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PRICE AND NON-PRICE FACTORS AFFECTING DEMAND FOR MEATS: EMPHASIS ON BEEF

Wayne D. Purcell
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Virginia Tech

November 1993

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INTRODUCTION

The demand problems for beef that began in the late 1970s have been widely documented (Braschler, Chavas, Choi and Sosin, Moschini). Earlier differences of opinion on the "why" of the demand problems were giving way to a consensus by the latter half of the decade of the 1980s. Analysts that had earlier suggested that the variability in per capita consumption of beef could be explained by income and changes in relative prices were starting to change their minds. Changes in tastes and preferences were being identified as a possible reason for the decreases in demand.

There are a number of potential "demand shifters" that can increase or decrease demand. A particular level of demand is defined for a certain and fixed set of conditions, called the *ceteris paribus* conditions. More specifically, the schedule of quantities a rational consumer will take at alternative prices--and this entire schedule is demand--is developed for constant and fixed levels of consumer income, fixed and constant prices of other products, and a constant preference pattern. When any one of these conditions are not met, then the entire demand schedule can shift. The three conditions then become demand shifters. Changes in consumer incomes, for example, can shift demand. At any product price, the consumer who has received an increase in income will, for most products, tend to take more of the product. The schedule might change as follows:

After the income increase:

<u>Price</u>	<u>Quantity</u>
\$ 5.00	32
6.00	26
7.00	21
8.00	17
9.00	14
10.00	12

Before the income increase:

<u>Price</u>	<u>Quantity</u>
\$ 5.00	30
6.00	24
7.00	19
8.00	15
9.00	12
10.00	10

After the income change, the price-quantity plot that can become a graphical expression of the demand schedule changes. In Figure 1, the demand curve shifts from D_1D_1 to D_2D_2 . This shift, which constitutes a change in the level or strength in demand, was prompted by the change in income. One of the *ceteris paribus* conditions changes, and that change in income becomes a demand shifter.

Changes in prices of other products can also be demand shifters. Beef and pork are substitutes in most consumers' buying patterns. A price-quantity schedule for beef, the demand for beef at any particular point in time, is developed for constant prices of pork. If pork prices change significantly, then

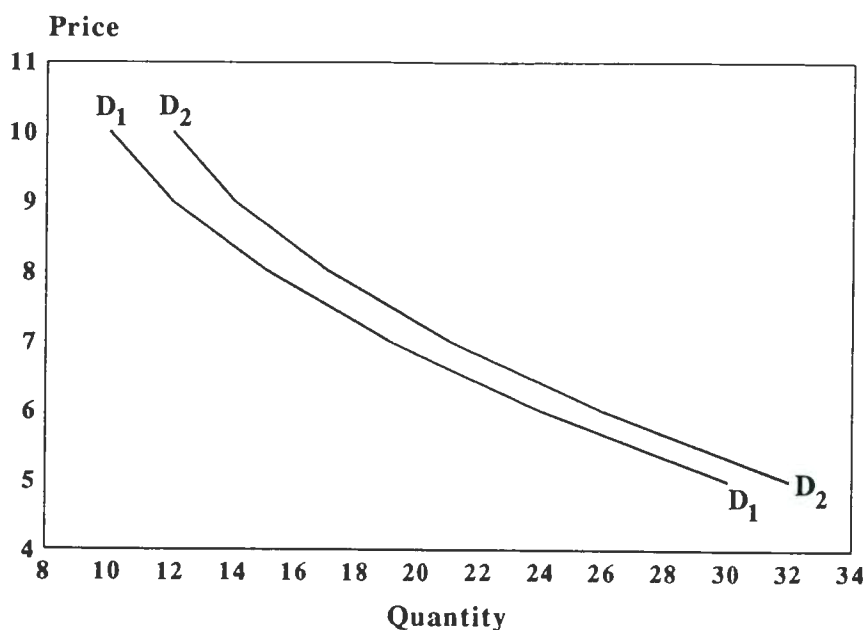


Figure 1. Demonstration of the Demand Schedules for Different Levels of Consumer Income

the demand for beef will change. At any particular price of beef, the quantity taken of beef can and probably will change because the price of an acceptable substitute has changed. Assume, for example, a major cyclical supply expansion in pork drives pork prices down 15-20 percent compared to year-earlier levels. Now, at a particular price for a beef roast, the pork chop is a more formidable competitor. Consumers will buy more pork at the lower price and will tend to buy less beef. Figure 2 shows demand for beef before the decrease in pork prices (D_1D_1) and after the decrease (D_2D_2).

Analysis of demand can be complex. Sophisticated econometric models are often involved. But behind the complexity, certain very basic relationships are always involved. If the intent is to explain variation over time in the quantity of beef, usually measured as per capita consumption, the analytical model will involve some mathematical version of the following relationship:

$$Q_B = f(P_B, I, P_{PROD})$$

where

Q_B = quantity measure of beef,

P_B = price of beef,

I = consumer incomes, and

P_{PROD} = price of other products that are either complements to, or substitutes for, beef.

The "taste and preference" shifter is not included among the explanatory variables, the variables in the ()s to the right of the equal sign. Tastes and preferences are not quantifiable. If there are changes in Q_B over time that are not explained by changes in P_B , I , and P_{PROD} , then the model as specified above cannot capture them directly. There is no preference measure to allow the beta or slope coefficient to

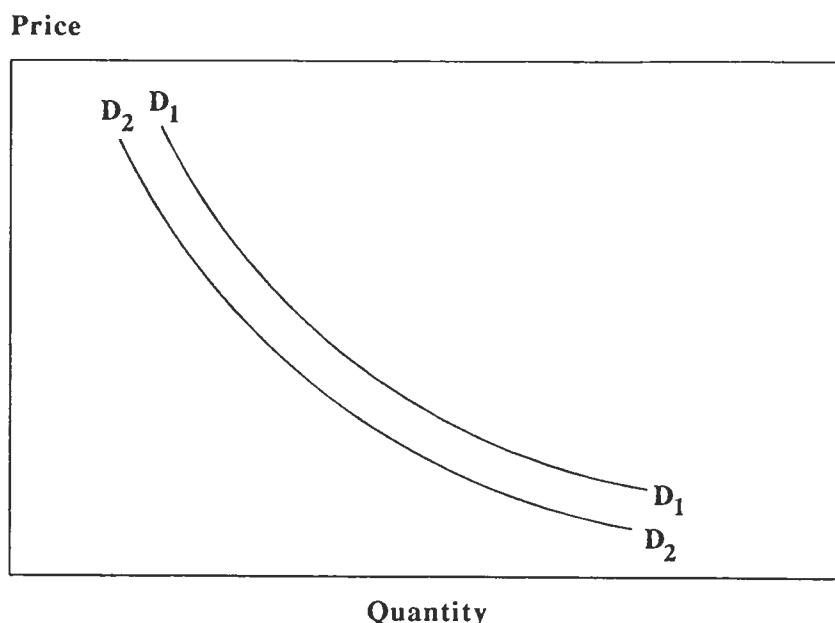


Figure 2. Demonstration of a Shift in Demand for Beef Due to a Decrease in Pork Prices

capture the part of the change in Q_B that is due to preference shifts. Instead, there will be large errors, the difference between actual Q_B and the model predicted Q_B . The errors will also tend to show some time-related pattern rather than being random around zero. Something is missing from the model, and the "something" may well be a shift in the preference pattern. If the model is expressed in price-dependent form (which is sometimes of more interest), then the expression is $P_B = f(Q_B, I, Q_{PROD})$ where Q_{PROD} will typically include per capita consumption of competing products such as pork and poultry. Again, if there are large prediction errors and/or errors that show a time-related pattern for the last several years (such as all being negative or all positive), then something is missing from the set of explanatory variables. It may be a taste or a preference change that is influencing price.

All of this needs more explanation. That explanation, as it is developed, will show why this particular research effort focused attention on the convenience in preparation and the time required in preparation of beef cuts.

Some Basic Analytics

Figure 3 documents the demand problems for beef. It shows deflated or inflation-adjusted prices of Choice beef at retail on the vertical axis, per capita consumption in retail weights on the horizontal axis. The yearly prices since 1960 have all been adjusted for inflation to a 1982-84 base period, a necessary step if one is to examine the true demand-side dimensions of the situation. Until the influence of overall price inflation is removed, any year-to-year change is a mixture of price inflation and changes due to demand and/or supply shifts.

After the late 1970s, the general movement in the yearly plots has been down or down and to the left. Using 1979 as a reference point to illustrate, note that price declined over 30 percent from 1979

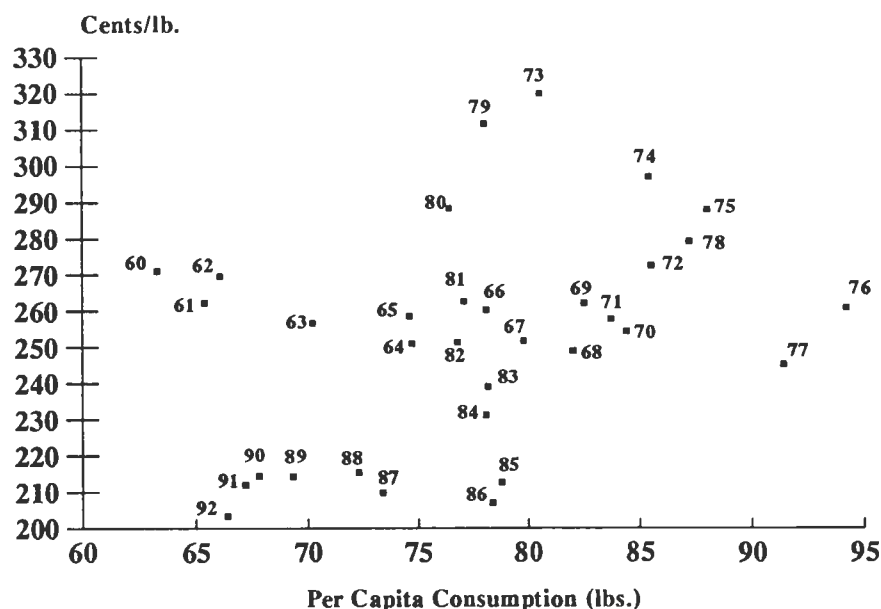


Figure 3. Per Capita Consumption and Deflated Retail Price for Beef (CPI, 1982-84=100), 1960-92

through 1986 with per capita consumption, which essentially measures per capita supplies, roughly constant. Starting in 1987, a different pattern developed. The inflation-adjusted prices were maintained into the 1990s, but only because the per capita offerings were being reduced. The industry ran out of ways to maintain per capita offerings from a declining cattle inventory by increasing production per cow, and per capita offerings, and therefore per capita consumption, declined.

Research estimates the demand elasticity for beef at retail is near $-.67$. This means that a 2 percent change in quantity along a given demand curve will generate a 3 percent change in price in the opposite direction. Given the scales on the axes in Figure 3, this means a negatively sloping demand curve of about 45 degrees in slope passed through the 1979 price-quantity coordinate. Clearly, to reach 1980, 1981, and all the way through to 1992, the demand curve would have to move down and to the left. The slope of the curves would change slightly, due to changes in the price and quantity levels which influence percentage calculations, but the basic pattern holds.

Without indicating the causal forces, the graph suggests that beef demand has decreased each year since 1979. Accepting this apparently inevitable and data-driven conclusion raises the immediate question of "why."

Recalling the earlier general model formulations and related discussion, there can be a number of reasons. Declines in consumer incomes would cause demand for beef to decline. Lower relative prices of substitute meats, especially pork and chicken, would also cause demand for beef to decline. If the answer cannot be found in these "demand shifters," then the taste and preference shifter will emerge as a possible reason.

Table I shows retail beef, pork, and chicken prices since 1975. In the case of pork and chicken (whole broilers), the table also shows the ratio of the prices with beef. For example, the column headed Beef/Broiler shows the ratio formed by dividing, for each year, beef prices by broiler prices. For these ratios, the nominal or observed prices are used. If each price series were divided by CPI to "deflate" the prices, the ratio would not change since each price series is being adjusted by the same CPI series. Thus, deflating is not needed here.

Also shown in Table I is per capita disposable income adjusted for inflation. The "real" incomes are the relevant ones. A consumer who gets a 5 percent pay raise has less "real" income to spend if prices of everything go up 10 percent. An increase in real income should increase demand for beef, a decrease would decrease demand for beef.

All the prices have trended higher over time. But if lower prices of pork or chicken is the reason for decreased beef demand, *then those prices would need to be going down relative to beef prices*. But the data show this is not the case, especially for broilers. The widely employed assertion that beef has lost market share because beef prices have gone up relative to chicken is not supported by the data. During much of the decade of the 1980s, the ratio of beef-to-broiler prices was decreasing, not increasing. The ratio would average above 3.0, near 3.3, in the years around 1980. It was at 2.87 as recently as 1989, and has only moved back above 3.0 in the last 3 years.

In the case of pork, the ratio is essentially constant with no major change. If there is any significant movement, it has been lower relative to the levels surrounding 1980.

The demand literature indicates it is relative prices that drive consumer behavior. To illustrate the point, assume ground beef costs \$1.50 per lb. and chicken quarters cost \$1.00 per lb. If ground beef prices increase 5 percent, the price becomes \$1.575. The price has increased 7.5 cents. If chicken prices go up 6 percent, price is now \$1.06, a 6-cent increase. The ratios are $\$1.50/\$1.00=1.50$ and $\$1.575/\$1.0666=1.48$. The beef price went down relative to chicken, even though the increase in prices was larger for ground beef. If we assume a typical consumer was buying 3 lbs. of ground beef and 2 lbs. of chicken per week at the \$1.50 to \$1.00 comparisons, he or she would tend to move to more beef and less chicken at the new prices because beef prices have declined in relative terms. But that is not what happened during the 1980s. As chicken prices went up relative to beef, especially through 1989, chicken consumption increased from about 47 lbs. in 1980 to nearly 77 lbs. in 1992. Beef consumption was near 75 lbs. per capita in 1980 and was below 67 lbs. in 1992.

The ratios of beef/pork prices, as noted, show little change. Pork prices have not changed in any major way relative to beef prices, and the ratios have varied in the 1.3 to 1.5 range since the early 1980s. Relative to pork prices, beef prices peaked in 1980 at a ratio near 1.7. There is no basis here to argue beef demand was decreased by lower relative pork prices.

It does not appear lower relative prices of substitute meats could have caused the declines in beef demand. Neither pork nor chicken prices have declined significantly relative to beef. Indeed, chicken prices—even for whole birds—increased relative to beef during much of the 1980s.

