Who Buys Food Directly from Producers in the Southeastern United States?

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Abstract

To capitalize on potential opportunities presented by growing consumer demand for locally grown foods, farmers need insight into significant motivations and behavioral characteristics of consumers in their region. This paper aims to evaluate the characteristics of Southeastern urban consumers who purchased food *directly from producers*. Novel study findings include the impact of disease incidences that occurred in respondent and related family members, a more accurate understanding of US agriculture, relatively higher levels of concern about US food safety, and greater physical activity levels, which are significant motivators of increased likelihood to purchase direct from producers.

Key Words: consumer behavior, local food purchases, logit, Southeastern farmers, survey research

JEL Classifications: Q13, Q16, D12

Introduction

In recent years, there has been growing interest among consumers in buying locally grown and produced food products. In 2008 direct-to-consumer sales accounted for $877 million (roughly 18.27%) of total food sales in the US (Low and Vogel 2011), and farmers' markets have seen a large increase in the last ten years, growing in number from 3,137 in 2002 to 7,864 in 2012 (U.S. Department of Agriculture, Agricultural Marketing Service, 2012). In March of 2007 the cover page of Time Magazine touted the phrase "Forget Organic. Buy Local" (Cloud 2007). Smith and MacKinnon's (2007) *The 100-mile Diet: A Year of Local Eating*, which popularized the term "locavore", spent several weeks on several non-fiction bestsellers lists. In 2012, the U.S. Department of Agriculture began its "Know Your Farmer, Know Your Food" initiative (USDA, 2012) in order to implement the President's plan to strengthen local and regional food markets.

The food dollar captures the average portions of each dollar spent on food in the US that go to the various parties involved in the food production process (Canning, 2011). The traditional food system in the United States, in which intermediaries (brokers, manufacturers, wholesalers, and retailers) move food items through the marketing channels from the farm gate to the consumer, returned 15.8 cents of every 2008 dollar spent on food to the producers (Canning, 2011). Farmers can benefit from this growing trend in consumption of locally grown foods by potentially capturing a greater share of the food dollar. For example, Darby et al. (2006) predict that marketing strategies emphasizing local production (in this case, within the state of Ohio) could lead to an estimated price premium of $1.17 per carton of locally grown strawberries when purchased directly from the producer and a premium of $0.64 per carton when purchased from a retailer.

In order to capitalize on potential opportunities to meet market demand for locally-grown foods, farmers need insight into significant motivations and behavioral characteristics of those consumers who have purchased local foods. Furthermore, it is evident that some consumers buy directly from producers based on their desire for "local" food (Thilmany, Bond, and Bond 2008). Local food consumer preferences and motivations potentially differ across regions of the United States and across varying definitions of "local" food. Definitions of "local" food vary widely in previous studies (Zepeda and Leviten-Reid 2004; Zepeda and Li, 2006; Onozaka, Nurse, and McFadden, 2010), yet provide valuable insight into the perceived gains to consumers who purchase local foods based on a variety of definitions of the term "local."[1] Local food consumers who buy "direct from producer" are a potentially important subset of the local foods market. In 2008, direct-to-consumer sales accounted for $877 million (roughly 18.27%) of total food sales in the US (Low and Vogel, 2011), and farmers' markets have seen a large increase (in number (from 3,137 in 2002 to 7,864 in 2012) in the last ten years (U.S. Department of Agriculture, Agricultural Marketing Service, 2012).

Little research has been done on the local foods sector for the Southeastern United States. Most studies concentrate on the Eastern coast or the Western region of the United States (e.g. Giruad et al, 2005; Hardesty, 2008; Thilmanny et al, 2008) or would benefit from updated analyses (Eastwood et al, 1987). There are 12,549 community supported agriculture programs in the US, of which 4,015 (32%) are located in the Southeastern region (U.S. Department of Agriculture, 2007), an indication of consumer support for producer-sourced food and food

[1] For example, some consumers and retailers may view food coming from a particular region (e.g. the Mid-South region of the United States) to be local (Onozaka, Nurse and McFadden, 2010) whereas others might consider only food from within a day's drive to be local (Whole Foods), or within 100 miles (Smith & McKinnon, 2007). Retailers, such as Whole Foods Market consider food grown within a few hours' drive to be local.

products. This paper aims to fill this gap in the literature by evaluating the characteristics of Southeastern urban consumers who purchased food *directly from producers*.

