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Consumer and Food Store Manager Perceptions Of Food Inspection Requirements

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Federal and state governments operate inspection systems to help assure consumers of the wholesomeness and cleanliness of food products. Each major outbreak of human illness attributed to foodborne pathogens or to cancer-causing residues in foods raises questions as to the effectiveness of this food inspection. How do food store managers and consumers differ in their perceptions of needed food inspection? Mail surveys of households and food stores in three urban and five rural Louisiana parishes in 1992 provided data on consumer perceived inspection requirements for domestically processed seafood, imported seafood and red meats, and for maximum permissible content of cancer-causing substances.

Introduction

The typical food consumer does not have the capability of determining when a particular food product, such as a beef rump roast, is carrying disease-causing microorganisms, residues, or other hazards to human health. In most cases, the food consumer must rely upon the integrity of the persons or firms producing, processing, packaging, and distributing the food product to assure its wholesomeness, along with the inspection activities of trained industry and government personnel.

Federal and state programs have been established to inspect many food products for wholesomeness and cleanliness. For meats, the inspection program provides for pre-slaughter inspection of live animals for evidence of disease and other abnormalities; post slaughter inspection of carcasses for wholesomeness and cleanliness; and, in some cases, inspection of product during further processing and/or packaging (Lesser, 1993). Product, workers, and facilities are included in the inspection process, and laboratory evaluations of product samples are made both randomly and upon request of inspection personnel.

Federal or equivalent state inspection, as currently

used for red meats and poultry, has not been made compulsory for seafood. However, the requirement to create a Hazard Analysis Critical Control Point system (HACCP) for seafood has been published in the Federal Register (Agricultural Outlook, 1994; Lin and Milon, 1993). While many seafood processing plants are under state and Food and Drug Administration (FDA) inspection, seafood consumers frequently must rely on the supplier to provide pathogen- and residue-free product. Though seafood is often considered as less safe than other food sources, Center for Disease Control data indicate that seafood accounts for only five percent of reported food illnesses (Mason-Jenkins, 1991).

There is some concern that imported meats may not be produced under the same restrictions on chemical use as are products produced in the United States. They also may not be processed under as sanitary conditions and/or not otherwise handled in as careful a manner to provide wholesomeness and cleanliness. Federal authorities claim imported products are as safe as domestic products (McCoy, 1988); however, a small group of importers tend to violate U.S. import laws (Segal, 1992).

Food stores are expected to market food products that are safe when consumed under normal conditions. Food store managers need to be aware of the safety concerns of their customers to make appropriate decisions on stocking, handling, and advertising the products they sell (Scroggins, 1991).

Statement of the Problem

Given that the USDA's Food Safety and Inspection Service is continuously reviewing its policies and enforcement criteria and that federal seafood inspection of seafood is not mandatory, examination of the

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perceptions of consumers and food store managers about the quality of current inspection programs for domestic and imported meats and seafood appears timely (Vansickle, 1993). The meat animal processing and distribution industries, researchers, and government policy makers lack this information and estimates of the level of acceptable risk from food contamination by residues, hormones, and/or preservatives. This information is also needed to develop educational material and programs to help inform consumers of federal and state inspection programs for meats and seafood.

Objectives

The overall objective of the study was to estimate consumer and food store manager reactions to selected issues relative to the safety of meat and seafood products available at retail in the United States. Specific objectives included:

1. compare consumer and food store manager perceptions of the safety of imported meat and seafood to similar domestic products;
2. estimate consumer and food store manager perceptions of the level of safety inspection needed for imported and domestically produced seafood and meats; and
3. estimate consumer and food store manager acceptance of alternative labelling policies for acceptable content of residues, hormones and preservatives in food products.

Previous Research

Kreider, et al. (1993) surveyed 10,000 households in the Delmarva Peninsula of the Northeast about preferences for seafood inspection. Younger, male, higher income, and higher educated consumers strongly favored government inspection of seafood as opposed to industry inspection. There was also strong support for increased government regulation of the processing of seafood.