Consumer incomes, in real terms, dipped in the early 1980s, especially 1980-82, during the years of 10 percent or higher price inflation. Salaries and wages did not increase by 10 percent, so real incomes or "buying power" went down. That dip could have had something to do with the early demand-side problems, but incomes staged a strong recovery later. The trend was solidly higher throughout the 1980s and into the early 1990s, with the only year-to-year decrease coming in 1990. A long history of

Table 1. Selected Indicators of the Demand Shifters for Beef Demand

Year	Beef Price cents/lb.	Pork Price cents/lb.	Broiler Price cents/lb.	Beef/ Pork	Beef/ Broiler	Real Per Capita Income (\$)
1975	154.8	134.6	64.3	1.15	2.41	9,830
1976	148.2	134.0	61.1	1.11	2.43	10,092
1977	148.4	125.4	61.9	1.18	2.40	10,328
1978	181.9	143.6	66.5	1.27	2.74	10,678
1979	226.3	144.1	67.7	1.57	3.34	10,587
1980	237.6	139.4	71.9	1.70	3.30	10,221
1981	238.7	152.4	73.7	1.57	3.24	10,168
1982	242.5	175.4	71.6	1.38	3.39	10,075
1983	238.1	169.8	72.8	1.40	3.27	10,374
1984	239.6	162.0	81.4	1.48	2.94	10,845
1985	228.6	162.0	76.3	1.41	3.00	11,013
1986	226.8	178.4	83.5	1.27	2.72	11,394
1987	238.4	188.4	78.5	1.27	3.04	11,576
1988	254.7	183.4	85.4	1.39	2.98	11,936
1989	265.7	182.9	92.7	1.45	2.87	12,248
1990	281.0	212.6	89.9	1.32	3.13	12,022
1991	288.3	211.9	88.0	1.36	3.28	12,141
1992	284.6	198.0	86.9	1.44	3.28	12,335

research has shown beef to be a normal good, a food product for which the income elasticity is positive and significantly different from zero. This means, at constant prices for beef and other products, that consumers will buy more beef as their incomes increase. But that did not happen in the 1980s: In the presence of rising incomes, both quantity and prices for beef declined. Often, smaller quantities could be moved into consumption only at lower prices (1990 through 1992 in Figure 1).

It appears that changes in consumer incomes were not the source of the "demand shift." Changes in incomes have been largely positive, which would tend to increase the demand for beef, not decrease it.

Another approach to sorting out the issues is to model either quantity or price to see which demand shifters appear to be at work. Table II reports the results of a relatively simple model designed to explain changes in inflation-adjusted beef prices over time. The model is of this general form:

$$P_B = f(Q_B, Q_{PORK}, Q_{BROIL}, I, Q_{DUM}, DUM_i)$$

where

- P_B = deflated price of Choice beef at retail (cents/lb.),
- Q_B = per capita consumption of beef (lbs.),
- Q_{PORK} = per capita consumption of pork (lbs.),
- Q_{BROIL} = per capita consumption of chicken (lbs.),
- I = deflated per capita disposable income (\$),
- Q_{DUM} = quarterly shift dummies to account for seasonal patterns in price not accounted for by the other explanatory variables, and
- DUM_i = a shift dummy for year i which allows the dependent variable P_B to shift for reasons other than the other demand shifters in the model.

Only 3 of the 4 quarterly dummies can be included for statistical estimation reasons. All data are quarterly average data from 1960 through 1992.

The results shown in Table II are informative. Starting in the late 1970s, the "shift variables," such as DUM_{77} (where $i=1977$), emerge as statistically significant explanatory variables. In general, the larger the t-ratios, the more significant is the variable. A t-ratio of about 2.0 in absolute value is needed to meet widely used levels of "statistical significance." This pattern of statistical significance continues through the 1980s and through 1992, with the coefficients becoming more negative. *The impact of the competing meats, consumer income, and a seasonal factor are in the model.* Still, beef prices declined for reasons not attributable to the traditional demand shifters of income and the impact of substitutes. The increasingly negative coefficients give a measure of the magnitude of the declines for reasons other than the impacts of changes over time in consumer incomes and changes in the relationships between and among beef, pork, and poultry as competing meats. The overall model intercept is near 336 cents per lb. The coefficient on DUM_{92} , the shift variable for 1992, is -172. This means the "demand surface" has declined from a level of \$3.36 per lb. to the equivalent of \$1.64 per lb. ($\$3.36 - 1.72$) for reasons not explained by the economic forces and the seasonal factors in the model.

If one assumes the model specification is a simple but reasonable expression of the basic economic relationships present, and it is, then the unexplained shifts have to be due to a preference change. The critic would object to this--arguing you have to include some measure of preferences in the model to reach this conclusion. If that measure were labeled $PREF$, a negative and statistically significant coefficient on $PREF$ would be required to reach a "preference change" conclusion.

The problem, of course, is that preferences are not directly measurable as indicated earlier. Some analysts have incorporated proxy variables such as a measure of the times cholesterol issues are mentioned or covered in articles in widely read magazines (Brown and Schroder). Ward incorporated concerns about fat and cholesterol into his modeling of beef demand. The "cholesterol variable," for example, trends higher during the 1970s and 1980s, but does show variability across time. If incorporated into the model specification above, the coefficient would be negative reflecting the negative correlation between an increasing "cholesterol concern" and the downward trending deflated beef prices. The yearly shift dummies, especially DUM_{79} -- DUM_{92} , would probably no longer be statistically significant. The shifts they measured would have been picked up by the cholesterol variable.

Table II. Statistical Properties, Coefficients for a Price Model for Beef, 1960-1992 Data

Dependent Variable	P_B		
Standard Error of Regression	8.2117		
R-squared	.93422		
Adjusted R-squared	.92021		
F Statistic (23,108)	66.6831		
Probability Value for F	.00000		
Mean Squared Error	7282.70		
Durbin-Watson Statistic	1.5678		
Variable	Coefficient	T-Ratio	Prob > T
INTERCEPT	335.95	18.045	.000
Q_B	-11.565	-10.553	.000
Q_{BROIL}	-2.384	-1.129	.260
Q_{PORK}	-3.295	-4.121	.0001
I	.258	9.599	.000
DUM77	-31.704	-6.952	.000
DUM78	-17.737	-3.412	.001
DUM79	-.759	-.101	.883
DUM80	-16.545	-2.168	.031
DUM81	-40.875	-5.075	.000
DUM82	-54.280	-6.305	.000
DUM83	-67.675	-7.850	.000
DUM84	-87.438	-9.397	.000
DUM85	-102.113	-10.079	.000
DUM86	-120.795	-11.387	.000
DUM87	-134.705	-10.331	.000
DUM88	-140.661	-9.942	.000
DUM89	-155.730	-9.410	.000
DUM90	-154.919	-8.554	.000
DUM91	-162.092	-8.421	.000
DUM92	-171.884	-8.599	.000
QDUM2	1.013	.361	.718
QDUM3	5.221	1.961	.050
QDUM4	-1.895	-.886	.381

Is this a better explanation, a better documentation that preferences have shifted? Perhaps, but it is important to recognize that any variable that trends up or down will pick up the shifts in price that have not been explained by the economic factors in the model. Ward also incorporated a time trend variable in the model he developed to measure the impact of check-off funded advertising on beef prices (Ward). The time trend variable is used with the income and consumption variables shown in Table II above and, quite predictably, the coefficient is negative. The time variable picks up the downward shifts in price that the DUM77-DUM92 variables pick up in the model above. But time trend variables can cause other problems. In Table II, the t-ratio for the Q_{BROIL} variable is just above 1.0 in absolute value.

It takes, as noted above, about a 2.0 level in absolute terms for the variable to be at acceptable levels of statistical significance. The model can be criticized on these grounds. Conceptually, broilers should make a significant difference since beef and broilers are substitutes in many consumers' buying patterns. Yet, the Q_{BROIL} measure is not statistically significant. But a number of the model specifications reported by Ward also appear to have problems. There are problems such as lack of statistical significance not only for broilers but also for pork. It would appear the trend variable in Ward's work might be picking up some of the influence that might more correctly be attributed to pork or chicken. The important point is that virtually any series that trends either up or down will pick up the part of the price changes not explained by changes in income, the measures of consumption, and the seasonal factors. If "A" is used and it trends up from 1960-1992, then the coefficient will be negative since the relationship with the declining real beef prices would tend to be inverse or negative. If "B" is used and it trends down, then the coefficient will be positive. In this sense, using DUM77-DUM92 would appear to be superior. The "shift variables" pick up the part of the beef price changes over time not attributed to the income, consumption, and seasonal measures and allow the magnitude of the shift for each year to be measured. Obviously, prices continued to fall from 1977 through 1992 for reasons not explained by the traditional "economic" shifters.

The interpretations are complex, but the model results are consistent with the graphical picture in Figure 3 and the information in Table I. There is no logical and plausible base on which to argue that all the shifts in beef demand--whether measured by decreases in price or in per capita consumption as dependent variables in the models--can be explained by the so-called economic demand shifters of incomes and price relationships across products or consumption patterns. Something else is at work, and the only thing left is the preference patterns of consumers.

This inference is important. It refutes the conclusion by Johnson, *et al.*, that the only important issue in the competitive position of beef is price. Their conclusion that the attention of the industry should be focused predominantly on decreasing the costs of production (to allow consumer prices to decline) is incorrect and is dangerously misleading. There is broad evidence to support an inference that non-price dimensions are also important determinants of changed buying behavior and of the downward shifts in demand for beef.

FORCES THAT DRIVE DEMAND

Two earlier analyses, also receiving financial support from the Virginia Cattle Industry Board, documented price and non-price factors that influence buying behavior for beef (Purcell, June 1991; Purcell, April 1993). The June 1991 report was based on a survey of 2,000 randomly selected Virginia households, and it clearly identified cholesterol, fat levels, quality, and convenience/time in preparation as non-price attributes that are important to many consumers. In general, the relative importance of these measures versus price as determinants of buying behavior increased for the better educated, higher income, and younger consumers.

The April 1993 report investigated further. A new 2000-household random sample was drawn, and from this group, 100 households were selected on the basis of their expressed willingness to answer detailed written and/or phone questions about their buying behavior for beef. Figure 4 summarizes some of the important findings. The respondents were asked to rate, on a scale of 10=very important and 1=not important, the importance of several product attributes. Taste (a proxy for eating quality), fat levels, cholesterol levels, and ease in preparation all rated as high as price in the responses.

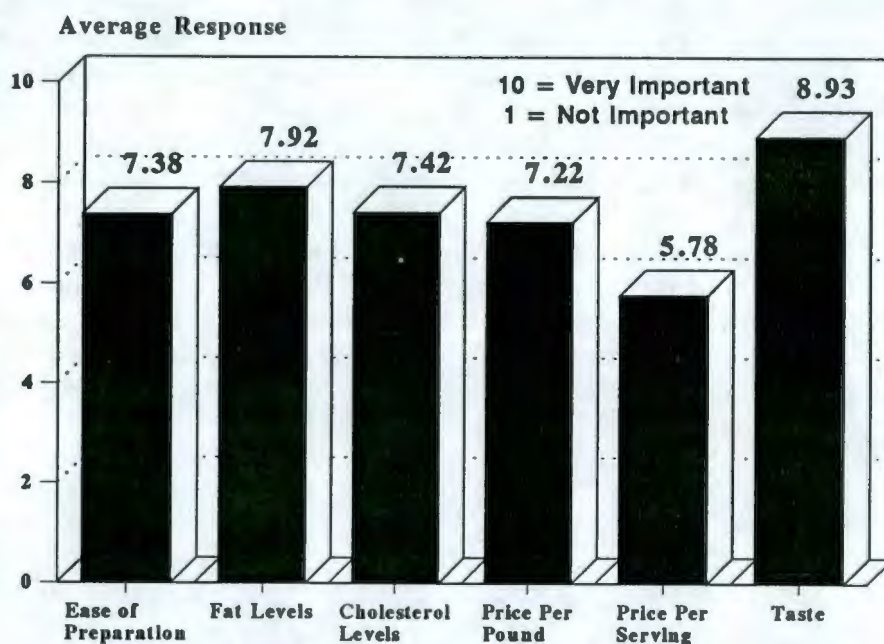


Figure 4. Importance of Various Criteria in the Selection of Beef Products

This set of responses, and responses to related questions, prompted a research proposal to further investigate the issue of ease of preparation. Responses reported in the April 1993 report had shown (1) the use of microwaves is increasing, an indirect measure of the interest in convenience, (2) leisure time is decreasing, and (3) the "food preparer" in the family is receiving less encouragement to spend time preparing food. Figure 5 shows response to a question asking whether family members offer encouragement (rating=10) or no encouragement (rating=1). The level of encouragement appears to be decreasing, again attesting to the probable importance of convenience in preparation.

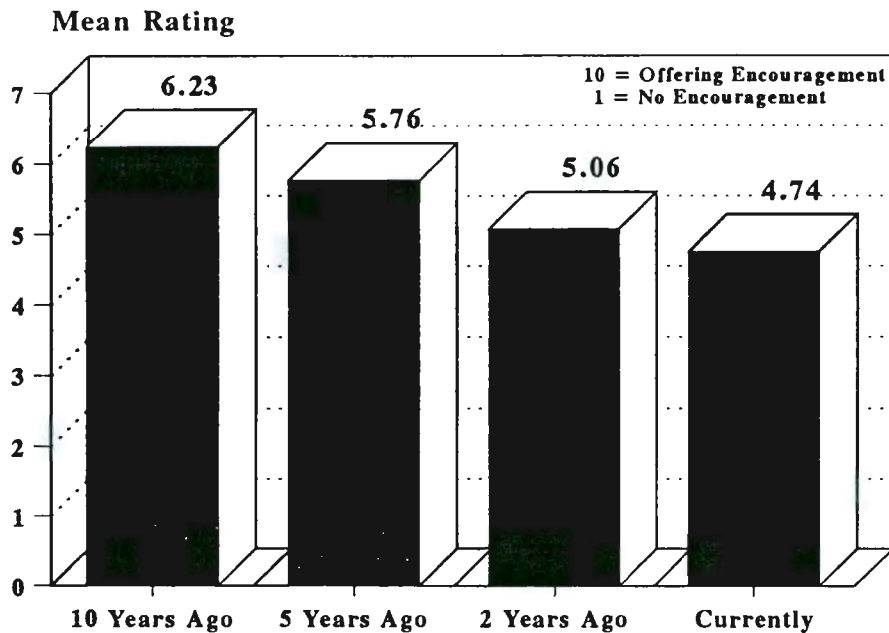


Figure 5. Encouragement from Family Members in Spending Time on Food Preparation

The fat level and cholesterol issues have received attention in the literature and in many conferences and meetings. Less attention has been paid to the "convenience" issue. It is, in the final analysis, a combination of price and value in the product offering that will drive buying behavior. Convenience or the perception of how much time and effort will be required to prepare the entree will be a potentially important determinant of how much "value" is attached to the product offering. The remainder of this report deals with survey results and analysis of the issue of convenience and time in preparation of meats, with an emphasis on beef.

THE SURVEY AND RESULTS

The survey instrument employed is shown in Appendix I. Surveys were sent to the 100 families surveyed in the research reported in April of 1993 and to an additional 2,000 randomly selected Virginia households. Responses were received from 68 of the 100 (only 90 addresses were still valid) and from 283 families in the 2,000-family random group. The responses were examined separately and were then merged when no significant differences were found to be present.

