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Meat Buying and Use in the Missouri Restaurants

by

CURTIS H. BRASCHLER, WARREN D. ALEXANDER, AND JOHN WELCH

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INTRODUCTION

The food service industry has been increasing in importance as a food marketing agency. Approximately 20 percent of the total domestic food consumption is accounted for by meals eaten outside the home. Past trends suggest that this proportion may increase in the future as real income increases.

Very little is known about the food service industry from a research point of view. There are probably a number of reasons for a lack of research information concerning the operation of the restaurant industry. The industry has been and still is composed of a large number of relatively small firms. From this standpoint, but not necessarily other standpoints, the industry fits the economist's assumptions for a purely price competitive industry. Historically, firms operating in a relatively isolated position in the market have not tended to be research oriented. Individual firms in such a position usually cannot afford to support large trained staffs of research personnel. Furthermore, an individual firm does not have the incentive for research found in less competitive areas because other firms will adopt the new practices developed by research and reap benefits for which they did not pay their share of the costs. For these reasons, publicly supported research has been justified for an industry where lack of incentive for individual firm research exists.

This study of the Missouri restaurant industry was undertaken for several reasons. Little is known about the restaurant industry as an industry. Thus, a primary objective of the study was to develop a descriptive picture of the Missouri restaurant industry as an industry. Such information would be useful for development of research and extension programs.

Because of their unique position in the marketing channel, it was hypothesized that individual restaurants and the industry as a whole could exert a powerful influence on the determination of consumer demand for meat items of specific quality, cuts and type. If restaurants were found to be an active rather than passive force in shaping final consumer demand for specific qualities, cuts and types of meat, then a study of consumption trends for meat in restaurants might be useful to predict possible changes in consumption patterns for meat items.

Finally, knowledge of the economic and technological problems involved in purchasing and merchandising meat through restaurants was sought in this pilot study. Such knowledge should provide benchmarks for further extension and research programs.

This report summarizes information concerning meat buying and use by firms in the Missouri restaurant industry. Another report will describe the Missouri restaurant industry from an operational point of view.

RESEARCH PROCEDURE

A sample of 100 firms in the four metropolitan areas of Missouri was selected for interview. An interview schedule was developed to serve as a guide for the interviewer. Approximately 3 percent of the firms in the metropolitan areas of St. Louis, Kansas City, St. Joseph, and Springfield, were included in the sample. The sample was originally designed to be random, but fallout of the original firms forced the interviewers to take some restaurants on a judgment basis toward the end of the interviewing period.

In the four metropolitan areas from which the sample was drawn, there were approximately 2,900 firms in 1958[1] Approximately 3,600 firms of this type operated in the state during 1958. Total sales of all firms in the four metropolitan areas were approximately $157,000,000 in 1958 and total sales in the state were $190,000,000. The sample included 3 percent of the operating firms in the 4 metropolitan areas on a 1958 basis and approximately 2½ percent of the firms in the State.

MEAT UTILIZATION AND MERCHANDIZING PRACTICES

One of the objectives of this study was the determination of some of the meat procurement and merchandizing practices adopted by the restaurants and what factors influenced these practices. The influences particularly sought were those which might affect the demand for meat, especially pork and beef.

PROPORTION OF DIFFERENT MEAT PRODUCTS SOLD BY THE RESTAURANTS

An important part of this study was to determine the proportion of the total meat sales accounted for by beef, pork, lamb, fish, and fowl.

Beef accounted for 52.8 percent of the total meat sales of the restaurants within the sample. This was expected. Pork sales included only 16.8 percent of the total meat sales, whereas sales of fowl included 17.7 percent of the total.

Many restaurant patrons have come to expect fish on Friday; therefore, many restaurant managers emphasize fish and provide a variety of fish dishes then. Fish accounted for 10.4 percent of the meat sold from the restaurants in this sample.

[1] 1958 Census of Business. Retail Trade in Missouri. U. S. Department of Commerce.

Sales of lamb were relatively small and accounted for only 2.3 percent of the meats sold by the sample restaurants.

Sixteen of the 87 restaurant managers interviewed lacked enough knowledge of their establishment's business to give any estimate of the percentage of meats sold. Several others indicated that they were giving only an estimate, thus, only a few of the managers knew exactly the percentage of the different kinds of meat used in their establishments.

Variation in Meat Utilization Between Restaurants

One of the more important aims of this study was to determine variations in the percentages of total meat consumption accounted for by different meat items among the different restaurants. It was hypothesized that such variations of percentage of total meat used existed and could be at least partially explained by variations in certain attributes of the restaurants previously delineated, such as daily sales volume, type, locations, etc. The discovery of a relation between variation in proportion of meat items used, and certain restaurant's attributes would shed useful light on the complex subject of the consumer demand structure for various meat items.

A variety of uses for such information can be delineated on a theoretical basis. A firm would find such information useful for planning its future growth and technological development. Planning would be simplified in that meat items would be emphasized by constructing an operation according to a certain market.

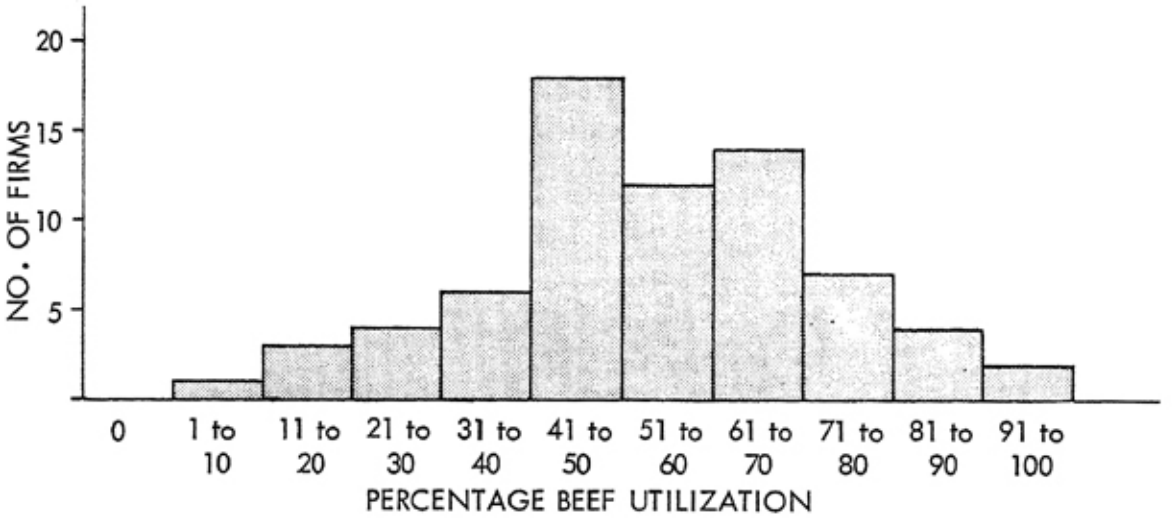
A more fundamental need for an analysis of the complex structure of consumer demand for meat was considered in the planning phase of this study. The study proposed to evaluate the position of restaurants with respect to their ability to function as shapers of consumer demand for types, qualities, and cuts of different meat items. The issue of consumer sovereignty versus the sovereignty of the individual firm in determining ultimate consumer demand for meat products was of primary concern. It was hypothesized that the restaurant industry could be an important factor in the determination of consumer demand for various types and qualities of meat items.

Figures 1, 2, 3, 4, and 5 indicate frequency histograms showing the number of firms using various percentages of the different meat species beef, pork, fowl, fish, and lamb. The variation in use of beef was by far the largest of the five species studied (Figure 1 compared to 2, 3, 4, and 5). The range in proportion of beef used was from 10 to over 90 percent (Figure 1). Approximately 60 percent of the firms used from 41 to 70 percent beef in their operation. Eleven percent reported using less than 30 percent beef.

The use of fowl was quite variable as indicated by Figure 3. Pork utilization varied considerably between restaurants, although it was somewhat less variable than fowl was and much less variable than was beef (Figure 1, 2, and 3).

Fifty percent of the firms used from 1 to 10 percent pork in their operation (Figure 2). There was no firm using more than 50 percent pork.

Fig. 1 Number and Percentage of Beef Utilization by Restaurants



Thirty-eight percent of the firms used from 1 to 10 percent fowl and approximately 10 percent used no fowl. Two firms (3 percent) used over 60 percent fowl and 1 of these used over eighty percent fowl (Figure 3). Thirty-four (48 percent) of the firms used from 11 to 50 percent fowl (Figure 3).

Use of fish was fairly constant among reporting firms. Forty-three firms (61 percent) used from 1 to 10 percent fish. (Figure 4). Most of the other firms either used no fish or used from 11 to 20 percent fish.