The results of our study are based on an online survey of 1,023 primary household food shoppers who reside in five major cities in the southeast US (Atlanta GA, Nashville TN, Birmingham AL, and Houston and Austin TX). Novel study findings include the impact of disease incidences among respondent and related family members, a more accurate respondent understanding of the agriculture industry, and higher physical activity levels, all of which are significantly linked to increased likelihood to purchase direct from producers. Significant differences in respondent purchasing behavior were exhibited between cities, as well as relatively higher levels of respondent concern about the safety of U.S. grown food and food products. Female respondents with some college education who prepare more meals at home each week were statistically more likely to have purchased direct-from-producers within the previous six months (January through June, 2012), findings that are consistent with the existing literature. The results of this study are expected to assist growers located in the Southeast who are interested in securing and nurturing sustainable, producer-to-consumer relationships. Extension specialists can share survey findings by delivering producer educational programs built on informed, targeted marketing strategies that effectively meet the needs of the locally grown consumer base.

Previous studies on local food consumption

Previous studies have found that decisions whether to purchase local food products are a function of education, marital status, age, household characteristics, and travel distance (Wolf, Spittler, and Ahern 2005; Abello, et. al 2012), as well as the (in)convenience inherent in finding local foods to purchase (Wolf, Spittler, and Ahern 2005). Conflicting relationships between key

demographic factors such as income, education, and gender have been reported. For example, Brown (2003) and Govindasamy, Italia, and Adelaja (2002) found the average buyer of local foods to be a college educated female with above average income whereas Kolodinsky and Pelch (1999), Abello et al. (2012) and Onianwa, Wheelock, and Mojica (2005) found that income did not affect purchasing of local foods. The effects of educational achievement are also debated between different studies (e.g. Abello et al. 2012; Zepeda and Li 2006).

Previous research indicated that locally grown food is perceived to be relatively safer (e.g. Grubinger 2010), and to capture this effect, if any, respondents were asked to indicate their level of concern about the safety of food produced in the US and other countries relative to their own friends and family. As evidence continues to build in support of the theorized correlation between the respondent's lifestyle and long-term health issues, questions related to respondent lifestyles were included (e.g. Chandon and Wansink, 2011; Trexler, 2011; Brewster and Goldsmith, 2007). Consumer personal and family health concerns may drive local food purchase decisions (e.g. Rozin, Ashmore, and Markwith 1996). McGinnis and Nestle (1989) found that consumers with histories of these types of ailments in their families were more likely to purchase local foods due to the perceived lower health risks.

Conceptual Framework

We assume a random utility framework (Haab and McConnell 2002) in which consumers buy directly from the producer if and only if the utility they derive from doing so is greater than the utility they derive from not doing so. We assume utility is a linear-in-parameters function of consumer characteristics, such that the utility, u, of respondent i from making choice c is:

$$(1) \quad u_{ic} = \beta_0^c + \boldsymbol{\beta}_{\mathbf{x}}^{\mathbf{c}\prime}\mathbf{x}_i + \varepsilon_i^c$$