Appendix II shows histograms of the socio-economic characteristics of the total of 351 families. Average age of respondents was 48.9 years, with 15.2 years (where 12=high school) of education. Pre-tax gross family incomes averaged \$61,600, and about one-fourth of the respondents were retired. There were a number of two-worker households. Of 331 responses, 68 percent indicated family meals are stressed, 20 percent follow an on-the-go lifestyle, and 12 percent are seldom involved in "family meals." Overall, the set of respondents appears to represent Virginia households and would appear to offer broad insights on buying behavior and the importance of convenience.

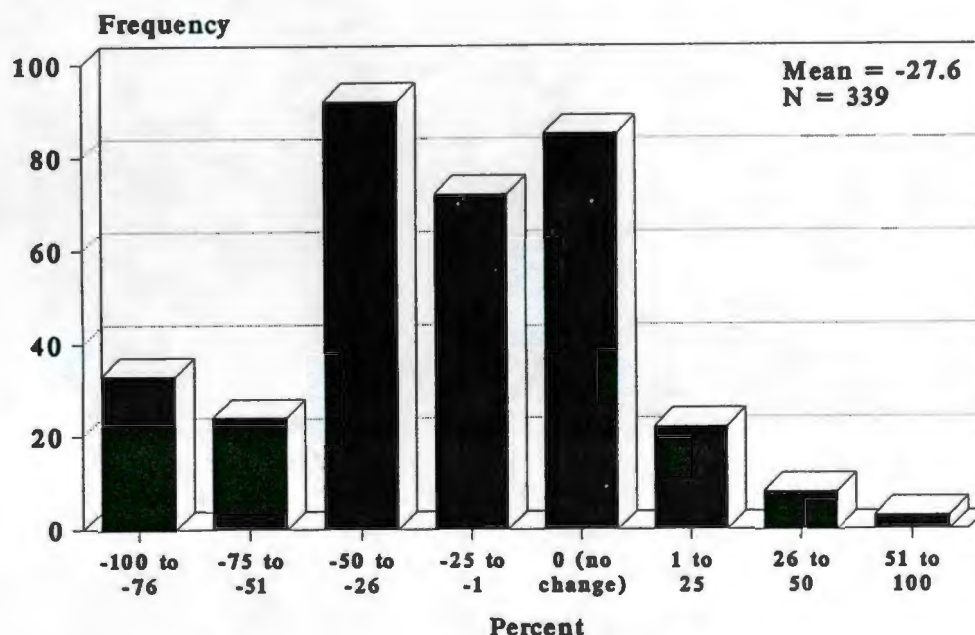
In this section, the essence of the questions from the survey is repeated and a histogram of the responses is shown. Average responses and the number of responses (N) are typically shown on the histograms.

Correlations between the responses and dimensions of the socio-economic profiles of the respondents--age, income, education, lifestyle, etc.--are shown. Consistent with the earlier research efforts, a P-Level of .20 is used as a cut-off point. The P-Level refers to a statistical probability and, in layman's terms, any P-Level above .20 says the possibilities of the measured correlations being just a chance phenomenon are more than 20 of 100. Said another way, the correlations that are (1) relatively large in absolute value (they can be negative or positive), and (2) have a small P-Level (close to 0) are the more important ones.

Examination of the correlations will show which respondents are at the extremes. Knowing how the older, or better educated, or higher income consumers responded if they were different from the mean or average response will help tailor market and product development programs to the socio-economic profile of consumers in a particular market area.

Changes in Use

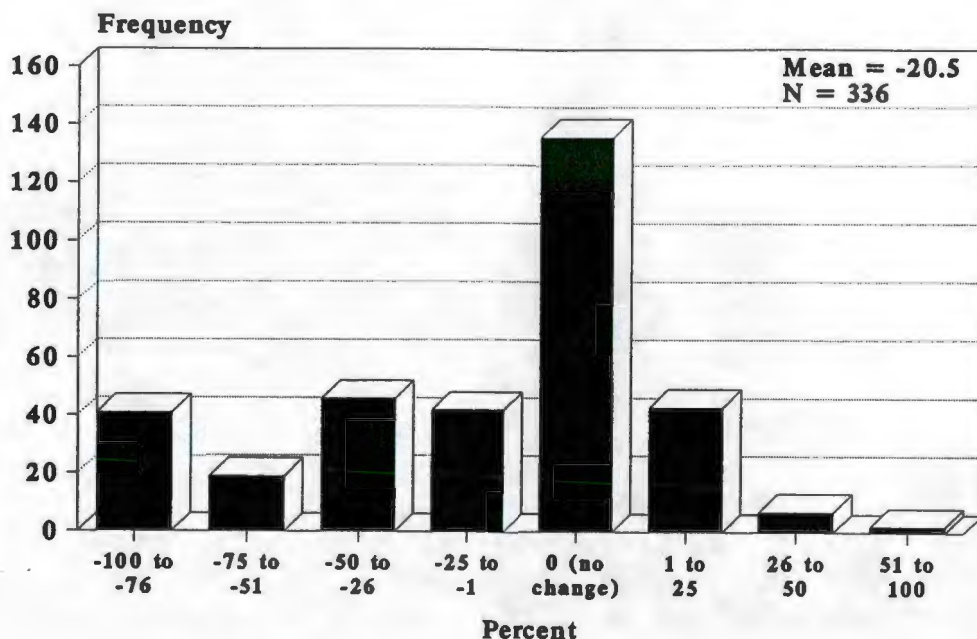
Question: *How has your family's use of beef changed across the past 10 years?*



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.070	.197	339
Education	-.171	.002	331
Income	-.112	.046	319
Works part-time outside home	-.075	.172	337
Does not work outside home	.097	.074	338
No. in family	.080	.144	337
No. adults in family	.096	.087	319
Emphasis on family meals	.102	.069	319
Meals on-the-go lifestyle	-.141	.012	319
Use of microwave for dinner	-.125	.023	332

Perhaps the most significant finding is the mean response of -27.6 percent. The correlations show what type of consumer tended to be even more likely to reduce use of beef. The negative correlations, for example, would suggest a consumer that would have reduced usage even more than the -27.6 percent average response. There are negative and highly significant correlations associated with education, with income, with families that see themselves following a pattern of "meals on-the-go," and with families that use the microwave significantly. Positive correlations are shown for the food buyer that does not work outside the home and for the larger families. *There is support here for the hypothesis that preparation time and convenience is an issue in buying behavior. It is especially important for the higher income and better educated consumer who is inclined to want to use the microwave and to have a more mobile lifestyle.*

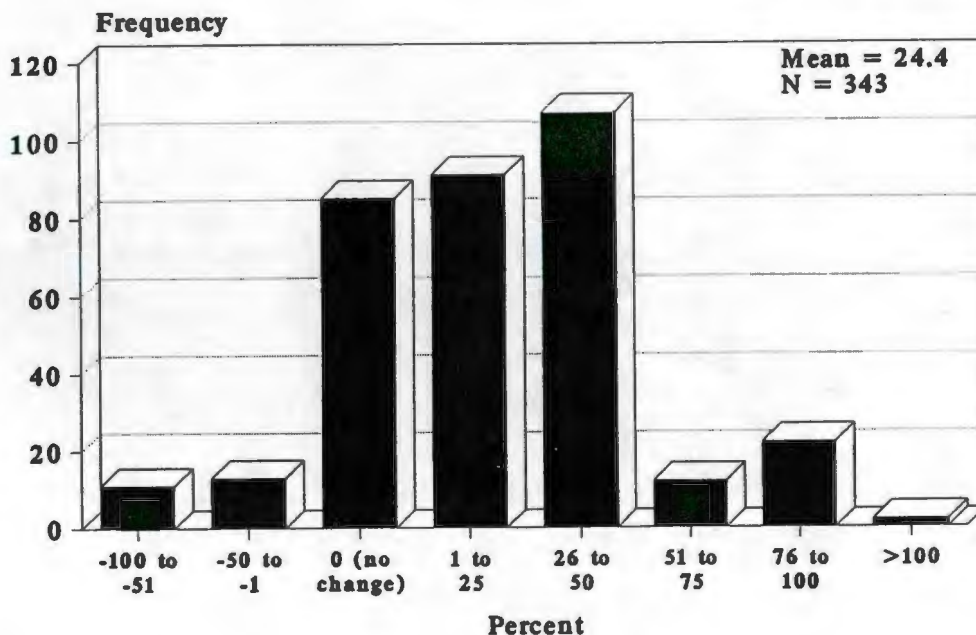
Question: *How has your family's use of pork changed across the past 10 years?*



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.115	.036	336
Education	-.121	.028	328
Works full-time outside home	-.082	.136	335
Does not work outside home	.093	.089	335
No. in family	.082	.137	334
No. children in family	.079	.150	331
Meals on-the-go lifestyle	-.117	.038	317
Use of microwave for lunch	-.079	.154	328

The mean response was -20.5 percent. This finding tends to suggest that the sample of respondents has reduced usage of pork somewhat more than the average consumer. Per capita consumption of pork has been relatively stable across the past 10-15 years. Somewhat similar to the findings in beef, negative correlations are shown for age, education, food buyers who work full-time, and a family style that features a mobile lifestyle (meals on-the-go and tend to use the microwave). These consumers tended to show bigger decreases than the -20.5 average answer. The families with the food preparer who does not work outside the home and the larger families show positive correlations, suggesting that these families have reduced consumption of pork less or possibly even increased their usage. The histogram shows a relatively large number of families, something over 40, that have increased consumption from 1-25 percent across the past 10 years. It would be these larger families with the food preparer not working outside the home that would tend to be filling these categories. *The correlations show the same pattern observed for beef. Older consumer, better educated consumers, and consumers with on-the-go lifestyles have reduced usage of pork more than average.*

Question: *How has your family's use of chicken changed across the past 10 years?*

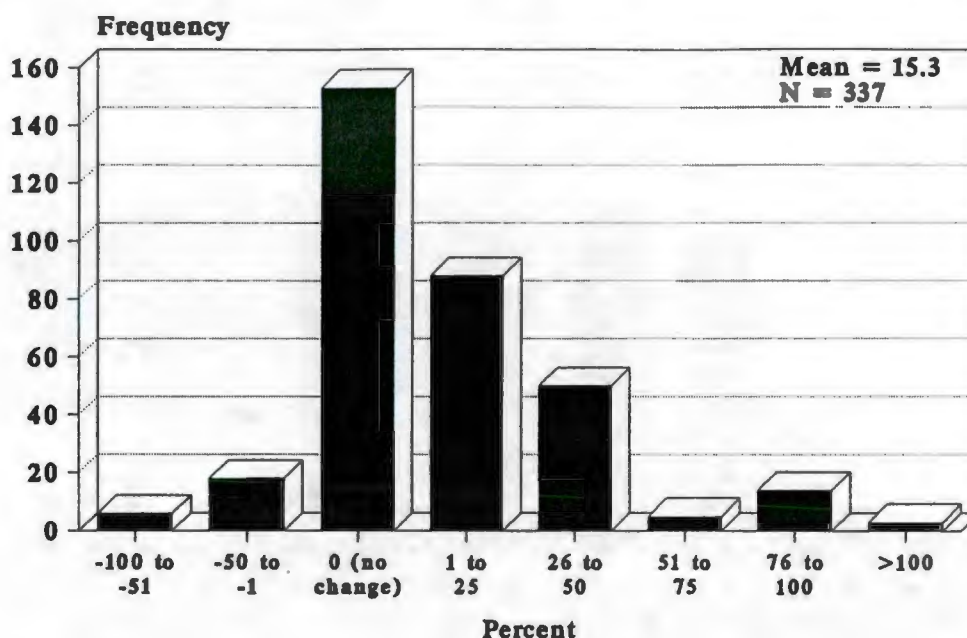


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
No. children in family	.073	.182	338
Use of microwave for dinner	.129	.018	336

The average response is a 24.4 percent confirming the widely recognized trend for increased consumption of chicken. Very few have reduced consumption. The largest frequency in the histogram shows an increase of 26-50 percent, suggesting that a substantial number of respondents have increased use of chicken in a highly significant way. The mean finding is perhaps the most important finding here. There are no statistically significant negative correlations and only two positive correlations that are statistically significant given the selected .20 cut-off level. Arguably the most important one of these is the correlation for those families who tend to use the microwave for dinner, with a relatively large .129 correlation and a highly significant relationship with the P-Level at .018. This finding suggests that those families that are tending to prepare evening meals in the microwave are even more likely to have increased use of chicken across the past 10 years.

These findings are in direct support for the hypothesis that convenience in preparation is a factor in buying behavior in meats. The use of chicken which tends to be more nearly microwaveable and has a wider of variety of offerings in the frozen entrees, which are designed for microwave use, suggests that convenience is important to a large number of the responding families.

Question: *How has your family's use of turkey changed across the past 10 years?*

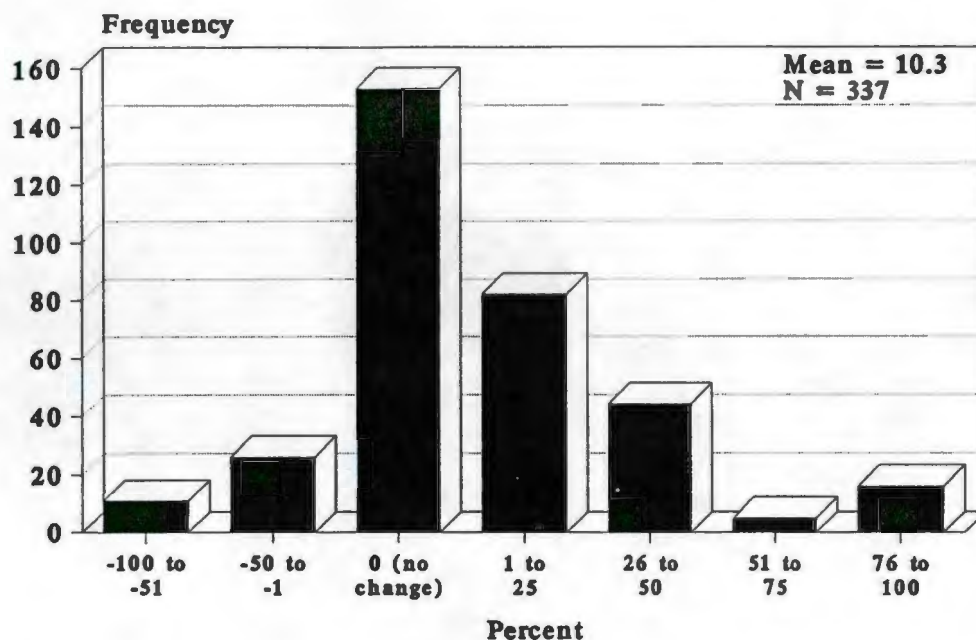


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Income	.117	.037	315
No. full-time empl. in family	.075	.174	327
Emphasis on family meals	.099	.078	318
Meals on-the-go "plus" lifestyle	-.107	.057	318
Use of microwave for dinner	.087	.114	330

The mean response was 15.3 percent, indicating some increase in usage but the magnitude of the average response is not quite as high as was the case for chicken. The most frequent response here was 0 or no change as is shown by the histogram. Turning to the correlations, the only negative relationship was for the family that follows a "meals on-the-go plus" lifestyle. Examination of the survey question indicates that these families seldom plan and organize family meals, where everyone sits down and eats together. What this negative correlation suggests is that those families who fit this lifestyle would have been less inclined to increase usage of turkey across the past 10 years. This finding may be saying something about the convenience of turkey or the inclination for families that meet this lifestyle to choose turkey as a main entree in meals however they might be prepared.

