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IMPLICATIONS OF PRICE AND PRODUCT ATTRIBUTES**

Wayne D. Purcell
Professor and Director,
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Agricultural Economics

April 1993

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Introduction

There continues to be uncertainty and difference of opinion with regard to the status of beef demand. At the industry level, there are two basic and somewhat conflicting lines of thought as to what has occurred across the past 12 to 15 years. One position is that it is higher prices of beef relative to the competing meats that has caused per capita beef production and therefore per capita consumption to decline. The other line of thought is that price relationships are important, but it is more nearly non-price attributes of the product that have caused the problems. This latter approach suggests that preference-related declines in the demand for beef have occurred, declines that cannot be explained by the traditional demand-shifting measures of consumer income and relative prices across the competing meats. Knowing what has in fact occurred is important to industry leaders who make decisions on promotion, research, and educational programs.

Figure 1 places the issue in an appropriate context. On the vertical axis are inflation-adjusted prices of Choice beef at retail. The actual prices for the years since 1960 have been divided by the consumer price index, with the base period 1982-1984=100, to remove the influence of overall price inflation. This adjustment is important to convert all the yearly beef prices to a "common denominator" so that the prices can be legitimately compared. If the price data were not adjusted for overall inflation, then year-to-year price moves would be a mixture of price inflation and of changes in the underlying supply and demand balance. Since the interest is on focusing on what is happening with regard to the demand for the product and the underlying supply and demand balance, it is important that the influence of overall price inflation be removed.

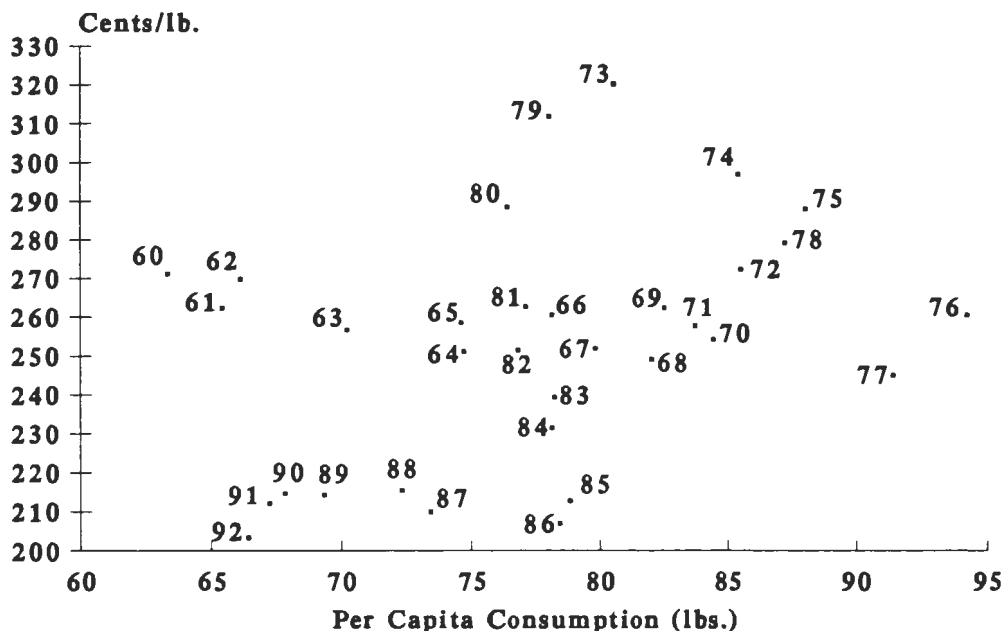


Figure 1. Per Capita Consumption and Deflated Retail Price for Beef (1982-84=100), 1960-92.

On the horizontal axis is shown per capita consumption in retail weights. The conversion factor for changing carcass to retail weights has changed slightly in recent years, and this change in conversions will explain part of the decline in quantity since 1985. But the adjustments are not of sufficient magnitude to significantly influence the pattern in the plots which, when interpreted, present quite a

negative picture. The numbers in the body of the figure show years, as implied, ranging from 1960 up through 1992.

The sharp decline in per capita supply (which equals per capita consumption) between the 1975-78 period and 1992 is the visible result of the demand problems. The industry was forced to downsize dramatically as consumer demand weakened and resources were forced out of business. Between 1975 and the late 1980s, the beef cow herd declined by over 12 million head--the equivalent of more than 300,000 average size producers in the U.S. being forced out of business by market forces.

In assessing what actually happened and why, it is important to recognize the distinction between a change in quantity and a change in the overall level of demand. Figure 2 provides a reference plot with a beginning price/quantity combination labeled A. This is one price/quantity combination on a demand curve that can be plotted from a schedule of prices and quantities, the curve labeled DD. Technically, demand is defined as the entire schedule of the quantities that consumers will take at alternative prices. Note the definition is in terms of a schedule, not in terms of a particular level of per capita consumption or a particular price. At any one point in time, a typical consumer would take more of a particular product only if prices are lower. If prices are higher than those shown in conjunction with combination A, prices above P_A on the vertical axis, then that same typical consumer will take a smaller quantity of the product. Thus, the level of demand is defined in terms of the entire schedule and the price/quantity schedule for a typical, rational consumer will be a downward sloping curve when plotted. The downward slope reflects the "law of demand" which says that a consumer will, at any particular point in time, take more only at a lower price.

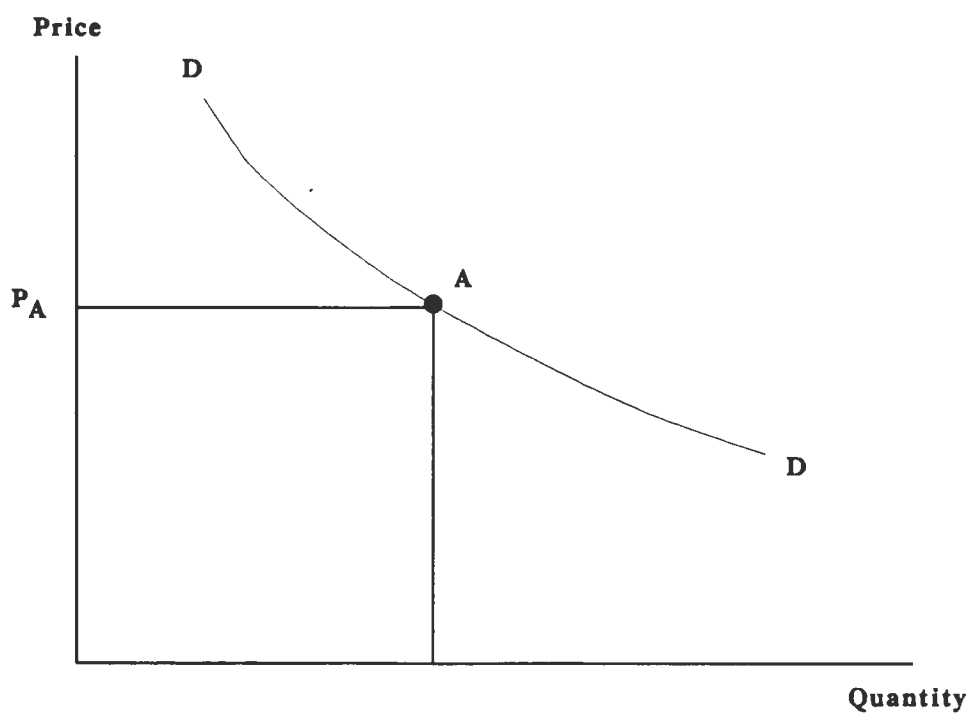


Figure 2. Demonstration of a Particular Price-Quantity Combination (At Point A) on a Demand Curve.

By dividing the space in Figure 2 into quadrants and using the reference point A, it is possible to develop some understanding of what is and is not a change in the level of demand. Any move into the quadrant down and to the left of point A will constitute a decrease in demand. This would mean, for example, that a decreased quantity of product can be moved into consumption only at lower prices. At the vertical extreme of this quadrant, the same quantity would be moving into consumption at lower prices or, at the horizontal extreme, a smaller quantity would be moving into consumption at constant prices. Figure 3 reproduces this pattern with the quadrant that would involve decreases in demand shown in cross hatch format. Any move from point A to a new price/quantity combination in this quadrant lying below and/or to the left of point A will constitute a decrease in demand. Intuitively, most observers would recognize that there are problems on the demand side if the only way a seller can sell even a smaller quantity of product than at a previous time period is by reducing the price.

From 1979 through 1986, a dramatic pattern developed on the scatter plot shown in Figure 1. There were no significant changes in per capita consumption, which meant per capita beef supplies were essentially constant. In the face of that constant per capita supply, the inflation-adjusted prices of beef at retail had to decline by more than 30 percent to get the consumer to continue taking that same per capital quantity. Figure 1 shows the developments, and the pattern in the 1979-86 period paralleled a move down the vertical extreme below point A in Figure 3. In 1987 through 1992, the pattern changed. Price has been maintained at essentially a constant level by reductions in per capita supply. The pattern for this period, using 1986 as a reference point, parallels the horizontal extreme from point A in Figure 3. Demand continued to decrease.

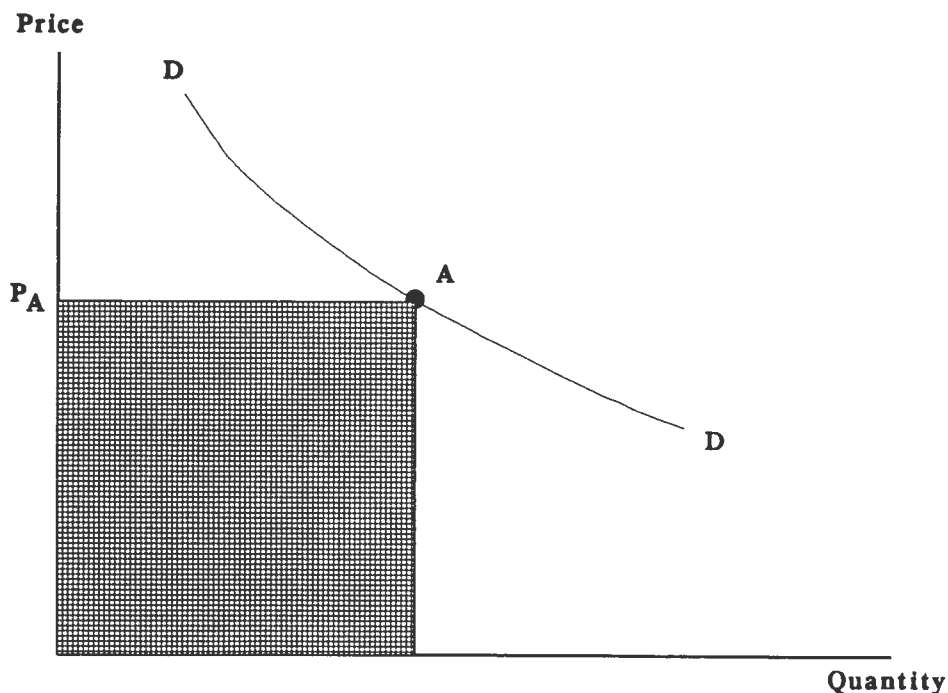


Figure 3. Demonstration of a Decrease in Demand Relative to Point A.

Having established that demand decreased after 1979, the important question is "why." If the downward shifts in demand were due to declining prices of substitutes or to declining consumer incomes, then an emphasis on research and education programs to get beef prices down is the correct emphasis. But if the demand decreases were due instead to preference shifts, then product and market development might be of equal importance. This issue is discussed in more detail below. The need here was to document that demand did decrease.

The declines in per capita consumption from 1987 into the early 1990s are a stark reflection of what will eventually happen if demand continues to shift down. As suggested above, industry inventory and production potential have been trending lower since 1975 under the weight of generally declining prices. The inventory dropped from approximately 132 million head in 1975 down into the area of 100 million head or less in the late 1980s. That massive liquidation eventually started to significantly reduce per capita offerings. It was no longer possible to increase output per cow via technology and cross breeding programs as had been done during the late 1970s and early 1980s. As resources and producers exited the industry, the production potential declined and the inevitable result was a reduction in per capita supplies and a related reduction in per capita consumption. Figure 4, which is the total cattle inventory across that time period, shows the long-term decline after the peak in herd size in 1975.

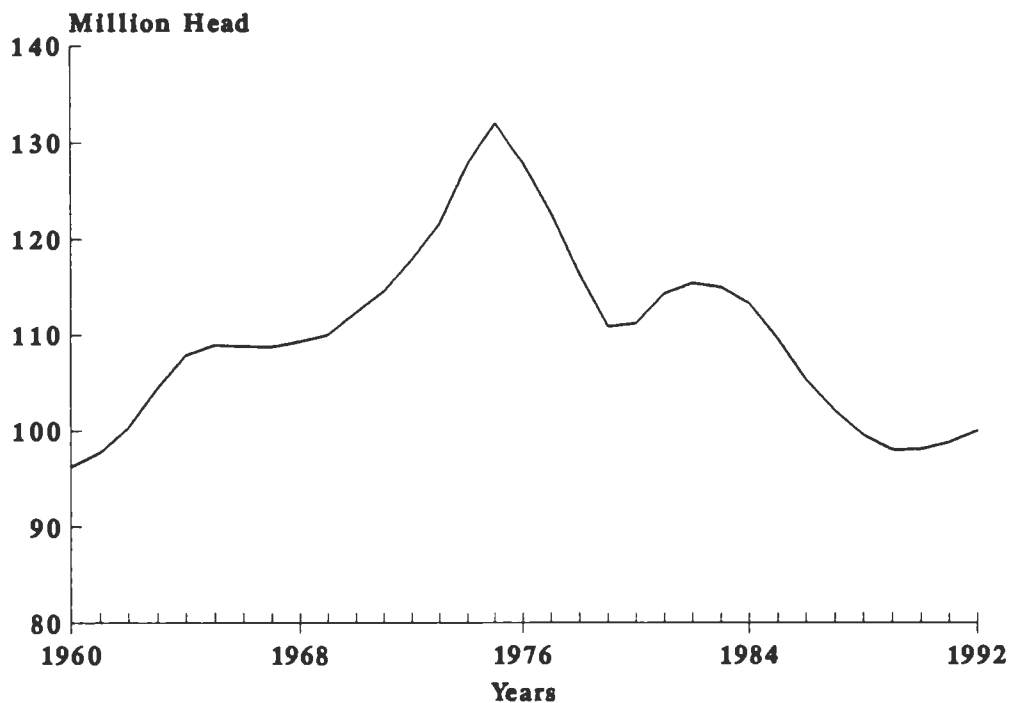


Figure 4. Total Cattle and Calves, January 1 Inventory, 1960-1992

The visual evidence in the plot in Figure 1 and the reasoning developed in Figures 2 and 3 make it difficult to accept the conclusions by analysts such as Johnson, *et al.* A group of "outside experts" was commissioned by the National Cattleman's Association to look at what was occurring in the beef industry and to offer suggestions with regard to industry programs and appropriate strategic initiatives. The group

issued a report in 1989 entitled, Competitive Issues in the Beef Sector: Can Beef Compete in the 1990s?, and one phase of that study dealt with what is occurring in the demand for beef. The primary conclusion was that nothing has happened in terms of the basic preference for beef relative to other meats and that all of the adjustments and the declines in per capita supply and consumption could be explained by changes in consumer income and changes in relative prices of competing meats across the past two decades. The authors reported results of a study that purported to explain 97 percent of the variability in per capita consumption across the relevant time period using consumer incomes and meat prices as explanatory variables. Their conclusion was that the only major problem facing the cattle industry was that the beef product was priced too high at retail, and the overwhelmingly important adjustment for the industry was to get costs down.

The study reported by Johnson, *et al.* appears to be flawed in several respects. Most analytical efforts that employ a long time series of annual data (prices, quantities, incomes, etc.) across a number of years report very high coefficients of determination, the measure of the percentage of the variability that is explained by the modeling effort. That coefficient of determination was 97 percent for the Johnson study, leading to the conclusion that changes in incomes and changes in relative prices are the only important demand shifters that have occurred in the beef sector.

The study used a model that was not specified to allow or identify shifts in consumer preferences. The study was set up to explain variations in per capita consumption of beef over time. The model "misses" on the high side in its estimates of per capita consumption for each of the last eight years of the study period. The authors gave no indication that they were concerned about the errors, the consistency in direction of the errors, and the apparent evidence from analysis of these errors or "residuals" that something else was occurring that was not being explained by consumer incomes and relative meat prices, the explanatory variables that were used in the model. The only "demand shifter" that remains is a change in preferences, and it is a tautology to suggest that preferences did change during the period. There is no other plausible explanation.

It is very important to sort out what is and is not going on in the beef sector, to get the uncertainty resolved. The conclusions drawn by the group headed by Johnson focused attention on production technology and cost of production as the only major challenge. It is extremely important to be efficient in production and to keep costs as low as possible. But the focus of industry programs will be inappropriate if the challenges facing the industry are in fact broader. In particular, if the problems on the demand side approach, equal, or exceed the cost of production and price levels in importance in explaining consumers' reactions to beef across the past 10 to 15 years, then a broader and more comprehensive industry research and education agenda is needed.

The data in Figure 1 clearly suggest something dramatic occurred. It is not sufficient to dismiss the possibility of non-price, non-income related problems at the consumer level given the picture shown in Figure 1 and the problems that are apparent in the Johnson, *et al.* effort. The studies that argue no preference-related problems have occurred do not adequately explain why the price had to decline over 30 percent from 1979 to 1986 to keep the consumer buying essentially a constant per capita supply of beef. There is a need to look in more depth at what was going on, especially during the decade of the 1980s, and to support the inference that preference changes have occurred.

Evidence of Change

The conclusion that changes in consumer incomes and changes in relative meat prices are sufficient to explain the demand declines in the beef sector across the past 12 to 15 years carry some implicit assumptions. First, there is the assumption that beef prices have been going up relative to

chicken and pork prices. Basic consumer behavior theories suggest that consumers react and make adjustments in consumption patterns based on relative prices. If prices of the competing meats are to explain what occurred in the beef sector during the 1980s, then pork and beef prices were presumably going down relative to beef. If that is not the case, then there is no basis for the argument that the decreases in beef demand that are clearly documented in Figure 1 are explained in a significant way by lower relative prices for substitute meats.

