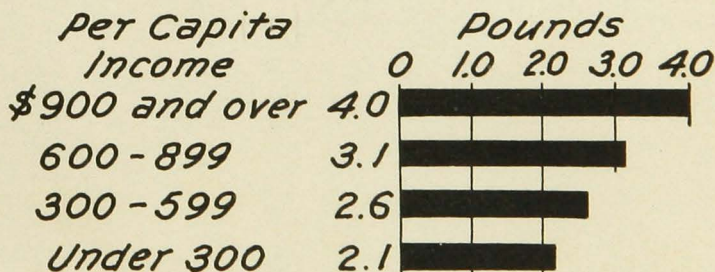


UNIVERSITY OF MINNESOTA
 AGRICULTURAL EXPERIMENT STATION

A STUDY OF
 THE CONSUMPTION OF MEATS
 IN MINNEAPOLIS, 1934

WARREN C. WAITE AND REX W. COX
 DIVISION OF AGRICULTURAL ECONOMICS



Weekly Per Capita Consumption of Meats at Various Income Levels

UNIVERSITY FARM, ST. PAUL

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INTRODUCTION

The purpose of this study is to show the variations in the expenditures for, and the consumption of, meat by families in Minneapolis, and to account for the differences. The study is based on the reported consumption of groups of families in various parts of the city, the families having been selected in such a way as to give a good representation of conditions in the city as a whole. From October to December, 1934, enumerators called at all homes in 228 selected areas. These areas were distributed fairly evenly in the residential parts of the city, at distances from four to eight blocks apart, as shown in Figure 1. It was thought that this method of sampling would be most effective in disclosing homogeneous consumption areas; moreover, that it would be almost certain to include families with all the important differences in characteristics responsible for variations in the consumption of meat products. The replies given by the housewives to questions about the weekly consumption of meats and about family characteristics constitute the data of the study as reported in this bulletin. Information was obtained from 2,239 families, which included 8,573 persons.

The methods followed in this study were similar to those used in an earlier study of the consumption of dairy products, the results of which were reported in Minnesota Bulletin 311, "A Study of the Consumption of Dairy Products in Minneapolis, 1934." While the families included in this study were not identical with those of the earlier study, they were located in neighboring blocks, and are thought to be similar in character, so that comparisons may be made between the two studies.

Meat consumption shows seasonal variations, and a study at any particular time of the year discloses the special characteristics of the period. The time of the year at which this study was made—October to December—probably differs from other periods in that it shows high poultry consumption. Again, the study was made during a period when pork prices were relatively high. Such conditions explain in part the differences in the levels of consumption of the various products.

This bulletin first describes the variations found in the rates of consumption and in the average prices paid by families for meats. Next,

¹ This study was made possible through a grant of FERA funds, Project No. 200-F2-41 420. Collection of the records was under the supervision of Walter Garver, and tabulations were in charge of O. J. Thorstad.

VARIATION IN RATES OF CONSUMPTION

The average rates of consumption and the proportions of families using the different classes of meats are given in Table 1. All families used some kind of meat each week. Nearly all families reported the use of beef, more than four-fifths reported the use of pork, about one-third reported the use of poultry and fish, and one-tenth the use of mutton. The family average of meat used per week was 9.50 pounds, or about 2.5 pounds per person. The consumption of beef was larger than that of any other meat, amounting to one pound per person. Pork was next with a consumption of 0.60 pound, and poultry with about 0.40 pound.

Table 1

All Meats: Proportion of Families Using Them, Average Price, and Weekly Per Capita Consumption in Minneapolis, 1934

Product	Proportion of families using product	Average price	Average consumption for all families	
			Per family	Per person
	per cent	cents per lb.	lb. weekly	lb. weekly
All meats	100.0	20.6	9.50	2.48
Beef	93.0	18.0	3.83	1.00
Pork	83.9	21.9	2.30	0.60
Mutton	12.3	23.5	0.31	0.08
Poultry	29.1	25.9	1.49	0.39
Fish	35.0	17.7	0.52	0.14
Other meats	53.8	20.3	1.05	0.27

Poultry, with an average of 25.9 cents a pound, was highest in price, and mutton, at 23.5 cents, was next. Beef and fish were lower in price, 18.0 and 17.7 cents, respectively.

The average rates of consumption for the city as a whole were derived from families showing a wide range in per capita consumption. Table 2 shows the percentage of families reporting meat consumption at less than specified rates per person. The most usual rate of meat consumption was between 2.0 and 2.5 pounds a week per person. Fifty-one per cent of the families consumed at per capita rates of less than 2.50 pounds. The families with low rates of consumption were the larger families and contained a larger proportion of children.

A cumulative distribution of families for beef and pork is shown in Table 3. Examination of this table shows that there was a comparatively large number of families with low rates of pork consumption. For example, about 75 per cent of the families used less than a pound of pork per person per week, while only about 45 per cent of the families used less than a pound of beef per person. The most common rate of pork consumption was between 0.25 and 0.50 pound, while for

Table 2
All Meats: Cumulative Distribution of Families, of Adults, and of Children, According to the Per Capita Rates of Consumption

Rates of consumption, pounds per week	Proportion of total			
	Families	Adults	Children	All persons
	per cent	per cent	per cent	per cent
Less than 0.50.....	0.2	0.2	0.2	0.2
1.00.....	3.5	3.9	7.0	4.7
1.50.....	13.3	14.3	20.3	16.0
2.00.....	31.8	33.5	47.2	37.2
2.50.....	50.9	52.6	70.4	57.3
3.00.....	65.8	67.8	82.6	71.4
3.50.....	76.4	78.0	90.0	80.7
4.00.....	83.1	84.5	93.8	86.5
4.50.....	89.3	90.3	96.0	91.2
5.00.....	93.2	94.3	98.0	94.7
Less than 7.50.....	100.0	100.0	100.0	100.0

beef it was between 1.00 and 1.25 pounds. Only 5 per cent of the families reported a rate of pork consumption exceeding 2.0 pounds per week, while about 15 per cent reported a rate of beef consumption exceeding that amount. The fact that the average rate of pork consumption was lower than that of beef in the city as a whole was due apparently, not only to the smaller proportion of families using pork, but also to lower rates of consumption in the families who consumed pork.