Positive correlations show up for income, for the families with more full-time employees in the family, families with an emphasis on family meals, and families that tend to use the microwave for dinner. This suggests that turkey, to some families at least, fits the niche of a relatively easy to prepare meal, with the microwave being employed, but is nonetheless a feature for family-type meal settings. The positive correlation on income is highly significant in a statistical sense and suggests possibly that the higher priced cuts of turkey, such as roll turkey breast or other further processed and higher priced cuts, might be finding an increased level of acceptability among some of the higher income consumers. *Turkey appears to fit preferences of families with emphasis on family meals, and the "profile" of the consumer looks different than that for chicken.*

Question: How has your family's use of seafood changed across the past 10 years?



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Income	.102	.070	316
Year retired	.177	.142	70
Works full-time outside home	.102	.061	336
Does not work outside home	-.101	.065	336
No. in family	-.081	.139	335
No. adults in family	-.122	.029	319
Use of microwave for lunch	-.075	.175	330

The mean response to the question was 10.3 percent, suggesting an overall tendency to use more seafoods. Some industry observers have observed that availability of a consistent quality of seafood might be the only major restraint in terms of increased usage.

Correlations show that higher income consumers, food preparers that work full-time outside the home, and those decision makers who are more recently retired tend to opt for seafood. The positive correlations on income and working full-time outside the home are much more significant in a statistical context. Negative correlations show up for families where the food preparer does not work outside the home (this may be suggesting an income constraint when there is only one wage earner), the larger families, number of adults in the family, and the tendency to use the microwave for lunch. *Perhaps the most significant finding here is that the larger families with presumably a single wage earner and families in which the food preparer does not work outside the home tended to increase usage of seafood less than the average respondent or even decreased their usage. As suggested, this may be reflecting an income constraint.*

Question: *How has your family's use of beef, pork, chicken, turkey and seafood changed across the past 5 years?*

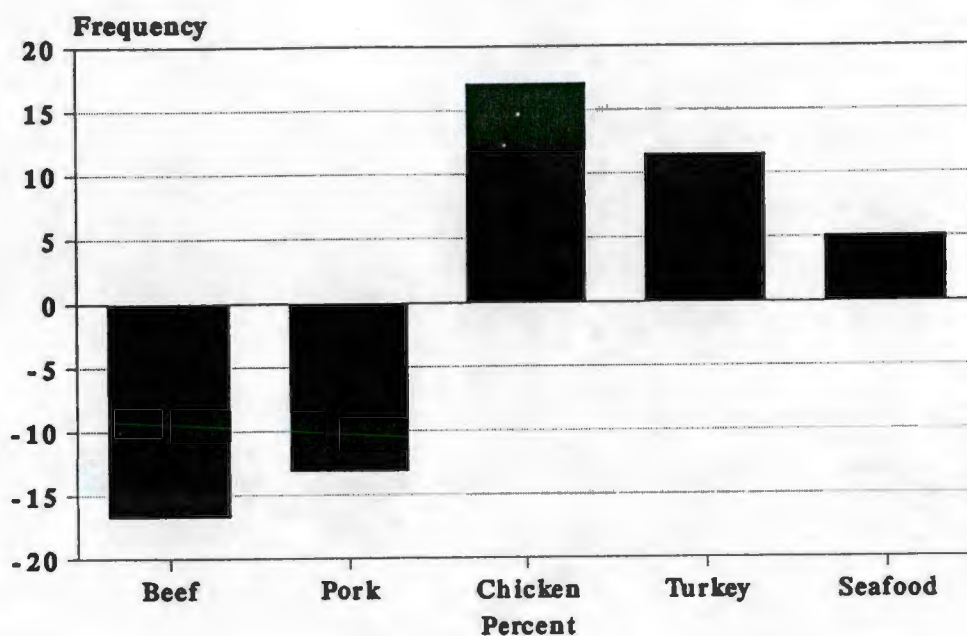


Table I shows the numerical mean responses to the comparable set of questions that asked for changes in the use of beef, pork, chicken, turkey, and seafood within the last 5 years, the changes graphed in the histogram above. The magnitude of change is slightly different in some instances from the 10-year developments, but they tend to be in the same direction and tend to reinforce the pattern that was observed in looking at the changes across the past 10 years. The absolute levels would be expected to be smaller because of the smaller adjustment period, and they in fact are smaller. Beef shows a negative -16.7 percent, pork shows a negative -13.1 percent, chicken shows a positive 17.1 percent, etc. The mean responses are somewhat similar to the pattern seen in the 10-year data.

Table I. Change of Use in Meats in the Last Five Years

Meat	% Change in Use
Beef	-16.7
Pork	-13.1
Chicken	17.1
Turkey	11.5
Seafood	5.1

Correlations showing specific consumer patterns for the 5-year data are presented below for beef. They are slightly different in interpretation from data showing changes across 10 years. The most

significant finding is that the tendency to use microwaves shows a positive correlation even though the P-Level, and therefore the level of statistical significance, is relatively weak. This may be suggesting that in recent years, as beef has become more widely available in the frozen entrees and in the other types of products that are ready for the microwave, usage has tended to increase slightly. (The correlation was negative for the 10-year changes.) The negative correlations on age and on income are consistent with what was found in looking at the correlations for the 10-year data.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.170	.060	123
Income	-.166	.081	112
Use of microwave for breakfast	.137	.139	118
Use of microwave for lunch	.138	.137	118

Correlations for the changes in use of pork across the past 5 years are shown below. As was the case with beef, the difference tends to be in the positive correlation on families who tend to use the microwave. That correlation was negative across the 10-year time frame. The other correlations are basically consistent with what was found earlier, and examination suggests that age, education, and income (education and income are always highly correlated) tend to be negatively correlated with changes in usage. The larger families in both data sets tend to be positively correlated, which means they have not decreased usage of pork as much. Thus, the major difference is in the tendency to use the microwaves, and as suggested in the discussion related to beef, this may be a function of increased availability of microwaveable products in the more recent years.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.172	.063	118
Income	-.129	.183	108
Year retired	-.446	.020	27
No. adults in family	-.172	.071	111
No. children in family	.123	.186	117
Meals on-the-go "plus" lifestyle	.133	.164	112
Use of microwave for breakfast	.147	.119	113
Use of microwave for lunch	.210	.025	113
Use of microwave for dinner	.156	.098	113

Correlations for the 5-year responses to change in use of chicken are shown below. There are more significant correlations here than for the 10-year data, but this can happen because of variability in the responses. There are negative correlations with age and families that tend to have meals on-the-go lifestyles. There are positive correlations with any measures suggesting large family sizes and a positive correlation with the tendency to have emphasis on family meals. This brings up the image of lower income, blue-collar families who tend to be larger families and are more inclined to emphasize family meals tending to increase usage of chicken even more than the average respondent across the last five years.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.209	.021	122
No. full-time empl. in family	.150	.105	118
No. in family	.281	.002	121
No. adults in family	.153	.104	115
No. children in family	.220	.016	121
Emphasis on family meals	.218	.019	116
Meals on-the-go lifestyle	-.213	.022	116

Correlations for turkey data that show changes across the past 5 years are shown below. As was the case with chicken, there are more significant correlations here than with the 10-year data. There is a basic consistency. The emphasis on family meals and the various indicators of larger family size show a positive correlation with use of turkey, and this was the finding in the 10-year data. In the 10-year data, the only negative correlation was for the families with a "meals on-the-go" family style. That negative correlation shows up again, and "meals on-the-go plus" lifestyles are added. Also added are the older and retired consumers. This suggests that these families have tended to increase turkey usage less across the past 5 years than the average respondent. It may well be that for the older consumer and retired consumer, the relatively high price of the convenient boneless turkey breast, etc., is a constraint. It is rather clear that the older and retired families who are less inclined to be worried about meals on-the-go or adopt a mobile lifestyle fit the profile of a consumer who is using less turkey than is the average respondent.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.159	.088	117
Retired	-.128	.173	115
No. full-time empl. in family	.148	.115	114
No. in family	.174	.062	116
No. adults in family	.162	.091	110
Emphasis on family meals	.263	.005	112
Meals on-the-go lifestyle	-.126	.187	112
Meals on-the-go "plus" lifestyle	-.219	.021	112

Correlations for the use of seafood across a 5-year time period are presented below. There are some apparent inconsistencies here with correlations in the 10-year data, but it is important to recognize that the P-Level, the level of statistical significance, is weak in every case except for the meals on-the-go family lifestyle, which shows a negative correlation. These data would show a tendency for retired consumers, larger families, and families with an emphasis on family meals to be more inclined to use seafood than would the average respondent. The 10-year data does not necessarily support that, except in terms of recent retirees tending to move toward this posture. Income, which is likely to be somewhat correlated to number in the family, also shows positive correlations in the 10-year data. The caveat here is that most of the correlations shown for the 5-year data are relatively weak in a context of statistical significance. Less attention should be paid to the correlations when the P-Level is as high as .15 or .16, which is the case here for a number of the attributes.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Year retired	.271	.155	29
No. in family	.134	.151	116
Emphasis on family meals	.143	.134	111
Meals on-the-go lifestyle	-.204	.032	111
Use of microwave for dinner	.133	.164	112

Reasons for Changes in Consumption

An important part of the survey form investigated the reasons for the documented changes in consumption of beef, pork, chicken, turkey, and seafood. On a scale of 1-10 and restricting the responses to meat that is bought in the supermarket, respondents were asked to rate the importance of several product attributes in their meat-buying behavior. A scale of 1-10 with 1 equaling "not important" and 10 equaling "very important" was employed. The specific questions asked for each of the meats can be paraphrased as follows:

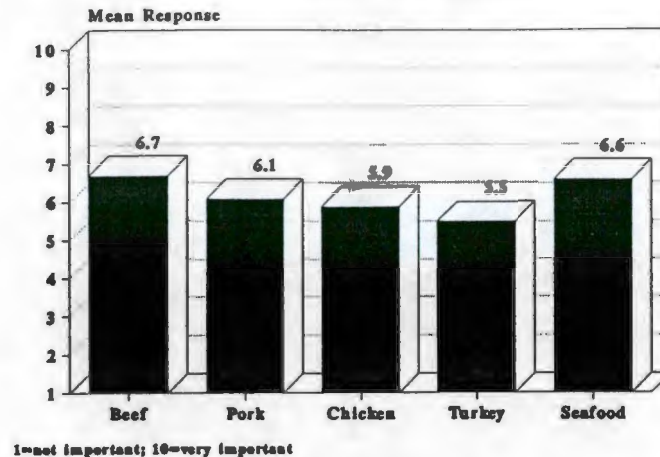
- 1) *Concerned about price you have to pay?*
- 2) *Concerned you will not get consistent high quality?*
- 3) *Concerned about fat level/cholesterol?*
- 4) *Concerned about convenience and ease in preparation and serving?*
- 5) *Concerned about the amount of time needed to prepare the meal?*

Each of the issues or "concerns" was addressed as a reason for changed buying behavior.

Note there were two questions that deal with convenience and/or time. This reflected the perception that convenience and ease of preparing is not synonymous with time required in preparation. Some products, for example, are easy and convenient but may require a considerable time span for the one or two simple stages in preparation. Other products may require relatively little cooking time but involve several steps in preparation and offer something other than convenience in an overall product appeal.

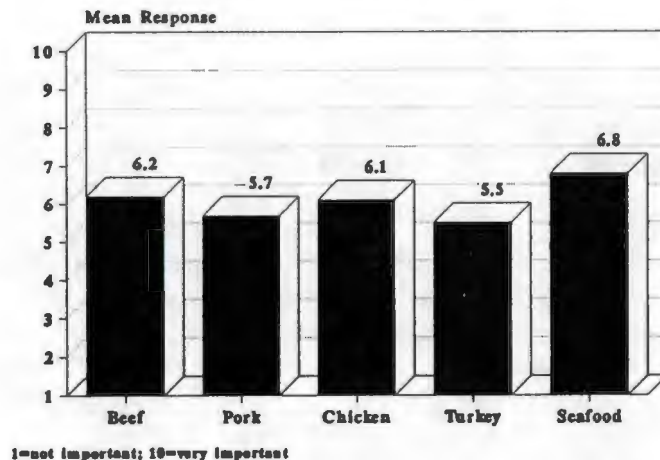
These five criteria are presented on the following pages in the form of histograms across the five different food products. Each attribute, such as price, is presented and then a brief discussion is offered. Correlations to show significantly different response patterns for particular types of consumers are presented later in this section by commodity.

Importance of Price as a Factor in Change in Meat Use



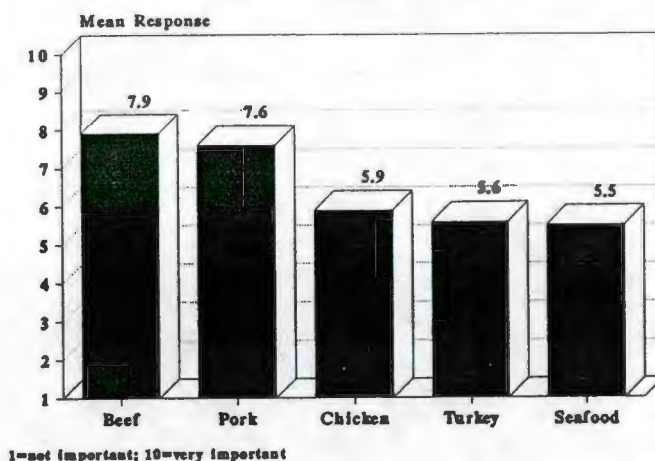
Obviously, price as an important factor in buying behavior is not independent of the level of price or direction of price movement over time. On the surface, it would appear that beef and seafood, perhaps the two consistently higher priced products of the five, show a higher importance being attributed to price than the other commodities. The differences are not large, however, and many of the differences would not be statistically significant. For example, the 6.7 average response to beef is not likely to be significantly higher than the 6.1 response for pork in a statistical context. In the introductory remarks, a table was presented that showed the ratios of beef-to-pork and beef-to-chicken prices. In relative terms, beef prices have increased less than have pork, chicken, turkey, or seafood prices. This tends to dispel the popular notion that the primary impediment to increased usage of beef is price and that the major concern the industry should have is getting price down via reduced cost of production. These results suggest that price is not a dominant factor in buying behavior for beef or for the other commodities.

