# The Influence of Consumer Concerns And Demographic Factors on Purchasing Patterns for Beef*

by

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**Abstract**

The results of a cross-tabulation analysis indicate that health-related concerns for roasts, steaks and ground beef are expressed significantly more frequently by survey participants eating less beef as compared to those who report the same amount in beef usage. The results generally suggest that chicken is served more frequently by those eating less beef than by those who have not changed their beef-eating habits or are eating more beef. Expense was identified as a concern for

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both roasts and steaks. Those eating less beef are typically older than those indicating more or the same beef usage.

## Introduction

Recent changes in U.S. consumption patterns for beef have been the source of concern to many in the beef industry. Several analyses have been directed toward identifying the sources of these changes in beef consumption, as well as changes in the consumption of beef substitutes, notably chicken. As indicated by Cox, et al., many of the studies of meat demands have employed annual time series data on aggregate per capita meat consumption and have provided estimates of short-run consumption response to prices and income (e.g., Braschler; Chavas, 1983; Nyankori and Miller; Moschini and Meilke; Wohlgenant). Other research has been directed toward relating meat consumption to demographic factors such as family size and family composition (e.g., Buse and Salathe; Blaylock and Smallwood; Cox, et al.; Lee).

The results of these analyses of meat demands, particularly those in the former category, have contributed to a debate concerning the effect of change in competing meat prices on the observed changes in beef consumption patterns (Chavas, 1989; Smallwood, et al.). Purcell suggests that changes in prices of competing meats such as pork and poultry alone cannot explain the shifts in beef demand since 1979. Chavas (1989) recognizes that there is empirical evidence that changing relative prices of meat have contributed to a price substitution effect from beef consumption to poultry consumption. Chavas (1989) adds that changing life style and concern about health-related issues have likely influenced consumer beef-purchasing behavior. Moreover, the attitudes toward buying low-fat foods have been shown to be important in the purchase decision for lean meats (Capps, et al.; Menkhaus, et al.). However, due to severe data limitations, little empirical evidence on the effects of health-related concerns on beef consumption exists.

To better assess the direction the beef industry should take in new product development and merchandising techniques, information regarding consumer attitudes toward current beef products must be provided. It would be particularly relevant to identify factors which have contributed to the different purchasing patterns of consumers. For example, are there differences in concerns with respect to beef products among consumers who are purchasing more, less, or the same amount of beef?

## Objectives

The overall purpose of this paper is to report the results of analyses of consumer survey data collected in 1987. The data were collected in the San Francisco Bay area and served as part of an overall study to evaluate the consumer appeal of branded, low fat, fresh beef (Menkhaus, et al.). The research which is reported in this paper focuses on the more general issue regarding factors influencing different purchasing patterns for beef. Specifically, purchasing patterns for beef (purchasing more, less or the same amount) are related to consumer concerns regarding roasts, steaks and ground beef, and are related to selected demographic characteristics.

## Data

Consumer questionnaires were administered to 310 individuals in the San Francisco Bay area during July, 1987 as part of a laboratory test market (LTM) study (Menkhaus, et al.). Data used in the analyses in this study were chosen from the questionnaires completed in the LTM; specifically, consumer demographics; concerns and dissatisfactions related to roasts, steaks and ground beef; and purchasing patterns for beef (more, less or the same amount). The product characteristics are expressed as concerns or dissatisfactions with beef cuts--roasts, steaks and ground beef. Purchasing more, less or the same amount reflects the changes in sample consumer buying practices for fresh beef for the twelve-month period prior to July, 1987. The analysis focuses on determining the influences of selected beef product characteristics on the purchasing patterns for fresh beef. The variables (product characteristics) include a mix of health-related, palatability and convenience factors, along with demographic factors.

Dissatisfactions and concerns for roasts, steaks, and ground beef include: (1) too expensive, (2) don't like taste, (3) high fat content, (4) hard to cook, (5) children don't like, (6) not well trimmed, (7) takes too long to cook, (8) too much waste, (9) high cholesterol content, (10) meat looks unappetizing, (11) don't know how to cook, (12) can't cook in a microwave, (13) high in salt, (14) messy to cook, (15) high in calories, (16) contains artificial ingredients, (17) not juicy, dried out, (18) eating too much not good for health, and (19) tough, not tender. Demographic factors are (20) age of consumer, (21) education level, and (22) total family income. Additionally, purchase patterns for beef are related to the number of servings of chicken and fish during the two-week period prior to the study. While this is a very short time period, it has the advantage of respondents being able to recall more accurately the serving frequencies of chicken and fish, as compared to a longer period.