Table 3
Beef and Pork: Cumulative Distribution of Families, According to the Per Capita Rates of Consumption

Rates of consumption, pounds per week	Beef	Pork
	per cent of total families	per cent of total families
Less than 0.25.....	9.1	26.1
0.50.....	18.7	47.1
0.75.....	34.3	66.7
1.00.....	44.5	74.8
1.25.....	62.0	84.5
1.50.....	71.1	88.6
1.75.....	81.6	93.0
2.00.....	86.6	94.7
2.25.....	92.4	96.8
2.50.....	94.8	97.6
Less than 3.75.....	100.0	100.0

A cumulative distribution of the weekly purchases according to the average weekly price paid for meat is given in Table 4. About 36 per cent of all the meat was consumed by families whose average weekly cost of meat per pound was less than 18 cents, while less than 8 per cent was consumed by families having an average cost above 30 cents. The large quantity of beef purchased at low prices is striking. About

55 per cent of the beef was purchased by families whose average beef cost was less than 18 cents per pound, while only 25 per cent of the pork was purchased by families whose pork cost was that low. The range of qualities in beef is much wider than in the case of pork and is shown by the fact that 33 per cent of the beef consumed was purchased at prices ranging between 18 and 26 cents per pound, while 57 per cent of the pork fell within a similar range.

Table 4
Cumulative Distribution of Weekly Purchases, According to Average Weekly Price Paid for Meat

Average weekly price, cents per pound	Proportion of total		
	All meats	Beef	Pork
	per cent	per cent	per cent
Less than 10.0.....	1.6	6.3	2.7
14.0.....	10.7	29.6	8.9
18.0.....	35.7	54.9	24.8
22.0.....	64.0	76.6	51.7
26.0.....	83.8	88.4	81.9
30.0.....	92.7	95.3	86.8
34.0.....	95.9	97.5	93.7
Less than 42.0.....	100.0	100.0	100.0

Families with high rates of total meat consumption used more of all kinds of meats than families with low rates of total meat consumption (Table 5). The increase in the amount of poultry used is particularly marked, and is sufficient to account for the high proportion of poultry to the total meats in the higher consumption groups, and for the low proportion of all other meats. The proportion of beef and fish was large in the low consumption groups, beef accounting for nearly 50 per cent of the total consumption and fish for about 12 per cent. This indicates that families with low incomes are forced to consume the lower-priced meats.

Table 5
All Meats: Proportionate Distribution of the Consumption of the Different Meats at Varying Levels of Total Meat Consumption, Minneapolis, 1934

Per capita consumption of all meats	Proportion of total meat consumption					
	Beef	Pork	Poultry	Fish	Mutton	Other meats
	per cent	per cent	per cent	per cent	per cent	per cent
0.00-0.99	46.1	31.2	2.5	11.8	0.4	8.0
1.00-1.99	47.3	24.1	5.1	6.9	3.1	13.5
2.00-2.99	44.8	25.1	10.0	5.6	3.1	11.4
3.00-3.99	39.8	23.9	17.1	5.2	2.6	11.4
4.00-4.99	32.5	22.0	28.2	4.4	3.7	9.2
5.00-5.99	30.4	21.0	31.4	4.4	4.8	8.0
6.00 and above	25.1	23.2	36.9	3.4	5.1	6.3

CONSUMPTION IN DIFFERENT PARTS OF THE CITY

In a city as large as Minneapolis, families of similar incomes and of related nationalities and other like characteristics tend to congregate in the same areas. In consequence, considerable areas of the city might be expected to show about the same per capita consumption, to buy meat of about the same quality, and to show similar expenditures per person. Since about 75 per cent of all the meat purchased is either pork or beef, the analysis of area differences has been restricted to those two kinds of meat.

Examination by the analysis of variance shows that there were real differences in the average rates of consumption in the 228 areas included in the survey, and that they were in general too great to have arisen from discrepancies in the interviews with the families.² Further examination shows that the averages in the neighboring areas were nearly the same and that the rates of consumption in the city were similar in a number of fairly well defined sections. This also was true for the average price paid and the expenditures per person. It should be noted that consumption and expenditures are per capita rates, and that the total sales in a particular section also depend upon the density of population.

The sections of low consumption, low average price, and low expenditure do not necessarily coincide. Similar differences occur in the sections of medium and of high consumption. This is because families may buy a small quantity of high-priced meat or a large quantity of low-priced meat, resulting in the same total expenditure. It should be noted also that the average price of meat does not mean that prices for given cuts or qualities are higher or lower in one section of the city than in another, but in a large degree represent a variation in the quality and cuts of meat consumed by the families. For example, a low price of beef in a given section probably means that the families in that section consumed lower qualities of beef, or the cheaper cuts such as boiling pieces and pot roasts, while a high price indicates the consumption of the higher-priced cuts such as steaks and rib roasts and the better qualities of beef.

