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Abstract

Social scientists tend to agree that public opinion influences public policy. As the agricultural industry faces increased scrutiny from public officials and citizen advocacy groups, agricultural communication professionals are faced with the challenge of targeting messages that encourage public confidence in the industry. Research-based marketing segmentation may hold the key to effective political marketing for the industry. While some consumer research has been conducted to better understand food purchasing decisions, more is needed to better understand public attitudes toward the larger agricultural industry and to better recognize any segmentation in public opinion. This study's findings—drawn from the Agriculture Institute of Florida's 2006 survey, the 2000 United States Census of Population and Housing, and the 2002 United States Department of Agriculture Census of Agriculture—may help guide future industry messages toward the public.

Keywords

Social scientists, public policy, voter confidence, agricultural industry, campaigns, purchasing behaviors

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Voter Confidence in the Agricultural Industry

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Abstract

Social scientists tend to agree that public opinion influences public policy. As the agricultural industry faces increased scrutiny from public officials and citizen advocacy groups, agricultural communication professionals are faced with the challenge of targeting messages that encourage public confidence in the industry. Research-based marketing segmentation may hold the key to effective political marketing for the industry. While some consumer research has been conducted to better understand food purchasing decisions, more is needed to better understand public attitudes toward the larger agricultural industry and to better recognize any segmentation in public opinion. This study's findings—drawn from the Agriculture Institute of Florida's 2006 survey, the 2000 United States Census of Population and Housing, and the 2002 United States Department of Agriculture Census of Agriculture—may help guide future industry messages toward the public.

So What?

When organizing campaigns to encourage public confidence in the agricultural industry, there are several important factors to consider. Segmentation may be based on geography, residential location, county population, household composition, and food purchasing behaviors. Study findings suggest that agricultural awareness campaigns targeted toward urban audiences may need to move away from economic impact stories and focus more on relationship-building, positioning agriculture as the "good neighbor."

According to Burstein (2003), "public opinion influences policy most of the time, often strongly. Responsiveness appears to increase with salience, and public opinion matters even in the face of activities by interest organizations, political parties, and political and economic elites" (p. 29). This conclusion is supported by decades of research on public opinion and public policy. In fact, Burstein's review found that "public opinion

affects policy three-quarters of the time its impact is gauged; its effect is of substantial policy importance at least a third of the time, and probably a fair amount more" (p. 36).

In the face of increased regulation in the agricultural industry, public opinion has increased in importance and consequence for the food and fiber industry. As agricultural communication professionals consider options for influencing and leveraging public opinion, they are first faced with the challenge of understanding it. Does the public have a favorable opinion of the agricultural industry? How and where should positive industry messages be targeted? Research-based marketing segmentation may hold the key to effective political marketing for the industry (Bannon, 2004). A review of literature is helpful in providing insight, yet questions endure. Only limited research exists on the subject of geographic differences in the public's attitudes toward the larger agricultural industry. Understanding how geography affects attitudes may be particularly important in states that are economically dependent on agricultural production and sales or where rural/urban interface issues exist. This study uses survey data from a sample of registered voters to address these questions. With data to indicate the variables that influence voter confidence in the agricultural industry, agricultural communication professionals will be better able to target messages related to public policy campaigns.

Public Interest in Buying Local Food

Three fourths of Americans rate "grown in the U.S." and "processed in the U.S." as qualities that are important to them when selecting food (Wimberley et al., 2003, p. 3). In addition to this preference for food produced in the United States, over 70% of Americans have a preference for food produced locally (Wimberley et al., p. 4), and many express a willingness to pay more for locally produced food (Brown, 2003; Food Processing Center, 2001; Harris, Burress, Mercer, Oslund, & Rose, 2000; Wimberley et al.).

Consumers often define "locally grown" as a regional concept that can cross state boundaries, rather than a statewide concept bounded by state lines (Brown, 2003). However, research by the Food Processing Center (2001) suggests that 22% to 24% of consumers believe it is important to purchase state-grown products. Some states, like Iowa and Indiana, have an even stronger preference for state-grown products. About one third of Iowa grocery shoppers believe it is "extremely important" to purchase products that are "Iowa grown" (Food Processing Center, p. 9) and about 60% of Indiana residents indicate that they are "highly likely to purchase local food products" (Jekanowski, Williams, & Schiek, 2000, p. 48).

Patterson (2006) has summarized some of the reasons consumers prefer local foods:

> Parochial interests or ethnocentric sentiments seem to influence these views, and they seem to be reinforced with state residency or length of residency. Consumers also express the view that they expect local products to be fresher or of better quality. (p. 44)

Attitudes Toward Local Agriculture

When comparing food grown in the U.S. to imported food, four out of five Americans believe that domestically produced food is fresher and safer than imported food, about half believe that it is more nutritious and tastes better, and slightly more than half believe it costs less (Wimberley et al., 2003). Among professions trusted as knowledge sources for food safety, a national survey found that farmers fare best, receiving the trust of about 70% of consumers (Wimberley et al.). However, "a 57 percent majority say that they worry about health problems due to farming methods in the United States" (Wimberley et al., p. 3) and "a 61 percent majority worry some or a great deal about the environmental problems that are caused by U.S. farming" (Wimberley et al., p. 11).