Fig. 2 Number and Percentage of Pork Utilization by Restaurants

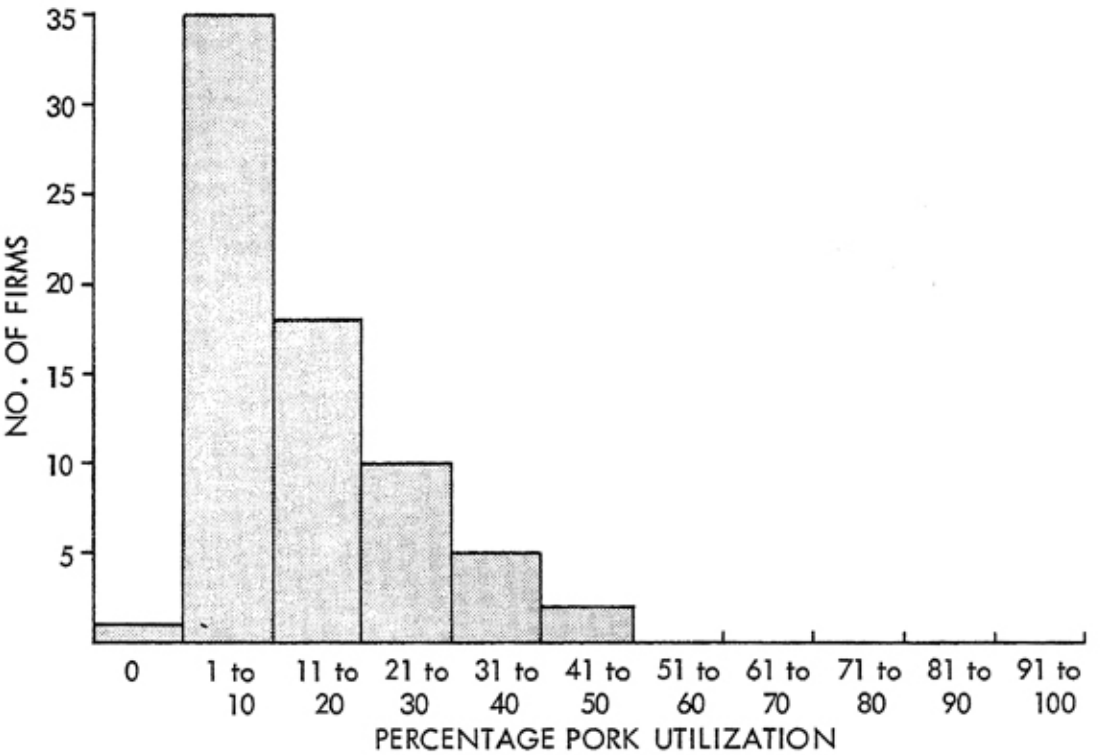


Fig. 3 Number and Percentage of Fowl Utilization by Restaurants

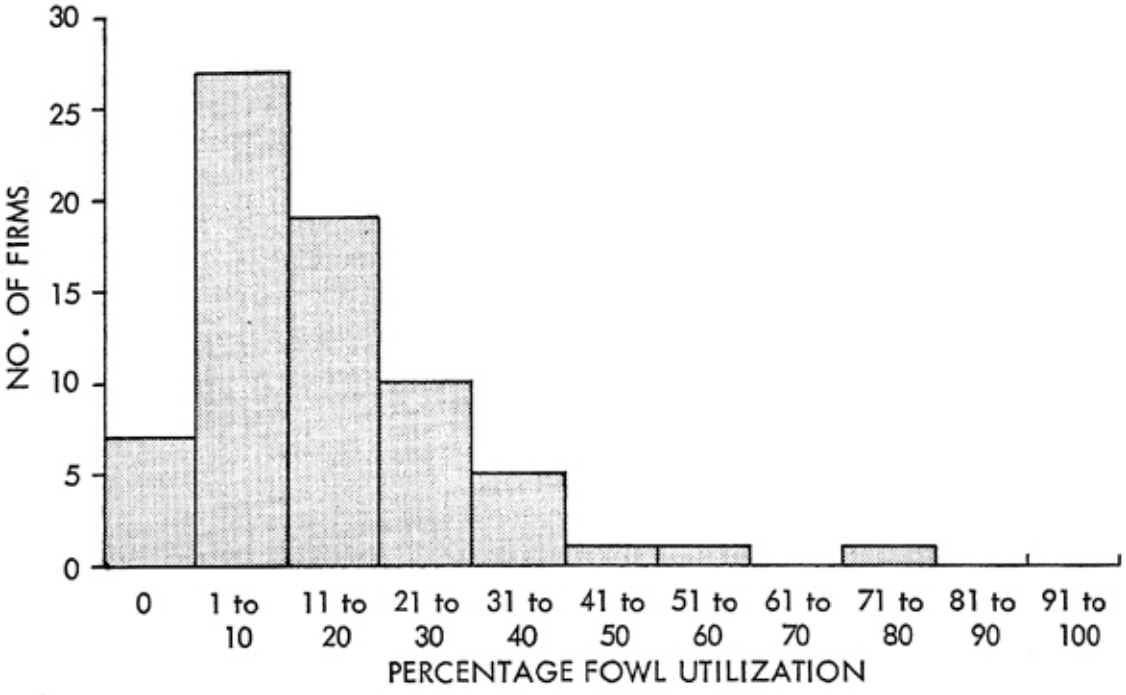
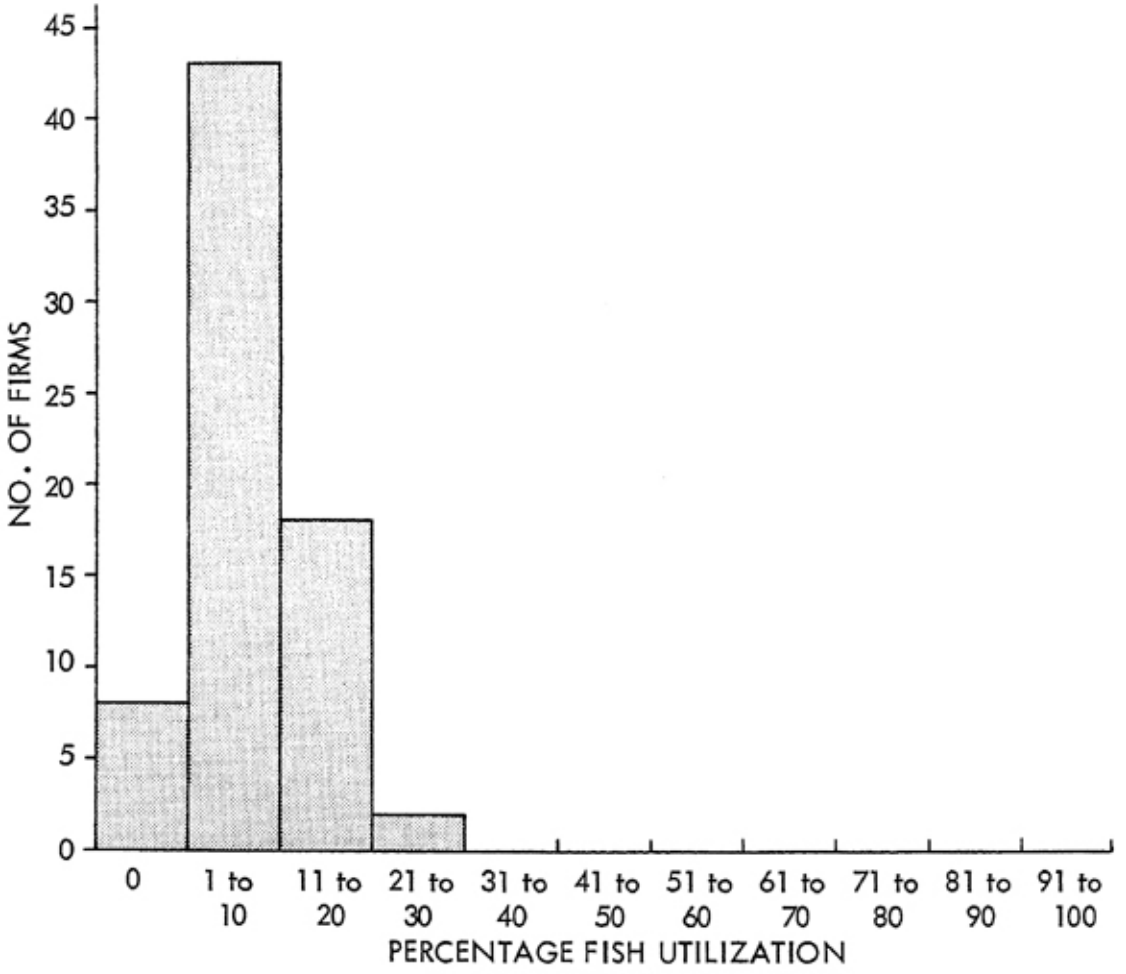