The areas with a low average price paid for beef were largely along the Mississippi River, with additional sections along Glenwood and Franklin avenues extending nearly to South Fortieth Street between Nicollet and Cedar avenues (Figure 2). There was another well-

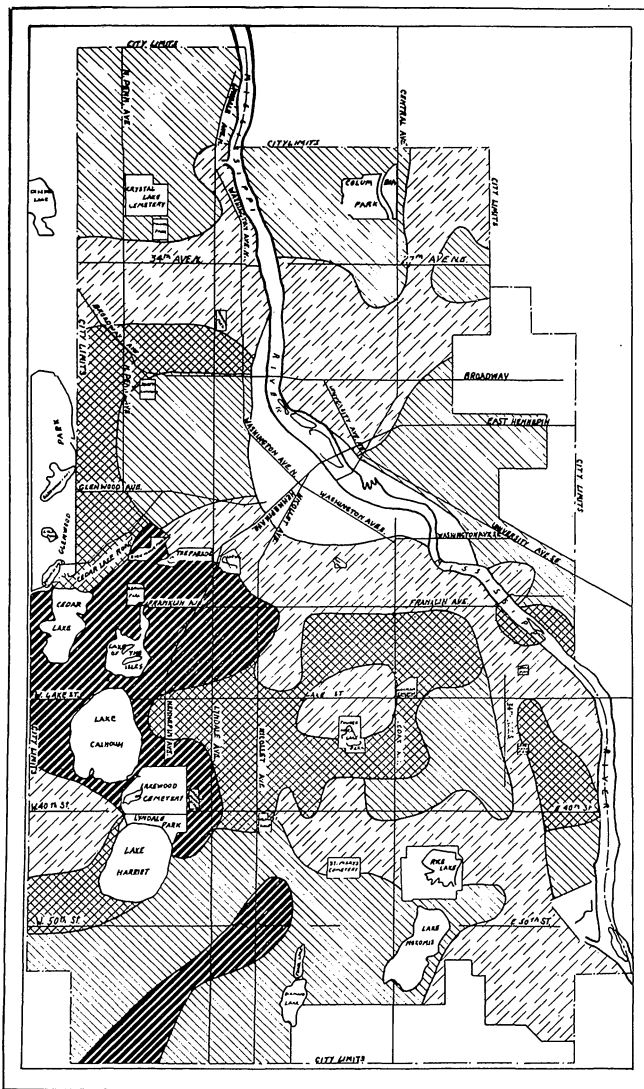
² The ratio of the greater to the smaller mean square in the case of beef is 10.68 and for pork 5.04. These ratios lie considerably outside of Fisher's highly significant values for this number of observations and indicate that there is a much smaller chance than one in a hundred that there are not real differences among areas.

marked area between Twenty-fifth and Thirty-fourth avenues N. The bulk of South Minneapolis, east of Nicollet Avenue, and most of Northeast Minneapolis lay in the medium-price group. The high-price area was in the better residential area surrounding the lakes and toward the southwest.

There was less concentration of areas of like per capita consumption than of price (Figure 3). Some of the high beef consumption was in the low-price sections, notably just south of Franklin Avenue and a strip just west of Washington Avenue N., as far as Twenty-fifth Street. This probably was due to the presence of a considerable proportion of Jews of medium income in those sections. Some of the low-consumption sections were also in the high average-price sections, for example in the better residential sections in the southwestern part of the city, around Lake Harriet and Lake Calhoun. These were the areas in which poultry consumption was high. There was a high-consumption and high-price area just west of Nicollet between Lake Street and the Parade. There was also a considerable area of high consumption running through the center of south Minneapolis from east to west, between Fortieth and Lake Streets.

The highest per capita expenditures for beef were in the sections south of the Parade and Loring Park, as far eastward as Nicollet, and around the lakes (Figure 4). This is, perhaps, the best residential section of the city. The next highest section lay between Fortieth Street and Franklin Avenue, as far eastward as Cedar, then diagonally northeastward to the river. Expenditures were low in Northeast Minneapolis and around Minnehaha Park. In general there were medium expenditures in North Minneapolis, except for a strip with high expenditures between Broadway and Twenty-seventh, and low between Twenty-seventh and Thirty-sixth avenues.