Public attitudes toward controversial agricultural food technologies, such as food irradiation and use of antibiotics and hormones, have shaped consumer attitudes toward food production and potentially influenced consumer preference for locally grown food. This preference for locally grown food stems from a desire to have a closer connection to the producer and thus more confidence in the safety of the food (Belliveau, 2005). Agricultural biotechnology has become an especially important issue for agricultural communicators and researchers studying how consumers make decisions about "risky" food technologies (Irani & Sinclair, 2004). Evidence suggests that trust and risk perceptions exert direct influence on consumer acceptance of these types of technologies (Eiser, Miles, & Frewer, 2002).

Residential Differences in Opinion

A Food Processing Center (2001) study showed that rural and small-town residents placed a higher importance on purchasing locally grown products, yet were less willing to pay a price premium for those products. In a related study, Weatherell, Tregear, and Allinson (2003) found that although 74% of urban residents were strongly or extremely likely to choose locally produced food, a greater percentage (82%) of rural residents were strongly or extremely likely to choose locally produced food.

Research

Although Brown (2003) also found that rural residents were more willing to seek out local products than urban residents, the study found that farm households were not significantly different from other households when it came to preferences for locally grown food. Instead, "households where someone was raised on a farm, or their parents were raised on a farm, were found to have a preference for local produce and a willingness to pay a price premium for those products" (p. 222). As an explanation for influence of farm background, Brown hypothesized that:

> …for those who were raised on a farm, or who had parents raised on a farm, there may be nostalgia for high-quality products that came directly from the farm, or a desire to support family farmers by purchasing local products. (p. 220)

The finding that rural residents have a stronger preference toward locally produced food may fall in line with expectations, but contrary results have also been reported. Patterson, Olofsson, Richards, & Sass (1999) found that residents of the Phoenix metro area were 24.7% more likely to prefer Arizona-grown products over products from other areas, while no significant preference was observed for other Arizona residents. As a potential explanation, Patterson offered that the capital city residents may "more closely identify with initiatives perceived to be in the state's interest" or may be "more concerned about product freshness and quality" (p. 190).

Some researchers have concluded that rural versus urban residence does not matter when it comes to preference for buying local products or caring where the produce was grown (Brown, 2003; Jekanowski et al., 2000). Instead, Jekanowski and colleagues argue that loyalty toward state products builds over time and that length of residence in a state is an important influence on consumer behavior.

Public perception of the agricultural industry seems to be somewhat positive, regardless of residence. Frick, Birkenholz, and Machtmes (1995) found residents from smaller cities and towns in a Midwestern state to be more knowledgeable than their urban counterparts, but this knowledge difference did not result in differences in overall attitude toward the industry. Study participants had relatively positive perceptions of agriculture, regardless of their places of residence.

Smithers, Joseph, and Armstrong (2005) conducted in-depth interviews with farm and town residents in South Huron County, Ontario, and arrived at a similar conclusion. Despite a limited knowledge of agriculture, the town residents' perceptions of the industry were somewhat positive. In fact, a vast majority believed that the farm community was important to the area's economic prosperity and social vitality.

Weatherell and colleagues (2003) conducted a qualitative and quantitative investigation of rural and urban differences among consumers in the United Kingdom. They found that "rural based consumers tended to give higher priority to 'civic' issues in food choice, reported higher levels of concern over food provisioning issues, and showed greater interest in local foods" (p. 242). However, "the survey found no significant differences between urban and rural respondents on questions relating to farming, with both groups registering sympathetic views on average" (p. 242). Unfortunately, the researchers found few other studies from which to draw comparisons. Weatherell and colleagues recommend that future studies incorporate urban/rural residency as a demographic criterion when investigating public perceptions of agriculture.

In sum, public opinion research reports generally positive attitudes toward agriculture and local food production, with rural residents tending to have a more positive opinion. However, the reason for this residential difference remains an empirical question.

The Case of Florida

Florida is a diverse state in both its demographic makeup and its economic profile. In 2006, Florida was the fourth largest state in the nation in terms of population. The U.S. Census Bureau (2008b) estimated the population at more than 18 million at that time; the population is continuing to grow at a rate double the national average. Of Florida's 67 counties, 38 are part of metropolitan areas, 11 are part of micropolitan areas, and the remaining 18 are neither metro nor micropolitan (U.S. Census Bureau: Population Division, 2005). (The term "metropolitan" refers to areas containing at least one core of 50,000 or more people, whereas the term "micropolitan" refers to areas containing cores of at least 10,000 but less than 50,000 people.) A core area includes a county's urban center and the surrounding counties that are likely to commute to that urban center. Based on these classifications and estimates, "93.7 percent of Florida residents live in metropolitan areas, 4.1 percent live in micropolitan areas, and 2.2 percent live in noncore areas" (Rural Policy Research Institute, 2006, p. 1).