Several researchers have examined the consumers acceptance of food contamination from residues, hormones, and other undesirable contaminants. While microbiological contamination of food is the most likely food safety hazard, consumers appear to be most concerned with pesticide residues, including hormones and antibiotics (Jones, 1992). Concerns for food safety cause the consuming public to place heavy demands on the government, producers, and the mar-

keting system to deliver safe, high-quality food products. However, research suggests that these concerns are often exaggerated or misplaced (Littman, 1991).

Milon and Babb (1991) surveyed consumers in selected Mid-Atlantic and Southeastern states regarding their ratings of the safety of oysters. Using a probit model, they found that frequency of consumption, education, and age were significant factors influencing the respondent's perceived safety rating of oysters.

Methods and Procedures

Questionnaires containing identical statements/questions on inspection requirements or acceptability of specified levels of residues, hormones or preservatives were developed and pretested on small samples of households and food stores in the Baton Rouge, Louisiana area. The four statements/questions on the survey used for this paper include:

1. *Currently, a food product either contains less than a specified (permissible) amount of a given residue, hormone, or preservative and is sold unlabeled, or the food product is banned for sale as food. An alternative policy¹ would set up a three-option choice: a) product containing less than a specified (minimum) amount of residue, hormone, or preservative would be marketed unlabeled; b) product containing a higher amount (yet still considered safe in all but exceptional cases) would be labeled with the risk involved; and c) product containing higher levels would be banned for use as food. The alternative is more appropriate than the current policy* (respondents replied using a seven-point scale, where 1 = strongly agree and 7 = strongly disagree). This statement examined the willingness of respondents to accept the risks of food containing contamination by residues, hormones, or preservatives.
2. *Imported meat and/or seafood is as safe as meat or seafood produced and processed in the United States* (respondents replied using a seven-point scale, where 1 = strongly agree and 7 = strongly disagree).
3. *What inspection requirements should be imposed on imported meat or seafood to insure wholesomeness and cleanliness? (circle one)*
 - a. *the inspection requirements currently imposed on imported meat and/or seafood are adequate.*
 - b. *inspection for wholesomeness and cleanliness, at importer expense, of each shipment at*

- point of entry into the United States.*
- c. *the same inspection requirements at point of processing as used for meat in the United States.*
4. *What inspection requirements for seafood processing and handling facilities are needed in the United States? (circle one)*
- a. *continuous online government inspection during processing for wholesomeness and cleanliness.*
 - b. *Unannounced visits by government inspectors in addition to continuous online inspection by trained plant employees.*
 - c. *continuous online inspection by trained plant employees.*

Responding households also provided information on education of head, ethnic grouping, and family income level while the food stores provided information on class of store, organization of store, and the store's primary clientele.

The questionnaires were mailed, in early 1992, to 3,300 households and 400 food stores in three urban and five rural Louisiana parishes, the latter randomly selected from the two categories. Names and addresses of households were randomly selected from a list obtained from the Louisiana Department of Public Safety - Motor Vehicle Section. The names and addresses of all food stores in the eight parishes, with the exception of known convenience stores (who generally do not sell meat or seafood products), were secured from the Louisiana Business Directory. Follow-up questionnaires were mailed to nonrespondents three weeks later. Only 16 and 18 percent of households and food stores, respectively, returned usable forms. The low response rate could be attributed to the complexity of the issues examined and the lack of an immediate direct benefit to potential respondents. Research funds and telephone numbers were not available to contact nonrespondents to check whether the respondents were representative of nonrespondents. A comparison of socioeconomic characteristics of the eight-parish population and the respondents indicates that the response is somewhat biased toward white, more educated, and higher income households. A larger than expected percentage of the responding food stores consisted of convenience or general-type stores. ANOVA, MANOVA and Chi-Square were used in the analyses.

Empirical Results

The overall means and means by socioeconomic characteristic of household responses for the four statements or questions are presented in Table 1. Overall,

the responding households tended to agree (2.78, where 3=agree) that the three-option policy was preferable to the two-option policy. They tended to disagree (4.93, where 5=disagree) with the statement that imported product was as safe as domestic product. Response to the question on the type of inspection required of imports was midway between "same requirements at point of processing as used for meats in United States" and "inspection, at importer expense, of each shipment at point of entry into the United States". Households tended to prefer a joint government-plant inspection program for seafood in the United States.