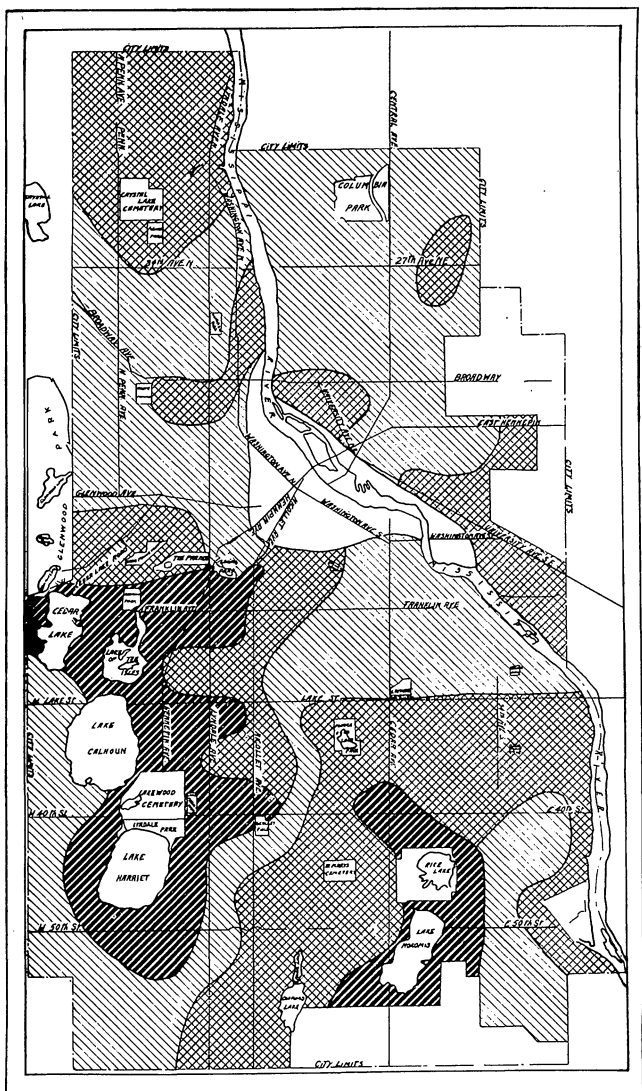
The high average-price areas for pork were about the same as those for beef, and were around the lakes, south of the Parade and Loring Park, except for an additional section south of Fortieth Street around Nokomis and Rice lakes (Figure 5). There were low-price sections north of Lake Street and east of Third Avenue, in most of Northeast Minneapolis, and also north of Glenwood in North Minneapolis, except the region north of Thirty-fourth Avenue. In the low-price sections prices averaged below 21 cents for pork, which means that consumption must have consisted largely of picnic hams, low-priced cuts and low-quality bacon. In the higher-price areas, prices averaged over 25 cents per pound and consumption must have consisted largely of bacon, ham, and roasts.



CENTS PER WEEK



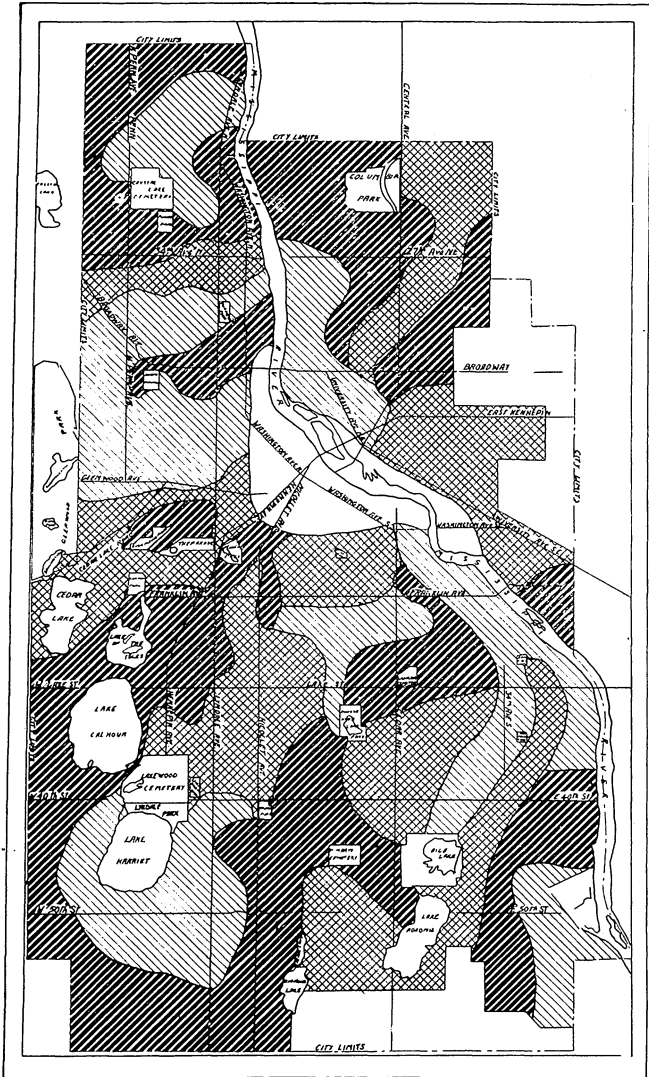
Fig. 4. Beef: Weekly Per Capita Expenditure, Minneapolis, 1934



CENTS PER POUND

- ▨ LESS THAN 21.0
- ▩ 210-24.9
- 25.0 AND OVER

Fig. 5. Pork: Average Price Paid Per Pound, Minneapolis, 1934



POUNDS PER WEEK

LESS THAN 50
 50-69
 70 AND OVER

Fig. 6. Pork: Weekly Per Capita Consumption, Minneapolis, 1934

The sections containing the areas of similar pork consumption were smaller and more scattered than those of beef (Figure 6). This was in part due to the varying proportions of Jewish families which consume no pork. These families may be concentrated in either high- or low-income areas. Note especially the section of North Minneapolis around Sixth Avenue, that south of the Parade, and that north of Franklin. There was high consumption in many low-price sections, notably around Minnehaha, in Northeast Minneapolis, and in several places in North Minneapolis.

The low-expenditure areas in North Minneapolis extended from Glenwood almost as far northward as Thirty-fourth Avenue. In South Minneapolis, the low-expenditure sections were south of Franklin Avenue and the strip along the railways, also on the east side of Lakes Harriet and Calhoun and south of the Parade. There were several areas of high expenditure in Northeast Minneapolis and also a considerable section along Nicollet Avenue.

