# A Lifestyle Segmentation Study of US Food Shoppers to Examine Organic and Local Food Consumption

Cong Nie and Lydia Zepeda

Professor Lydia Zepeda:  lzepeda@wisc.edu   tel:  1-608-262-9487
Cong Nie, M.S.: jasminenie@gmail.com

University of Wisconsin-Madison
Department of Consumer Science
1305 Linden Dr.
Madison, WI  53706  USA

# A Lifestyle Segmentation Study of US Food Shoppers to Examine Organic and Local Food Consumption

Survey data of US food shoppers are used to test whether consumer segments interested in sustainable food consumption also have more environmental concerns, knowledge and practices than other food shopper segments. Segmentation is also used to examine correlations with health concerns and practices, and demographic characteristics.

Key words: local food, market segmentation, organic food

**Introduction**

One of the fastest growing food trends today is the consumption of sustainable food; buying organic and local foods are dominant and growing. According to USDA (Shaffer & Cox, 2008) statistics, as of 2008, there were 4,685 farmers' markets across 50 states, showing a 150% growth from 1994. The volume of organic food business is even larger: $23 billion dollars were spent on organic food in 2008 (Organic Trade Association, 2008). This is about 3% of total US food consumption. NPD Group (2009) forecasts that the organic food market is likely to grow 40% in the next decade.

The popularity of sustainable foods reflects more than meeting basic needs; it is an expression of identity and worldviews (Senauer, 2001). In other words, we are consuming the values that food provides. Food values are expressed throughout the entire food consumption process: purchase, preparation, consumption and clean-up. For sustainable foods, naturalness and healthiness are the two main associated values (Lusk & Briggeman, 2009).

Consumer segmentation is useful to understand the attitudes and motivations of specific consumers rather than learning how an "average" consumer thinks and behaves. This paper segments food consumers based on their lifestyle, which is a mixture of habits, conventional ways of doing things and reasoned behavior. There are several advantages of lifestyle segmentation; compared to demographic segmentation, it reflects consumers' psychological profiles, such as values and attitudes, so that the motivation of a behavior can be captured (Demby, 1974). Unlike product-specific attitudes or preference, lifestyle is concerned with more general and more observable characteristics of consumers, which helps practitioners develop communication strategies (Wells, 1975).

The food-related lifestyle (FRL) model proposed by Grunert, Brunsø and Bisp (1993) is adapted to the data available for this study to classify consumers into different market segments. According to FRL, there are five components of lifestyle, which can be used to explain food purchase categories: ways of shopping, product attributes, meal preparation, usage situation, and desired consequences. Analysis of food-related lifestyle segmentation provides insights regarding who are current and potential sustainable food shoppers, and what motivates them to shop for such food products. It is also important to understand each consumer segment's socioeconomic and demographic

profiles to select appropriate media to access the target population. The segments are used to test whether consumer segments showing more interests in sustainable food consumption have more environmental concerns, knowledge, and practices than non-sustainable food shoppers. Food-related lifestyle choices are also used to test whether they are associated with health concerns and practices. Specifically, this study will address the following research questions using US survey data:

1. Can food-related lifestyle factors distinguish American households into identifiable consumer groups? What are the characteristics of each lifestyle group?

2. Are sustainable food consumption behaviors different among lifestyle groups?

3. Are food choices related to consumers' health practices?

4. Are food choices related to consumers' environmental concerns, knowledge and behaviors?

5. Which socioeconomic and demographic factors are associated with a particular consumer segments?

**Conceptual Model**

Following theories of sociological models (e.g. Attitude-Behavior-Context theory, Guagnano, Stern, & Dietz, 1995) it is hypothesized that both personal and contextual factors can explain different food-related lifestyle choices. Personal factors include environment-related determinants, as well as health-related determinants. Both factors are chosen because of our interest in understanding their roles in forming one's food-related lifestyle (FRL). More specifically, we want to examine whether high ecological (Kollmuss & Agyeman, 2002) and health-related (Baker, Thompson, & Engelken, 2004) concerns are associated with certain lifestyles that value organic and local food consumption. Contextual factors include socioeconomic and demographic variables, as well as community characteristics.

"Organic" is one of the food attributes specified in the FRL model (Grunert et al., 1993). Although "shop local" is not a consideration in the original FRL survey instrument to classify food consumers' lifestyle choices, several subsequent FRL studies (e.g., Laaksonen, Laaksonen & Leipämaa, 2005) indicate the "shop local" factor to be an important supplement to FRL. The dominant sources of local food in the US are from Community Supported Agriculture (CSA), farmers' markets, farm stands, and

local food co-operatives. Based on the FRL literature discussed above, we hypothesize that consumer segments that are more likely to purchase sustainable food, similar to the "adventurous" and "rational" consumer segments commonly found in FRL literature, have one or more of the following characteristics: they seek special consequences out of meals (desired consequences); they value health, nutrition, and freshness, but not necessarily cost (product attributes); they shop at specialty stores (ways of shopping); and cook often (meal preparations). Likewise, consumers who are not involved in sustainable consumption might be more price conscious and/or prepare meals less frequently.

