes on your survey. With the word regulation being tossed around so frequently today, hopefully the government will become more involved and critical of what we ingest locally or not. Bon appetit! :)
MD	Buy local to help local farmers
MD	Can't rate as I only shop the 3 conventional grocery stores in my neighborhood and almost always by price. Where the food comes from is not my concern.
NJ	Check everything you buy for freshness and price. Know where to shop. Buy only what you need.
PA	Check out Penn+Teller Organic foods special.
MD	Completed by ..... Not addressee because she is away at college
NJ	CONSIDER ORGANIC FOODS TO BE HEALTHIER AND MORE FLAVORFULL, ONLY IF LOCALLY GROWN OTHERWISE LOCAL GROWN NATURAL IS BEST AS FOODS LOSE NUTRITION VALUE WHEN TRANSPORTED LONG DISTANCES. ORGANIC USUALLY IS VERY EXPENSIVE.
NJ	considers food to be local if it is within "STATE" miles away
NJ	Cost is always a factor, but I will always strive to purchase "jersey fresh" or locally grown products.
NJ	Depending on season of products, first local farmers or organic then grocery stores ie. Shoprite, Acme. Price is a major contributor for buying fresh produce.
DE	depends more on current quality, not price, based on convenience
PA	Diabetic
NJ	Did my niece (a Virginia Tech Agriculture Grad and Master as of May 2010) have anything to do with my name appearing on a list somewhere? Computer? Is that scientific?
PA	Did not understand local & organic. Local farmer or local distributor?
DE	DID NOT UNDERSTAND QUESTIONS WITH SETS. WAS NOT SURE WHAT YOU WANTED.
MD	Did not understand set of boxes.
DE	Do not need my income.
DE	Do not understand questions about tomatoes and preserves. Seems to be only 1 answer. Under each set in 9a, respondent wrote "local produce stand." Under each set in 9b, respondent wrote, "Amish food stand."
PA	Don't buy strawberry preserves, period!
PA	Don't eat tomatoes. Don't eat preserves.
VA	Don't like the term organic. Should call it "all natural" or similar name. Organic farm to me is weird.

State	Comments, Cont.
VA	Dr. Bernard or Ms. Onken: Please send a copy of the study once completed to me if you can. You can send an electronic copy to me at.....
DE	During the summer months, I often purchase fresh produce from the local market (Marini's Produce) and it is quite good. I am hoping to support local farmers. My only concern is trying to avoid chemically treated food/soils. I'm not sure how much pesticide spraying local farmers are using. I'll gladly pay more knowing the food is organic.
MD	During the summer we grow our own tomatoes etc. I only buy them at the store during the off season. It's difficult to find a farmer's market at that time. Price determines a lot of my choices. I'll do without before I'll pay too much for fresh or organic.
PA	Excellent survey - want better labeling on foods with clear definitions.
PA	Fresh food prices are way to high for average family to purchase. Therefore gardening is my hobby source of food.
DE	Fresh, locally grown produce is important to me. Unfortunately right now price is a big factor. If it's too expensive, I buy something else.
NJ	Glad to help
PA	Good choice of a topic! :)
PA	Good luck - I remember research for my master's thesis! If you are like I was, you need the \$1 more :)!
NJ	Good luck on your research. It brings back memories for me. Quantitative research methods in graduate school :)
NJ	Good luck on your study and thesis.
MD	Good luck on your thesis Kathryn!
PA	Good luck with the study. Only too happy to help - price point is very important. I like Trader Joe's/Whole Foods/Produce Junction
DE	Good luck with your project!
MD	Good luck with your research.
MD	Good luck with your survey. Have never heard of Maryland's Best. Not too observant! Lol.
PA	Good luck with your thesis. I'd like to read it based on survey results! Most produce we consume is grown in our own "organic" garden!
NJ	Good luck with your work. With nearly a billion people starving worldwide and 100 species going extinct per day we absolutely need better agricultural practices.
DE	GOOD LUCK!
VA	Good luck!

<b>State</b>	<b>Comments, Cont.</b>
DE	Good luck.
MD	Great job doing this research! Sadly, I need to focus on price, but if that wasn't an issue, I would always choose to support local, organic foods bought at a farmers or organic market.
VA	Great survey - We eat no beef, pork, chicken or turkey for we know not what they are fed. Fish, oysters and shrimp are the near perfect diet.
PA	Guess I am "cheap." Bargains are what we look for when shopping. Cheers!
DE	Had been unaware of GF in DE until this - but will watch for it in future. For question 4 I used my Jersey Fresh standard figuring Grown with Care in DE being equivalent. Being unaware of their program gives their state marketing a very poor grade.
PA	Hard to make some choices because we do not have a definite choice of organic foods in our area.
VA	Having been raised on a farm in South Dakota, I am fully aware of what organic fertilizer is. I also have served in Korea and Japan where organic fertilizer was the norm. Organic banvos?? Yes, organic root crops no!! You may want to throw out my responses as being biased. P.S. I lived in Hawaii for some 25 years and I used?? farmer's market a lot.
MD	Healthy food should be available to everyone, not just the rich.
DE	Hope I helped with this. Thank you.
DE	Hope this helps. Merry Christmas!
MD	Hope we get to hear the results.
MD	How come the envelope isn't big enough?
DE	However, this is only the case since moving to Delaware. In San Jose, CA we bought at farmer's mkt every Sunday. Here the Farmer's Mkt is terrible...more like a flea market. Again, it was easy to buy fresh local produce in California. Here, I know mushrooms are local but not much else...I am picturing the reality of Hockessin: Acme, Harvest, and Greg's are the choices...(and apples and bananas at Wawa)
PA	Husband 90 I'm 87. On a fixed income. No longer shop the way we used to. Etc. etc. goes on despite having not filled out the strong majority of the questionnaire.
DE	I always buy healthy foods from local conventional grocery stores or local organic farmers market when available. Jersey corn, Del or Jersey organic tomatoes and eggs - free roaming hens/organic only. I am a type II diabetes on dialysis. I have access to my dietary requirements with assoc.
NJ	I always buy locally when possible. I assume it is freshest and tastes better. Stop genetic testing with vegetables.

State	Comments, Cont.
PA	I always had my own garden and canned much fruits, juices etc. It's healthier. I'm 86 years old & not as capable as in the past but now I absolutely despise adulterated food! And food grown locally are always fresher.
NJ	I always look for freshness and cleanliness in the market. An instance, carrots with the fresh green tops are preferable to packaged ones - regardless of price. (returned dollar)
PA	I always prefer local, sustainable. Most foods are a challenge to produce organically in our climate and I don't find organic worth more \$.
DE	I always try to buy local and/or organic foods especially produce; however, price is always/usually the deciding factor.
PA	I am an Ohio State graduate as is my wife. She is a food scientist & I'm an architect.
PA	I am disabled price is my biggest determining factor when making purchase. I do like to support local market but can't if prices are too high. I believe eating a lot of vegetables is best even if canned or frozen. Also we don't need to eat so much meat chicken scares me the most.
DE	I am graduating with a Bachelor's Degree in English Education in May.
DE	I am in Delaware most often when farmer's market is not open, so most purchases are at local grocery. When it is open - I hate to deal with traffic to get to farmer's market.
MD	I am not the person whom the survey was sent. They no longer reside at this address. Hope my completion of the survey still helps?
VA	I am on a very fixed income; I can only buy the best buy for the best quantity. I can't afford to spend \$2.49 for 5 med tomatoes of \$2.99 for an 18 oz jar of strawberry jam, or jelly - it has to be on sale and look for ingredients on back of jar.
VA	I am on total and permanent disability so I usually try to go to just 1 store for everything. Usually it's the supermarket, although I have been wanting to go to markets and get fresh produce.
NJ	I am retired and the income is not enough to buy special food, the church gave me local produce and sometimes I can buy NJ produce when they made a market in the park.
PA	I am sorry I was unaware of most of programs that was suggested in beginning of interview.
VA	I am very poor, cannot always eat right. P.s. thank you for the dollar.
NJ	I apologize for the delay in returning this survey! I misplaced it (on my desk at work...) :) Good luck!