Importance of Consistent Quality as a Factor in Change in Meat Use



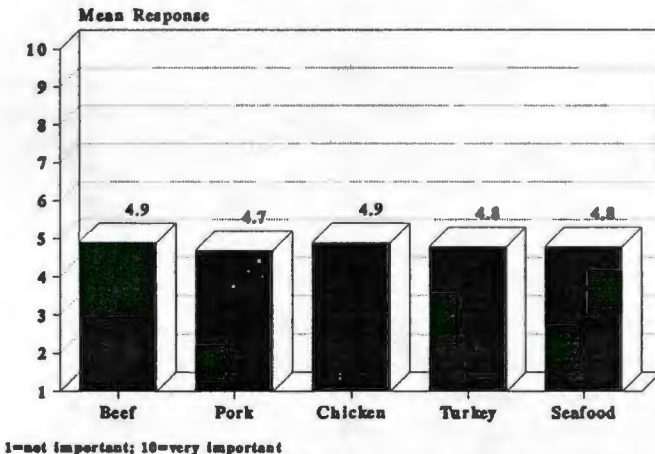
Not surprisingly, seafood shows the largest average ranking in terms of importance of consistent quality. Many observers would suggest that the primary constraint against increased consumption in seafoods is a consistent supply of high quality product. Quality also ranks relatively high in beef and in chicken. Note that these overall numbers in terms of average rankings on a 1-10 scale are not markedly different than the rankings seen on price in the previous histogram. There is considerable concern, apparently, about consistent quality in all of the food products. This finding reaffirms findings in earlier surveys that show significant concern about quality in the meats, especially in beef, whether the consumption is at home or in a restaurant setting.

**Importance of Fat/Cholesterol Level as a
Factor in Change in Meat Use**



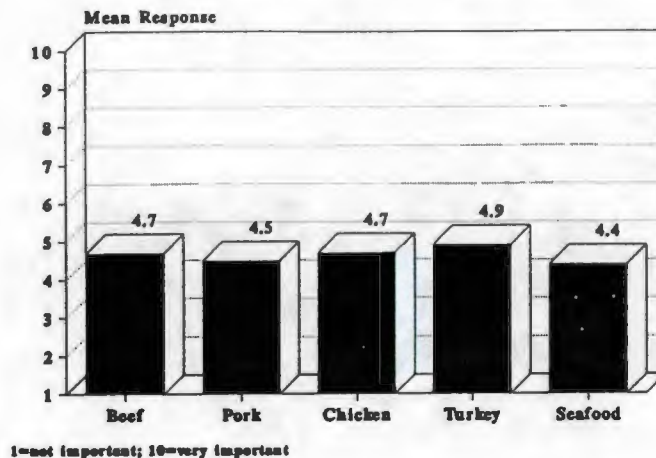
The results clearly indicate beef and pork are hurt by more negative perception with regard to fat and cholesterol levels than are the other commodities. The 7.9 and 7.6 ratings on beef and pork respectively would be statistically significantly different from the 5.9 down to 5.5 ratings on chicken, turkey, and seafood. This finding would be widely expected and is reaffirmed by many surveys that have been seen in the research literature and in the popular press that show that beef and pork are perceived to be relatively high in fat and in cholesterol. Certainly, the findings here reaffirm the need for the industry to move toward close trimming processes and move toward product forms that will both have relatively low fat levels and be perceived to be low in fat and/or cholesterol.

**Importance of Convenience in Preparation
as a Factor in Change in Meat Use**



The ratings are consistent, and are all in a 4.7 to 4.9 range. This suggests a posture of moderate importance being attached to convenience in preparation, but for beef and pork, the results would not suggest that convenience matches fat and cholesterol levels as of yet in terms of relative importance in changed buying behavior and changed use. To the extent to which this question was complicated by the fact that another question (presented below) dealing with time in preparation was also included is not known. It may well be that if only one question dealing with convenience and time of preparation had been asked, that the rating would have been higher. There was an attempt to sort out these two somewhat different issues in the survey, however, which explains the two questions being used. These ratings would not, for most commodities, differ significantly from the ratings found on quality and would not be significantly different from the ratings found on price, at least for the poultry products. Thus, one would have to conclude that while they are not dominant, convenience and/or time in preparation are important factors in consumers' buying behavior.

Importance of Time Needed in Preparation as a Factor in Change in Meat Use



The ratings are 4.4 for seafood up to 4.9 for turkey. One suspects that turkey faces some slight disadvantage because of the somewhat onerous time requirements to prepare the traditional turkey at Thanksgiving or Christmas. Again, as was the case on the question of convenience, with rankings in the 4.5 to 4.7 area for beef, pork, and chicken, respondents are telling us that this is important but that the issue of time in preparation is not of dominant importance.

Reasons for Change: Correlations with Socio-Economic Measures

Correlations that relate the product attributes, such as price, consistent quality, etc., to a specific consumer profile are shown below. The presentation takes each particular attribute and deals with it across all of the five food products being discussed. In this particular section, the P-Level that is employed to show a correlation is dropped to the .10 level. This reduces somewhat the often large number of consumer characteristics that are shown and focuses attention on those correlations that are of more importance in terms of statistical significance.

Keep in mind in examining these data that correlations between a product attribute such as price and a consumer attribute such as education or income are more important when the absolute level of the correlation is relatively large and when the P-Level is close to 0. In interpreting the results, correlations that meet those twin requirements of a relatively large correlation coefficient in absolute terms and a highly significant P-Level should be given more attention and more importance.

Concerns About Price

Beef:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.228	.0001	295
Education	-.220	.0002	289
Income	-.269	.0001	278
Retired	-.117	.047	290
Works part-time outside home	-.137	.019	293
No. in family	.202	.0005	294
No. children in family	.204	.0005	292
Meals on-the-go "plus" lifestyle	-.100	.093	282

Negative correlations would suggest that those particular consumers are less concerned about price as a factor in changing buying behavior and use of beef. That is, these negatively correlated consumers tended to mark lower levels of concern or importance, where 10=very important. Positive correlations, conversely, would indicate that particular type of consumer would be even more inclined than the average response of 6.7 on a scale of 1.0 to 10.0 to say that price is an important factor in their buying behavior. Negative correlations show up for age, education, income, whether the respondent is retired, whether that respondent works part-time, and a meals on-the-go plus family lifestyle. These findings offer a profile of somewhat older, better educated, higher income consumers, some of whom are retired and some who tend to be in a setting where the family lifestyle is a meals on-the-go plus or very mobile lifestyle. Those types of consumers are less inclined to worry about price as a dominant factor in terms of their use of beef. These findings are basically consistent with past surveys and with logic. The positive correlations on measures of family size, such as number in the family and number of children in the family, are also very consistent with past findings. The larger families, perhaps because of an income or budget constraint, tend to be more concerned about price than is the average respondent. *Overall, price is important. But some consumers, especially the better educated and higher income consumers, are less concerned than the overall 6.7 rating would indicate.*

Pork:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.224	.0002	274
Education	-.217	.0004	268
Income	-.249	.0001	259
Retired	-.117	.056	269
Works part-time outside home	-.148	.014	272
No. in family	.144	.018	273
No. children in family	.166	.006	271
Emphasis on family meals	.158	.011	262
Meals on-the-go "plus" lifestyle	-.172	.005	262

Correlations are consistent with what was found in beef. Age, education, income, whether the consumer is retired, etc., show negative correlations. The positive correlations are shown for various measures of family size and for families who have a family meal lifestyle. It is apparently the case, then, that in pork as well as in beef, the older, better educated, higher income consumer is less concerned about price. Families with a tendency to have an on-the-go plus type of lifestyle are also less concerned about price. The larger families, again, possibly because of an income or budget constraint, tend to be more concerned about price than the average response of 6.1 for pork. *The pattern is similar to that found in beef. Consumers who prefer on-the-go lifestyles and who can afford to pay for convenience from the higher incomes have decreased usage even more than the average respondent.*

Chicken:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.248	.0001	287
Education	-.177	.003	281
Income	-.231	.0001	268
Retired	-.113	.058	283
No. in family	.158	.007	286
No. children	.159	.007	284
Emphasis on family meals	.124	.041	273
Meals on-the-go "plus" lifestyle	-.121	.047	273
Use of microwave for breakfast	.112	.059	282

For chicken, negative correlations show up on age, education, income, whether the consumer is retired, and the mobile lifestyle indicator of meals on-the-go plus. Positive correlations are present for number in the family, number of children in the family, a family meal lifestyle, and oddly enough, for use of microwave for breakfast. That latter finding is likely to be somewhat of a random phenomenon. Overall, it would appear that price is less important to older, better educated, higher income consumers for chicken, and is of more concern to the larger families. To this point, the three meats--beef, pork, chicken--show a very similar and comparable profile in terms of the relative importance of price. There is some modest difference in the overall or mean response on importance of price ranging from 6.7 for beef, down to 6.1 for pork, and to 5.9 for chicken. *But across the three major meats, price does not appear to be the only factor bringing change, especially to the high-income consumer who prefers a mobile lifestyle.*

Turkey:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.190	.002	276
Education	-.147	.016	270
Income	-.212	.001	258
No. in family	.184	.002	275
No. children in family	.163	.007	273
Meals on-the-go "plus"	-.175	.005	262
Use of microwave for breakfast	.128	.035	271

The pattern in the correlations is now familiar. The older, better educated, higher income consumer is less likely to be concerned about price than is the average respondent. The larger families are more concerned about price. It would appear that across all the meats, some of the same consumer attributes are associated with the level of concern expressed about price. *High income and better educated consumers with mobile lifestyles see price as less important.*

Seafood:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.187	.002	285
Education	-.118	.050	278
Income	-.232	.0001	268
Retired	-.125	.037	281
No. in family	.163	.006	284
No. children in family	.161	.007	281
Meals on-the-go "plus"	-.174	.004	271
Use of microwave for breakfast	.077	.196	280

Negative correlations are present for age, education, income, and whether the consumer is retired. This is essentially the same pattern that we have seen throughout the meats. There is a negative correlation also for the family style that fits the meals on-the-go plus type of description. This suggests that the mobile family, the family that eats on-the-go, is less likely to be concerned about price than is the average respondent. *Positive correlations are again present for the large family size indicators, such as number in family and number of children in family, and these are consistent across all of the meats. These families are more concerned about price.*

Concerns About Quality

Beef:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	-.153	.011	277
Emphasis on family meals	.122	.046	271
Meals on-the-go lifestyle	-.120	.048	271

Negative correlations exist for education and for a family that has a meals on-the-go lifestyle. This suggests that the better educated and those families with a mobile lifestyle are somewhat less concerned about quality, perhaps because they either buy better quality or are willing to substitute quality for convenience. The positive correlation shows up for the families that have an emphasis on family meals. Bear in mind that the overall rating on the quality issue for beef was a 6.2, which attests to the relatively high importance of this product attribute. *The fact that there are relatively few significant correlations only suggests that virtually every respondent was at or very near that 6.2 overall rating in terms of relative importance.*

Pork:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	-.167	.007	261
Emphasis on family meals	.149	.017	258

Again, correlation with education is negative, suggesting that the better educated are less concerned about consistent quality. This may be also related to where pork is consumed and the cuts that are purchased. It may be that the better educated, and therefore typically the higher income consumer, is buying higher priced cuts and, therefore, trying to eliminate some uncertainty on quality. *As was the case with beef, the families that have an emphasis on the family meals tend to be very concerned about quality.*

Chicken:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	-.198	.001	270
Income	-.125	.045	259

Correlations with education and income are negative. As suggested in discussing these negative correlations for pork, it is quite probable that this reflects a tendency for the higher income consumer to buy a higher quality product such as the filet of chicken breast, where there might be more consistency than in quarters, legs, or other types of chicken cuts. But this is not apparent from the data; it is a hypothesis. *The high income and better educated consumer shows less concern over quality, but this may be due to what type of product they buy—an issue that needs more investigation.*

Turkey:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	-.194	.002	260
Emphasis on family meals	.160	.010	255
Meals on-the-go lifestyle	-.128	.041	255

Negative correlations for education and the meals on-the-go type of lifestyle are consistent with what has been seen with the other meats. It may be that the higher educated people are buying the better quality product, and families with an on-the-go lifestyle may be a little less constrained about quality. A positive correlation for those families with an emphasis on family meals is consistent with findings in other meats. *Families that emphasize family meals value quality and rate it as being more important than the average respondent.*

Seafood:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.113	.062	272

The only significant correlation that met the revised .10 level cut-off was age, with a negative correlation. It may be that the older consumer, who may be somewhat more inclined toward the higher income end of the continuum and buys the better offerings of the product, has less concern about quality considerations than the average response. *There were fewer departures from the average response for seafood.*

Concerns About Fat/Cholesterol

Beef:

There were no statistically significant correlations for beef. This suggests most consumers were at or near the mean response of 7.9.

Pork:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Meals on-the-go "plus" lifestyle	-.142	.021	265

There is a significant negative correlaton with the family lifestyle that is characterized by meals on-the-go plus. *Families who truly eat on the run, have a mobile lifestyle with little time or concern about family meals, are less concerned about fat and cholesterol than would be the average respondent.*

Chicken:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Meals on-the-go "plus" lifestyle	-.115	.059	272

The pattern is much the same as that observed for pork. *Families with a truly mobile lifestyle, with little concern about family meal time and eating together, are even less concerned about fat and cholesterol in chicken than the average response of 5.9.*

Turkey:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Meals on-the-go "plus" lifestyle	-.146	.018	265

Correlations on turkey continue the patterns seen for pork and chicken, and it is consistent with *a priori* expectations. *The highly mobile families that are characterized by meals on-the-go plus, with little tendency toward family meals, apparently tend to be less concerned about the fat and cholesterol dimension.*

Seafood:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Works full-time outside home	-.134	.029	268
Does not work outside home	.140	.022	268
Meals on-the-go "plus" lifestyle	-.115	.065	257
Use of microwave for lunch	.132	.032	265

Negative correlations show up for the food preparer who works full-time and for the families with a lifestyle characterized by meals on-the-go plus. *This would suggest that there is less concern from the buyer of seafood about fat and cholesterol among those people who have the mobile lifestyles and where the food preparer tends to work full-time outside the home.* Positive correlations occur for the food preparer who does not work outside the home and those who tend to use the microwave for lunch. That latter correlation involving the microwave may well be a random phenomenon. There is no reason to argue that families that tend to use the microwave for lunch would be more concerned about fat and cholesterol levels in their seafood diets.

Concerns About Convenience

Beef:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Use of microwave for dinner	.165	.006	277

Families who tend to use the microwave for dinner show a positive correlation that is highly significant with a P-Level of .006. They rate convenience more important than the average respondent. This fits with logic and *a priori* expectations. *Families who tend to use the microwave for preparation of the evening meal would be more prone to be concerned about convenience and ease in preparing and serving than those beef consumers who are using more conventional preparation techniques.*

Pork:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.129	.033	272
Use of microwave for breakfast	.108	.078	267
Use of microwave for dinner	.150	.014	268

A negative correlation is shown with age suggesting that older consumers are less concerned about convenience and ease in preparing and serving than is the normal respondent. This is not surprising. Pork dishes that might require time would be more acceptable to a retired consumer or older consumer, for example, who has the time to prepare. Positive correlations, and this would be expected, are shown with families that tend to use the microwave. *Interest in convenience and ease in preparing and serving pork would be, of course, consistent with extensive use of the microwave.*

Chicken:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.150	.011	282
Meals on-the-go "plus" lifestyle	.154	.011	269
Use of microwave for dinner	.170	.005	277

A negative correlation shows for the older consumer, again suggesting that older consumers are less concerned than the normal respondent about convenience and ease in preparing. Positive correlations show for families following a lifestyle that tends to be meals on-the-go plus and for those families that tend to use the microwave for dinner. *Again, ease and convenience in preparation would be consistent with a mobile lifestyle and the tendency to use the microwave.*

Turkey:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.148	.014	277
Meals on-the-go "plus" lifestyle	.164	.008	264

Age is again negatively correlated. This is the now familiar pattern of the older consumer being somewhat less concerned about ease and convenience in preparation. *Positive correlations appear for the mobile families with an on-the-go plus lifestyle.* This is essentially the same pattern of correlations that was shown for chicken and is quite consistent with expectations.