**Data**

Data from a 2003 nationwide food consumer survey (n= 956) are used in cluster analysis to identify food-related lifestyle groups (See Zepeda & Li, 2006 and 2007 for a full description of the data; see also Table 1 and Appendix 1 below for variable descriptions). This is an important time period in the US because in October 2002, the US Department of Agriculture (USDA) adopted a national organic standard in production and labeling (USDA, 2003). Since then, retail availability of organic products has expanded from natural food markets to conventional supermarkets. In 2006, the sales of organic food in conventional markets surpassed that in natural food markets for the first time (Organic Trade Association, 2007). Meanwhile, local food movements have grown in tandem with popular media promoting eating local food. These events and trends make 2003 an important and interesting time point to observe consumers' food-related lifestyles.

Lifestyle segments are obtained from variables organized into four domains of the FRL theoretical framework: ways of shopping, product attributes, meal preparation and desired consequence (Grunert et al., 1993). "Usage situation" is excluded because an empirical study (Nijmeijer, Worsley, & Astil, 2004) showed it was relatively less important in determining FRL, and these data are not available in our dataset. Table 1 contains the variables used to segment US food shoppers. Other variables in the survey are listed in Appendix 1.

**Table 1: Variables in food-related lifestyle segmentation**

| *Variables* | *Description* |
|---|---|
| *Ways of shopping* | |
| Specialty shop | I get my groceries from one or more of the following on a regular basis: Food co-op, health food store, ethnic food store, farmer and my own garden |
| Farmers' market | I shop at a farmers' market: Never =(0,0); <= two times per month =(1,0); > two times per month =(1,1)* |
| CSA member | Member of community supported agriculture (yes=1; no=0) |
| Recognize label | I have seen USDA's organic label (yes=1; no=0) |
| | |
| *Product attributes* | |
| Freshness | Most important characteristic of food is freshness (yes=1; no=0) |
| Taste | Most important characteristic of food is taste (yes=1; no=0) |
| Healthiness | Importance of nutrition/health: not at all important=(0,0); somewhat important=(1,0); very important=(1,1)* |
| Safety | Importance of food safety: not at all important=(0,0); somewhat important=(1,0); very important=(1,1)* |
| Convenience | Importance of convenience: not at all important=(0,0); somewhat important=(1,0); very important=(1,1)* |
| Brand | Importance of brand: not at all important=(0,0); somewhat important=(1,0); very important=(1,1)* |
| Cost | Importance of cost: not at all important=(0,0); somewhat important=(1,0); very important=(1,1)* |
| Shop organic | Buy organic food: never=(0,0); occasionally=(1,0); very regular=(1,1)* |
| | |
| *Meal preparation* | |
| Enjoy cooking | Enjoy cooking: not at all=(0,0); somewhat enjoy=(1,0); very much enjoy=(1,1)* |
| Cook often | Frequency of preparing meals from raw ingredients: < one per week=(0,0,0); once per week=(1,0,0); three to five times per week=(1,1,0); everyday=(1,1,1)* |
| | |
| *Desired consequence* | |
| Someone in household follows a special diet to | |
| Treat illness | Heart diseases, cancer, diabetes or food allergies (yes=1; no=0) |
| Keep fit | Fitness or weight loss concerns (yes=1; no=0) |
| Vegetarian | Vegetarian (yes=1; no=0) |
| Religion | For religious reasons (yes=1; no=0) |

* Additive coding. For an ordinal variable V with three levels, two new dummy variables, V1 and V2 are created in cluster analysis. "V1=0, V2=0" represents the lowest level; "V1=1, V2=0" represents the median level; "V1=1, V2=1" represents the highest level. Three dummy variables are created for variables with four levels.

**Results**

The clustering method used in this analysis is the "k-means" (Hartingan & Wong, 1979), a popular iterative partitioning method. Four food-related lifestyle clusters are found in our sample. Stability and reliability tests are conducted to validate the optimal number of segments. The resulting four consumer segments are given the names "practical consumer," "food enthusiast," "indifferent consumer" and "convenience seeker." We do not use the names commonly seen in FRL literature because the clusters are not directly comparable given the differences in the survey instruments used.