**Results and Discussion**

To identify the importance of each variable identified in the above section on purchasing patterns for beef, purchasing patterns were cross-tabulated with each concern variable for roasts, steaks and ground beef. Of the 310 individuals in the sample, 25 reported eating fresh beef more often during the twelve-month period prior to July, 1987; 132 and 151 indicated eating fresh beef less often and the same amount, respectively. Two individuals did not respond. Given that only 25 individuals reported eating more beef, the focus of the discussion which follows, and statistical analysis, are primarily directed toward those respondents reporting beef purchases of less and the same amount. A Chi-square analysis was conducted to determine if the proportions between those reporting eating fresh beef less and those reporting no change in fresh beef purchases are significantly different for each variable.

Results of the cross-tabulations for roasts, steaks, and ground beef are presented in Tables 1, 2 and 3. In general, the results are consistent among the three beef products. Health-related concerns such as high fat content, high cholesterol, high in calories, contains artificial ingredients, and eating too much not good for health consistently appear as concerns for roasts, steaks and ground beef among a high percentage of those who reported eating less beef and, for the most part, the percentages are significantly higher as compared to the group eating the same amount of beef. These health concerns are also expressed by a fairly high proportion of the individuals in the group eating the same amount, although not as frequently as by those in the less usage group.

Expense is expressed as a concern by all three usage groups for roasts and steaks. Moreover, perceived presence of artificial ingredients in beef products appears to be an important concern among survey participants for all three beef products.

Among other concerns which are expressed frequently are not well trimmed, as well as tough, not tender (Tables 1 and 2). Interestingly, these concerns are expressed in nearly equal proportions by both the eating less and eating the same groups. Tough, not tender was less of a concern for roasts and steaks among those eating more beef than among those eating less or the same amount. Moreover, not juicy, dried out was not as important among the concerns as health-related factors. This result may suggest that the reduced amount of marbling in "no roll" or select beef sold at retail in the San Francisco area, when compared to predominantly choice grade beef in many other areas, has not reduced substantially consumer perceptions of juiciness.

Takes too long to cook for roasts appears to be a uniform concern, thus suggesting the importance of convenience for this beef product. Can't cook in the microwave is also expressed significantly more frequently (for steaks and ground beef) by the less group as compared to the group eating the same amount of beef.

Differences among survey participants in each purchase category with respect to chicken and fish usage over a two-week period are presented in Table 4. The results generally suggest that chicken, and to a lesser extent fish, are served more frequently by those eating less beef than by those in the same or more purchase categories.

## Table 1

Percent Expressing the Variable as a Concern Among Survey Participants Who Reported Eating More, Less or the Same Fresh Beef - Roasts

| Variable | Percent Expressing Concern Among Those Who Reported Eating Beef | | |
|---|---|---|---|
| | More | Less | Same |
| | % | % | % |
| Too expensive | 48.0 | 47.0 | 55.0 |
| Don't like taste[a] | 4.0 | 6.8 | 13.9 |
| High fat content[a] | 24.0 | 42.4 | 29.8 |
| Hard to cook | 12.0 | 9.1 | 14.6 |
| Children don't like | 8.0 | 14.4 | 18.5 |
| Not well trimmed | 28.0 | 46.2 | 41.7 |
| Takes too long to cook[a] | 32.0 | 22.7 | 32.5 |
| Too much waste | 12.0 | 25.8 | 22.5 |
| High cholesterol content[a] | 24.0 | 46.2 | 32.5 |
| Meat looks unappetizing | 12.0 | 17.4 | 23.8 |
| Don't know how to cook | 8.0 | 5.3 | 8.6 |
| Can't cook in microwave | 8.0 | 13.6 | 7.9 |
| High in salt[a] | 4.0 | 15.9 | 7.3 |
| Messy to cook | 8.0 | 6.1 | 2.6 |
| High in calories[a] | 12.0 | 31.8 | 13.9 |
| Contains artificial ingredients | 32.0 | 45.5 | 37.7 |
| Not juicy, dried out | 12.0 | 31.8 | 36.4 |
| Eating too much not good for health[a] | 28.0 | 60.6 | 41.7 |
| Tough, not tender | 20.8 | 47.7 | 47.7 |
| Sample size | (25) | (132) | (151) |

[a] Proportions between those reporting eating fresh beef less and those reporting no change are significantly different ($\chi_\alpha^2 = 2.706$ for $\alpha = 0.10$).