State	Comments, Cont.
DE	I believe strongly organic is always best but cannot afford it sometimes. I wish better didn't mean more cost.
DE	I buy when and wherever the product looks fresh and is seasonably priced. I do not pay attention to marketing programs. (returned dollar)
NJ	I can't eat tomatoes, I don't like strawberry preserves, I am on a special diet.
DE	I consider a food product produced/grown within 50 miles away from food stores/food stands to be "local".
NJ	I did not know how to complete 9a and 9b as it made no sense to me. This is a very poorly prepared survey. You have too many assumptions in these questions.
VA	I did not understand part of this test.
PA	I didn't answer the last 7 ?'s as I don't think you have to have personal information on this questionnaire
VA	I didn't feel I could fully answer some questions about natural organic foods. Despite your helpful definitions, I was under the impression that the regulation for labeling foods was still thin. Also, I'd shop more at local farmer markets, but the hours are limited.
DE	I disregard a "natural" label as meaningless. I consider "organic" to be meaningless because I don't believe there are concrete standards for a food to be labeled "organic"
VA	I do not know if my survey will be helpful. I live with my ex-wife and she does 95% of grocery shopping. I basically pick up odds and ends as needed. I am a conservative but am rather to the left on environmental issues other than global warming. When I had a garden space in the past it was totally organic. Excluding my ex wife my income is 20,000-30,000. My purchases are based more on price.
DE	I do not know of "Grown Fresh with Care in DE" -- am I missing it?
VA	I do not share my income. In reference to 9A I make my own.
NJ	I do not shop much and when I do it is at my local supermarket. I do not look for special foods, just get what I think is a good buy for the \$. Thanks for \$1. Good luck in the study. Thanks also for the explanations- I needed them.
MD	I do not tell my income. I shop 5 food stores and 1 farmers market every month.
MD	I don't know what you mean
DE	I DONATED YOUR \$1.00 TO THE FOOD BANK OF DELAWARE.
PA	I don't care for the taste of organic food.
VA	I don't know if I helped any but I hope so.

State	Comments, Cont.
MD	I don't know of "MD's Best"
DE	I feel my food decisions are mainly influenced by price of product. There aren't many "farmers markets" in my area of food shopping.
NJ	I find this a difficult questionnaire to complete. I don't think along these lines at all. "Jersey Fresh" should mean something to me but it doesn't. It would be helpful to know the history of this questionnaire and what it will be used for.
NJ	I find this a very confusing survey. I would prefer to buy local organic produce, usually a local farmers market. I do pay the higher price hoping that it is pesticide free and fresh. I don't like to buy organic in conventional grocery stores because I don't know where produce is from.
PA	I generally shop at our local grocery chain. In the summer, I like to buy produce at the Farmer's market close to my home. Price, quality and freshness matter.
NJ	I grew up on a natural farm in the Caribbean. I love to have a little garden. My mom had a plot in E. Orange
MD	I grow all my vegetables. We do lot of canning. I do not grow organic.
PA	I grow my own potatoes that I can myself. Also I put up a lot of my own cucumbers, peppers and other produce I grow. Also, I make my own horseradish and sauerkraut; I hunt and fish, so some of the meat we eat is from the wild game harvest. I don't know this is helpful, but I hope it is.
PA	I grow my own vegetables and make my own jams. I buy eggs and milk at local farms; that is what I am referring to when I checked "often" for farmer's market.
PA	I grow my own.
DE	I grow some of my own produce using a combination of organic and nonorganic methods. Returned dollar.
MD	I grow strawberries, red/black raspberries, cranberries, tomatoes, mesclun lettuce, herbs. I bought 10 doz of corn from farmer in PA - I froze it. I buy groceries from Wegman's, Trader Joes, Millers, Weis, Wal-Mart, etc. I use cow manure and 10*10*10 for my gardens.
NJ	I have 5 adult children, 12 grands, 2 g. grandchildren - also am very careful and frugal and have a vegetable garden for years.
NJ	I HAVE A LARGE ORGANIC GARDEN IN MY YARD AND SOME FRUIT TREES AND BERRIES. I BELONGED TO NOFA FOR MANY YEARS.
PA	I have a nice garden grow most of all my vegetables. Freeze and eat. I buy very little produce in markets.

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State	Comments, Cont.
VA	I have answered these questions in this manner because I believe it is all hype! An advertising ploy. Charge more for healthy while paying less to grow it.
VA	I have chickens so I get my own eggs and meat. Guess the name of the breed; it is Delaware.
VA	I have homes in VA and DE -- a few answers may be distorted. I prefer local farmers markets and price is no issue. Local at the farmers markets are fresher and often taste better. My husband doesn't care for organic, so I don't purchase it normally but believe it's far healthier!
DE	I have my own garden & grow much of my own vegetables. I also purchase vegetables and fruits and preserves from road side stands and church bazaars.
DE	I have never heard of "Grown Fresh with Care in DE." Bring a "Whole Foods" supermarket to Kent County
PA	I have never seen or heard of the PA preferred.
NJ	I have noticed produce is limited such as oranges, have been scarce in NJ from time to time. And other produce not quite ripe but sold anyway a "bland" taste to it.
VA	I hope I did it right. I am 78 years old. My husband lives with me.
VA	I hope this helps. Good luck with your research!
DE	I hope this info helps you achieve the success you are looking for Kathryn!!! Thanks John for the chance to be heard!!! Use me anytime for more surveys and studies!!!
NJ	I hope you the best. Good luck.
NJ	I kept putting off completing this because it made no sense - it is the worst laid-out survey I have ever seen - too complicated - not well thought out to gain a response.
MD	I like local, reasonable price, don't care about organic. Fresh food gets priority-also I like to support the locals.
PA	I like natural and organic, but mostly I like local enough that fruits and vegetables can be picked ripe!
VA	I like organic food, but local farmers produce organic food and I like to support our local economy -
VA	I like seasonal foods.
DE	I like Shopping the Supermarket

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State	Comments, Cont.
DE	I LIKE THE SURVEYS. BUT I THINK MR. JOHN BERNARD, YOU MAY GIVE THE SURVEYER(S) FOR THERE HELP AND SUPPORT FOR ABOUT \$5 TO \$10 DEPENDING HOW LENGTHY THE SURVEY IS. PARDON MY PENMANSHIP AS I HAVE A BROKEN ARM. PLEASE DO NOT BAR ME FROM YOUR INTERESTING SURVEYS. I LOVE DOING THEM.
DE	I like to buy fresh food whenever possible, at farmers market or grocery store.
DE	I like to buy organic but the local grocery stores are too high priced. I was not able to visit the stands on the green in Dover due to the limited time frame they were opened. Hope this helps your research
DE	I like to purchase all vegetables and fruit fresh at local farmers market. Do not shop for organic.
PA	I live in a "rural" area. During warm months I buy fruit & vegetables from nearby farm. I used to grow my own vegetables. I grow my own mint, chive, oregano, etc.
VA	I live in a rural area where "conventional" and "organic" are the available choices.
VA	I mostly purchase my food at grocery stores since our farmers market is limited.
DE	I no longer shop for food as I live in asst. living facility and am provided meals.
VA	I only buy organic strawberries due to chemicals allowed especially in CA. Natural really doesn't mean anything - haven't seen DE or Jersey items.
PA	I only shop at local grocery stores. I have 4 kids and a full time job. I don't have time to go to farmer's markets. I would like to eat healthier but there isn't time to take those steps.
DE	I prefer organic foods but they are usually too expensive. Most of my organic foods come from my garden in the summer which is small but very productive. As you can see from my answers I buy the cheaper because of budget restraints. I will not buy GM foods if at all possible.
NJ	I purchase by price in the supermarkets. I just never think to drive a few extra miles to the farmer's market. Natural and organic may not be worth paying extra money for.
NJ	I question if one of your valuables how dirty (aka dirty non-organic) the particular food is. There are certain foods that either I buy organic or I just won't buy it regardless of price.