**Table 2: Lifestyle profiles of the four clusters**

|  | *Practical Consumer* | *Food Enthusiast* | *Indifferent Consumer* | *Convenience Seeker* | *Total* |
|---|---|---|---|---|---|
|  | 29.23% | 24.06% | 17.85% | 28.85% | 100% |
| *Ways of shopping* |  |  |  |  |  |
| Specialty shop** | 59.73% | 82.80% | 13.77% | 30.04% | 48.51% |
| Farmers' market** |  |  |  |  |  |
| >2X/mo | 18.14% | 31.72% | 5.80% | 9.87% | 16.82% |
| <2X/mo | 65.93% | 58.06% | 34.06% | 56.05% | 55.50% |
| Never | 15.93% | 10.22% | 60.14% | 34.08% | 27.68% |
| CSA member | 1.33%$^a$ | 2.69%$^a$ | 1.45%$^a$ | 2.24%$^a$ | 1.94% |
| Label Recog** | 33.19% | 51.61% | 17.39%$^a$ | 22.42%$^a$ | 31.69% |
|  |  |  |  |  |  |
| *Product attributes* |  |  |  |  |  |
| Freshness** | 0.00%$^a$ | 98.92%$^b$ | 0.00%$^a$ | 94.17%$^b$ | 50.97% |
| Taste** | 96.46%$^a$ | 0.00%$^b$ | 96.38%$^a$ | 0.00%$^b$ | 45.41% |
| Importance of Healthiness** |  |  |  |  |  |
| Very | 81.86%$^{aA}$ | 87.10%$^a$ | 36.96% | 73.09%$^A$ | 72.57% |
| Somewhat | 16.37% | 11.29% | 55.07% | 24.67% | 24.45% |
| Not at all | 1.77% | 1.61% | 7.97% | 2.24% | 2.98% |
| Importance of Safety** |  |  |  |  |  |
| Very | 85.40%$^A$ | 93.01%$^a$ | 65.22% | 87.44%$^{Aa}$ | 84.22% |
| Somewhat | 11.50% | 4.30% | 22.46% | 8.97% | 10.99% |
| Not at all | 3.10% | 2.69% | 12.32% | 3.59% | 4.79% |
| Importance of Convenience** |  |  |  |  |  |
| Very | 22.57%$^a$ | 19.35%$^a$ | 44.93% | 32.29% | 28.59% |
| Somewhat | 63.27% | 61.30% | 47.10% | 60.98% | 59.25% |
| Not at all | 14.16% | 19.35% | 7.97% | 6.73% | 12.16% |
| Importance of Brand |  |  |  |  |  |
| Very | 8.41%$^{Aa}$ | 11.83%$^{ab}$ | 11.59%$^{Ab}$ | 13.45%$^b$ | 11.25% |
| Somewhat | 49.55% | 51.61% | 57.98% | 55.16% | 53.17% |
| Not at all | 42.04% | 36.56% | 30.43% | 31.39% | 35.58% |

Importance of Cost

| | | | | | |
|---|---|---|---|---|---|
| Very | 52.21%$^a$ | 47.31%$^a$ | 47.83%$^a$ | 52.47%$^a$ | 50.32% |
| Somewhat | 43.37% | 46.78% | 43.47% | 42.60% | 43.99% |
| Not at all | 4.42% | 5.91% | 8.70% | 4.93% | 5.69% |

Shop organic**

| | | | | | |
|---|---|---|---|---|---|
| Regularly | 10.18% | 16.13% | 2.90%$^a$ | 1.79%$^a$ | 7.89% |
| Occasional | 55.75% | 65.05% | 28.98% | 39.47% | 48.51% |
| Never | 34.07% | 18.82% | 68.12% | 58.74% | 43.60% |

*Meal preparation*

Enjoy cooking**

| | | | | | |
|---|---|---|---|---|---|
| Very much | 54.42% | 70.97% | 13.77% | 24.66% | 42.56% |
| Somewhat | 39.83% | 24.73% | 62.32% | 62.34% | 46.70% |
| Not at all | 5.75% | 4.30% | 23.91% | 13.00% | 10.74% |

Cooking**

| | | | | | |
|---|---|---|---|---|---|
| Everyday | 40.27% | 54.30% | 2.90% | 9.87% | 28.20% |
| 3-5x/week | 52.21% | 40.32% | 29.71% | 53.36% | 45.67% |
| 1x/week | 6.64% | 4.84% | 24.64% | 19.28% | 13.06% |
| <1x/week | 0.88% | 0.54% | 42.75% | 17.49% | 13.07% |

*Desired consequences*

| | | | | | |
|---|---|---|---|---|---|
| Treat illness** | 29.20% | 50.54% | 10.87%$^a$ | 15.70%$^a$ | 27.17% |
| Keep fit** | 32.30% | 69.35% | 15.22%$^a$ | 17.94%$^a$ | 34.02% |
| Vegetarian** | 1.77%$^{ab}$ | 4.30%$^{aA}$ | 0.72%$^{bA}$ | 0.45%$^b$ | 1.81% |
| Religion** | 2.65%$^{Aa}$ | 10.75% | 0.00%$^{Ab}$ | 2.24%$^{ab}$ | 4.01% |

Note: **The chi-square test shows the variable distribution is different across lifestyle segments, significance level=0.05. When no subscript is present (such as farmers' market), all four segments are different pair-wise at 5% level. For categorical variables with several levels (such as farmers' market, healthiness), the subscript will only appear in the first row. When the same uppercase letter is present for two segments, the segments are significantly different at 10% level but not 5% level. When the same lowercase letter is present for two segments then their lifestyles are NOT significantly different in terms of that factor. If the same lowercase letter appears in three or four of the segments (such as CSA member), it means that no difference is found between each pair of the three or four segments.

We are able to conclude that each of the four consumer segments displays a statistically different frequency in terms of farmers' market shopping and organic food shopping (Table 2). There is no statistical difference in terms of frequency of CSA participation, in part because of the extremely low CSA membership across all segments.

In terms of the segment names, "food enthusiasts" correspond roughly to adventurous consumers; they visit farmers' markets and buy organic food most frequently. "Practical consumers" correspond roughly to rational consumers. They are "practical" because while the taste and healthiness of food are very important to them, so is cost, and they cook frequently. They are less likely than "food enthusiasts" but

more likely than "indifferent consumers" and "convenience seekers" to buy sustainable foods. Like "indifferent consumers," "convenience seekers" are not active in organic food shopping, however they shop at farmers' markets more frequently than "indifferent consumers." "Indifferent consumers" are the least involved in any kind of sustainable food shopping. The characteristics of US food shoppers lifestyle segments are summarized in Table 3.

