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Consumer Awareness of State-sponsored Marketing Programs: An Evaluation of the Jersey Fresh Program

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The majority of consumers surveyed (77 percent) report awareness of the Jersey Fresh, state-sponsored promotional program. However, certain segments appear more likely to be familiar with Jersey Fresh and its logos than others are. Behavioral and demographic models were constructed to evaluate which characteristics influence consumer awareness of Jersey Fresh. The results indicate that those who shop at more than one supermarket, those who frequently shop at direct marketing facilities, and those who frequently read food advertisements are more likely to exhibit a preexisting awareness of the Jersey Fresh Program. The results also indicate that the period of residence in the state positively contributed to the awareness of the program.

Introduction

Agricultural growers in many states are facing enormous pressure from urbanization, regulation, and increasingly competitive markets. Appreciating land values, high input costs, and excessive regulatory burdens have each contributed to the financial losses incurred by many farmers (Adelaja, 1996). Policymakers are searching for ways to help growers remain economically viable through farm-related activities that will encourage them to remain in agriculture (Govindasamy and Nayga, 1996). State-sponsored agricultural marketing programs have been implemented in several areas to improve the regional economy, increase local employment, and promote the sustainability of agriculture and the preservation of open space.

One attempt to bolster the farm profits of New Jersey growers is the Jersey Fresh Program established by the state Department of Agriculture. The geographic location of New Jersey provides several benefits that can translate into increased profits for farmers. New Jersey agriculture, located in the middle of the most densely populated consumer market in the United States, also enjoys a region in which the per capita income is one of the highest in the nation. Local growers have the distinct competitive advantage

of being able to transport and market produce in the Northeastern states more efficiently than Western and Southern growers can. Because of its close proximity to the large consumer markets of the Northeastern states, New Jersey produce can be harvested at the height of ripeness and transported to these markets in less time and with less cost than the produce of growers in more distant locations. Moreover, consumer demand for fresh, high-quality produce has increased in recent years (NJDA, 1991).

The New Jersey Department of Agriculture (NJDA) initiated the Jersey Fresh Program in an effort to capitalize on these competitive advantages, to boost the net returns of New Jersey farmers, and to increase the share of New Jersey produce in the retail markets. Jersey Fresh is one of the nation's leading examples of state-sponsored agricultural marketing promotion and is one of the most ambitious agricultural produce-promotional programs that has been launched by the NJDA (NJDA, 1986). The fundamental purpose of this program is to promote locally grown fruits and vegetables with the intention of increasing the profitability of New Jersey farms and the viability of local agriculture. Jersey Fresh highlights the freshness of New Jersey produce to give local growers a competitive edge over the produce that is shipped from other states.

The promotional campaign provides consumer education and advertising, which focus public attention in the Northeastern metropolitan areas on the fruits and vegetables produced in the Garden State. The program attempts to increase consumer awareness of many fresh

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fruits and vegetables available from New Jersey by targeting consumers of New Jersey, nearby Philadelphia, New York, and the Delmarva (Delaware, Maryland, and Virginia) region (NJDA, 1985).

Jersey Fresh uses billboards, radio and television advertising, special promotions, and distribution of attractive point-of-purchase materials to foster consumer awareness. These advertisements are each well-identified with Jersey Fresh Logos designed to capture consumer attention. The NJDA also participates in many promotional events, such as farmer's market fairs, trade shows, cooking competitions, and in-store Jersey Fresh produce demonstrations held throughout the state. Price-cards, stickers, banners, paper bags, and worker's aprons are distributed to retail organizations. Participating vendors also receive exposure through Jersey Fresh television commercials and billboards.

The purpose of this study was to evaluate the effectiveness of the Jersey Fresh Program in terms of consumer awareness. Information was collected through a survey instrument on the shopping habits of consumers and their sociodemographic statistics. The results of the analysis will help build an understanding of the consumer characteristics that are most likely to influence awareness of state-sponsored marketing programs. The findings may be transferable to other states interested in developing marketing programs and could also be used to statistically select certain segments of the population to promote the program. In response, marketing programs can be further targeted for specific demographic groups that have not been effectively reached in the past.