Even with its dense population areas, Florida maintains a productive agricultural industry. Recent research reports that Florida's agriculture industry supports more than 750,000 jobs and has an overall economic impact of $97.8 billion annually (Florida Agricultural Statistics Services, 2007). The United States Department of Agriculture (USDA) Economic Research Service (2004a) classifies seven Florida counties as "farming dependent," indicating that farm earnings account for an annual average of 15% or more of total county earnings or that farm occupations account

for 15% or more of all occupations of employed county residents. Although the number of farms and the amount of acreage farmed in the state are both declining, 2005 estimates are that the state has about 42,500 commercial farms across nearly 10 million acres, for an average farm size of 235 acres.

The Agriculture Institute of Florida, a coalition of agricultural communication specialists, conducts periodic public opinion surveys with Florida voters. In past surveys, the great majority of respondents had a favorable opinion of agriculture and believed that it was very important to Florida's economy (Agriculture Institute of Florida, 2006). However, this public opinion data set has not previously been examined for geographic segmentation and residential differences. These residential differences are important, considering the speed at which some of Florida's rural areas are disappearing and the vast differences in agricultural production across the state.

Purpose

The purpose of this study was to determine how consumers' confidence in Florida agriculture varies in relation to their location and other demographic characteristics. The specific objectives were to describe Florida voters' confidence in the state's agricultural industry, distinguish residential differences in the public's confidence in Florida agriculture, and identify demographic characteristics that predict confidence in Florida agriculture beyond residential location.

Method

The data set used for this study is from a public opinion telephone survey conducted in September 2006 and sponsored by the Agriculture Institute of Florida. The purpose of the survey was to assess voters' opinions about Florida agriculture as well as their perceptions of food and agricultural issues. The survey instrument was developed by the executive board of the Agriculture Institute of Florida in cooperation with the Florida Survey Research Center at the University of Florida, which also conducted the survey.

The sample was purchased from a commercial sampling firm and included a listed residential sample of registered voters in the state of Florida. Between September 14 and September 22, 2006, the Research Center called 2,061 phone numbers, with a maximum number of call-backs set at four. Of 6,941 calls placed, 875 actual contacts were made. Of those contacts, 494 refusals were received and 381 completed surveys were collected for a response rate of 18.5%. (See formula for Response Rate 1, The American Association for Public Opinion Research, 2008). One respondent had an out-of-

state phone and was therefore dropped from the sample. In addition, two respondents answered "don't know" to key questions about their confidence in the agricultural industry. As a result, their data were dropped from the sample, resulting in a final sample size of 378.

For this study, the dependent variable was confidence in Florida agriculture. Study respondents' confidence in Florida agriculture was measured through a 6-item index. Principal components factor analysis was used to confirm the unidimensionality of the index (Kim & Mueller, 1978). A single factor was extracted with an eigenvalue of 2.685. The factor accounted for 44.7% of the total variance of the items. The specific questions and factor loadings (which indicate the strength of the relationship between each item and the overall index) were as follows:

- How confident are you that farming is safe for environmental quality in Florida? (Factor loading: .652)
- How confident would you say you are that farmers in Florida use chemicals—such as pesticides, herbicides, and fertilizers—properly? (Factor loading: .567)
- How reliable is the information farm industry organizations provide about food safety? (Factor loading: .680)
- How reliable is the information farmers provide about food safety? (Factor loading: .653)
- How reliable is the information farm industry organizations provide about farm labor? (Factor loading: .726)
- How reliable is the information farmers provide about farm labor? (Factor loading: .723)

To calculate the index score for each respondent, the responses to the six survey questions were coded 1 (*not at all confident*), 2 (*somewhat confident*), or 3 (*very confident*) and then averaged across all six questions. The confidence in Florida agriculture index had an overall reliability (Cronbach's alpha) of .787.

Because place of residence was an essential independent variable for this study, several measures of this variable were included. A geographic question was not included in the phone survey, however, so zip code, city, county, and Census County Division (CCD) were indexed using each respondent's telephone area code and prefix. The geographic identifiers for each respondent were then connected with census data. Each respondent's residence was identified as metropolitan, micropolitan, or neither, based on the "core based statistical area" (CBSA) classification (U.S. Census Bureau: Population Division, 2005). In addition, residence was classified using the

rural/urban continuum codes (USDA Economic Research Service, 2004b) and the locale codes (U.S. Department of Education: Institute of Education Sciences, 2007). Each of these codes represents a different approach to the definition of rural. Population size was identified at the county level and also at the Census County Division (CCD) level. CCDs are delineated by the U.S. Census Bureau in cooperation with local governments and serve as the equivalent of minor civil divisions in other states (U.S. Census Bureau: Geography Division, 2005).