We also examine each segment's demographic characteristics as well as their health practices, environmental concerns, sustainable food knowledge and pro-environmental behavior (Table 4). All four clusters show significant differences in age, quintile of household income, race, gender, education and community characteristics. Consumers with different lifestyles also have distinct expressions over three environment-related factors and health practices.

"Practical consumers" are 29.23% of the population. Although there is no significant difference between the four consumer segments in terms of cost and brand, "practical consumers" consider brands and costs to be least important of the four groups. "Practical consumers" highly value the taste of food products. Overall, they are not as involved in food activities as "food enthusiasts," but they are more concerned and more active than "indifferent consumers" and "convenience seekers" in food shopping, preparation and consumption.

They value the healthiness and safety of food but do not value convenience as much as others do. 18% of them shop regularly at farmers' markets. They are more likely than average to buy organic food: 10% of them are regular organic food shoppers and 56% of them are occasional organic food shoppers. "Practical consumers" like cooking; more than 92% of them cook at least three times per week from raw ingredients. 29% of "practical consumers" follow a special diet because of health concerns, 32% of them follow a special diet because of weight loss or fitness concerns.

Regarding demographic characteristics, "practical consumers" are more likely than average population to be middle-aged, white, be in the high-income quintile and have more children living in the household. They are more likely than average to live in the West and have access to a farmers' market in the neighborhood.

**Table 3: Characteristics of US food shoppers lifestyle segments**

| | Practical consumer | Food enthusiast | Indifferent consumer | Convenience seeker |
|---|---|---|---|---|
| Ways of shopping | • Shop specialty stores<br>• Pay attention to label<br>• Shop at farmers' market | • Shop specialty stores most often<br>• Pay most attention to label<br>• Shop at farmers' market most often | • Least likely to shop specialty stores<br>• Pay no attention to label<br>• Least likely to shop at farmers' market | • Do not often shop specialty stores<br>• Pay no attention to label<br>• Do not often shop at farmers' market |
| Product attributes | • Value taste and healthiness of food<br>• Do not value convenience and brand<br>• Active organic food shoppers | • Value healthiness, food safety and freshness<br>• Do not value convenience<br>• Most active organic food shoppers | • Only value taste and convenience of food<br>• Least likely organic food shoppers | • Value convenience, freshness and food safety<br>• Unlikely organic food shoppers |
| Meal preparations | • Have interest in cooking<br>• Cook often | • Have keen interest in cooking<br>• Cook most often | • Least interested in cooking<br>• Cook least often | • Not interested in cooking<br>• Home cookers |
| Desired consequences | • Moderate illness-related or fitness-related dieting concerns | • Follow special diet to treat illness or to keep fit<br>• Religious concerned | • No special diet | • No special diet |

Regarding their health-related lifestyles, and above average (24%) of "practical consumers" go to a fitness club. They are more knowledgeable than the average person about alternative agriculture. A higher than average percent of them (8%) are actively involved in environmental protection, even their concerns regarding environmental issues are just about average.

"Practical consumers" are active sustainable food shoppers. It is possible that their higher income makes higher-priced organic food more accessible to them. Going to specialty shops and having a farmers' market nearby can also increase their chance of trying alternative food products.

"Food enthusiasts" are 24.06 % of the population and are enthusiastic about shopping, preparing and consuming foods. 83% of these consumers visit specialty shops on a regular basis, which is significantly higher than all three other consumer groups. They visit farmers' markets most frequently: 32% of "food enthusiasts" go there more than twice per month. A relatively high percent of them (3%, as compared to an average of 2%) are CSA members. "Food enthusiasts" pay the most attention to label information.

"Food enthusiasts" are a group of consumers who highly value healthiness, safety and freshness of foods. People who consider these three food characteristics to be "very important" are 87%, 93% and 99%, respectively. In comparison, these percentages of the whole sample are 73%, 84% and 51%, respectively. "Food enthusiasts" tend to be the most frequent home cookers of all the four consumer groups. 54% of them cook at least once a day, while only 28% of the general population cook as often. This finding is correlated with the fact that 81% of "food enthusiasts" do not consider the convenience of food to be very important. Most "food enthusiasts" (71%) enjoy cooking very much.

"Food enthusiasts" have keen interest in shopping for organic food. 16% of them are regular organic shoppers and 65% of them shop for organic food occasionally. One of most distinguishable difference between "food enthusiasts" and others is, a much higher percentage of these people following a special diet, either because of health concerns (51%), fitness or weight loss (69%), religions concerns (4%), or because they are vegetarian (11%).