State	Comments, Cont.
DE	I RARELY EVER SHOP AT FARMERS MARKETS. I PURCHASE PRODUCTS MOSTLY BASED ON PRICE AND LOOK FOR CHEAPEST PRICE. IF PRICE THE SAME THEN BUY LOCAL.
PA	I realize the value of surveys & getting people to participate. Please use the dollar to further your research. Thanks...
VA	I really like the home grown food.
VA	I resent your waste of my (taxpayer) money to do a stupid survey that has no readily apparent benefit to anyone except the faculty of UD.
MD	I shop at different grocery markets and stores
PA	I shop at Giant food store.
MD	I shop at the Farmers Market at the Cantonville location once a week when it is open from the spring until it closes before Thanksgiving.
MD	I shop by the cost at the grocery store.
NJ	I shop for good bargain items & I dislike having to choose non-USA produce - local (in NJ) nearby farm products are trusted to be at least - natural - but who knows?
DE	I shop military commissaries. I have a garden and grow a lot of my own food.
DE	I think a lot of "organic" is hype. Mostly I purchase canned or frozen off season, and we garden and eat our own in summer. Otherwise, price matters most to me.
VA	I think we need to eat more food without salt and sugar in it.
NJ	I THINK YOUR RESULTS IN THE FOOD PRODUCT BOXES WILL BE QUESTIONABLE. HIGHLY CONFUSING AND I GOT TIRED OF READING SIMILAR CHOICES.
NJ	I try to always buy organic for fruit & veggies except for bananas.
MD	I try to buy natural or organic foods. For my basic foods I shop at Whole Foods in Mt. Washington, Baltimore. The food is excellent; carry out is especially good.
VA	I try to shop at one store to save time.
NJ	I try to use a warehouse club. Also, jct., but don't last from there.
DE	I usually shop in Sam's Club and Wal-Mart's. We have a farmer's market but it is sold in large quantities. Organic is questionable most sprays have ruined good land.
DE	I want to buy local and organic at the regular grocery store, I want to make one trip for all groceries- do not want to stop at SuperFresh, then Farmers Market. Just stock conventional grocery stores with more local and better labeled organic.

State	Comments, Cont.
MD	I was happy to participate in this survey, but found it confusing to answer... anyway, good luck with your research!
PA	I will always purchase organic 1st as long as the produce looks ok. If organic isn't available then my 2nd choice is local produce.
PA	I will always shop the grocery store above all others to avoid extra stops, regardless of cost.
DE	I will check more closely. What is the correct definition of "local"? Please place \$1.00 in the self addressed stamped letter for a nonprofit organization and send off for me.
NJ	I would generally support the purchase of organic food if it was within 10% of the price of non-organic food. Would always purchase from a local "farmers market" if one was closer. Good luck!
PA	I would like to clarify not knowing about "PA preferred". I have just recently moved to Pennsylvania. Thank you-
DE	I would like to have locally grown produce year round. I do have a garden in the summer for fresh fruit and vegetables. Grown fresh with care in Delaware I will be on the lookout for this.
DE	I would like to see more farmers markets and local produce stands in southwestern Sussex County!
MD	I would love to eat more organic and locally grown products but the grocery store is far more convenient than a farmers market. Organic products can also be very expensive. Thank you for including me in your survey.
MD	I would prefer to buy local organic, but sometimes it's just too expensive.
PA	I'd be interested in reading the results of your research.
PA	If I had knowledge of "PA Preferred" I would have probably changed some answers in the "set" questions.
DE	If the scales/questions don't show it, I always shop at the closest grocery store to my house and I often buy whatever produce is on sale.
PA	I'm 93 years old and trying to live alone. I'm into frozen food dinners! - Amen! (dollar returned)
MD	I'm getting better with organic and natural foods.
MD	I'm in grad school, so I'm broke and my answers reflect that. If I made more \$, I would favor local more than organic, but it also depends on what's in season where. Like there's no way I'd ever eat citrus if I was strictly locavore. So in Feb, I eat lots of grapefruit instead of old local apples. We have a great food shipment system, and I think it's more healthy to eat fresh in winter than locally. And thanks for the dollar! :)

State	Comments, Cont.
VA	I'm interested in your survey results, please let me know if they are published or posted online. I would go to the farmers' markets more often if kids were a little older, easier to shop with.
PA	I'm not a good example for the study since I live alone - my husband is in a nursing home - my shopping is limited but do frequent a farmers market when I can.
NJ	I'm returning your gift of \$1.00. Please use for a good purpose. Good luck with your research.
MD	I'm sending your dollar back. I'm glad to help a student out.
PA	I'm sorry but I'm not at all familiar with the issues you seem to be working with.
DE	I'M SORRY YOU DIDN'T RECEIVE THE FIRST ONE I SENT...HOPEFULLY YOU GET THIS ONE. MERRY CHRISTMAS! HAPPY NEW YEAR!
PA	In my household I purchase the fruits and vegetables and my wife does the remainder 80% wife 20% husband
NJ	In spring- summer, and fall, I tend to buy locally whenever available and also grow vegetables without sprays.
MD	In summer, I buy as much locally (MD- thru Delaware - to Ocean City - 150 mi radius) as I can at roadside stands, etc. I fill in at supermarkets, i.e. Super Fresh, Safeway, Giant, rest of the year mostly supermarket. Happy thanksgiving. Good luck!
PA	Income question #17 is not necessary for the survey
NJ	Interesting survey.
VA	Interesting survey. Good luck! :)
NJ	Interesting! As you can see, I am very driven by cost...always have been. Good Luck!
PA	Interesting! Money returned for your good use!! Thank you!
MD	It also depends how the product looks. Good luck!
MD	It was a pleasure to help.
MD	It will be entertaining to see the results. My focus is on cost and easy accessibility. I think more education needs to be done on organic, natural, MD's best - etc. I don't think I have heard of MD's best.
NJ	I've added a dollar for a donation. Sorry it took so long, misplaced survey. Hope this helps Kathryn's thesis. If I could help in any other way please respond back. Good luck!
MD	I've never tried organic foods. I have a daughter in college so the dollar needs to be returned because to me education is important.

