



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Using Customer Surveys to Promote Farmers' Markets: A Case Study

David B. Eastwood

Changing food consumption patterns indicate that food retailers need to be responsive to patrons. Consumer surveys can be used to identify changes that should be made in the management of a facility and to identify relevant promotional messages for food shoppers. A survey of shoppers at a farmers' market is used to estimate a Poisson regression of the number of trips. Results provide a basis for the outlet becoming more responsive to consumer information needs.

Fresh produce is an important component of consumers' food budgets. For example, annual per capita expenditure for fresh produce, measured in constant dollars, has increased from \$59.28 in 1980 to \$102.78 in 1992 (Smallwood, et al.). The produce and general merchandise departments of supermarkets in 1994 were virtually tied as the top selling store categories (Supermarket Business). Two reasons for the prominence of fresh produce in American diets are health concerns and the promotion of fresh produce via the national 5-A-DAY campaign.

Farmers' markets are alternative sources of fresh produce for consumers. Between 1980 and 1990 the number of farmers' markets in the United States rose from 1,200 to 2,000 (Rhodus, Schwartz, and Hoskins). Along with the proliferation, there has been a tendency for them to become more organized (Peck et al.). Locally grown fresh produce is perceived to have the advantage of freshness over commodities brought in from other regions, and supermarkets are considered by food shoppers to have advantages with respect to location, convenience, and consistent supply (Brooker, Eastwood, and Gray; Buitenhuis, Kezis, and Kerr; Eastwood, Orr, and Brooker; Rhodus, Schwartz, and Hoskins).

To be viable retail outlets in this environment, farmers' markets must be responsive to customers and should develop advertising programs that provide relevant information. Consumer surveys can be a source of useful data for

farmers' markets to address problem areas identified by patrons and to incorporate consumer information needs into advertising programs. Outlets can increase the flow of customers through their responsiveness to attitudes, perceptions, and socioeconomic characteristics of food shoppers. This paper summarizes the responses to two related surveys and uses the results to draw marketing implications.

The Farmers' Market Surveys

The Knox County Farmers' Market (KCRFM) is located in an urban area near an exit from an interstate by-pass around Knoxville, Tennessee. The facility was built by the county and opened in the spring of 1992. The main structure is a 27,000 square foot building designed to operate as a year-round facility. Ample parking is provided.

A survey instrument was developed to gather information about the attitudes, perceptions, and socioeconomic characteristics of shoppers visiting the market. Two weeks during the 1993 harvest season were selected to conduct the survey. The first, June 20-26 coincided with a special weekend event designed to draw people to the market. It also represented a week at the start of the harvest season. A second week, July 18-24, represented a week from the middle of the harvest season without a special event.

During each week 1,000 shoppers were stopped at random and asked to take a mail-back questionnaire home and complete it at their convenience. No postage was required. The questionnaire fit on the two sides of a legal-sized page and

David B. Eastwood is a Professor in the Department of Agricultural Economics and Rural Sociology at the University of Tennessee, Knoxville, TN 37901-1071.

Table 1. Demographic Characteristics of Respondents (Percent Distributions).

Characteristic	Week 1	Week 2	Census	Chi Square ^a
<u>Gender</u>				
Male	17.3	10.0	55.2	6.35*
Female	82.7	90.0	47.8	
<u>Race</u>				
White	96.8	96.8	89.9	NC
Other	3.2	3.2	10.2	
<u>Age</u>				
Under 25	1.6	2.3	12.7	7.17
25 to 34	11.2	13.6		
35 to 44	27.1	20.8	32.8 ^b	
45 to 54	23.1	24.0	10.5	
55 to 64	13.5	19.5	8.9	
65 and over	23.5	19.8	12.7	
<u>Education</u>				
Some High School	4.1	3.2	14.5	0.27
High School Grad	31.7	32.5	27.5	
Some College	14.6	14.9	18.4	
College Grad	49.6	49.4	28.8	
<u>Household Size</u>				
One	9.6	14.1		2.65
Two	50.2	47.6		
Three	20.1	17.4		
Four or more	19.7	20.8		
<u>Income</u>				
\$15,000 and under	9.3	8.4	29.7	4.47
\$15,001 to \$25,000	12.8	15.0	18.5	
\$25,001 to \$35,000	19.4	22.6	15.6	
\$35,001 to \$45,000	21.1	16.0		
\$45,001 to \$55,000	15.0	11.8	36.3 ^c	
\$55,001 and over	22.5	26.1		
<u>Occupation</u>				
Homemaker	24.0	26.7		2.27
Full-time employed	43.6	39.2		
Part-time employed	6.8	7.4		
Retired	23.6	23.2		
Student	1.6	3.2		
Unemployed	.4	.3		