where $\mathbf{x_i}$ is a vector of characteristics of consumer *i*, β_0^c and $\boldsymbol{\beta}_{\mathbf{x}}^{\mathbf{c}}$ are parameters to be estimated, and ε_i^c is an iid error term with mean zero. The indicator $c \in \{1, 0\}$ indicates the choice of buying local (1) or not (0). Under the assumption that the consumer buys directly from the producer if and only if $u_{i1} \geq u_{i0}$, it is straightforward to estimate the differences in parameters across choices ($\beta_0 = \beta_0^1 - \beta_0^0$ and $\boldsymbol{\beta}_{\mathbf{x}} = \boldsymbol{\beta}_{\mathbf{x}}^{\mathbf{1}} - \boldsymbol{\beta}_{\mathbf{x}}^{\mathbf{0}}$) using a maximum likelihood estimator assuming the difference in errors ($\varepsilon_i = \varepsilon_i^1 - \varepsilon_i^0$) is logistically distributed. The researchers determine which characteristics belong in the vector $\mathbf{x_i}$ based on a thorough review of existing literature related to local food markets and consumer behavior.

Survey and Data

Data for the study were collected through an online consumer survey conducted in July of 2012. Recent comparisons of online and conventional (mail, telephone) survey methodologies have concluded that properly conducted internet survey research offers quick, convenient, and credible results (Dillman et al, 2009; Smyth et al. , 2010; Smyth & Pearson, 2011). Our agreement with Research Now, a market research company affiliated with eRewards.com, ensured a minimum sample of two hundred respondents from each of five Southeastern cities: Atlanta, Georgia, Austin and Houston, Texas, Birmingham, Alabama, and Nashville, Tennessee. Research Now selected a demographically-balanced representative sample (aged 18 years and older). Our desired respondent was selected during a pre-screening process to include those individuals that served as the primary household food shoppers in the five major cities in the Southeast. The online instrument was pre-tested with approximately fifty respondents to ensure consumer responsiveness and instrument usability. Within a seven-day time frame, the target sample of 1,023 completed questionnaires was received from Research Now via an electronic

database. Due to the proprietary nature of the Research Now database, the response rate cannot be calculated, as the initial number of invitations is unknown to the researchers.

The survey was designed to examine the characteristics of urban consumers who purchased food and food products directly from growers, ranchers, farmers and fishermen during the January through June 2012 time period. Standard demographic variables are included in our survey questionnaire, such as respondent city, gender, education levels, and number of people in the household. Dummy variables were included for the respondent's city of residence and the number of individuals living in the household during the study period. Respondents were asked to indicate the average number of days per month spent on travel for work or pleasure, and to indicate the amount of time spent commuting to work. Participants were asked to categorize their daily physical activity level as "less active" (walk less than 1.5 miles), "active" (the equivalent of 1.5-3 miles of brisk walking), or "more active" (the equivalent of greater than three miles of brisk walking).

Respondents were asked to indicate the incidences of illnesses including cancer, heart disease, diabetes, and obesity in their family by noting which, if any, family members had been diagnosed with one or more of the diseases (respondent, siblings, father, mother, children, and grandparents), for a maximum of 24 possible occurrences. Respondents indicated their annual health insurance policy purchasing behavior over the previous ten years, to provide a representative measure of their health risk management behavior. Finally we elicited respondents' knowledge of agriculture with a true/false assessment (their score out of eight was used as the independent variable).

Results

In general, a comparison of the respondent demographics reveals a fairly representative sample (Table 1) as compared to the published 2009 U.S. Census data for each city. However, the percentage of females in the sample is higher than the actual percentage of females in each city, and the median age is higher in the sample than in the population. These differences could be explained by the prerequisite that the respondent be the primary shopper of the household. Variable descriptions and descriptive statistics of the model variables are provided in Table 2. Overall survey respondent household size included an average of 2.4 individuals, slightly less the 2012 U.S. national average of 2.7 persons per household (U.S. Census Bureau, 2011). About half of the respondents consider themselves to be active and another 12% consider themselves to be very active. On average, respondents and/or immediate family members had experienced four occurrences of diseases, and had purchased annual health insurance policies about half the time over the past decade. Respondents selected an average of 3.9 (49%) correct responses to questions on the agriculture knowledge assessment.

