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Dairy products consumption and the market, four Mississippi towns

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Dairy Products
Consumption and the Market,
Four Mississippi Towns

MISSISSIPPI STATE COLLEGE
AGRICULTURAL EXPERIMENT STATION

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STATE COLLEGE

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Dairy Products Consumption and the Market,¹ Four Mississippi Towns

By

Dorothy Dickins and Virginia Ferguson²

It was the purpose of this study to determine the kinds and amounts of dairy products consumed by representative families in towns of the Prairie and Delta Areas of Mississippi and the factors which affected consumption. Factors related to the market as well as the family were considered as both families and food handlers are important keys in explaining consumption. Information from each is necessary for a better understanding of marketing of dairy products and for making recommendations for more effective marketing programs.

THE FAMILIES

Data were obtained during November and December 1954 by personal interview with a representative sample of families in four Mississippi towns. Two of the towns were in the Prairie or Dairying Area. One, Amory, had a population of about 5,000; the other, Okolona, of about 2,000. The other two towns were in the Delta or Cotton Area. One, Belzoni, had a population of about 4,000; the other, Inverness, of about 1,000. The samples were drawn from a list of family dwellings having electric light meters (or in one town of those having water meters). This sample was supplemented with one taken from a list of dwellings without light meters (or water meters) compiled with the assistance of meter readers for the town.³

Only families whose members usually had one meal in the home together were included. Since this was a study of dairy products consumption in the home, one would of course want to include only those families who ate some of their meals at home. Families who usually ate one meal at home together but who happened to be away from home the week preceding the interview were revisited later to get a record for a typical period. Institutional families (those with 5 or more boarders) and families of one person eating at home alone were not included. These families are relatively unimportant from the consumer market viewpoint.⁴

Data were obtained from a total of 405 families—232 white families, 171 Negro families and 2 Chinese families. Fifty-one percent of the white and 3 percent of the Negro families had had incomes of \$4000 and over during the year preceding the study (1953-54); and 4 percent of the white and 38 percent of the Negro families had had incomes of under \$1000 during this period.⁵ The average income of all 405 families was \$3078.

In this study income was defined as the sum of receipts from farm operations minus farm expenses; wages and salaries; non-farm business receipts minus business expenses; and all other non-farm income except non-recurrent income such as inheritances.

¹This bulletin reports on the Mississippi subproject of the Southern regional project SM-13.

²Thanks are due to Dr. Walter Drapala for making statistical analyses in connection with this report.

³An equal number of families from the four towns were interviewed since it was desired to study differences in consumption in smaller and larger towns, and in Delta and Prairie towns. One in every 12th dwelling in Amory, every 5th dwelling in Okolona, every 9th dwelling in Belzoni, and every 2nd dwelling in Inverness was visited.

⁴There were 518 families in the sample; 88 of these were ineligible and 25 could not be contacted or were unable or unwilling to participate.

⁵Sixteen white families and one Negro family did not give income estimates but enough data were obtained about their occupation and socio-economic position to place them in an income group.

The main occupation of the principal earner in two-thirds of the Negro families was unskilled wage work. For white families, semi-skilled and skilled wage work, proprietor of a non-farm business and white collar work were the most important kinds of main occupations. The percentage of white families with these as the main occupation were 32, 22, and 18, respectively.

Most white families in this study had one income earner; most Negro families, two. The homemaker in 65 percent of the white families and in 26 percent of the Negro families had had no gainful work during the year preceding the interview. A husband was the family head in about 90 percent of the white families and in about 70 percent of the Negro families, widows and older daughters being the family head in remaining families.

Since food consumption, including consumption of dairy products, is fairly stable it was thought that current income data might need to be supplemented with some other quantitative measure that would give perhaps a better expression of family level of living. Specified data including ownership of certain material possessions such as a mechanical refrigerator and T. V. set; subscription to newspapers; reading regularly on part of homemaker of food sections in magazines and newspapers; and participation in organizations by family members were used for this purpose. See socio-economic scale used, page 28 in the Appendix.

All families in the study were scored with the socio-economic scale, possible total scores ranging from 0 - 18. In Table 1 in the Appendix is given the percentage of families having specified scores in the scale by socio-economic group classification. (Other descriptive data such as family size, schooling and age of husband and homemaker are given in a footnote of this table).

Six percent of the white families and 65 percent of the Negro families had socio-economic scores of 6 or under; 69 percent of the white and 7 percent of the Negro families had socio-economic scores of 11 - 18. The relationship be-

tween total socio-economic score and net income was determined by correlation analysis. The correlation coefficients between net income and socio-economic scores were highly significant. They were for white families, .46; and for Negro families, .60.

THE FOOD STORES

Owners or managers of the 90 food stores in the four towns were interviewed with the use of schedules. Food stores were defined as those in which more than 50 percent of the total sales were from food. Most of the food stores were small independently-operated stores. Only one-fourth had gross yearly sales of \$50,000 or over; only 7 percent were chains, either voluntary or corporate. About 40 percent were located downtown, 40 percent in residential neighborhoods and the remaining in a community center (or on a highway on the edge of town).

A description of kinds and prices of dairy products handled as well as promotional work in connection with dairy products was obtained from owners and managers of the food stores, since it was thought that these stores might be an important factor affecting kinds of dairy products consumed by family members.

MILK DRINKING

Since most of the dairy products consumed were in the form of fluid milk and since most of the fluid milk was used in drinking, the findings concerning milk drinking by members of the 405 families will be reported first.

Information was obtained on meal-time and seasonal differences in usual drink of adults and children and on frequency of drinking fresh fluid milk, reasons for not drinking, and amounts and kinds of milk and other drinks by family members.

Usual Drinks of Adults and Children

In figures 1 and 2 are given the usual drinks of adults and of children for the three meals and between meals in win-

ter and summer. "Both milk and non-milk" includes for the most part families in which some adults usually had a milk drink, other adults a non-milk drink; or some children a milk drink, other children a non-milk drink. In only a few cases were two usual drinks given for one person at one meal.

At all meals and seasons there were more adults with a non-milk than a milk drink as their usual drink (Figure

1). The non-milk drink at breakfast was usually coffee in both winter and summer. At both the noon and evening meal the non-milk drink in winter was most often coffee, in summer most often tea. For between meals in both seasons it was soft drinks. The milk drink named as the usual drink for adults was most frequently whole milk. The evening meal was the meal in which more adults had a milk drink.

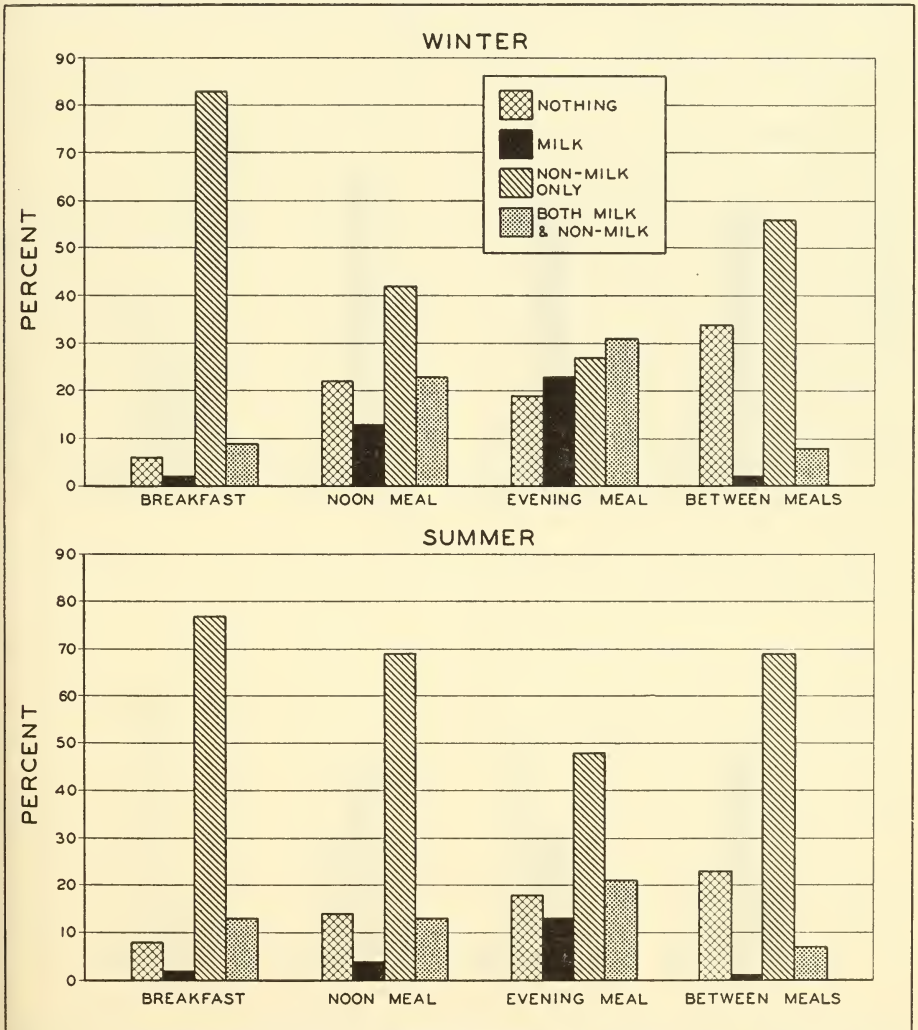


Figure 1. Usual drink of adults in the 405 families in winter and summer at the 3 meals and between meals.

Milk was more popular as the usual drink in winter than in summer.

More children had a milk than a non-milk drink except at noon in summer and between meals. (Figure 2). Iced tea was a popular noon meal drink in summer, soft drinks for between meals. As for adults, the milk drink named was for the most part whole milk. But cocoa was named more for

the usual breakfast drink for children than it was for adults.

The non-milk drinks named for children were similar to those for adults, that is: coffee for breakfast, tea for the noon and evening meal and soft drinks for between meals. Coffee was rarely reported as the usual drink for children at the noon and evening meal. Soft drinks were reported for these meals more frequently for children and

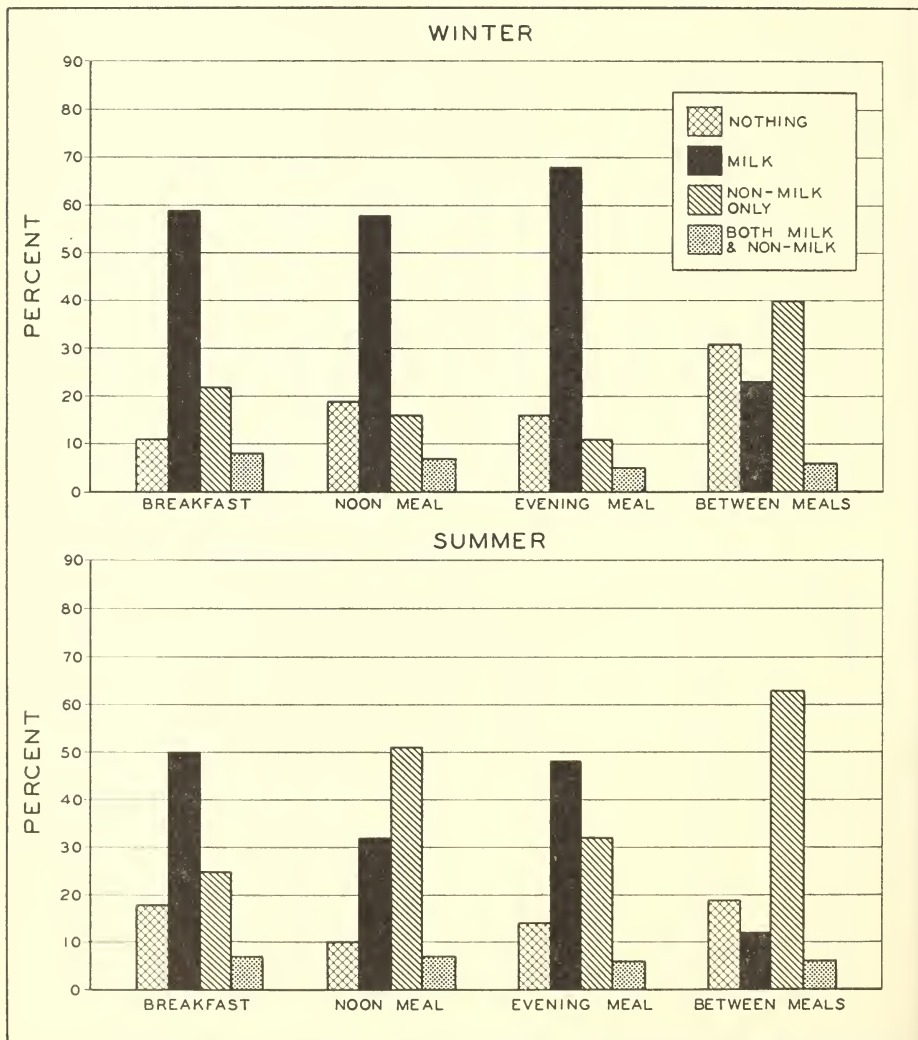


Figure 2. Usual drink of children in the 244 families with children in winter and summer at the 3 meals and between meals.

fruit juice more often mentioned as their usual breakfast drink.