The telephone survey data were also linked with a set of county-level data collected in the 2002 Census of Agriculture (USDA National Agricultural Statistics Service, 2004). The county-level agricultural data included number of farms, acres of land in farms, and market value of agricultural products sold.

Respondents' demographic attributes were also considered. These independent variables included gender, ethnicity, education, age, length of Florida residency, presence of children in the household, food purchasing behavior (the frequency of grocery shopping, whether the respondent purchased organic foods and, if so, the frequency of organic purchases), agricultural income, and household income. The measurement of each variable is shown in tandem with the distributional statistics in the findings section of this article.

The data in this study were analyzed with descriptive statistics and multivariate procedures. Correlations were calculated to identify direct relationships among variables. Upon initial analysis, the researchers created and tested an interaction term by multiplying county population and agricultural sales. These two variables were chosen for the interaction because of the level of significance each provided in the relational analysis. Multiple linear regression analysis, with all predictors entered simultaneously, was also conducted to test for interaction effects of related measures. In the end, reduced regression models were identified based on their ability to predict confidence in Florida agriculture. *P* values are reported for the significance level of the parameter estimates (Cohen, 1992).

The demographic data collected in the study offer a limited opportunity to generalize the study by comparing demographic differences between survey participants and population estimates offered by the U.S. Census Bureau. Survey respondents were primarily non-Hispanic white (84.7%, $n = 320$), and a majority were male (63.5%, $n = 240$). In comparison, the U.S. Census Bureau (2008a) estimated Florida's population to be 62.3% non-Hispanic white and 49.1% male. However, it is important to note that the census data are for the entire population, and the population of registered

voters is likely to include fewer minorities (Jamieson, Shin, & Day, 2002). Nearly half (49.3%, *n* = 186) of all study participants were college graduates, and the median annual household income was in the range of $50,000 to $69,000. In comparison, the Census Bureau's 2000 estimate of Florida's adult residents with a bachelor's degree or higher was only 22.3%, and the estimated 2003 median household income was $38,985. Although no data were available to provide a direct comparison between registered voter demographics and the sample of registered voters, consideration of the available data suggests that caution should be exercised in generalizing findings to the entire population of Florida voters. Instead, findings should be used as a starting point for better understanding relationships among voter attitudes, demographics, and behavior.

Findings

When asked about their overall opinion of Florida agriculture, 34.9% (*n* = 132) of survey participants rated it "very favorable," 46.8% (*n* = 177) rated it "somewhat favorable," and 5.0% (*n* = 19) rated it "not at all favorable," while 13.2% (*n* = 50) indicated that they did not know. In terms of the importance of agriculture to Florida's economy, 78.3% (*n* = 296) reported that it is "very important" and 20.1% (*n* = 76) reported that it is "somewhat important." Because advocates for Florida's agricultural industry generally consider the industry to be the second most important for the state's economy (after tourism), the public's perception of the industry's economic ranking was a specific variable of interest. Among respondents, 60.9% (*n* = 229) identified the agricultural industry as ranking among the two most important industries for the state's economy.

Objective 1: Describe voter confidence in Florida agriculture.

With respect to their confidence in the safety of farming for the Florida environment, 29.9% (*n* = 113) were "very confident," 51.9% (*n* = 196) were "somewhat confident," and 11.1% (*n* = 42) were "not at all confident," while 7.1% (*n* = 27) indicated that they did not know (Table 1). With regard to confidence in Florida farmers' safe use of chemicals, 19.3% (*n* = 73) were "very confident," 55.6% (*n* = 210) were "somewhat confident," and 18.0% (*n* = 68) were "not at all confident," while 7.1% (*n* = 27) indicated that they did not know. Survey participants were also asked about the reliability of information sources. For information about food safety and farm labor, the respondents generally believed farmers to be reliable sources and also believed (to a somewhat lesser degree) farm industry organizations to be reliable sources.

Research

Table 1. *Florida Voter Confidence in the Agricultural Industry*

Variable / Attitude	Frequency %	Mean (*SD*)
Farming is safe for FL environment		2.20 (0.63)
Very confident	29.9	
Somewhat confident	51.9	
Not at all confident	11.1	
Don't know	7.1	
FL farmers use chemicals properly		2.01 (0.63)
Very confident	19.3	
Somewhat confident	55.6	
Not at all confident	18.0	
Don't know	7.1	
Farm industry organization information on food safety		2.14 (0.57)
Very reliable	22.8	
Somewhat reliable	60.6	
Not at all reliable	9.5	
Don't know	7.1	
Farmers' information on food safety		2.34 (0.59)
Very reliable	37.6	
Somewhat reliable	51.1	
Not at all reliable	5.6	
Don't know	5.8	
Farm industry organization information on farm labor		2.06 (0.59)
Very reliable	19.6	
Somewhat reliable	60.8	
Not at all reliable	14.0	
Don't know	5.6	

Variable / Attitude	Frequency %	Mean (*SD*)
Farmers' information on farm labor		2.18 (0.63)
Very reliable	29.1	
Somewhat reliable	53.7	
Not at all reliable	11.6	
Don't know	5.6	
Florida agriculture confidence index		2.15 (0.42)

Note. $n = 378$. Mean is based on a 3-point scale, where 1 = *not at all*, 2 = *somewhat*, and 3 = *very*; *don't know* was not included in the calculated mean. From *Public Opinion Survey Report*, by Agriculture Institute of Florida, 2006.