**Table 4: Demographic profiles by cluster**

| | *Practical Consumer* | *Food Enthusiast* | *Indifferent Consumer* | *Convenience Seeker* | *Total* |
|---|---|---|---|---|---|
| | 29.23% | 24.06% | 17.85% | 28.85% | 100% |
| *Environment and Health Related* | | | | | |
| E-concerns** | 2.70% | 3.15% | 2.03% | 2.59% | 2.66% |
| E-knowledge** | 4.14%$^a$ | 4.17%$^a$ | 3.99%$^{aA}$ | 3.70%$^A$ | 3.99% |
| E-friendly** | 7.52%$^a$ | 8.06%$^a$ | 5.80%$^{aA}$ | 2.24%$^A$ | 5.82% |
| Fitness club** | 23.89%$^a$ | 35.48% | 22.46%$^a$ | 21.08%$^a$ | 25.61% |
| *Family composition (No. of)* | | | | | |
| Adults | 1.95$^{ab}$ | 2.07$^{aA}$ | 1.88$^b$ | 1.91$^{bA}$ | 1.95 |
| Children <5 yrs | 0.29$^a$ | 0.23$^a$ | 0.20$^a$ | 0.25$^a$ | 0.25 |
| Children 6-17 yrs* | 0.61$^{AB}$ | 0.45$^{Aa}$ | 0.43$^{Ba}$ | 0.40$^a$ | 0.48 |
| *Average Age* | 47.58$^a$ | 47.60$^a$ | 47.70$^a$ | 48.57$^a$ | 47.89 |
| Age composition** | | | | | |
| Less than 25 | 2.21%$^a$ | 5.38%$^a$ | 5.80%$^{ab}$ | 6.28%$^b$ | 4.79% |
| 25-34 | 15.04% | 12.90% | 15.22% | 20.63% | 16.17% |
| 35-44 | 27.88% | 25.27% | 24.64% | 14.80% | 22.90% |
| 45-54 | 25.66% | 27.96% | 24.64% | 21.08% | 24.71% |
| 55-64 | 16.37% | 15.59% | 11.59% | 17.49% | 15.65% |
| More than 65 | 12.83% | 12.90% | 18.12% | 19.73% | 15.78% |
| *Female** | 62.83%$^{Aa}$ | 72.04%$^{Ab}$ | 52.17% | 68.16%$^{ab}$ | 64.68% |
| *Income** | | | | | |
| < $15,000 | 8.85%$^a$ | 6.45%$^{ab}$ | 8.70%$^{aA}$ | 12.56%$^{bA}$ | 9.31% |
| $15,000-$29,999 | 10.18% | 18.28% | 13.77% | 21.52% | 16.04% |
| $30,000-$44,999 | 17.70% | 20.43% | 14.49% | 17.04% | 17.59% |
| $45,000-$75,000 | 31.86% | 26.34% | 31.88% | 28.25% | 29.50% |
| >$75,000 | 31.42% | 28.49% | 31.16% | 20.63% | 27.55% |
| *Education** | | | | | |
| <High school | 3.10%$^{ABa}$ | 6.99%$^{Ab}$ | 2.90%$^{BCb}$ | 4.48%$^{Ca}$ | 4.40% |
| High school | 25.22% | 19.35% | 22.46% | 29.15% | 24.45% |
| Technical degree | 8.85% | 8.06% | 9.42% | 13.45% | 10.09% |
| Some college | 17.70% | 19.35% | 25.36% | 19.73% | 20.05% |
| 4-year college | 17.70% | 25.81% | 22.46% | 15.70% | 19.92% |
| Graduate school | l6.19% | 3.23% | 0.72% | 4.93% | 4.14% |
| Graduate degree | 21.24% | 17.20% | 16.67% | 12.56% | 16.95% |
| *Race** | | | | | |
| White | 88.05%$^{aA}$ | 74.19% | 94.20%$^a$ | 81.17%$^A$ | 83.83% |
| African American | 3.54% | 7.53% | 4.35% | 9.87% | 6.47% |
| Hispanic | 3.10% | 8.60% | 0.72% | 4.93% | 4.53% |
| Asian | 1.33% | 4.30% | 0.00% | 0.90% | 1.68% |
| Native American | 0.88% | 0.54% | 0.00% | 1.35% | 0.78% |
| Other | 3.10% | 4.84% | 0.72% | 1.79% | 2.72% |
| *Community characteristics* | | | | | |
| Northeast** | 16.37%$^{aA}$ | 20.43%$^a$ | 18.84%$^b$ | 20.18%$^{Ab}$ | 18.89% |
| Midwest | 26.55% | 20.43% | 37.68% | 26.91% | 27.17% |
| South | 32.74% | 31.72% | 28.99% | 38.12% | 33.38% |

| | | | | | |
|---|---|---|---|---|---|
| West | 24.34% | 27.42% | 14.49% | 14.80% | 20.57% |
| No market** | 16.81%[a] | 12.37%[a] | 32.61% | 27.80% | 21.73% |

Note: ** Chi-square test or t test shows the variable is different across lifestyle segments at a significance level of 0.05, if *, the level of significance is 0.10. When no subscript is present (such as E-concerns), all four segments are different pair-wise at 5% level. When the same uppercase letter is present for two segments then they are significantly different at 10% level but not at the 5% level in terms of the characteristic. When the same lowercase letter is present for two segments, then they are not significantly different in terms of that factor. In the case when the same letter appears in three or four of the segments, it means that no difference is found between each pair of the three or four segments. For categorical variables with several levels (such as education and race), the subscript only appears in the first row.

"Food enthusiasts" are more likely to be female and a higher than average percent of them belong to a minority race group. They are not the richest quintile in the sample; neither are they the poorest. However, they are the most educated; 46% of them went to college. They are more likely than average to live in the West and have access to a farmers' market in the neighborhood.

Among the four consumer groups, "food enthusiasts" are most likely to go to fitness club (35%). Their environmental concern levels as well as knowledge about alternative agriculture are also the highest.

Overall, "food enthusiasts" are the most likely to be sustainable food shoppers. Their high concerns about healthiness and active involvement in health practices can be an explanation of their shopping patterns. Furthermore, their high concerns about environmental issues may be associated with their preference for sustainable food. Like "practical consumers," going to specialty shops and frequently visiting farmers' markets can increase "Food enthusiasts'" accessibility to sustainable food products.

