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# Differences in Willingness to Pay for Safer Meat and Vegetables

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With numerous food recalls in the last few years, food safety has become an important concern for the food industry and consumers. Millions of people are sickened and thousands die each year from consuming contaminated and unsafe food in the U.S. This paper compiles information on the profile of respondents to a survey on willingness to pay for safer meats (beef and poultry) and fruits and vegetables, and examines factors that influencing consumers' willingness to pay. A telephone survey was used to collect data from 1,000 participants in Alabama, North Carolina, and Tennessee. Results indicate that 22.5 percent of respondents definitely would pay more for safer food, while 29.2 percent said they were more likely to do so. About nine percent of the respondents said they likely would not pay for safer food and 33.4 percent indicated that they were somewhat willing to pay more. Only 4.4 percent showed no interest in paying more for safer food. Chi-square methodology was used to examine factors explaining differences in willingness to pay for safer meats and fruits and vegetables. The Statistical Package for the Social Sciences (SPSS) was used in analysis. Willingness to pay for safer food was significantly related to gender, education, ethnicity, and marital status.

Numerous articles document consumer willingness to pay for safer foods. Many of these studies apply a variety of methodologies using different commodities and products (Mukhopadhaya et al. 2004; Goldberg, Roosen, and Nayga 2006). Although consumers want safer foods, they are not always willing to pay for the cost. In a 2008 choice experiment study of 844 Danish consumers, it was shown that consumers' willingness to pay for safer meat depended on the method used in reducing salmonella risks and the price of the product (Mørkbak, Christensen, and Gyrd-Hansen 2008). Miller and Unnevehr (2001) examined factors influencing consumer willingness to pay for safer pork. Their telephone survey of 609 households, conducted in spring 1999, showed that most consumers were willing to pay a price premium for safer pork. The authors used a logistic regression model to determine that willingness to pay for safer pork was related to gender, age, and income, and that urban residency had the most significant effect on willingness to pay for safer pork.

## Methodology

Data used in this study were collected from telephone survey of consumers in three states. The

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telephone survey consisted of 1,000 interviews with residents of Tennessee, Alabama, and North Carolina. A random-digit-dialing sample frame was generated for the designated survey area. The computer system used a random-selection procedure to select the initial set of potential survey participants. The survey interviewers used at least three call-back attempts to each number dialed for which there was no answer; this process enhanced the validity of the research results. Five specific items in the 43-item questionnaire developed for this study were analyzed. Socio-economic variables for age, gender, ethnic origin, marital status, and educational level also were summarized. Data were analyzed and summarized using the Statistical Package for the Social Sciences (SPSS) and the Excel spreadsheet. Chi-square tests were used to test for differences in willingness to pay for safer meats and vegetables.

## Results and Discussions

Of the 1,000 respondents to the survey, 10.4 percent were less than 35 years old and 89.6 percent were 35 years or older, 66.3 percent of study participants were married, 14.0 percent were divorced or separated, 9.7 percent were widowed, and 9.0 percent had never been married. About 21 percent of respondents were males while 78.9 percents were females. Analysis of ethnic groups of participants shows that 797 (79.7 percent) were Caucasian or white, 128 (12.8 percent) were African-American and 30 (3 percent)

were American Indian or Alaska Native, 0.4 percent identified themselves as Asian or Pacific Islander, and one percent identified themselves as "other ethnic groups"; only 0.9 percent of the respondents identified themselves as being of multiple ethnic backgrounds. Twenty-two people (2.2 percent) refused to answer the question.

Table 1 shows the educational levels of the study participants. Interestingly, survey participants show a high level of education—17.8 percent of the respondents hold postgraduate or professional degrees.

Knowledge of deaths, hospitalizations, and illnesses resulting from foodborne illnesses changed consumer willingness to pay for safer foods. When consumers were informed that 325,000 people are

hospitalized and 5,000 people die from food illnesses each year their willingness to pay for safer food changed. As a result of this knowledge, the percentage of respondents who that they "definitely" would pay for safer food increased to 32.9 percent.

When asked how likely they were to pay more for food items that are safer, 33.4 percent of the respondents indicated that they were "somewhat likely," 29.2 percent said they were "very likely," and 22.5 percent said they would "definitely." Nine percent of the respondents were "not willing" to pay more for safer food and 4.4 percent would "definitely not." About one percent did not know or refused to answer the question (Table 2).

Participants in the survey were asked how much

**Table 1. Level of Education.**

Category	Number of responses (n = 1,000)	Percent
Refused	14	1.4
High school graduate or less	376	37.6
Vocational/technical school	37	3.7
Some college	224	22.4
College-undergraduate degree	178	17.8
Postgraduate or professional degree	171	17.1
Total	1,000	100.0

**Table 2. Likelihood of Paying for Safer Food.**

Category	Percentage of responses (n = 1,000)
Do not know/refused	1.4
Definitely not	4.4
Not likely	9.1
Somewhat likely	33.4
Very likely	29.2
Definitely	22.5
Total	100.0

more they were willing to pay per pound to ensure that the beef they consume was safer. They were given choices of 50 cents, \$1.00, \$1.50, and \$2.00 more per pound. Forty-one percent of the consumers stated that they were willing to pay 50 cents more per pound for safer beef. At \$1.00 more per pound, 17.3 percent were willing to pay and 2.8 percent of the consumers were willing to pay \$1.50 more per pound. When the extra cost increased to \$2.00 more per pound, 12.6 percent were still willing to

pay. Twenty-seven percent of the respondents did not respond, did not know, refused to answer, or were not willing to pay additional price for safer beef (Table 3).