The two expenditure maps indicate that there were sections where there were low expenditures for both pork and beef. These were principally the strips along the railways in South Minneapolis, around Minnehaha Park, in Northeast Minneapolis on University Avenue, and a strip south of Thirty-fourth Avenue in North Minneapolis. The low expenditures in these sections appear to have been occasioned by low incomes. The most conspicuous differences were in the areas with high beef and low pork consumption. These were the sections with fairly high incomes, which contained a considerable proportion of Jewish families. Note especially the strip around Lake Harriet and Lake Calhoun, south of the Parade and also south of Franklin Avenue. There were smaller differences in other sections, such as the section east of Penn and between Glenwood and Thirty-fourth avenues, where reside low- and medium-income families, a considerable proportion of which are Jews. Here expenditures for pork were low and those for beef fell in the medium group. A different sort of section is found north of Franklin Avenue, where beef expenditures were low and pork expenditures fell in the medium group.

FACTORS INFLUENCING PER CAPITA EXPENDITURES AND RATES OF CONSUMPTION BY DIFFERENT FAMILIES

This section presents an analysis of the variations among families in their expenditures for meat and of the factors responsible for such variations. Differences in expenditures for meat depend upon the quantities of meat purchased and the average of prices paid. The

principal factors influencing rates of consumption and prices are the per capita income, nationality, and composition of the family. An analysis of the effect of each of these factors is presented below.

INFLUENCE OF INCOME ON CONSUMPTION AND EXPENDITURES

The most important factor influencing expenditures for meat appeared to be the per capita income of the family. Total expenditures for food rise with increases of per capita income (Table 6). Expenditures for meat rise at a more rapid rate, and, in consequence, the proportion of the food expenditures that goes for meat products rises with increases in income. On the low-income level, 20 per cent of the food expenditures were for meat and on the high-income level 26 per cent. It should be noted that this is in marked contrast with expenditures for certain other foods. For example, a survey of similar groups of Minneapolis families shows that the low-income group used 30 per cent of their food expenditures for dairy products, while the high-income group used 22 per cent.³ This suggests that consumers consider meats in part a luxury, and that expenditures are likely to be influenced in a marked degree by changes in their incomes.

Table 6

Food Expenditures: Weekly Per Capita Expenditure on Food and Meat, and Proportion that Meat Expenditure is of Total Food Expenditure, on Various Income Levels

Per capita income	Total per capita expenditure on food	Per capita expenditure on meat	Proportion of food expenditure used for meat
	dollars weekly	dollars weekly	per cent
Under \$300	1.91	0.37	19.7
300-599	2.48	0.52	21.0
600-899	3.18	0.71	22.4
900 and above	4.56	1.18	25.9
All families	2.55	0.54	21.6

All families in each income group reported the purchase of meat (Table 7). In the lowest-income class the per capita consumption of all meats averaged 2.08 pounds weekly. In the highest-income group it was 4.00 pounds. The average price increased from 17.7 cents a pound in the low-income group to 29.5 in the high-income group. Families with high incomes not only purchased more meat but paid higher average prices than families with low incomes. The per capita expendi-

³ Waite, W. C., and Cox, R. W. A Study of the Consumption of Dairy Products in Minneapolis, 1934. Minn. Agr. Expt. Sta. Bul. 311, p. 27.

tures of the highest-income group were about three times that of the low-income group.

Table 7

All Meats: Proportion of Families Purchasing, Per Capita Consumption, Average Price Paid, and Per Capita Expenditures on Various Income Levels, Minneapolis, 1934

Per capita income	Proportion of families purchasing	Per capita consumption pounds weekly	Average price cents per pound	Per capita expenditure cents per week
	per cent			
Under \$300	100.0	2.08	17.7	36.9
300-599	100.0	2.57	20.0	51.5
600-899	100.0	3.13	22.6	70.7
900 and above	100.0	4.00	29.5	118.1
All families	100.0	2.58	20.9	53.9

The largest expenditure was made for beef in all but the highest-income group, where expenditures on poultry were larger (Table 8). The proportion expended on each kind of meat, except poultry and mutton, declined as income increased. Beef declined from 40.5 to 27.6 per cent, and pork from 27.2 to 19.7 per cent. Poultry increased from 11.0 to 36.0 per cent, and mutton from 2.2 to 7.7 per cent. It should be kept in mind that the survey was conducted during the season of heavy poultry consumption, so that the importance of poultry was, perhaps, overemphasized.

Table 8

All Meats: Weekly Per Capita Expenditure on Meats and Distribution of Products Among Families on Various Income Levels, Minneapolis, 1934

Per capita income	Per capita expenditures on meats dollars weekly	Proportion of total expenditures on meat expended on					
		Beef	Pork	Poultry	Mutton	Fish	Other
		per cent	per cent	per cent	per cent	per cent	per cent
Under \$300	0.368	40.5	27.2	11.0	02.2	05.7	13.4
300-599	0.515	34.5	27.7	18.7	03.0	05.1	11.0
600-899	0.706	33.3	23.5	24.8	03.8	03.6	11.0
900 and above.....	1.179	27.6	19.7	36.0	07.7	03.3	05.7
All families	0.538	34.6	25.5	20.8	03.8	04.7	10.7

In pounds, beef consumption exceeded that of any other kind of meat for all income levels except the highest, in which it was equaled by poultry consumption. The proportions of the other kinds of meats did not change greatly. Beef, however, decreased from 45.8 on the low to 30.7 per cent of the total consumption on the high-income level, while poultry increased from 8.9 to 30.7 per cent (Table 9).