Seafood:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.176	.003	275
No. full-time empl. in family	.127	.038	267
Emphasis on family meals	-.107	.081	263
Meals on-the-go "plus" lifestyle	.174	.005	263
Use of microwave for breakfast	.109	.075	269
Use of microwave for dinner	.151	.013	270

Negative correlations show for the older consumers that use seafood and for those families with some emphasis on family meals. This would suggest that older consumers, again, have time to prepare, and one would expect that families with an emphasis on family meals would also take the time to prepare. Thus, the negative correlations are not surprising. *Positive correlations appear for families with more full-time employees in the family, for families with an on-the-go lifestyle, and those that tend to use the microwave.* This is consistent with the patterns seen above for the other meat products.

Concerns About Time in Preparation

Beef:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.133	.024	284
Retired	-.116	.051	282
No. full-time empl. in family	.112	.061	278
Meals on-the-go "plus" lifestyle	.151	.012	275
Use of microwave for lunch	.098	.099	282
Use of microwave for dinner	.146	.014	283

Negative correlations with age and the fact that the consumer is retired are consistent with the now-established patterns and with expectations. *The older consumer, especially the retired consumer, might be less concerned about the amount of time, as separate from the convenience in preparation, involved in preparing a meal. The number of full-time employees in the family shows a positive correlation as do the on-the-go plus family lifestyles and the tendency to use the microwave for lunch and/or dinner. These are consistent with the patterns that have appeared on a number of occasions in the responses. These types of families and their tendencies would tend to be associated with families that are concerned about the amount of time needed to prepare the meal.* Remember, positive correlations suggest that type of consumer is more concerned about time in preparation than the average respondent and a 4.7 rating.

Pork:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.152	.012	270
Retired	-.132	.032	265
Use of microwave for breakfast	.141	.022	265
Use of microwave for dinner	.117	.057	266

Negative correlations appear for age and for the retired consumers, continuing the pattern observed for beef. *Positive correlations again emerge for families that tend to use the microwave, showing the consistent relationship between the tendency to use the microwave extensively and concern about the amount of time required to prepare a meal.*

Chicken:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.192	.001	286
Retired	-.130	.029	282
No. full-time empl. in family	.111	.063	279
Meals on-the-go "plus" lifestyle	.148	.014	274
Use of microwave for dinner	.149	.012	281

Negative correlations again occur for age and for retired consumers. *Positive correlations show up for the families with mobile lifestyles, the tendency to use the microwave, and families with more full-time members working outside the home. This is again consistent with expectations in terms of what type of consumer would be concerned about the amount of time needed to prepare the meal.*

Turkey:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.201	.001	281
Retired	-.139	.021	277
No. full-time empl. in family	.101	.094	275
Meals on-the-go "plus" lifestyle	.152	.012	269
Use of microwave for dinner	.170	.005	276

Negative correlations are again seen for age and for the retired consumer. *Positive and statistically significant correlations are present for families with more full-time workers in the family, the families with mobile lifestyles, and those who have a tendency to use the microwave for dinner.* These responses are very consistent with patterns established with other meats, and are now becoming familiar in the results.

Seafood:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.157	.009	277
Retired	-.100	.100	273
Does not work outside home	-.102	.092	276
No. full-time empl. in family	.118	.053	270
Meals on-the-go "plus" lifestyle	.103	.095	266
Use of microwave for breakfast	.116	.056	271
Use of microwave for dinner	.155	.010	272

Negative correlations appear for those seafood consumers who are older, are likely to be retired, and who do not work outside the home. This is consistent with expectations since these are the consumers that more nearly have time to prepare meals. *Positive correlations occur for indicators of a mobile lifestyle, the tendency to use the microwave, and for families with more full-time workers in the family.* This is also consistent with expectations and with prior established patterns.

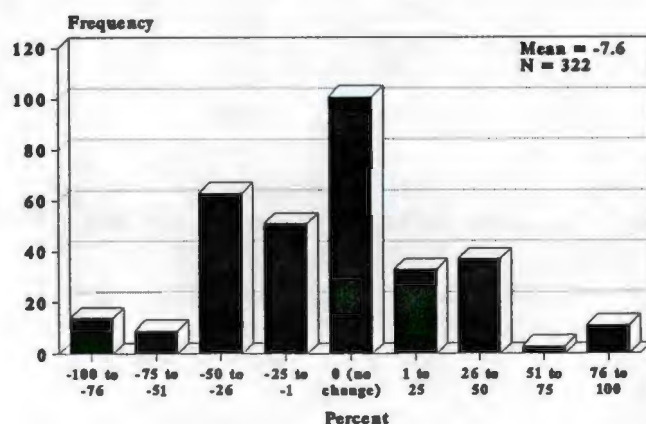
Leisure Time

Question: *How has your leisure time changed in the past 5 and 10 years?*

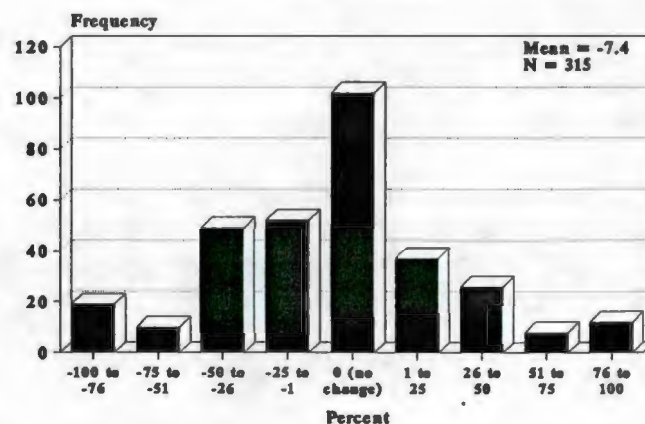
There were two questions dealing with how leisure time has changed. One question asked for a response for changes across the past 10 years. The second asked for changes in the past 5 years. Both histograms are shown below, and the results are quite similar. *Across the past 10 years, respondents have indicated a 7.6 percent decrease on average. Across the past 5 years, they indicated a 7.4 percent decrease in leisure time on average.*

The correlations for both the 10-year and the 5-year changes were quite similar. Those for the 10-year time changes are shown below. In this presentation, we return to the criterion of using a P-Level of .20 or smaller to indicate statistical significance and to identify a statistically significant correlation.

**Change in Leisure Time in
Last 10 Years**



**Change in Leisure Time in
Last 5 Years**



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	.480	.0001	322
Education	-.088	.1215	314
Retired	.413	.0001	316
Works full-time outside home	-.175	.0017	321
Does not work outside home	.201	.0003	321
No. full-time empl. in family	-.288	.0001	312
No. in family	-.240	.0001	320
No. children in family	-.283	.0001	317
Meals on-the-go lifestyle	-.087	.1283	307

Negative correlations are present for education, consumers who work full-time outside the home, families with more full-time workers in the family, families with more members in the family (the larger family), families with more children in the family, and families that have an on-the-go lifestyle. All of these negative correlations would suggest that consumers meeting these profiles have suffered an even greater loss in leisure time across the past 10 years, compared to a mean response of a 7.6 percent reduction. Positive correlations are present for age, retired consumers, and for consumers that do not work outside the home. These are now somewhat predictable findings and confirm the expectation that the older consumer, the retired consumer, and the consumer who does not work outside the home would show either an increase in leisure time across the past 10 years or would have suffered a less significant decline than the 7.6 percent average response.

Time Preparing Meals

Question: *How has the time you spend in preparing meals changed in the past 5 and 10 years?*

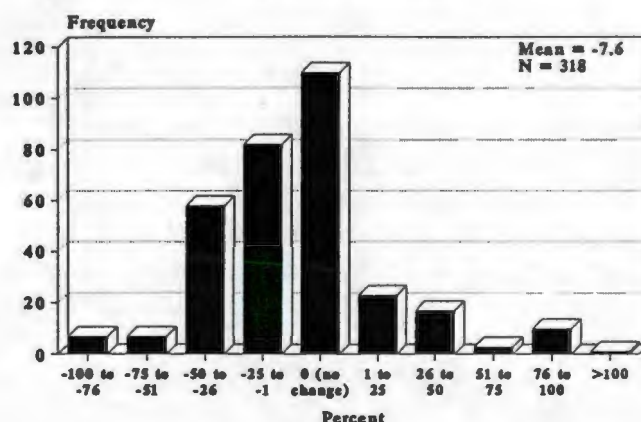
Two questions in the survey form dealt with how time spent preparing meals has changed. One question called for response across the past 10 years, and the second called for a response across the past 5 years. The two histograms showing the level and frequency of the response are shown on the next page. *The mean response across the past 10 years has been a 7.6 percent reduction in time spent in preparing meals. Across the past 5 years, there is an indication of an 8.1 percent reduction in time spent in preparing meals.* These differences would not be statistically significant but do tend to confirm the fact that less time has been spent in preparing meals in recent years as compared to historical patterns.

As was the case with the questions on leisure time, the correlations for these two questions involving a 10-year and a 5-year horizon are similar. Therefore, only the correlations for the 10-year time horizon are shown. A P-Level cut-off point of .20 or larger is again employed here.

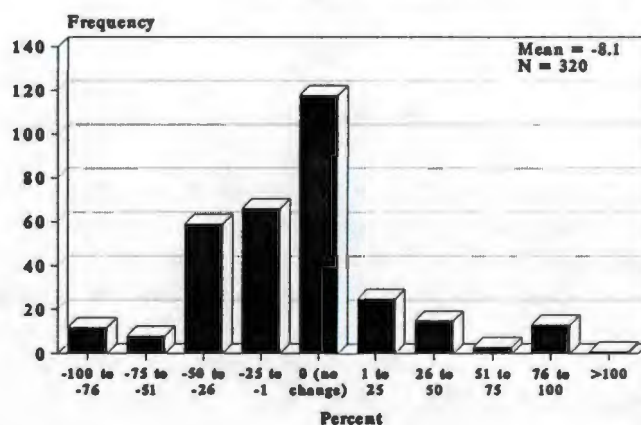
Negative correlations are present for age, income, for families with more full-time workers, for families with more adults, for families with an on-the-go plus lifestyle, and those that tend to use the microwave. *These negative correlations suggest that older consumers, higher income consumers, families with more adults and more full-time workers, and those that use the microwave and have adopted an on-the-go lifestyle would tend to show even larger decreases in time spent preparing meals than the mean 7.6 percent response.* The finding with regard to age is perhaps the only surprising finding. Earlier questions suggested that the older consumers have more leisure time and have more time to prepare, but the response to this question appears to be indicating that they are less inclined to spend

it preparing meals. *Positive correlations emerge for families where the food preparer does not work outside the home, families with more children in the family, and families with an emphasis on family meals.* These results all appear to be logical. These types of families would tend to have increased time spent in preparing meals across the past 10 years or would have decreased time less than the mean -7.6 percent response.

**Change in Time Spent Preparing Meals
in Last 10 Years**



**Change in Time Spent Preparing Meals
in Last 5 Years**



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.137	.015	318
Income	-.112	.054	298
Does not work outside home	.074	.188	317
No. full-time empl. in family	-.076	.182	306
No. adults in family	-.103	.076	300
No. children in family	.105	.064	313
Emphasis on family meals	.129	.025	302
Meals on-the-go "plus" lifestyle	-.104	.070	302
Use of microwave for breakfast	-.083	.142	312

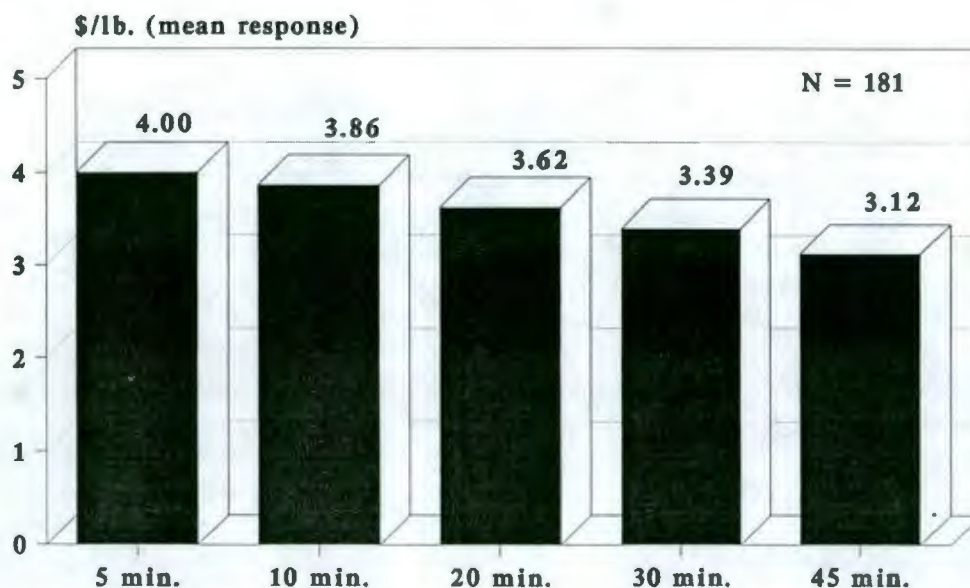
Value of Time: Price Implications

There were questions in the survey form designed specifically to determine how important time in preparation of a meal is to the consumer. This question involved a direct effort to estimate or to place some bounds on the price premium that consumers would be willing to pay to reduce time in preparation. The question was worded carefully with a base price of \$3.00 per lb. and the assumption that 60 minutes of time would be involved in preparing the meal, involving several procedural steps. Perhaps the most important question in the survey, the question is repeated verbatim below to ensure that the exact wording of the question is clear.

Question: *You can buy a meat item that takes you 60 minutes to prepare, involving several steps, at a cost of \$3.00 per pound. Assume you know the final product will be the same in plate appearance and eating quality. What price would you pay with the different preparation times listed below? (Assume you are going to buy the meat in one form or another, and answer carefully. Please fill in every blank even if you put the same price in all of them.)*

The histogram showing the responses to the question is provided below. There is clear indication that many consumers would be willing to pay significantly higher prices, prices approaching \$4.00 per lb., for a reduction in time of preparation down to 5 minutes. This question really is asking the consumer for a "willingness to pay" expression, and those results should always be used with some caution. What they say they would do and what they would actually do if offered the alternatives have been shown to be somewhat different on occasion, but *there is clear indication in this set of responses that reduced time of preparation is important to many consumers and that they are willing to pay higher prices to get the time of preparation down.*

Correlations between responses to this question and consumer attributes will shed light on what type of families are most likely to be willing to pay the higher prices for reducing time of preparation. The entire set of correlations is shown below, featuring those for the 45-minute preparation time, 30-minute preparation time, and down to the 5-minute preparation time. A P-Level of .20 or smaller was used as an indicator of statistical significance here. Remember that correlations that have P-Levels that are small, down toward 0, are more important and are expressive of the more reliable relationships.