^a Tests for independence between weeks 1 and 2.

^b Census data for age 25-44.

^c Census data for income greater than or equal to \$35,000.

* Significant at .05 level. NC = not computed.

was folded so the return address was visible. One thousand questionnaires were distributed each week. The number of questionnaires distributed each day was in proportion to the total number of shoppers estimated to visit the market each week.

This procedure helped ensure representation from all segments of patrons who frequented the outlet during a week. Totals of 243 and 315 questionnaires were returned for weeks 1 and 2, respectively.

Descriptive Comparisons

Profiles of respondent characteristics are presented in Table 1. Census information is provided where corresponding categories for the 1990 Knox County census are available, although comparisons with the 1990 census are not made because the typical fresh produce consumer does not have the same characteristics as the typical resident of a metropolitan area (Cartier; Eastwood, Gray, and Brooker; Jack and Blackburn; Kezis et al.). With respect to race, over 95 percent of the respondents were white. Relatively few of the respondents were under 25 years old, and no significant difference in the age distributions between the two weeks was found. Both samples contained relatively high proportions of respondents who were college graduates and in higher income groups. The chi square values led to inferences of similar response patterns for weeks 1 and 2 in both cases. The distributions of household sizes were similar, as were the income and occupation distributions. No significant week 1 versus 2 differences were found with respect to occupation.

These results are consistent with other surveys of food shoppers and of fresh produce consumers. The majority of fresh produce decision making is done by women (Vance). Adrian and Vitelli, Beierlien et al. found direct market shoppers tended to be at least 25 years old. They also concluded that patrons of direct markets tended to be from higher income groups. Smallwood and Blaylock and Vance found that as age increased, so did fresh produce consumption. These studies

also noted that whites tended to consume proportionately more fresh produce than other races.

Survey questions were designed to obtain information about reasons for not shopping regularly at the market. Problem areas had been identified from earlier conversations with employees, reports in the media, and published surveys of other markets. Table 2 presents a list of the problem areas for not shopping at the outlet regularly. The most frequently cited were too far to drive, prices were too high, equal or better quality was available at more convenient locations, and the facility was alright for occasional visits but not regular trips. Significant differences in the reason proportions "prices too high" and "okay for occasional visits" were found. More shoppers at the start of the harvest season felt there was a pricing problem, and this could reflect growers feeling they could charge too much of a premium when locally grown fresh produce first becomes available. Proportionately more of the week 2 respondents indicated a trip was alright for occasional visits, which is consistent with answers (not reported here) to a separate question that indicated more of them made large purchases for canning/freezing.

Another set of response categories was intended to gather insights about things to change in order to increase patronage. The feature that distinguishes this set from those in Table 2 is that those in Table 3 can be controlled by management. More farmers, lower prices, and more produce were the most frequently cited problem areas among patrons. Events seem to be a way of drawing shoppers at the start of the season but not later on.

Table 2. Reasons for Not Shopping Regularly (Percent Distributions).^a

Reason	Week 1	Week 2	t-test
Too far to drive.	37.6	45.5	-1.91
Prices too high.	23.1	8.2	4.86*
Comparable quality at more convenient locations.	23.9	19.4	1.29
Okay for occasional visits but not regularly.	35.0	53.4	-3.11*

^a Respondents could check more than one reason.