<b>State</b>	<b>Comments, Cont.</b>
PA	Keep the \$1 for future research. Thanks.
DE	Keep the \$1.00 for your program. Thanks.
PA	keep the dollar
NJ	Keep the dollar; glad to help.
PA	Keep up the good study/investigation relative to health concerns!
VA	Kind of an odd survey, but you have to get answers somehow!
PA	Let me know if you have any questions! Included email.
MD	Local, seasonal products
VA	Location, availability and mobility of purchasers would be strong deciding factors.
DE	Make survey in Spanish - be fair to this segment I offer to translate for free.
PA	Meat and dairy foods, I will buy "natural" and organic. For vegetables, I don't care.
PA	Most times organic is the most expensive.
MD	Mostly I shop at a warehouse club, twice a month I'll go to a grocery store. Good luck, grad student! :)
DE	Mr. G..... has had a stroke and is in a nursing home and is unable to fill this out.
PA	Much luck on your paper-
VA	My comments is that I plant my own vegetables so I doesn't buy any vegetables, home grown because I eat more vegetable our of my garden. I plant them myself I go to grocery store for thing I can't plant.
PA	My concerns regarding organic is that I worry the process doesn't kill micro-organisms that can make you sick
NJ	My family enjoyed shopping at the farmers market near our summer home in Blairstown, NJ, and a USDA organic farm stand in Newton, NJ, once a week.
NJ	My granddaughter went to the University of Delaware. Good luck with this!
DE	My husband did not fill out the survey-his wife did.
MD	My occupation is a Produce Quality (QA.) Assurance Inspector as well as the Receiving Dept. manager. For a major produce warehouse in MD. Also I am a very small farmer afford 60 acres.
DE	My opinions are free! I think your study should donate the \$ to a food bank.
NJ	<b>MY PRIMARY CONSIDERATION FOR BUYING FOOD IS THE PRICE, REGARDLESS OF THE LOCATION BUT WILL BUY FROM ORGANIC STORE IF THE PRICE IS THE SAME AS OTHERS.</b>

State	Comments, Cont.
PA	My purchasing habits are influenced by "Depression" childhood. Best value for dollar . Good nutrition.
PA	My wife and I both shop for food. Due to the economy price dictates a lot of our purchases.
PA	My wife and I prefer to buy organic but find ourselves shopping at conventional stores for convenience. They are on every corner and open late.
NJ	My wife does most of the grocery shopping.
NJ	My wife is allergic to strawberries, so I never would buy strawberry preserves.
DE	Need to educate more consumers on the state marketing programs and Delaware needs to do more to market their program.
MD	No token received
DE	None at this time. I hope I have helped in survey.
PA	On question 9, price overrides other attributes. Thank you for the dollar. I will donate it to the DE food bank. Good luck with your thesis!
PA	Organic food is very good but must be substituted for lesser value because of price.
NJ	Organic is overpriced and poorly regulated. No standards to rely on and fancy marketing do not make something healthier. Making harmful pesticides, hormones, and chemicals and all "GM" ingredients unlawful is only way to ensure healthier produce.
PA	Organic produce in our town is too expensive.
VA	Organic products are too expensive, I just don't bother buying them. Local products are of course the best. Returning your \$1.00 to help with mailing. Good luck Kathryn with your thesis.
NJ	Our local grocery store carries mostly local (within 20 miles) produce and always labels which farm the produce comes from. That makes a big difference in which produce I choose because I like to help out the "locals".
VA	Our stores carry local produce and we select locally produced food when possible. I pick up what my wife designates.
VA	Please contact me regarding survey results.
PA	Please do not send anymore.
DE	Please don't send any more correspondence to me. Don't like giving my info to persons I do not know, nor leaving my address.
NJ	Please let me know of anything else or any other surveys going on!
PA	Please let me know where I can read your results. Thank you!

State	Comments, Cont.
DE	Please note that if we had a Trader Joe's, Whole Foods, etc., some of my answers would differ. I'm not really aware of any organic farmers market locally?! Some of these distributing sites you mention are not easily available in Newark, or at least I'm not aware of them. I am willing to pay - however items' availability a problem!
NJ	Please send this survey to my friend. J.....
DE	Price is a large factor in my choices for groceries.
NJ	Price is almost the most important factor, but we are willing to pay a little more for jersey fresh or locally grown, but not much more.
MD	price matters as our income is low. I like farmer's markets and we need to support local economy by helping local farmers
DE	Price will always be a consideration; 9A and B will skew. We prefer to buy all US products but since suspension of USDA inspections, there's no telling what kind of poison or dangerous chemicals we are ingesting due to lack of current controls.
PA	Price would make my choice.
PA	Price, has to do with choice. But if grown "local" and "organic" I am more likely to purchase those products. "Organically/locally" grown it would be a better product.
PA	Price, of course, is a factor in what we buy. As we learn more about the dangers of pesticides, we avoid non-organics when possible (potatoes, apples, milk) We use organic solutions to gardening problems.
NJ	priority order: price - local - w/in NJ
PA	Purchasing answers given as if I had all the available choices in our area which we don't.
MD	Q7 local is the state where I live
PA	Question 9 could use some further explanation at bit confusing at first.
DE	Retired
DE	Retired in January 2009. Most of the times buy generic. Organic food are more expensive- I need to watch my expenses since retirement.
MD	Retuned Dollar "I would like to hear more about your study before giving you (unknown to me) more of my opinion! Good luck! Eat Treats as long as it's good"
DE	RETURNED \$1. LIVE IN NURSING HOME. DO NOT SHOP.
MD	Returned Dollar "Good Luck"
PA	Send copy of results to .....Thanks and good luck w/survey

State	Comments, Cont.
MD	Some of the decisions were difficult because I shop at a number of places and if I'm not at Giant Food, I mainly...?. I shop at MOMS, Trader Joe's, farmers markets, Giant and occasionally other - price is important. Best tomatoes get at local farmer's market, their own locally grown heirloom tomatoes. I'm buying more organic produce now to avoid pesticides...
PA	Sorry about the delay. I had very serious problems at home.
NJ	Sorry for getting back to you so late. Survey was misplaced. Good luck!
NJ	Sorry for the delay, I underwent total knee replacement surgery and hence the delay. All the best to you.
DE	Sorry I'm not willing to answer the last question.
DE	Sorry the sharpie went through the pages. Hope you can decipher. Good luck on project.
VA	Sorry this is late!
DE	SORRY TO TAKE SO LONG. IF I HAD A FEW CHILDREN IN THE HOUSE MY CHOICES MIGHT BE DIFFERENT.
PA	Sorry to take so long. My wife and I were visiting our son in Western PA and just got back.
DE	STRAWBERRY PRESERVES WAS A BAD CHOICE BECAUSE I DON'T LIKE THEM. A DIFFERENT FRUIT WOULD HAVE BEEN BETTER.
PA	Suggest return date on survey.
VA	Thank you Dr. Bernard. Good luck with your research.
VA	Thank you for allowing me to participate in your survey.
PA	Thank you for allowing us to have some say. Put your \$1 towards a better future.
VA	Thank you for asking me to participate!
VA	Thank you for offering the dollar bill, but it wasn't necessary. I enjoyed the survey. Good luck with your project!
DE	Thank you for the dollar and good luck with your survey.
DE	Thank you for the dollar.
PA	Thank you for the gift of \$1. Good luck with your efforts.
PA	Thank you for the gift. I am giving it back. Thank you for the thought.
VA	Thank you for this opportunity in helping your research.
NJ	Thank you for your gift (\$1) I shop (food) mainly in Super Markets (Food Town or Shop Rite or A&P, but at times pick up food at local drugstore or deli)
NJ	THANK YOU SO MUCH AND GOOD LUCK.
NJ	Thank you!