Interviewees in Negro families more than in white families reported "no drink" (or water) for both adults and children at the different meals and seasons. (Tables 2 and 3 in the Appendix). The milk-drinking pattern of white and Negro adults differed little but white children more often had milk at the three meals than did Negro children. The principal difference in drinks of white and Negro adults was the greater proportion of white adults with a non-milk drink as their usual drink.

Frequency of Drinking Milk by Family Members

Information was obtained on the frequency of drinking fresh fluid milk including sweet milk, cocoa/chocolate milk, and buttermilk by each member of the family. There were relatively few in each of the 11 sex-age groups in which family members were classified who never drank milk. Quite a number drank milk sometimes (Table 4 and 5 in Appendix). The percentage who usually drank fresh fluid milk as often as once a day was as follows:

Family members	Percent
Husbands*	44
Homemakers	31
Other adults	37
Males under 6 years	58
Males 6 - 12 years	60
Males 13 - 15 years	61
Males 16 - 19 years	68
Females under 6 years	54
Females 6 - 12 years	46
Females 13 - 15 years	40
Females 16 - 19 years	39

*In the husbands' group in this tabulation as well as other tabulations in the report are included a few widowers.

Frequency of drinking fresh fluid milk is given in the Appendix Tables 4 and 5 for members of white and Negro families. Drinking such milk was reported much more frequently for

white than for Negro groups, though there was not a significant difference in homemakers nor in older girls of the two races.⁶

No significant differences were found between frequency of drinking fresh fluid milk by husbands, by homemakers, by boys under 6 and by other sex-age groups in white families residing in smaller and larger towns, or between frequencies by husbands, homemakers, boys under 6, etc., in Negro families residing in smaller and larger towns. Nor were differences found between these groups in Delta and Prairie towns.

Reasons For Not Drinking Milk

When the homemaker reported that the family member usually drank fresh fluid milk "sometimes" or "never" she was asked the reasons for not drinking or for drinking so little. In Table 1 the reasons she gave for the different members are listed. "Costs too much" was much more often the reason given for children not drinking regularly than for adults. Cost was a much more common reason given by the Negro homemaker for her children not drinking fresh fluid milk regularly than by the white homemaker. Another big difference in reasons given for adults and young children was "use other forms of milk." Many infants and young children used canned milk rather than fresh fluid milk.

"Does not like taste" was a reason given for about one-fifth to one-third in every group. This reason was, however, mentioned more for adults and older girls than for other groups.

Amounts of Fresh Fluid Milk and Other Drinks

During the report week homemakers and girls drank less fresh fluid milk at home than did husbands and boys. (Table 2). This was the case in Negro

⁶Differences between percentages are considered significant if they are large enough so that they would not occur through chance variation in sampling more frequently than 5 times in 100. For convenience the following publication was used in certain of the analyses: Vernon Davies, Table Showing Significance of Differences Between Percentages. Washington Agricultural Experiment Station Circular No. 102, Sept., 1950.

as well as white families (Tables 6 and 7 in Appendix).

There was little fresh fluid milk drunk away from home by family members except children 6 - 12 years (see Table 8 in Appendix). This milk was drunk in the school lunchroom. Those children who ate in the school lunchroom drank milk but the majority in this group did not eat in the school lunchroom.

An average of 12.2 pints of fresh fluid milk per family was used during the report week in drinking and infant feeding by the 405 families included in this study. This was 73 percent of the fresh fluid milk used. Practically all of this milk was drunk by family members. Other persons, that is, hired help, guests, drank an average of only .3 pint per family. White families drank an average of about 15 pints, Negro families, about 8 pints.

Homemakers in families in which all members were adults drank on an average more fresh fluid milk than home-

makers in families with children. Averages were for homemakers in families of adults only, 3.0 pints; in families of adults and children, 2.0 pints. Consumption of milk of husbands in the two types of families averaged about the same.

The average amount of fresh fluid milk drunk by both husbands and wives was considerably less in families with low cash expense per person per meal than in families with medium cash expenses per person per meal. But those with low cash expense per person per meal were usually low income families. Seventy-two percent of the families with expenses less than 20 cents per person per meal were Negro families. There was very little difference in amount of fresh fluid milk drunk by husbands and homemakers in families with medium and with high cash expenses. Average amounts of milk drunk by husbands and homemakers in families with cash expense per person per meal of varying amounts were:

Table 1. Reasons given by homemaker for "never" drinking fresh fluid milk or for drinking it only "sometimes".

Reasons**	Men	Boys under 13 years	Boys 13-19 years	Women	Girls under 13 years	Girls 13-19 years
	%	%	%	%	%	%
Does not like taste	37	25	19	37	21	34
Costs too much	28	48	58	29	52	50
Prefer other beverages	15	1	15	10	1	5
Uses other forms of milk	2	22	0	*	20	0
Trying to control weight— too fattening	8	0	0	10	2	3
Medical reasons	8	0	4	11	1	3
All other reasons	2	1	4	2	3	0
Total number persons	216	79	26	337	104	38

*Less than .5 percent.

**Does not always add up to 100 percent since a few homemakers did not give a report for certain members.

Table 2. Percentage of family members drinking fresh fluid milk at home and average amount drunk by those drinking, report week November, December, 1954.

Family Members	Total number	Percent who drank fresh fluid milk	Average amount drunk by members (Pts.)
Husbands	336	69	5.6
Homemakers	404	61	3.8
Other adults* (family members)	133	58	4.6
Males under 6 years	98	71	6.4
Males 6 - 12 years	96	90	5.0
Males 13 - 15 years	36	86	5.8
Males 16 - 19 years**	34	85	6.8
Females under 6 years	104	73	5.8
Females 6 - 12 years	103	85	4.4
Females 13 - 15 years	35	86	3.4
Females 16 - 19 years*	22	77	3.2

*Six were not at home during report week.

**Four were not at home during report week.

**Average cash expense for food
per person per meal**

	Under 20c	20 - 39c	40c & over
Husbands	2.9 pts.	4.6 pts.	4.4 pts.
Homemakers	1.9 pts.	2.7 pts.	2.8 pts.

Homemakers were classified into three schooling groups, according to grades completed; 6 grades or less, 7-11 grades, high school or more. Consumption of fresh fluid milk during the report week by women in these three groups averaged 2.2, 2.4, and 2.6 pints respectively.

Information was obtained on the kinds and amounts of fresh fluid milk and non-milk drinks used during the report week. These are given in Table 3.

As is shown, the most popular kinds of milk used were pasteurized homogenized milk and buttermilk; while coffee, soft drinks, and vegetable and fruit juices were the most popular non-milk drinks used. Since most tea used is as iced tea and since the study was made in November and December, use of tea was undoubtedly less than in certain other seasons of the year.

When asked to name the usual drinks for meals in summer and winter for family members, most homemakers did not mention fruit juices. In other words, these juices were not regarded as a beverage by the majority; but a few so regarded them and for this reason they are shown.

Amounts of Canned and Dried Milk

Of the 1401 family members at home during the report week, there were only 45 who were reported as drinking dried milk and only 64 canned milk. Thirty-seven of those drinking dried milk were adults. The 45 drinking dried milk included one infant fed a dried milk formula. Forty-nine of those drinking canned milk were children and most of the children were under 6 years. The 45 drinking dried milk drank on the average about one-third of a pound each (5.5 ounces) while those drinking canned milk averaged a little more than 4 large cans (about 58.8 ounces).

Infant Feeding

Eleven of the 31 infants in the 405 families included were breast fed. But three of these were only part-breast fed; that is, they had other kinds of milk too. One had fluid milk and breast milk, the other two canned milk and breast milk. During the record week one baby was fed a milk formula, 5 received fluid milk only, 13 canned milk only, and one both canned and fluid milk.

Those infants who received fluid milk only averaged 7.7 quarts. Amounts consumed by them ranged from 5 quarts to 10.5 quarts. Those infants using canned milk only averaged 98.3 oz. (nearly 7 large cans). Their consumption of canned milk ranged from 42 to 207 ounces.

DAIRY PRODUCTS USED

Three-fourths or more of the families had used during the year preceding the interview the following dairy products: sweet homogenized milk, buttermilk, evaporated whole milk, yellow cheese and ice cream (Table 9 in Appendix).

Three-fourths or more reported they had never used the following dairy products: sweet skim milk, coffee cream, half and half milk, evaporated skim milk and dry cream.

When asked whether their families used the specified dairy product more in winter, in summer, or about the same, two-thirds or more of the replies for all dairy products except frozen ones were "about the same." For frozen products four-fifths or more replies were "more in summer." There was not a significant difference in summer and winter use of the other dairy products reported except for chocolate milk, whipping cream, condensed milk, cottage cheese, all reported as used more in the summer. (See Table 10 in Appendix).

As has already been shown, milk drinks were reported somewhat more frequently as the usual drink by adults and children in winter than summer

and most milk was used for drinking. It would therefore seem that more fluid milk would have been reported as used in winter than summer and this was not the case. It may be that the pattern for total milk is fairly stable and that when less is used for drinking more is used in preparation.

About one-half the families used canned milk, about one-seventh dried milk during the report week. (Figure 3). About one-half the homemakers reported they had never used dried milk. This is of course one of the newer types of dairy products as is dry cream. At the time of the study instant dried milk was just beginning to come on the market. Dry cream was carried by less than one-fifth of the local groceries.

As stated before about three-fourths of the fluid milk used was used for drinking. In contrast about one-third of the dried milk was used for drinking. These proportions may have changed since instant milk has been brought in large amounts on the market. Approximately one-half the canned milk was used in drinking or infant feeding, usually in infant feeding.

Yellow cheese (including both unprocessed and processed) was the only kind of cheese used to any extent by the families. About 70 percent of the white families and about 50 percent of the Negro families used some during the report week. Average amounts used by families using for both groups

was about the same; that is, slightly less than one pound.

Interviewees were asked: "Let's say you did not have any meat for your dinner but you did have on hand materials to cook an egg dish, a dish of dried peas or beans, or a cheese dish. Which one would you cook if you wanted to please your family most?" The replies of homemakers in white and Negro families were as follows:

Replies*	In white families	In Negro families
	%	%
Cheese	39	25
Eggs	23	17
Dried peas or beans	30	49

*Does not add up to 100 percent since a few homemakers did not reply or would not make a choice.

It may be that the Negro woman's choice of dried peas and beans as a meat substitute more often than the white woman's is related to the fact that she uses them more. One likes what one is accustomed to eating.

Fresh cream was a dairy product used to a very limited extent by families during the report week (only 11 percent used whipping cream and 4 percent other fresh cream). Limited use seemed to be related to costs and other factors such as "too rich," rather than use of competing products such as whipped topping. Only one percent of the families reported its use during the study period.