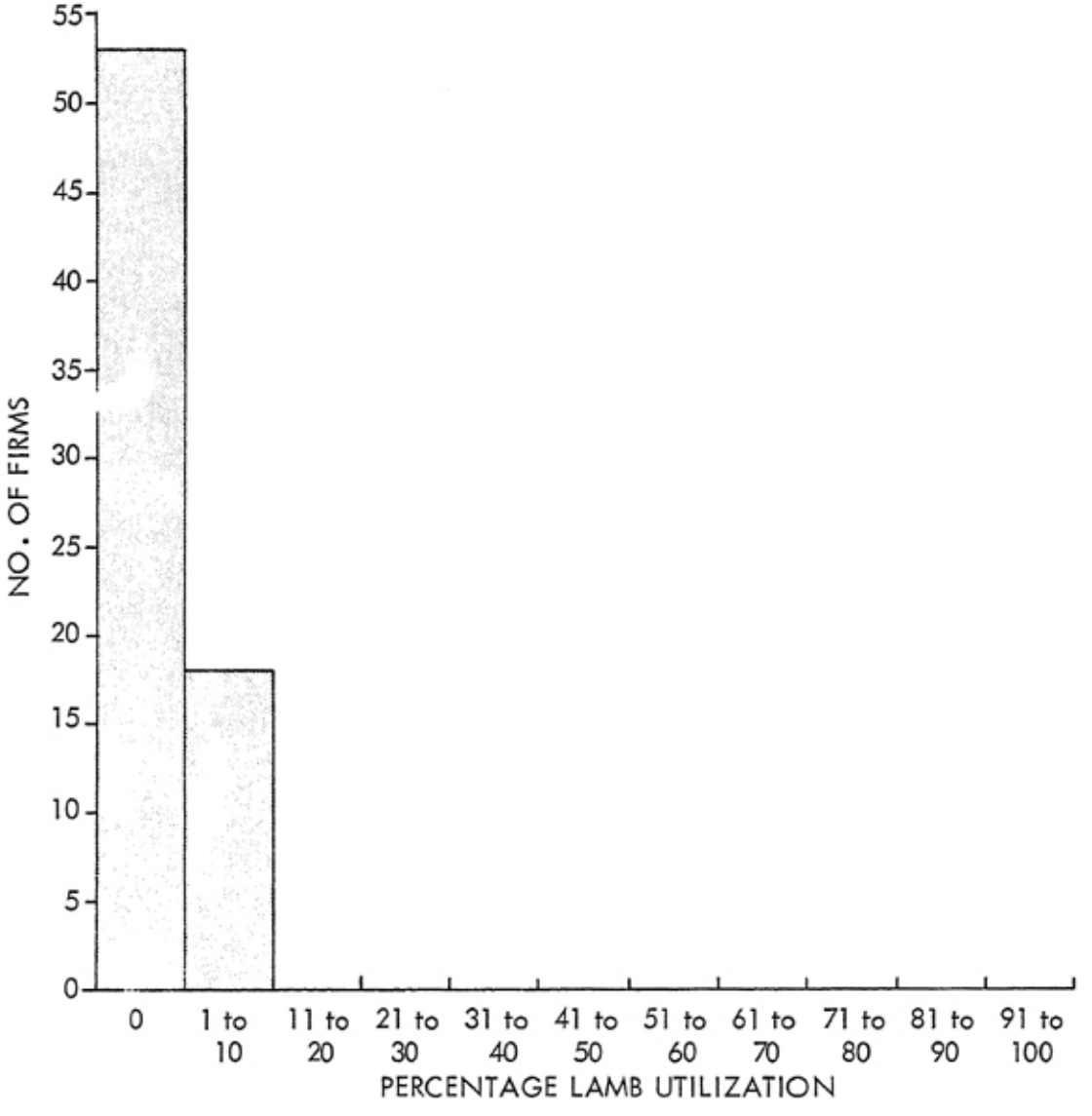
Fig. 4 Number and Percentage of Fish Utilization by Restaurants



Lamb was very unimportant as a menu item and 53 firms (75 percent) used no lamb. The other 25 percent used from 1 to 10 percent lamb.

The variation in sales of different specie items between restaurants suggested the need for attempting to delineate certain quantitative and/or categorical variables which would explain or be associated with this variation. On the basis of theoretical considerations, it seemed logical to hypothesize a relation between daily sales volume and variation in percentages of the total proportion of meat sold that was accounted for by the different types of meat.

Fig. 5 Number and Percentage of Lamb Utilization by Restaurants



A linear regression model was hypothesized with Y = the proportion of total meat sales of a particular type and X = the daily sales volume of a particular restaurant. The least-squares technique was used to compute the constants

a and b in the linear equation $Y = a + bX$. The appropriate coefficients of correlation and determination were computed for each meat type with daily sales volume as the independent variable. The resulting b and r values are indicated in Table 1. It should be kept in mind that the relations indicated were for the sample of restaurants and no attempt was made to infer generalizations to the entire population of restaurants in Missouri. Thus, relations indicated in Table 1 were for restaurants included in the sample. The relation between the two variables was very weak in all instances in the sense that the daily sales volume could not be used to predict an expected proportionate quantity of a particular type of meat sold in a restaurant with a particular sales volume. The only specie showing any appreciable relation to sales volume was lamb. (Table 1).

TABLE 1-COEFFICIENT OF CORRELATION BETWEEN DAILY SALES VOLUME AND PERCENTAGE OF DIFFERENT MEAT ITEMS SOLD

	b Slope of Line	r Coefficient of Correlation	r^2
Beef	-.0046	.1688	.0285
Pork	+.0005	.0346	.0012
Lamb	+.0014	.4423	.1956
Fish	+.0008	.0854	.0073
Fowl	+.0019	.0949	.0090

RELATIONSHIP OF MEAT ITEM EMPHASIZED TO RELATIVE MEAT CONSUMPTION

For further purposes of analysis, the restaurants were divided into three meat emphasis categories. These were: no emphasis, those emphasizing beef, and those emphasizing fowl.

Table 2 indicates the average percentage of total consumption of the different meat items in the three emphasis categories. Thirty-six firms did not em-

TABLE 2-AVERAGE PERCENTAGE CONSUMPTION OF DIFFERENT MEAT ITEMS IN RESTAURANT EMPHASIS CATEGORIES

	No Emphasis (Percent)	Beef (Percent)	Fowl (Percent)
Beef	53.2	68.0	48.8
Fowl	17.1	9.0	25.3
Pork	16.6	15.1	15.3
Fish	11.6	7.5	7.3
No. of firms	36	21	14

phasize any kind of meat, twenty-one emphasized menu items derived from beef, and 14 emphasized fowl on their menu. This was a total of 71 firms reporting relative percentage consumption of different meat items.

The average percentages of beef and fowl used by firms in the three different emphasis categories varied considerably. (Table 2) Beef consumption averaged 68.0 percent in the beef emphasis category, and only 48.8 percent in the fowl emphasis category (Table 2). Fowl consumption averaged 25.3 percent of total meat sales in the fowl emphasis category, and only 9.0 percent in the beef emphasis category (Table 2). Pork consumption was relatively constant within the 3 emphasis categories (Table 2). Fish consumption was slightly higher in the no emphasis category than in the other two categories.

These data suggested that restaurant managers could significantly affect sales of various meat items by choosing to emphasize particular specie items on their menu. Just how this is accomplished by the individual firm was not completely clear. Apparently, it was accomplished by a menu price relationship in connection with a favorable image of a particular meat item offered.

These data further suggested that consumption of beef and fowl varied greatly between restaurants, whereas consumption of pork and fish was fairly constant between restaurants. Finally, these data suggested that beef and fowl were being substituted rather closely for each other among the various restaurant operations.

Although, as previously stated, the sample was not completely a random one, it was decided to use single classification analysis of variance to test the hypothesis of equality of mean beef consumption between the three emphasis categories. Basically, this technique provided a useful tool for studying the variation in beef consumption within and between the three emphasis categories. The analysis of variance indicated considerably more variation in beef consumption between emphasis categories than within emphasis categories (Table 3).

TABLE 3

Source of Variation	Sums of Squares	Degrees of Freedom	M. S.
Within Emphasis Categories	22,039	68	324.1
Between Emphasis Categories	4,008	2	2,004
Total Variation	26,047	70	

F = 6.18 F.01 = 4.95

The F ratio was considerably larger than would be expected by chance in a random sampling situation at the 1 percent level of significance. This further supports the suggestion that emphasis on meat items by a restaurant can substantially affect consumption rates for those items.