<b>State</b>	<b>Comments, Cont.</b>
VA	Thanks for \$1.00. I hope I was of help.
DE	Thanks for giving me the opportunity to fill this out and hope you have a great day
VA	Thanks for the "buck"
VA	Thanks for the \$1.00
PA	Thanks for the \$1.00, but use it for something else.
MD	Thanks for the dollar bill. I hope this survey helps you.
VA	Thanks for your work. Hope this is not too late
DE	Thanks so much for the small token. It added to something I really needed. God bless you. Send me the survey any time.
NJ	THANKS YOU!! HOPE IT HELPS OUT
DE	The address used is a seasonal home. Please remove from your mailing list.
MD	The best tomato still comes from one's own back yard!
PA	The format of this survey sucks. Feel free to contact me if you need advice on how to improve its design.
MD	the non-local organic grocery store - few and far between. Maryland's best natural grocery store - hit or miss in terms of quality, not constant with selections. To eat healthy means to pay more- prices jump too much.
VA	The person to whom this survey is addressed has been deceased for 30 years. Please remove name from your mailing list. Thanks.
MD	The purchase choice would depend significantly on the convenience and availability of farmer's market at time of need.
DE	The wife of the intended recipient completed this survey. Good luck with your study.
PA	There is anything wrong with these types of surveys. But I think using others info for results, like in newspapers, radios, tvs and towns meetings. I'm sorry returning this report late. Sorry, again.
NJ	Think organic foods are overpriced and don't taste any better.
NJ	This is a difficult survey. Depends on seasons - i.e. tomatoes - I'll buy from a roadside stand vs. grocery store while in season of the particular item
MD	This is a very good survey because foods are quite important as medicine.
DE	This is about how we shop. Not our education or race, income ask about food.
DE	This is really important research. Thank you
DE	This survey is a bit confusing.
DE	THIS SURVEY WAS FILLED OUT BY J.....'S WIFE.

State	Comments, Cont.
VA	This was sent to an address in Northern Virginia; I spend most of the year in Southwest Virginia. I don't know if region is important to your study, but just in case...
VA	Time for farmer market coincides with my church schedule. Plan to grow my own organic fruits and vegetables in the next few years.
PA	To be my age I must be doing something right. Can't believe all on the labels anyway. Everything is a survey, survey. I am tired of them. Use common sense.
MD	Too much thinking required, make it more simple!
MD	Total annual household income mentioned in this survey includes my wife's earning.
VA	Tropical storm "Ida" soaked your mailing!
VA	Use Walmart for food source except for meat.
MD	Used to work for a farmer's market in the area, never heard of Maryland's best. Wrote in "southern maryland... so good" as mktg program and rated it "3"
VA	Very confusing. I live in a "life care" community, and shopping at least once a week for breakfast and lunch, both of which are light. I have little control over main food.
PA	Very enlightened. Good luck Kathryn Onken.
PA	Very long comment about being a caregiver.
PA	Was I supposed to factor in travel/convenience when making choices? Unclear to me. Good luck with your research!
DE	We also grow a lot of our own food-garden-
MD	We buy organic when we can usually from the grocery store or local markets.
DE	We do not cook at home very much so I do not buy a lot of groceries. We do try to buy low fat and sodium foods and no red meats when we do prepare our food.
DE	We grow our own vegetable in the summer all organic.
MD	We have a garden, grow some of our own food, we don't like food that has all those pesticides, etc. in them.
MD	We have our own garden, vegetable type in our yard.
MD	We purchase garden veggies from you-pick farms on the Maryland, Delaware border
NJ	We seldom choose any organic products, mostly because of price. We buy most vegetables and fruits from a local vegetable store. Sometimes the products are marked Jersey Fresh.

State	Comments, Cont.
PA	We shop a close by Giant Eagle and a local Wal-Mart. We have a farmer's market within 5 minutes but we just never get there.
DE	We shop at a natural food store, small grocery - seldom at a supermarket. For preserves natural is good enough since it is cooked. Grocery=convenience.
MD	What if you "don't know" what category you're buying?
DE	What is your definition of a farmers market?
PA	When do we start receiving samples? I'm off? In our housing it's food or meds.
MD	When I buy organic, price is no object. P.s. your return envelope came totally sealed!
VA	When I lived in NC, I went to their state farmers market every weekend. It was big, had lost of choices, and great food. I have yet to find something I like as well in VA - they are hard to find, are open sporadically, and don't have as much variety. The NC state market was permanent and open every day for much of the day. I would shop at a market like that in VA if I could.
PA	When purchasing foods, price is my highest priority. The lower the price the more likely I am to purchase the product.
DE	WHERE DO YOU GET YOUR PRICES? WE KNOW ORGANIC ANYTHING IS OVERPRICED!
MD	While I'm not aware of the "Maryland's Best" program, my county (Harford) has put a lot of effort into a campaign to get people to buy from Harford farms, or buy "local."
DE	Why are you wasting \$5000 by putting the dollar in the survey package? People would reply, if they're so inclined without any dollar. My dollar will go in the church collection plate.
MD	Why does organic have to be so expensive?
MD	Why would I want to be a judge of food grown anywhere other than Maryland?
MD	Will the results of the survey be published on the web somewhere?
NJ	Would choose locally grown for approx. 30% more \$ than grocery store \$ always. Good luck.
DE	Would like to have completed entire survey but just too much for a survey like this. I prefer to buy local produce, and I am blessed to not have to consider cost.
NJ	Would like to know more about organic foods; however prices for organics are a bit too high.

State	Comments, Cont.
VA	Would welcome locally grown organic produce, provided prices are reasonable. We should not have to expend a great amount in order to eat healthfully (organic).
MD	wrote "none of y.b" by income
PA	To me, local means it can be picked in the morning & delivered to my store or farmer's market by the afternoon; I guess that could happen if the delivery truck was v.fast.
NJ	Wrote his name/address
DE	You made me think where I should buy my groceries and if I should get organic or natural.
DE	You should have a box indicating "prefer not to answer." DK responses are as valuable as valid response. For question #2 (strawberry preserves), I do not use this type of product. You might want to add a box asking how often you purchase these types of product.
NJ	Your method of following up on the survey encouraged me to participate. To be honest I usually throw these types of things away. Good job!!

## Appendix IV

### SAS CODE USED TO GENERATE CHOICE EXPERIMENT

```
title "Working with the choiceff macro with market" ;
options linesize=80 noovp ;

title2 "Getting a design";
%mktx(2 3 2 2 3 2 2 3 2 ,n=1728,seed=2009081814)
;

data test ;
  set randomized ;
run;

proc sql ;
  create table test
  as select * from test
  order by ranuni(2345);
quit;

/*
proc print data=test ;
run;
*/

title2 "Create the Choice design key " ;

data key;
  input
  Choice $ 1-9   organic $ pricec $ market $;
cards;
Program          x1          x2          x3
Local            x4          x5          x6
Non-Local        x7          x8          x9
None             .           .           .
;
title2 "Create the Choice design key " ;

title2 "Create Choice Design from Linear Design" ;
%mktroll(design=test,
         key=key,
         alt=choice,
         out=designblock)
run;
```

```

/*
proc print data=designblock ;
  by set;
run;
*/

data designblock ;
  length price 8;
  set designblock;
  if pricec='1' then price=2.99 ;
  else if pricec='2' then price=3.99 ;
  else if pricec='3' then price=4.99 ;
run;
run;
title2 "Use choiceff" ;
%choiceff(data=designblock,
          init=designblock(keep=set),
          intiter=1000,
          iter=1000,
          model=
organic*market /sta)
          class(choice organic market
          identity(price) identity(price*price)
          identity(price)*class(organic/sta)
          identity(price)*class(market/sta)
          ,
          nalts=4,
          nsets=12,
          seed=2009082634,
          beta=zero)

proc print data=results ;
run;

libname design "." ;

title2 "Create blocks" ;
%mktblock(data=results,nblocks=2,out=design.blocked,nalts=4
,maxiter=1000,
          factors=choice
          price organic market ,seed=2009100137) ;

data design.blocked;
  set design.blocked;
  if price=. then price=0;
run;

proc format;
  value market 1 = 'FarmersMkt' 2 = 'GroceryStore' ;
  value organic 1 = 'Organic' 2 = 'Natural';