**Table 2**

Percent Expressing the Variable as a Concern Among Survey Participants Who Reported Eating More, Less or the Same Fresh Beef - Steaks

| Variable | Percent Expressing Concern Among Those Who Reported Eating Beef | | |
|---|---|---|---|
| | More | Less | Same |
| | % | % | % |
| Too expensive | 64.0 | 59.8 | 68.7 |
| Don't like taste | 12.0 | 4.5 | 7.9 |
| High fat content[a] | 28.0 | 41.7 | 30.5 |
| Hard to cook | 12.0 | 2.3 | 5.3 |
| Children don't like | 20.0 | 12.1 | 17.2 |
| Not well trimmed | 36.0 | 58.3 | 50.3 |
| Takes too long to cook | 0.0 | 3.8 | 2.6 |
| Too much waste | 20.0 | 24.2 | 16.6 |
| High cholesterol content[a] | 20.0 | 54.5 | 32.5 |
| Meat looks unappetizing | 8.0 | 17.4 | 24.5 |
| Don't know how to cook | 0.0 | 2.3 | 3.3 |
| Can't cook in microwave[a] | 12.0 | 20.5 | 7.9 |
| High in salt | 4.0 | 12.9 | 7.3 |
| Messy to cook | 8.0 | 3.8 | 5.3 |
| High in calories[a] | 4.0 | 31.8 | 19.9 |
| Contains artificial ingredients[a] | 32.0 | 44.7 | 35.1 |
| Not juicy, dried out | 8.0 | 25.0 | 25.8 |
| Eating too much not good for health[a] | 36.0 | 61.4 | 41.1 |
| Tough, not tender | 12.5 | 43.8 | 44.4 |
| Sample size | (25) | (132) | (151) |

[a] Proportions between those reporting eating fresh beef less and those reporting no change are significantly different ($\chi_\alpha^2 = 2.706$ for $\alpha = 0.10$).

**Table 3**

Percent Expressing the Variable as a Concern Among Survey Participants Who Reported Eating More, Less or the Same Fresh Beef - Ground Beef

| Variable | Percent Expressing Concern Among Those Who Reported Eating Beef | | |
|---|---|---|---|
| | More | Less | Same |
| | % | % | % |
| Too expensive | 4.0 | 14.4 | 11.3 |
| Don't like taste | 4.0 | 6.1 | 7.9 |
| High fat content | 64.0 | 71.2 | 69.5 |
| Hard to cook | 0.0 | 0.0 | 2.0 |
| Children don't like | 4.0 | 3.0 | 4.6 |
| Takes too long to cook | 0.0 | 0.8 | 2.6 |
| Too much waste | 12.0 | 22.0 | 14.6 |
| High cholesterol content[a] | 40.0 | 59.1 | 39.7 |
| Meat looks unappetizing | 12.0 | 25.0 | 23.8 |
| Don't know how to cook | 0.0 | 2.3 | 1.3 |
| Can't cook in microwave[a] | 0.0 | 7.6 | 2.6 |
| High in salt | 4.0 | 12.9 | 7.3 |
| Messy to cook | 12.0 | 9.8 | 11.9 |
| High in calories[a] | 8.0 | 35.6 | 21.2 |
| Contains artificial ingredients[a] | 32.0 | 50.0 | 39.7 |
| Not juicy, dried out | 8.0 | 12.1 | 18.5 |
| Eating too much not good for health[a] | 28.0 | 65.2 | 39.1 |
| Tough, not tender | 8.3 | 11.4 | 13.2 |
| Sample size | (25) | (132) | (151) |

[a] Proportions between those reporting eating fresh beef less and those reporting no change are significantly different ($\chi_{\alpha}^2 = 2.706$ for $\alpha = 0.10$).

**Table 4**

Percent of Survey Respondents in Each Beef Purchase Category
Reporting Eating Chicken and Fish (Other than Tuna)
Two or Less Times and Three or More Times During the Two-Week Period Prior to the Study

| Meat Product | Percent in Each Beef Purchase Category | | |
|---|---|---|---|
| | More | Less | Same |
| | % | % | % |
| Chicken | | | |
| Served two or less times in last two weeks[a] | 40.0 | 22.0 | 46.4 |
| Served three or more times in last two weeks[a] | 60.0 | 78.0 | 53.6 |
| Fish | | | |
| Served two or less times in last two weeks[a] | 92.0 | 70.5 | 88.1 |
| Served three or more times in last two weeks[a] | 8.0 | 29.5 | 11.9 |
| Sample size | (25) | (132) | (151) |

[a] Proportions between those reporting eating fresh beef less and those reporting no change are significantly different ($\chi_\alpha^2 = 2.706$ for $\alpha = 0.10$).

The results of relating beef purchasing patterns with age, education and total family income are reported in Table 5. Those indicating that beef has been eaten less in the previous year prior to July, 1987, are typically older than those indicating more or no change in beef usage. This result is likely due to the dominance of health-related concerns among those eating less beef. There are no significant differences present with regard to education and total family income between the less and same groups, at least for the education and income categories selected.

## Summary and Implications

While there is considerable evidence which supports the contribution of changing relative prices of meat to a price substitution effect from beef consumption to poultry consumption, little empirical evidence is available which identifies the influence of changing life style or nonprice, including health-related, factors on purchasing behavior for beef. The primary focus of this study was to relate beef purchasing patterns to concerns regarding roasts, steaks and ground beef expressed by survey respondents and to selected demographic characteristics. The concern variables included primarily health-related factors and a few palatability and convenience-related characteristics of beef products. Data were obtained from consumer questionnaires, administered to 310 individuals in the San Francisco Bay area during July, 1987.