Food store manager mean responses, overall and by store characteristic, are given in Table 2. Managers were less in agreement (3.20, where 3=agree) that the three-option policy was preferable and slightly less critical of imported product relative to domestic product (4.56, where 5=disagree). The responding managers wanted slightly more stringent inspection requirements for imported meat and seafood than the households and were also more demanding in their inspection requirements for domestic seafood processing.

ANOVA was used to measure the impact of selected socioeconomic characteristics on the responding households' ratings of the two statements (Table 3). Urban households were significantly more critical of the safety of imported meat and seafood than rural households, as were white households, households with heads having some college or higher levels of education, and households with higher levels of family incomes. Managers of convenience stores were more agreeable with the three-option policy than managers of the other classes of stores, and imported meats and seafood were more acceptable to chain store managers than to managers of independent stores.

Given that responses to the two questions on inspection requirements were discrete, Chi-Square analysis was used to test for significance of relationships (Table 4). As indicated in the degrees of freedom column, some combining of rows and/or columns was necessary to avoid violations of expected frequencies. Two significant relationships were found. Households with heads having graduate work were more willing to use plant personnel to inspect seafood than households with heads having less formal education. Managers of convenience stores also called for significantly greater government involvement in the inspection of seafood than managers of supermarkets or general stores.

MANOVA and Chi-Square were used to estimate whether households and food store managers were in agreement in their responses to the two statements and two questions (Table 5). Food store managers tended to be less critical of the safety of imported meat and

Table 1

**Mean Household Ratings of Meat and Seafood Inspection and Labelling Issues
By Socioeconomic Characteristic, Louisiana, 1992.**

Variable	Statement/Question ^a			
	1	2	3	4
Overall	2.74	4.93	2.50	1.63
Location				
Urban	2.65	5.04	2.49	1.67
Rural	2.68	4.70	2.51	1.57
Ethnic Group				
White	2.76	5.05	2.51	1.62
Black	2.57	3.95	2.39	1.90
Hispanic	2.67	4.00	2.63	1.88
Other	1.83	4.67	2.40	1.20
Education				
<High School	2.69	3.97	2.38	1.74
High School	2.59	4.90	2.44	1.57
Some College	2.84	5.07	2.51	1.53
College Degree	2.67	5.03	2.54	1.70
Graduate Work	2.98	5.02	2.62	2.02
Income (\$)				
<15,000	2.65	4.51	2.49	1.63
15,000-29,999	2.63	4.53	2.38	1.67
30,000-44,999	2.76	5.15	2.54	1.56
45,000-59,999	2.87	4.93	2.51	1.63
60,000-75,000	2.35	5.42	2.53	1.77
>75,000	3.27	5.39	2.65	1.77

^a 1 = Two-option vs three-option labeling (1-7 scale)

2 = Safety of imported product vs domestic product (1-7 scale)

3 = Inspection requirements for imported product (assumes use of 1-3 scale, where a = 1)

4 = Inspection for domestic seafood processing (assumes use of 1-3 scale, where a = 1)

Table 2

Mean Food Store Manager Ratings of Meat and Seafood and Labelling Issues by Store Characteristic, Louisiana, 1992.

	Statement/Question ^a			
	1	2	3	4
Overall	3.20	4.56	2.35	1.58
Classification				
Convenience	2.84	4.78	2.29	1.77
General	3.58	4.46	2.30	1.36
Supermarket	3.50	4.30	2.45	1.40
Organization				
Chain	3.36	4.00	2.60	1.71
Independent	3.16	4.67	2.29	1.57
Clientele				
Low Inc White	3.00	3.50	3.00	3.00
Mid Inc White	3.40	4.75	2.32	1.50
High Inc White	3.00	4.00	2.33	1.50
Low Inc Black	3.10	4.00	2.38	1.33
Mid Inc Black	3.50	4.50	2.00	2.00
Low Inc Rac Mix	2.89	5.20	2.60	1.63
Mid Inc Rac Mix	2.56	4.44	2.29	1.75

^a 1 = Two-option vs three-option labeling (1-7 scale)

2 = Safety of imported product vs domestic product (1-7 scale)

3 = Inspection requirements for imported product (assumes use of 1-3 scale, where a = 1)

4 = Inspection for domestic seafood processing (assumes use of 1-3 scale, where a = 1)