Twenty-eight percent of the families reported use of butter, 83 percent of

Table 3. Percentage of the 405 families using and average amounts by those using various kinds fresh fluid milk and non-milk drinks during report week, November-December, 1954.

Product	Percent using	Average amount by those using
Pasteurized homogenized whole milk	75	7.4 qts.
Pasteurized plain whole milk	6	6.5 qts.
Raw whole milk	7	7.6 qts.
Sweet skim milk	"	5.0 qts.
Buttermilk	63	3.1 qts.
Chocolate milk or drink	4	1.7 qts.
Condensed coffee	16	2.6 oz.
Ground coffee	69	.8 lbs.
Tea	33	3.4 oz.
Coffee substitute	2	1.7 oz.
Soft drinks	64	11.1 bot.
Powdered drinks	6	2.5 pkg.
Fruit and vegetable juices	52	49.1 oz.

*Less than .5%.

**For further information see Table 9 in Appendix.

oleomargarine during the report week. Average amounts of these two products used by families using were for butter .8 pound and for oleomargarine 1.2 pounds.

Only about one-third of the families used ice cream during the report week, November-December. Use of sherbet and ice milk at this time was negligible. Those families who ate ice cream aver-

aged about 3 pints each. (See Table 9 Appendix).

Failure to use could not be related to the stock of dairy products on hand in food stores. Practically all dairy products listed on the store schedule were carried by one or more stores in each town. But it is to be noted that even though the product was available in some food stores in town, it may

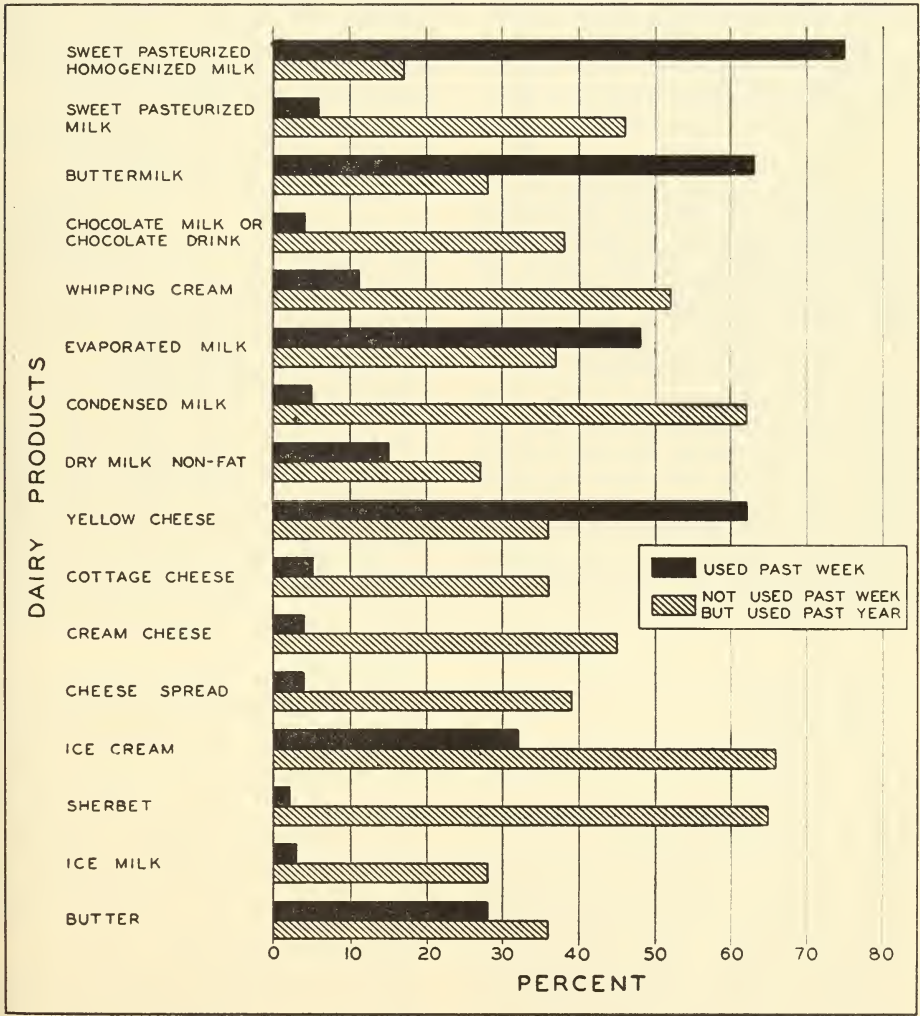


Figure 3. Percentage of families using specified dairy products during week preceding interview and percentage not using this week but using sometimes during the past year, 1953-54.

not have been carried in stock in the particular store or stores in which the family traded.

The dairy products carried by more than 50 percent of the stores surveyed were:

Products	Percent of food stores carrying
Evaporated milk	100
Homogenized, past. milk	93
Buttermilk	92
Ice cream	91
Yellow cheese, unprocessed	89
Sherbet	80
Condensed milk	78
Dried non-fat milk	78
Yellow cheese, processed	69
Butter	56

In Table 11 of the Appendix the average amount of milk and its products of specified kinds used during report week by families of this study are compared with amounts used by families during one week in other studies.

Cost of Dairy Products Used

Five of the 405 families in this study used no bought dairy products of any type at home during the report week. Three of these had incomes under \$1000, two had incomes from \$1000 to \$2500. The average costs of the dairy products used during the report week by the 400 families using bought products classified by income were:

Income	Cost dairy products used
Under \$1000	\$1.59
\$1000 - \$2500	2.22
\$2500 - \$4000	3.34
\$4000 and over	3.86

Families with higher incomes spent on the average more for food as well as more for dairy products. Those with incomes under \$1000 spent an average of 15 cents per capita per meal for food at home; those with incomes of \$1000 to \$2500 spent an average of 21 cents per capita per meal; those with incomes of \$2500 to \$4000 spent an average of 28 cents; and those with incomes of \$4000 and over, an average of 34 cents.

Families in this study spent during the report week an average of \$17.22

for food at home. Sixteen percent of this was for dairy products.

Homemakers were asked about how much members of the family had spent for between-meal snacks eaten away from home during report week such as soft drinks, ice cream, candy. If an amount was reported they were asked how much of it was for ice cream, milk drinks, or other dairy products. About one-third of the families reported some expenses for dairy products of this type. Those families having spent money this way had spent during the report week an average of 68 cents.

Type of family affected expenditures for dairy products. Average expenditures for those purchasing were:

Type of family	Average expenditures by those purchasing
Adults only (all members 20 yrs. and over)	\$2.14
Adults and young children only (all children 12 yrs. or under)	3.22
Adults and older children (one or more children 13-19 yrs. May or may not have children under 12 years)	3.51

But families of adults only were small families, those with older children larger families. (Ninety-six percent of the adult-only families had fewer than 4 members, 59 percent of the families of adults and young children had this few members, and 43 percent of the families with older children this few).

Those buying pasteurized milk, either plain or homogenized, paid an average of 23.6 cents per quart. But those buying whole raw milk paid an average of 15.9 cents per quart. Most of the whole raw milk was purchased direct from producers, sometimes relatives who let the family have the milk at a low price. The average price paid for buttermilk was 14.8 cents per quart. Here, too, purchases include some bought from producers.

Some of the butter used was country butter which was purchased by a few families for as low price as 50 cents a pound. However, most of those buying butter paid 75 or 80 cents a pound.

Country butter was sold by a few stores at as low as 60 cents a pound.

Prices charged for dairy products varied from store to store. Some of the variation of course was related to quality and brand; other variation to pricing policies and overhead or other expenses of the particular store. Listed below are some of the price variations found in specified dairy products in the 90 grocery stores in these 4 towns:

Dairy product	Price and unit
Pasteurized milk*	22c - 26c (qt. carton)
Ice cream	59c - \$1.20 (½ gal.)
Butter	60c - \$1.00 (1 lb.)
Cheddar cheese (unprocessed)	43c - 69c (1 lb.)
Processed cheese	31c - 46c (½ lb.)
Evaporated milk	6.2c - 11.5c (6 oz.)
Evaporated milk	12.3c - 20c (14½ oz.)
Dry skintmed milk	15c - 20c (6½ - 7 oz.)
Dry skintmed milk	29c - 41c (10½ oz.)
Whipping cream	25c - 35c (½ pt.)

*Includes both plain and homogenized milk; does not include Golden Guernsey milk.

Variation in prices of ice cream, butter, cheese, canned and dried milk in the individual towns followed very much the pattern of that of the four towns. Variation within a town was much less however for pasteurized milk and whipping cream. Price per quart for pasteurized milk varied as much as 3 cents from store to store in all towns. Cream usually 2 cents, but in one town variation was 7 cents.

PLACE OF PURCHASE AND OTHER SHOPPING HABITS

Homemakers were asked who usually buys the groceries in the family and about 4 out of 5 replied that they did this alone or together with either their husbands or other members of the family. The percentage giving various replies were:

	Percent
Husbands (only)	14
Homemakers (only)	54
Homemakers and husband	21
Homemaker and other member of family	4
All others	7

†Delivery service may however help one milk plant better compete with another. No investigation was made on this point.

Expenditures per person per meal were examined to determine if there was any difference when husband did the shopping alone, when homemaker did it alone, and when they shopped together. No significant differences were found.

Eighty-nine percent of the homemakers in this study reported that most of the food for their families was bought by personal shopping. Only 4 percent reported that most of the food-buying was done by telephone. Seven percent said that these two methods were used about the same in their families.

Source of Purchases

In Table 4 is shown that grocery stores were the source of purchase for most perishable dairy products bought. More sweet milk and thin cream were bought from distributors than other products listed, and more buttermilk and butter from local producers.

Information was obtained on the effect of a standing order at the creamery or milk plant on milk consumption. Sixteen percent of the families had a standing order at a milk plant or creamery. These families used an average of 9.3 quarts of purchased milk during the report week from these creameries or milk plants. In addition they purchased from other sources an average of 1.3 quarts, making a total of 10.6 quarts in all.

An average of 6.8 quarts of bought milk was used by other families. Operators of creameries and milk plants say that delivery is good business. It was found however that relatively more white families and relatively more families with high incomes had a standing order. In other words "standing order" families included the type that buys higher amounts anyway.⁷

The fluid milk distribution pattern in the Prairie and Delta Area towns was quite different. Merchants in Amory (the larger Prairie town) traded almost exclusively with the two local

distributors. In Okolona (the smaller Prairie town) trade was divided between the local distributor and two distributors from neighboring towns. There were no milk plants located in either of the Delta towns surveyed but fluid milk and cream were obtained principally from plants located in the Delta Area. These plants, however, obtained part of their milk from outside the Delta.

Marketing Services

Homemakers were asked to give the names and addresses of grocery stores where they had bought any food during the past week, distance from their homes, whether or not they had used credit, delivery; also to indicate which stores were the major source of their food supply and which were near their work. Information from these questions are summarized in Table 12 in the Appendix. In most of the grocery stores in which the family had traded neither credit nor delivery service had been used, but credit was used in stores where the major food supply was bought more than in all stores traded with, especially by Negro families. Very few families used delivery.

Managers in 71 percent of the 90 grocery stores reported that credit was extended; 40 percent said they would deliver food to the home. There were, however, more than two cash and carry stores in every town.

Grocery stores in these four towns surveyed were open to the public an average of 80 hours per week. About one-half of them were open at some time on Sunday. In only one town was there no store open on Sunday.

It would thus seem that families in the four towns could select from a number of services, as well as find some store open at almost any time they wanted to buy dairy products.

Sizes of Purchases

Information was not only obtained on amounts of the different dairy products used during the week preceding the interview and the place of purchase but also on the amounts bought at the last purchase. Last purchases of whole pasteurized milk (either plain or homogenized) averaged about 1½ quarts which would mean about 4 or 5 purchases a week. Raw whole milk (usually bought direct from producers) was purchased in larger amounts—an average of about 3¼ quarts at one time. This would mean about 2 purchases a week. Buttermilk was bought about as often as whole raw milk but last purchases averaged 1.7 quarts, or about one-half the amount of last purchases for whole raw milk.