"Indifferent consumers" (17.85% of the population) are least interested in food activities. Only 14% of such consumers visit specialty food shops. A majority of them (60%) have never been to a farmers' market. They are among the least likely to be CSA members (1%). Recognition of the organic label information is the lowest (17%, compared to the average of 32%) among the four consumer segments.

The healthiness and nutrition of food are not as valuable to "indifferent consumers" as to consumers with other lifestyle choices. Unlike other consumers, "indifferent consumers" have a relatively high percentage (12%) of people who consider food safety to be "not at all important." Generally speaking, "indifferent consumers" do not consider any of the food characteristics to be of high importance,

except convenience. This is possibly due to the fact that "indifferent consumers" do not enjoy cooking and a lot of them (43%) cook less than once per week.

Organic food shopping is not common for "indifferent consumers." Only 3% of them claim that they regularly shop for organic products. On the other hand, 68% of such consumers never buy organic food, which is the highest in our sample. Most "indifferent consumers" do not follow a special diet. None of them are vegetarians and only 15% of them modify their eating habits according to fitness and weight loss concerns, compared to the sample average of 34%.

"Indifferent consumers" are more likely to be white males, to live in the Midwest, less likely to have children living in the household and less likely to have a farmers' market in their area. They also tend to be in the highest income quintile in our sample. Their educational levels are average and their age distribution is similar to that of the general population.

Regarding health practices, a below average percent (22%) of "indifferent consumers" are members of a fitness club. Their levels of knowledge about alternative agriculture are about the average. However, their concerns regarding environmental issues are the lowest among the four consumer groups.

"Indifferent consumers" are the least likely to be sustainable food shoppers. They are unlikely to be very careful about their household's food shopping and preparation decisions. If they need to be involved in food activities, they hope the process can be as convenient as possible. Local food and organic food products may be less convenient to access than conventional foods. Furthermore, sustainable foods are less likely to be easily prepared. It might partly explain why "indifferent consumers" are less likely to shop for alternative food products.

"Convenience seekers" (28.85 % of the population) have a prominent characteristic of seeking convenience in food. Although a higher percentage of "indifferent consumers" consider "convenience" to be very important (45%, as compared to 32% for "convenience seekers"), "indifferent" is a more appropriate description for these consumers given their overall food-related lifestyle patterns. A below average percent of "convenience seekers" (30%) shop at specialty stores and farmers' markets (66%). Their recognition of the USDA organic label information is higher than "indifferent consumers" (22% versus 17%), but still falls behind the

population average of 32%. They value freshness of food products. Their concerns for healthiness, food safety and cost are slightly above the population averages. They have the most people who care a lot about brand (13%) and cost (52%).

"Convenience seekers" are least likely to be regular organic food shoppers. Less than 2% of them belong to this category, compared to the sample mean of 8%. Nevertheless, occasional organic food shopping behaviors are more common for "convenience seekers" than for "indifferent consumers" (39% versus 29%). Cooking is not a very enjoyable task for "convenience seekers." However this does not implies that they do not cook often: 63% of them cook more than three meals a week from raw ingredients. Most of the "convenience seekers" do not desire special consequences out of their meals, meaning a lower than average percentage of them follow a special diet due to health concerns (16%), fitness and weight loss (18%), religion (<1%) or being vegetarians (2%).

A relatively high percentage of "convenience seekers" belong to the lower two income quintiles, and they have the lowest proportion completing college. They are more likely than average to be either younger than 35 or older than 55. They are also less likely to have a farmers' market in their area. The racial distribution of "convenience seekers" is about average and they are more likely to live in the South. "Convenience seekers" have the lowest knowledge level about sustainable foods among the four consumer groups. They are least likely to be members of an environmental group (2%) or belong to a fitness club (21%).

In sum, the lifestyle of "convenience seekers" seems to be influenced by their relatively low income level. It is not likely that they can afford the lifestyle of being regular organic food shoppers. The lack of knowledge about such products may also contribute to the fact that "convenience seekers" are not active in local food and organic food shopping. On the other hand, just like "indifferent consumers," "convenience seekers" may be less likely to be interested in sustainable food products since convenience is usually not an attribute of such products.

**Summary and Implications**

In answer to question (1), we were able to identify four consumer lifestyle segments in our sample. They are different in their ways of shopping, product attributes,

meal preparation and desired consequences. "Practical consumers" comprise 29% of sample households, are frequent home cookers and cooking is an enjoyable task for them. While convenience is not an attribute of food they value highly, they do place a high value on taste and are cost-conscious. "Food enthusiasts," at 24% of the sample, are very enthusiastic about shopping, preparing, and consuming foods. Healthiness, freshness and safety of food are very important to them. A significantly higher than average proportion of them follow a special diet because of health, fitness, weight loss, religion, or being vegetarians. They are the segment that cooks most frequently at home. "Indifferent consumers" are the smallest consumer group (18%) in the sample. They are the least involved in any food activities. Functional product characteristics such as healthiness and freshness are not important to them. This can be related to the fact that they do not have many desired consequences for meals. The only food characteristic they care about is convenience. "Convenience seekers" comprise 29% of the sample. Characteristics of food such as healthiness and safety are somewhat important to them, but they highly value the convenience of food products.