Figure 5 provides a plot of beef relative to chicken prices from 1970 to 1992. The ratio is the USDA Choice beef retail price divided by the retail price series for whole broilers. The pattern is very interesting. During the 1970s, when the scatter plot in Figure 1 would suggest that demand for beef was increasing, beef prices were, in fact, going up relative to broiler prices. During much of the 1980s, quite the opposite was true. Beef prices were trending lower relative to chicken prices, and it is important to remember that this is the price series for whole broilers. If a price series for filet of chicken breast or some other value-added, further processed chicken product were used, the declines in beef prices relative to chicken prices during the 1980s would be even more dramatic. It is thus impossible to argue that the dramatic declines in beef prices from 1979 through 1986, documented in Figure 1, were caused by declining chicken prices relative to beef prices. The evidence in Figure 5 suggests quite the opposite.

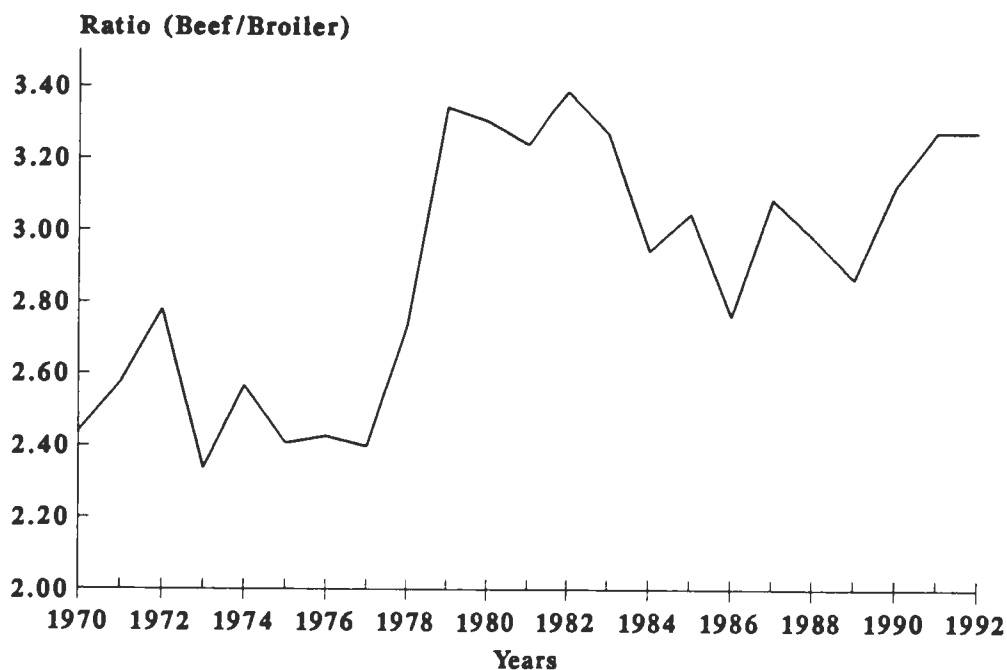


Figure 5. Ratio of Retail Choice Beef to Broiler Prices, 1970-92.

Figure 6 records a similar plot of beef prices relative to pork prices. Although the pattern is not as dramatic as that shown with broilers in Figure 5, it is clearly the case that beef prices were not going up significantly relative to pork prices during the 1980s. Once again, to argue that lower prices for substitutes created the problem during the 1980s is to argue that beef prices were going up relative to the competing meats such as pork. Figure 6 suggests this is simply not the case. There is no reason to argue that pork was attracting market share or competing more favorably with beef only because pork prices were going down relative to beef prices.

If it is not lower relative prices of the competing meats that caused the problem for beef, then some of the available studies listed in the references would suggest the problems must be in terms of income at the consumer level. Figure 7 shows a plot of inflation-adjusted disposable personal income on a per capita basis for 1970 through 1992. With the exception of the 1979-82 years, inflation-adjusted disposable personal incomes were increasing significantly, especially during the mid-1980s when the demand for beef was showing its biggest problems. Since all studies indicate that the income elasticity for beef is positive (suggesting that as incomes go up consumers would be inclined to spend more of their income on beef), then the increasing incomes during the 1980s should have increased demand for beef. It is not possible, then, to use changes in consumer incomes to explain or justify the demand declines that occurred in the 1980s in the beef sector.

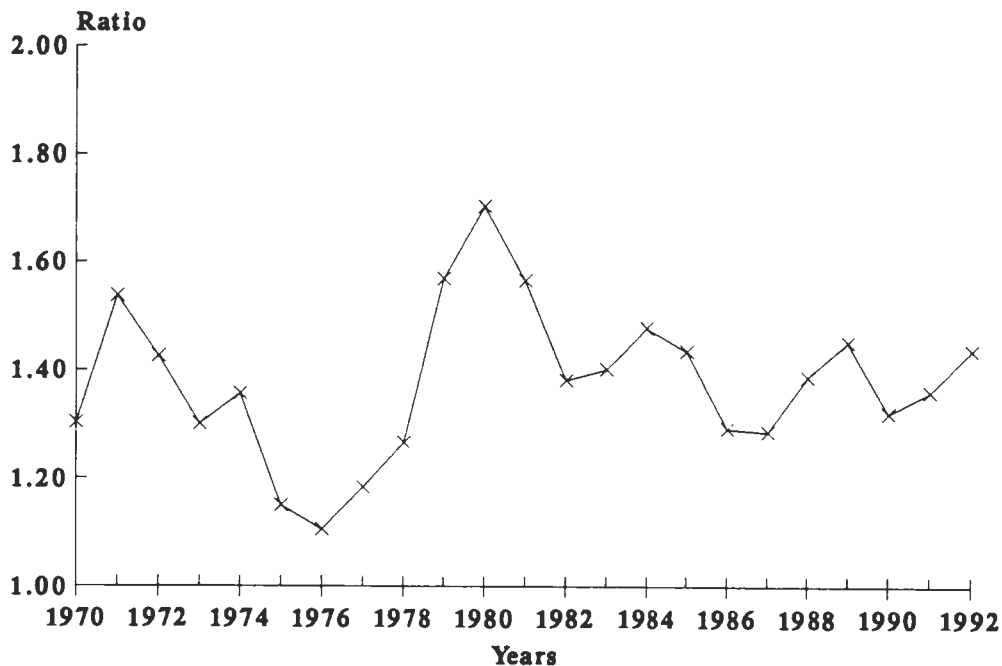


Figure 6. Ratio of Choice Beef Prices at Retail to Pork Prices, 1970-92.

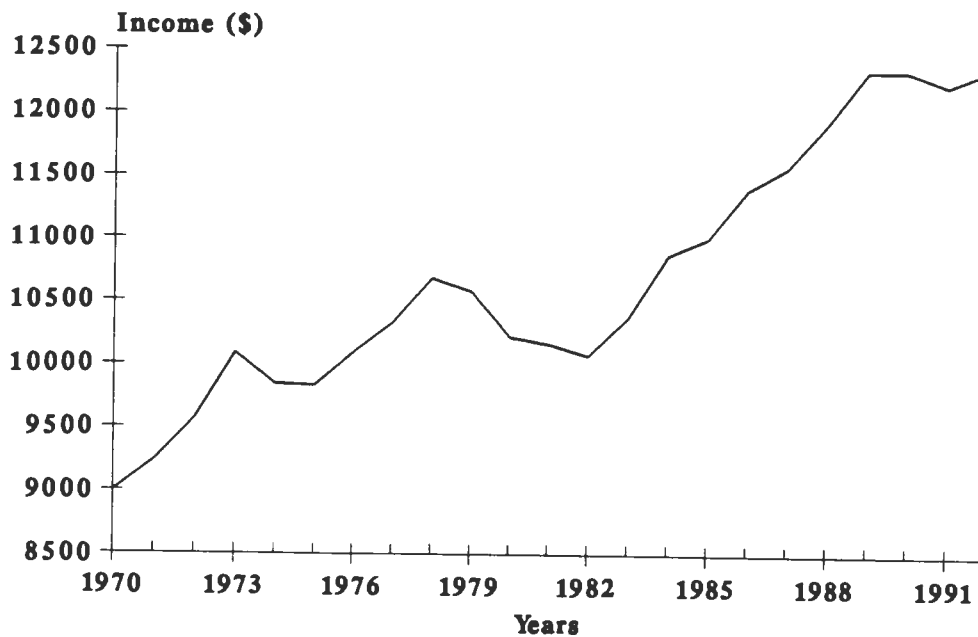


Figure 7. Inflation Adjusted (CPI, 1982-84=100) Average Per Capita Disposable Income, 1970-92

It is important to recognize that the difficulties in the beef sector did not end in 1986. The period 1979 through 1986 has been singled out for attention because it shows a dramatic pattern of price declines in the presence of largely constant per capita supplies. The pattern for 1987 through 1992 looks somewhat different, but, as suggested earlier, the demand problems continued. Most research studies suggest that demand for beef at retail has an elasticity near $-.67$ in value. The $-.67$ means that a 2 percent increase in quantity would bring a 3 percent decline in price if the only change is, in fact, the change in quantity, and supply is just moving along the same demand curve. This property of elasticity, the percent change in quantity divided by percent change in price, can be used to analyze price changes such as those from 1986 to 1987 to see what, in fact, was occurring with regard to the level of demand.

From 1986 to 1987, the per capita offering and per capita consumption declined by 6.4 percent. If we take this decline in offerings and put it in the numerator of an elasticity equation, then it is possible to estimate what the price change should be from 1986 to 1987 if the only thing that occurred was a reduction in per capita supply of beef. In other words, we set up the following

$$-.67 = \frac{-.064}{X}$$

and solve for X, the change in price. X is .096. The price should have increased by 9.6 percent from 1986 to 1987 if the only thing that was occurring in the basic supply-demand framework was a reduction of supplies. The 1987 price would have been 1.096 (\$2.07) or \$2.26. In fact, price did not increase in such a significant way from 1986 to 1987. Prices for the two years were relatively close after accounting for overall price inflation. The year-to-year increase was from \$2.07 to \$2.10, only a 1.5 percent increase. Figure 8 shows what, in fact, occurred. The only way to have a balance of supply and demand

for 1987 is to sketch a demand curve for 1987 that lies down and to the left of the demand curve in 1986. This shift to a new curve is shown in Figure 8 and tends to confirm the fact that even though prices were no longer declining dramatically, the demand for beef continued to drop in 1987 and in subsequent years. In Figure 8, the price would have been \$2.26 if demand in 1987 had been equal to demand in 1986, and the only change was a reduction in supply from S_{86} to S_{87} . There is a very significant difference between \$2.26 and the actual \$2.10 that was recorded in the marketplace. Even though there were no visible price declines in 1987 to parallel those of 1979-86, the pattern of sharply reduced supply moving at only a slight increase in price is just as devastating. Demand decreased significantly from 1986 to 1987, and that general pattern has continued through 1992.¹

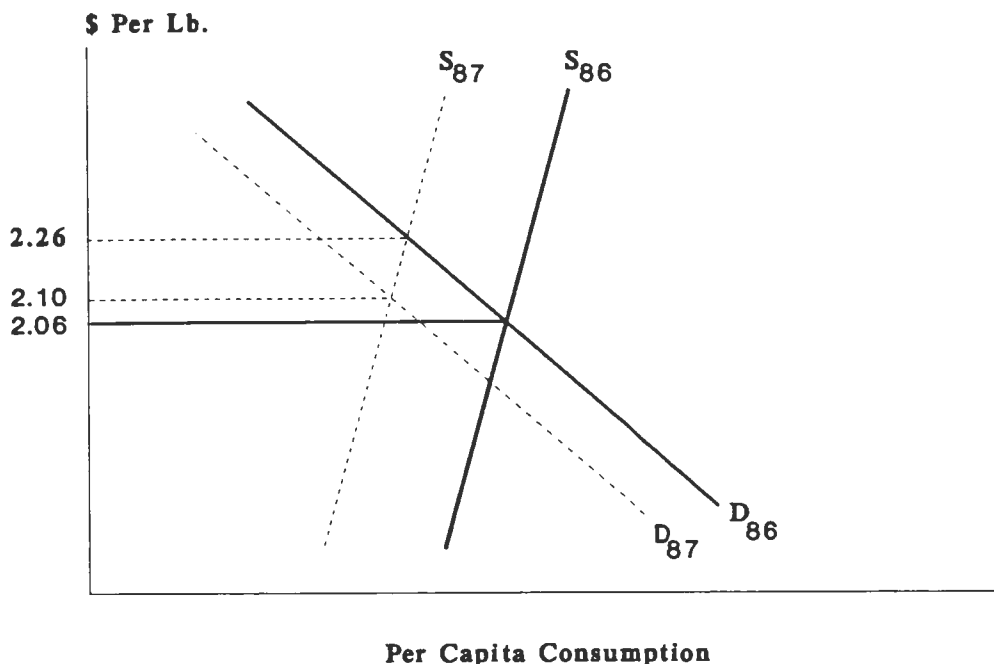


Figure 8. Demonstration of the Demand-Supply Dynamics for 1986 and 1987.

There is also evidence from recent econometric modelling efforts that the demand for beef was, in fact, declining during the 1980s for reasons other than changes in consumer incomes and changes in relative prices. Table 1 reports the results of an analytical effort designed to explain changes in quarterly per capita consumption of beef since 1960 as a function of prices of beef, prices of chicken, prices of pork, consumer income, seasonal price factors, and "shifters" that allowed for shifts in demand that could not be explained by these normal economic factors. The particular variables in the model are explained or defined in the table, and the important variables here are the variables called DUM77 through DUM91. These are "shift variables" that allow the quantity of beef consumed to change for reasons other than changes in prices of competing meats and changes in consumer incomes, the economic shifters that were also included in the model. If preferences shifted, DUM77 through DUM91 would identify and measure the impact of those shifts. Starting in the late 1970s, the coefficients on these shift variables get more and more negative. They are statistically significant, which means that the per capita consumption

¹This type of analysis implicitly assumes that pork and broiler prices were constant. In fact, pork prices declined from 1987 to 1988 and broiler prices went up. Using the elasticity framework requires an assumption that all demand shifting factors are held constant.

Table I. Analysis of Per Capita Beef Consumption with Economic and Shift Variables, Quantity Data, 1960-1991.

Variable	Coefficient	Std. Error	T-ratio
CONSTANT	17.1670	1.037	16.552
BEEFDEF	-.0415	.00469	-8.826
PORKDEF	.0203	.00333	6.091
BRDEF	-.0306	.00719	-4.256
DEFINC	.0015	.00009	16.387
DUM77	-1.0449	.2727	-3.832
DUM78	-1.5269	.2564	-5.955
DUM79	-2.1149	.3539	-5.976
DUM80	-2.4806	.3378	-7.343
DUM81	-3.5052	.3047	-11.504
DUM82	-4.3796	.3080	-14.219
DUM83	-4.8086	.3082	-15.604
DUM84	-5.4387	.3317	-16.394
DUM85	-6.2281	.3603	-17.288
DUM86	-7.2491	.3830	-18.925
DUM87	-8.9553	.3746	-23.908
DUM88	-9.3683	.4029	-23.252
DUM89	-10.395	.4398	-23.636
DUM90	-10.966	.3966	-27.647
DUM91	-11.4550	.4159	-27.546
QDUM2	.0046	.1131	.041
QDUM3	.4524	.1132	3.998
QDUM4	-.3049	.1139	-2.6769

The variables defined:	
BEEFCON =	per capita consumption of beef, retail weights (lbs.)
BEEFDEF =	deflated price of beef at retail (c/lb.)
PORKDEF =	deflated price of pork at retail (c/lb.)
BRDEF =	deflated price of broilers at retail (c/lb.)
DUM77 =	shift dummy to account for changes in BEEFCON in 1977 not captured by the economic variables (BEEFDEF, PORKDEF, BRDEF, DEFINC) or the seasonal factors (QDUM2, QDUM3, QDUM4)
.	.
DUM91	shift dummy to account for changes in BEEFCON in 1991 not captured by the economic variables (BEEFDEF, PORKDEF, BRDEF, DEFINC) or the seasonal factors (QDUM2, QDUM3, QDUM4)

of beef was declining for reasons other than changes in relative prices and changes in consumer incomes, the traditional economic forces that were included in the model. It is important to recognize that this analysis does not indicate why the downward shifts were occurring. It could be due to concerns about fat levels, concerns about cholesterol, concerns about lack of convenience in meal preparation, concerns about inconsistent quality, or to any number of product and service attributes as the consumer looks at the offerings in the beef sector. But there is strong evidence that the demand for beef was declining for preference-related reasons that could not be explained by just relative prices, consumer incomes, and seasonal factors.²

A Consumer Survey

There is a need, then, to continue to explore what is occurring at the consumer level and to examine the "why" of consumers' changed buying behavior. This bulletin reports the results of a survey that was conducted to explore in more depth what is occurring at the consumer level. Based on responses to a random sampling of 2,000 Virginia households, 100 households were selected as a relatively broad "panel" to respond to more detailed questions about beef. The survey form listed in the appendix to this bulletin was distributed during 1992, and after a planned follow-up reminder, a total of 90 of the 100 panelists responded. The results of this survey are analyzed and presented in the remainder of this bulletin and are followed by some overall observations as to what the findings mean in terms of what is occurring at the consumer level and in terms of needed programs in research and education at the industry level. Histograms showing means, number of responses, etc., for age, income, education, family size, and similar socio-economic measures of the respondents are shown in Appendix II.

The results are presented in a format that repeats the question in the survey, shows a histogram of the responses with the mean response and the number of responses (N), and shows statistical correlations to indicate whether and how particular types of consumers answered differently. In reporting the correlations, a P-value of .20 is used as the cutoff level. For P-levels above .20, there is a probability bigger than 20 of 100 that what is being observed is, in fact, just due to chance. In using the correlations, then, those with the smaller P-levels should be considered more important and more reliable as indicators that particular types of consumers respond differently. A brief commentary on what the correlations mean is also offered.