Similar results were obtained when consumers were asked how much more they were willing to pay per pound for safer poultry. Forty-one percent of the consumers indicated that they were willingness to pay 50 cents per pound more for safer poultry, and 11 percent were willing to pay \$2.00 more. Twenty-

**Table 3. Willingness to Pay for Safer Beef.**

Additional cost of beef (per pound)	Percentage willing to pay additional cost (n = 1,000)
Nothing	11.4
50 cents per pound	40.1
\$1.00 per pound	17.3
\$1.50 per pound	2.8
\$2.00 per pound	12.6
Do not know/refused	7.1
Total	91.3
Missing	8.7
Total	100.0

**Table 4. Willingness to Pay for Safer Poultry.**

Additional cost of poultry (per pound)	Percentage willing to pay additional cost (n = 1,000)
Nothing	10.9
50 cents per pound	41.5
\$1.00 per pound	19.0
3.7	
\$2.00 per pound	11.0
Do not know/refused	5.2
Total	91.3
Missing System	8.7
Total	100.0

five percent did not respond to the question, did not know, or were not willing to pay any increase in price for safer poultry (Table 4).

Table 5 discusses responses to question regarding consumer willingness to pay for safer fruits and vegetables. Again, choices were 50 cents, \$1.00, \$1.50, and \$2.00 more per pound. Approximately 42 percent of the consumers were willing to pay 50 cents more per pound for safer fruits and vegetables, 16 percent were willing to pay \$1.00 more per pound for safer fruits and vegetables, about four percent of the consumers were willing to pay \$1.50 more per pound, and nine percent were willing to pay \$2.00 more per pound. A total of 29 percent of

survey participants did not respond, did not know, or were not willing to pay an additional price for safer fruits and vegetables.

Results of chi-square test of independence are displayed in Table 6. The relationships between selected variables and willingness to pay more for safer beef, poultry, and fruits and vegetables were estimated using the chi-square procedure from the Statistical Package for the Social Sciences (SPSS). The selected variables were coded as follows: Marital Status: 1 = married, 0 = otherwise; Ethnic Origin: 1 = white or Caucasian, 0 = otherwise; Education: 1 = high school or more, 0 = otherwise; Gender: 1 = female, 0 = male. Willingness to pay for safer

**Table 5. Willingness to Pay for Safer Fruits and Vegetables.**

Additional cost of fruits and vegetables (per pound)	Percentage willing to pay additional cost (n = 1,000)
Nothing	15.9
50 cents per pound	41.9
\$1.00 per pound	15.6
\$1.50 per pound	3.8
\$2.00 per pound	9.4
Do not know/refused	4.7
Total	91.3
System	8.7
Total	100.0

**Table 6. Chi-Square Test of Independence: Willingness to Pay More for Safer Food.**

Selected variables	Beef	Poultry	Fruits and vegetable
Marital status	29.322 (0.000)***	n.s.	14.776 (0.011)**
Ethnic origin	n.s.	36.526 (0.000)***	42.922 (0.000)***
Education	9.966 (0.076)*	n.s.	n.s.
Gender	n.s.	10.689 (0.058)*	12.650 (0.027)**

\* Significant at the ten-percent level.

\*\* Significant at the five-percent level.

\*\*\* Significant at the one-percent level.

beef was related to Marital Status ( $\chi^2 = 29.322$ ,  $P \leq 0.000$ ) and Education ( $\chi^2 = 9.966$ ,  $P \leq 0.076$ ). Willingness to pay for safer poultry was related to Ethnic Origin ( $\chi^2 = 36.526$ ,  $P \leq 0.000$ ) and Gender ( $\chi^2 = 10.689$ ,  $P \leq 0.058$ ). Willingness to pay more for fruits and vegetables was related to Marital Status ( $\chi^2 = 14.776$ ,  $P \leq 0.011$ ), Ethnic Origin ( $\chi^2 = 42.922$ ,  $P \leq 0.000$ ), and Gender ( $\chi^2 = 12.650$ ,  $P \leq 0.027$ ).

These results imply that at the one-percent level of significance, married consumers were more willing to pay for safer beef than were unmarried consumers. Consumers with a high school or greater education were more likely than others to pay for safer beef; this result was significant at the ten-percent level. Caucasians were willing to pay more for safer poultry than were consumers of other ethnic groups, and women showed greater willingness to pay more for safer poultry than did men. These results were significant at the one-percent and ten-percent levels, respectively. At the one-percent level of significance, Caucasians were more willing to pay more for safer fruits and vegetables. Married respondents and women were more willing to pay more for safer fruits and vegetables compared to others; these results were significant at the five-percent level. This study not only provides useful insights for understanding consumer willingness to pay more for safer beef, poultry, fruits and vegetables, it also shades light on consumer preferences for safer foods.

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