Individual questions about confidence in Florida agriculture were combined to form the study's dependent variable. The confidence index had a mean rating of 2.15, with a standard deviation of 0.42. Within the scale, index scores ranged from the scale's minimum possible rating of one, indicating that the consumer was "not at all confident," to the scale's maximum possible rating of three, indicating that the consumer was "very confident." The index mode was 2.0, which corresponds with responses of "somewhat confident" or "somewhat reliable."

Objective 2: Distinguish residential differences.

Based upon phone number area codes and prefixes, the vast majority of survey respondents lived in metropolitan areas (92.9%, $n = 351$) (Table 2). About 6% of respondents lived in micropolitan areas (6.1%, $n = 23$). The remaining 1% ($n = 4$) lived in noncore areas. The rural/urban continuum codes placed 59.5% of respondents in metro areas with populations of one million or more people and 27.5% in metro areas with populations of 250,000 to one million people. About 5% lived in urban, nonmetro areas, and less than 1% lived in rural areas. This is in contrast to the NCES locale classification, which suggests that about 15% of Floridians live in rural areas and small towns. The locale classification also breaks the population more evenly among other categories, with 28.7% of respondents living in the urban fringe of a larger city, 26.5% living in the urban fringe of a midsize city, and 20.2% living in a midsize city. Survey respondents' county populations ranged from 13,185 to 2,363,600, with a mean of 797,622 and a standard deviation of 633,390. The Census County Division (CCD) populations for the respondents ranged from 2,862 to 850,725, with a mean of 209,186 and a standard deviation of 226,019. Although the geographic representation

in the sample does not perfectly mirror the state, it is similar to the Florida population estimates provided by the Rural Policy Research Institute (2006).

Table 2. *Geographic Representation From the Agriculture Institute of Florida's 2006 Public Opinion Survey Respondents*

Variable	Frequency %	Mean (*SD*)
Core-Based Statistical Area (CBSA) classification		1.92 (0.31)
Noncore area resident (0)	1.1	
Micropolitan area resident (1)	6.1	
Metropolitan area resident (2)	92.9	
Rural/urban continuum classification		8.37 (1.00)
Rural area or less than 2,500, no adjacent metro (1)	0.0	
Rural area or less than 2,500, adjacent metro (2)	0.3	
Urban area of 2,500 to 19,999, no adjacent metro (3)	0.0	
Urban area of 2,500 to 19,999, adjacent metro (4)	1.3	
Urban area of 20,000 or more, no adjacent metro (5)	0.0	
Urban area of 20,000 or more, adjacent metro (6)	4.2	
Metro area with population fewer than 250,000 (7)	7.1	
Metro area with population of 250,000 to 1,000,000 (8)	27.5	
Metro area with population of 1,000,000 or more (9)	59.5	
Locale classification		3.76 (1.29)
Town or rural, outside CBSA (1)	5.0	
Rural, inside CBSA (2)	10.3	
Urban fringe of midsize city (3)	26.5	

Variable	Frequency %	Mean (*SD*)
Urban fringe of large city (4)	28.7	
Midsize city (5)	20.2	
Large city (6)	9.3	
County population (1,000)		797.6 (633)
Census County Division (CCD) population (1,000)		209.2 (226)
Local agriculture by county		
Number of farms		1,072.0 (923)
Acres in farmland (1,000)		179.7 (174)
Market value of agricultural products sold ($1,000)		200.9 (239)

Note. $n = 378$. Mean and standard deviation of geographic areas were calculated using the number in parentheses beside each description. From *Public Opinion Survey Report,* by Agriculture Institute of Florida, 2006; *Geographic Areas Reference Manual*, by the U.S. Census Bureau: Geography Division, 2005; and *Table 3: Annual Estimates of the Components of Population Change for Metropolitan and Micropolitan Statistical Areas: July 1, 2002 to July 1, 2003*, by the U.S. Census Bureau: Population Division, 2005.

The data display a significant negative correlation between the study's dependent variable, confidence in Florida agriculture, and the respondents' county population size ($r = -.162$, $p = .002$) (Table 3). Other residential location variables lacked significance at the .05 alpha level. Still, there was a nontrivial negative relationship between the confidence index and respondents' county agricultural sales ($r = -.097$, $p = .061$). As a result, the researchers invested an interaction term of county population by agricultural sales and found a significant negative relationship with confidence in Florida agriculture ($r = -.129$, $p = .012$).