* significant at .05 level.

Table 3. Things to Change to Shop There Regularly (Percent Distributions).^a

Problem	Week 1	Week 2	t-test
Need more farmers	64.7	60.8	.96
Need more crafts	9.0	8.4	.25
Need more flowers/shrubs	8.1	11.4	-1.33
Open earlier	4.5	7.6	-1.56
Lower prices	45.2	41.8	.81
Open later	19.8	18.6	.36
Increased security	1.4	.4	1.22
Poor service	5.4	5.9	-.26
More produce	35.3	33.8	.37
More events	9.5	.3	4.92*

^a Respondents could check more than one problem.

* Significant at .05 level.

Modeling the Number of Trips

The questionnaire asked how many trips respondents made during 1992. Table 4 presents the distributions of the grouped responses for the two surveys. Inspection of the table indicates the two are nearly identical. The corresponding chi square test led to the inference that the two distributions are statistically independent, or there is no systematic difference in the ways weeks 1 and 2 respondents recorded the number of trips at the beginning and middle of the 1993 harvest season.

Table 4. Number of 1992 Trips (Percent Distributions).

Grouped Trips	Week 1	Week 2	Chi Square
0	24.7	30.5	
1 to 5	38.7	34.0	
6 to 10	23.9	21.3	
11 to 20	9.0	8.5	
21 or more	3.7	5.7	2.94

The decision variable analyzed in this study was the number of trips a respondent made (ungrouped responses). Weeks 1 and 2 were combined into a single sample based on the inference drawn from the chi square test for the Table 4 data. A Poisson regression model was developed due to these being count data.¹

It is useful to recognize from the outset that the data are neither censored or truncated. Aside from the number of trips being a nonnegative integer, the range of values has not been collapsed (censored) or discarded (truncated) because some respondents who visited the market in 1993 had not visited the outlet in 1992. The percents of respondents indicating no 1992 trips were 23.7 and 30.4 for weeks 1 and 2 respectively. Since the questionnaire was distributed in 1993 and the number of trips refers to the previous year, the regression model implicitly assumes the estimated relationship reflects causality that is relevant for any year. A zero-altered Poisson model was also estimated, but the coefficient of the inverse Mills ratio was not significant, leading to the inference that the double hurdle framework was not appropriate.²

The variety of response categories for questions in the instruments made it possible to include several dimensions of attitudes, shopping behavior, and socioeconomic characteristics. General relationships were hypothesized between the independent and dependent variables. Socioeconomic characteristics, travel cost, attitudes and perceptions, and shopping behavior are hypothesized to impact decisions about the number of trips a patron would make during a harvest season. The questionnaires gathered data on several

tion of the Poisson regression, see Greene (1993). A recent example is Creel and Loomis.

² For a discussion of this extension of the Poisson model, see Greene (1994) and Haab and McConnell.

¹ The nonnegative integer values of the dependent variable preclude the use of the OLS regression model. For a discus-

dimensions within each, and there is no a priori assumption that every one has a significant impact. That is, for each dimension, only a subset of measures may be used more heavily by fresh produce shoppers.

Initial Poisson regressions were estimated using all the variables associated with the questionnaires. Those variables that had insignificant (asymptotic) estimated coefficients led to the respective independent variable being deleted in subsequent regressions. The potential for pretest bias was held to a minimum by comparing the overall fits, estimated coefficients, and asymptotic standard errors. If a large change occurred, the problem variable was reintroduced.

Independent variables used in the final Poisson regressions are described below. Some are subsets of the response categories described previously. The following variables were coded separately with 1 denoting the respondent checked the choice and 0 denoting not checked: the trip occasion when the respondent received the survey (special event, journey to/from church, and journey to/from work) and reason (see Table 2) for not shopping at KCRFM (too far to drive, equal or better quality available elsewhere, and okay for occasional visit). If the respondent checked at least one thing to change in order to shop at KCRFM regularly (see Table 3), then this variable was coded 1 and 0 denoted none checked. Respondents who checked the 25-34 age group and those whose educational attainment was high (a high school graduate or some college) were also included in the final regression.