The Results

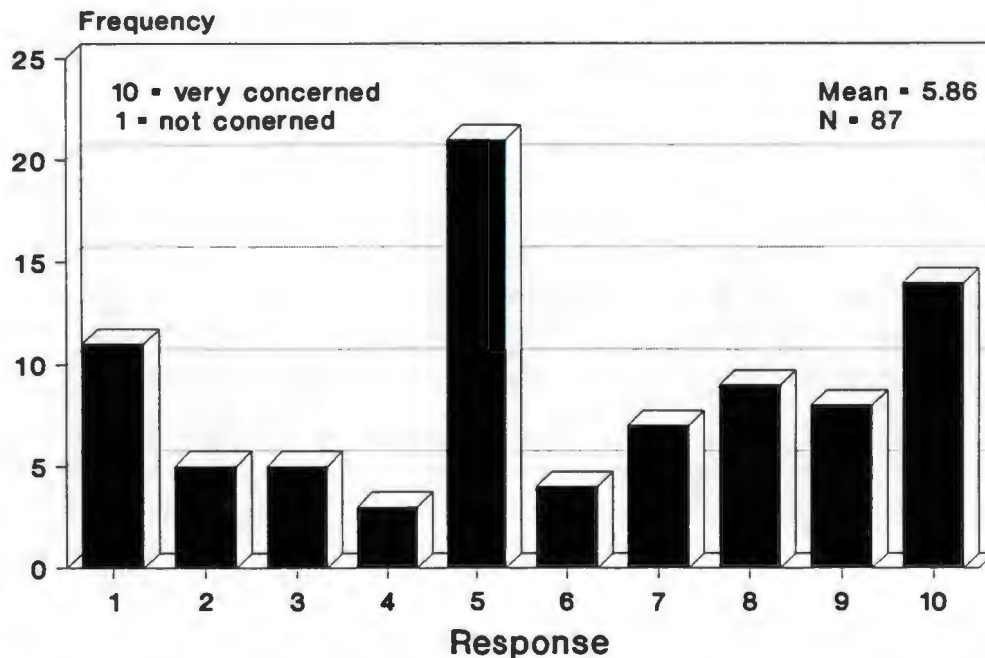
Reactions to Economic Recession

Part 1 of the survey dealt with the consumer's reaction to the economic recession of 1991-92. General information on how consumers respond is of special importance to processors and retailers who must make decisions on how to merchandise beef in general and how to best present particular cuts of beef. More specific information on type of response by socio-economic profile of the consumer group will help in segmenting markets and in tailoring merchandising and promotional efforts to specific types of consumers.

²The negative sign on the deflated broiler price series (BRDEF) is not consistent with broilers as a substitute product. From 1960 through the mid-1970s, per capita consumption of beef trended sharply higher and deflated broiler prices trended lower. The two, therefore, were negatively correlated and the negative sign prevails in the regression model. Broiler prices were retained in the model on theoretical grounds since broilers do clearly compete with the beef sector for market share and for the consumer's dollar.

Question: *What is your level of concern over the last 2 years about your job or the general economic well-being of your family during the economic recession.*

Level of Concern about Economic Recession

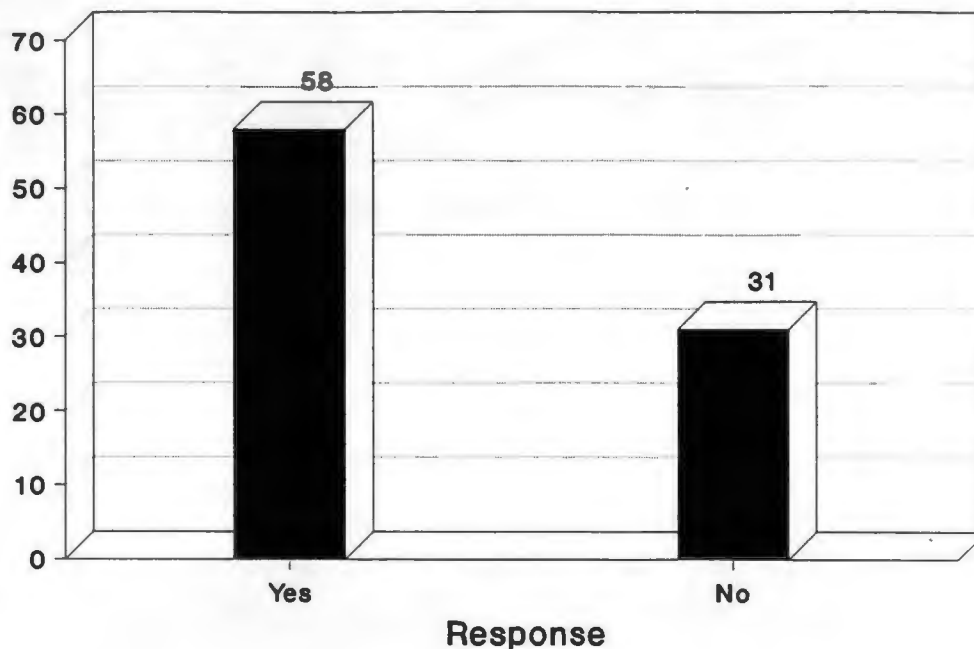


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.184	.091	86
No. people in family	.290	.006	87
No. adults in family	.221	.041	86
No. teenagers in family	.199	.074	82
Income before taxes	-.222	.045	82
No. part-time workers	.166	.153	76

Older consumers show negative correlations, which means they tended to be less concerned about the recession. These results are consistent with expectations. Every measure of family size suggests the larger families and those with more workers are more concerned about recession than the average respondent. The larger families tended to pick numbers above 5.86, the mean response. Higher-income families were less concerned, also an expected result. The negative correlation indicates that higher incomes are associated with responses below the 5.86 mean, suggesting higher income families can absorb the problems of economic recession more easily.

Question: *Have you made any adjustments in terms of decreasing what you spend within the past 2 years in response to the recession?*

Decreased Spending Due to the Recession



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.255	.016	88
Education	-.211	.051	86
No. people in family	.139	.195	89
Income before taxes	-.271	.013	84
No. full-time workers	.186	.096	81
Concern for future well-being	.409	.0001	87

A positive correlation suggests a tendency toward a "yes" answer, a negative correlation, a "no" answer. (The responses were coded 1 for yes, 0 for no). The larger families, the families with more full-time workers, and those more concerned about their future economic well-being tended to answer "yes." The older and better-educated consumer and, not surprisingly, those with higher incomes have been less likely to reduce spending during the recession. Some of the older respondents would be retired, of course, and not worried about losing their jobs. The better educated might have some job security, even though the recession of the early 1990s did see white collar jobs eliminated.

A number of questions asked how the respondents adjusted spending during the recession on cars, clothing, retirement/savings, furniture, houses, vacations, and food. The objective of these questions was to see whether it is food or non-food items that bear the brunt of the adjustments during an economic recession. If food expenditures tend to stay relatively constant, then retailers and merchandisers can plan their offerings accordingly.

Table II pulls the mean responses together. In general, spending on housing, furniture, vacations, cars, and even clothing tend to be decreased the most during recession. Spending on retirement/savings and on foods apparently suffers less. Within this overall pattern, there were obvious exceptions. Larger families tend to be even more conservative across many of the categories than the average respondent. The better educated tend to reduce expenditures less than average across many of the categories, perhaps because their incomes tend to be higher and because they have more job security. The histogram and correlations are shown on page 15 for the responses on foods.

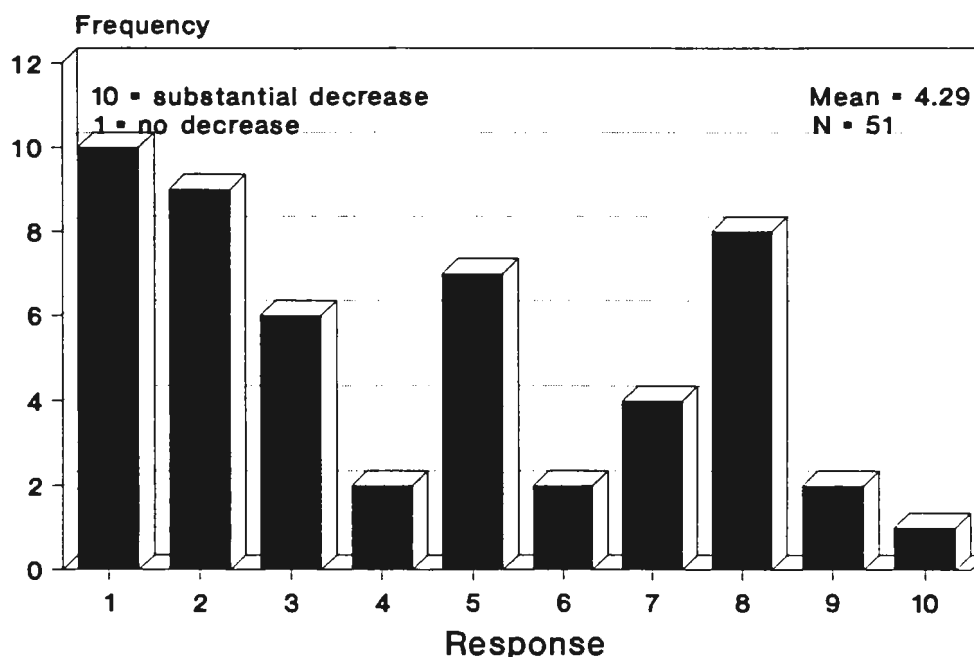
Table II. Mean Rankings of Spending Changes During Recession for Broad Product or Service Groupings

Category	Mean Rating (10=substantial decreases; 1=no decreases)
Car	6.59
Clothing	6.21
Retirement/Savings	4.54
Furniture	7.49
Food	4.29
House Purchase	6.54
Vacations	6.83

Having established that spending on foods tends to decrease less than some non-food categories, interest then swings to what happened for the meats and for particular types of meats. Merchandising and pricing programs can, perhaps, be tailored to meet the changed needs of consumers during economic recession and reinforce the image of the seller in the eyes of the consumer.

Question: *During the economic recession, how has your spending changed for: Food?*

How Spending During Recession Changed: Food

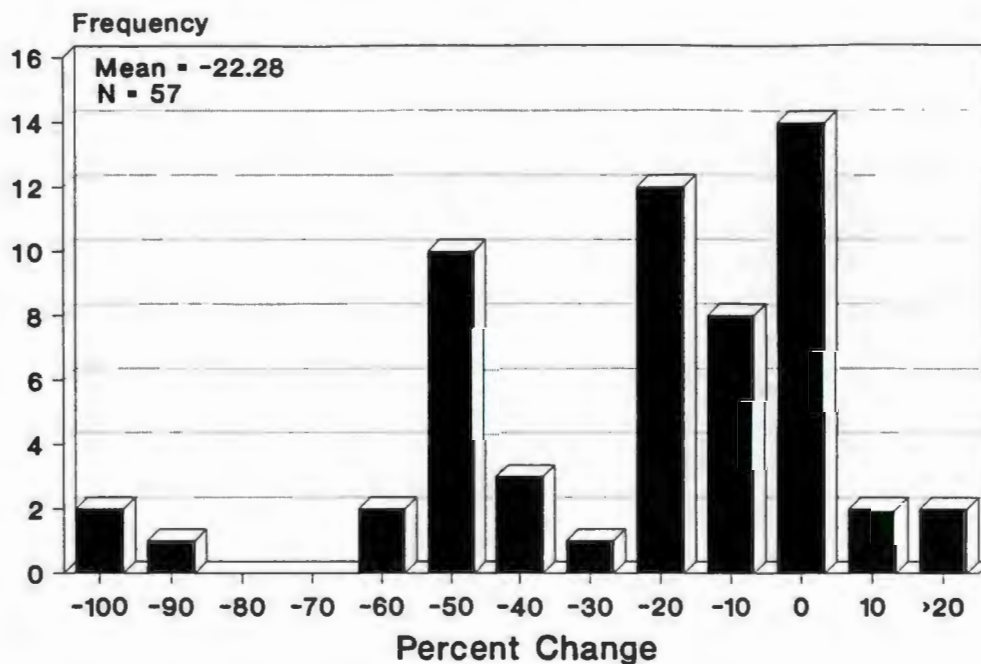


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Income before taxes	-.255	.081	48
No. full-time workers	-.313	.036	45
No. part-time workers	.364	.015	44
Concern for future well-being	.308	.029	50

Higher-income families and those with more full-time workers tended to answer below the overall 4.29 mean. Families with more part-time workers (perhaps some are forced to work part-time to get by) and those with higher levels of concern about the recession tended to respond with larger numbers, suggesting bigger than average reductions on food by these groups. For food as a whole, the 4.29 is well below the levels for car, clothing, furniture, etc., a significant finding for food merchandisers. It is not food that gets the big decreases in spending.

Question: *During the recession, how has your spending changed for: All Meats?*

Percentage Changes During Recession
in Money Spent on: All Meats

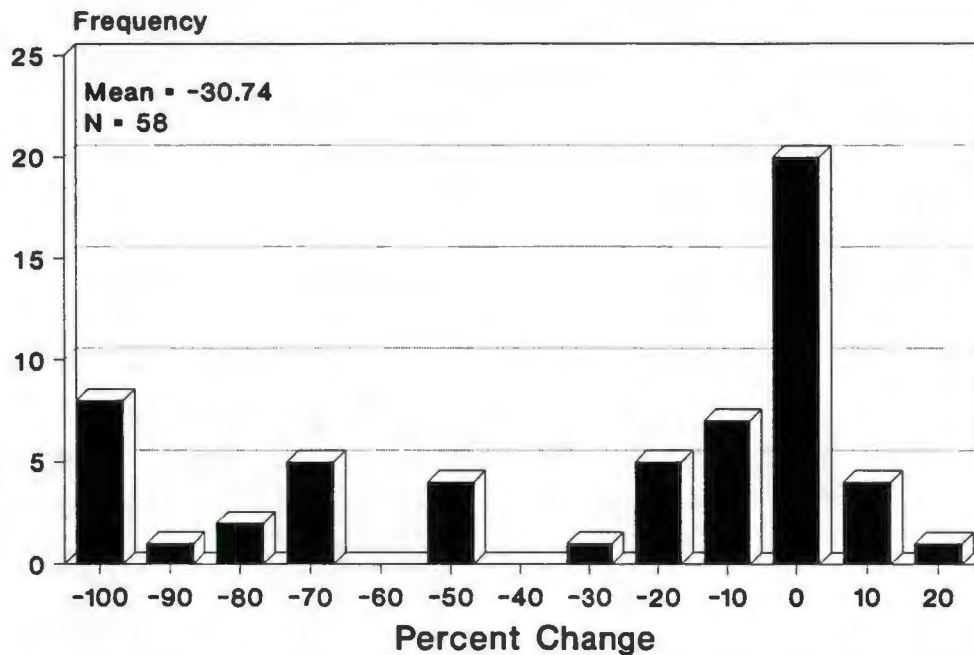


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
No. people in family	-.218	.103	57
No. adults in family	-.379	.004	57
No. teenagers in family	.210	.119	56
No. full-time wage earners	-.336	.015	52
No. part-time wage earners	-.262	.068	49

Only the families with more teenagers show a significant tendency (and the P-value is statistically "weak" at .119) to be above the mean of a 22.28 decrease in spending on all meats during the recession. All the other groupings suggest the larger families, especially the families with more than 1 worker, either full-time or part-time, reduced expenditures even more than the average. *These findings suggest a focus on low prices and promoting value to the large family, likely more nearly blue collar families, during periods of economic recession. Clearly, there are significant moves away from meats as a total product grouping during economic tough times.*

Question: *During the recession, how has your spending changed for: Pork?*

Percentage Changes During Recession
in Money Spent on: Pork

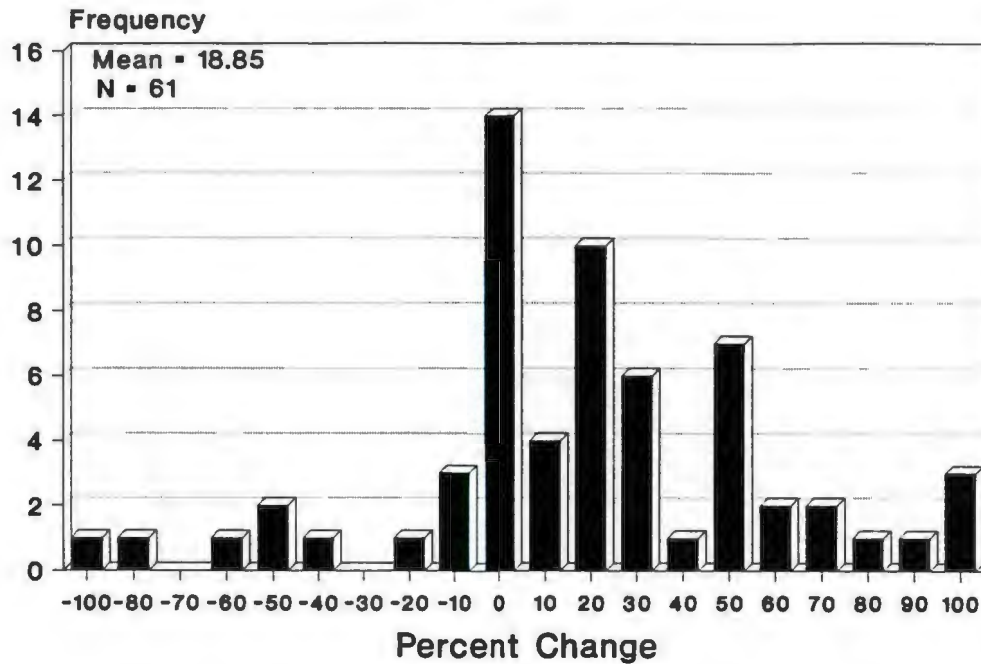


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
No. adults in family	-.305	.020	58
Incomes before taxes	.206	.139	53
No. full-time wage earners	-.208	.131	54
Concern for future well-being	-.310	.019	57

The mean is a very low -30.74, suggesting the mean was influenced by the respondents who indicated, for example, a 100 percent decrease in money spent on pork. It is possible that respondents avoided pork entirely for economic reasons, but this set of responses might be distorted by respondents who do not eat pork for religious reasons. Within that caution, the large families with high levels of concern about job security, etc., reduced expenditures even more sharply. The high-income families increased spending or reduced it significantly less than the average 30.74 percent given the positive .206 correlation. *The general response pattern shows a tendency to move away from pork during economic recessions. High-income families were less inclined to reduce spending on pork.*