```

```
run;

data design.blocked;
    set design.blocked;
format market market. organic organic. ;
run;

proc print data=design.blocked ;
by set notsorted ;
run;

proc freq data=design.blocked ;
tables block*price ;
tables block*market ;
tables block*organic ;
run;
```

## Appendix V

### SAS CODE USED IN CLM ANALYSIS

```
title "Thesis Model-CLM-Strawberry Preserves" ;
options linesize=132 noovp;

libname design '.' ;

*%include 'choicel6.sas' ;

title2 "Entering the data" ;

data surveyresults;
  length State $ 2 Block 8 Color $ 7 SurveyNo 8 Q1A 8 Q1B 8 Q2A8
    Q2B 8 Q2C 8 Q2D 8 Q2E 8 Q3A 8 Q3B 8 Q3C 8 Q3D 8
    Q3E 8 Q3F 8 Q3G 8 Q3H 8 Q4A 8 Q4B 8
    Q4C 8 Q4D 8 Q4E 8 Q5A 8 Q5B 8 Q5C 8 Q5D 8 Q5E 8 Q6A 8 Q6B 8
    Q6C 8 Q6D 8 Q6E 8 Q6F6iNJ 8 Q6F6iDE 8 Q6F6iPA 8
    Q6F6iVA 8 Q6F6iMD 8 Q7Miles 8 Q8Percent 8 Q9ASet1 8
    Q9ASet2 8 Q9ASet3 8 Q9ASet4 8 Q9ASet5 8 Q9ASet6 8
    Q9BSet1 8 Q9BSet2 8 Q9BSet3 8 Q9BSet4 8 Q9BSet5 8
    Q9BSet6 8 Q10Sex $ 1 Q11Age 8 Q12Health 8 Q13Educ 8
    Q14Children $ 1 Q15Race 6 Q16Purchaser $ 1 Q17Income 8
    Comments $ 1000;

infile 'surveyresults.csv' dlm=',' dsd firstobs=2 obs=1847;

  input State $ Block Color $ SurveyNo Q1A Q1B Q2A Q2B
    Q2C Q2D Q2E Q3A Q3B Q3C Q3D Q3E Q3F Q3G Q3H Q4A
    Q4B Q4C Q4D Q4E Q5A Q5B Q5C Q5D Q5E Q6A Q6B Q6C
    Q6D Q6E Q6F6iNJ Q6F6iDE Q6F6iPA Q6F6iVA Q6F6iMD Q7Miles
    Q8Percent Q9ASet1 Q9ASet2 Q9ASet3 Q9ASet4 Q9ASet5 Q9ASet6
    Q9BSet1 Q9BSet2 Q9BSet3 Q9BSet4 Q9BSet5 Q9BSet6
    Q10Sex $ Q11Age Q12Health Q13Educ Q14Children $ Q15Race
    Q16Purchaser $ Q17Income Comments $ ;

label Q1A="FreqPurchaser"
  Q10Sex="Gender"
  Q13Educ="Educ"
  Q14Children="ChildUnder18"
  Q15Race="Ethnicity" ;

run;
```

```

/*
proc print data=surveyresults (obs=100);
run;
*/

data conjoint1;
    set surveyresults (keep= State Block SurveyNo Q1A
        Q9BSet1 Q9BSet2 Q9BSet3 Q9BSet4 Q9BSet5 Q9BSet6
        Q10Sex Q11Age Q13Educ Q14Children Q15Race Q17Income );

where ((State='DE') or (State='NJ') or (State='MD') or (State='PA')
or (State='VA'))
and Q9BSet1 in (1,2,3,4)
and Q9BSet2 in (1,2,3,4)
and Q9BSet3 in (1,2,3,4)
and Q9BSet4 in (1,2,3,4)
and Q9BSet5 in (1,2,3,4)
and Q9BSet6 in (1,2,3,4)
        ;

run;

/*proc freq data=conjoint1 ;
    title "Response breakdown" ;
    tables state*(q9bset1-q9bset6) ;
run;
*/

/*proc print data=conjoint1 (obs=100);
run;
*/

/*proc print data=design.blocked;
run;
*/

title2 'Merge Data and Design' ;
    %mktmerge (design=design.blocked, data=conjoint1,
        out=res2,blocks=Block, nsets=6, nalts=4, setvars=Q9BSet1 - Q9BSet6)

/*title2 'Design and Data Both';
proc print data=res2 (obs=100);
    by SurveyNo block;  id set SurveyNo;
run;
*/

title2 'Code the Independent Variables' ;

```

```

proc transreg design norestoremismissing data=res2;
    model class(choice organic market organic*market )
           identity(price) identity(price*price)
           identity(price)*class(organic)
           identity(price)*class(market);
    id state block SurveyNo Q1A Q10Sex Q11Age Q13Educ Q14Children
    Q15Race Q17Income set c;

output out=coded ;
run;

%put variables are &_trgind ;

/*proc print data=coded ;
    where choicelocal=. ;
run;
*/

/*proc print data=coded (obs=100);
run;
*/

/* add proc freq statement */

/*proc freq data=coded ;
    title2 "Check on NJ choices" ;
    where choicenone=1;
    table c*state ;
run;
*/

%phchoice(on)

title2 "Multinomial Logit Discrete Choice Model";
data coded ;
    set coded ;
    if ChoiceLocal=0 and ChoiceNon_local=0 and ChoiceNone=0
        then ChoiceProgram=1 ; else ChoiceProgram=0 ;

if state="NJ" then NewJersey=1;
else if state="DE" then NewJersey=0;
else if state="MD" then NewJersey=0;
else if state="PA" then NewJersey=0;
else if state="VA" then NewJersey=0;

if state="MD" then Maryland=1;
else if state="DE" then Maryland=0;
else if state="NJ" then Maryland=0;
else if state="PA" then Maryland=0;
else if state="VA" then Maryland=0;

```

```

if state="PA" then Pennsylvania=1;
  else if state="DE" then Pennsylvania=0;
  else if state="NJ" then Pennsylvania=0;
  else if state="MD" then Pennsylvania=0;
  else if state="VA" then Pennsylvania=0;

if state="VA" then Virginia=1;
  else if state="DE" then Virginia=0;
  else if state="NJ" then Virginia=0;
  else if state="PA" then Virginia=0;
  else if state="MD" then Virginia=0;

if state="DE" then Delaware=1;
  else if state="MD" then Delaware=0;
  else if state="NJ" then Delaware=0;
  else if state="PA" then Delaware=0;
  else if state="VA" then Delaware=0;

if Q10Sex="F" then Female=1;
  else if Q10Sex="M" then Female=0;

if Q14Children="Y" then ChildUnder18=1;
  else if Q14Children="N" then ChildUnder18=0;

if Q1A=4 then FreqPurchaser=1;
  else if Q1A=5 then FreqPurchaser=1;
  else if Q1A=1 then FreqPurchaser=0;
  else if Q1A=2 then FreqPurchaser=0;
  else if Q1A=3 then FreqPurchaser=0;

if Q13Educ=3 then SomeCollegeorAbove=1;
  else if Q13Educ=4 then SomeCollegeorAbove=1;
  else if Q13Educ=5 then SomeCollegeorAbove=1;
  else if Q13Educ=6 then SomeCollegeorAbove=1;
  else if Q13Educ=1 then SomeCollegeorAbove=0;
  else if Q13Educ=2 then SomeCollegeorAbove=0;

if Q15Race=1 then AfriAmer=0;
  else if Q15Race=2 then AfriAmer=1;
  else if Q15Race=3 then AfriAmer=0;
  else if Q15Race=4 then AfriAmer=0;
  else if Q15Race=5 then AfriAmer=0;
  else if Q15Race=6 then AfriAmer=0;
  else if Q15Race=7 then AfriAmer=0;

if Q11Age^=. then do;
if Q11Age=1 then Age=21;
  else if Q11Age=2 then Age=29.5;
  else if Q11Age=3 then Age=40.5;
  else if Q11Age=4 then Age=49.5;
  else if Q11Age=5 then Age=57;
  else if Q11Age=6 then Age=62;