Background

Consumer awareness of the Jersey Fresh Program has been surveyed previously (Gallup Organization, Inc., 1986, 1987, 1989; Zeldis, 1993, 1995). These studies have shown that the percentage share of New Jersey produce in an average buyer's total produce purchase has increased since the inception of the program. Consumer studies have found the freshness of locally grown produce to be the program's greatest asset. While aggregate measures of consumer awareness have been recorded, little empirical research has focused on analyzing the factors that contribute to the awareness of state-sponsored produce mar-

keting or the patronage of locally grown fresh produce. Studies in other states have been limited in their area of focus or in that the analyses were performed on only specific products.

Adelaja et al. (1994) estimated that the Jersey Fresh Program expanded the market for New Jersey products by 5.5 percent. Each dollar spent on the program was shown to have resulted in a return of \$46.90 to New Jersey agriculture. New Jersey farmers earned an additional \$15.20 in net farm income for every \$1 spent on the program. Lininger (1985) reported that the purchase of non-Jersey Fresh tomatoes depends on the price of the Jersey Fresh tomatoes and that consumer preference for Jersey Fresh tomatoes has a negative impact on the purchase of non-Jersey Fresh tomatoes. Results also suggest that the quality-graded Premium Jersey Fresh tomatoes could be treated as a different product than the non-Jersey Fresh tomatoes, enabling retailers to demand a premium price.

Other regional marketing campaigns analogous to Jersey Fresh, such as those in Tennessee and Michigan, have also been implemented. Brooker et al. (1987a) reported that logo stickers in Tennessee helped to reach uninformed consumers who were willing to purchase locally grown tomatoes. Highly educated consumers were found to be the least likely to patronize locally grown produce. Similar results by the Michigan Department of Agriculture suggest that 76 percent of consumers would purchase locally grown produce.

Govindasamy, Italia, and Liptak (1997a, 1997b), and Brooker et al. (1987b) found that consumers rank other attributes as more important than they do the locally grown attribute. Produce characteristics—such as freshness, lack of blemishes, and color—were all ranked as more important by consumers than the region in which the produce was grown was ranked. Only when locally grown produce can successfully compete with produce grown in other regions, with respect to aesthetic characteristics, does regional production present a viable basis for product differentiation.

Methods

A logistic approach using maximum likelihood estimation was chosen for this analysis. The logit model yields large sample properties

of consistency and asymptotic normality of the parameter estimates, allowing conventional tests of significance to be applied. The logit model, with the closed-form cumulative logistic probability function, estimates the log of the odds that a particular outcome would be observed. In this scenario, the likelihood of a customer being aware of Jersey Fresh was chosen as a function of a set of predetermined variables. The model assumes that the probability of a consumer being aware of Jersey Fresh produce depends on a vector of independent variables associated with each consumer and a vector of unknown parameters. The model specification for estimating the awareness of Jersey Fresh-labeled produce as a function of demographic characteristics is given by:

$$Y_i = \beta_0 + \beta_1 \text{South} + \beta_2 \text{Suburb} + \beta_3 \text{Years} + \beta_4 \text{Female} + \beta_5 \text{House} + \beta_6 \text{Child} + \beta_7 \text{Gar} + \beta_8 \text{Age} + \beta_9 \text{Educ} + \beta_{10} \text{Job1} + \beta_{11} \text{Income3}$$

where

- Y_i = 1 if the individual is aware of the Jersey Fresh program and 0 otherwise;
- South** = 1 if the person lives in South Jersey and 0 otherwise;
- Suburb** = 1 if the person lives in a suburban area and 0 otherwise;
- Years** = 1 if the person has lived in New Jersey for more than 5 years and 0 otherwise;
- Female** = 1 if the person is female and 0 otherwise;
- House** = 1 if the household of the person has more than one member and 0 otherwise;
- Child** = 1 if the person has two or more children and 0 otherwise;
- Gar** = 1 if the person has a vegetable garden at home and 0 otherwise;
- Age** = 1 if the person's age is more than 50 years and 0 otherwise;
- Educ** = 1 if the person had at least a some college education and 0 otherwise;
- Job1** = 1 if the person is employed by others and 0 otherwise (unemployed, self-employed, or retired); and
- Income3** = 1 if the person's annual income is \$80,000 or higher and 0 otherwise.