Another factor which might have an effect on beef consumption was the type of restaurant operation. As previously indicated the restaurants were classified as service, cafeterias, and short-order types.

The multiple classification analysis of variance was used as a descriptive device to determine whether a relation existed between beef consumption and types of restaurants and emphasis categories for restaurants included in the sample. Both types and emphasis categories appeared to affect the individual restaurant's beef consumption (Table 4). The interaction between the 2 variables did not appear to be important (Table 4).

TABLE 4-ANALYSIS OF VARIANCE OF BEEF CONSUMPTION OF RESTAURANTS CLASSIFIED BY TYPE AND EMPHASIS CATEGORY

Sources of Variation Treat	D. F.	Sum of Squares	Mean S.	F
Types	2	3459	1729.5	6.0
Emphasis	2	4008	2004	6.9
Interaction	4	675	168.8	
Within Restaurants	62	17905	288.8	
Total	70	26047		

Average use of beef by cafeterias emphasizing chicken was lowest at 38.5 percent of total meat sales. Service restaurants showed some relation to emphasis but not as much as cafeterias. Average beef consumption for service restaurants was 55.6 percent of total meat sales. There were no short-order restaurants emphasizing chicken. The short-order firms in the sample either emphasized beef or did not emphasize any meat product. Eight short-order firms emphasized beef with an average beef consumption of 76.1 percent of total meat sales. Ten short-order firms did not emphasize any meat items and had an average beef consumption of 60.5 percent of total meat sales.

Since beef consumption, on the average, accounted for over fifty percent of total meat sales, it seemed pertinent to analyze the variation in beef consumption as related to other meat items. The purpose of such an analysis was to find out what meat specie was being interchanged for beef between different restaurants as consumption of beef varied between restaurants.

To investigate the problem of substitution of specie items for beef the tools of simple and multiple regression analysis were employed as a descriptive device. Simple intercorrelation coefficients and coefficients of determination were computed assuming percentage beef consumed as the dependent (Y) variable. Fowl (X_1), fish (X_2), and pork (X_3), were taken respectively as the three independent variables for a linear multiple regression analysis of the relationship. The purpose of this analysis was to show substitution relations and their relative magnitude between beef and other items consumed between and within restaurants.

Since the percentage consumption of all items must total 100 percent, the total variation in beef consumption would be approximately 100 percent explained by variation in the 3 independent variables (lamb consumption was not included because of its relative unimportance).

Table 5 shows the matrix of intercorrelation coefficients of determination in standard statistical form. Sixty-one percent of the variation in beef consumption between restaurants was associated with fowl which was a much larger variation than that associated with the other two species (Table 5). Only fowl and fish consumption moved together between restaurants on a complementary basis. (Table 5). In other instances, negative relations existed between consumption of different simple pairs of specie items.

TABLE 5-MATRIX OF COEFFICIENT OF DETERMINATION BETWEEN BEEF AND OTHER MEAT SPECIE ITEMS

	Fish (X_2)	Pork (X_3)	Beef (Y)
Fowl (X_1)	+.0977	-.0026	-.61
Fish (X_2)	1.0000	-.0340	-.29
Pork (X_3)		1.0000	-.17

$R^2 Y_1 = .61$

$R^2 Y_{12} - .736$

$R^2 Y_{123} = 100.0$

One of the more powerful aspects of multiple regression analysis from a descriptive viewpoint is its ability to determine the additive explanatory association of each addition of successive independent variables in association with variation in a common dependent variable. As previously noted the largest proportion of variation in beef consumption was associated with variation in fowl consumption (61 percent). The additional percentage variation explained by fish was 12.6 (Table 5) and variation in pork consumption was associated with another 23.4 percent of the variation in beef consumption between restaurants (Table 5).

Several important points can be summarized from these descriptive analyses of the specie consumption data between restaurants:

1. Beef was by far the most important meat item in the menu of sample restaurants
2. Variation in beef consumption was relatively high between restaurants
3. Variation in consumption of fowl was also rather high between restaurants
4. Consumption of pork and fish was relatively stable between restaurants
5. The data suggested that fowl has been found to be reasonably interchangeable for beef on the menu of some of the sample restaurants

6. Pork also appears to be a substitute for beef as a menu item, but much less important than fowl
7. There appeared to be some substitution of fish for beef but this apparently was not too important.
8. Both emphasis and type of restaurant appear to be fairly important variables in determining the proportion of total meat sales accounted for by beef (Emphasis appeared to be slightly more important than type of restaurant in accounting for variation in beef sales between restaurants)
9. Over 50 percent of the variation in beef consumption within restaurants occurred in the service type restaurant.

The largest proportion of the variation within service restaurants (over 50 percent) in the service category that were classified as no emphasis actually were emphasizing more than three specific products. Such restaurants were classified as not emphasizing a particular meat item. Usually, these firms emphasizing more than two particular items were emphasizing three or more items that could be included either in the beef or fowl specie category. This suggests that the individual manager in the service, no emphasis category, was actually emphasizing either beef or fowl and probably should have been included in one or the other of the fowl or beef emphasis category. The interviewers were not aware of the possible importance of emphasis or type in determining specie consumption at the time of the study. Furthermore, they were not aware of the apparent close substitution between beef and fowl between individual restaurants. Thus, it is believed that a more intense effort to determine specie emphasis in the service type operation would have resulted in further reduction in the within variation category of the service, no specie emphasis group.

MEAT ITEM EMPHASIZED RELATIVE TO OTHER RESTAURANT VARIABLES

Since emphasis and type of restaurants appeared to appreciably affect specie utilization of meat by restaurants, it appeared logical to try to determine factors which might affect the meat items emphasized by the particular restaurant.

It was hypothesized, that certain factors, such as type, location, and daily sales volume, might affect the meat item emphasized by the various restaurants. The Chi-square test was used to test the hypotheses that these variables and meat item emphasized were independent. Chi-square was not significant at the 5 percent level for any of the 3 variables. There appeared to be no relation between meat item emphasized and location, type of restaurant, and daily sales volume.

Although no significant relationships were found when the chi-square tests were applied, several factors appeared in Tables 6 to 7 which should be noted.

A higher percentage of the very large restaurants emphasized no particular meat product than did the smaller firms (Table 6). Very few of the restaurants

TABLE 6-THE EMPHASIS OF THE VARIOUS MEAT ITEMS AS COMPARED WITH DAILY SALES VOLUME

Meat Item Emphasized	Daily Sales Volume: Small $100 Or Less		Medium $101 To $300		Large $301 To $700		Very Large More Than $700	
	Number	Per Cent	Number	Per Cent**	Number	Per Cent**	Number	Per Cent**
Steak*	0	0.0	6	22.2	3	12.5	1	5.9
Ribs	0	0.0	0	0.0	1	4.2	1	5.9
Chicken	1	5.6	6	22.2	6	25.0	2	11.8
Roast Beef	2	11.1	5	18.5	5	20.8	2	11.8
Sandwiches	4	22.2	4	14.8	0	0.0	1	5.9
Other	2	11.1	0	0.0	1	4.2	0	0.0
No Meat Item Emphasized	9	50.0	10	37.0	12	50.0	11	64.8

*There was one restuarant that emphasized steaks that gave no estimate of its daily sales volume.
**These columns equal more than one hundred percent because some firms within these groups emphasized two different meat items.

TABLE 7-THE EMPHASIS OF THE VARIOUS MEAT ITEMS AS COMPARED WITH LOCATION OF RESTAURANT

Meat Item Emphasized	Location of Restaurant: Downtown		Neighborhood		Shopping Center		Highway		Industrial		Other	
	No.	%*	No.	%*	No.	%	No.	%*	No.	%	No.	%*
Steak	4	16.7	4	12.5	0	0.0	2	15.4	0	0.0	1	33.3
Ribs	1	4.2	0	0.0	0	0.0	1	7.7	0	0.0	0	0.0
Chicken	4	16.7	8	25.0	0	0.0	2	15.4	0	0.0	1	33.3
Roast Beef	8	33.3	3	9.4	0	0.0	0	0.0	3	30.0	0	0.0
Sandwiches	0	0.0	4	12.5	1	20.0	2	15.4	2	20.0	0	0.0
Other	0	0.0	1	3.1	1	20.0	0	0.0	0	0.0	1	33.3
No Meat Item Emphasized	11	45.8	15	46.9	3	60.0	7	53.8	5	50.0	1	33.3

*These percent columns equal more than one hundred percent because some firms within these groups emphasized two different meat items.

in either the large or very large categories emphasized sandwiches. Steaks seemed to be emphasized more in medium size restaurants than in the small or very large restaurants.