Through exploratory regression analysis, the researchers were able to further elaborate the relationships between confidence in Florida agriculture and residential location. Geographic variables considered in the full regression model included county population, Census County Division (CCD) population, number of acres farmed in the county, amount of agricultural sales in the county, and the interaction term of county population by agricultural sales. These variables were identified for their ability to control statistically for changes in other variables, thus offering

more precise predictions. For example, agricultural sales is somewhat related to number of acres farmed; by including both, we can ensure that the observed effect of increased agricultural sales is truly from a proportional increase in agricultural sales and not just an increase in number of acres farmed. Other geographic variables were excluded from the analysis because they were considered redundant, based upon their correlations with the included variables. The adjusted R^2 for the full model was .031 (Table 4). This amount of explained variance could be replicated with a reduced model that included only county population and CCD population. Thus respondents' county population estimates, along with CCD population, explain slightly more than 3% of variance in the confidence index. Within this model of voter confidence, county population has a significant negative relationship (B = -.212, $p < .001$), and there is a nonignorable positive relationship with CCD population (B = .110, p = .053).

Table 3. *Geographic Correlations With Florida Voter Confidence in the Agricultural Industry*

Variable	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) FL agriculture confidence core	-.052	-.006	-.082	**-.162**	.015	-.051	-.047	-.097	**-.129**
(2) CBSA classification		**.436**	**.743**	**.271**	**.194**	**.144**	.061	**.155**	**.153**
(3) Locale classification			**.464**	**.348**	**.589**	.060	-.017	**.185**	**.230**
(4) Rural/urban continuum class				**.565**	**.392**	**.177**	.018	**.332**	**.351**
(5) County population					**.451**	**.320**	-.007	**.574**	**.757**
(6) Census County Division population						.051	**-.190**	**.138**	**.259**
(7) Number of farms in county							**.496**	**.530**	**.477**
(8) Farm acres in county								**.670**	**.375**
(9) Agricultural sales in county									**.906**
(10) County population by agricultural sales									

Note. n = 378. Bold coefficients are significant at a .05 alpha level. From *Public Opinion Survey Report*, by Agriculture Institute of Florida, 2006.

Table 4. *Standardized Regression of Florida Voter Demographics, Behavior, and Attitudes on Confidence in the Agricultural Industry*

Source	Geographic Models				Comprehensive Models			
	Full		Reduced		Full		Reduced	
	Est.	α	Est.	α	Est.	α	Est.	α
County population	-.244	.009	-.212	<.001	-.186	.002	-.196	<.001
Census County Division population	.099	.092	.110	.053	.114	.053	.118	.043
Farm acres in county	-.182	.090						
Agricultural sales in county	.349	.119						
County population X agricultural sales	-.217	.267						
Gender (1 = female)					<-.001	.990		
Age					-.093	.131	-.077	.194
Length of FL residency					.029	.585		
White, non-Hispanic					.032	.553		
Education level					-.037	.518		
Children in the home (1 = yes)					-.131	.024	-.130	.024
Household income					-.071	.226	-.073	.171
Grocery shopping frequency					-.014	.803		
Organic food purchase (1 = yes)					.138	.175	.123	.210
Frequency of organic food purchases					-.194	.057	-.191	.058
Economic rank of FL agriculture					.058	.267	.064	.216
Adjusted R^2	.031		.031		.041		.052	
F statistic	3.40	.005	7.01	.001	2.20	.009	3.47	<.001

Note. $n = 378$. From *Public Opinion Survey Report*, by Agriculture Institute of Florida, 2006.

Research

Objective 3: Identify other important predictors.

In an effort to explain additional variance in the confidence rating, the researchers considered additional demographic and behavioral variables. A majority of the survey participants indicated that they do all (42.3%, n = 160) or most (16.9%, n = 64) of their households' grocery shopping (Table 5). With respect to organic food purchasing habits, about half of the respondents (50.4%, n = 185) had not purchased organic foods in the past 6 months, while 18.5% (n = 68) purchased organics every few months, 16.4% (n = 60) purchased organics a few times per month, and 14.7% (n = 54) purchased organics at least once a week.

Table 5. *Demographic Representation From the Agriculture Institute of Florida's 2006 Public Opinion Survey Respondents*

	% or Mean (*SD*)	Range
Male (1 = yes)	63.5	0-1
Age (years)	59.75 (15.8)	18-90
Length of FL residency (years)	31.7 (19.8)	0-90
Ethnicity: White, non-Hispanic (1 = yes)	84.7	0-1
Education (highest level)		1-8
8th grade or less	0.8	1
Some high school	3.4	2
High school graduate	20.4	3
Technical/vocational	3.2	4
Some college	21.7	5
College graduate	30.2	6
Graduate/professional school	19.1	7
Refused	1.3	8
Children living in the home (1 = yes)	23.1	0-1
Annual Income		1-6