Question: *During the recession, how has your spending changed for: Poultry?*

Percentage Changes During Recession
in Money Spent on: Poultry

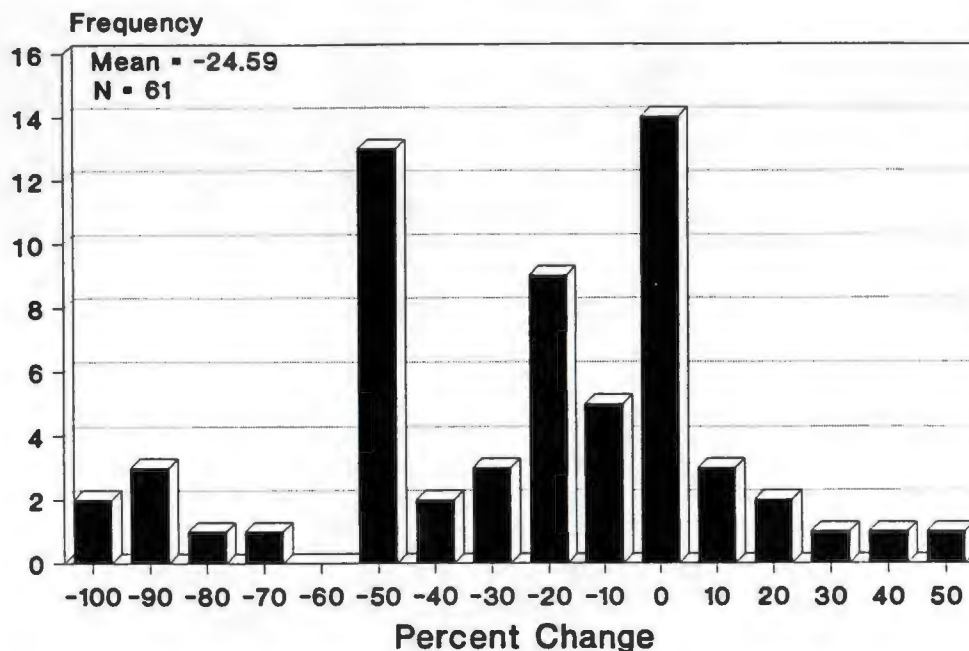


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.252	.053	60
No. pre-teen children	.193	.147	58

The mean response is a positive 18.85, a response that differs sharply from the reductions on all food and the other meats. Around this overall response, older consumers tend to show smaller increases or perhaps even decreases. Families with pre-teen children show a weak tendency (P-value=.147) to increase expenditures on poultry even more than 18.85 percent. *The mean response is a significant finding. Poultry firms have an opportunity to entrench themselves with consumers during periods of economic recession and to increase market share. Poultry should be merchandised to take advantage of this tendency, and the other meats should be merchandised insofar as possible to mitigate the concerns facing consumers during economic recessions. Value should be stressed in presentation and in packaging.*

Question: *During the recession, how has your spending changed for: Beef?*

Percentage Changes During Recession in Money Spent on: Beef

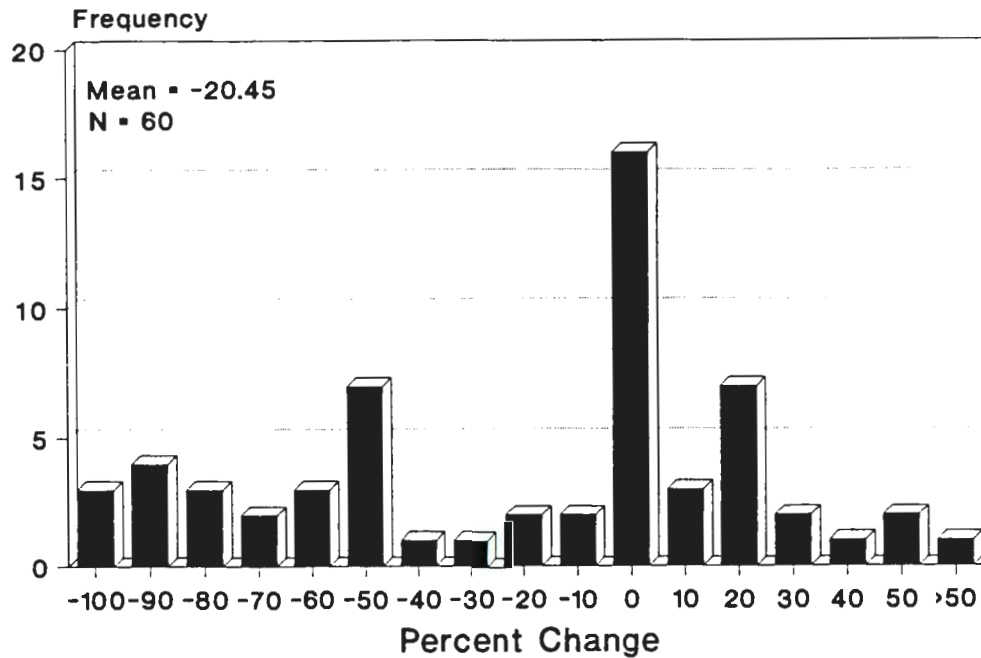


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
No. people in family	-.296	.020	61
No. adults in family	-.439	.0004	61
No. full-time wage earners	-.312	.018	57
No. part-time wage earners	-.346	.011	53
Concern for future well-being	-.170	.194	60

The mean response, at -24.59 percent, is less extreme than pork, and it also appears more credible. The large number of -50 percent responses versus the extremes showing 100 percent declines (in pork) appears to be a more reasonable finding. Around that mean, it is clear that the larger families with more workers reduce spending on beef even more aggressively. The large correlation (-.439) on "number adults" is very significant (P-value=.0004), suggesting the families with more adults react sharply during periods of economic stress. *These findings suggest the larger families with more wage earners, likely to be multiple workers by necessity rather than by choice, are vulnerable during economic stress. Merchandising efforts to keep these traditional beef customers by stressing value and economy during economic recessions would be expected to pay dividends over time by protecting a customer base.*

Question: *During the recession, how has your spending changed for: Seafood?*

Percentage Changes During Recession
in Money Spent on: Seafood

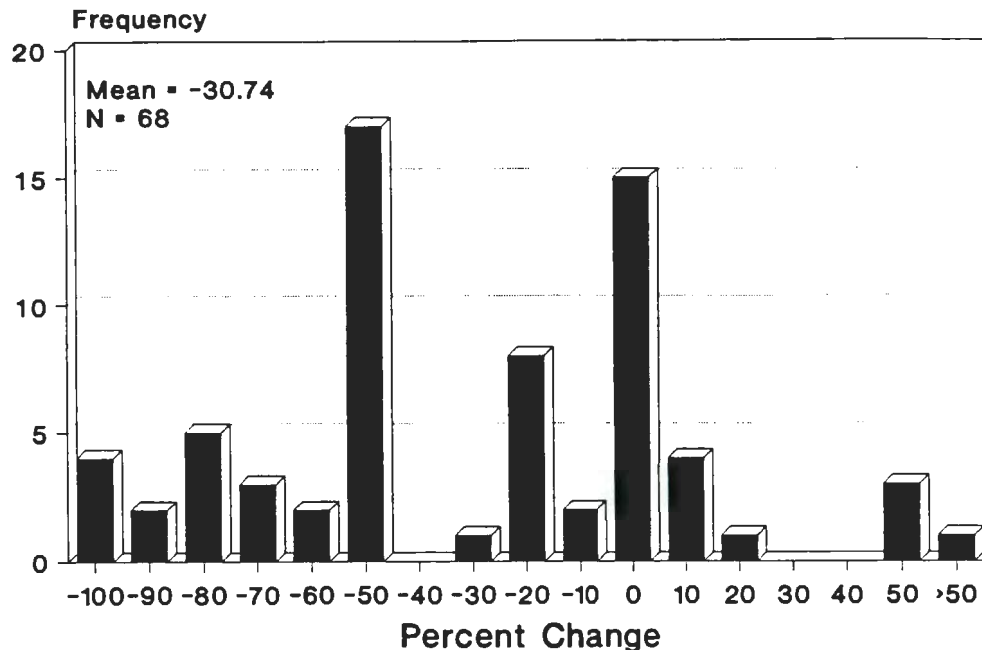


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	.390	.002	59
No. people in family	-.168	.198	60
Income before taxes	.355	.008	55
Concern for future well-being	-.309	.017	59

Expenditures were down an average of -20.45 percent, with larger families and those with high levels of concern about their economic well-being showing even larger decreases. Older consumers and those with higher incomes either decreased spending less or increased spending on seafood. *The positive correlations for older and high-income consumers may be important. It appears these consumers are more likely to "stay with" seafood during tough economic times, a result merchandisers will find useful.*

Question: *During the recession, how has your spending changed for: Higher-Priced Beef Cuts?*

Percentage Changes During Recession in
Money Spent on: High-priced Beef Cuts

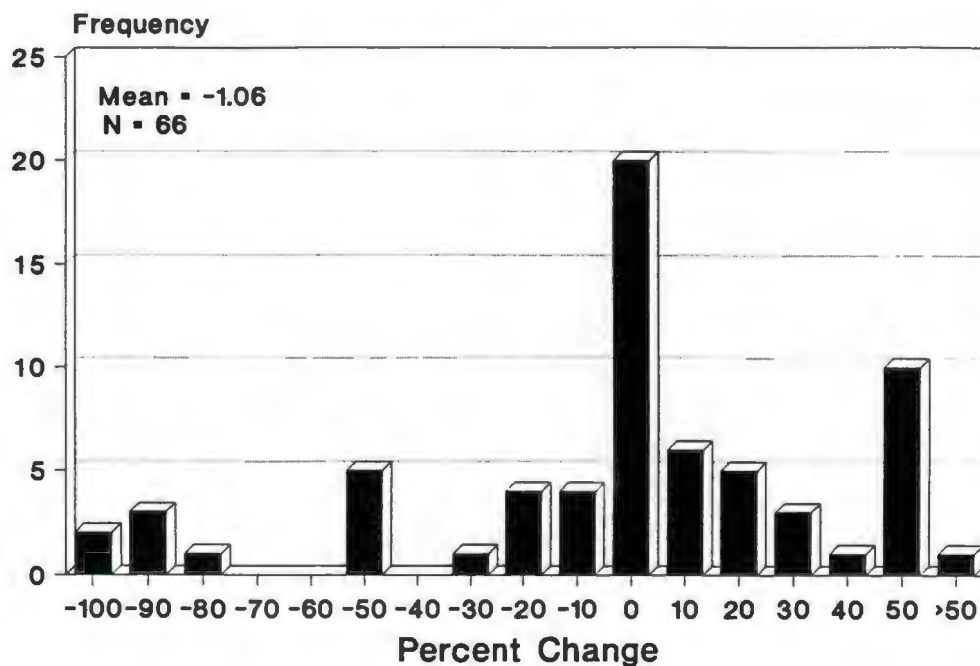


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	.342	.005	67
Education	-.163	.190	66
No. people in family	-.304	.012	68
No. adults in family	-.333	.006	67
No. pre-teen children	-.185	.144	64
No. full-time wage earners	-.289	.024	61
No. part-time wage earners	-.278	.033	59

The mean is a quite negative -30.74 percent, and there are a number of consumer "types" that moved away from high-priced beef cuts even more aggressively. The larger families with more wage earners, families with multiple wage earners to "get by," showed dramatic responses. The negative correlations on number of people and number of adults in the family are relatively large and are highly significant in a statistical context. Only the older consumers were less inclined to show decreases as large as 30 percent. *Merchandising efforts for these cuts of beef should recognize the stress the larger families are feeling. Bulk packages, perhaps with a minimum of cost-increasing services, should be employed, and efforts should be made to keep these typically "beef lover" families, the larger blue collar families, as customers when the economic environment again improves.*

Question: *During the recession, how has your spending changed for: Lower-Priced Beef Cuts?*

Percentage Changes During Recession in Money Spent on: Low-priced Beef Cuts

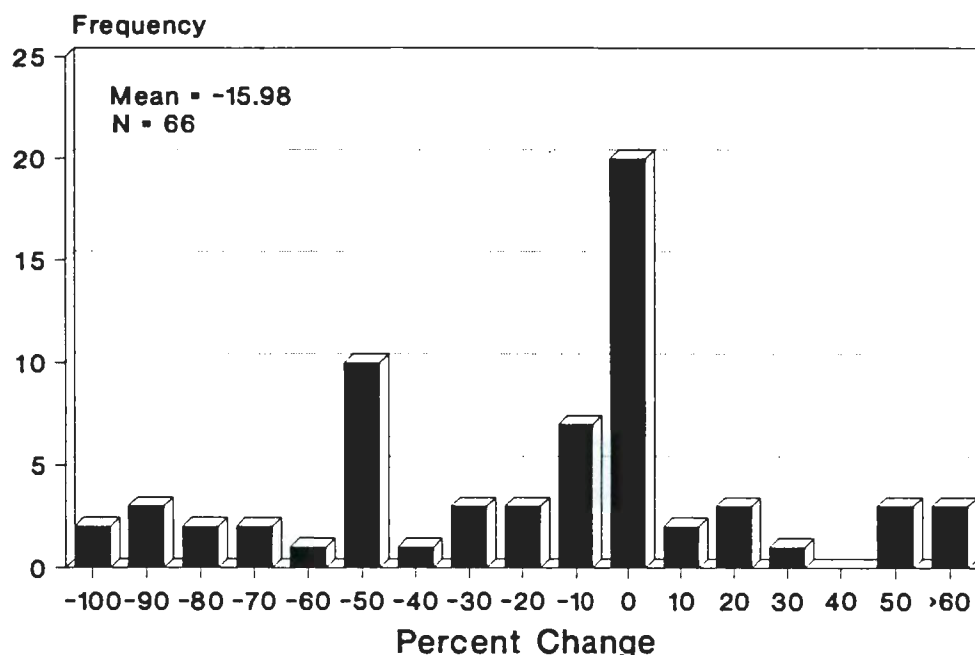


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	-.200	.110	65
No. adults in family	-.318	.009	66
Income before taxes	-.178	.170	61
No. full-time wage earners	-.290	.025	60
No. part-time wage earners	-.316	.016	58

The mean shows a nominal 1.06 percent decrease, but a number of consumer groups show larger declines. The larger families with more wage earners were inclined toward larger decreases, a result that is consistent with their sharp declines on the higher-priced cuts and on beef in general. *These results reinforce the need for merchandising efforts designed to keep these larger families as beef customers during periods of economic stress. Stressing value and price competitiveness for the low-priced cuts is also important during these periods.*

Question: *During the recession, how has your spending changed for: Beef Consumed in Nice Restaurants?*

Percentage Changes During Recession in Money Spent on Beef in Nice Restaurants



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
No. people in family	-.165	.184	66
No. adults in family	-.292	.018	65
No. pre-teen children	.259	.040	63
No. full-time wage earners	-.243	.064	59

It is not surprising to find that the larger families with more wage earners also reduced their spending on beef away from home at restaurants more than the average respondent. The mean response was -15.98, and the large family response would be even more negative. Families with pre-teen children decreased expenditures less than the average. *These results are consistent with the overall findings that show movement away from beef during the recession.*

A battery of questions was included to investigate consumer reaction to cuts from the beef chuck. Information in this section should give direction to those working in the areas of product development, value-added packaging and processing, and in merchandising chuck roasts and other cuts of beef from the chuck primal.

Section 2 of the survey form probes in some detail consumers' responses to cuts of beef from the chuck primal. Across the past 10 years, the chuck (and the round) primal prices have declined relative to the loin and rib, the so-called "middle meats." The chuck primal is a significant part of the carcass and declining value of the chuck decreases overall value to the producer and to the industry.

Figure 9 shows year-ending (December) prices for chuck roast and for sirloin steak since 1981. Prices for cuts from the chuck primal have not kept pace with the prices from the cuts from the loin, and comparisons with cuts from the rib primal would also show the chuck at a disadvantage.

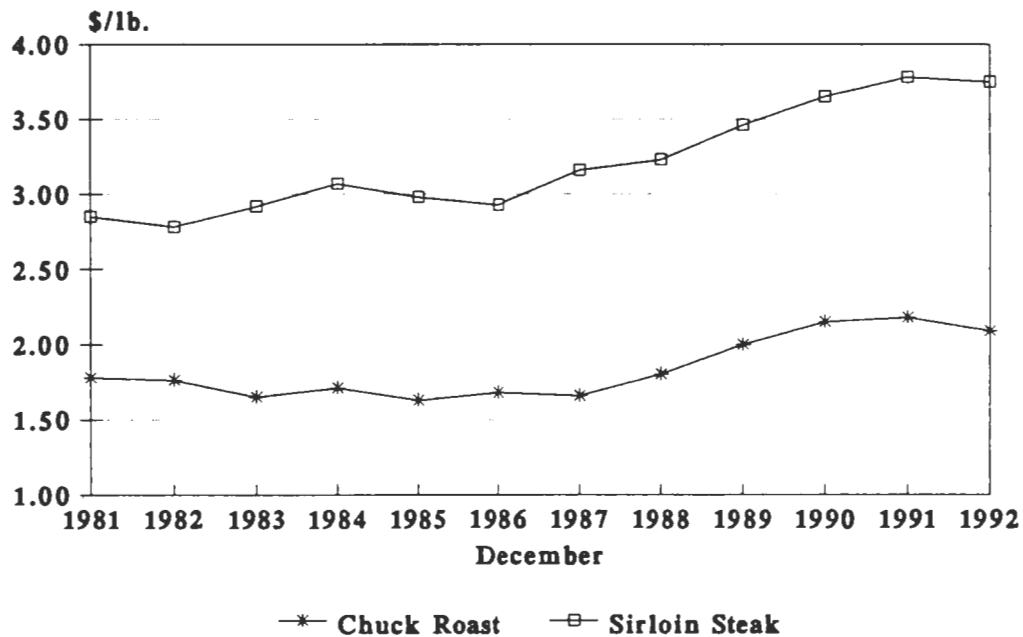
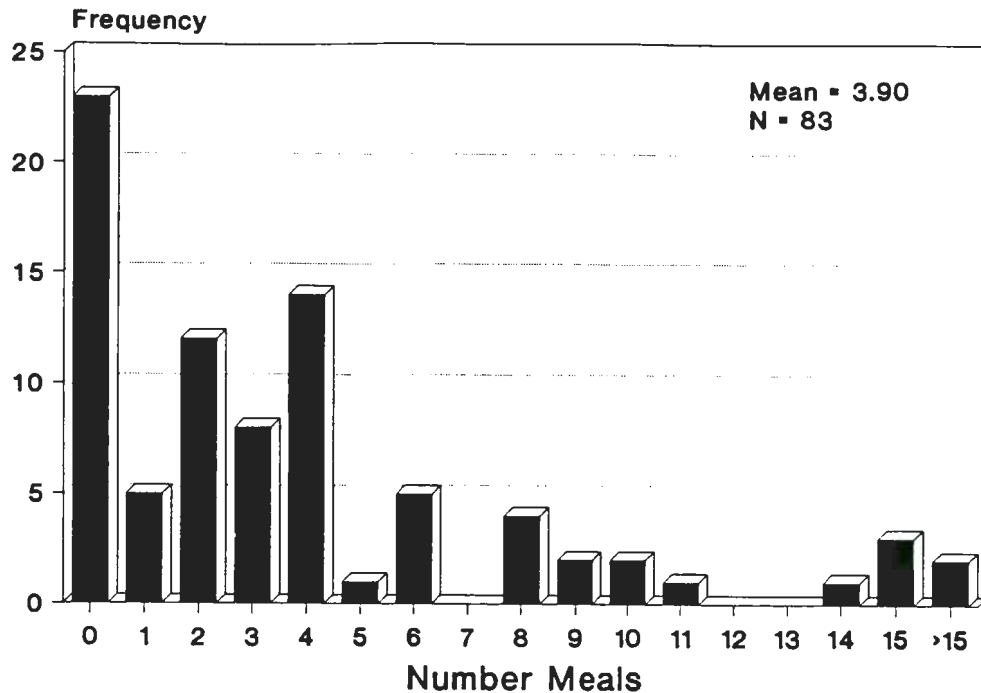


Figure 9. Year-end Prices for Chuck Roast (Bone In) and Sirloin Steak (Bone In), 1981-1992.