Beef.—Most of the families on each income level consumed beef. Families in the low-income group were spending about 15 cents

Table 9

Proportionate Distribution of Per Capita Consumption of Different Meats by Families on Various Income Levels, Minneapolis, 1934

Per capita income	Proportion of total per capita consumption						
	All meats	Beef	Pork	Poultry	Mutton	Fish	Other
	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Under \$300	100.0	45.8	23.8	08.9	02.3	06.3	12.9
300-599	100.0	38.7	25.6	16.2	03.0	05.5	11.0
600-899	100.0	37.3	22.3	21.8	03.5	04.0	11.1
900 and above	100.0	30.7	21.2	30.7	06.6	04.0	06.8
All families	100.0	39.6	24.1	16.7	03.3	05.3	11.0

per person per week on beef, and those in the high-income group about 33 cents (Table 10). Per capita consumption increased steadily from 0.95 pound in the low-income group to 1.23 pounds in the high-income group, an increase of about 30 per cent. The corresponding rise in average price was from 15.6 cents to 26.5 cents or about 70 per cent. The average price of beef was, with a single exception, the lowest of any of the kinds of meat on all income levels. This was especially marked in the lower-income groups. Per capita consumption of beef showed less change between income groups than the other important kinds of meats, which was probably due to the large quantities of relatively cheap beef on the market. There is a larger variation in the quality of beef carcasses and in the various cuts from the beef carcass than is the case with other kinds of meat.

Table 10

Beef: Proportion of Families Purchasing, Per Capita Consumption, Average Price Paid, and Per Capita Expenditure on Various Income Levels, Minneapolis, 1934

Per capita income	Proportion of families purchasing	Per capita consumption	Average price	Per capita expenditure
	per cent	pounds weekly	cents per pound	cents per week
Under \$300	93.6	0.95	15.6	14.9
300-599	93.6	1.00	17.8	17.7
600-899	88.6	1.17	20.2	23.6
900 and above	93.3	1.23	26.5	32.6
All families	92.7	1.02	18.2	18.6

The shift from the poorer to the better carcasses and cuts is indicated in the data of Table 11. Steaks, which are generally the higher-priced cuts, increased from 25.9 on the low-income level to 33.7 per cent of the total beef purchases on the high-income level, and roasts from 40.6 to 48.5. These two products constitute 66 per cent of the total beef consumption in the low-income group and 82 per cent in the high-

income group. It is evident that the remaining 34 per cent of the beef purchased by the low-income group must have averaged close to 10 cents a pound, while in the high-income group the remaining 18 per cent of the beef averaged above 20 cents per pound.

Table 11
Beef Roasts and Beef Steak: Per Capita Consumption, Average Price Paid and Proportion of Total Beef Consumption on Various Income Levels, Minneapolis, 1934

Per capita income	Per capita consumption		Average price		Proportion of total	
	Roasts	Steak	Roasts	Steak	Roasts	Steak
	pounds weekly		cents per pound		per cent	
Under \$300	0.39	0.25	15.3	20.7	40.6	25.9
300-599	0.44	0.26	17.7	22.8	44.3	26.5
600-899	0.56	0.37	18.3	25.6	47.6	32.0
900 and above	0.60	0.42	24.4	32.9	48.5	33.7
All families	0.45	0.28	17.7	23.8	44.0	27.8

Pork.—About 85 per cent of the families used pork. The per capita expenditure for pork rose from 10.0 cents per week in the low-income group to 23.2 cents in the high-income group. The difference represents a change of approximately 132 per cent. The corresponding figure for beef is 112 per cent. As is shown in Table 12, the per

Table 12
Pork: Proportion of Families Purchasing, Per Capita Consumption, Average Price Paid and Per Capita Expenditure on Various Income Levels, Minneapolis, 1934

Per capita income	Proportion of families purchasing	Per capita consumption	Average price	Per capita expenditure
	per cent	pounds weekly	cents per pound	cents per week
Under \$300	80.1	0.50	20.2	10.0
300-599	87.8	0.66	21.6	14.3
600-899	84.8	0.70	23.7	16.6
900 and above	83.4	0.85	27.4	23.2
All families	84.7	0.62	22.1	13.7

capita consumption for all families in the lowest-income group averaged 0.50 pounds weekly and rose gradually to 0.85 pounds weekly in the high-income group. The average prices ranged from 20.2 cents to 27.4 cents. The per capita consumption of pork was less than the per capita consumption of beef within each income class, but the change in consumption as one passes from the low-income to the high-income level was greater in the case of pork. Families in the high-income group consumed 70 per cent more pork per person than those in the low-

income group, while the increase in beef was only 30 per cent. Prices for pork, on the other hand, were more nearly the same in all income groups, varying by only 35 per cent, while beef prices were 70 per cent more in the high-income group than in the low-income group. This was probably due to a greater uniformity in hog carcasses and cuts than in beef carcasses and cuts.

On the low-income level, chops and roasts constituted the largest items of consumption, amounting to 46.2 per cent of all pork, while on the high-income level bacon and ham constituted the largest items, amounting to 46.9 per cent of all pork (Table 13). Bacon was consumed at approximately the same rate on all income levels except the lowest. Smoked ham, on the contrary, even tho lower in price than bacon, had a low rate of consumption in the two lower-income groups

Table 13

Pork Products: Per Capita Consumption, Average Price Paid and Proportion of Total Pork Consumption on Various Levels, Minneapolis, 1934

Per capita income	Per capita consumption			Average price			Proportion of total pork consumption		
	Chops and roasts	Smoked ham	Bacon	Chops and roasts	Smoked ham	Bacon	Chops and roasts	Smoked ham	Bacon
	pounds weekly			cents per pound			per cent		
Under \$300	0.23	0.07	0.11	19.3	15.8	25.7	46.2	13.3	23.0
300-599	0.31	0.09	0.17	19.7	17.1	28.7	46.7	14.0	26.1
600-899	0.27	0.18	0.19	22.0	17.4	30.7	38.5	24.7	27.0
900 and above	0.34	0.21	0.19	25.8	24.3	35.1	39.8	24.4	22.5
All families	0.28	0.10	0.16	20.5	18.0	28.9	44.6	16.5	24.9

and a much higher consumption in the upper-income groups. It appears that there was a substitution of smoked ham for chops and roasts in the upper-income groups.