	% or Mean (*SD*)	Range
Less than $20,000	10.1	1
$20,000 to $34,999	15.1	2
$35,000 to $49,999	17.7	3
$50,000 to $69,999	14.6	4
$70,000 or more	27.5	5
Don't know or refused	15.1	6
Agricultural income (1 = yes)	4.3	0-1
Grocery shopping frequency for the household	2.79 (1.26)	0-4
None	6.1	0
Little	10.3	1
Some	24.3	2
Most	16.9	3
All	42.3	4
Organic food purchasing in past 6 months (1 = yes)	49.6	0-1
Frequency of organic food purchasing	0.95 (1.12)	0-3
None in past 6 months	50.4	0
Less than once a month	18.5	1
A few times a month	16.4	2
At least once a week	14.7	3

Note. $n = 378$. From *Public Opinion Survey Report,* by Agriculture Institute of Florida, 2006.

The researchers observed a significant negative relationship between the study's dependent variable, confidence in Florida agriculture, and respondents' frequency of organic food purchases ($r = -.111$, $p = .033$) (Table 6). In addition, the researchers observed nonignorable relationships between the confidence index and respondents' income ($r = -.095$, $p = .065$) and whether or not children live in the respondent's home ($r = -.099$, $p = .054$).

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Table 6. *Demographic and Attitudinal Correlations With Florida Voter Confidence in the Agricultural Industry*

Variable	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) FL agriculture confidence score	-.030	.020	.028	.044	-.082	-.099	-.095	-.043	-.031	-.068	**-.111**	.059
(2) Female (1 = yes)		.086	-.037	-.058	**-.108**	**-.104**	**-.159**	**.134**	**.414**	.080	**.127**	-.050
(3) Age			**.186**	**.135**	**-.226**	**-.430**	**-.237**	.075	.004	**-.132**	**-.119**	-.020
(4) Length of FL residency				-.019	-.068	-.024	.003	-.062	-.100	**-.143**	-.101	.037
(5) Ethnicity (1 = white, 0 = other)					.094	-.085	**.126**	-.017	-.036	-.033	-.025	**.141**
(6) Education level						.101	**.374**	.062	.019	**.187**	**.159**	.012
(7) Children in the home (1 = yes)							**.149**	.023	**-.105**	-.015	-.014	-.052
(8) Household income								-.071	**-.160**	**.132**	**.132**	-.004
(9) Agricultural income (1 = yes)									**.156**	.027	-.007	-.062
(10) Grocery shopping frequency										.060	-.066	-.032
(11) Organic food purchase (1 = yes)											**-.859**	.028
(12) Frequency of organic food purchases												-.022
(13) Economic rank of FL agriculture												

Note. $n = 378$. Bold coefficients are significant at a .05 alpha level. From *Public Opinion Survey Report,* by Agriculture Institute of Florida, 2006.

Through exploratory regression analysis, the researchers were able to further elaborate the relationships between confidence in Florida agriculture and available independent variables. The full comprehensive model had an adjusted R^2 of .041, thus explaining slightly more than 4% of the variance in the confidence index (Table 4). Based on the individual terms in the full, comprehensive model, the researchers were able to create a reduced model that explained slightly more than 5% of the variance in the confidence index (based on an adjusted R^2 of .052, $p < .001$). The significant explanatory variables included in the reduced model were county population ($B = -.196$, $p < .001$), the Census County Division population ($B = .118$, $p = .043$), and whether or not children live in the home ($B = -.130$, $p = .024$). Other variables were retained in the reduced model because they either presented nontrivial relationships or were important to include for their interaction effects with other variables in the model. These variables included household income ($B = -.073$, $p = .171$), respondents' age ($B = -.077$, $p = .194$), whether or not the respondents purchase organic foods ($B = .123$, $p = .210$), the frequency of organic food purchases ($B = -.191$, $p = .058$), and the respondents' perceived rank of agriculture's importance for Florida's economy ($B = .064$, $p = .216$).

Discussion, Conclusions, and Recommendations

The data collected by the Agriculture Institute of Florida suggest that Florida voters tend to be somewhat positive toward agriculture and farming in Florida. This favorable view toward the industry is reflected in the collected attitudinal measures, all of which favored confidence in Florida's agriculture. This finding supports previous research in the United States that suggests the public's perception of the agricultural industry is generally positive (Frick et al., 1995; Wimberley et al., 2003).

The study's findings do suggest residential differences in attitude toward Florida agriculture. Counties with smaller populations did tend to have a more favorable attitude toward Florida's agricultural industry. Although the effect sizes are small, the findings add to the body of research that recognizes rural residents for their positive attitudes toward local agriculture (Food Processing Center, 2001; Smithers et al., 2005; Weatherell et al., 2003). However, county subdivisions did not display the same negative relationship between population size and confidence in the agricultural industry; the CCD population estimates had a positive relationship with confidence in the agricultural industry, supporting findings by Patterson and colleagues (1999). Regression models suggest that the CCD population estimates have explanatory power beyond that of county population estimates alone. The findings may reflect a greater concern for preserving open space and retaining local food sources among people in the more urbanized areas

within a county, which offsets, in part, the generally less positive opinion toward agriculture in large counties. Although the overall variance explained by the regression models is small, the models do offer some initial insight into factors that influence voter confidence.