Question: *How many times each month do you serve chuck roast, chuck steak, ground chuck, or other beef chuck products?*

Meals Per Month Involving Beef Chuck

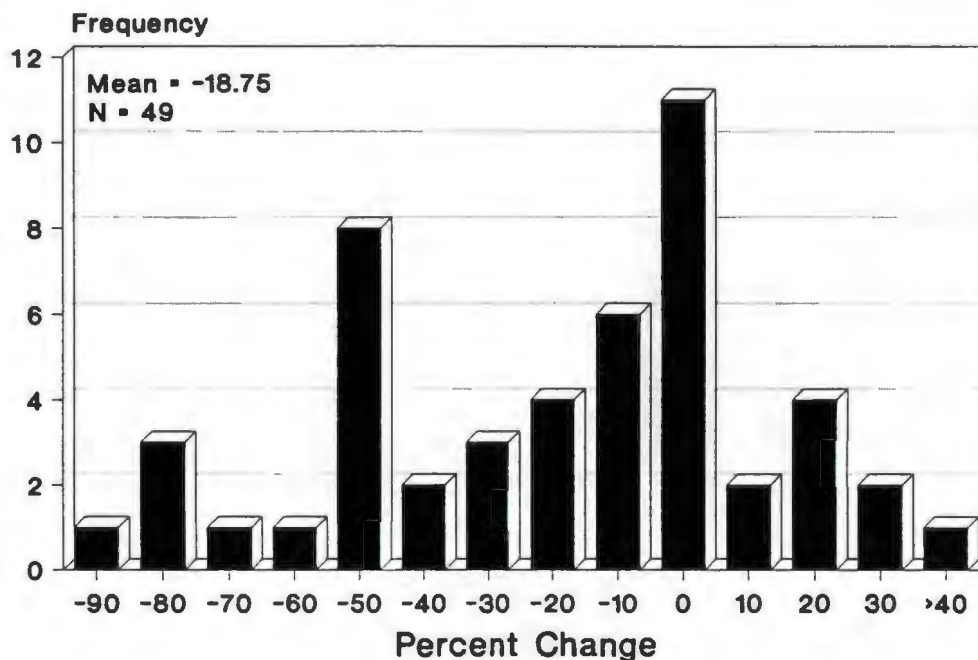


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
No. people in family	.228	.038	83
No. adults in family	.179	.108	82
No. teenagers in family	.191	.095	77
Concern for future well-being	.308	.006	80

The larger families, those with teenagers, and those most concerned about their economic well-being tend to use chuck roast more than the mean 3.90 meals per month. But the mean levels and the departures from the mean to the high side are perhaps less revealing here than the histogram itself. *Of the 83 respondents who answered this question, 23 indicated "0" for the number of meals per month. The chuck roast is clearly not a product that a number of families consider. Examination of the correlations between number of times chuck roasts are used and income levels shows a negative correlation of -.093, but it is not statistically significant (P-level=.421). It is, apparently, not just the high-income families that tend to not use the chuck roast. The negative to indifferent attitude appears to span most types of consuming families. Clearly, the chuck roast needs to be "positioned" more effectively if it is to find more widespread acceptance.*

Question: *How has the frequency of your use of beef chuck changed over the past 5 years?*

How Use of Beef Chuck Items Changed in Last Five Years

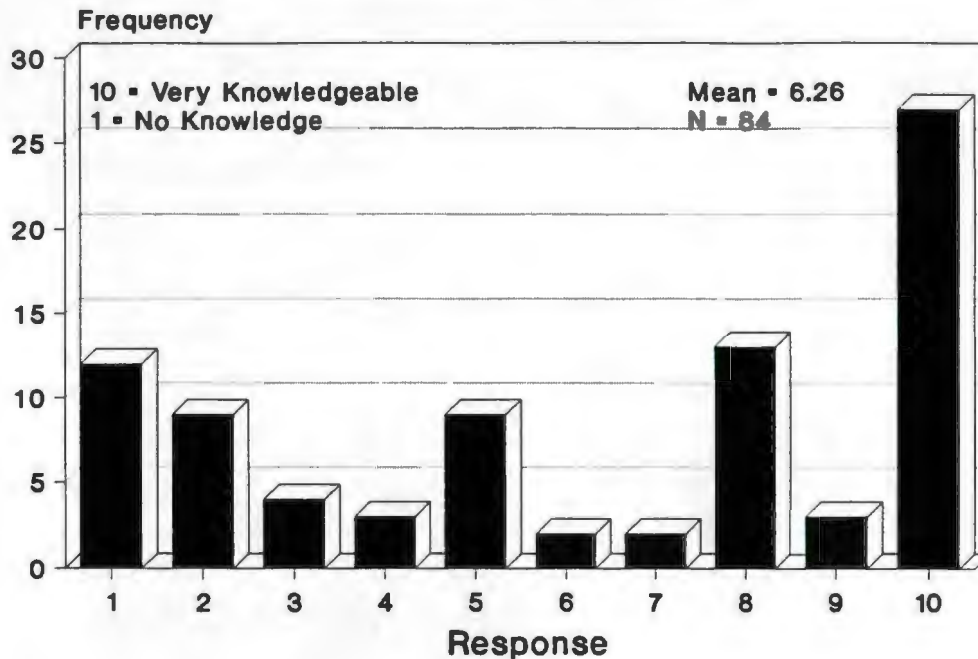


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	-.327	.022	49
No. full-time wage earners	-.228	.133	45
No. part-time wage earners	-.427	.005	41

The mean is -18.75 percent, suggesting a significant overall decline in use of chuck items in the past 5 years. The better educated and the families with more wage earners have reduced usage even more. Note that the "size of family" variables are not statistically correlated in this instance, suggesting that the families with multiple wage earners are the two-professional families in the survey, not the larger blue-collar families with multiple wage earners by necessity. *These families with more than one wage earner have moved away from the beef chuck, perhaps because of time required to prepare chuck roasts, etc., as a dinner entree. If this inference is confirmed by other work, finding ways to make cuts from the chuck easier to prepare and less time consuming is important.*

Question: *How well do you know how to prepare chuck roast so that it fits into the diet you want for your family?*

How Well You Know How to Prepare Chuck Roast

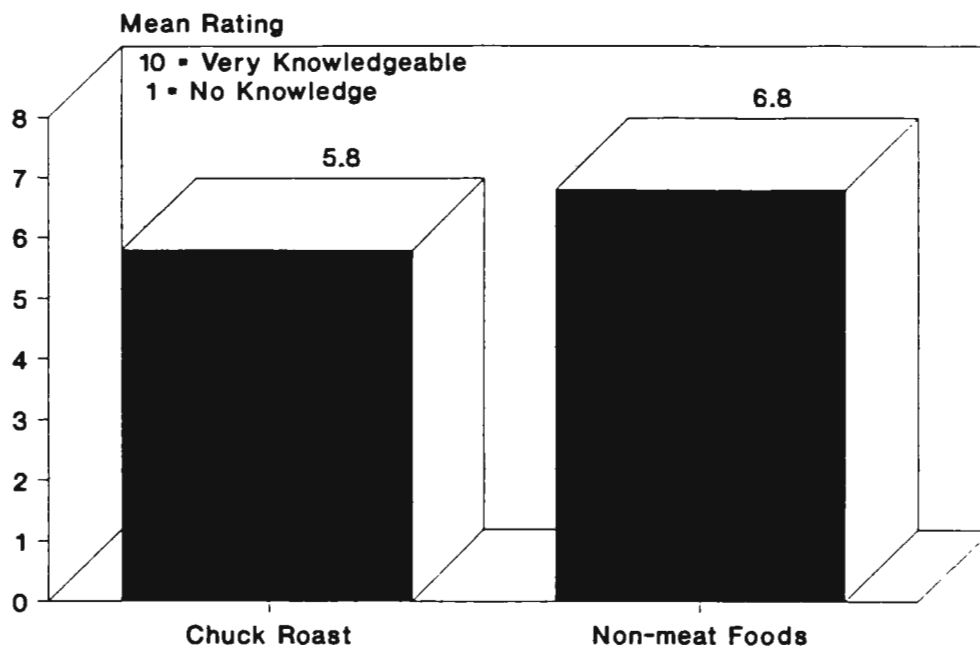


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	.388	.0003	83
Education	-.282	.010	82
No. people in family	.186	.090	84
No. adults in family	.251	.022	83
Income before taxes	-.148	.197	78

The older consumers and larger families tend to know how to prepare a chuck roast, but the better-educated (and typically younger) consumers do not. Higher-income consumers also show a negative correlation, but the P-value of .197 was just slightly below the .20 cut-off threshold. *Overall, the negative correlations on education and income reinforce the problem emerging from a mean of only 6.26. The histogram clearly shows a number of respondents in the 1-5 category, and the mean level is misleading when the overall pattern of responses is considered. There is a major problem. Many consumers, especially the better-educated and high-income consumers, do not feel they know how to prepare the chuck roast and fit it into their modern consumption plans. Merchandising efforts need to recognize this issue.*

Question: *How well do you understand the nutrient content and fat levels in a chuck roast versus most non-meat food items you use?*

How Well You Know Nutrient and Fat Levels of Chuck Roast vs. Non-meat Foods

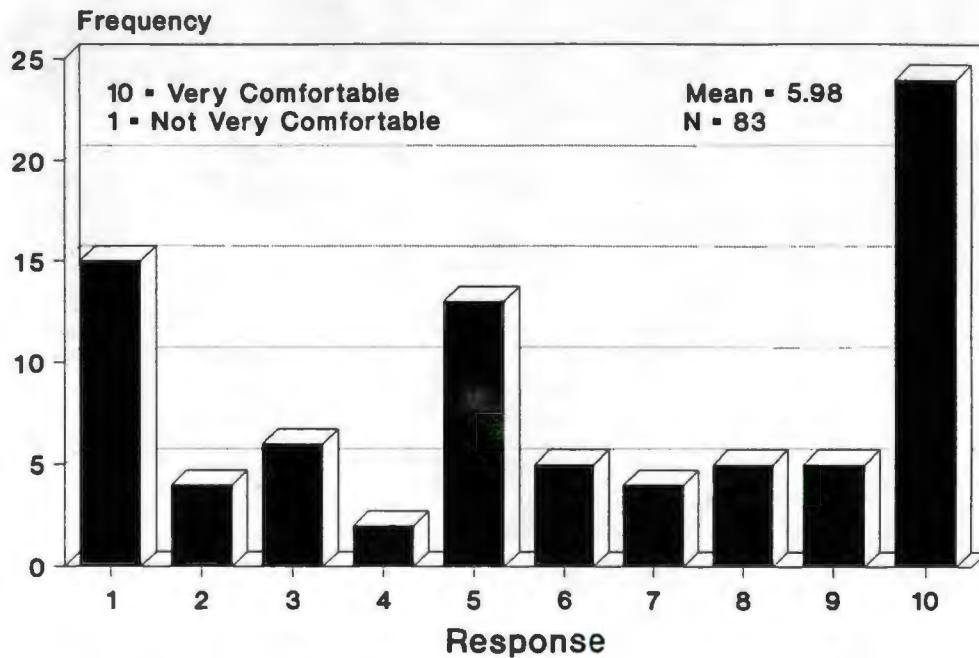


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Correlations, chuck roast only:			
Age	.404	.0002	83
No. adults in family	.167	.131	83
Correlations, non-meat:			
No. people in family	.143	.194	84
No. adults in family	.254	.021	83

The means are different, and the histogram suggests less knowledge with regard to the chuck roast. The larger families tend to know more about nutrition levels, and the older consumers know more about the chuck roast. *The difference in knowledge levels adds to the barriers toward acceptability of the chuck roast. Adding information on fat levels, calories, and nutrient content would help, especially if the product is offered in a closely trimmed or possibly restructured form to control fat levels.*

Question: *How comfortable are you serving a cut from beef chuck to dinner guests?*

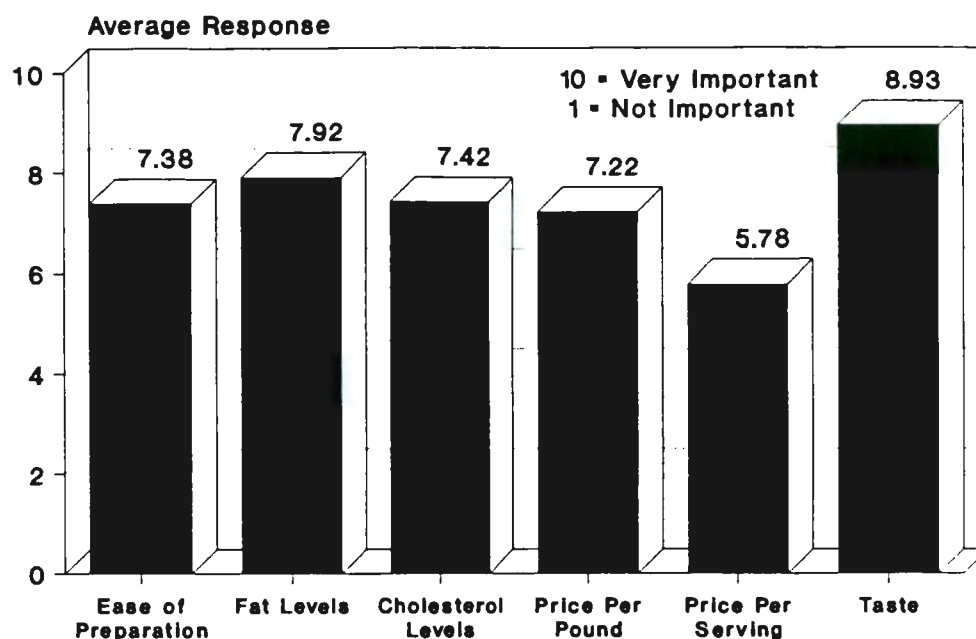
How Comfortable You Are Using Cut From Beef Chuck for Company



<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	.243	.028	82
Education	-.265	.017	81
No. teenagers in family	.208	.070	77

The positive correlations with age and number of teenagers (the larger families) are not unexpected and are consistent with prior findings. The mean, at 5.98, and the negative correlation on education, with a P-value of only .017, are both negative results. Overall, the chuck roast is not well-positioned as an entree for company, and the better-educated consumer is especially likely to be concerned. *The result on education level suggests accentuated problems in the future. The better-educated consumer, likely concerned about fat levels or cholesterol levels or both, is becoming the "typical" consumer over time as consumers are increasingly better informed and more inclined to think about what they are eating and how it fits their lifestyle and needs for a perceived healthy diet. The chuck needs to be changed so it can be presented in alternative form so as to be acceptable to these consumers.*

Question: *When choosing cuts of beef or beef products for your family, how important are ease of preparation, price per pound, price per serving, fat levels, cholesterol levels, and taste/eating satisfaction?*



The results are very interesting. Price is not the most important item. Taste, fat levels, cholesterol levels, and ease of preparation are all equally important or more important than price.

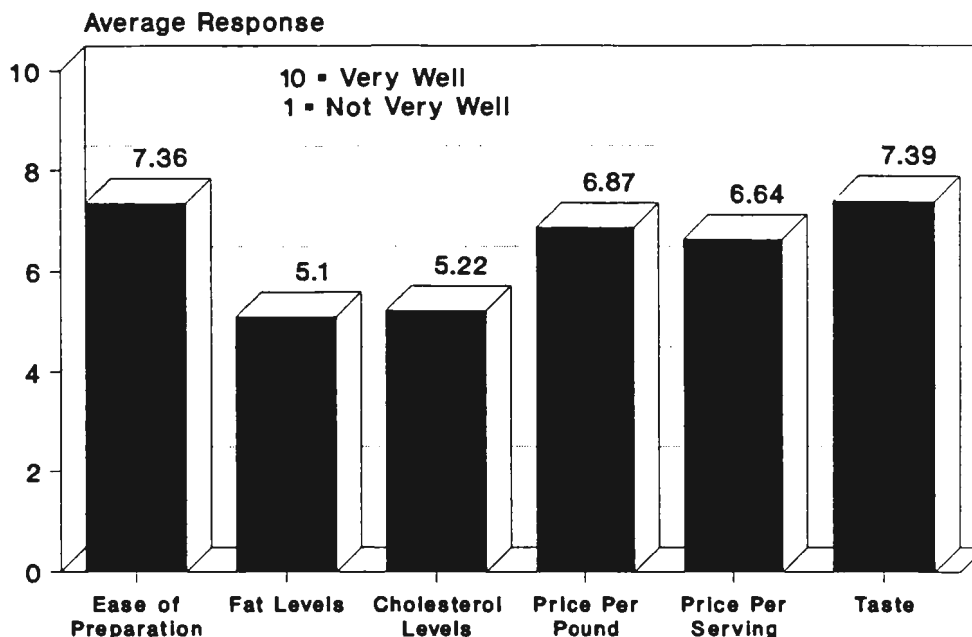
The correlations with P-levels below .20 in absolute value show:

1. Better-educated consumers rated ease of preparation, fat levels, and cholesterol levels as more important than average. They rated price per pound, price per serving, and taste lower in importance than the average respondents;
2. Larger families with more adults tended to rate every factor except taste as being even more important than the average respondent;
3. Older consumers rated fat levels and cholesterol levels more important than the average consumer;
4. Higher-income consumers rated price per pound and price per serving as less important than the average; and
5. Consumers feeling more stress from economic conditions saw the price levels as more important.

The important message is that factors other than price are seen as very important. The results also support the importance of market segmentation. Higher-income and better-educated consumers (the 2 are correlated) worry less about price, and they worry more about other factors that affect quality and acceptability. Large families and those concerned about the economy, as would be expected, see price level as important. These diverging needs should to be recognized in merchandising programs.

Question: *How well does chuck roast meet your criteria for ease of preparation, price per pound, price per serving, fat levels, cholesterol levels, and taste/eating satisfaction?*

How Well Chuck Roast Meets Various Criteria



The beef chuck falls short in the areas of fat level and cholesterol level, factors seen as important in the previous question. It ranks well in taste and ease of preparation (this was surprising) and reasonably well in price.