Last purchases of canned and dried milk and dried cream were larger than the amounts of these products used during the report week, as were last purchases of ice cream and ice milk. These frozen desserts were often bought in quantities of one-half gallon on week-end specials and kept in the freezing compartment of the refrigerator or in a home freezer. Last purchases of other dairy products were in amounts of about the same as such products used during the week, except for "half and half." Last purchases of this light cream averaged one pint and average amounts used by families using were 1.5 pints.

Table 4. Percentage of families using purchased dairy products of specified kinds during the report week by source of purchase.*

Dairy product	Milk or ice cream plant	Grocery store	Local producer
Sweet milk	16	85	5
Buttermilk	4	76	20
Whipping cream	8	92	0
Other cream**	15	87	0
Butter	0	78	22
Ice cream	8	92	0

*Sometimes adds up to more than 100 percent since some used products from more than one source.

**Coffee cream or half and half.

Containers For Fluid Milk

Homemakers who had used fluid milk the past year (all except one of the 405 families) were asked if they purchased it in cartons, bottles, or both. Fifty-one percent had purchased it in both cartons and bottles, 42 in cartons only, 3 percent in bottles only.⁸ Those homemakers who had purchased milk in both bottles and cartons were asked which they preferred and why.

Of the 205 homemakers who had used both bottles and cartons during the past year, 55 percent (113) expressed a preference for cartons, 38 percent for bottles, and 7 percent said they had no preference.

Those stating a preference for cartons gave as their reasons:

Reasons*	Percent
Not as much trouble, don't have to wash and return	39
Keeps better in carton, safer, and more sanitary	15
Milk tastes better in cartons	12
Milk in cartons takes up less room in the refrigerator	4
Milk in cartons is easier to carry....	2

*Some gave more than one reason.

The reasons given by the 78 for preferring bottles were:

Reasons	Percent
Don't like taste of milk in cartons. Like taste of milk in bottles—wax gets in milk	42
Carton gets soft, leaks in refrigerator, messes up refrigerator	14
Can't tell how much milk is in carton; in bottle can see through...	13
Just like better	13
Carton doesn't pour as well. Carton spills, like to pour from bottle	10
May be more sanitary in bottles	6
Don't like milk to sit in carton	4
Milk stays colder in bottle	1
Local product in bottles	1
Cheaper in bottles	1

Homemakers were asked if they had purchased milk in more than one size container. Eighty of the 405 replied that they had and 79 of these reports involved purchase of quarts and half-gallons.⁹ Sixty-two of the 79 having

used both quarts and half-gallons expressed a preference for the quart, 17 for the half-gallon.

Reasons given for preferences were:

Reasons	Prefer qts. to half-gals.	Prefer half-gals. to qts.
	%	%
Easier to handle	25	35
Stays fresh, easier to keep fresh	25	0
No waste or spoilage	21	0
Suitable for refrigerator	16	24
Right size for family and use	3	5
Easier to wash	1	0
Milk tastes better	1	0
Cheaper	0	12
Don't have to buy so often	0	12
Get more milk in half-gallon*	0	12
No reason	8	0

*Commonly believed by a very few that there is more milk in one-half gallon than in 2 quarts. This reason was given in pre-testing the schedules as well as in the study.

The 377 homemakers who had bought milk in cartons were asked if they would like a different color of carton for each different kind of milk. Only about one-third said they would. But only 7 of these cared what the color was for homogenized, for pasteurized, or for buttermilk.

Ninety-nine percent of the stores handled milk in quart cartons; 24 percent in quart bottles; and 18 percent in half-gallon cartons. Several stores in the Delta Area handled the "twin pack" or two one quart cartons fastened together with a easy-to-carry handle.

Merchants who handled both bottles and cartons were asked to estimate the percentage of total sales made in bottles. When both were available the carton container was more popular according to estimates given. An average of 20 percent of the whole milk sales was stated to be in glass. When both quart and half-gallons were handled, merchants reported that about four-fifths of the total whole milk sales were in quart bottles.

⁸ A few had home produced milk; a few did not report.

⁹ One woman reported having purchased in gallons and quarts and preferred the gallon as it was the right size for her family.

ATTITUDES AND KNOWLEDGE OF HOMEMAKER CONCERNING PROPERTIES IN MILK

Two questions were asked homemakers which gave information on attitudes concerning and knowledge about properties in milk. The first of these was "Which foods do you think your family ought to have every day?" If milk was not named they were asked, "Which beverages (or things to drink) do you think your family ought to have every day?" This question was among the first on the schedule, and was asked before any of those concerning milk products. The other question was "What would you say milk has in it?"

Listed below is the percentage of homemakers reporting milk as a food, as a beverage, and not naming milk at all; and the place in which milk was given when named as a food or a beverage:

	Percent**
Milk named as a food (Total)	80
Milk named 1st	22
Milk named 2nd	16
Milk named 3rd	22
Milk named 4th	13
Milk named in other positions.....	7
Milk named as a beverage (Total) ...	14
Milk named 1st	13
Milk named 2nd	1
Milk named in other positions.....	*
Milk not named as food or beverage	5

*Less than .5%.
 **Does not add up to 100% since a few did not reply.

Four-fifths of the homemakers named milk as a food their families should have every day, but only one-fifth gave it first place among foods. About one in seven thought of it as a beverage.¹⁰

The second question produced many kinds of replies—from the very specific to the more general, such as "calcium," "minerals," "builder of bones and teeth." The replies are summarized in Table 13 in the Appendix.

Milk is the main source of calcium in the American diet and also con-

tributes high-quality proteins, and riboflavin, niacin, and thiamine, part of the vitamin B complex. Vitamin D, an important nutrient, is supplied by vitamin D milk. Milk has also a generous amount of vitamin A.

The most frequent reply to the question "What does milk have in it" was, "vitamins," "all the vitamins." Forty-nine percent of the interviewees gave this reply. It was a reply more often given by Negro than white interviewees. (See Table 13 in Appendix).

"Fats, butter, cream" was the reply of next importance (35 percent of the women gave it). This reply was given by more white than Negro women. Thirty percent of the homemakers interviewed mentioned protein, and 26 percent calcium or lime. Most of the women giving protein and calcium or lime were white women. No woman interviewed said that milk contained riboflavin, niacin, or thiamine, but 6 mentioned vitamin B. Eight women mentioned vitamin D and 4 vitamin A.

There was a close relationship in schooling of the interviewee and her reply as to what milk had in it, as is shown:

Grade completed	Calcium or lime	Protein	Fats, cream, sugar—carbohydrates
	%	%	%
Less than 4 grades.....	6	6	19
4 - 6 grades.....	6	6	15
7 - 11 grades.....	14	23	26
Finished high school...	59	40	51
College training	54	50	64

It is interesting to note here that 26 percent of the interviewees from families with incomes under \$2500 mentioned fats and/or cream, sugar, calories. The percentage for those with incomes \$2500 and over mentioning them was 51.

PROMOTION AND EDUCATION

Families in these towns of Mississippi were exposed to dairy products

¹⁰It was thought that as the study advanced in a town there might be progressively more families naming milk first. No relationship was found, however, in week of interview and replies of white and of Negro homemakers to this question.

promotion and education programs outside as well as within local groceries. Such promotion and education was provided in the foods section of daily and weekly newspapers and of magazines, over the radio and TV, and in connection with organizations in which many participated.

Homemakers in three-fourths of the white families and in one-fourth of the Negro families read regularly one or more newspapers or magazines with a foods section. Of those publications mentioned with a foods section by these town women, 49 percent were women's magazines such as **McCalls**, **Ladies Home Journal**, **Good Housekeeping**; 30 percent were daily papers with a foods section, usually once a week (on Friday). Twelve percent were farm magazines and 7 percent magazines sold at grocery stores for 5 cents such as **Family Circle**, **Today's Woman**, and **Better Living**.

More homemakers should have been reached by the radio (granted there were milk-promotion programs over the radio and that they were listened to) than by the foods section in papers and magazines, since more had a radio than read regularly papers and magazines with a foods section. Practically all families included in the survey (nearly 100 percent of the white and about 90 percent of the Negro families) owned a radio. Also, a little more than one-third of the white families had a TV set.

Organization participation was also a potential educational and promotional source for dairy products; but such participation was for the most part in connection with the church. One or more members in 54 percent of the families participated in organizations other than the church. In many of these organizations one would get little information about milk products. It is believed, however, that one might get some in connection with socials and contacts resulting.

There was a total of only 55 participants in the 405 families attending clubs or organizations in which in-

formation concerning the use or value of dairy products is regularly given; such as home demonstration clubs, the Farm Bureau, home improvement clubs, 4-H clubs, FFA clubs, and FHA clubs.

Store Promotion

Merchants were questioned about their experiences during the preceding year in promoting the sale of dairy products. In about two-thirds of the 90 stores some type of promotion had been used. Those who used no promotion were practically all operators of small groceries.

Of those who had done promotional work a large percentage (83%) reported having used advertising material provided by dairies, ice cream suppliers, manufacturers of canned and dried milk and cheese. Brightly-colored store posters, banners, and stickers were placed in stores by plant representatives. Some companies provided premiums to be awarded customers who bought their product in certain amounts, or "prizes," to those with designated quantities of the products' wrapper. Folders of recipes featuring certain items were placed on store shelves.

Fifty-three percent of the merchants, however, originated promotional work themselves. Of the total advertising or promotion originated by store operators, percentage of different types was as follows:

Price reduction sales	24%
Store displays	24%
Newspaper advertising	19%
Lettering on store front	7%
Trade stamps (advertising store as a whole)	7%
Handbills	5%
Radio	4%
Other types (2% of the stores)...	10%

In the "other types" are included free samples (cheese), calendar advertising. Advertising on television was mentioned by the one manager of a corporate chain store.

Another factor of importance is the attitude of the merchant towards dairy products. Many of these merchants

give individual attention to the customer and customers depend upon them for advice.

There were two types of questions in the store schedule from which one might obtain some light on probable attitude of the merchant towards handling dairy products. The first one related to the profit he made on the sale of fluid milk. No merchant thought he made a good profit. But 33 percent thought the profit fair, 58 percent very little. Two percent said there was no profit and the remaining did not express themselves one way or the other. The second type of question pertained to problems in connection with handling dairy products. Two-thirds of the merchants named no problem in connection with handling fluid milk. Only a few mentioned problems in connection with handling ice cream and cheese.

When merchants were asked to discuss ways in which they thought milk sales could be increased, more replies were centered on non-price factors than price factors. Some examples of these are: "Improve facilities for keeping milk fresher;" "Display it better;" "Improve quality;" "Advertise it more;" "Keep it sanitary;" "Give more education to the public concerning its nutritive value."

Promotion of Particular Dairy Products in Stores

Cheese was the dairy product most extensively advertised by individual merchants in the study, but very little promotional work was reported as having been done by the cheese manufacturer as shown:

Product	Promotion by merchant	Promotion by processor
	%	%
Fluid milk and cream	14	11
Canned milk	22	19
Dried milk	7	21
Cheese	32	5
Ice cream	25	44

The typical means of displaying milk was in a meat counter. Here it was

usually visible to the consumer, but sometimes close scrutiny was necessary to find it. In one-fourth of the stores milk was not visible. In only about one in six stores was milk kept in a dairy or milk cabinet with open top.

Cheeses were rarely centered in one location in the store. Those requiring refrigeration were usually kept in a meat counter, dairy cabinet, or home-type refrigerator. Cheese in jars was kept on store shelves and on top of meat counters.

The most common type of advertising for dairy products by merchants was "special" sales; advertisements in newspapers, over the radio, on hand bills, by store front lettering. Also, in case of canned milk and cheese, store displays were sometimes used.

Determining Effect of Promotion and Education

Five questions were included in the family schedule with the idea of finding out the types of promotion and education that had caused the family to use more dairy products, either more of the same product, the product in a different way, or a new dairy product.