For estimation purposes, one classification was eliminated from each group of variables to prevent perfect collinearity. The base group of individuals and omitted variables are given in Table 1.

Survey Administration

The Jersey Fresh Program targets households in the state of New Jersey. Since the population density varies with the geography of the state, a stratified random sampling technique—in which the number of surveys conducted was higher in regions of higher population—was used. The number of surveys conducted was in the ratio of 47:30:23 for the Northern, Central, and Southern regions of New Jersey, corresponding to the population distribution in these regions.

A mail questionnaire was employed as the survey vehicle. Questionnaires were mailed to a random sample of New Jersey residents using the latest telephone books of each county as the source for addresses. The surveys were sent with a prepaid return envelope and a cover letter that introduced the Jersey Fresh Program and explained the purpose of the survey. The effort of the participant was acknowledged, and a dollar was enclosed as an incentive for their participation and in appreciation of their effort.

The results of an earlier focus group were taken into account while designing the survey instrument. The survey was also pre-tested by several consumers and modified on the basis of their input. Of the 500 questionnaires that were mailed in July 1996, 186 responses were received by the end of the first due date in August 1996. A reminder was sent to all the non-responders; this increased the final number of useable responses received to 209, with an overall response rate of 44 percent.

The majority of consumers (77 percent) indicated that they were aware of the Jersey Fresh program. The logos were most often remembered from produce displays and television advertisements. Most respondents (82 percent) associated the logo with quality produce from New Jersey. Of those who had purchased Jersey Fresh produce, the levels of quality and freshness were rated as very good in comparison to other produce by more than 70 percent of the participants. Approximately one-half of the participants felt that Jersey Fresh produce was the same as other fresh

Table 1. Description of the Model Variables.

Variable	Response	Frequency	Percentage	Std. Dev.
<i>Dependent Variable</i>				
Have you heard of the "Jersey Fresh" program or seen the Jersey Fresh logo?	Yes	162	0.7751	0.4185
	No	47	0.2249	0.4185
<i>Consumer Behavior Variables</i>				
Would you find the Jersey Fresh Logo useful in identifying and selecting New Jersey's produce? (LOGOUSE)	Yes	199	0.9522	0.2134
	No ^a	10	0.0478	0.2134
How often do you shop for fresh produce during the summer in a week? (OFTEN)	Once or more	183	0.8755	0.3308
	Less than once ^a	26	0.1244	0.3308
Where do you shop for fresh produce most often during the summer? (FMKT)	Farmer's markets	132	0.6316	0.4835
	Supermarkets ^a	77	0.3684	0.4835
Do you care where the fresh produce you buy was grown? (CARE)	Yes	167	0.7990	0.3927
	No ^a	39	0.1866	0.3927
How would you react to Jersey Fresh displays of produce in stores? (REACT)	Buy more	132	0.6316	0.4835
	Will not buy more ^a	77	0.3684	0.4835
Do you read food advertisements in newspapers or grocery store brochures regularly? (READ)	Yes	161	0.7703	0.4216
	No ^a	48	0.2297	0.4216
Do you shop at more than one food store in order to buy advertised specials? (CHANGE)	Yes	46	0.2200	0.4153
	No ^a	163	0.7800	0.4153
When deciding where to purchase produce what do you consider to be most important?	Convenience (CIMP) ^a	47	0.2249	0.4185
	Price (PIMP)	31	0.1483	0.3562
	Quality (QIMP)	114	0.5455	0.4991
Would you like your local grocery store to have a greater selection of New Jersey's produce? (SELECT)	Yes	177	0.8469	0.3609
	No ^a	32	0.1531	0.3609
<i>Consumer Demographic Variables</i>				
Region in New Jersey	South (SOUTH)	29	0.1388	0.3465
	Central (CENTRAL) ^a	70	0.3349	0.4730
	North (NORTH) ^a	107	0.5119	0.5010
Type of Neighborhood	Suburban (SUBURB)	168	0.8038	0.3989
	Urban (URBAN) ^a	22	0.1053	0.3076
	Rural (RURAL) ^a	13	0.0622	0.2421
Number of Years living in New Jersey (YEARS)	5 or more years	196	0.9377	0.2421
	Less than 5 years ^a	13	0.0623	0.2421
Gender of the survey participant (FEMALE)	Female	129	0.6172	0.4872
	Male ^a	80	0.3828	0.4872

Table 1. Description of the Model Variables (continued).