For each of the following attributes, respondents were asked to indicate the best source (supermarket, farmers' market, same, don't know). Criteria were color, flavor, freshness, nutrition, price, shape, and size. The measure is the number of attributes for which the respondent indicated farmers' markets were better.

Information about independent variables not described previously is given below. For the trip during which the questionnaire was received, people were asked to check the selection that most accurately described their travel to KCRFM. These were part of a trip to/from a nearby mall, a special trip for a demonstration or event, on the way to/from church, on the way to/from work, part of a trip to/from other (non-mall) stores, de-

termined by a tour bus leader, or a special trip to KCRFM. Three of these measures were part of the final equation.

COST is a proxy for travel cost. The income categories (see Table 1) used in the questionnaire were ordered from 1 (lowest) to 6 (highest). Then, COST was calculated as the product of the distance to the market and income category. This measure is used to value the opportunity cost of the patron's travel time. It is hypothesized to have a negative effect on the number of trips.

Table 5 presents the estimated Poisson regressions for the number of trips made in 1992 by the weeks 1 and 2 respondents. Since all the independent variables drawn directly from the questionnaires are dummy variables, no elasticities were calculated. Only the direction of causality from the respective independent variable to the number of trips is discussed. The questionnaire was distributed in 1993, and the number of trips refers to the previous year.

The log likelihood value is -1,931. Computed chi square and likelihood ratio statistics lead to the inference of a significant systematic relationship between the independent variables and the number of trips to KCRFM.

Three types of trips had significant impacts, and the estimates provide insights as to the effects of different types of food shopper trips on the number of store visits in any year. Interpretation involves the distribution of the types of trips among shoppers (conducted as a separate analysis but not reported here) as well as the signs and magnitudes of the coefficients. Since all trip coefficients are positive, respondents who visited the market during the listed types of trips tended to have made more visits. Seven percent of the sample indicated they had come for a special event. Three percent of the sample indicated they were on trips to/from work, and two percent were traveling to/from church. While these types of trips only comprise 12 percent of the respondents, their significance in the estimated equation suggests that this type of respondent made more trips during the year to the outlet than shoppers who were at the facility on other types of trips. Furthermore, the incremental effects of shoppers on their way to/from church and work were twice those for special events.

Table 5. Poisson Regression Results, The Number of Trips.

Variable	Coefficient
<u>Constant</u>	1.987* (.159)
<u>Type of Trip</u>	
Special Event	.368* (.089)
To/From Church	.645* (.144)
To/From Work	.637* (.082)
<u>Reason for not Shopping Regularly</u>	
Too Far	-.233* (.072)
Good Quality Elsewhere	-.181* (.077)
Okay for Occasional Trip	-.432* (.061)
<u>Things to Change</u>	.162* (.017)
<u>Farmers' Markets Better</u>	.023* (.008)
<u>Age of Respondent</u>	
25-34	-.468* (.068)
<u>Education</u>	
High School Grad	-.254* (.044)
Some College	-.281* (.063)
<u>Cost</u>	-.007* (.001)
<u>Log Likelihood</u>	-1,931
<u>Chi Square</u>	2,838.*
<u>Likelihood Ratio</u>	667.*

Note: Asymptotic standard errors in parentheses.

* Significant at .05 level

Three reasons for not shopping there regularly were significant. Respondents who felt it was too far to drive tended to make fewer visits. Those who felt comparable quality produce was available elsewhere also made less frequent stops.

People who indicated the outlet was alright for occasional visits made fewer trips.

Persons who felt there was at least one thing to change tended to make more trips to the facility. This may reflect patrons who are more familiar with the market having identified things to change. The familiarity came through more trips to the outlet.

Another question entailed respondents comparing seven produce attributes (color, flavor, freshness, nutrition, price, shape, and size). Responses were "supermarket better, farmers' markets better, and don't know". A variable was created which equaled the number of times a person indicated farmers' markets were felt to be better. Since there are seven attributes, the value of this measure ranged from zero to seven. Thus, the higher the value, the higher the rating of farmers' markets relative to supermarkets.