Poultry.—Less than one-third of the families reported the purchase of poultry (Table 14). Only 18 per cent of the families in the

Table 14

Poultry: Proportion of Families Purchasing, Per Capita Consumption, Average Price Paid, and Per Capita Expenditure on Various Income Levels, Minneapolis, 1934

Per capita income	Proportion of families purchasing	Per capita consumption	Average price	Per capita expenditure
	per cent	pounds weekly	cents per pound	cents per week
Under \$300	18.1	0.19	21.9	04.1
300-599	31.7	0.42	23.2	09.6
600-899	41.3	0.68	25.7	17.5
900 and above	48.5	1.23	34.5	42.4
All families	31.3	0.43	26.0	11.2

low-income and 48 per cent in the high-income group purchased poultry. The per capita expenditure in the high-income group was 42.4 cents, or more than ten times that of the low-income level, and constituted approximately 25 per cent of the meat expenditures for the high-income level. It appears that while poultry may have been substituted for all meats it was probably substituted for the most part for beef.

Mutton.—Only a small proportion of the families reported the consumption of mutton (Table 15). The per capita expenditures for mutton were insignificant in all the income groups except the highest, and even in that group it was less than one-third of the amount spent on beef. The average price paid for mutton in the low-income group was only slightly higher than that for beef, and below that paid for pork. Nevertheless, the rate of consumption was very low and indicated a consumer preference for other kinds of meat. The price in the upper-income group was very high by comparison with beef and about equal to that of poultry.

Table 15

Mutton: Proportion of Families Purchasing, Per Capita Consumption, Average Price Paid, and Per Capita Expenditure on Various Levels, Minneapolis, 1934

Per capita income	Proportion of families purchasing	Per capita consumption	Average price	Per capita expenditure
	per cent	pounds weekly	cents per pound	cents per week
Under \$300	9.4	0.05	17.0	0.8
300-599	11.5	0.08	20.4	1.6
600-899	14.8	0.11	24.5	2.7
900 and above	25.2	0.27	34.4	9.2
All families	12.9	0.09	23.8	2.0

Fish.⁴—The proportion of families using fish was somewhat higher in the low-income groups (Table 16). The per capita consumption was only slightly affected by income, but the families in the high-income group paid approximately 50 per cent more per pound than the families in the low-income group. The per capita expenditure was low for all groups.

Other meats.—Other meats included such items as liver, veal, various kinds of sausage, and cooked or prepared meats—except ham, canned meats, etc. (Table 17). These constituted about one-seventh of the total purchases in the low-income group and about one-eighth of the total purchases in the high-income level. The per capita expenditure varied from 4.9 to 6.6 cents per week.

⁴ Includes canned salmon and tuna fish.

Table 16

Fish: Proportion of Families Purchasing, Per Capita Consumption, Average Price Paid, and Per Capita Expenditure on Various Income Levels, Minneapolis, 1934

Per capita income	Proportion of families purchasing	Per capita consumption	Average price	Per capita expenditure
	per cent	pounds weekly	cents per pound	cents per week
Under \$300	34.6	0.13	15.8	02.1
300-599	37.5	0.14	18.7	02.6
600-899	32.2	0.12	20.3	02.5
900 and above	29.4	0.16	23.8	03.9
All families	35.0	0.14	18.4	02.5

Table 17

Other Meats: Proportions of Families Purchasing, Per Capita Consumption, Average Price Paid and Per Capita Expenditure on Various Income Levels, Minneapolis, 1934

Per capita income	Proportion of families purchasing	Per capita consumption	Average price	Per capita expenditure
	per cent	pounds weekly	cents per pound	cents per week
Under \$300	52.4	0.27	18.3	4.9
300-599	58.1	0.28	20.0	5.7
600-899	54.2	0.34	22.2	7.7
900 and above	45.4	0.27	24.8	6.6
All families	54.5	0.28	20.0	5.7

It is evident that those with low incomes had less to spend on meat than those with larger incomes. Even in the low-income group, 25 per cent of the food expenditures were for meat. But consumers seem to regard meat as an expensive food, since the proportion spent on meat increased with the income level. The presence of large quantities of relatively low-priced beef on the market lead to heavy consumption of such meat in the low-income groups. Both mutton and fish averaged nearly as low in price in this group, but the consumption was very low. The consumption of pork seems to have been restricted by the relatively high price. As income increased, the consumption of pork rose regularly and was 70 per cent larger in the high-income group than the low-income group. The consumption of poultry increased regularly and was particularly significant on the high-income level, where the consumption was six times that on the low-income level. The consumption of mutton was small on all income levels, but was five times larger on the high-income level than on the low-income level. Beef and fish did not show very great changes, largely because of the very great variation in price.

NATIONALITY

There do not appear to have been very marked differences in the meat consumption among the various nationalities (Table 18). The same relationships between income and meat consumption, which we have just traced for the entire group, appear to have held true in general for each of the nationalities. The single exception is that of the Jews. They eat virtually no pork. With them, beef consumption was high in the low-income group, but decreased somewhat in the high-income groups, while the consumption of poultry increased very markedly. The consumption of fish was not large even among the Scandinavians.