In one of these questions the homemaker was asked about new foods or new recipes which she had tried during the past year, to describe and to tell who or what gave her the recipe or idea to try. Fifty-two percent reported one or more new dishes tried. Thirty-two percent of the women reported one or more new dishes involving dairy products. Fifty-three percent of the new dishes with dairy products involved sweet milk, 32 percent cheese, 10 percent evaporated milk, and the remaining 16 percent buttermilk, dried milk, and condensed milk. Types of dairy products used adds up to more than 100 percent since in 11 percent of the new dishes 2 dairy products were used. Casserole dishes, chiffon pies and congealed salads were among the most common new dishes involving dairy products.

The most important sources of suggestion for the 192 new dishes involving dairy products were:

Source	Percent
Friends	40
Recipes (magazines, newspapers, cook books)	26
Relative	8
Advertising material	8
Seeing in store or having clerk call attention to	5

Another question used to find out types of promotion or education that had caused the family to use dairy products was: "Do you remember any particular advertisement (such as in newspapers, magazines, in stores, over radio or TV) about milk products?" Yes___ No___ "If yes, what?" _____ "Source?" "If yes, did this cause you to use more?" Yes___ No___.

Ninety-eight women (or about one-fourth) reported they remembered one or more particular advertisements about milk products. But three of these women could not remember where they saw the advertisement. The 95 who could remember reported on 116 advertisements. These advertisements and where they were seen were as follows:

Product	Where seen
Evaporated milk (39)	TV, 14; radio, 12; magazines, 11; newspaper, 1; store, 1.
Ice cream (30)	TV, 19; magazine, 7; radio, 3; newspaper, 1.
Whole milk (18)	Radio, 7; newspaper, 5; TV, 3; magazine, 3.
Dry milk (18)	TV, 7; radio, 5; magazine, 4; newspaper, 1; store, 1.
Cheese (11)	TV, 6; magazine, 4; newspaper, 1.
Dry cream (1)	Radio (1).
Condensed milk (1)	Newspaper (1).

Forty-one percent of the advertisements remembered were on TV, 25 percent in magazines, 24 percent on the radio, 10 percent in newspapers and 2 percent in stores.

Seventeen percent of the women remembering advertisements of dairy products said the advertisement had caused them to use more of the product. These involved 19 different advertisements including 7 on TV, 7 in

magazines, 4 on the radio, and one in the newspaper. Eight of these advertisements were of evaporated milk, 5 of ice cream, 2 of whole milk, 2 of dry milk, and one each of cottage cheese and condensed milk.

When asked, "Have you or any member of your family been to any group meeting during the past year where use and preparation of dairy products was demonstrated or discussed," only eight women answered in the affirmative. Two women reported that they tried the demonstration later. Six of the demonstrations were attended by the women themselves, one by her children and one by her husband. The two who tried the product demonstrated later had attended the demonstration themselves.

Homemakers in 33 of the families, when asked if during the past year they had received information concerning dairy products from doctors, nurses, health clinics, replied that they had. In all except two cases the doctor, nurse, or health clinic had advised specified kinds and amounts of milk for a certain member or members. In these two cases a doctor had suggested that the member was allergic to milk.

The last question for finding out the type of promotion or education that had caused the family to use more dairy products was asked only of the 176 families with school children. This question was: "Have your children ever asked you to serve or use in preparation a dairy product they had seen, heard about, or tasted away from home?" Only 17 women replied in the affirmative. These 17 women mentioned 19 dairy products. Nine involved use of dairy products in desserts such as "lemon pie with milk," "homemade ice cream like Johnny's mother makes," "pineapple pudding." Three had asked for bottled chocolate milk. One had asked for whole milk in bottles such as served at the school lunchroom; another for milk from a certain creamery. Other requests were for malted milk, ice milk, and certain ice cream "novelties."

It might seem from the analysis of the replies to the five questions relating to the effect of promotion and education on consumption of dairy products that best results would be obtained by more effective use of local leaders; from recipes in magazines, newspapers, cookbooks; and by advertising on TV and radio.

PER CAPITA CONSUMPTION OF MILK PRODUCTS AND RECOMMENDED AMOUNTS

Milk products used by the family were converted into quarts of fluid milk equivalent which included not only fluid milk but the fluid milk equivalent of evaporated, condensed and dry milk, cream, ice cream and cheese on the basis of protein and calcium content. Conversion factors developed by the Human Nutrition Research Branch of the U. S. Department of Agriculture to express the nutritive value of each product as compared with fluid whole milk were used.

Quantities for different family members in the revised low-cost food plan developed by specialists in the Human Nutrition Research Branch of the U. S. Department of Agriculture for milk products were used in estimating milk needs for the family.¹¹ The recommended dietary allowances of the National Research Council were used as the nutritional basis of the food plans at different costs.¹²

Quantities of fluid milk equivalent per week suggested for various family members in the low-cost plan were:

Young children and boys:		
Young children		
1 - 3 years	5	Qts.
4 - 6 years	5	
7 - 9 years	5	
Boys		
10 - 12 years	6	
13 - 15 years	6½	
16 - 20 years	6½	
Adults and girls:		
Adults		
Women	3½	Qts.
Nursing mother	10	
Men	3½	

Girls		
10 - 12 years	6	
13 - 15 years	6	
16 - 20 years	6	

No recommendations for children under a year were made by these specialists in the U. S. Department of Agriculture since most infants are fed according to directions of a physician or a nurse. Amounts fed vary with weight, growth, and the like. Therefore, in determining whether or not the family had milk in the quantities recommended, infants are treated separately.

Per Capita Consumption

The 405 families included in this study averaged 12.25 quarts of fluid milk equivalent during the week (or 4.05 quarts per capita).¹³ Of this amount an average of 8.40 quarts was in the form of fresh fluid milk, (that is sweet milk, chocolate milk, butter-milk) 3.85 quarts in the form of converted milk (that is, dried and canned milk, cheese, ice cream, cream).

The per capita consumption of milk was calculated by dividing the quarts of equivalent milk used at home by the number of members fed from the home supply during the study week. The number of members fed from the home supply was obtained by dividing the total number of meals eaten at home during the report week by 21 (number of meals in one week).

Per capita consumption of dairy products (equivalent quarts fluid milk) decreased rapidly with increasing household size and especially for Negro families, as is shown:

Household size	Percent families with 4.0 quarts milk equivalent or more per capita*	
	White	Negro
Under 2 members	67	65
2.0 - 3.9	60	35
4.0 - 5.9	48	9
6.0 and over	18	3

*The difference in percentage of both white and Negro families of 2 and 6 and more members is highly significant.

¹¹Rural Family Living, March, 1955, Home Economics Research Branch, Agricultural Research Service, U. S. Department of Agriculture, p. 10.

¹²Recommended Dietary Allowances (1953 Revision), National Academy of Sciences, National Research Council, Publication 302, p. 22.

¹³This average per capita differs little from amount (4.29 quarts) found for 1021 urban and rural families of Attala, Marion, Jones and Adams Counties, Mississippi. See "Home Consumption of Milk," Dorothy Dickins, Miss. Agri. Exper. Circular 198. Sept. 1955.

It was thought when planning the study that families living in the Prairie or Dairying Area would consume larger amounts of dairy products. In Table 14 in the Appendix is given average per capita consumption of milk equivalent during study week for Prairie and Delta town families by race. There was not a statistically significant difference in per capita consumption of white families in the towns in these two areas nor in Negro families in towns in the two areas.¹⁴

Per capita consumption of quarts fluid milk equivalent of white and Negro families by income is shown in Table 15 in Appendix.

Recommended Amounts

About two-thirds of the white families and one-third of the Negro families had milk products in recommended amounts or more for families of their size and composition.¹⁵ According to chi square tests there was a high association in income level (under \$2000; \$2000 - \$2999; \$3000 and over) and receiving milk products in recommended amounts when white and Negro families were grouped together. (Appendix Table 16). When analyses were made separately for white families and for Negro families no associations were found. Some association in income level and receiving recommended amounts might have been shown for Negroes had there been more Negro families with incomes of \$3000 or more.

Chi square tests were made on differences in white and Negro families receiving recommended amounts at each of the three income levels. At only the \$2000 - \$2999 income level were significant differences found. Relatively more white families in this income group than Negro families in the same income group had recommended amounts of milk products.

There was found also a high association in socio-economic score (6 and under, 7 - 10, and 11 - 18) and receiving milk products in recommended amounts

when white and Negro families were grouped together. (Appendix Table 17). When analyses were made separately for white and for Negro no association was found in socio-economic score and receiving milk products in recommended amounts in white families. There was found, however, a high association in these two variables in Negro families. There were relatively more Negro families with low socio-economic scores with less than recommended amounts of milk products.

It is interesting to note here that for Negro families rating on the socio-economic scale seemed more related to getting recommended amounts of milk products than did income.

Very low milk products consumption; that is, under 50 percent of the recommended amounts, were especially centered in families with children. Of those families who had less than half the recommended quantities of milk products, three-fourths were families with children. Twelve percent of the families consisting of adults only and 34 percent of the families with one or more children 13 years or over (the group where recommended amounts were highest) had less than 50 percent of the recommended amounts of dairy products. Families with children, i.e., large families, actually averaged more quarts of equivalent fluid milk than families without children, i.e., small families; but not enough more to provide the extra needs for milk products of such families.

The percentages of families with amounts of milk equivalent below 50 percent of recommendations, from 50 to 89 percent of recommendations and 90 percent or more of recommendations classified by household size were:

	Percent of recommendations		
	Below 50%	50-89%	90% or more
Less than 2 members ...	5	22	73
2.0 - 2.9 members	11	29	60
3.0 - 3.9 members	14	31	55
4.0 - 4.9 members	31	38	31
5.0 - 5.9 members	33	25	42
6.0 and over	56	40	4

¹⁴ The terms "fluid milk equivalent," "dairy products," "milk products" are used interchangeably.

¹⁵ Ninety percent of recommended amount or more.

As shown in Table 5 the drop in percentage of families getting recommended amounts of milk products was greater with increasing family size with Negro than with white families. The differences in percentages of white and Negro families having recommended amounts of dairy products are statistically significant. It is to be noted that Negro households in this study were larger than white households.

Figures 4 and 5 give some interesting data on recommended amounts of milk products for the family and characteristics of the homemaker. As shown in Figure 4 more families get suggested amounts of these products when the homemaker drinks milk every day or every meal. More families get suggested amounts when the homemaker has more schooling. (Figure 5). The schooling groups of 6 grades or less, 7 to 9 grades, and 10 grades or over, were used since relatively few Negro homemakers had more than 10 grades of schooling. But about the same percentage of families of white homemakers with college training as with the tenth grade or more schooling had milk products in amounts recommended by nutrition specialists.

There were only 30 Negro husbands with schooling beyond the 6th grade. There was no difference in the percentage of these families having suggested amounts of milk products and those in which the husband had less schooling. The percentage of white families having milk products in recommended amounts by schooling of husband was similar to that by schooling of homemaker.

Practically all Negro families with low cash expenditures per capita per

meal had less than recommended amounts of dairy products as is shown:

Per capita per meal food expense	Percent of families with recommended amounts dairy products	
	White families	Negro families
Less than 20c*	55	16
20 - 39c	64	54
40c and over	71	73

* Difference in white and Negroes is highly significant.

SOME FACTORS AFFECTING PURCHASE OF WHOLE MILK

Data in this section of the bulletin are limited to the 331 users of purchased whole milk and to the 60 not using whole milk from any source whatsoever. In Table 6 partial regression coefficients and their standard errors between quarts of purchased whole milk used and four variables for both white and Negro families in the two larger towns (Amory and Belzoni) and the two smaller towns (Okolona and Inverness) are shown. In both white groups there was a highly significant relationship in amount of purchased whole milk used and household size. The relationship between these two was, however, not significant for Negroes in either area. This difference in whites and Negroes is no doubt related to the fact that many of the large Negro families were low income families.

In the Amory and Belzoni Negro group there was a significant relationship in amount of purchased whole milk used and income. The relationship between purchased milk used and income in Negro families of Okolona and Inverness was not significant.