Respondents in the 25-34 age group made significantly fewer trips in 1992. With respect to education, high school graduates and people who attended but did not graduate from college tended to make fewer trips to the outlet. These results are consistent with other studies of fresh produce consumption, as noted in the discussion of Table 1 above.

The proxy for the opportunity cost of time had the expected effect. The negative coefficient indicates that higher costs led to fewer trips. This suggests that although KCRFM food shoppers may come from higher income households (see Table 1), these patrons are less likely to be regular shoppers due to the higher costs of their trips.

Marketing Implications

Responses to patron surveys provide a framework for developing strategies to provide relevant information about fresh produce alternatives and to serve customers better. The occupational distribution of respondents indicated the largest three groups were full time workers followed by homemakers and retirees. With respect to income, the KCRFM customer is from a higher income household. Reasons for not shopping there regularly are the distance, comparable quality is available elsewhere, and the outlet is suitable for occasional (as opposed to regular) visits. More farmers, more produce, and lower prices are

factors which customers identified as being important for their increased patronage. Two implications are that more highly educated consumers may be a receptive market segment to try to reach via promotions and that as awareness of the benefits of fresh produce expands (due to such programs as 5-A-DAY) farmers' markets can try to dovetail their messages with generic promotions.

A separate analysis of the distribution of the type of trip (not reported) indicated the largest group of patrons (47 percent) had made special trips to the outlet on the day they received the questionnaire. A key to increasing patronage is to encourage these people to be more regular shoppers. One way to do this is to suggest stopping by on the journey to/from work, which could be done with rush hour radio ads and some signs at the facility on weekends when most people visit.

Urban food shoppers may not be familiar with the harvest times for locally grown fresh produce. This lack of knowledge may be reflected partly in their feeling that more produce needs to be available. A way of addressing this problem is to have signs at the outlet, and in other promotions, that indicate what fresh produce is expected to be available in the coming weeks.

Another promotion strategy could be to emphasize easy to prepare meals and snacks using fresh produce. This can be done through demonstrations on several weekends during the harvest season. Each demonstration could focus on quick meal preparation and canning/freezing for the particular produce in season. Reminders could be provided that freshness and quality for snacks and meals are available with a convenient stop on the way to/from work.

Economic models of consumer choice portray the shopper as asking whether a good is worth the price (e.g., Eastwood). This is called the value of the last dollar spent and reflects the trade-off between the incremental change in utility and the consumer's price. The latter includes the market price and the travel cost. Marketing strategies can be directed toward the incremental satisfaction or the consumers' price.

Positive perceptions of locally grown produce need to be included in promotions. Messages could also provide information about perceived problems as they are addressed and cor-

rected. Although locally grown fresh produce is perceived to have advantages such as freshness and nutrition, there are two countervailing forces also at work with respect to shopping decisions. One is the consumer's additional cost associated with stopping at farmers' markets. The other is that many urban food shoppers are satisfied with the quality and freshness available elsewhere. An important element of a promotional program, therefore, should be an emphasis on freshness and quality that are available at competitive prices.

Trips to the KCRFM entail extra travel cost vis-à-vis supermarkets. Consequently, ways to encourage more trips should center on emphasizing positive attributes of locally grown fresh produce and by keeping the market price below those in supermarkets. Then, more food shoppers are likely to conclude trips to the outlet are worthwhile. Suggesting that people stop by on the way to/from work and church may also help to lower perceived travel cost.

The desirability of competitive pricing is essential in this regard. For many consumers the travel cost (time plus transportation) can be substantial. Many food shoppers indicated they have access to comparable or better fresh produce elsewhere. This suggests that the incremental gain in utility from produce purchased at a farmers' market vis-à-vis other sources could be small. Consequently, the value of the last dollar spent can be kept favorable for farmers' markets through very competitive prices.