Of the five study cities, Nashville has the highest percentage of respondents who have bought directly from the producer at 49.5%, while just 23.9% of Houston respondents reported direct-from-producer purchases within the previous six months (Table 3). Atlanta, Austin, and Birmingham have similar proportions of direct-from-producer purchasing consumers, at 37.9%, 35.1%, and 36.1%, respectively. Atlanta was selected to represent the baseline comparison city in the econometric analysis.

Estimation Results

A binary logit model was estimated using Limdep software. Parameter estimates and marginal effects estimates are reported in tables 4 and 5, respectively. The signs of the

parameter estimates indicate the direction of the marginal effect of a change in the independent variable on the probability of the respondent purchasing directly from the producer.

Consistent with Brown (2003) and Govindasamy, Italia, and Adelaja (2002), we find that college educated females are more likely to purchase directly from the producer. Nashville respondents are significantly more likely to purchase foods directly from producers than residents of Atlanta, whereas those residents of Houston are significantly less likely to purchase foods directly from producers than residents of Atlanta. There is no statistical difference in the probability of residents of Austin or Birmingham purchasing directly from the producer relative to residents of Atlanta. Respondents who consumed a greater number of their weekly meals at home are more likely to make direct-from-producer purchases as are those that travel more days per month for business or leisure.

The respondent's concern for the safety of US food relative to concerns expressed by friends or family is also a significant predictor of direct-from-producer purchasing likelihood. Those relatively more concerned with U.S. food safety have a 5.2% increase in predicted probability to purchase directly. This may be an indication that informed consumers are not entirely satisfied with traditional agriculture production and are looking to purchase food from the producer to overcome some of the perceived shortcomings of food purchased at traditional outlets. This is an interesting finding as it conflicts with anecdotal evidence claiming that the local food movement was motivated by consumer concerns about agriculture production practices and food safety regulations outside the U.S. Finally, respondent knowledge about the agriculture industry appears to be a positive predictor of purchasing behavior. A one-point increase in a respondent's score on the agriculture knowledge assessment resulted in a 2.2 percent increase in the likelihood of direct purchase.

Consistent with much of the literature, respondents who considered themselves "more active" (that is, those who perform the equivalent of at least three miles of brisk walking daily) have a nearly ten percent higher likelihood of purchasing direct, relative to "active" respondents. Conversely, participants who described themselves as "less active" (less than 1.5 miles brisk daily walking) were 11.7% less likely to buy direct. We find evidence that higher incidences of illness in the family motivated the primary shopper's decision to purchase food and food items direct from producers. For every additional disease incidence in either the respondent or his/her immediate family, the respondent was 1.2% more likely to purchase food direct from a producer. Respondents who purchased additional annual health insurance policies in the previous ten years demonstrated a significant 1.7% increase in likelihood of purchasing direct from producers.

Summary and Discussion

Existing studies show that demand for locally produced food continues to increase. Evidence is accumulating that consumers are continuing to desire more information on where and how their food is produced. It is important for producers to understand these trends in order to maintain and grow their businesses as consumer preferences for locally-grown food and food products develop over the next decade. One principle of sustainable agribusiness management hinges on the accurate identification of target customers for different types of food product. These survey results offer useful, objective information to Southeastern producers who are crafting marketing strategies to capture expanding urban consumer demand in nearby geographic proximity.

Using data from consumers in four states in the Southeastern region of the United States, this study was able to better identify characteristics of consumers who buy direct from the producer. College education, gender and physical activity are important consumer characteristics

that affect their decision to purchase direct. Importantly, family illness incidences also affect consumers' decision to purchase direct, perhaps due to perceived lower health risk of local foods or growing interest in managing chronic health concerns via known food suppliers. Future research would benefit from inclusion of questions related to illnesses with established genetic causes as compared to those related to lifestyle choices, with the intention of clarifying the relative importance of specific health concerns that drive locally grown consumer behavior. Another important factor affecting a consumer's decision to purchase direct is their knowledge of U.S. agricultural production. Future studies can further investigate this question with the goal of developing better understanding of consumer preferences.