A larger percent of the neighborhood restaurants emphasized chicken than those located downtown (Table 7). More of the downtown restaurants emphasized roast beef than those located out in the neighborhood (Table 7). Sandwiches were also emphasized in a larger percent of the neighborhood locations than in the restaurants located downtown.

Steaks were emphasized only in service and short-order restaurants (Table 8). Cafeterias within this sample emphasized only two meat products, roast beef and chicken. A higher percentage of the cafeterias emphasized roast beef or chicken than service and short-order operations.

SEASONAL EMPHASIS OF VARIOUS MEAT ITEMS AND OTHER SEASONAL CHANGES IN THE SALES OF MEAT

Another aspect of the study of meat utilization involved a determination of seasonal emphasis and seasonal changes in meat sales of the sample firms. Factors which might affect such changes were also sought.

The seasonal emphases considered were:

1. emphasis of turkey at Thanksgiving
2. emphasis of ham at Easter
3. selling of less meat in the summer and
4. selling of less pork in the summer.

Of the eighty-seven restaurants interviewed, 55 percent said that they emphasized turkey at Thanksgiving and 39 percent said that they emphasized ham at Easter. Twenty-five percent of the sample firms said they sold less pork in the summer and only 12 percent said they sold less total meat during the summer months. There were several, however, who mentioned that although they did not sell less meat in the summer months there were shifts to different kinds of meat sold, other than those already mentioned. There were also a few who stated that they actually sold more meat in the summer and 2 who said that they sold more pork in the summer.

The hypothesis was made that daily sales volume, location, and type of restaurant, would affect the seasonal changes and the other changes in emphasis. Because such a few (12 percent) of the restaurant managers said that they normally sold less meat in the summer this category was not tested for independence. Chi-square was again used to test the hypotheses that meat item emphasized was independent of daily sales volume, type, and location of the restaurant. Chi-square was not significant for any of the nine different null hypotheses at the 5 percent level. Thus, it can be assumed that daily sales volume, location, and type of restaurant, had little or no effect upon the seasonal emphasis of various meat items and other seasonal changes in the quantities of meat sold.

TABLE 8-THE EMPHASIS OF THE VARIOUS MEAT ITEMS AS COMPARED WITH TYPE OF RESTAURANT

Meat Item Empahsized	Type of Restaurant					
	Service		Cafeteria		Short-Order	
	Number	Per Cent*	Number	Per Cent*	Number	Per Cent*
Steaks	6	14.6	0	0.0	5	15.1
Ribs	1	2.4	0	0.0	1	3.0
Chicken	7	17.1	5	33.3	3	9.1
Roast Beef	8	19.5	4	26.7	2	6.0
Sandwiches	2	4.9	0	0.0	7	21.2
Other	2	4.9	0	0.0	1	3.0
No Meat Item Emphasized	20	48.8	8	53.3	14	42.4

*These columns equal more than one hundred percent because some firms within these groups emphasized two different meat items.

TABLE 9-SEASONAL CHANGES OF MEAT SALES AS COMPARED WITH DAILY SALES VOLUME

Seasonal Changes	Daily Sales Volume							
	Small $100 Or Less		Medium $101 To $300		Large $301 To $700		Very Large More Than $700	
	Number	Per Cent*	Number	Per Cent*	Number	Per Cent*	Number	Per Cent*
Emphasized Turkey At Thanksgiving	8	44.4	12	44.4	17	70.8	11	64.7
Emphasized Ham At Easter	4	22.2	10	37.0	11	45.8	9	52.9
Sold Less Pork In The Summer	3	16.7	9	33.3	5	20.8	5	29.4
Sold Less Meat In The Summer	1	5.6	3	11.1	3	12.5	3	17.6

*These columns equal more than one hundred per cent because some firms within these groups made more than one seasonal change.

TABLE 10-SEASONAL CHANGES OF MEAT SALES AS COMPARED WITH TYPE OF RESTAURANT

Seasonal Changes	Type of Restaurant					
	Service		Cafeteria		Short-Order	
	Number	Per Cent*	Number	Per Cent*	Number	Per Cent*
Emphasized Turkey At Thanksgiving	23	56.1	11	73.3	14	50.0
Emphasized Ham At Easter	17	41.5	8	53.3	9	32.1
Sold Less Pork In The Summer	12	29.3	4	26.7	6	21.4
Sold Less Meat In The Summer	4	9.8	4	26.7	2	7.1

*These columns equal more than one hundred per cent because some firms within these groups made more than one seasonal change.

TABLE 11-SEASONAL CHANGES OF MEAT SALES AS COMPARED WITH LOCATION OF RESTAURANT

Seasonal Changes	Location of Restaurant											
	Downtown		Neighborhood		Shopping Center		Highway		Industrial		Other	
	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*	No.	%*
Emphasized Turkey At Thanksgiving	14	58.3	18	56.3	3	60.0	6	46.2	5	50.0	2	66.7
Emphasized Ham At Easter	10	41.7	12	37.5	2	40.0	4	30.8	4	40.0	2	66.7
Sold Less Pork in The Summer	9	37.5	9	28.1	1	20.0	1	7.7	3	30.0	0	0.0
Sold Less Meat In The Summer	4	16.7	3	9.4	0	0.0	0	0.0	3	30.0	0	0.0

*These columns do not equal one hundred per cent because some firms within these groups made more than one seasonal change and some did not make any seasonal changes.

Tables 9 to 11 show the relationship of daily volume of sales, location and type of restaurant to the seasonal changes. Only a few generalizations can be made concerning these small differences.

A higher percentage of the larger firms made seasonal changes in all four areas than did the smaller firms (Table 9). This tendency on the part of the larger restaurants to make seasonal changes is most noticeable in the Thanksgiving emphasis of Turkey. Smaller but still noticeable differences between the larger and smaller firms are seen in the shifts made at Easter and during the summer months.

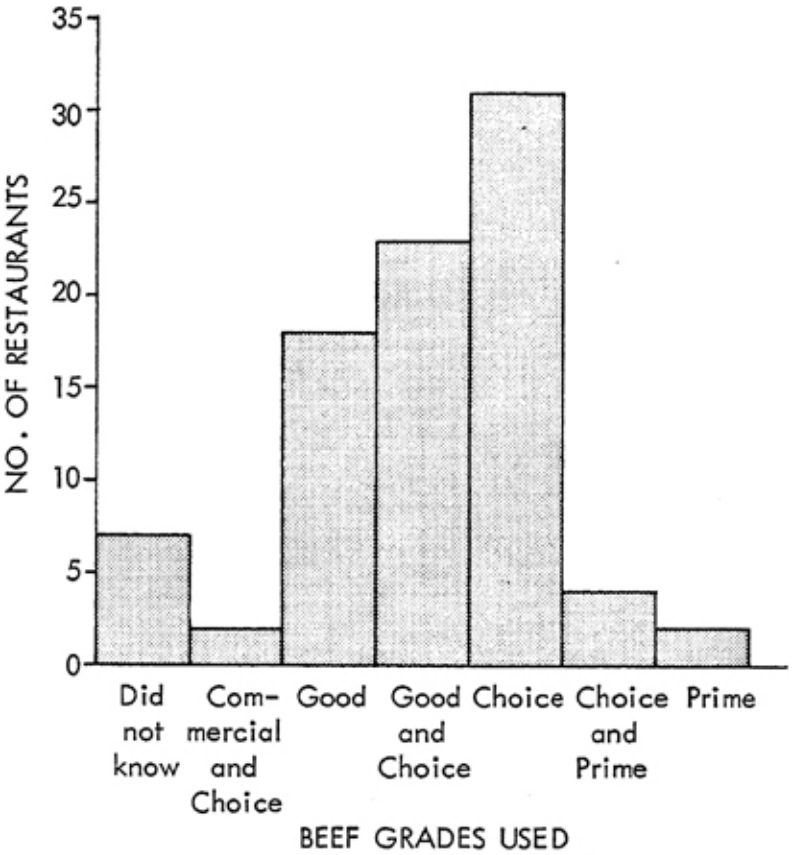
Cafeterias made a slightly higher percentage of these seasonal changes than did any other type of restaurant (Table 10). The service type restaurants also made a higher percentage of the seasonal changes than did the short-order restaurants, but there the differences were again quite small.

Beef Grades used in Relation to Restaurant Variable.

Another aspect of the study involved a determination of the grades of beef used by the restaurants and factors which affected the use of the different U.S.D.A. grades of beef.