Table 3

ANOVA Results of Household and Food Store Manager Responses to Selected Inspection and Labelling Issues
By Household and Food Store Characteristics, Louisiana, 1992

Variable	MS	F	Pr>F
Three-Option is More Appropriate than Two-Option Policy			
Location (HH)	0.04041	0.02	0.8919
Ethnic Group (HH)	2.05323	0.98	0.4013
Education (HH)	2.21796	1.04	0.3849
Income (HH)	3.88455	1.86	0.1003
Class (Store)	3.97348	3.09	0.0526*
Organ. (Store)	0.29101	0.21	0.6472
Clientele (Store)	1.12381	0.85	0.5343
Perception of Safety of Imported Meat and Seafood			
Location (HH)	7.55229	2.82	0.0952**
Ethnic Group (HH)	17.19474	7.15	0.0001*
Education (HH)	8.34434	3.42	0.0090*
Income (HH)	10.78614	4.51	0.0005*
Class (Store)	1.52374	0.98	0.3809
Organ. (Store)	4.37576	2.92	0.0921*
Clientele (Store)	2.12150	1.50	0.1940

*, ** Significant at 5 and 10 percent levels, respectively.

Table 4

Chi-Square Results of Household and Food Store Manager Responses
To Selected Meat and Seafood Inspection Issues by Household and Food Store Characteristics, Louisiana, 1992

Variable	df	χ^2	Prob > χ^2
Desired Inspection Requirements for Imported Meats			
Location (HH)	1	0.016	0.901
Ethnic Group (HH)	2	1.115	0.573
Education (HH)	4	4.122	0.390
Income (HH)	5	5.374	0.372
Class (Store)	2	0.251	0.882
Organ. (Store)	a	a	a
Clientele (Store)	a	a	a
Desired Inspection Requirements for Seafood Processing			
Location (HH)	2	1.154	0.562
Ethnic Group (HH)	2	2.228	0.328
Education (HH)	8	29.064	0.000**
Income (HH)	10	9.780	0.460
Class (Store)	1	3.914	0.048*
Organ. (Store)	a	a	a
Clientele (Store)	a	a	a

*, ** Significant at 5 and 10 percent levels, respectively.

a - Excessive violations with Chi-Square analysis.

Table 5

MANOVA and Chi-Square Comparisons of Household and Food Store Manager Responses
To the Four Statements and Questions^a, Louisiana, 1992

Variable	MS (df)	F (χ^2)	Pr > F (χ^2)
Statement 1	2.6572	1.23	0.2691
Statement 2	10.5598	4.05	0.0449*
Question 1	2	2.850	0.2400
Question 2	2	0.310	0.8565

* Significant at 5 percent level.

^a 1 = Two-option vs three-option labeling (1-7 scale)

2 = Safety of imported product vs domestic product (1-7 scale)

3 = Inspection requirements for imported product

4 = Inspection for domestic seafood processing

seafood than were the households. There were no other significant relationships.

Summary and Implications

The responding households were particularly critical of the safety of imported meats and seafood. Urban, white, higher educated, and higher income households, who were slightly more represented in the sample than the population, tend to be more informed and have the resources to implement their preferences.

Consumer agreement with use of plant personnel in the inspection process is consistent with USDA's desire to delegate some of the responsibility for product safety to producers, processors, and handlers. Emphasis on development of HACCP-based inspection programs is illustrative of this movement (*Agricultural Outlook*, 1994). Packaging and labeling of product at the packer level transfers some of the responsibility for product safety and quality from the retailer to the packer. Under these conditions, consumers may realize that the packer could be as conscientious of product safety as the "third party" government grader.

Location and socioeconomic characteristics did not significantly influence household respondent perceptions of needed inspection requirements for imported meats or domestically processed seafood, except for education on the latter. The demand for these public good services, therefore, differs little among households in the study area.

Food store managers were less critical of the safety of imported meat and seafood than the household respondents. This finding was expected given the retailer's greater knowledge of the source and quality of the imported product.

Endnote

¹The three-option policy has been supported by Rep. Henry Waxman (D, Calif) and was discussed at several Congressional hearings in the late 1980s. It has not received the support, however, of consumer groups.

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