The findings of this study have important implications for producers. For producers, an objective assessment of the characteristics of consumers who buy direct is expected to result in new marketing strategies and access to a larger clientele base. Study findings reinforce the need to develop and deliver Extension programming aimed at producers interested in targeted direct marketing strategies that incorporate consumer educational components which emphasize food safety benefits, encourage lifelong healthy eating habits and promote awareness of agricultural production practices.

Table 1. Selected Survey Respondent Demographics Compared to 2009 U.S. Census Bureau Data, by City/Metropolitan Area (MA).

	Atlanta MA		Austin MA		Birmingham MA		Houston MA		Nashville MA	
	Sample	City	Sample	City	Sample	City	Sample	City	Sample	City
Number	206	5.5M	208	1.7M	202	1.1M	205	5.9M	202	1.6M
% Female	70.9	50.7	63.9	56.8	70.3	52.5	64.9	50.3	70.3	57.5
% White	77.7	57.8	76.4	73.7	74.8	68.1	70.2	67.6	75.3	78.9
Age (median)	50.0	34.4	49.0	32.5	49.5	37.3	52.0	32.9	45.5	35.5
Income (2009$) (mean)	97,075	75,127	93,233	74,990	80,160	63,555	92,146	76,626	80,420	68,223

Source: U.S. Census Bureau (http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml), Selected Economic Characteristics, 2009 and Demographic and Housing Estimates, 2009, both recorded in the American Community Survey 1-year Estimates.

Table 2. Variable definitions and descriptive statistics.

Variable Description	Type [a]	Mean	Std. Dev.	Min	Max
Over the past six months, have you purchased any food or food products directly from a grower/rancher/farmer/fisherman?	Binary	0.365	0.481	0	1
Atlanta resident	Binary	0.201	0.401	0	1
Nashville resident	Binary	0.197	0.398	0	1
Houston resident	Binary	0.200	0.401	0	1
Birmingham resident	Binary	0.197	0.398	0	1
Austin resident	Binary	0.203	0.403	0	1
Female	Binary	0.680	0.467	0	1
At least some college	Binary	0.749	0.434	0	1
Number of people residing in household in previous six months	Continuous	2.399	1.234	1	9
Number of meals prepared at home each week (reported in seven, 0-3 meal intervals)	Continuous	4.016	1.754	1	7
Number of accurate responses recorded on agricultural knowledge assessment	Continuous	3.93	1.82	0	8
Concern about average US food prices in next six months relative to friends and family (0 = much less concerned, 4 = much more concerned)	Continuous	2.643	0.928	0	4
Concern about US food safety relative to friends and family (0 = much less concerned, 4 = much more concerned)	Continuous	2.457	1.084	0	4
Concern about safety of food produced outside the US relative to friends and family (0 = much less concerned, 4 = much more concerned)	Continuous	2.891	1.015	0	4
Number of days traveled per month	Continuous	6.773	6.914	2	25
Time spent commuting to work one way (reported in five 15-minute intervals)	Continuous	1.838	1.053	1	5
Less than 1.5 miles brisk walking per day	Binary	0.449	0.498	0	1
More than 3 miles brisk walking per day	Binary	0.117	0.322	0	1
Number of disease incidences in family	Continuous	3.979	2.848	0	19
Number of times purchased health insurance in past 10 yrs (1=never, 2=1-3x/yr, 3=4-6x/yr, 4=7-9x/yr, 5=10x)	Continuous	2.686	1.561	1	5

[a] All binary variables equal 1 if the description is true, 0 otherwise. [b] Atlanta is the omitted base city. [c]

Active (equivalent of 1.5-3 miles brisk walking daily) is the omitted activity level

Table 3. Percentages of survey respondents indicating direct-from-producer purchases within the time period January through June, 2012, by city.

City	Did not buy direct-from-producer		Did buy direct-from-producer	
	Number	Percent	Number	Percent
Atlanta [a]	128	62.14%	78	37.86%
Austin	135	64.90%	73	35.10%
Birmingham	129	63.86%	73	36.14%
Houston	156	76.10%	49	23.90%
Nashville	102	50.50%	100	49.50%
TOTAL	650	63.54%	373	36.46%

[a] Atlanta is the omitted base city

Table 4. Parameter estimates of the binary logit model.