References

- Adrian, J. and V. Vitelli. "Pick-Your-Own and Farmers' Markets: Direct, Marketing Alternatives for Alabama Growers." Auburn University Agricultural Experiment Station Bulletin 544 (1982).
- Bierlien, J.G., H. Vroomen, and C.M. Connell. "Pennsylvania Roadside Market Survey." Pennsylvania State University Agricultural Experiment Station Bulletin 182 (1986).
- Brooker, J., D. Eastwood, and M. Gray. "Consumers' Perceptions and Attitudes Regarding Tennessee's New Farmers' Markets," Tennessee Farm and Home Science (February, 1993):14-19.
- Buitenhuys, N. A. Kezis, and H. Kerr, Jr. Consumer Purchasing Habits, Acceptance, and Preferences for Directly Marketed Small Farmers' Horticultural Commodities in Maine. University of Maine Agricultural Experiment Station Bulletin 797 (1983).

- Bureau of Labor Statistics. Consumer Expenditure Survey, 1990-91. Bulletin 2425 GPO:1993.
- Cartier, K. Direct Marketing of Produce: A Study of Farmers; Markets in Jackson, Knoxville, and Memphis Tennessee. University of Tennessee Unpublished M. S. Thesis (1994).
- Creel, M. and J. Loomis. "Theoretical and Empirical Advantages of Truncated Count Data Estimators for Analysis of Deer Hunting in California," *American Journal of Agricultural Economics*, 72(1990):434-41.
- Eastwood, D. The Microeconomics of Consumer Behavior. Houston, TX: DAME, 1996.
- Eastwood, D., M. Gray, and J. Brooker. An Intrastate Comparison of Consumers' Patronage of Farmers' Markets in Knox, Madison, and Shelby Counties. University of Tennessee Agricultural Experiment Station Research Report 95-03 (1995).
- Eastwood, D., R. Orr and J. Brooker. Consumer Stated Preferences for Selected Fresh Produce and Vegetables. University of Tennessee Agricultural Experiment Station, University of Tennessee, Research Report 86-06 (1986).
- Greene, W. H. *Econometric Analysis*, 3rd ed., New York: MacMillan, 1993.
- _____. "Accounting for Excess Zeros and Sample Selection in Poisson and Negative Binomial Regression Models." NYU Department of Economics, EC-94-10 (1994).
- Haab, T. C. and K. E. McConnell. "Count Data Models and the Problem of Zeros in Recreation Demand Analysis." *American Journal of Agricultural Economics*, 78,1(1966):89-102.
- Jack, R. L. and K. L. Blackburn. "Effect of Place of Residence on Consumer Attitudes Concerning Fresh Produce Marketed Through Direct Farm Markets in West Virginia." West Virginia University Agricultural and Forestry Experiment Station Bulletin 685 (1985).
- Kezis, A. S., F. R. King, U. C. Toensmeyer, R. Jack, and H. Kerr. "Consumer Acceptance and Preferences for Direct Marketing in the Northeast," *Journal of Food Distribution Research* 15(1984):38-46.
- Peck, K., R. R. Vose, J. I. Grieship, J. Wright, and M. Stiles. "Popularity Has Spawned Diversity and Rules at Certified Farmers' Markets." *California Agriculture*, 27,2(1993).
- Rhodus, T., J. Schwartz, and J. Hoskins. Ohio "Consumer Opinions of Roadside Markets and Farmers' Markets." Ohio State University Department of Horticulture (1994).
- Smallwood, D. and J. Blaylock. "Household Expenditures for Fresh Fruits, Vegetables and Potatoes." USDA/ERS Technical Bulletin 1690 (1984).
- Smallwood, D., N. Blissard, J. Blaylock, and S. Lutz. "Food Spending in American Households, 1980-92." USDA/ERS Statistical Bulletin 888 (1994).
- "Supermarket Business." *Supermarket Business*, (September, 1995).
- Vance Publishing Corporation. "The Packer Fresh Trends: A Profile of the Fresh Produce Consumer." Lincolnshire, IL (1994), Vol. C No. 54.
-