Figure 6 shows the distribution of the beef grades used by the 87 restaurants within the sample. It should be noted that 7 of the 87 did not know what

Fig. 6 Grades of Beef Used by Restaurants in the Sample

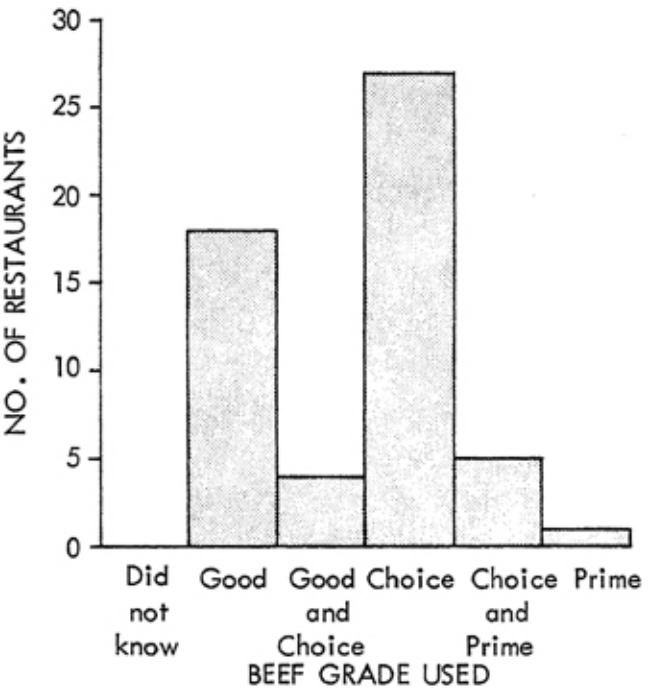


Based on Grading Standards After 1956

grades of beef they used. One-half (51.2 percent) of the 80 remaining restaurants purchased part or all U.S.D.A. Good grade beef.

For comparative purposes the grades of beef used in restaurants studied by Sartorius and Burk are shown in Figure 7.[2] The study originally employed the U.S.D.A. grading system used prior to 1950. The grades used in Figure 7 were based on a conversion of the old grading system to the present system.

Fig. 7 Grades of Beef Used in Minnesota Restaurants Studied by Sartarius and Burk



A statistical analysis was performed to determine whether daily sales volume, location, and type of restaurant were related to the grade of beef used in the restaurants.

A Chi-square test indicated that daily sales volume and beef grades were related in the sense that restaurants with higher sales volume tended to use higher U.S.D.A. graded beef. It can be assumed that there was some relation between daily sales volume and beef grades used by the restaurants.

Table 12 shows three main differences in the grades used among the four size groups of the restaurants. All of the small restaurants, $100 or less daily sales volume, used only one grade of beef such as only Good or only Choice; whereas, a high percentage of the other size groups used a combination of two grades. The small and medium sized restaurants used a much higher percentage

[2]Lester C. Sartorius, and M. C. Burk, *Eating Places as Marketers of Food Products,* United States Department of Agriculture, in cooperation with the Division of Agriculture Economics, University of Minnesota, Marketing Research Report 3 (Washington: Government Printing Office, 1952), p. 102.

TABLE 12-GRADES OF BEEF USED AS COMPARED WITH DAILY SALES VOLUME

Grades Of Beef	Daily Sales Volume							
	Small $100 Or Less		Medium $101 To $300		Large $301 To $700		Very Large More Than $700	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Did Not Know	5	27.8	2	7.4	0	0.0	0	0.0
Commercial And Choice	0	0.0	1	3.7	1	4.2	0	0.0
Only Good	6	33.3	10	37.1	1	4.2	1	5.9
Good And Choice	0	0.0	6	22.2	10	41.6	7	41.1
Only Choice*	7	38.9	7	25.9	10	41.6	6	35.3
Choice And Prime	0	0.0	1	3.7	1	4.2	2	11.8
Only Prime	0	0.0	0	0.0	1	4.2	1	5.9

*There was one restaurant that used only Choice grade beef that gave no estimate of its daily sales volume.

of only Good grade beef than did the larger restaurants. The restaurants which had a daily sales volume of over $300 used a much higher percentage of a Good and Choice grade combination. Another noticeable factor is that a slightly higher percentage of the larger restaurants tended to use some or all Prime grade beef. Only managers of the small and medium sized restaurants did not know which grade of beef that they used. This group, however, was not used in the Chi-square test.

The Chi-square test was also used to determine whether there was any relationship between the location of the restaurants and the beef grade or grades used. Chi-square was not significant at the 5 percent level. Thus, there appeared to be no relation between beef grades used and location of the restaurants. Only slight differences in beef grades used by different locations were apparent (Appendix Table 1). The main difference was between the downtown and neighborhood locations. A higher percentage of the downtown restaurant managers used a combination of Good and Choice grades of beef; whereas, a higher percentage of the neighborhood restaurants used only Good or only Choice grade beef.

A Chi-square test was also used to detect a possible relation between type of restaurant and grades of beef used. There appeared to be little relation between type of restaurant and the grade used. Slight differences in the relationships between the types of restaurants interviewed and the grades of beef used by these restaurants were noted (Appendix Table 2). A greater percentage of the short-order restaurants used only Good grade beef and a larger percentage of both the service and cafeteria restaurants used a combination of Good and Choice grades of beef.

The above-mentioned differences in beef grades used by the different categories seem to be quite small when the average grade is figured. Although there might not be much difference as far as the average grade used between two groups, one of which uses only one grade of beef and the other a combination of that grade and another grade, the very fact that one group of restaurants is able to use a combination of grades may be of more importance. Thus, some restaurants have devised a system enabling them to use a higher or lower grade of beef according to the specific form in which the meat item is to be served.

Adjustments Made for Short-Run Changes In The Cost of Meat Items

Along with an analysis of the demand of restaurants for meat products, there was an effort to determine the price responsiveness of these restaurants and the nature of some of the factors which might influence these responses. An analysis of types of adjustments were considered in relation to various factors that might affect the different adjustments. The different adjustments considered were:

1. emphasis of high profit meat items with a variable menu
2. increase menu prices and
3. decrease portion size.

These adjustments proved inadequate because a large number of the restaurants indicated that they absorbed most or all of the short-run changes in meat prices.

Only fifty of the eighty-seven restaurants indicated efforts to adjust to short run changes in meat prices. Of these fifty restaurants, 18 percent said they emphasized high profit meat items, 38 percent increased menu prices, only 12 percent decreased portion size; whereas 72 percent absorbed all or part of an increase in the cost of a meat item. Seventeen of these fifty restaurants applied a combination of the above practices which explains the percentage total of over 100. The most prevalent combination was the absorbtion of some increase with a not too frequent increase in menu prices.

The study of Sartorius and Burk yielded similar results. They found that 72 percent absorbed day-to-day changes in meat buying prices, 17 percent changed the size of portion and only 7 percent changed menu prices.[3] The findings of the 2 studies were similar although the questions were asked in different terminology. The Minnesota study was interested primarily in the day-to-day changes in meat prices; whereas, this study dealt with short-run changes in meat prices, thus probably involving a longer time period than a day-to-day change.

In the effort to determine some of the factors which might have an effect upon the price responsiveness of these restaurants, three independent variables were considered. These were size, location, and type of restaurant. Chi-square tests indicated that none of these variables was related to adjustments responses of the restaurants.

Although the 3 independent variables had no statistically significant effect upon adjustments to short-run price change, some differences appeared in the tabular analysis (Appendix Tables 3 to 5).

None of the small or very large firms decreased portion size when a particular meat item increased in price (Appendix Table 3). A slightly higher percentage of the larger firms emphasized high profit meat items and increased menu prices than did the small or medium size restaurants.

A higher percentage of both the service and short-order type restaurants absorbed part or all of the price increases than did the cafeterias (Appendix Table 4). Instead of absorbing the increase, a greater percentage of the cafeterias emphasized a high profit meat item or increased menu prices than did the service and short-order type restaurants (Appendix Table 4).

The possibility that restaurants might buy meat seasonally to adjust for the seasonal changes in meat prices was also considered. The meat buyer, using this method, would buy large quantities of a particular meat item when the price was low and store this meat until the price reached its peak. This scheme would necessitate freezing of the meat and would impose an enormous problem in the amount of freezer space required.

All of the restaurants interviewed indicated that they had some freezer space. A few of the restaurant managers said that they froze no meat. Most of the

[3]Sartorius and Burk, *op. cit.*, p. 103.

restaurants used the freezer space partly for storage of specialty meat items such as fish and some prefabricated beef cuts.