```

```

else if Q11Age=7 then Age=67;
else if Q11Age=8 then Age=72;
else if Q11Age=9 then Age=77;
else if Q11Age=10 then Age=85;
end;

if Q17Income^=. then do;
  if Q17Income=1 then Income=0.5;
  else if Q17Income=2 then Income=1.24995;
  else if Q17Income=3 then Income=1.99995;
  else if Q17Income=4 then Income=2.99995;
  else if Q17Income=5 then Income=4.24995;
  else if Q17Income=6 then Income=6.24995;
  else if Q17Income=7 then Income=8.74995;
  else if Q17Income=8 then Income=11.24995;
  else if Q17Income=9 then Income=13.74995;
  else if Q17Income=10 then Income=17.49995;
  else if Q17Income=11 then Income=22.49995;
  else if Q17Income=12 then Income=30.0000;
end;

ageage=Age*Age ;
incomeincome=Income*Income;
NCmarket1=(1-choicenone)*market1 ;
NCprice=(1-choicenone)*price ;
NCorganic1=(1-choicenone)*organic1 ;
NCpriceprice=(1-choicenone)*priceprice ;
NCpricemarket1=(1-choicenone)*pricemarket1 ;
NCpriceorganic1=(1-choicenone)*priceorganic1 ;
NCorganic1market1=(1-choicenone)*organic1market1 ;

NJChoiceLocal=NewJersey*ChoiceLocal ;
NJChoiceNone=NewJersey*ChoiceNone ;
NJChoiceProgram=NewJersey*ChoiceProgram ;
NJChoiceNon_Local=NewJersey*ChoiceNon_Local ;
NJNCmarket1=NewJersey*NCmarket1 ;
NJNCprice=NewJersey*NCprice ;
NJNCorganic1=NewJersey*NCorganic1 ;
NJNCpriceprice=NewJersey*NCpriceprice ;
NJNCpricemarket1=NewJersey*NCpricemarket1 ;
NJNCpriceorganic1=NewJersey*NCpriceorganic1 ;
NJNCorganic1market1=NewJersey*NCorganic1market1 ;

MDChoiceLocal=Maryland*ChoiceLocal ;
MDChoiceNone=Maryland*ChoiceNone ;
MDChoiceProgram=Maryland*ChoiceProgram ;
MDChoiceNon_Local=Maryland*ChoiceNon_Local ;
MDNCmarket1=Maryland*NCmarket1 ;
MDNCprice=Maryland*NCprice ;
MDNCorganic1=Maryland*NCorganic1 ;
MDNCpriceprice=Maryland*NCpriceprice ;

```

MDNCpricemarket1=Maryland\*NCpricemarket1 ;  
MDNCpriceorganic1=Maryland\*NCpriceorganic1 ;  
MDNCorganic1market1=Maryland\*NCorganic1market1 ;

PAChoiceLocal=Pennsylvania\*ChoiceLocal ;  
PAChoiceNone=Pennsylvania\*ChoiceNone ;  
PAChoiceProgram=Pennsylvania\*ChoiceProgram ;  
PAChoiceNon\_Local=Pennsylvania\*ChoiceNon\_Local ;  
PANCmarket1=Pennsylvania\*NCmarket1 ;  
PANCprice=Pennsylvania\*NCprice ;  
PANCorganic1=Pennsylvania\*NCorganic1 ;  
PANCpriceprice=Pennsylvania\*NCpriceprice ;  
PANCpricemarket1=Pennsylvania\*NCpricemarket1 ;  
PANCpriceorganic1=Pennsylvania\*NCpriceorganic1 ;  
PANCorganic1market1=Pennsylvania\*NCorganic1market1 ;

VAChoiceLocal=Virginia\*ChoiceLocal ;  
VAChoiceNone=Virginia\*ChoiceNone ;  
VAChoiceProgram=Virginia\*ChoiceProgram ;  
VAChoiceNon\_Local=Virginia\*ChoiceNon\_Local ;  
VANCmarket1=Virginia\*NCmarket1 ;  
VANCprice=Virginia\*NCprice ;  
VANCorganic1=Virginia\*NCorganic1 ;  
VANCpriceprice=Virginia\*NCpriceprice ;  
VANCpricemarket1=Virginia\*NCpricemarket1 ;  
VANCpriceorganic1=Virginia\*NCpriceorganic1 ;  
VANCorganic1market1=Virginia\*NCorganic1market1 ;

label ChoiceProgram="ChoiceProgram"  
    price="price"  
    NCmarket1="NCMarket1"  
    NCprice="NCprice"  
    NCorganic1="NCorganic1"  
    NCpriceprice="NCpriceprice"  
    NCpricemarket1="NCpricemarket1"  
    NCpriceorganic1="NCpriceorganic1"  
    NCorganic1market1="NCorganic1market1"

NJChoiceLocal="NJChoiceLocal"  
NJChoiceNone="NJChoiceNone"  
NJChoiceProgram="NJChoiceProgram"  
NJChoiceNon\_Local="NJChoiceNon\_Local"  
NJNCmarket1="NJNCmarket1"  
NJNCprice="NJNCprice"  
NJNCorganic1="NJNCorganic1"  
NJNCpriceprice="NJNCpriceprice"  
NJNCpricemarket1="NJNCpricemarket1"  
NJNCpriceorganic1="NJNCpriceorganic1"  
NJNCorganic1market1="NJNCorganic1market1"

```

MDChoiceLocal="MDChoiceLocal"
MDChoiceNone="MDChoiceNone"
MDChoiceProgram="MDChoiceProgram"
MDChoiceNon_Local="MDChoiceNon_Local"
MDNCmarket1="MDNCmarket1"
MDNCprice="MDNCprice"
MDNCorganic1="MDNCorganic1"
MDNCpriceprice="MDNCpriceprice"
MDNCpricemarket1="MDNCpricemarket1"
MDNCpriceorganic1="MDNCpriceorganic1"
MDNCorganic1market1="MDNCorganic1market1"

PACChoiceLocal="PACChoiceLocal"
PACChoiceNone="PACChoiceNone"
PACChoiceProgram="PACChoiceProgram"
PACChoiceNon_Local="PACChoiceNon_Local"
PANCmarket1="PANCmarket1"
PANCprice="PANCprice"
PANCorganic1="PANCorganic1"
PANCpriceprice="PANCpriceprice"
PANCpricemarket1="PANCpricemarket1"
PANCpriceorganic1="PANCpriceorganic1"
PANCorganic1market1="PANCorganic1market1"

VACChoiceLocal="VACChoiceLocal"
VACChoiceNone="VACChoiceNone"
VACChoiceProgram="VACChoiceProgram"
VACChoiceNon_Local="VACChoiceNon_Local"
VANCmarket1="VANCmarket1"
VANCprice="VANCprice"
VANCorganic1="VANCorganic1"
VANCpriceprice="VANCpriceprice"
VANCpricemarket1="VANCpricemarket1"
VANCpriceorganic1="VANCpriceorganic1"
VANCorganic1market1="VANCorganic1market1" ;

run;

/*title3 "Test dataset" ;
proc print data=coded(obs=100) ;
run;
*/

/*proc freq data=coded ;
  table choicenone*price ;
  table choicenone*market1 ;
  table choicenone*pricemarket1 ;
run;
*/