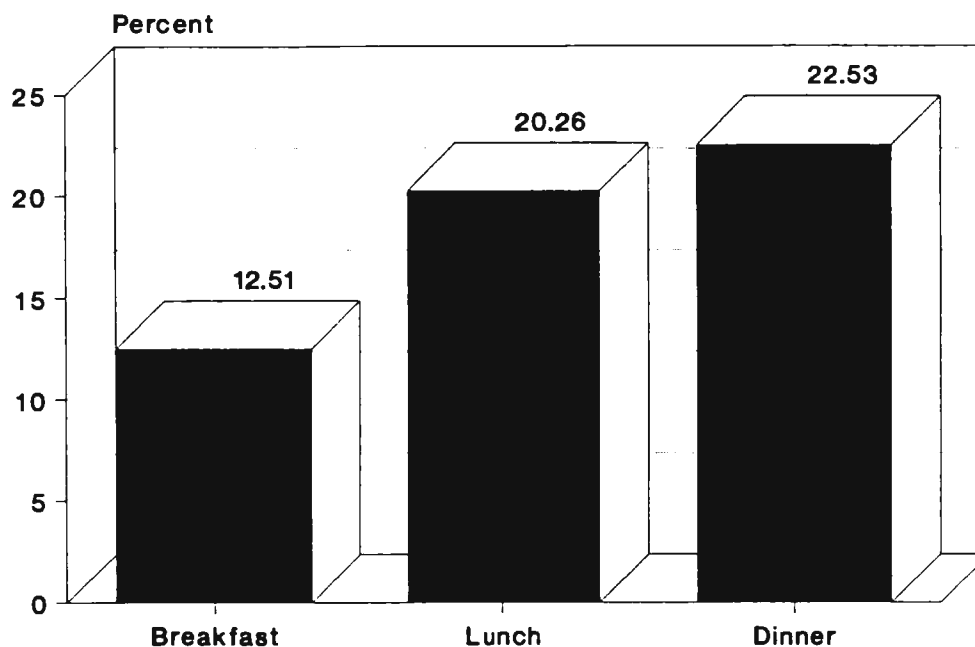
The correlations with P-levels less than .20 show:

1. Older consumers ranked the chuck roast more positively in every category than the average response;
2. Larger families, high-income consumers, and families with small children were more negative on ease of preparation;
3. Families with children rated the beef chuck weaker in meeting acceptable fat and cholesterol levels in the diets;
4. Better-educated consumers and families with more adults rated the beef chuck stronger in terms of acceptable prices; and
5. Better-educated consumers and families with teenage children were less impressed with the taste appeal of the beef chuck than the average respondent.

This set of responses needs to be examined in the context of the previous question. The beef chuck does not fare well in areas the respondents said were important--especially in fat and cholesterol levels. Like many other findings in this survey, these results suggest this product needs to be changed and presented in a more favorable light to the consumer.

Question: *What percentage of your meals consumed at home are prepared in the microwave?*

Percent of At-Home Meals Prepared in Microwave

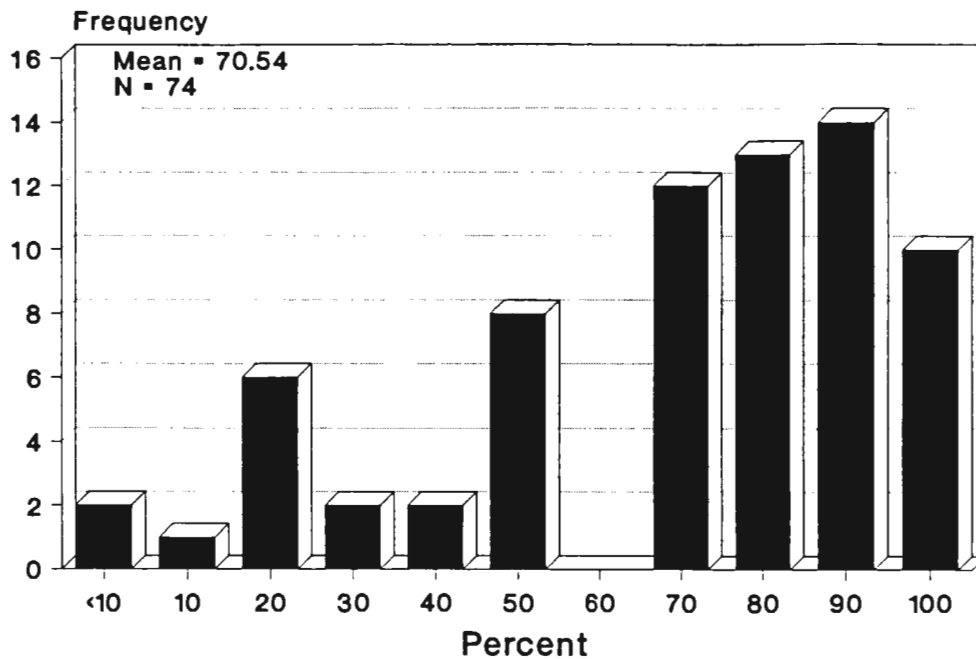


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Lunch:			
Age	-.213	.052	84
No. part-time wage earners	.223	.056	74
Dinner:			
Age	-.288	.007	85

There was considerable "spread" to the responses, with a few responses as high as 90 or 100 percent for each of the three meals. Further, the responses were broadly representative across consumer types. There were only two statistically significant negative correlations. Older consumers tend to use the microwave less for both lunch and dinner, perhaps because they have more time for meal preparation. Families with more wage earners tended to use the microwave more for lunch, perhaps at work, but there was no specific information on where the meals are being consumed. *With over 20 percent of lunches and dinners involving the microwave, the importance of being microwaveable is obvious.*

Question: *On what percent of all your food purchases do you pay attention to the nutrient content before buying?*

Percent of Purchases Where Nutrient Content is Important

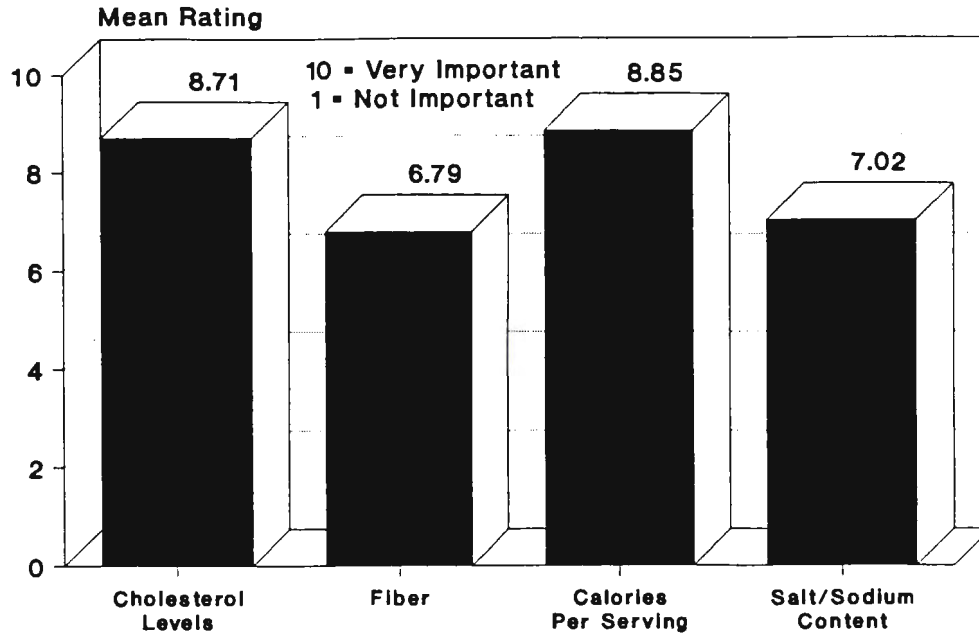


<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
No. teenagers in family	.199	.100	69
No. part-time wage earners	.217	.083	65

The mean is a high 70.54 percent, and this high mean is arguably the most important finding. People are reading nutrient labels. The positive correlation for families with teenagers is interesting. It could be the teenagers who are bringing the increased awareness. *If further research confirms these patterns, it will then be clear that nutrition will be more important in the future and will need to be incorporated into merchandising programs.*

Question: *When buying any food product, how important are cholesterol levels, calories per serving, salt/sodium content, and fiber?*

Importance of Various Criteria in Buying Habits of All Foods



Obviously, cholesterol and calorie levels are very important. Fiber levels and salt levels show a lower mean rating but are still near 7.0. *Consumers are clearly concerned about these dietary issues and they like to evaluate each food item in this context.*

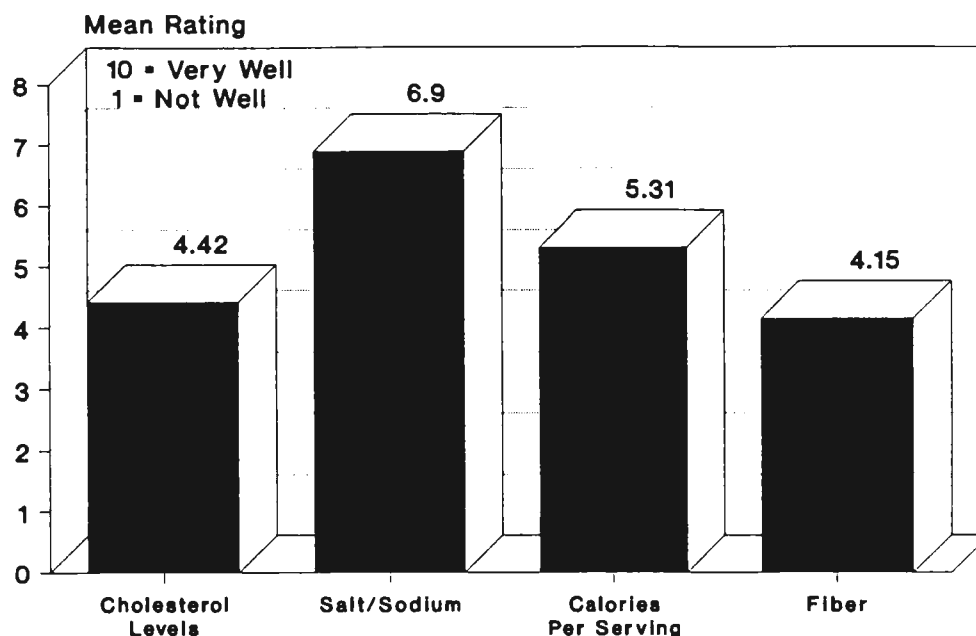
Examination of the correlations with P-levels below .20 reveals:

1. Older consumers are less concerned about cholesterol than the average respondent;
2. Older and better-educated consumers are more concerned about fiber levels, and families with pre-teen children are less concerned than the average respondent;
3. Older consumers are not as concerned about calories; and
4. The larger families with teenagers are less concerned than the average respondent about salt levels.

All consumers tend to show concerns about calories and cholesterol given the high mean ratings. There are few significant departures from this pattern and the beef chuck, and any other food item, will be evaluated accordingly.

Question: *How well does chuck roast meet your standards for cholesterol levels, calories per serving, salt/sodium content, and fiber?*

How Well Chuck Roast Meets Standards for Various Criteria



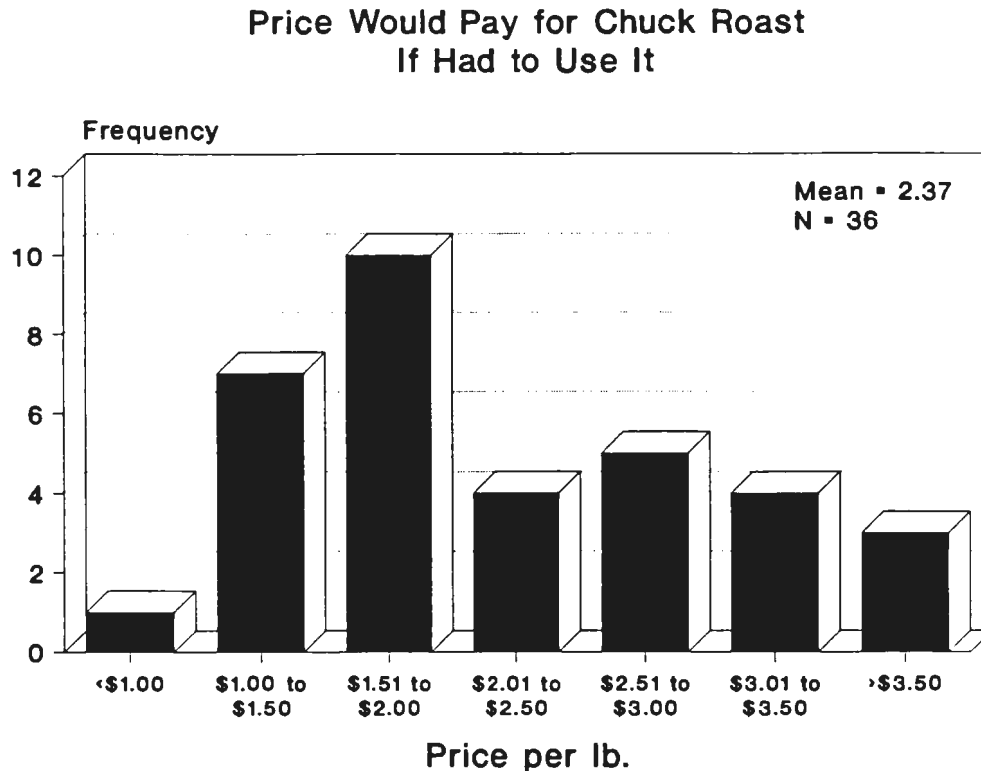
The mean ratings for the chuck roast are the weakest for the attributes the consumers saw as most important in the prior question. The ratings in cholesterol, calories, and fiber are very weak, suggesting the chuck roast is not seen as a product that "fits" modern diets and eating habits by many consumers.

Among the statistically significant correlations, the key findings are:

1. The better-educated consumers are even more negative with regard to cholesterol;
2. The better-educated consumers and the families with multiple wage earners are even more negative than the average respondent with regard to calories in the chuck roast; and
3. The better-educated consumer rates the chuck roast very low in terms of its ability to meet adequate fiber levels in the diet.

If the chuck roast is not changed and presented differently in ways to offset these concerns, it will increasingly move only at prices that are sufficiently low that the price/value ratio is seen as acceptable or at price levels low enough to attract the consumer who has marginal concerns about cholesterol, calories, etc.

Question: *If you do not normally use chuck roasts, how much would you pay for a chuck roast if you had to take it home, prepare it and use it?*



A total of 36 respondents answered the question, and the mean price was \$2.37 per pound. Perhaps more important than the mean is the number of respondents who selected the lower price levels. A significant number would buy the chuck roast only at prices below \$1.50. (It is not clear, of course, how well this group of consumers knew what the price would be if they had gone out to buy a chuck roast.)

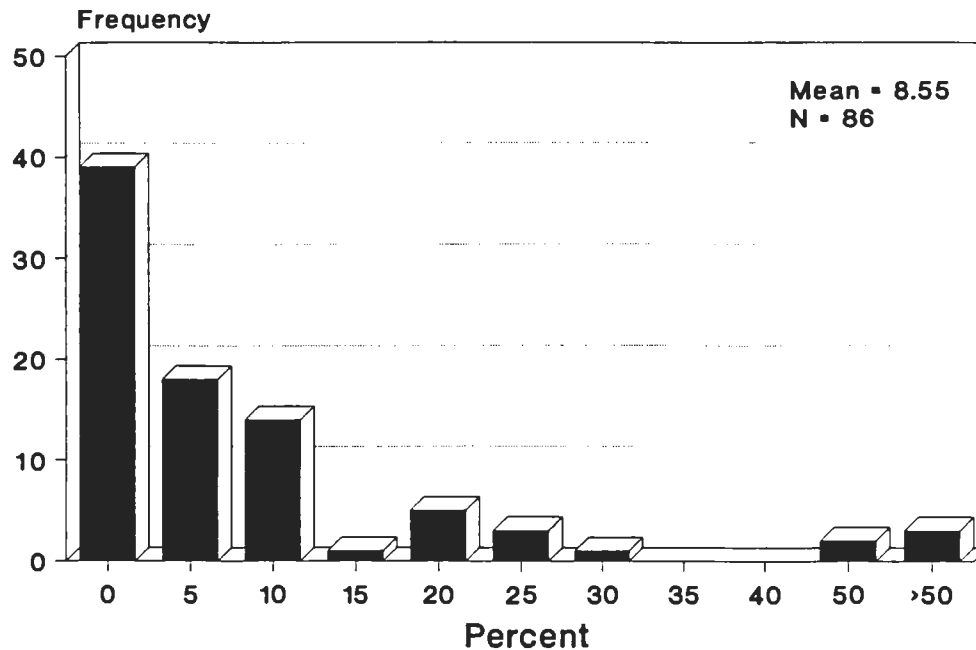
There was only one statistically significant correlation.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	.365	.031	35

The better-educated consumers tended to pick prices above the mean level of \$2.37. *Obviously, some consumers would accept this product only at very low prices. The product image and its position in the array of food alternatives must be improved. The major needs are product innovations that reduce fat content and, thereby, mitigate concerns about cholesterol and calories and value-added further processing to make the product easier and more convenient to use.*

Question: *What percentage of your evening meals consumed at home involve frozen entrees that are microwaveable?*

Percent of At-Home Evening Meals Involve Microwaveable Frozen Entrees



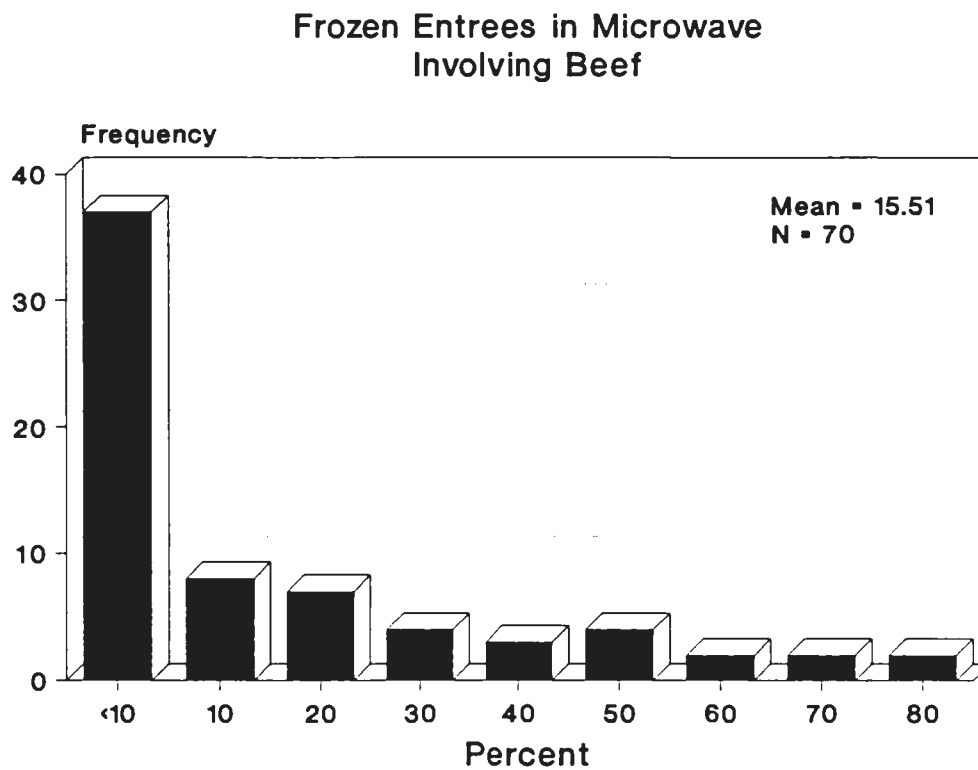
The mean response was 8.55 percent, but there were a number of responses at 20 percent and higher. Related questions indicated that usage has declined slightly (about 2 percent) during the most recent two years (which included an economic recession). When asked to identify the single most important factor in their decision to use frozen entrees at the evening meal, the most frequently mentioned was "convenience in preparation."