Variable	Response	Frequency	Percentage	Std. Dev.
<i>Consumer Demographic Variables (continued)</i>				
Household Size (HOUSE)	Two or more	169	0.8086	0.3943
	One individual ^a	40	0.1914	0.3943
Number of children below the age of 17 in the household (CHILD)	Two or more	37	0.1770	0.3826
	Less than two ^a	172	0.8230	0.3826
Do you have a vegetable garden at home? (GAR)	Yes	101	0.4832	0.5009
	No ^a	108	0.5168	0.5009
Age of the survey participant (AGE)	Less than 50 years of age ^a	101	0.5167	0.5009
	50 or more years of age	108	0.4833	0.5009
Education (EDUC)	High School degree or less ^a	67	0.3205	0.4678
	At least some college	63	0.3014	0.4599
	Master's or more	73	0.3493	0.4778
Current Occupation	Retired (JOB3) ^a	98	0.4688	0.5002
	Self-employed (JOB2) ^a	22	0.1052	0.3076
	Employed by others (JOB1)	74	0.3541	0.4794
Annual Household Income	Less than \$40,000 (INCOME1) ^a	58	0.2775	0.3076
	\$40,000–\$79,999 (INCOME2) ^a	68	0.3254	0.4872
	\$80,000 or more (INCOME3)	61	0.2918	0.4557

^aRefers to the category that was omitted in the logit analysis.

produce in terms of price (46 percent) and package (58 percent).

Most respondents shopped for fresh produce once a week (43 percent) or twice a week (48 percent). Consumers commonly shopped at supermarkets (83 percent) and farmer's markets (46 percent). While quality and freshness were ranked as the most important produce characteristics, price tags and special produce demonstrations in stores were ranked highest among the various advertisements that attracted participants.

Most consumers indicated that they were concerned about the origin of the fresh produce they purchased (75 percent—see Table 1) and preferred to be provided with such information (89 percent). Consumers were willing to purchase locally grown fresh produce (89 percent) and also willing to pay at least a

minimum premium price for it (73 percent). Overall, 45 percent of respondents were willing to pay an additional 1–10 percent premium; 18 percent of respondents were willing to pay a 6–10 percent premium; and 10 percent of respondents were willing to pay an 11–15 percent premium to purchase Jersey Fresh produce. Consumers also indicated that Jersey Fresh displays would prompt them to buy more than they had originally planned to buy (64 percent) and that they wished grocery stores had more produce marked with Jersey Fresh Logos (88 percent).

The largest number of responses (52 percent) was received from northern New Jersey, in accordance with the stratified sample. Most of the respondents lived in suburban households (83 percent), and the average residency in the state was about 37 years. One-half of the

respondents had a home garden, and the average household size of the sample was 2.8 individuals. Females accounted for the majority (64 percent) of participants among the primary grocery shoppers who responded to the survey. The average consumer who responded to the survey was 36 to 50 years of age, had a college degree, was employed, was Caucasian, and had an annual household income of \$40,000 to \$59,000.

Logistic Results

Two separate logit models, a behavioral model and a demographic model, were used to predict the likelihood of consumer awareness of Jersey Fresh, given certain characteristics of the respondents. The first model utilized explanatory variables related to consumer attitudes, consumers' habits while shopping for fresh produce, and consumers' perception of locally grown produce. The second model was constructed using variables that profiled the sociodemographic characteristics of the respondents. All the explanatory variables were binary with a discrete value of zero or one generated from categorical questions of the consumer survey. Because most of the survey questions were of a qualitative nature, corresponding dummy variables were chosen in the regression (Pindyck and Rubinfeld, 1991).