**Table 5**

**Percent of Survey Respondents in Each Beef Purchase Group By Selected Age, Education and Total Family Income Category**

| Demographic Factor | Percent in Each Beef Purchase Category | | |
|---|---|---|---|
| | More | Less | Same |
| | % | % | % |
| Age | | | |
| 21-44 | 84 | 44.7 | 63.0 |
| 45-greater than 60 | 16 | 55.3 | 37.0 |
| Education | | | |
| High school or less | 16 | 28.1 | 25.2 |
| Greater than high school | 84 | 71.9 | 74.8 |
| Total Family Income | | | |
| Less than $40,000 | 44 | 37.7 | 45.2 |
| $40,000 and greater | 56 | 62.3 | 54.8 |
| Sample size | (25) | (132) | (151) |

[a] Proportions between those reporting eating fresh beef less and those reporting no change are significantly different ($\chi_\alpha^2 = 2.706$ for $\alpha = 0.10$).

The results of a cross-tabulation analysis suggest that several health-related factors including high fat content, high cholesterol, high in calories, contains artificial ingredients, and eating too much not good for health are expressed as concerns for roasts, steaks and ground beef more frequently by those eating less beef as compared to those eating more or the same. This result suggests the importance of differences in beef product concerns among consumers with different purchasing patterns for beef. Takes too long to cook for roasts was frequently expressed as a concern by all three beef purchase groups (more, less and eating the same amount). Can't cook in the microwave was expressed significantly more frequently (for steaks and ground beef) by those purchasing beef less as compared to the no change group.

The results generally suggest that chicken is served more frequently by those eating less beef than by those eating the same or more. Moreover, among the survey participants, beef more frequently was eaten less among the 45 and older age group as compared to the more and same amount groups. In addition, expense was identified as a concern for roasts and steaks among all three beef usage groups.

Expressed concerns for roasts, steaks, and ground beef are generally different among consumers with different purchasing patterns for beef. This result may have important implications for the beef industry. It appears to be important that the industry address the health issue as it relates to beef. Perhaps this issue should be more succinctly addressed in the industry's promotion campaign. Such efforts may be useful in satisfying the concerns of all consumers (those eating

less, the same, and more beef). For the consumer segment eating less, it may be necessary to provide a differentiated product, one which is perhaps leaner, in order to win back this group. For the segments eating more or the same, while they express concerns regarding health-related factors, their concerns generally are not translated into decreased purchases. This group simply may need only to be reassured that beef is a healthy food.

Such a recommendation is not altogether consistent with that suggested in a recent National Cattlemen's Association (NCA) report (*The National Provisioner*). The NCA report claims that the recent decrease in beef consumption can be blamed on the price advantages of competing meats, particularly poultry, rather than a change in consumer preferences. The report's summary indicates that beef consumer information programs could be helpful, but stressed that beef must become more cost competitive with fowl to regain market share (WSMA, 1989). The results of the study reported here suggest that the industry should be concerned about both the cost-competitive issue and health-related and changing life styles of consumers, particularly if the focus is toward alternative consumer beef purchasing segments, rather than consumers in aggregate. It seems reasonable to suggest that a combination of factors, price and nonprice, have recently affected the demand for beef and that these factors, in total, should be addressed by the beef industry.

Related to palatability, tough - not tender - was found to be less of a concern for steaks and roasts among those eating more beef than among those eating less or the same amount. Because there is probably no difference in eating quality of the beef purchased by the three groups, differences could be due to those in the group eating more beef knowing better how to prepare it or to the other two groups looking for justifications for eating less or the same amount.

The trend toward more convenience type products in the food industry has been targeted to suit the changing lifestyles among U.S. consumers. The beef industry needs to develop products which contain convenience characteristics. However, the study results do not as strongly identify the convenience factors, compared to the health-related issues, in affecting purchasing patterns. Such a finding is likely due to the limited number of convenience factors considered in the study, as compared to the health factors. Further study of the impacts of health and convenience factors on purchasing patterns of beef, and cuts of beef, is warranted (Capps, 1989).

The results of this study provide a benchmark for comparison with analyses of more current survey data. More recent data would provide insights into changes in factors influencing alternative consumer purchasing patterns for beef and perhaps the influence of industry promotion campaigns. Moreover, data from other locations would provide evidence of whether or not factors found important among consumers with different consumption patterns for beef are consistent across locations.

Finally, it is important to identify factors responsible for changing consumption patterns for consumers with different purchasing patterns for beef, rather than aggregate beef consumption. Only then can specific beef merchandising practices be targeted to specific consumer segments, which may be more effective than, e.g., a broad promotion campaign.

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