The significant correlations involving use of frozen entrees were:

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	-.276	.011	85
No. people in family	-.155	.154	86
No. adults in family	-.171	.116	86
Income before taxes	-.157	.163	80
No. part-time wage earners	-.172	.138	76

Not all the correlations are highly significant, and they do confirm to *a priori* expectations. Older, high-income, and larger families with more wage earners tend to use the entrees less. The correlation with age is negative, relatively large, and highly significant. As the consuming public ages, this finding would suggest the older consumers will not move aggressively to microwaveable frozen entrees. Many are retired and have time to prepare meals. *Use of microwaveable frozen entrees tends to confirm the importance of convenience in preparation.*

Question: *Of the microwaveable, frozen entrees you consume, what percent involve beef?*

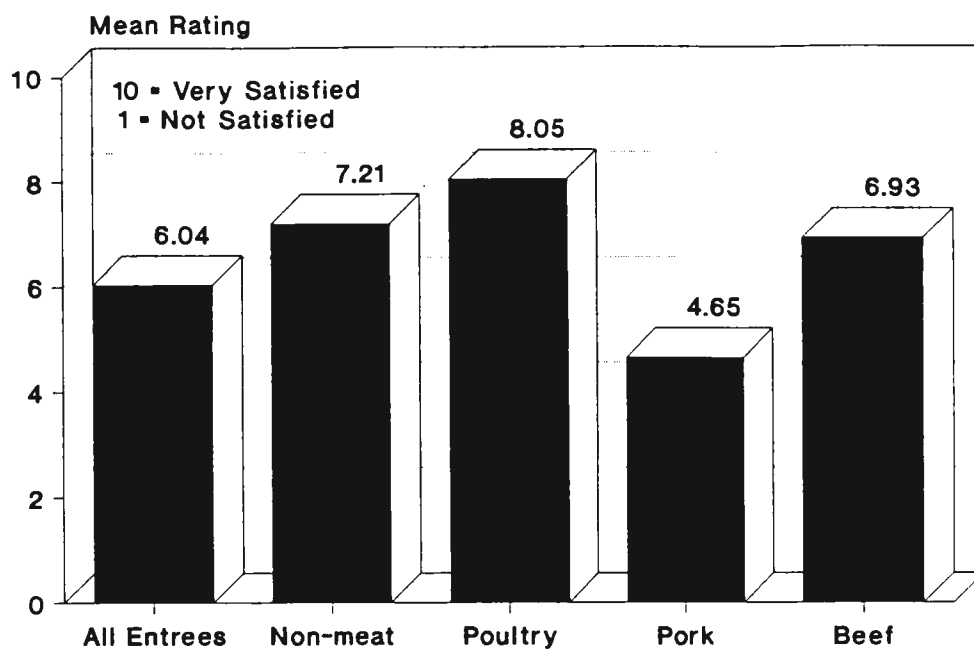


Only 15.51 percent of the frozen entrees that go in the microwave involve beef. This is a surprisingly small "share" of this market since many of the meals are built around a meat item as the centerpiece of the meal. The frequency pattern in the histogram is also potentially negative. The mean is pulled above 15 percent by the few responses at 50 percent and above, but nearly 40 of the 70 respondents answered either with zero or with a number below 10 percent.

There were no significant correlations, so the response pattern fits all consumers. *Given that most surveys at the national level point to the desire for convenience and the virtual saturation of all homes by microwave technology, it is logical to expect the use of frozen entrees to increase. These survey results suggest beef is not starting from a strong position.*

Question: *How satisfied are you with the following microwaveable entrees?*

Satisfaction with Quality of Various Microwavable Frozen Entrees



Obviously, poultry and the non-meat entrees fare well in terms of consumer reactions. The rating on poultry is very strong. On the other end of the continuum, pork fares very poorly. Beef appears to compete well with all the alternatives except poultry.

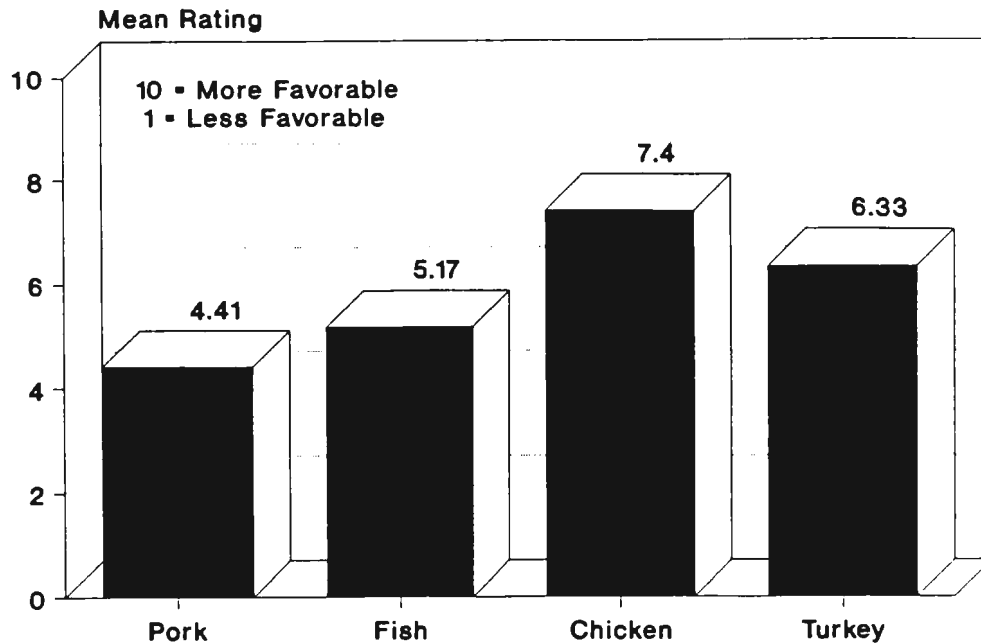
The correlations with P-levels smaller than .20 show:

1. Families with more wage earners tended to be less satisfied than the average respondent with quality of all of the alternatives;
2. High-income consumers tended to rate quality of poultry entrees lower than the average respondent; and
3. The correlations between beef quality and the various characteristics in the consumer profile, except age, were all negative, but none met the .20 P-level threshold.

Beef is not faring well in its competition with poultry for the frozen entree market. The mean ratings on the two are significantly different, and there is no indication any one type of consumer tends to support beef. The question of "why" clearly needs to be addressed.

Question: *How does the consistency in quality of the following compare to frozen beef entrees?*

Quality of Beef Entrees Compared to Pork, Fish, Chicken, and Turkey



In a related question, there was more concern about the level of quality in beef entrees versus the consistency in quality, but both were identified by a number of consumers. The histogram above clearly shows consumers rate chicken and turkey more favorably than beef in terms of consistent quality.

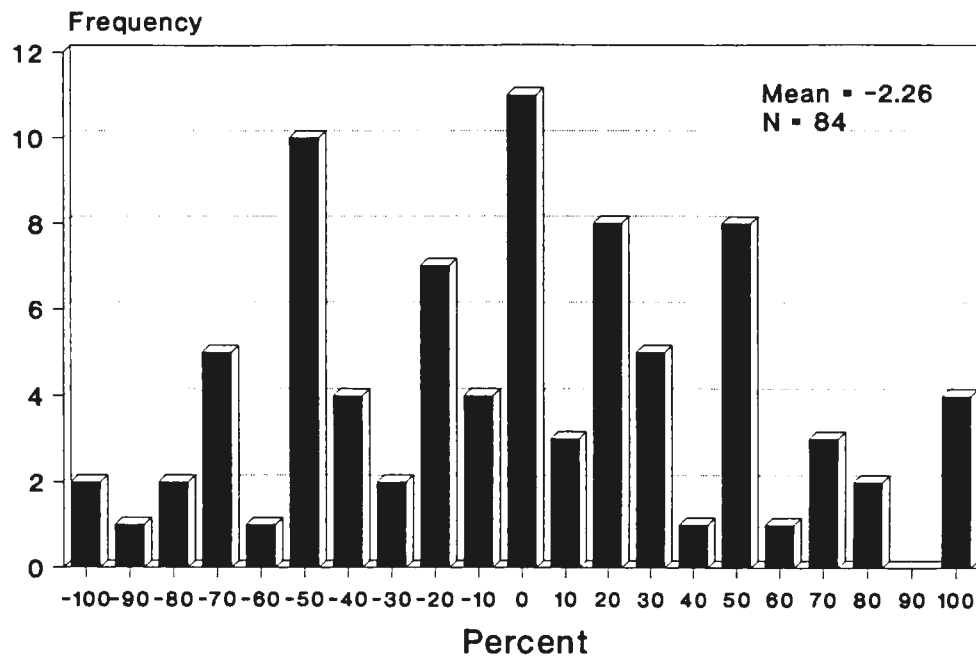
The correlations with P-levels below .20 show:

1. Older consumers tend to rate beef more favorably relative to poultry than the average respondent;
2. Families with pre-teen children tend to rate all the alternatives--fish, pork, poultry--stronger relative to beef than the average respondent; and
3. Higher-income consumers tend to rate turkey more highly than does the average respondent.

Beef is not seen as presenting the level of quality or the consistency in quality that is offered by the poultry alternatives. Improvement in these areas is likely to be a necessary condition if beef is to gain a larger share of the frozen entree market.

Question: *How has your leisure time increased or decreased in the last 5 years?*

Percent Change in Leisure Time in Last Five Years



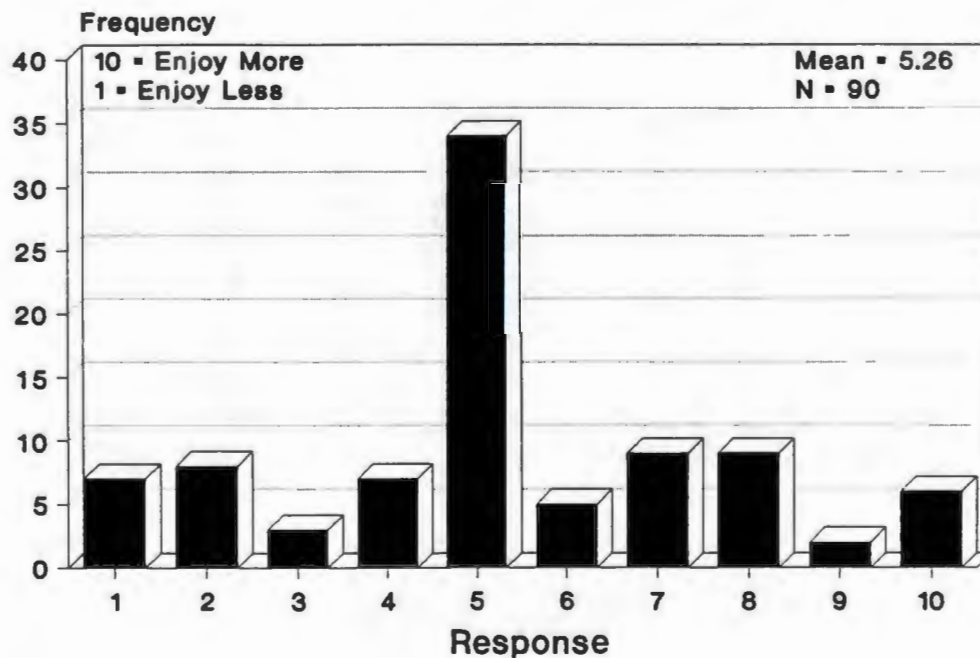
Leisure time has decreased by 2.26 percent in the last 5 years. The responses clearly indicate that some have retired so they have seen large (up to 100%) "increases" in leisure time. This question did not sort out these implications, but it is safe to assume that the actual change by employed people would be a decrease of more than 2.26 percent.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Age	.573	.0001	83
No. people in family	-.262	.016	84
No. pre-teen children	-.164	.153	77
No. full-time wage earners	-.306	.007	76

The correlations fit expectations. Larger families and families with small children have seen their leisure time decrease more than the average. The strong positive correlation with age confirms that the mean response was biased upward by answers of older consumers who have retired. *Leisure time is declining, and this decline could have implications to the time spent in meal preparation.*

Question: *What is your level of enjoyment in preparing meals now compared to what it was 5 years ago?*

Level of Enjoyment in Meal Preparation Compared to Five Years Ago



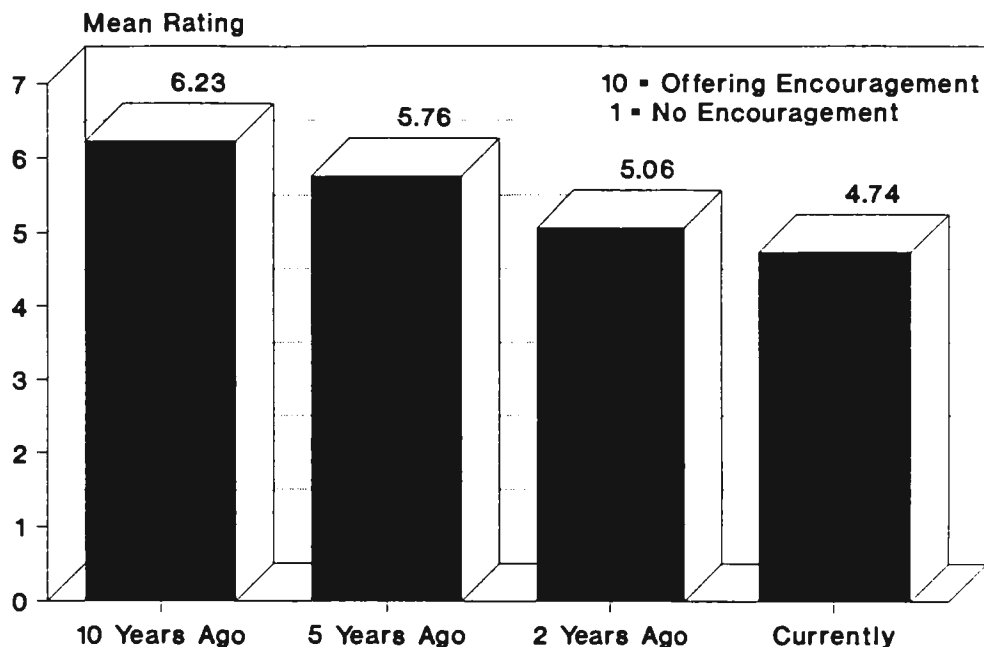
The results were somewhat surprising. The 5.26 would not be statistically different from 5.0, so there has effectively been no change on average. Those who answered with numbers below 5.0, of course, are saying "no" to time in meal preparation, and this set of respondents would likely welcome new products or value-added changes to reduce the time they spend preparing meals.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	-.224	.037	87

The better educated tend to say they are enjoying meal preparation less than the average respondent. Overall, it appears that both ends of the continuum are there. Some are enjoying preparation more, others less. Each group would likely be willing to pay for products designed to meet their needs if the markets are effectively segmented.

Question: *How much are you encouraged by your family to spend time preparing meals now versus 2 years ago, 5 years ago, and 10 years ago?*

Encouragement of Family to Spend Time Preparing Meals



The histogram shows declines in the mean, and perhaps most importantly, a different pattern in the histograms for specific time intervals (not shown). The mean for the "current" response is down because a number of respondents selected 1, meaning they get no encouragement from family members.

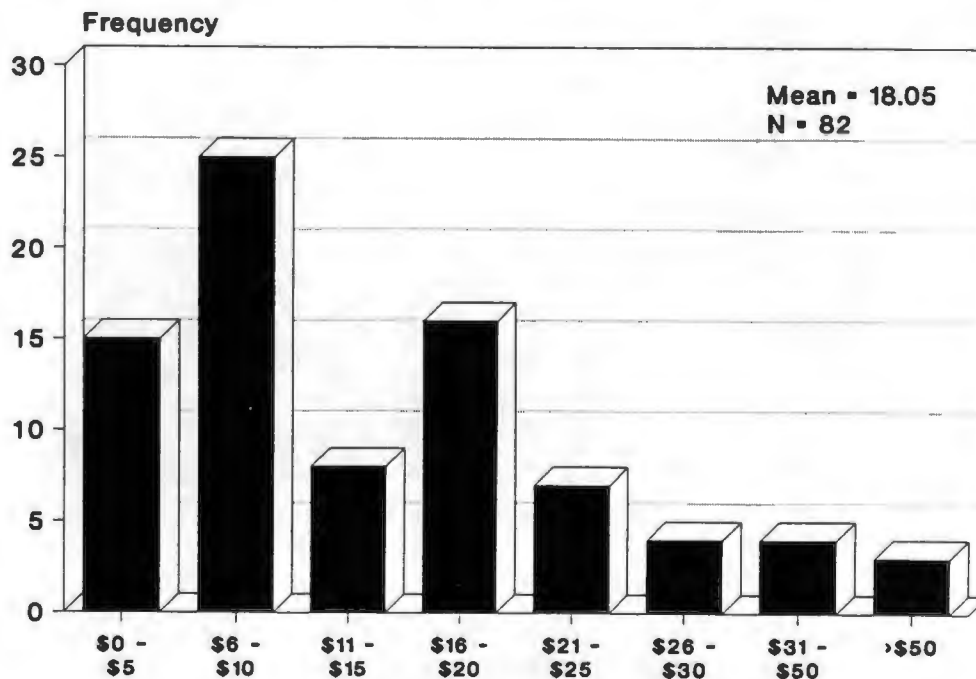
The statistically significant correlations show:

1. Larger families and families stressed more by economic conditions are currently offering encouragement in meal preparation;
2. Ten years and five years ago, meal preparers in families with more teenagers were being offered more than average encouragement, but that has disappeared; and
3. Ten years ago, families with more wage earners offered encouragement on time spent on meal preparation, but that too has disappeared.