The likelihood ratio index, which uses maximum likelihood estimation (Pindyck and Rubinfeld, 1991), was employed as an alternative measure of goodness of fit for the models. In the models, significance of the variables was considered at the 0.10, 0.05, and 0.01 levels. The chi-square statistic for both models clearly rejected the null hypothesis that all of the independent variables together as a set were not statistically significant at the 0.01 level.

The dependent variable (AWARE) was based on the survey question that asked if the participant was aware of the Jersey Fresh Program (see Table 1). The dependent variable was coded as one for those who said that they were aware and as zero for those who said that they were not aware of Jersey Fresh nor did they remember seeing the logo. Of the 209 responses, 77.5 percent indicated that they were previously

aware of Jersey Fresh while 22.5 percent reported that they were not.

Consumer Awareness Model with Behavior Variables

The logit analysis results for the behavioral model of consumer awareness are given in Tables 2 and 3. The goodness of fit is shown by the McFadden's R^2 of 0.13, which is reasonable for cross-sectional data. The estimated changes in the probabilities for each variable are given in Table 2. The extent of predictive accuracy is shown in Table 3. Approximately 76 percent of the survey participants were correctly classified as either aware or unaware of Jersey Fresh.

The variable FMKT had a positive sign and was significant at the 0.05 level. Those who shopped at farmer's markets and roadside stands for fresh produce regularly during the summer were 13 percent more likely to be aware of Jersey Fresh compared to those who did not often shop at farmer's markets and roadside stands. Earlier studies show that consumers who liked farm fresh produce mostly shopped at farmer's markets and roadside stands during the summer (Govindasamy and Nayga, 1996).

The variables READ, REACT, and CHANGE showed positive coefficients and were significant at 0.05 percent level. Consumers who read food advertisements in newspapers and grocery store brochures (READ) were 16 percent more likely to be aware of Jersey Fresh than those who did not. The significance of the variable REACT indicated that consumers were 14 percent more likely to be aware of Jersey Fresh if they bought more than what they had originally planned when they found Jersey Fresh products. Consumers who were willing to change their usual shopping place in order to buy specially advertised produce (CHANGE) were 17 percent more likely to be aware of Jersey Fresh than those who would not change. Consumers who shop at a variety of places during the summer may have been more aware of Jersey Fresh Logos because promotional materials were displayed at a variety of farmer's markets and grocery or supermarkets. The results also suggest that this segment of produce shoppers were more likely to be aware of Jersey Fresh than others were.

Table 2. Consumer Awareness Model with Behavioral Variables.^a

Variable	Estimate	Standard Error	Change in Probability
INTERCEPT	-0.6457	0.7902	-0.0986
LOGOUSE	0.4102	0.7953	0.0627
OFTEN	0.1782	0.3895	0.0272
FMKT ^b	0.8500	0.3779	0.1299
CARE	-0.2833	0.4203	-0.4327
REACT ^b	0.8860	0.3898	0.1353
READ ^b	1.0285	0.4498	0.1571
CHANGE ^b	1.1041	0.5906	0.1687
PIMP	-0.0322	0.5137	-0.0049
QIMP	0.0380	0.4139	0.0058
SELECT	-0.4133	0.5250	-0.0631

^aMcFadden's R^2 is 0.1280.

The ratio of non-zero observations to the total number of observations is 0.7815.

^bSignificant at the 0.05 level.

Table 3. Predictive Accuracy of Behavioral Model.^a

		<i>Predicted</i>	
		0	1
<i>Actual</i>	0	4	7
	1	41	152

^aNumber of correct predictions: 156.

Percentage of correct predictions: 75.6.

Consumer Awareness Model with Demographic Variables

Logit analysis results for the demographic model of consumer awareness are given in Tables 4 and 5. The goodness of fit for the model is shown by the McFadden's R^2 of 0.16. The change in the probability percentages for each variable is given in Table 4. The extent of prediction is shown in Table 5. Approximately 74 percent of the survey participants were correctly classified as either aware of Jersey Fresh or not aware of Jersey Fresh using the logit specification.