Table 18
Beef, Pork, Poultry and Fish: Per Capita Consumption by Various Nationalities on Different Income Levels, Minneapolis, 1934*

Product and per capita	All families	Nationality				
		Native white	Scandinavian	German	English	Jewish
	pounds weekly	pounds weekly	pounds weekly	pounds weekly	pounds weekly	pounds weekly
<i>All meats</i>						
Under \$300	2.08	2.07	2.11	2.48	1.92	1.94
300-599	2.57	2.47	2.78	2.72	2.92	1.90
600-899	3.13	2.98	3.71	3.04	3.43	2.99
900 and above	4.00	4.01	3.64	4.50	...	...
<i>Beef</i>						
Under \$300	0.95	0.90	0.94	1.24	1.09	1.22
300-599	1.00	0.96	1.06	0.98	1.16	0.78
600-899	1.67	1.17	1.11	1.41	1.39	0.84
900 and above	1.23	1.26	1.22	1.00	...	...
<i>Pork</i>						
Under \$300	0.50	0.54	0.52	0.42	0.34	0.00
300-599	0.66	0.66	0.73	0.61	0.53	0.02
600-899	0.70	0.69	1.03	0.67	0.59	0.02
900 and above	0.85	0.82	0.92	1.75	...	...
<i>Poultry</i>						
Under \$300	0.19	0.20	0.17	0.25	0.18	0.28
300-599	0.42	0.39	0.40	0.67	0.47	0.63
600-899	0.68	0.59	0.89	0.33	0.87	1.29
900 and above	1.23	1.27	0.62	0.75	...	...
<i>Fish</i>						
Under \$300	0.13	0.11	0.15	0.21	0.09	0.09
300-599	0.14	0.13	0.19	0.08	0.16	0.24
600-899	0.12	0.12	0.19	0.05	0.04	0.07
900 and above	0.16	0.16	0.26	0.25	...	...

* The averages of groups of less than 10 families have been omitted.

SIZE AND COMPOSITION OF FAMILY

Practically all persons reported the consumption of some meat—99 per cent of the adults and 98 per cent or more of the children five years old and more. Only the very youngest children were not meat eaters.

Two-thirds of those under five years of age were reported as consuming some meat. Children appeared to consume somewhat less meat than adults. Table 19 shows the per capita consumption of all meats reported in families of two adults with children of different average ages. In families of a given size the average consumption increased as the average age of the children increased. The differences, as would be expected, were more marked in the large than in the small families.

Table 19

All Meats: Effect of Average Age of Children in Families with Two Adults on Average Per Capita Consumption, and with Per Capita Incomes between \$300 and \$599, Minneapolis, 1934*

Number of children	Age of children			
	0-4 years	5-9 years	10-14 years	15-18 years
	pounds weekly	pounds weekly	pounds weekly	pounds weekly
1	2.86	2.75	3.11	3.04
2	2.37	2.31	2.46	2.88
3	1.90	2.45	2.54	3.96

* The averages of groups of less than 10 families have been omitted.

This is further illustrated in Tables 20 and 21, which show the average consumption of beef and pork in families composed of different numbers of adults and children and with per capita incomes between \$300 and \$599. The data indicate a tendency for lower meat consumption in families which have a large proportion of children.

Table 20

Beef: Per Capita Consumption in Families of Varying Number of Adults and Children and with Per Capita Incomes between \$300 and \$600, Minneapolis, 1934*

Number of children	Number of adults				
	1	2	3	4	over 4
	pounds weekly	pounds weekly	pounds weekly	pounds weekly	pounds weekly
0	1.33	1.24	1.16	1.19	0.94
1	1.17	1.49	0.84	...
2	0.91	0.78	0.70	...
3	0.80	0.75	...	...
4	0.84	...	...	...

* The averages of groups of less than 10 families have been omitted.

The influence of children upon the per capita consumption of meats by the family was much less marked than on the consumption of other products. The rate of milk consumption, for example, was more closely associated with the number of children in the family than with the income of the family.

Table 21
Pork: Per Capita Consumption in Families of Varying Number of Adults,
and Children and with Per Capita Incomes between
\$300 and \$600, Minneapolis, 1934*

Number of children	Number of adults				
	1	2	3	4	over 4
	pounds weekly	pounds weekly	pounds weekly	pounds weekly	pounds weekly
0	0.17	0.80	0.74	0.82	1.02
1	0.65	0.51	0.52	...
2	0.64	0.60	0.35	...
3	0.93	0.41	...	...
4	0.41	...	...	...

* The averages of groups of less than 10 families have been omitted.

CONCLUSIONS

Income exercises a predominant influence upon meat consumption. The higher-income groups consumed nearly twice as many pounds of meat and spent nearly three times as much per person for meat as those in the low-income group. As a result, meat constituted a larger proportion of the food expenditures in the high-income than in the low-income groups. This close relationship to income indicates that a revival of business activity, resulting in increased city consumer incomes, would materially benefit the meat producers. It is even possible that consumer expenditures on meat would increase more than the increase in incomes. It also suggests that, with present levels of income, consumers will react to higher prices either with material decreases in the amounts of meat purchased or with a shift to lower qualities.

The variation in the consumption in the different areas of the city were especially marked. In general, per capita expenditures were related to the income of the area, but the kinds of meat showed some modifications with nationalities. The variation from area to area was sufficient to produce considerable difference in the type of business of the individual retailers. It also indicated the complexity and problems involved in the distribution of meat in a large city.

Size and composition of the family exercise only a minor influence upon consumption. In this study no significant differences were found among the nationalities, except for the characteristic consumption of the Jews.