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
45 minutes:			
Education	-.163	.030	178
Income	.134	.079	172
Works full-time outside home	-.115	.125	180
Works part-time outside home	.127	.088	180
Emphasis on family meals	.119	.120	173
Use of microwave for lunch	-.116	.122	179
30 minutes:			
Education	-.115	.127	178
Income	.151	.047	172
Works full-time outside home	-.130	.081	180
Works part-time outside home	.120	.109	180
20 minutes:			
Income	.169	.026	172
Use of microwave for dinner	.149	.046	179
10 minutes:			
Age	-.110	.140	181
Income	.217	.004	172
Use of microwave for dinner	.219	.003	179
5 minutes:			
Age	-.135	.070	181
Income	.181	.018	172
Use of microwave for dinner	.207	.006	179

Negative correlations would indicate consumers who would be less likely to pay the higher prices for a particular offering in terms of preparation time. For example, for the 45-minute alternative, a negative correlation would tend to say that particular type of consumer is less willing to pay significantly higher prices for a reduction down to 45 minutes than is the average respondent. Positive correlations, of course, would show the converse. *Consumer attributes that are positively correlated with the willingness to pay prices for each time category would suggest that these consumers would be willing to pay a higher price than the average respondent.*

Examination shows negative correlations for education, food preparers that work full-time outside the home, and for families that tend to use the microwave for lunch at the 45-minute time interval. But only the education correlation is highly significant in a statistical context. That negative correlation with education is continued at the 30-minute interval, but the P-Level is now larger at .127, and the correlation is arguably less important. There is also, again, a negative correlation for the food preparer who works full-time outside the home. *For modest reductions in time of preparation, the better*

educated consumer and the consumer who works full-time outside the home are apparently less willing to pay a significantly higher price. Perhaps they are saying that reductions down to 45 minutes and 30 minutes are not deserving of any significant price premium because they are still considered to be too burdensome in terms of preparation times. That is an especially logical explanation for the response for the consumer who works full-time outside the home. The negative correlation for education is a little less obvious in terms of its source and meaning. There would be, in all probability, a high correlation between education and the food preparer who tends to work full-time outside the home. This will often be the two-professional family, and it may be that it is largely the same set of consumers that is showing the negative correlation.

Across all time intervals, income is the one consumer attribute that is consistently positively correlated and shows a very small P-Level or a very high statistical significance level. At the 30-minute time interval, working part-time outside the home shows a positive correlation. That positive correlation is also present in the 45-minute time interval, and a modest correlation emerges with families with an emphasis on family meals. But as the times are reduced down to the 20-minute, 10-minute, and 5-minute time intervals, it tends to be income and the tendency to use the microwave that are consistently present and significant in a statistical context. *It is clearly the high-income consumer who uses the microwave that is willing to pay even higher prices for reduced preparation time.*

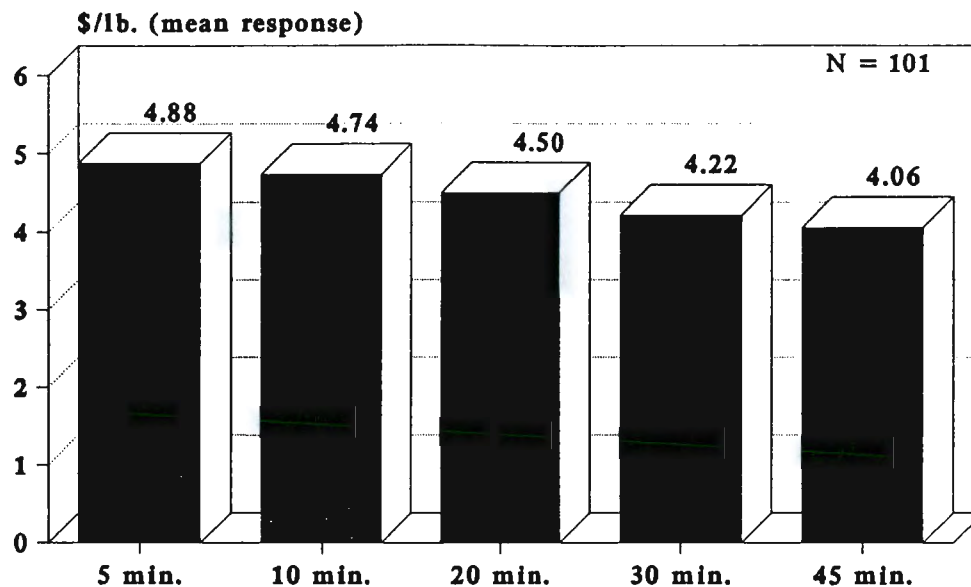
Negative correlations emerge again at the 10-minute and 5-minute interval for age. The older consumers are showing some reduction in their willingness to pay higher prices to get the time and preparation reduced down to this extent.

The most important finding in this set of correlations is the consistent positive and highly significant correlations on income and on some measure of a tendency to want to reduce preparation time. In these responses, use of microwave picks up that correlation.

In preparing the survey form, there was some concern that the responses in terms of willingness to pay for reduced preparation time would not be independent of the \$3.00 base price. Thus, the survey was split on a random basis, and part of the respondents received a survey form that asked for willingness to pay for reduced preparation times relative to a \$4.00 per lb. base price. The question is repeated below to ensure understanding of what was asked in the exact wording of the question. The only change is the \$4.00 per lb. instead of the \$3.00 per lb. in the earlier question.

Question: *You can buy a meat item that takes you 60 minutes to prepare, involving several steps, at a cost of \$4.00 per pound. Assume you know the final product will be the same in plate appearance and eating quality. What price would you pay with the different preparation times listed below? (Assume you are going to buy the meat in one form or another, and answer carefully. Please fill in every blank even if you put the same price in all of them.)*

The histogram showing prices that consumers would be willing to pay for preparation times down to 5 minutes is shown below. The increase in price in moving down to the 5-minute preparation time is not substantially different from the increase seen when the base price was \$3.00. This set of results tends to confirm the overall findings and eliminates some of the concerns about the possible impact of the level of the base price on the response patterns.



As was the case with the question dealing with the \$3.00 per lb. product, the correlations are shown for the various preparation times below. Again, .20 is used as a cut-off point for the P-Level or probability in a statistical context. A glance at the results indicates that there are more significant correlations in this split of the questionnaire than was the case in the set with the \$3.00 base price. There was a somewhat smaller set of responses for this particular question, and the size of the responses or the N-level will always have an impact on the statistical probabilities.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
45 minutes:			
Retired	-.133	.190	99
Does not work outside home	-.193	.053	101
No. in family	-.199	.047	100
No. children in family	-.156	.123	99
Use of microwave for breakfast	.402	.0001	98
Use of microwave for lunch	.161	.116	97
Use of microwave for dinner	.176	.083	98

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
30 minutes:			
Education	.135	.181	100
Income	.151	.138	98
Year retired	.330	.168	19
Works part-time outside home	.185	.064	101
Does not work outside home	-.161	.107	101
No. full-time empl. in family	.133	.198	95
No. in family	-.198	.048	100
No. children in family	-.187	.064	99
Use of microwave for breakfast	.264	.009	98
20 minutes:			
Income	.284	.005	98
Works full-time outside home	.144	.151	101
Does not work outside home	-.245	.013	101
No. full-time empl. in family	.265	.009	95
No. in family	-.131	.193	100
No. children in family	-.218	.030	99
Use of microwave for breakfast	.224	.026	98
10 minutes:			
Income	.287	.004	98
Retired	-.169	.095	99
Works full-time outside home	.171	.087	101
Does not work outside home	-.219	.028	101
No. full-time empl. in family	.277	.007	95
No. children in family	-.217	.031	99
Emphasis on family meals	-.189	.064	96
Meals on-the-go "plus"	.141	.172	96
Use of microwave for breakfast	.164	.107	98
Use of microwave for dinner	.173	.088	98
5 minutes:			
Education	.166	.100	100
Income	.215	.034	98
Retired	-.157	.122	99
Works full-time outside home	.194	.052	101
Does not work outside home	-.243	.015	101
No. full-time empl. in family	.235	.022	95
No. in family	-.131	.195	100
No. children in family	-.204	.043	99
Emphasis on family meals	-.210	.040	96
Meals on-the-go	.157	.127	96
Use of microwave for breakfast	.196	.053	98
Use of microwave for dinner	.159	.119	98

The patterns in the correlations are similar to those in the other split of respondents. Negative correlations for the 45-minute time interval appear for retired consumers, the consumer who does not work outside the home, the larger families, and families with more children. The P-Level is smaller for the number in the family and for the family where the food preparer does not work outside the home. These negative correlations suggest reluctance to pay prices as high as the mean response for the 45-minute preparation interval. Positive correlations appear for those families that tend to use the microwave, and the correlation between willingness to pay higher prices and use of microwave for breakfast is very significant, with a P-Level of .0001.

The 30-minute time interval shows some of the same tendencies, with negative correlations for the consumer who does not work outside the home, for the larger families, and families with more children. Positive correlations emerge for education, income, and the specific year for when the retired consumer retired, but the P-Levels are quite large, and these correlations may not be highly reliable. There are also positive correlations for the consumer who works part-time outside the home, for the families with more full-time workers, and for the families that tend to use the microwave for breakfast. Again, there is a pattern of the higher income consumers who have a more nearly mobile lifestyle and have more full-time workers in the family being more willing to pay higher prices for reduced preparation time, and specifically to pay prices above the mean response for this 30-minute time interval.

In the 20-minute, 10-minute, and 5-minute time intervals, some rather clear patterns emerge and appear consistently across the various preparation times. Income continues to be positively correlated, for example, and the P-Levels are very small, down to .0005, indicating a highly significant relationship in a statistical context. *The higher income consumers are more willing to pay for reduced preparation time, the same finding that was overwhelmingly present for the question with the \$3.00 base product price. Positive and highly significant correlations are also present across these time intervals for families with more full-time workers, for the families where the food preparer works full-time outside the home, and consistently for families that tend to use the microwave in preparing various meals or have an on-the-go type of lifestyle.* There is also a positive correlation for the families with more full-time workers in the family, but this would be expected since those families are likely to have higher levels of income and be more nearly able to afford the higher prices for reduced preparation times.

Negative correlations are consistently present for the larger families and for the families where the food preparer does not work outside the home. There is a negative and highly significant correlation with being retired that emerges in the 10-minute time interval and, to a lesser extent, in the 5-minute time interval as well. This is consistent with the results for the \$3.00 base price question. The retired consumer, who has time to prepare a meal, will eventually run out of willingness to pay higher prices to pull the time of preparation still lower and down to as little as 10 or 5 minutes.

The question using the \$4.00 base price generates results consistent with the \$3.00 base price. *High-income consumers who prefer a mobile lifestyle will pay the higher premiums.* This willingness to pay extends to the families with more than one wage earner--which suggests these are also the high-income families. *Older consumers who are retired and the food preparer who does not work outside the home (perhaps because they are retired) are among the respondents who would pay smaller premiums to reduce preparation time.*

SUMMARY AND IMPLICATIONS

There are a number of factors that have driven the changes in buying behavior for meats. Across all the meats, and this definitely includes beef, non-price factors are important. The responses of over 350 randomly selected consumers confirm this conclusion. Taste, fat/cholesterol levels, convenience in preparation, and time required in preparation are all factors. The importance of the various product attributes does vary across consumers, but the mean responses reveal a clear tendency to look at both price and non-price dimensions of the product offering in making buying decisions.

This research effort emphasized the importance of convenience and time required in product preparation. Specific questions probed the willingness of buyers to pay higher prices for reduced preparation times. Across all respondents, there was a willingness to pay significantly higher prices for reduced preparation times. A statistical correlation analysis of the relationship between the responses and the socio-economic profile of the respondents revealed significant departures from the mean responses. High-income families and families who favor a mobile lifestyle and who use the microwave extensively were willing to pay even higher price premiums for reduced preparation times. In some instances, this willingness extended to the families where the "food preparer" works outside the home--the two-professional families.

Older and retired consumers are less inclined to pay premiums. This is especially true for preparation times as brief as 5 to 10 minutes. Apparently, these consumers are willing to substitute time in preparation to reduce somewhat the price premiums they would pay.

Meat buyers report their leisure time is declining. They are getting less encouragement from family members to spend time in meal preparation. Nearly one-third of the respondents report an "on-the-go" lifestyle that has little emphasis on family meals. Almost 30 percent of evening meals are prepared at least partially in the microwave. *Family behavior patterns are changing, and with these changes comes new buying patterns in the meats. The growing demands for revised product offerings are dictating changes in the meat sector. Responding to a changed and changing consumer will be critically important. In no sub-sector of the meat industry is this more important than in the beef sector. That response must recognize that non-price attributes of the product offering are important determinants of buying behavior for meats and especially for beef. The findings in this study will help business firms and merchandisers who seek to respond effectively to the modern consumer by offering a product/service combination consistent with what the consumer wants and for which he or she is willing to pay. In addition, and very importantly, this study should be useful to industry leaders who are charged with the responsibility of deciding how check-off funds are spent. There are clearly reasons to support programs that change the product offering to a better alignment with what the modern consumer wants as lifestyles continue to change.*

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APPENDIX I

The Survey Form

CONSUMER SURVEY ON MEATS

ALL INFORMATION IS STRICTLY CONFIDENTIAL. THE RESPONSES CANNOT BE IDENTIFIED WITH YOU IN ANY WAY. PLEASE ANSWER ALL QUESTIONS COMPLETELY AND CANDIDLY!

(This survey should be completed by the person who does most of the food preparation in your home.)

Your Profile

1. Your age in years (sorry, no one will ever know!) _____
2. Education in years (12 = high school diploma) _____
3. Gross, before-tax, annual income for the entire family \$ _____
4. Are you retired? ____ Yes ____ No. If yes, what year did you retire? _____
5. Do you work outside the home? ____ Yes, full-time
____ Yes, part-time
____ No
6. Number full-time employees in the household who work outside the home _____
7. Total number in family _____
Number adults _____
Number teens or younger _____
8. Which one best fits the lifestyle at your house:
____ Emphasis on family meals eaten together whenever possible, especially at dinner.
____ "On-the-go," with everyone eating at their convenience, and do not have "family meals" every day.
____ "On-the-go plus," which means we seldom sit down together as a family for "family meals."
9. Percent of your meals that are at least partly prepared using a microwave:
____ % for breakfast
____ % for lunch
____ % for dinner
10. Show how your family's use of the following meats has changed across the past 10 years:

<u>Meat</u>	<u>Use has increased by</u>	<u>Use has decreased by</u>	<u>Mark here if no change</u>
Beef	____ %	____ %	____
Pork	____ %	____ %	____
Chicken	____ %	____ %	____
Turkey	____ %	____ %	____
Seafood	____ %	____ %	____

(If you indicate a 100% decrease, this means you now use none; if you indicate a 100% increase, this means your use has doubled.)