The only economical way, in relation to freezer space, to store large quantities of meat would be in the prefabricated form which required approximately 180 cubic feet of freezer space for every 1000 pounds of beef.[4] Assuming that the average customer will consume approximately four ounces of prefabricated meat, no restaurant within this sample could store enough meat to last over thirty days if they used their entire freezer space for meat. Only 9 percent of the restaurants had enough freezer space to last over two weeks; those with this limited amount were primarily the smaller restaurants. Without increasing their own freezer capacity greatly or leasing outside freezer space, the restaurants interviewed could not adjust for seasonal changes in meat prices by buying seasonally. Other problems, including financing, the price spread in relation to the cost, and lack of knowledge of the seasonal variations, would arise if a restaurant undertook this practice.

AMOUNT OF BEEF PROCESSED BY THE RESTAURANTS

There are many forms from which the restaurant manager has to chose in buying his beef. These range from the prefabricated cuts, i.e., processed, pan-ready cuts, to the entire carcass. Each particular form of beef has advantages for certain restaurants and no one method of purchasing is cheaper for all cuts of beef. One of the purposes of this study was to determine the form in which the restaurants buy their beef and the factors which might influence this practice.

This problem was handled by determining the amount of processing the restaurants did. That is, the total amount of work required between the carcass stage and the stage when the meat is ready to be cooked. For this purpose, the restaurants were divided into four groups. One group included the restaurants that did "no processing" at all. The second group consisted of the restaurants who did "very little processing" of the meats used. The restaurants contained within this group generally did less than 10 percent of the total processing of the beef they used. The third group was classified as doing "some processing." These restaurants purchased more than 10 percent wholesale or primal cuts and also used prefabricated beef. The last group consisted of the restaurants who did "most of the processing" of the beef they used. These restaurants purchased part or all of their beef as sides or quarters.

Of this sample of 87 restaurants, 44 did no processing and another 17 did very little of the total processing of the beef they used. Of the remaining 26 restaurants 12 did some processing of the beef used by the restaurant and 14 did most of the processing. Of the 14 that did most of the processing only 4 or 5 purchased all of their beef as carcasses.

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[4]Capt. Marian J. Hayton, and Pearl J. Aldrich, "Cost of Oven-Ready Beef from Carcass, Primal Cut, and Fabricated Sources," *Journal of the American Dietetic Association,* XXXII (October, 1956), p. 951. This includes dunnage and space for air circulation.

A little less than ¾ of the meat purchased by the firms in the Minnesota study was in wholesale cuts. Most of the remainder was large quantity purchases of processed, pan-ready cuts.[5]

A study prior to 1955 that covered 47 states and 705 restaurants found meat buying habits as follows: 62 percent using primal cuts, 58 percent using prefabricated cuts, 24 percent using carcass meat, and 15 percent using canned meats. It was also reported that 22 percent used prefabricated cuts exclusively; 26 percent used only primal cuts; and only 6 percent purchased strictly carcass meat.[6]

Variation occurred both among the 3 studies themselves and among the restaurants in each study; thus, there was an attempt to determine what factors might influence the variation within the sample used for this study.

Chi-square was used to determine whether daily sales volume, type and location affected the method of beef purchasing. The test indicated that daily sales volume and type of restaurant were related to a firm's method of beef purchasing. Location did not affect the method of purchasing beef.

As daily sales volume increased, the amount of beef processed also increased (Appendix Table 6). Eighty-three percent of the small restaurants did no processing; whereas, 33 percent of both the medium size and large restaurants and 47 percent of the very large restaurants did some or most of the processing of the beef that they sold (Appendix Table 6).

Eighty-one percent of the short-order restaurants did no processing (Appendix Table 7). The cafeterias did more processing than any other type of restaurant (Appendix Table 7).

Miscellaneous Meat Buying Practices

Within the sample of 87 restaurants 70 of the restaurant owner-managers purchased the meat. The remaining 17 meat buyers included 3 purchasing agents, and 14 managers. Only 1 of the 71 owner-managers did not purchase the meat.

The only training that 78 of the 87 meat buyers had was experience in the restaurant field. Another 6 of these meat buyers had been employed as butchers or in some other type of meat business before working in their present managerial capacity. Only 3 meat buyers had some college training in meat purchasing.

Approximately ½ of the firms interviewed weighed all meat as it was received from the supplier. Twenty-eight percent of the restaurants never weighed any of the meat, and the other 22 percent spot-checked the weight of meat deliveries.

Of the sample of 87 restaurants, 68 percent checked the quality of all meat, but 13 percent never inspected the meat when it was delivered. The other 19

[5]Sartorius and Burk, *op. cit.*, p. 30.

[6]P. Pompilio, "How Seven-Hundred and Five Restaurants Buy Their Meat," *Restaurant Management*, LXXVI (January, 1955), p. 49.

percent occasionally checked the meat that they purchased for specific quality.

From an operational standpoint, the relationship between food and labor costs and total operating costs should be known by a restaurant operator. Only a few of the restaurant managers were able to give any answer, and still fewer a reliable answer, to questions concerning their relative costs of food and labor; therefore, no tabulation or statistical tests were done in these areas.

Another purpose of this survey was to determine economic and technological problems confronting the management of the firms interviewed. Only a few of the firms interviewed seemed aware of any existing problems or expressed any great interest in new ideas in buying and handling meats. The interested firms were generally the larger, more progressive firms.

Another measurement of restaurant interest in introducing innovations is the number belonging to the Missouri Restaurant Association and those attending the clinics sponsored by the Extension Service of the University of Missouri. In 1960, only about 10 percent of the restaurants in the four metropolitan areas belonged to the Missouri Restaurant Association. Usually less than 10 percent, and many times less than 5 percent, of the State's restaurants are represented at the University sponsored clinics.

The only meat buying problem that any of the restaurant managers mentioned was the short-run variation in meat prices. Some of the methods which the restaurants used to adjust to the price variations were discussed in a previous section. It may be noted in that section that most of the restaurants listed no method of adjustment, but they absorbed the price changes.

SUMMARY AND CONCLUSIONS

This report summarizes the meat buying and utilization practices of 87 restaurants in the 4 major metropolitan areas of Missouri. These firms were selected from appropriate lists of operating firms in St. Louis, Kansas City, St. Joseph, and Springfield. A formal interview schedule was taken from each cooperating firm.

The objectives were to determine meat buying practices and the use of meat items by specie, quality, and cut. The factors associated with variation in utilization by specie, cut, and quality, were also sought in the study. Operational aspects of the Missouri restaurant industry were also studied and the results of the analyses are reported in another publication.

The major findings and conclusions concerning meat buying and utilization are summarized as follows:

1. Beef was by far the most important meat item used by the sample restaurants accounting for nearly 53 percent of total meat sales
2. Fowl and pork were the next most important meat items accounting for approximately 18 and 17 percent of sales respectively
3. Fish accounted for approximately 10 percent of total meat sales (Lamb was

relatively unimportant accounting for only a little over 2 percent of meat sales of the sample firms reporting)

4. The use of beef by restaurants was quite variable (The range in percentage of beef used was from 10 percent to over 90 percent of total meat sales)
5. Fowl was the next most variable item in sales to restaurants (Pork sales were also fairly variable between restaurants but not as variable as sales of fowl. Several restaurants reported using over 50 percent fowl, whereas, no restaurant reported using more than 50 percent pork)
6. Sales of fish and lamb were relatively stable between restaurants
7. Restaurants were classified by meat emphasis categories as emphasizing beef, emphasizing fowl, and no meat items emphasized (Restaurants were also classified by types as service, cafeterias and short-order operations. It was hypothesized that these classifications would be associated with, and thus explain, some of the variation in utilization of meat by specie between the different operations)
8. Short-order restaurants in the beef emphasis category sold the highest percentage of beef at approximately 76 percent (Cafeterias emphasizing chicken sold approximately 38 percent beef—the lowest utilization of beef)
9. Both emphasis category and type appeared to be important in determining beef sales in the sample (Emphasis was somewhat more important than the type of restaurant)
10. Variation in daily sales volume did not affect sales by specie except in the case of lamb (Sales of lamb appeared to be concentrated in the restaurants with rather large daily sales volume)
11. Beef and fowl were the more closely interchangeable meat items in the menu of restaurants in the sample (Over 60 percent of the variation in sales of beef was associated with variation in the sales of fowl. Pork also appeared to be a somewhat interchangeable with beef although much less important than fowl)
12. Variation in utilization of beef and fowl was by far the greatest in the service type restaurant not emphasizing any particular meat item (Nearly 50 percent of the total variation in beef sales was found in this classification. It should be noted that the service type of operations were much more heterogenous than cafeterias and short-order types when many other measurable attributes were considered. From a research standpoint, this suggests that sub-classification of the service type of operation will be necessary before generalizations from research can be reasonably applied to a specific operation)
13. There were no restaurant characteristics such as type, sales volume, location, etc., that appeared to affect the type of meat items emphasized by a particular restaurant (Apparently, managers elect to emphasize meat products or not emphasize them on the basis of their own desires or on the basis of their own ideas concerning relative profitability. But, from this study, we were

unable to delineate managerial reasons for decisions to emphasize or not emphasize particular meat items on their menus)