Table 5. Percentage of white and Negro families having milk products in recommended amounts* by size of household report week, November-December, 1954.

Race	Number members in household			
	Less than 2	2.0 - 3.9	4.0 - 5.9	6.0 and over
No. families in group				
White**	21	153	49	11
Negro	20	88	34	29
Percent of families having suggested amounts milk products				
White	76	68	55	18
Negro	70	40	6	0

*90% or more than recommended amounts.

**Two Chinese families classified with white families.

However, this relationship approached significance.¹⁶ A significant relationship might have been shown with a larger number of family records.

Only among Okolona and Inverness white families was the relationship in price paid per quart for whole milk and amount used found significant. Here too the quarts of other fluid milk plus canned and dried milk equivalent used decreased significantly as amount of whole milk used increased. In none of the four groups (whites and Negroes in larger and smaller towns) were multiple correlation coefficients greater than .501. This means that the partial regression coefficients did not estimate the amount of milk consumed with the desired degree of accuracy for practical prediction purposes.

The amount of whole milk used is undoubtedly a rather involved thing. Family background, experiences, tastes may play a more important role than such factors as price and income.

DIFFERENCES IN AMOUNTS OF PURCHASED WHOLE MILK USED IN LOWER AND HIGHER MILK-PRICE TOWNS

In Amory and Belzoni pasteurized whole milk (not including the Golden Guernsey) sold for 24 and 25 cents in

46 of the 49 food stores. In three stores it sold for 26c. In Okolona and Inverness it sold for 22 and 23 cents in 26 of the 28 food stores and for 24 cents in two.

Table 18 in the Appendix shows the relationship of the price of milk per quart in the area to the amount of purchased milk used by white and Negro families holding income constant. In no instance either for white families at lower and higher income levels or for Negro families at lower and higher income levels were relationships of amount used and price found statistically significant.

SUMMARY

It was the purpose of this study to determine kinds and amounts of dairy products consumed by representative families in four towns of the Prairie and Delta Areas of Mississippi, and factors affecting consumption of these. Data were obtained from 405 families and from owners or managers of 90 food stores in the four towns.

Findings of this study may be briefly summarized as follows:

Usual drink at and between meals

At all meals and seasons there were relatively more adults with a non-milk drink than a milk drink; more children

Table 6. Partial regression coefficients and their standard errors between quarts of purchased whole milk used by white and Negro families during the report week, November-December, 1954, and variable listed below.

Variables	Area and race							
	Amory and Belzoni				Okolona and Inverness			
	107 white		91 Negro		115 white		78 Negro	
	coef. reg.	stand-ard error	coef. reg.	stand-ard error	coef. reg.	stand-ard error	coef. reg.	stand-ard error
Yearly income (reported in logs) ...	2.889	2.145	4.069*	1.579	-3.609	2.474	2.048	1.068
Size of household ...	2.108**	.4009	.3173	.1710	3.270**	.5884	.0651	.1992
Qts. other fluid milk plus canned and dried milk equivalent used report week ...	.0614	.1786	-.05215	.1030	-1.267**	.3488	-.02070	.1281
Price paid per quart report week ...	-.0133	.2335	-.1554	.1350	2.574**	.8152	-.3380	.1702

*Significant at the 5% level.

**Significant at the 1% level.

¹⁶ In a similar analysis of these schedules and schedules of families in another study including in all 1090 families (682 white and 408 Negro), white families at income levels of under \$1000, \$1000-\$1999, and \$2000-\$2999 purchased significantly more whole milk than did Negro families at the same low income levels. But at the \$3000-\$5000 income level there was not a significant difference in amounts of purchased milk used by whites and Negroes. See "Some Factors Affecting the Amounts of Purchased Whole Milk Used by Families" by Dorothy Dickins, Proc. Southern Agri. Workers Assoc., 1956, Marketing Section.

had a milk than a non-milk drink except at noon in summer and between meals.

Frequency of drinking milk

The majority of adults and female children over 6 years did not drink milk

as frequently as once a day. Men had better milk drinking habits than women.

When classified by race, milk-drinking patterns of family members in different areas about the same.

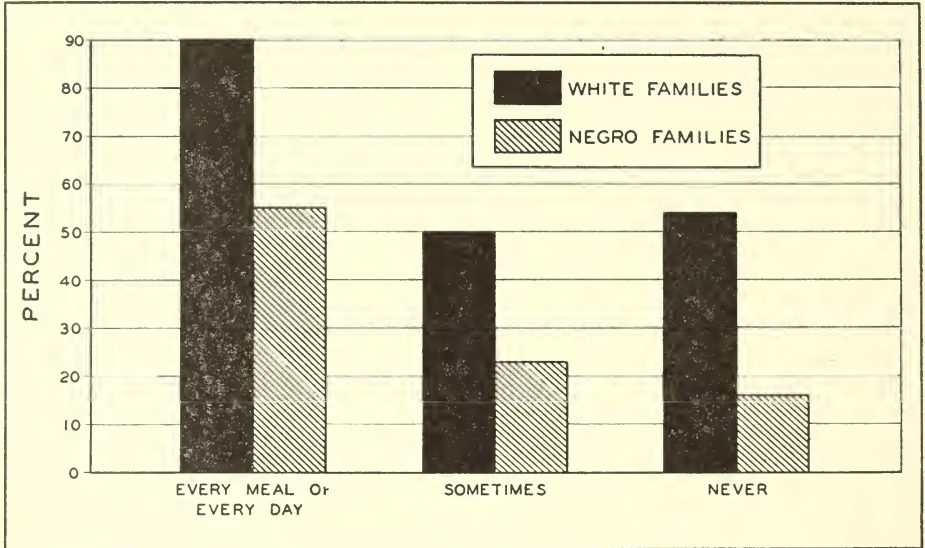


Figure 4. Percentage of white and Negro families having milk products in recommended amounts by frequency of drinking milk of homemaker in these families.

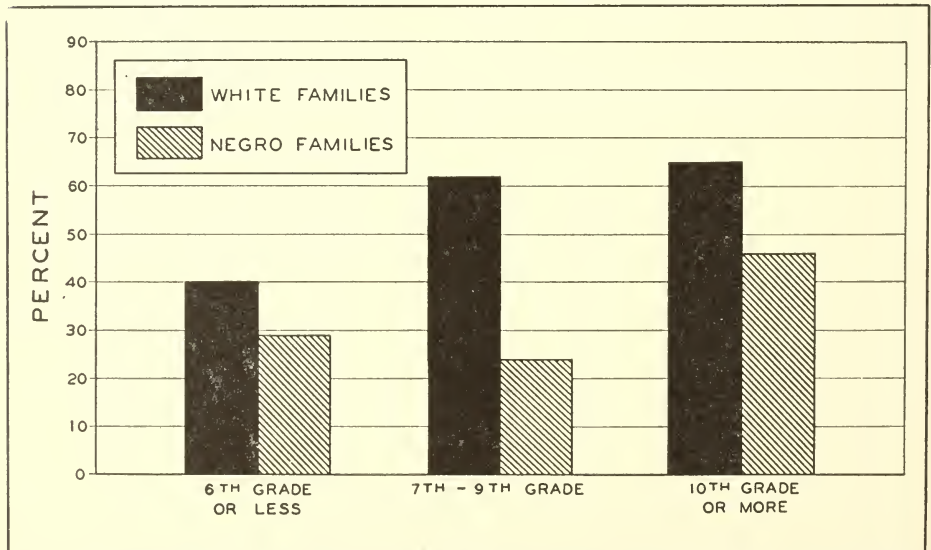


Figure 5. Percentage of white and Negro families having milk products in recommended amounts by schooling of homemaker in these families.

Differences were not found in frequency of drinking fresh fluid milk by husbands, by homemakers, and by other sex-age groups in white and in Negro families in Delta and Prairie Areas and in smaller and in larger towns.

Reasons for not drinking milk

The reason most often given for adults not drinking milk as often as once a day was "do not like," for children "costs too much." "Costs too much" was more often a reason for Negro than white children.

Most fluid milk is used for drinking

An average of 12.2 pints per family (15 for white families, 8 for Negro families) was used during report week for drinking and in infant feeding. This was 73 percent of the total fluid milk used.

Children make a difference in homemaker's milk drinking

Homemakers in families in which all members were adults drank an average of 3.0 pints during the report week; in families in which there were adults and children, 2.0 pints. Consumption of milk of husbands in the two types of families averaged the same.

Canned and dried milk used for drinking by very few

Of the 1401 family members at home during the report week there were only 45 who reported drinking dried milk; only 64 canned milk (the former were mostly by adults, the latter by young children).

Most popular dairy products

These were: sweet homogenized milk, buttermilk, evaporated whole milk, yellow cheese and ice cream.

Amount spent for dairy products

Average expenditures for dairy products used at home per family during the report week were \$2.85. This amount was 16 percent of total expenditures for food at home.

Food stores carried dairy products in stock

Practically all dairy products were carried in stock by one or more stores in each of the towns surveyed. The prices for most dairy products varied

considerably from store to store within a particular town.

Homemaker principal food shopper

Four out of five homemakers did some or all the food shopping.

Most perishable dairy products purchased from a food store

Three-fourths or more of the perishable products were bought from food stores. Only about one-sixth purchased sweet milk and cream from a milk plant or creamery. About one-fifth of the families purchased buttermilk and butter from local producers.

Families with a standing order of milk

Such families buy more milk but standing order families are usually white families of middle or higher income who use more milk anyway.

Frequency of purchase of dairy products

This was determined by comparing size of last purchase and amount used during the week. Thus estimated, whole milk was bought 4 or 5 times a week; buttermilk 2 times; canned and dried milk and ice cream in amounts larger than used in a week; other dairy products in about the same amounts as used in a week.

Cartons were favorite containers for milk

Most homemakers purchased milk in cartons and preferred cartons. Most preferred the quart size container.

Majority of homemakers name milk as food a family should have every day

Eighty percent named milk as one of the foods a family should have every day, but only one-fifth named milk first.

Milk especially recognized for its vitamins

When asked what milk has in it, 49 percent of the women replied vitamins, 35 percent fats, butter and/or cream; 30 percent protein, and 26 percent calcium.

Food store promotion of dairy products

About two-thirds of the managers or owners of the 90 food stores reported some type of promotion of dairy products. The promotion by the largest number was showing placards or post-

ers by dairies, ice cream suppliers, manufacturers of canned and dried milk and cheese. But about one-half originated promotional work themselves.

New dishes with dairy products tried by homemakers

The source for suggestion of a new dish most often came from friends and from recipes in magazines, newspapers and cook books.

One-fourth of the homemakers remembered dairy products advertisements

Only 17 percent of those remembering advertisements said the advertisement had caused them to use more.

Quarts of fluid milk equivalent used and amounts compared with recommendations of nutrition specialists

Quarts of fluid milk equivalent (based on protein and calcium content) used per capita averaged 4.01. About two-thirds of the white families and one-third of the Negro families had amounts recommended for families of their composition. At the \$2000 to \$2999 income level there were significant differences in whites and Negroes receiving recommended amounts of fluid milk equivalent.

When classified by race, consumption of dairy products in different areas about the same.

The average per capita consumption of quarts of fluid milk equivalent of white and of Negro families in the Prairie and Delta areas and in the larger and smaller towns was about the same.

Factors affecting having recommended amounts of milk products

More families received milk products in recommended amounts when the homemaker drank milk every day. More families had recommended amounts of milk products when the homemaker had 10th grade or more schooling.

Of those families who had less than half the recommended quantity of milk products three-fourths were families with children. There was a significant negative relationship in amounts of dairy products and household size.

Chi square tests showed no association between having recommended

amounts of milk products and income nor between having recommended amounts of milk products and socio-economic score for white families. Nor was there an association between income and having recommended amounts of these products for Negro families. But there was a high association between having recommended amounts and socio-economic score for Negro families.

More white than Negro families spending less than 20 cents per capita per meal for food had dairy products in recommended amounts.