```

```

title3 "Using 1-nc interactions-StateProgram & DE as Ref-New Full
Model-Demographic Covariates added";

```

```

proc phreg data=coded brief;

```

```

    model c*c(2) = ChoiceLocal ChoiceNon_Local ChoiceNone
                  ncmarket1 ncprice ncorganic1
                  ncpriceprice ncpricemarket1
    ChoiceNon_Local*Age ncprice*Age ncorganic1*Age ncpriceprice*Age
    ChoiceNon_Local*ageage ncprice*ageage ncorganic1*ageage
    ncpriceprice*ageage
    ChoiceNone*Income ncprice*Income ncorganic1*Income
    ncpriceprice*Income
    ChoiceNone*incomeincome ncprice*incomeincome
    ncpriceprice*incomeincome
    ncorganic1*ChildUnder18
    ncorganic1*SomeCollegeorAbove
    ChoiceNon_Local*AfriAmer ncprice*AfriAmer
    NJChoiceLocal NJChoiceNon_Local
    NJNCorganic1
    MDChoiceLocal MDChoiceNon_Local
    MDNCorganic1
    PAChoiceLocal PAChoiceNon_Local
    PANCorganic1
    VAChoiceLocal VAChoiceNon_Local
    VANCorganic1

    / ties=breslow;
    strata Block SurveyNo set;
run;

```

```

title3 "Using 1-nc interactions-StateProgram & DE as Reference-
Reduced Model for LRTs";

```

```

proc phreg data=coded brief;

```

```

    model c*c(2) = ChoiceLocal ChoiceNon_Local ChoiceNone
                  ncmarket1 ncprice ncorganic1
                  ncpriceprice ncpricemarket1
    ChoiceNon_Local*Age ncprice*Age ncorganic1*Age ncpriceprice*Age
    ChoiceNon_Local*ageage ncprice*ageage
    ncorganic1*ageage ncpriceprice*ageage
    ChoiceNone*Income ncprice*Income
    ncorganic1*Income ncpriceprice*Income
    ChoiceNone*incomeincome ncprice*incomeincome
    ncpriceprice*incomeincome
    ncorganic1*ChildUnder18
    ncorganic1*SomeCollegeorAbove
    ChoiceNon_Local*AfriAmer ncprice*AfriAmer
    NJChoiceLocal NJChoiceNon_Local

```

```

                                NJNCorganic1
MDChoiceLocal MDChoiceNon_Local
                                MDNCorganic1
PACChoiceLocal PACChoiceNon_Local
                                PANCorganic1
VACChoiceLocal VACChoiceNon_Local
                                VANCorganic1

                                / ties=breslow;
strata Block SurveyNo set;
run;

%include "macro_definition.sas" ;

/*Some Likelihood Ratio Tests*/

/*%ChoiceLRT (ChoiceLocal ChoiceNon_Local ChoiceNone
ncmarket1 ncprice ncorganic1
ncpriceprice ncpricemarket1 ncpriceorganic1
ncorganic1market1
                                MDChoiceLocal MDChoiceNone MDChoiceNon_Local
MDNCmarket1 MDNCprice MDNCorganic1
MDNCpriceprice MDNCpricemarket1 MDNCpriceorganic1
MDNCorganic1market1,
ChoiceLocal ChoiceNon_Local ChoiceNone
ncmarket1 ncprice ncorganic1
ncpriceprice ncpricemarket1 ncpriceorganic1
ncorganic1market1, test) ;*/

%ChoiceLRT (ChoiceLocal ChoiceNon_Local ChoiceNone
ncmarket1 ncprice ncorganic1
ncpriceprice ncpricemarket1
ChoiceNon_Local*Age ncprice*Age ncorganic1*Age
ncpriceprice*Age
                                ChoiceNon_Local*ageage ncprice*ageage
ncorganic1*ageage ncpriceprice*ageage
                                ChoiceNone*Income ncprice*Income
ncorganic1*Income ncpriceprice*Income
                                ChoiceNone*incomeincome
ncprice*incomeincome ncpriceprice*incomeincome
                                ncorganic1*ChildUnder18
                                ncorganic1*SomeCollegeorAbove
ChoiceNon_Local*AfriAmer
ncprice*AfriAmer
                                NJChoiceLocal NJChoiceNon_Local
                                NJNCorganic1
MDChoiceLocal MDChoiceNon_Local
                                MDNCorganic1
PACChoiceLocal PACChoiceNon_Local
                                PANCorganic1

```

```

                VChoiceLocal  VChoiceNon_Local
                    VANCorganic1,
                ChoiceLocal ChoiceNon_Local ChoiceNone
                ncmarket1  ncprice  ncorganic1
                ncpriceprice  ncpricemarket1
                ChoiceNon_Local*Age  ncprice*Age  ncorganic1*Age
ncpriceprice*Age
                ChoiceNon_Local*ageage  ncprice*ageage
ncorganic1*ageage  ncpriceprice*ageage
                ChoiceNone*Income  ncprice*Income
ncorganic1*Income  ncpriceprice*Income
                ChoiceNone*incomeincome
ncprice*incomeincome  ncpriceprice*incomeincome
                ncorganic1*ChildUnder18
                ncorganic1*SomeCollegeorAbove
                ChoiceNon_Local*AfriAmer
ncprice*AfriAmer
                NJChoiceLocal  NJChoiceNon_Local
                    NJNCorganic1
                MDChoiceLocal  MDChoiceNon_Local
                    MDNCorganic1
                PAChoiceLocal  PAChoiceNon_Local
                    PANCorganic1
                VChoiceLocal  VChoiceNon_Local
                    VANCorganic1, test) ;

/*
data coded ;
  set coded ;
  market1=1-market1 ;
  pricemarket1=price*market1 ;
  if choicenone=1 then price=-2.99 ;
run;

title3 "ChoiceNone Price change WWith ChoiceNone Interaction" ;
proc phreg data=coded brief;

    model c*c(2) = ChoiceLocal ChoiceNon_Local ChoiceNone
                ncmarket1  ncprice
                ncpriceprice  ncpricemarket1

                / ties=breslow;
    strata Block SurveyNo set;
run;

title3 "ChoiceNone Price change without Choicenone interaction";
proc phreg data=coded brief;

    model c*c(2) = ChoiceLocal ChoiceNon_Local ChoiceNone
                market1  price
                priceprice  pricemarket1

```

```

                                / ties=breslow;
      strata Block SurveyNo set;
run;
*/

/*title3 "Using 1-nc interactions-StateProgram & DE as Reference-
Final CLM Model-demographic covariates removed";

proc phreg data=coded brief;

      model c*c(2) = ChoiceLocal ChoiceNon_Local ChoiceNone
                    ncmarket1 ncprice ncorganic1
                    ncpriceprice ncpricemarket1
                    NJChoiceLocal NJChoiceNon_Local
                    NJNCorganic1
                    MDChoiceLocal MDChoiceNon_Local
                    MDNCorganic1
                    PAChoiceLocal PAChoiceNon_Local
                    PANCorganic1
                    VAChoiceLocal VAChoiceNon_Local
                    VANCorganic1
                                / ties=breslow;
      strata Block SurveyNo set;
run;
*/

%phchoice(off)

```

There was some concern with how to correctly include the choice No Purchase within the CLM, as No Purchase is separate from the other three purchase options present in the design. It was decided to add a constant term to the model in which the term (1-*NoPurchase*) was included for the attribute variables. This type of approach has been explored previously by Haaijer, Kamakura, and Wedel (2001), the benefits of which include a better predictive fit and unbiased estimates for the attributes.