In response to question (2), consumers belonging to different lifestyle segments do show different levels of involvement in sustainable food consumption, specifically shopping at farmers' markets and purchasing organic food. "Food enthusiasts," "practical consumers," "convenience seekers," and "indifferent consumers" are ranked from highest to lowest in terms of sustainable food shopping. Both "food enthusiasts" and "practical consumers" are active organic and local food shoppers. Although more than half of "convenience seekers" have bought local and organic food products, it is very unlikely that they will be regular shoppers of sustainable foods. The majority of "indifferent consumers" have never bought organic or local products.

In response to question (3), health practices are what significantly distinguish "food enthusiasts," the most active sustainable food shoppers, from other consumers. It is not surprising since these consumers emphasize healthiness as a food attribute.

In response to question (4), the level of sustainable food knowledge and the participation in environmentally friendly activities are both associated with the likelihood of being a sustainable food shopper. Environmental concerns are highest among "food enthusiasts" and lowest among "indifferent consumers." The consumers showing the least sustainable food knowledge and participation in environmental groups

are "convenience seekers." Since "convenience seekers" place some importance on the functional characteristics of sustainable food, such as freshness and healthiness, it is likely that lack of knowledge contributes to this attitude and there is a behavior gap for "convenience seekers." This implies a potential response to efforts spent on educating these consumers about the benefits of sustainable food products on their health.

As to question (5), the demographic characteristics that predict the lifestyle choice of "practical consumers" are: having more children living in the household, middle age, white, and high income. They are more likely to live in the West and to have access to a farmers' market in their neighborhood. "Food enthusiasts" are more likely than the average population to be female, minority, and to be a middle-income household. Like "practical consumers," they can easily access to farmers' markets in their neighborhood. "Indifferent consumers" are more likely than other consumers to be white, male, and they tend to have fewer children living in the household. They usually live in a community with no farmers' market nearby. "Convenience seekers" are more likely than average consumers to be either younger than 35 years old or older than 55 years old. They are less likely to live in the West and they tend to have no farmers' market in their neighborhood.

The cluster analysis provides insights to target strategies that would appeal to the different consumer segments. As an example, the ideal food for the largest group (29%), "practical consumers," is one that tastes good and has high nutrition levels, yet is not too pricey. Since these consumers are likely to have children in the family, products with features especially designed for children would be popular. Furthermore, the product can emphasize how it will bring fun and pleasure to cooking.

Overall, for "food enthusiasts," functional characteristics of food such as healthiness and freshness are a central issue. Marketers can appeal to "food enthusiasts" by strengthening the link between healthiness and organic/local food products. In addition, ethnic food with health and ecological benefits can be developed for "food enthusiasts," since a higher than average proportion of them are minorities. Furthermore, products that can be associated with fitness, such as an organic low-calorie energy bar, may be popular among "food enthusiasts," given their more active lifestyle.

To "indifferent consumers," food marketers can mainly emphasize the convenience of their products. The low priority they place on the health of their families raises some concerns since convenience foods are often high in fat and lack necessary nutrients. To mitigate this, education programs on meal preparation and food nutrition could be targeted to "indifferent consumers," a considerable proportion of whom are white males.

"Convenience seekers," like "indifferent consumers," are looking for food products that can be quickly and easily prepared. However, there are more possibilities of product differentiation for "convenience seekers" than for "indifferent consumers," given their higher concerns for food safety and health. Marketers may also want to take into account the food habits of both the older and younger generations when developing new products, since these groups are more likely to be "convenience seekers."

For US state governments that want to boost local agriculture and improve environmental sustainability by promoting local products, a challenge at hand is to promote awareness of how one's food decisions impact the environment and the local economy. Based on the results of this study, "convenience seekers" and "indifferent consumers" may not have high levels of environmental concerns or knowledge about sustainable agriculture. Providing them with relevant information may influence their opinions on alternative agriculture and advise them to be more thoughtful about food choices. Public health practitioners may find the food-related lifestyle information helpful, too. It provides insights as to whom they should provide healthy-eating education and strategies for the types of information to emphasize.

Conceptually, the results are consistent with Guagnano et al. (1995) Attitude-Behavior Context theory. The results emphasize the importance of personal characteristics in shaping attitudes that in turn affect knowledge and behaviors regarding sustainable food choices. In particular, they point to the importance of lifestyle over other characteristics and provide marketers and policy-makers with strategies to communicate with the different segments to promote sustainable foods. The results also provide strategies to shape the context to promote sustainable foods for the different groups, e.g. in terms of which groups will respond to access and pricing.

In terms of limitations and future work, it would be desirable to collect data that was directly comparable to Grunert et al.'s FRL model (1993). Also of interest, would

be to collect new data to examine the impact of greater availability of organic foods in mainstream US retail outlets, as well as to examine the effects of popular media and culture in promoting local foods in the US. The data could be used to test a structural model of the relative importance of attitudes and context in shaping behaviors. Also of interest would be to collect data that would permit direct comparisons of lifestyle segments across nations.

**References**

Baker, S., Thompson, K.E., & Engelken J. (2004). Mapping the values driving organic food choice. *European Journal of Marketing,* 38(8), 995–1012.

Demby, E. (1974). Psychographics and from Where it Came. *Life Style and Psychographics*, 9-30. Chicago, IL: American Marketing Association.