14. Some evidence was found that indicated seasonal demand for different meat items among the various restaurants (A majority of the firms emphasized turkey at Thanksgiving, but less than half emphasized ham at Easter)
15. The restaurants included in the sample used beef grades ranging from Commercial to Prime (Most of the operators appeared to be reasonably familiar with the USDA beef grading system. Only 8 percent of the operators did not know the grade of beef that was used in their operation. Over half of the restaurants used part or all USDA Good grade beef. Approximately 34 percent of the restaurants used only Choice beef)
16. Grades of beef utilized by restaurants appeared to be related to sales volume but not to location or type of operation
17. In adjusting to short-run changes in the price of meat items, 72 percent of the firms in the sample reported that they absorbed part or all of the changes in their profit margins (Most of the other firms increased prices or decreased portion sizes to protect the margin. Only a very few attempted to substitute lower cost products for higher price products in response to short-run changes in price relationships)
18. Daily sales volume, type or location did not affect individual restaurant response to short-run changes in meat prices.
19. Very few of the restaurants had enough freezer space to store meat for more than two weeks of operation (Thus, the purchase and storage of meat during seasonally low priced periods for use during periods of higher seasonal prices did not appear to be a practical solution to problems associated with short-run variation in meat prices)
20. Forty-four (50 percent) of the firms did no beef processing in their operation (These firms purchased their beef in ready to cook form. Another 20 percent processed 10 percent or less of the beef used in their operation. Only five firms processed most of the beef used from whole beef carcasses. The amount of beef processed by firms was related to size as measured by daily sales volume and by type of operation. Location did not affect the amount of processing of beef. Large cafeterias did more beef processing than any other restaurant type)
21. Only 20 percent of the restaurants had regular food purchasing agents specifically oriented to problems of meat purchasing (In the remaining 80 percent, owner-managers were responsible for meat purchasing)
22. As a group, restaurant managers did not seem to be particularly conscious of specific economic and technological problems that might be common to the entire industry (Problems of obtaining competent labor and maintaining and increasing sales volume seemed to be fairly common. Most managers mentioned short-run variations in food cost as a continuing problem but few seemed to have arrived at any satisfactory method of compensating for this situation).

APPENDIX TABLE 1-GRADES OF BEEF USED AS COMPARED WITH LOCATION OF RESTAURANT

Grades Of Beef	Location of Restaurant											
	Downtown		Neighborhood		Shopping Center		Highway		Industrial		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Did Not Know	2	8.3	2	6.3	1	20.0	1	7.7	1	10.0	0	0.0
Commercial And Choice	0	0.0	1	3.1	0	0.0	0	0.0	1	10.0	0	0.0
Only Good	3	12.5	9	28.1	0	0.0	3	23.0	3	30.0	0	0.0
Good and Choice	10	41.6	6	18.8	2	40.0	4	30.8	0	0.0	1	33.4
Only Choice	7	29.2	13	40.6	2	40.0	4	30.8	4	40.0	1	33.3
Choice and Prime	1	4.2	1	3.1	0	0.0	0	0.0	1	10.0	1	33.3
Only Prime	1	4.2	0	0.0	0	0.0	1	7.7	0	0.0	0	0.0

APPENDIX TABLE 2-GRADES OF BEEF USED AS COMPARED WITH TYPE OF RESTAURANT

Grades Of Beef	Type of Restaurant					
	Service		Cafeteria		Short-Order	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Did not know	1	2.4	0	0.0	6	19.4
Commercial and Choice	1	2.4	1	6.7	0	0.0
Only Good	5	12.2	2	13.3	11	35.5
Good and Choice	14	34.2	7	46.6	2	6.4
Only Choice	16	39.0	4	26.7	1	35.5
Choice and Prime	2	4.9	1	6.7	1	3.2
Only Prime	2	4.9	0	0.0	0	0.0

APPENDIX TABLE 3-THE ADJUSTMENTS MADE FOR THE INCREASE IN THE COST OF A MEAT ITEM AS COMPARED WITH DAILY SALES VOLUME

	Daily Sales Volume							
	Small $100 Or Less		Medium $101 To $300		Large $301 To $700		Very Large More Than $700	
Adjustments	Number	Per Cent**	Number	Per Cent**	Number	Per Cent**	Number	Per Cent**
Emphasize High Profit Meat Items	2	14.3	3	15.8	2	22.2	2	28.6
Increase Menu Prices	5	35.7	6	31.6	4	44.4	4	57.1
Decrease Portion Size	0	0.0	5	26.3	1	11.1	0	0.0
Absorb Part* Or All Of The Price Increase	9	64.3	15	79.0	6	66.7	5	71.4

*There was one restaurant that absorbed part or all of the price increase that gave no estimate of its daily sales volume.
**These columns equal more than one hundred percent because some firms within these groups made more than one adjustment.

APPENDIX TABLE 4-THE ADJUSTMENTS MADE FOR THE INCREASE IN THE COST OF A MEAT ITEM AS COMPARED WITH TYPE OF RESTAURANT

	Type of Restaurant					
	Service		Cafeteria		Short-Order	
	Number	Per Cent*	Number	Per Cent*	Number	Per Cent*
Emphasize High Profit Meat Items	1	4.3	4	57.1	4	15.4
Increase Menu Prices	9	39.1	5	71.4	5	19.2
Decrease Portion Size	4	17.4	0	0.0	2	7.7
Absorb Part Or All Of The Price Increases	17	73.9	4	57.1	15	57.7

*These columns equal more than one hundred percent because some firms within these groups made more than one adjustment.

APPENDIX TABLE 5-THE ADJUSTMENTS MADE FOR THE INCREASE IN THE COST OF A MEAT ITEM AS COMPARED WITH LOCATION OF RESTAURANT

	Location of Restaurant											
	Downtown		Neighborhood		Shopping Center		Highway		Industrial		Other	
Adjustments	No.	%*	No.	%*	No.	%	No.	%*	No.	%*	No.	%
Emphasize High Profit Meat Items	2	25.0	3	15.8	1	33.3	2	22.2	1	10.0	0	0.0
Increase Menu Prices	5	62.5	7	36.8	1	33.3	0	0.0	5	50.0	1	100.0
Decrease Portion Size	1	12.5	2	10.5	0	0.0	1	11.1	2	20.0	0	0.0
Absorb Part Or All Of The Price Increase	5	62.5	17	89.5	1	33.4	7	77.8	6	60.0	0	0.0

*These columns equal more than one hundred percent because some firms within these groups made more than one adjustment.

APPENDIX TABLE 6-THE AMOUNT OF MEAT PROCESSED AS COMPARED WITH DAILY SALES VOLUME

	Daily Sales Volume							
Amount of Meat	Small $100 Or Less		Medium $101 To $300		Large $301 To $700		Very Large More Than $700	
Processed	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
None	15	83.3	16	59.3	8	33.3	5	29.4
Very Little	1	5.6	3	11.1	9	37.5	4	23.5
Some	0	0.0	6	22.2	4	16.7	2	11.8
Most*	2	11.1	2	7.4	3	12.5	6	35.3

*There was one of the restaurants that did most of the meat processing that gave no estimate of its daily sales volume.

APPENDIX TABLE 7-THE AMOUNT OF MEAT PROCESSED AS COMPARED WITH TYPE OF RESTAURANT

Amount of Meat Processed	Type of Restaurant					
	Service		Cafeteria		Short-Order	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
None	15	36.6	4	26.7	25	80.6
Very Little	13	31.7	4	26.6	0	0.0
Some	6	14.6	4	26.7	2	6.4
Most	7	17.1	3	20.0	4	12.9

APPENDIX TABLE 8-THE AMOUNT OF MEAT PROCESSED AS COMPARED WITH LOCATION OF RESTAURANTS

AMOUNT OF MEAT PROCESSED	Location of Restaurant											
	Downtown		Neighborhood		Shopping Center		Highway		Industrial		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
None	9	37.5	18	56.2	2	40.0	7	53.8	6	60.0	2	66.7
Very Little	5	20.8	5	15.6	1	20.0	2	15.4	3	30.0	1	33.3
Some	4	16.7	3	9.4	2	40.0	2	15.4	1	10.0	0	0.0
Most	6	25.0	6	18.8	0	0.0	2	15.4	0	0.0	0	0.0