The dummy variable SOUTH (which equaled 1 if the consumer lived in Southern New Jersey) was estimated with a positive sign and was significant at the 0.05 level. This indicates that households of consumers who lived in the southern counties of New Jersey were 34 percent more likely to be aware of Jersey Fresh than those who lived in the central and northern regions of the state.

The dummy variables GAR and YEARS were estimated with the hypothesized positive sign and were significant at the 0.05 level. Consumers who had a home garden were 12 percent more likely to be aware of Jersey Fresh than those who did not. Similarly, consumers who lived in the state of New Jersey for five years or more were 22 percent more likely to be aware of Jersey Fresh than those who lived in the state for less than five years. However, although there is a statistically significant relationship between length of residency and awareness of Jersey Fresh, because of the minimal variation in the variable YEARS (see Table 1), caution should be exercised when interpreting this finding. This is especially true when making assumptions about the extension of this finding to other states.

The variables AGE, EDUC, and JOB1, for age, education, and occupation, respectively, were also significant in the model. Variable AGE was significant at the 0.10 level, indicating that consumers who were more than 50 years of age were 12 percent less likely to be aware of Jersey Fresh than those who were less than 50 years of age. Variable EDUC was estimated to be negative and significant at the 0.01 level, indicating that consumers with more than a high school degree were 18 percent less likely to be aware of Jersey Fresh than those with less than a high school degree. While these were not the

Table 4. Consumer Awareness Model with Demographic Variables.^a

Variable	Estimate	Standard Error	Change in Probability
INTERCEPT	-1.3077	0.8592	-0.1845
SOUTH ^b	2.3991	0.0584	0.3385
SUBURB	0.6206	0.4661	0.0876
YEARS ^b	1.5608	0.7425	0.2202
FEMALE	0.3325	0.3823	0.0469
HOUSE	0.0961	0.4470	0.0135
CHILD	0.7352	0.6146	0.1037
GAR ^b	0.8329	0.3912	0.1175
AGE ^c	-0.8422	0.5128	-0.1188
EDUC ^d	-1.3100	0.4549	-0.1848
JOB1 ^b	0.0543	0.4333	0.0077
INCOME3	0.5271	0.4734	0.0743

^a McFadden's R^2 is 0.155.

The ratio of non-zero observations to the total number of observations is 0.775.

^b Significant at the 0.05 level.

^c Significant at the 0.10 level.

^d Significant at the 0.01 level.

Table 5. Predictive Accuracy of Demographic Model.^a

	<i>Predicted</i>	
	0	1
<i>Actual</i>	0	14
	1	148

^a Number of correct predictions: 155.

Percentage of correct predictions: 74.2.

expected results, the age and education variables seem to indicate that Jersey Fresh was more popular among young consumers and with consumers who had less than a high school degree. Variable JOB1 was significant at the 0.05 level, with the hypothesized positive sign indicating that consumers who were employed by others were more likely to be aware of Jersey Fresh than consumers who were retired or self-employed. But, as shown in Table 4, the likelihood of these consumers being aware of Jersey Fresh was only 1 percent greater than the likelihood that their counterparts would be.

Conclusions

Awareness of Jersey Fresh was found to be high among consumers. Consumers who frequently shopped at direct marketing facilities, such as farmer's markets and roadside stands,

were more likely to be aware of Jersey Fresh, more likely to have bought Jersey Fresh-labeled produce, and more willing to buy Jersey Fresh produce in the future. Consumers who frequently read food advertisements in papers or brochures and who shopped at more than one place in order to buy advertised specials were more likely to be aware of Jersey Fresh.

The prominent demographic characteristics of consumers who were more likely to be aware of Jersey Fresh included those who lived in New Jersey for more than five years, who lived in Southern Jersey, who had a home garden, and who were employed by others (as opposed to unemployed, retired, or self-employed).

The results of this study should be useful to both existing state marketing programs and in the development of new promotional programs. Some potential shortcomings have been brought to light in the program's effectiveness to reach certain consumer groups. Marketing programs could be targeted for specific demographic groups that have not been effectively reached. These groups would include those over 50 years of age and those with higher levels of education.

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