11. If the answers will be different, answer for the past 5 years, please:

<u>Meat</u>	<u>Use has increased by</u>	<u>Use has decreased by</u>	<u>Mark here if no change</u>
Beef	_____ %	_____ %	_____
Pork	_____ %	_____ %	_____
Chicken	_____ %	_____ %	_____
Turkey	_____ %	_____ %	_____
Seafood	_____ %	_____ %	_____

Your Reasons for Change

12. Think about what is important in your meat buying in the supermarket only (not fast food). Mark any of the following you feel is an important factor with a number where 10 = very important, 1 = not important. Please do this carefully! It is very important!

<u>Factor</u>	<u>Meat</u>				
	<u>Beef</u>	<u>Pork</u>	<u>Chicken</u>	<u>Turkey</u>	<u>Seafood</u>
Concerned about price you have to pay	_____	_____	_____	_____	_____
Concerned you will not get consistent high quality	_____	_____	_____	_____	_____
Concerned about fat level/cholesterol	_____	_____	_____	_____	_____
Concerned about convenience and ease in preparing and serving	_____	_____	_____	_____	_____
Concerned about the amount of time needed to prepare the meal	_____	_____	_____	_____	_____

13. How has your leisure time changed in the past 10 years? _____ % increase
 _____ no change _____ % decrease
- the past 5 years? _____ % increase
 _____ no change _____ % decrease

14. How has the time you spend (or total time spent by all family members) in preparing meals changed in the past 10 years?

_____ % increase	the past 5 years?	_____ % increase
_____ % decrease		_____ % decrease
_____ no change		_____ no change

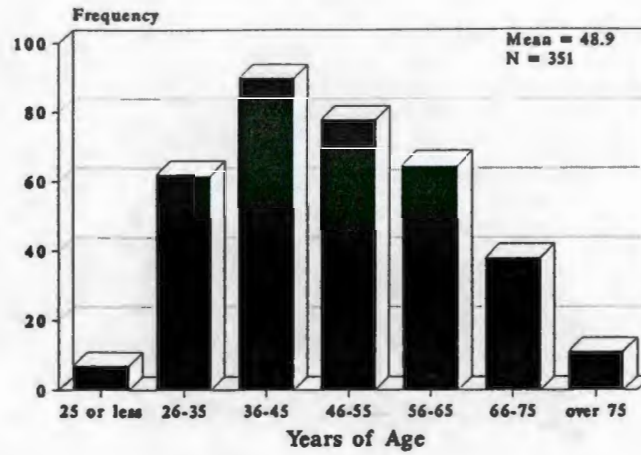
15. You can buy a meat item that takes you 60 minutes to prepare, involving several steps, at a cost of \$3.00 per pound. Assume you know the final product will be the same in plate appearance and eating quality. What price would you pay with the different preparation times listed below? (Assume you are going to buy the meat in one form or another, and answer carefully. Please fill in every blank even if you put the same price in all of them!)

<u>Time to prepare</u>	<u>Price you would pay</u>	<u>Time to prepare</u>	<u>Price you would pay</u>
60 minutes	\$3.00	20 minutes	_____
45 minutes	_____	10 minutes	_____
30 minutes	_____	5 minutes	_____

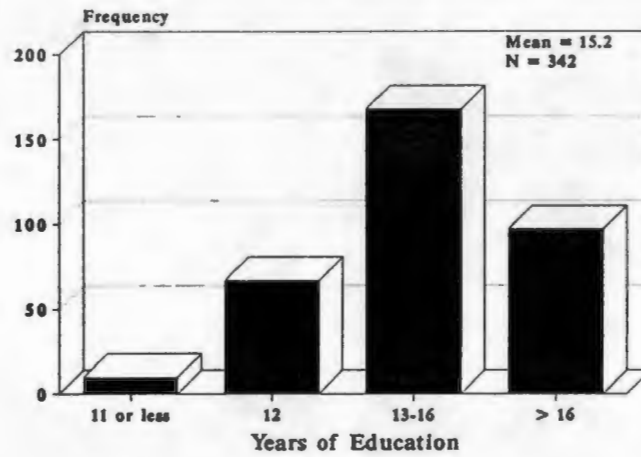
APPENDIX II

Socio-economic Measures of Respondents

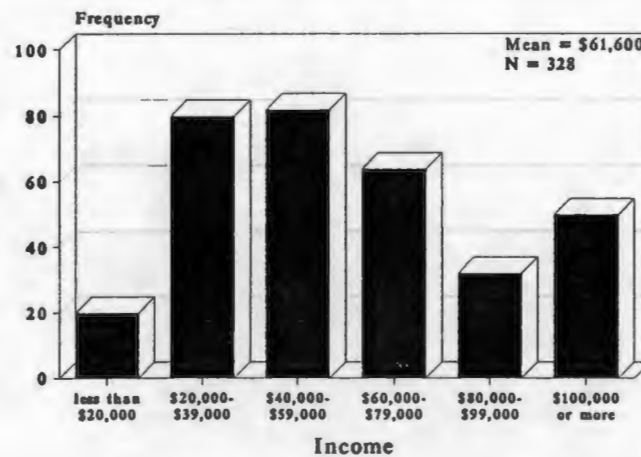
Age of Respondents



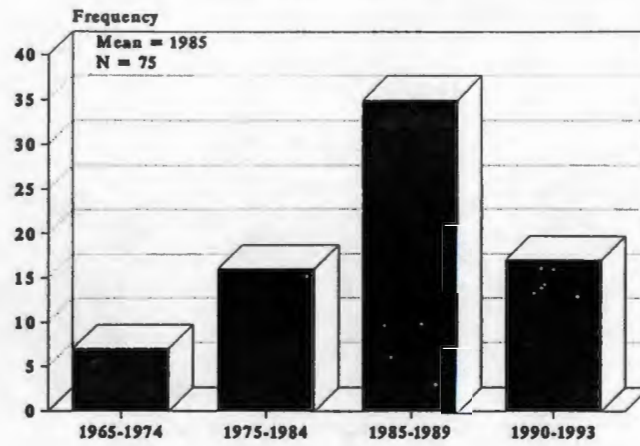
Education



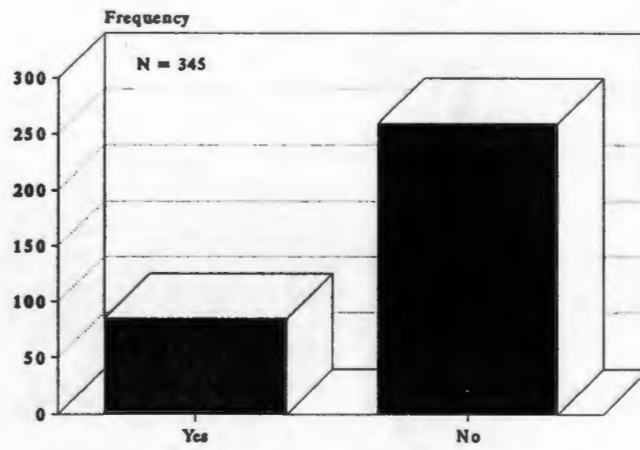
Annual Family Income



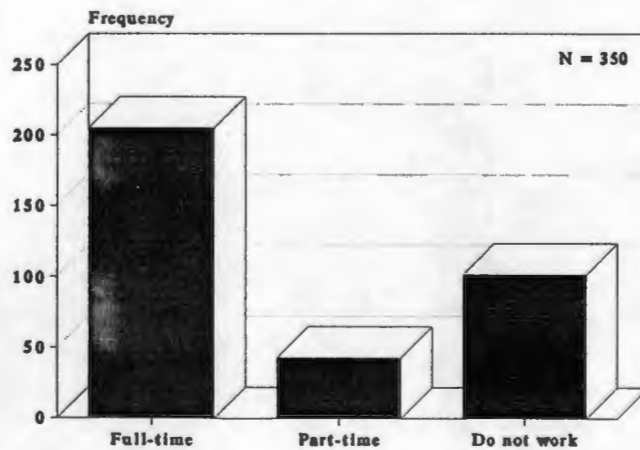
Year Retired



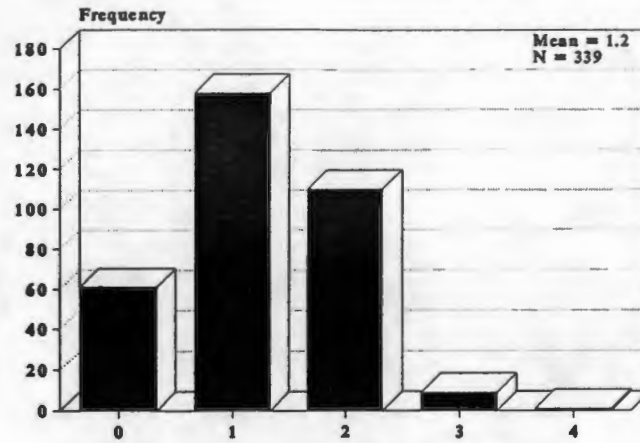
Retired Respondents



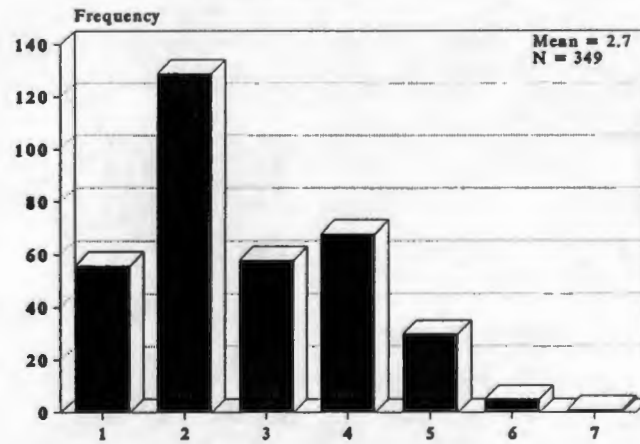
Work Status



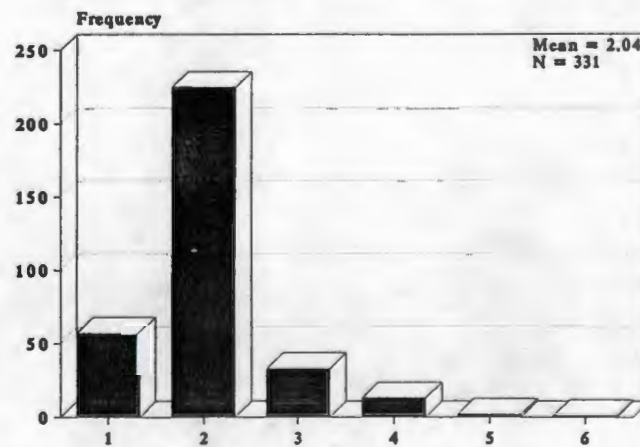
Number in Household Working Full-time



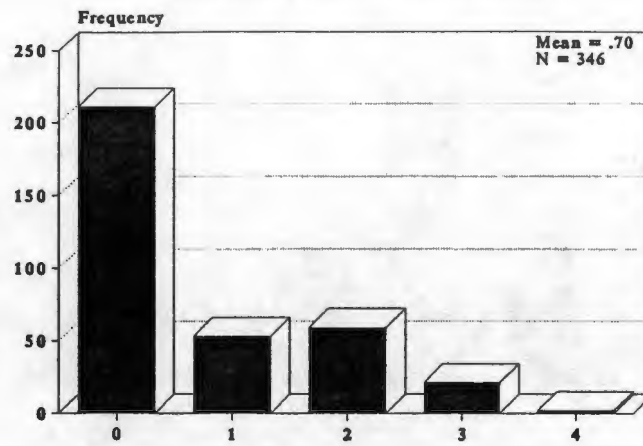
Total Number in Family



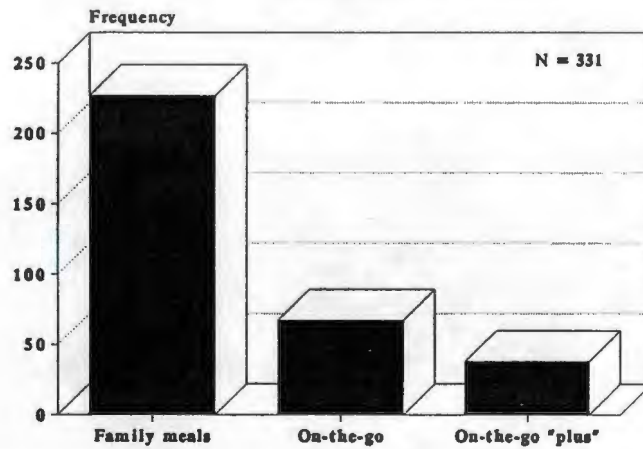
Number Adults in Family



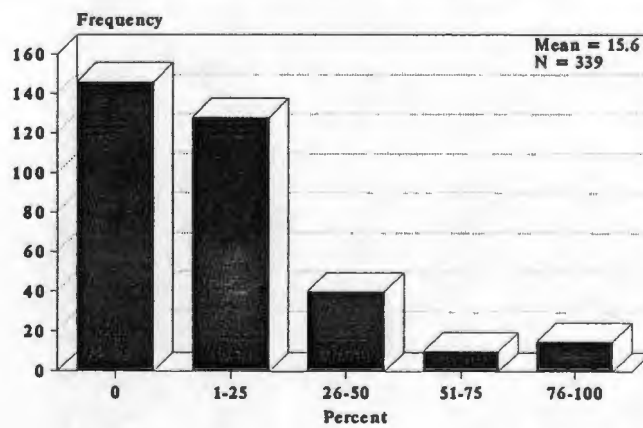
Number Children in Family



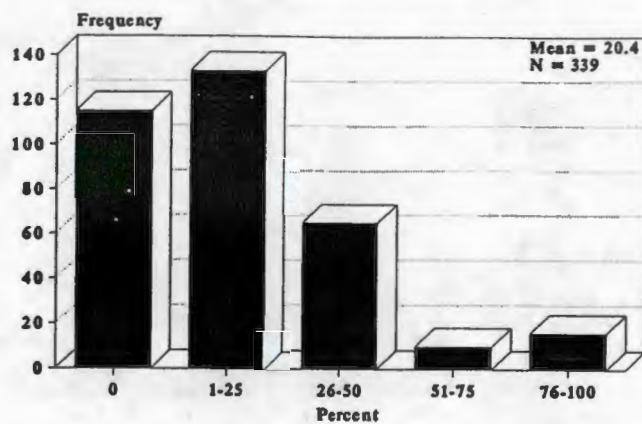
Family Lifestyle



Percent of Meals Partially Prepared in Microwave - Breakfast



Percent of Meals Partially Prepared in Microwave - Lunch



Percent of Meals Partially Prepared in Microwave - Dinner