Factors affecting amounts of purchased whole milk used

Some statistical relationships between quarts of purchased whole milk per household and 4 variables (income, household size, amounts of other kinds of milk used and price paid per quart for whole milk) among white and Negro families in smaller and larger towns were found. But multiple regression coefficients between purchased milk and the 4 variables in none of these four groups were great enough for prediction purposes.

IMPLICATIONS OF THE STUDY

What seem to be the implications of this study for home economists and other education specialists, for the dairy industry and for humanitarian agencies? Some implications for home economists and other education specialists are:

(1) Since about one-half of all the milk products used was in the form of fluid milk as a drink, this is the form and use that might be stressed, especially among consumers using small amounts of milk products.

(2) Since milk products other than fluid milk (as canned milk, dried milk, cheese, and ice cream) made up only about one-third of the total milk equivalent it might be well to give increased emphasis to the value of such products as well as information concerning conversion into quarts of equivalent milk in order that families

can check use against amounts recommended by nutritionists.

(3) Since consumption of milk products by Negro families was very low, ways and means of increasing their consumption need to be developed.

(4) The homemaker of the family is the person on whom milk expansion programs should be especially centered because: (a) she does all or at least part of the food shopping in most families; (b) her milk drinking habits seem related to the total consumption of milk products by her family; (c) her milk consumption was usually lower than other members of the family.

(5) The possibility of shopping around for milk products should be pointed out since price seems to vary considerably from store to store within a particular town.

(6) Appeals other than the nutritional value of milk products should be sought. Most homemakers name milk as a food their family should have every day and know something about the nutritional value of milk.

It should be of special concern to the dairy industry that many adults report not liking the taste of milk, that owners and managers in grocery stores most often mentioned as a way to increase use of milk—improve its quality. The fact that Golden Guernsey milk can sell at a 3-cent differential shows that consumers value quality in milk. On the other hand, it may be that there are many adults who have not

tasted modern homogenized milk; many who associate taste of milk with milk they had as a child. Some means of getting such adults to taste modern milk need to be devised.

This study shows the desirability of assisting grocers in merchandizing of dairy products, including furnishing of appropriate promotional material.

With an increasing number of families having refrigerators with a freezing section and home freezers, there might well be more promotion of the one-half gallon container of ice cream.

It would seem that two quarts of milk fastened together with an easy-to-carry handle would meet greater consumer acceptance than the one-half gallon container.

Factors other than nutritional value are important also in purchase of milk. More attention needs to be given to decision-making processes as related to the purchase of dairy products.

This study points up the need for working with home economists to see that recipes in newspapers, magazines, cook books, fully utilize dairy products. It also shows the need for more promotion programs directed towards adults, especially towards women.

This analysis shows that there are large numbers of low income Negro families and large numbers of families with children who use relatively small amounts of milk products per person. Some form of government subsidy might well be offered these groups.

APPENDIX
Socio-economic Scale

Col. No.		Encircle score	
1.	Do you have a TV set?	Yes	2
		No	0
2.	Do you have a radio?	Yes	2
		No	0
3.	Do you have a telephone?	Yes	2
		No	0
4.	Do you have a home freezer?	Yes	2
		No	0
5.	What kind of refrigerator do you have?	Electric, Gas or Kerosene	2
		Ice	1
		Other or none	0
6.	Do you have an automobile or truck?	Yes	2
		No	0
7.	Do you take a newspaper?	Daily paper	2
		Weekly paper	1
		Neither	0
8.	Does homemaker read regularly paper or magazine with a food section?	3 or more	2
		1 or 2	1
		None	0
9.	Do family members participate in one or more organizations?	All members 6 years and over in 1 or more organizations other than church	2
		Part members 6 years and over in 1 or more organizations other than church	1
		All or part in church only or in no organizations	0

TOTAL SCORE - _____

Table 1. Percentage of families having specified scores in socio-economic scale by socio-economic group classification.*

Col. No.	score	Socio-economic groups				
		0 - 3	4 - 6	7 - 10	11 - 14	15 - 18
T.V.	2	0	1	9	26	85
	0	100	99	91	74	15
Radio	2	71	94	98	99	100
	0	29	6	2	1	0
Telephone	2	0	9	51	95	100
	0	100	91	49	5	0
Home freezer	2	0	1	6	20	72
	0	100	99	94	80	28
Refrigerator	2	9	82	92	99	100
	1	64	14	7	1	0
	0	27	4	1	0	0
Auto or truck	2	2	34	60	91	100
	0	98	66	40	9	0
Newspaper	2	0	9	61	89	100
	1	2	2	7	4	0
	0	98	89	32	7	0
Food section	2	0	0	3	22	58
	1	4	16	40	64	38
	0	96	84	57	14	4
Organizations	2	0	8	7	30	62
	1	4	21	34	41	38
	0	96	71	59	29	0
Total families		45	80	108	112	60

*Ten percent of the families had less than 2 members in household during report week, 60 percent from 2.0 - 3.9 members, 20 percent from 4.0 - 5.9 members, and 10 percent 6 or more members; no husband and 2 percent of the homemakers were under 20 years; 32 percent of the husbands, 40 percent of the homemakers were 20 - 39 years, 44 percent of the husbands and 42 percent of the homemakers were 40 - 59 years and 24 percent of the husbands and 16 percent of the homemakers were 60 years and over. In 17 percent of the families there was no husband.

Thirty percent of the husbands and 24 percent of the homemakers had 6 grades schooling or less, 30 percent of the husbands and 35 percent of the homemakers had completed from 7 - 11 grades, 38 percent of the husbands and 41 percent of the homemakers had a high school education or more, 23 percent of the husbands and 22 percent of the wives had schooling in addition to high school. In 17 percent of the families there was no husband. In 2 percent of the families the schooling of the husband was not reported.

Table 2. Usual drink of adults in the 232 white and 171 Negro families at and between meals by season.

Meal and season	Usual drink							
	Nothing		Milk only		Non-milk only		Milk and non-milk	
	White	Negro	White	Negro	White	Negro	White	Negro
	%	%	%	%	%	%	%	%
Breakfast								
Winter	1	12	1	4	88	76	10	8
Summer	1	17	2	4	85	66	12	13
Noon Meal								
Winter	8	40	11	16	52	29	29	15
Summer	2	29	3	5	81	54	14	12
Evening meal								
Winter	6	36	24	21	32	21	38	22
Summer	6	33	15	11	52	42	27	14
Between-meals								
Winter	16	58	2	2	70	38	12	2
Summer	13	38	1	1	76	59	10	2

Table 3. Usual drink of children in the 140 white and 102 Negro families with children at and between-meals by season.

Meal and season	Usual drink							
	Nothing		Milk only		Non-milk only		Milk and non-milk	
	White	Negro	White	Negro	White	Negro	White	Negro
	%	%	%	%	%	%	%	%
Breakfast								
Winter	4	22	64	50	22	22	10	6
Summer	4	36	63	33	25	25	8	6
Noon meal								
Winter	6	34	71	41	16	18	7	7
Summer	1	24	38	24	55	46	6	6
Evening meal								
Winter	4	32	80	51	11	12	5	5
Summer	4	30	58	31	32	33	6	6
Between meals								
Winter	16	51	25	19	52	25	7	5
Summer	9	32	13	12	73	49	5	7

Table 4. Frequency of drinking fresh fluid milk by members of the 232 white families in four towns, Mississippi.

Family members	Total No. members	Every meal	Every day	Sometimes	Never	Total
		%	%	%	%	%
Husbands	212	8	45	34	13	100
Homemaker	232	3	32	38	27	100
Other adults, family members	67	8	42	37	13	100
Males under 6	45	56	29	6	9	100
Males 6 - 12	48	33	50	15	2	100
Males 13 - 15	21	0	86	9	5	100
Males 16 - 19	21	14	76	10	0	100
Females under 6	44	39	34	11	16	100
Females 6 - 12	50	24	58	12	6	100
Females 13 - 15	15	7	40	46	7	100
Females 16 - 19	14	0	64	22	14	100

Table 5. Frequency of drinking fresh fluid milk by members of the 171 Negro families in four towns, Mississippi.

Family members	Total No. members	Every meal	Every day	Sometimes	Never	Total
		%	%	%	%	%
Husbands	122	2	26	52	20	100
Homemakers	170	1	25	59	15	100
Other adults, family members	72	4	24	55	17	100
Males under 6	51	15	24	35	26	100
Males 6 - 12	47	2	30	68	0	100
Males 13 - 15	15	7	20	60	13	100
Males 16 - 19	16	0	38	56	6	100
Females under 6	59	12	29	37	22	100
Females 6 - 12	53	6	9	77	8	100
Females 13 - 15	20	10	25	60	5	100
Females 16 - 19	14	0	14	79	7	100

Table 6. Percentage of white family members drinking fresh fluid milk at home and average amount drunk by those drinking, report week, November-December, 1954.

Family members	Total No. families	Percent who drank fresh fluid milk	Average amount drunk by members (pts.)
Husbands	212	73	6.5
Homemakers	232	59	4.2
Other adults, family members*	64	69	5.2
Males under 6	45	87	9.2
Males 6 - 12	48	98	7.2
Males 13 - 15	21	95	7.4
Males 16 - 19*	18	100	8.2
Females under 6	44	77	8.0
Females 6 - 12	50	92	6.0
Females 13 - 15	15	93	4.2
Females 16 - 19**	10	70	5.0

*3 persons absent during report week.

**4 persons absent during report week.

Table 7. Percentage of Negro family members drinking fresh fluid milk at home and average amount drunk by those drinking report week, November and December, 1954.

Family members	Total No. families	Percent who drank fresh fluid milk	Average amount drunk by members (pts)
Husbands	122	62	4.0
Homemakers	170	63	3.3
Other adults, family members*	69	48	3.0
Males under 6	51	57	3.0
Males 6 - 12	47	81	2.8
Males 13 - 15	15	73	3.0
Males 16 - 19**	15	67	4.2
Females under 6	59	69	4.0
Females 6 - 12	53	79	2.6
Females 13 - 15	20	80	2.8
Females 16 - 19***	13	77	1.8

*3 persons absent during report week.

**1 person absent during report week.

***2 persons absent during report week.

Table 8. Percentage family members eating one or more meals not from family supply, average number of meals for those away and total pints fresh fluid milk drunk away during report week, November-December, 1954.

Family members	Total number families	Percent eating 1 or more meals away	Average No. meals for those away	Total pints drunk not home supply
Husband	336	36	3.7	17.5
Homemaker	404	34	3.9	19.0
Other adults, family members	133	32	5.3	3.0
Males under 6	98	17	2.7	4.5
Males 6 - 12	96	39	4.0	53.5
Males 13 - 15	36	39	3.4	13.0
Males 16 - 19	34	50	6.2	24.0
Females under 6	104	14	2.6	4.5
Females 6 - 12	103	41	3.9	56.0
Females 13 - 15	36	37	4.7	16.5
Females 16 - 19	23	30	3.9	2.5

Table 9. Frequency of use of dairy products and source, amounts, and cost of those used during the week preceding the interview, 405 families, Mississippi towns.