Grunert, K.G.. Brunsø K., & Bisp. S. (1993). *Food-related life-style: development of a cross-culturally valid instrument for market surveillance*. Arahus, Denmark: Arahus School of Business.

Guagnano, G.A., Stern, P.C., & Dietz, T. (1995) Influences on attitude-behavior relationships: A natural experiment with curbside recycling. *Environment and Behavior*, 27, 699–718.

Hartigan J. A., & Wong M. A. (1979). A k-means clustering algorithm. *Applied Statistics.* 28(1), 100-108.

Kollmus, A., & Agyeman, J. (2002). Mind the gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239-260.

Laaksonen, P., Laaksonen, M. & Leipämaa, H. (2002). *Consumers` Orientation to Food and Eating: A Modification and Application to the Food-related Lifestyle Instrument of Brunso, Grunert & Bisp.* Vaasa, Finland: University of Vaasa.

Lusk, J., & Briggeman, B. (2009). Food Values, *American Journal of Agricultural Economics*, 91(1), 184-196.

Nijmeijer, M., Worsley, A., & Astil, B. (2004). An exploration of the relationships between lifestyle and vegetable consumption. *British Food Journal*, 106 (7), 520-533.

NPD Group. (2009). *NPD Reports "Better for You" Foods to Grow Significantly Over the Next Decade.* Port Washington, NY: The NPD Group, Inc. Retrieved November 10, 2009,  http://www.npd.com/press/releases/press_090707a.html

Organic Trade Association. (2008). *Organic Industry Overview*. Green Field, MA: Organic Trade Association. Retrieved December 2, 2008, http://www.ota.com/pics/documents/Mini%20fact%201-08%20confirming.pdf

Organic Trade Association. (2007). *U.S. organic food sales up 22%, hit $17 billion in 2006*. Green Field, MA: Organic Trade Association. Retrieved December 2, 2009, http://www.organicconsumers.org/articles/article_5109.cfm

Senauer, B. (2001). *The food consumer in the 21$^{st}$ century new research perspectives.* St. Paul, MN: The Retail Food Industry Center, University of Minnesota.

Shaffer, J., & Cox, B. (2008). *Number of Farmers Markets Continues to Rise in U.S.* Washington, DC: USDA. Retrieved December 12, 2008, http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5072472&acct=frmrdirmkt

U.S. Department of Agriculture. (2003). *The National Organic Program*. Retrieved Nov. 23, 2009, http://www.ams.usda.gov/nop

Wells, W. D. (1975). Psychographics: A critical review. *Journal of Marketing, 12*(2), 196-213.

Zepeda, L.,  & Li, J. (2006). Who buys local food? *Journal of Food Distribution Research, 37*(3): 1-11.

Zepeda, L.,  & Li, J. (2007). Characteristics of organic food shoppers. *Journal of Agriculture and Applied Economics, 39*(1): 17-28.

**Appendix 1: Other Variables in Survey**

| *Variables* | *Description* |
|---|---|
| *Environment-related* | |
| E-concerns | Scale averages following five items:(Cronbach's alpha=0.72) |
| | Wildlife preservation (very concerned=1; otherwise=0) |
| | Water contamination (very concerned=1; otherwise=0) |
| | Personal or family health problems due to pollution |
| |     (very concerned=1; otherwise=0  0 |
| | Energy/resource conservation (very concerned=1; otherwise=0) |
| | Animal welfare (very concerned=1; otherwise=0) |
| E-knowledge | Scale averages the following five items:(Cronbach's alpha=0.60) |
| | Organic food means: |
| | Not grown with artificial fertilizers or pesticides (0=false; 1=true) |
| | Not genetically modified (0=false; 1=true) |
| | Free of antibiotics (0=false; 1=true) |
| | Free of artificial growth hormones (0=false; 1=true) |
| | Not treated with radiation (0=false; 1=true) |
| E-friendly behavior | |
| | Member of environmental group (yes=1; no=0) |
| *Health practice* | |
| Member | Currently a member of a fitness club (yes=1; no=0) |
| *Family composition* (number of) | |
| Adults | Number of adults in the household |
| Children <5 | Number of children less than 5 years old in the household |
| Children 6-17 | Number of children aged 6-17 years in the household |
| *Demographics* | |
| Female | Female (yes=1; no=0) |
| Age | Age in 10 years |
| Age2 | Square of age in 10 years |
| College | Completed 4-year college or higher (yes=1; otherwise=0) |
| Nonwhite | Race other than white (yes=1; otherwise=0) |
| *Income (approximate quintiles)* | |
| < $15,000 | Total household income before tax < $15,000 a year (yes=1; no=0) |
| $15,000-29,999 | Total household income before tax $15,000-$29,999 a year (yes=1; no=0) |
| $30,000-44,999 | Total household income before tax $30,000-$44,999 a year (yes=1; no=0) |
| $45,000-75,000 | Total household income before tax $45,000-$75,000 a year (yes=1; no=0) |
| >$75,000 | Total household income before tax >$75,000 a year (yes=1; no=0) |
| *Community characteristics* | |
| Northeast | Household in the Northeast US (yes=1; no=0) |
| Midwest | Household in the Midwest US (yes=1; no=0) |
| South | Household in the US South (yes=1; no=0) |
| West | Household in the US West (yes=1; no=0) |
| No market | There is no farmers' market in my area (yes=1; no=0) |