Given that both county and CCD size are contextual factors influencing confidence in agriculture, this poses a challenge for communicators, who need to create information campaigns that will be effective across a diversity of settings. From a practical standpoint, the finding suggests that agricultural communicators may need to consider audience segmentation approaches to a much greater extent than before. Used extensively in mass media brand marketing, segmentation strategies are based on geographic, demographic, and lifestyle factors and can help determine which audiences would be most effective to target with specific messages (Bannon, 2004; Vyncke, 2002). These approaches, although efficient, can be expensive and may require communicators to focus more on data management and analysis of trends than the traditional communications skills set. In circumstances where resources are limited, audience segments must be evaluated and prioritized for targeting. For example, Bannon's (2004) Hierarchy of Segments Model evaluates segments on their attractiveness and their responsiveness to stimuli, categorizing the segments into four areas:

1. Primary targets: Attractive segments that are responsive to stimuli;
2. Secondary targets: Less attractive segments that are responsive to stimuli;
3. Relationship building: Attractive segments that are less responsive to stimuli; and
4. Wasteland segments: Unattractive segments that are unresponsive to stimuli.

For some agricultural communication campaigns, all segments may be attractive, but there are likely to be differences in responsiveness to stimuli.

In this study, residents in counties with increased agricultural sales actually had less favorable views toward the agricultural industry. This apparent contradiction may be because counties with the largest agricultural sales are located in the most heavily populated region of the state: South Florida. However, this finding is particularly disturbing considering the fact that there are five "agriculture-dependent" counties in South Florida (USDA Economic Research Service, 2004a). Given Burstein's (2003) review on the influence of public opinion on policy, these more negative sentiments could be detrimental, especially as agricultural policies are voted on by Florida residents who may not feel a connection to the local farms and agriculture

and may be unsympathetic where urban encroachment into rural areas is concerned. This finding has implications for states beyond Florida as well, where voter awareness and connection with agriculture may be low and urban/rural interface issues have begun to take hold. As a result, these audience segments may be categorized as "relationship building" targets in Bannon's (2004) Hierarchy of Segments Model. Urban voters are an attractive segment because their large numbers mean they have the potential to heavily influence public policy that affects agriculture, yet they seem less aware of the economic benefits of agriculture in their surrounding communities. Agricultural awareness campaigns targeted toward these audiences may need to include different stimuli and focus more on relationship building than primary targeting. For example, successful campaigns may move away from the typical economic impact stories and more toward positioning agriculture as "the good neighbor," "stewards of the land and preservers of green space," and other appeals.

The findings in this study are consistent with other studies (Frick et al., 1995; Smithers et al., 2005; Weatherell et al., 2003) in that rural residents were found to have more favorable views of the agricultural industry than urban publics. However, further research is necessary to better understand the reasons for and implications of this residential difference. The relationship between population size and voter confidence should be explored in other states. In addition, the connection between voter confidence and organic food purchasing requires further investigation. Is this relationship consistent in other states? What is its driving force? Perhaps health-conscious voters have lost faith in agriculture and perceive the potential for risk in the industry's conventional approach to providing a safe food supply. Such concerns about the safety of agricultural products may also explain the weaker confidence among households with children in the home. These are empirical questions yet to be answered. In order to better target messages that influence voter confidence in agriculture, practitioners need more information about the lifestyle typologies that influence such opinions.

From a theoretical standpoint, this study adds to the extensive literature in persuasion and public opinion that demonstrates that individual difference factors influence perceptions. More specifically, the study offers more evidence that market segmentation should consider geographic, demographic, and psychographic (or lifestyle) variables (Bannon, 2004; Vyncke, 2002). In the context of agriculture and specifically voter confidence in agriculture, it suggests that geography, residential location, county population, household composition, and food purchasing behavior are factors that need to be taken into consideration when developing a predictive model of public attitudes in this domain.

Research

The residential differences suggested by this exploratory study may not be significant enough to warrant geographic differentiation in agricultural awareness campaigns. However, communication professionals may use data from this study to consider differences in the approach of public campaigns. If geography is destiny, then it makes sense for industry to keep consumers' locations in mind when considering consumer attitudes toward and perceptions of agriculture. Communication professionals targeting large urban counties should consider that consumers in these areas have less positive opinions of agriculture and may be less receptive to some messages than audience segments in rural counties or small urban counties.

Likewise, communicators might consider developing messages targeted toward organic food buyers and households with children. Such messages might emphasize food quality and safety, as well as the environmental benefits of well-managed agricultural operations. This can increase confidence in the agricultural industry among these market segments.

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