Product	Used	Not past	Not past	Never	Number families using past week	Source (No.)			Average used by those using	Average expense per family buying
	past week	week but year	year but have used	used		B	HP	O		
	%	%	%	%					Dollars	
Fresh fluid milk										
Sweet homogenized	75	17	4	4	304	303	—	1	7.4 qts.	1.75
Sweet pasteurized	6	46	37	11	24	24	0	0	6.5 qts.	1.53
Sweet whole raw	7	23	47	27	20	18	6	5	7.6 qts.	1.21
Sweet skimmed	4	5	16	79	2	1	0	1	5.0 qts.	1.02
Buttermilk (sour)	63	28	7	2	254	237	1	16	3.1 qts.	.46
Chocolate milk or drink	4	38	17	41	15	15	0	0	1.7 qts.	.40
Fresh cream										
Whipping	11	52	9	28	46	43	1	2	1.7 (½ pt.)	.52
Coffee cream	*	9	9	82	2	2	0	0	2.0 (½ pt.)	.42
Half and Half	4	10	6	80	16	16	0	0	1.5 pts.	.37
Canned milk										
Evaporated whole	48	37	9	6	194	193	—	1	38.6 oz.	.41
Evaporated skirn	1	1	1	97	3	3	—	0	13.3 oz.	.08
Condensed	5	62	15	18	22	22	—	0	17.3 oz.	.35
Dry milk										
Skirn, non-fat	15	27	13	45	62	59	—	3	12.4 oz.	.28
Cream	1	8	3	88	4	4	—	0	1.5 oz.	.14
Malted	1	7	3	87	3**	3	—	0	.2 oz.	.38
Cheese										
Yellow	62	36	1	1	252	251	0	1	9 lbs.	.55
Cottage	5	36	11	48	20	20	0	0	1.03 pts.	.32
Cream cheese	4	45	9	4	16	16	—	0	6 oz.	.31
Spread	4	39	6	51	15	15	—	0	4.5 oz.	.20
Frozen										
Ice cream	32	66	1	1	129	128	—	1	1.6 qts.	.75
Sherbet	2	65	10	23	10	10	—	0	.96 qts.	.48
Ice milk	3	28	4	12	12	12	—	0	1.25 qts.	.38
Butter	28	36	28	8	115	95	4	16	.83 lbs.	.59

*Less than .5%.

**One family used in addition two pounds of dried milk formula.

Table 10. When specified dairy products used during past year were most used.

Dairy product	No. using past year	Percent reporting used most		
		In winter	In summer	No difference
Fluid milk				
Sweet homogenized	373	13	10	77
Sweet pasteurized	211	4	6	90
Sweet whole raw	123	6	6	89
Sweet skimmed	22	9	5	86
Buttermilk	370	6	5	89
Chocolate milk	168	8	20	72
Fresh fluid cream				
Whipping cream	266	11	24	65
Coffee cream	40	18	5	78
Half and Half	55	9	7	84
Canned milk				
Evaporated whole	342	6	9	85
Evaporated skim	9	0	22	78
Condensed	271	7	23	70
Dry milk and cream				
Skim, non-fat	177	4	7	89
Dry cream	37	5	8	86
Cheese				
Yellow	393	7	4	89
Cottage	167	2	22	75
Cream	196	7	14	80
Frozen				
Ice cream	394	0	81	19
Sherbet	271	0	92	8
Ice milk	124	2	82	17
Butter	259	5	4	91

Table 11. Per family weekly consumption of milk and its products by families in this study compared with findings from some other studies where similar data were obtained.

Dairy products	Miss. 4 towns 1954 Nov., Dec.	Miss. ¹ farm families Delta, 1948	Va. ² Danville 1954	USDA ³ Birming- ham 1948	North ⁴ Carolina Urban 1950	South ⁵ Carolina open country families, 1955
Whole sweet milk, qts.	6.48	4.54	6.57	4.31	6.69	7.54
Buttermilk, qts.	1.94	7.83	1.86	2.04	1.69	4.68
Evaporated milk, lbs.	1.16	1.24	2.62	2.28	3.15	4.88
Dry milk, lbs. ....	.12	.01	.06	.18	—	.14
Cheese (excludes cottage) lbs. ....	.59	.23	.59	.68	.54	.67
Butter, lbs. ....	.24	1.05	.58	.28	.75	.92

¹ Moser, Ada, et al. Family Food Consumption in Three Types of Farming Areas of the South II. An Analysis of Weekly Food Records, Late Winter and Early Spring, 1948. Southern Cooperative Series Bulletin 20, November 1951.

² Dean, Willamay, et al. A Study of the Marketing & Use of Dairy Products and Some Influencing Factors. Va. Agri. Exper. Sta. Bull. (in press) 1956.

³ U. S. Department of Agriculture: Family Food Consumption in Birmingham, Alabama, Winter 1948. FE 685, 1948 Food Consumption Survey, Preliminary Report No. I, Nov., 1948.

⁴ Cotton, Walter P. Consumption of Dairy Products in Urban North Carolina, N. C. Agri. Exper. Sta. Bull. No. 371, pg. 8, August 1950.

⁵ Moser, Ada, et al. Foods Used by Open Country Families York County South Carolina. S. C. Agri. Exper. Sta. Bull. 428, June 1955.

Table 12. Grocery stores in which the 405 families had bought some food during the past week and grocery stores which were the major source of the food supply by distance from home and nearness to work, whether credit or delivery used, classified by area and race.

Item	Larger towns		Smaller towns		
	White families	Negro families	White families	Negro families	Chinese families
No. families	112	91	120	80	2
Total No. groceries named	267	153	195	108	2
Average No. per family named	2.38	1.68	1.63	1.35	1.00
Description of the groceries named					
Location*	%	%	%	%	No.
Less than 1 mile or 8 blocks	85	91	54	57	2
1.0 - 2.0 miles, or 8 to 16 blocks	1	7	41	42	0
2.1 miles or more; or 17 or more blocks	14	2	4	1	0
Used credit	19	49	30	42	0
Used delivery	7	4	25	16	0
Near work	4	1	4	4	1
No. families who named 1 major source of food supply	105	88	104	79	2
Description of the major source of food supply					
Location*	%	%	%	%	No.
Less than 1 mile or 8 blocks	83	87	45	64	2
1.0 - 2.0 miles, or 8 to 16 blocks	1	7	39	35	0
2.1 miles or more; or 17 or more blocks	15	3	2	0	0
Used credit	30	57	32	55	0
Used delivery	7	4	24	19	0
Near work	7	1	3	5	1

*In 2 stores named by white smaller town families no report is given as to distance.

Table 13. Replies of homemakers when asked what milk has in it.*

What milk has in it	Larger towns		Smaller towns**	
	White families	Negro families	White families	Negro families
Vitamins; all the vitamins	37	55	48	63
Fats, butter, cream	44	13	48	28
Calcium or lime	50	4	43	9
Protein	31	12	39	22
Water; mostly water	24	12	38	29
Don't know	5	12	6	19
It's nutritious; lots of food value	11	4	9	10
Minerals	11	2	3	9
Derogatory statements***	0	13	0	1
Builder of bones and teeth	9	0	1	3
Iron	3	1	3	5
Energy and strength	3	1	3	1
Vitamin D	5	2	0	0
Vitamin B	2	1	2	1
Value for building; everything for growing	4	0	0	1
Glucose; sugar	1	2	0	2
Vitamin A	1	2	1	0
Vitamin C	1	0	2	0
Starches	1	0	1	0
Calories; 67 calories	1	0	1	0
Milk powder; milk	1	1	0	0
Carbohydrates	0	0	1	0
McMillan's feed	0	0	1	0
Grade A more sanitary	0	0	1	0

*Will not add up to 100% since some gave more than one reply.

**The two Chinese families replied "fats, butter, cream" and "It's nutritious—lots of food value."

***Germs, bacteria, worms.

Table 14. Average per capita consumption of fluid milk equivalent report week of Prairie and Delta town families, November-December, 1954.

Per capita consumption	Prairie towns		Delta towns	
	White	Negro	White	Negro
Less than 2 quarts	8	29	4	35
2.0 - 3.9 quarts	33	40	44	39
4.0 - 5.9 quarts	29	17	31	18
6 quarts and over	30	14	20	8
Number families	138	63	97	108

Table 15. Per capita consumption of dairy products (fluid milk equivalent) during report week of white and Negro families by income, November-December, 1954.

Per capita dairy consumption	Net income							
	Under \$1000		\$1000 - \$2499		\$2500 - \$3999		\$4000 and over	
	White	Negro	White	Negro	White	Negro	White	Negro
Less than 2 qts.	No.* 2	% 32	% 11	% 35	% 4	% 28	% 4	No.* 0
2.0 - 3.9 qts.	5	40	41	41	29	22	40	1
4.0 - 5.9 qts.	1	15	24	14	39	28	29	4
6.0 and over	1	12	24	10	28	11	27	0
Total No.	9	65	37	83	69	18	119	5

*Numbers only are shown since less than 10 cases.

Table 16. Relation of net income to percentage of recommended amounts of milk products received (chi square tests).

Percentage of recommended amounts	Under \$2000		\$2000 - \$2999		\$3000 & over		Total families	
	No. families White	No. families Negro	No. families White	No. families Negro	No. families White	No. families Negro	No. families White	No. families Negro
Under 50%	6	50	3	8	12	2	21	60
50 - 89%	9	40	7	15	48	5	64	60
90 - 109%	3	9	7	1	28	1	38	11
110% and over	11	27	21	8	79	5	111	40
Total	29	126	38	32	167	13	234	171

- (1) White families 3 income levels
 $X^2 = 8.2682$
 $P .3 - .2$ (No assoc.)
- (2) Negro families 3 income levels
 $X^2 = 7.0161$
 $P .5 - .3$ (No assoc.)
- (3) White and Negro families 3 income levels
 $X^2 = 53.1755$
 P less than .01 (highly significant)
- (4) White and Negro families under \$2000
 $X^2 = 5.2951$
 $P .2 - .1$ (No assoc.)
- (5) White and Negro families \$2000 - \$2999
 $X^2 = 15.1084$
 P less than .01 (highly assoc.)
- (6) White and Negro families \$3000 and over
 $X^2 = 2.2470$
 $P .7 - .5$ (No assoc.)

Table 17. Relation of socio-economic score of white families to percentage of recommended amounts of milk products received (chi square tests).

Percentage of recommended amounts	6 and under		7 - 10		11 - 18		Total	
	No. families White	No. families Negro	No. families White	No. families Negro	No. families White	No. families Negro	No. families White	No. families Negro
Under 50%	3	50	7	10	11	0	21	60
50 - 89%	3	35	17	20	44	5	64	60
90 - 109%	1	6	10	4	27	1	38	11
110 and over	6	21	26	14	79	5	111	40
Total	13	112	60	48	161	11	234	171

- (1) White families 3 socio-economic levels
 $X^2 = 5.2091$
 $P .7 - .5$ (No assoc.)
- (2) Negro families 3 socio-economic levels
 $X^2 = 15.5504$
 $P .02 - .01$ (highly assoc.)
- (3) White and Negro families 3 socio-economic levels
 $X^2 = 70.2931$
 P less than .01 (highly significant)
- (4) White and Negro families 6 and under
 $X^2 = 5.6841$
 $P .2 - .1$ (No assoc.)
- (5) White and Negro families 7 - 10
 $X^2 = 5.6777$
 $P .2 - .1$ (No assoc.)
- (6) White and Negro families 11 - 18
 $X^2 = 2.3404$
 $P .7 - .5$ (No assoc.)

Table 18. Relation of the price of milk per quart in most groceries to amount of purchased milk used by white and Negro families classified by income. (chi square tests).

(a) WHITE FAMILIES

Milk prices in most groceries*	Income under \$4000		
	10 quarts or less	More than 10 quarts	Total
	No. families	No. families	No. families
24 - 25	37	14	51
22 - 23	47	18	65
Total	84	32	116

 $X^2 .0325$

P .95 - .90 (no association)

(b) WHITE FAMILIES

Milk prices in most groceries*	Income \$4000 and over		
	10 quarts or less	More than 10 quarts	Total
	No. families	No. families	No. families
24 - 25	41	20	61
22 - 23	30	27	57
Total	71	47	118

 $X^2 2.0412$

P .20 - .10 (no association)

(c) NEGRO FAMILIES

Milk prices in most groceries*	Income under \$1300		
	4 quarts or less	More than 4 quarts	Total
	No. families	No. families	No. families
24 - 25	32	8	40
22 - 23	36	8	44
Total	68	16	84

 $X^2 .004387$

P .95 - .90 (no association)

(d) NEGRO FAMILIES

Milk prices in most groceries*	Income \$1300 and above		
	4 quarts or less	More than 4 quarts	Total
	No. families	No. families	No. families
24 - 25	36	15	51
22 - 23	25	11	36
Total	61	26	87

 $X^2 .01580$

P .95 - .90 (no association)

*The price level of 24 - 25 cents per quart was in Belzoni and Amory; that of 22 - 23 cents in Okolona and Inverness. Data was collected in November and December of 1954.