Variable	Parameter Estimate	Std. Error	Pr>ChiSq
Constant	-3.534	0.544	0.000
Nashville resident	0.589***	0.216	0.006
Houston resident	-0.605***	0.231	0.009
Birmingham resident	-0.007	0.220	0.975
Austin resident	-0.089	0.218	0.681
Female	0.257*	0.156	0.099
At least some college	0.323*	0.168	0.055
Number of people residing in household in previous six months	0.089	0.056	0.115
Number of meals prepared at home each week	0.069*	0.041	0.094
Number of accurate responses recorded on agricultural knowledge assessment	0.108***	0.041	0.008
Concern about average US food prices in next six months relative to friends and family (0 = much less concerned, 4 = much more concerned)	0.010	0.084	0.904
Concern about US food safety relative to friends and family (0 = much less concerned, 4 = much more concerned)	0.253***	0.078	0.001
Concern about safety of food produced outside the US relative to friends and family (0 = much less concerned, 4 = much more concerned)	-0.020	0.083	0.809
Number of days traveled per month	0.157***	0.044	0.000
Time spent commuting to work one way (reported in five 15-minute intervals)	0.087	0.067	0.195
Less than 1.5 miles brisk walking per day	-0.568***	0.153	0.000
More than 3 miles brisk walking per day	0.459**	0.218	0.036
Number of disease incidences in family	0.061**	0.025	0.015
Number of times purchased health insurance in past 10 yrs (1=never, 2=1-3x/yr, 3=4-6x/yr, 4=7-9x/yr, 5=10x)	0.081*	0.045	0.073
Log-likelihood function = -610.290		McFadden Psuedo-Rsquared = 0.091	
Chi-squared = 121.650 (p = 0.000)		Hosmer-Lemeshow chi-squared = 3.722 (p=0.881)	

NOTE: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Marginal effects were estimated at the means of the regressors.

Table 5. Marginal effects of the binary logit model.

Variable	Marginal Effects	s.e.	95% Confidence Interval	
Nashville resident	0.127***	0.047	0.034	0.219
Houston resident	-0.119***	0.043	-0.203	-0.036
Birmingham resident	-0.001	0.045	-0.090	0.087
Austin resident	-0.018	0.044	-0.105	0.068
Female	0.053	0.032	-0.010	0.116
At least some college	0.065**	0.033	0.000	0.131
Number of people residing in household in previous six months	0.018	0.115	-0.004	0.041
Number of meals prepared at home each week	0.014*	0.008	-0.002	0.031
Number of accurate responses recorded on agricultural knowledge assessment	0.022***	0.008	0.006	0.039
Concern about average US food prices in next six months relative to friends and family (0 = much less concerned, 4 = much more concerned)	0.002	0.017	-0.032	0.036
Concern about US food safety relative to friends and family (0 = much less concerned, 4 = much more concerned)	0.052***	0.016	0.020	0.084
Concern about safety of food produced outside the US relative to friends and family (0 = much less concerned, 4 = much more concerned)	-0.004	0.017	-0.038	0.029
Number of days traveled per month	0.032***	0.009	0.014	0.050
Time spent commuting to work one way (reported in five 15-minute intervals)	0.018	0.014	-0.009	0.045
Less than 1.5 miles brisk walking per day	-0.117***	0.031	-0.178	-0.056
More than 3 miles brisk walking per day	0.098**	0.048	0.004	0.192
Number of disease incidences in family	0.012**	0.005	0.002	0.023
Number of times purchased health insurance in past 10 yrs (1=never, 2=1-3x/yr, 3=4-6x/yr, 4=7-9x/yr, 5=10x)	0.017*	0.009	-0.002	0.035

NOTE: *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Marginal effects were estimated at the means of the regressors.

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