These findings are important. Combined with earlier findings on changes in leisure time, the trend toward more wage earners in each family, the use of the microwave, etc., the message is to offer beef products that require less preparation time and are convenient in preparation, serving, and clean-up after the meal.

Question: *Based on dollars per hour, how much do you think your time is worth when you are spending time preparing meals at home?*

Value of Time Spent Preparing Meals



The mean is pushed higher, of course, by the very large numbers a few respondents indicated. It is not clear what criterion was being used—the market cost of hiring the work done, what they earn when working versus preparing a meal, etc. What is revealing is the perception that the time spent preparing a meal is worth a great deal.

<u>Economic Variable</u>	<u>Correlation</u>	<u>P-Level</u>	<u>N</u>
Education	.146	.195	80
Income before taxes	.672	.0001	76
No. full-time wage earners	.215	.065	74

The better-educated, higher-income consumers and families with more full-time workers were prone to enter rates above the average. These results are not surprising but do indicate who provided the large numbers. *Respondents tend to place a high value on time spent preparing meals, a finding consistent with more adults working, use of the microwave, lack of encouragement to spend time cooking, etc.*

Implications

The survey results are very revealing. The respondents have reacted to the recent economic recession by reducing spending on durables. Expenditures on total food were not reduced sharply, but consumers did tend to change what they bought. Poultry and lower priced cuts of pork and beef were used more, a finding that should be factored into merchandising programs.

Beef, and especially cuts of beef from the beef chuck, does not fare well in consumer perceptions of non-price attributes. It is important to recall that non-price attributes such as fat levels, convenience in preparation, etc., are seen by many consumers as equally important with price. This conclusion is especially true for the better-educated and higher-income consumer who looks for nutrient information and consistency in product offerings.

The differential responses across consumers reconfirms the importance of market segmentation. The product and how it is featured and offered should be different in different markets. There should be a continuing effort to change the beef product in all markets and to move it toward the modern consumer by product development and value-added further processing versus waiting for the former beef customer to return to the standard array of offerings. The findings reported in this bulletin should help producers, processors, and retailers in their efforts to present beef to the modern consumer more effectively.

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Appendix I

The Survey Form

Survey # _____

CONSUMER PROFILE

(The person who is most involved in buying food, preparing meals should complete this survey.)

- _____ Your Age
- _____ Your Education (12=high school)
- _____ How many people in your family
- _____ How many adults in family
- _____ How many teenagers in family
- _____ How many pre-teen children in family
- _____ Total income before taxes earned by the entire family
- _____ Full-time wage or salary earners in family
- _____ Part-time adult or teenage wage earners in family

_____ On a scale of 1-10 (10=very concerned, 1=not concerned) indicate how concerned you have been in the past 2 years about your job or the general economic wellbeing of your family as we struggled through an economic recession.

_____ Reflecting on those concerns during the economic recession, have you made any adjustments in terms of decreasing what you spend within the past 2 years in response to the recession? (Yes or No)

If you answered yes to the previous question, on a scale of 1-10 (10=substantially decreased, 1=no decreases) please rate each of the areas below as to how you have changed your spending.

- | | | |
|------------------------|---------------|--------------------|
| ___ Car | ___ Furniture | ___ House Purchase |
| ___ Clothing | ___ Food | ___ Vacations |
| ___ Retirement/Savings | | |

Using percents from 0 to 100 and (+) to show increases, (-) to show decreases, indicate how you have changed money spent during the recession on:

- | | | |
|---------------|-------------|-------------|
| ___ All meats | ___ Poultry | ___ Seafood |
| ___ Pork | ___ Beef | |

Using percents from 0 to 100 and (+) to show increases, (-) to show decreases, how has money spent in the past 2 years during the recession changed for:

- ___ Higher-priced cuts of beef such as steaks and roasts.
- ___ Lower-priced cuts of beef such as ground beef.
- ___ Beef consumed away from home at nice restaurants.
- ___ Beef consumed away from home at fast-food restaurants.

During the recession of the past 2 years, use percents from 0 to 100 and (+) to show increases, (-) to show decreases, show how your total family income before taxes has changed.

BUYING PATTERNS ON CUTS OF BEEF FROM THE BEEF CHUCK

_____ In your normal consumption pattern, how many times per month do you serve at home a beef dish involving chuck roast, chuck steak, ground chuck, or other products from the beef chuck? If you do not use such dishes, enter zero.

_____ If you do not normally use chuck roasts, enter the price you would pay in dollars per pound for a chuck roast if you had to take the roast home, prepare it, and use it.

_____ Indicate in percentage terms, from 0 to 100 and (+) or (-) as needed, how the frequency of your use of items from the beef chuck has changed in the past 5 years. Leave blank if you do not use such items.

Using a scale of 1-10 (10=very knowledgeable, 1=no knowledge), respond to each of the following. Everyone should answer including those who do not use chuck roasts, etc.

_____ How well you know how to prepare chuck roast so that it fits into the diet you want for your family.

_____ How well you know or understand the nutrient content and fat levels in a chuck roast.

_____ How well you know or understand the nutrient content and fat levels in most non-meat food items you use.

_____ How comfortable you are in preparing a meal around a cut from the beef chuck when you are having company.

Identify your favorite meat. _____

_____ How comfortable you are in serving your favorite meat to your company for dinner.

Thinking again about all of your beef purchases, on a scale of 1-10 (10=very important, 1=not important at all) mark the importance of each of the following as you choose cuts of beef or beef products to prepare for your family.

_____ Ease of preparation	_____ Price per pound	_____ Price per serving
_____ Fat levels	_____ Cholesterol levels	_____ T a s t e / E a t i n g Satisfaction

Using the same scale again, focus on a chuck roast and rate each of the following in terms of how well you feel a chuck roast meets these particular criteria (10=very well, 1=not well at all). Everyone should answer including those who do not use chuck roasts, etc.

_____ Ease of preparation	_____ Price per pound	_____ Price per serving
_____ Fat levels	_____ Cholesterol levels	_____ T a s t e / E a t i n g satisfaction

PLEASE STOP AND THINK ABOUT WHAT HAS BEEN THE MOST IMPORTANT FACTOR IN CAUSING YOU TO CHANGE THE QUANTITY OF BEEF CUTS FROM THE CHUCK THAT YOU USE AND INDICATE BRIEFLY HERE.

What percentage of all meals consumed at your home are prepared totally or partly in a microwave (use 0 to 100 percent).

___ Breakfast ___ Lunch ___ Dinner

___ Think about all of your food purchases, not just meat. What percent of your purchases involve attention being paid to the nutrient content of the product before buying (0-100 percent)?

On a scale of 1-10 (10=very important, 1=not important), think about your overall buying habits for all foods and rate the importance of each of the following types of nutrient information.

___ Cholesterol levels ___ Calories per serving ___ Salt/sodium content
___ Fiber

Indicate how well a chuck roast meets your standards in terms of these classifications (10=very well, 1=not well). Please rate each, and everyone should answer.

___ Cholesterol levels ___ Calories per serving
___ Salt/sodium ___ Fiber

___ What percentage of your evening meals consumed at home involve frozen entrees that are microwaveable such as Lean Cuisine, Le Menu, Healthy Choice, etc. (0-100 percent).

IN THE BLANK BELOW, PUT WHAT YOU FEEL IS THE SINGLE MOST IMPORTANT FACTOR THAT IS INVOLVED IN YOUR DECISION TO USE FROZEN ENTREES AT YOUR EVENING MEAL.

___ How has the your use of frozen entrees changed in the last year (0-100 percent and use (+) or (-) as needed)?

___ In the last 2 years? ___ In the last 5 years?

___ Of the microwaveable, frozen entrees that you consume, what percent involve beef?

On a scale of 1-10 (10=very satisfied, 1=not satisfied), rate each of the following categories of microwaveable frozen entrees in terms of your satisfaction with the quality of the dish. Answer only if you indicated above that 3 percent or more evening meals involve frozen entrees.

___ All entrees, in general ___ Non-meat entrees (macaroni & cheese, etc.)
___ Poultry-based entrees ___ Pork-based entrees
___ Beef-based entrees

If you indicated above that you have some problems with the quality of frozen and microwaveable beef-based entrees, which bothers you most (please mark one)?

___ The level of quality of the frozen beef entrees
___ Lack of consistency in quality of the frozen beef entrees

On a 1-10 scale, (1=less, 10=more), compare the consistency in quality of the following to frozen beef entrees.

___ Pork ___ Fish ___ Chicken ___ Turkey

_____ Has your leisure time increased or decreased in the last 5 years (0-100 percent and use (+) or (-) as needed)?

Think about what it is that you are not doing when you are spending time preparing meals at home and indicate one thing you would like to be doing instead of preparing meals.

_____ On a scale of 1-10 (10=enjoy more, 1=enjoy less), what is your level of enjoyment in preparing meals now compared to what it was 5 years ago?

_____ On a scale of 1-10 (10=offering encouragement, 1=no encouragement), indicate whether members of your family encourage you to spend time preparing meals.

Think back. What would have the 1-10 rating on encouragement by your family have been:

___ 2 years ago ___ 5 years ago ___ 10 years ago

_____ Based on dollars per hour, indicate how much you think your time is worth when you are spending time preparing meals at home?

WRITE DOWN THE SINGLE MOST IMPORTANT THING YOU HAD IN MIND WHEN YOU INDICATED THE DOLLAR VALUE OF YOUR TIME IN PREPARING MEALS AT HOME.

If you could develop, create, or request a new beef product that you would like to see available in the supermarket, what would it be? Provide detail, please.

If you could develop, create, or request a new beef product from the beef chuck that you would like to see in the supermarket, what would it be? Provide detail, please.

Whatever product from the beef chuck you identified or have in mind, rate its chances of success (use 0-100 percent) if the price is the same but it:

___ is not microwaveable ___ is microwaveable

Your Name: _____

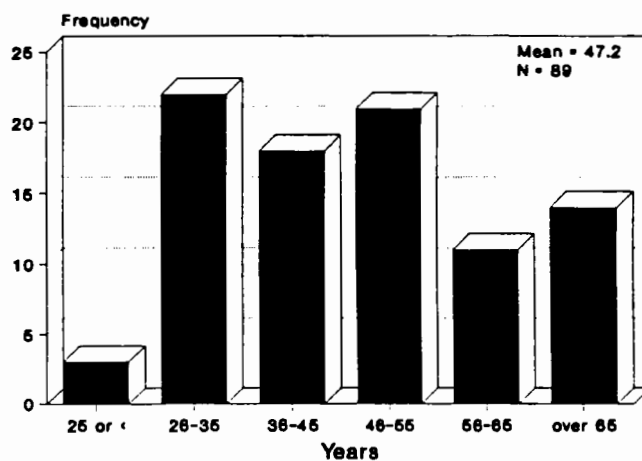
THANK YOU!

If you have questions or input, please call me at (703) 231-7725 or fax to (703) 231-7417. Your suggestions are always welcome and appreciated.

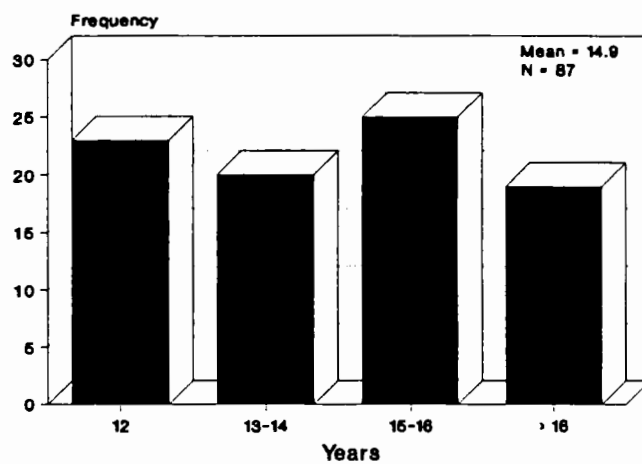
Wayne D. Purcell
324 Hutcheson, Agricultural Economics
Virginia Tech, Blacksburg, VA 24061

Appendix II
Socio-economic Measures of Respondents

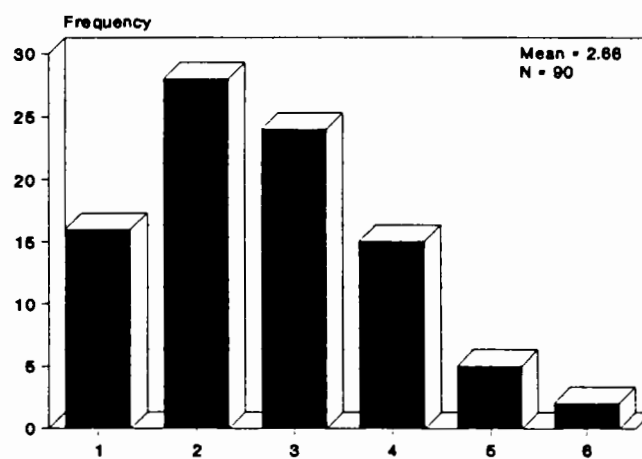
Age



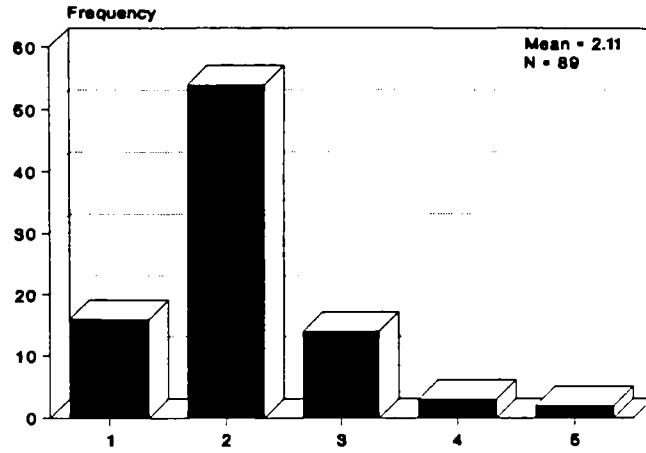
Years of Education



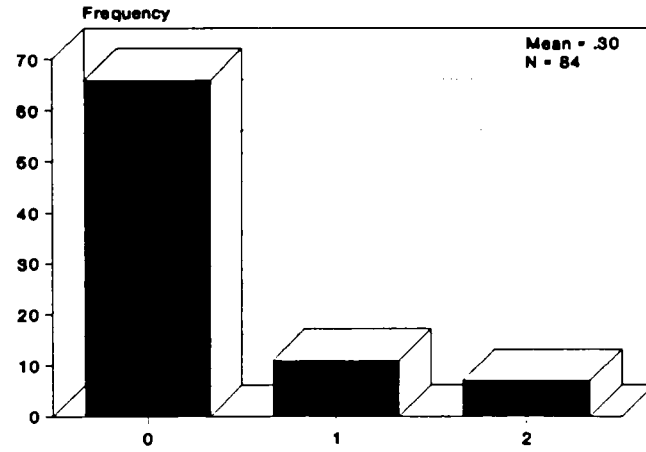
Number of People in Family



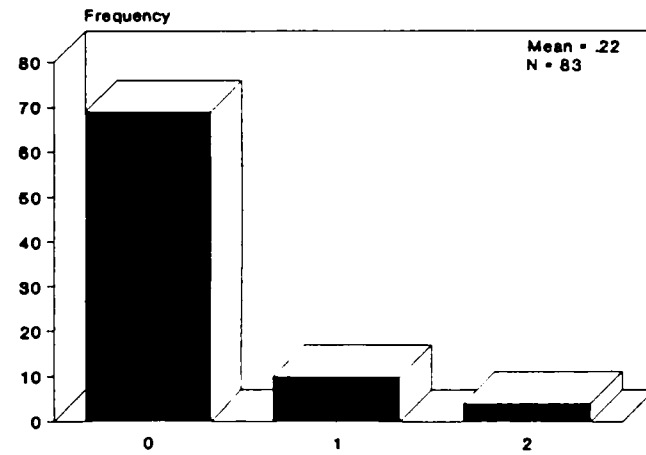
Number of Adults in Family



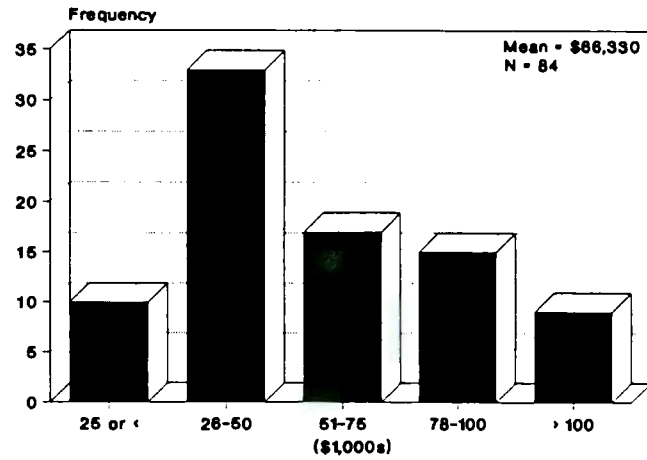
Number of Teenagers in Family



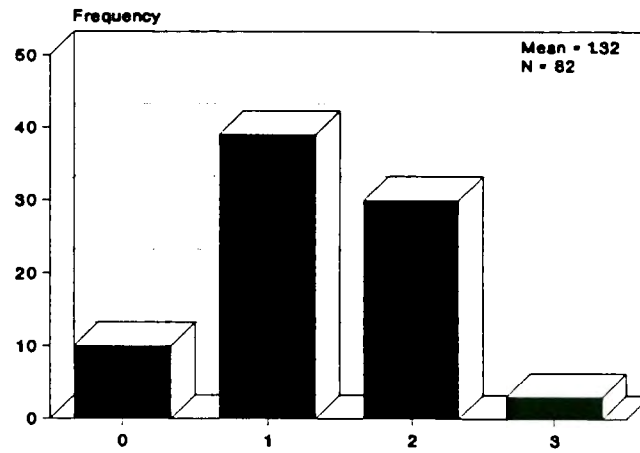
Number of Pre-teen Children in Family



Total Family Income



Number Full-time Wage Earners



Number Part-time Wage Earners

