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*Milk
Marketing*

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**A STUDY OF FLUID MILK DISTRIBUTION
IN FARIBAULT, MINNESOTA**

by

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A STUDY OF FLUID MILK DISTRIBUTION IN FARIBAULT, MINNESOTA

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Introduction

One reason why prices of milk delivered to consumers are as high as they are is that delivery costs are high. One way of reducing these costs is that of reducing the amount of services involved per quart of milk. Less frequent deliveries with larger amounts per stop provide a way of accomplishing this. Every other day delivery instituted during the war was a move in this direction. Another aid to this end is that of housewives taking more units per delivery. Quantity discounts for additional units of milk products purchased provide an incentive to do so.

A study of a plan of quantity discount pricing of milk in Faribault was undertaken by the Department of Agricultural Economics to obtain information regarding such a plan. Faribault was selected because plans were in the making to introduce such a pricing arrangement there. The present report covers the study made before its adoption. A follow-up study is planned after quantity discount pricing has been inaugurated.

The data presented in this report were obtained by interviewing 200 housewives in Faribault. A carefully planned random sample of 50 clusters each consisting of four households was selected from the 3,712 households listed in Polk's "Faribault Directory of House-

^{1/} The author acknowledges with appreciation the helpful suggestions of R. W. Cox, O. B. Jesness and E. F. Koller (leader of the project) of the Department of Agricultural Economics. Appreciation also is expressed to the milk distributors and the many citizens of Faribault for their generous cooperation in supplying data for this study.

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holders, 1953".

The Faribault Market

The population of Faribault according to the 1950 Census was 16,028 of whom 2,872 were occupants of institutions. The non-institutional population in 1950 was 13,156. The Census also indicated that there were 3,330 families living in Faribault in 1950. There was no accurate figure for either population or number of families for 1953, but presumably both have increased somewhat.

Faribault consumers obtained their milk mainly from four local distributors, Faribault Cooperative Dairy Ass'n., Land-O-Lakes Creameries Inc., Marigold Dairies Inc., and Voegels' Creamery. Purchases of milk were made from retail milk routes, grocery stores, and vending machines. A few consumers bought their fresh milk directly from farmers or produced their own supply. A classification of the immediate source of milk is shown in table 1.

Table 1. Current Sources of Fresh Milk Purchased
By Consumers in Faribault, Minnesota, December, 1953.

<u>Source</u>	<u>Per cent of Total</u>
Milkman (exclusively or nearly so)	45.0
Store (exclusively or nearly so)	28.0
Vending machine, exclusively	5.5
Milkman <u>and</u> store	8.0
Other*	10.0
None (Use no milk)	3.5
Total	100.0

*This category includes those who buy milk from farmers, produce their own, buy milk from milkman and vending machine, buy milk from store and vending machine, buy milk from milkman and farmer, etc.

The daily per capita consumption of fresh whole milk in Faribault is about 0.93 of a pint according to this survey. While this rate of consumption compares quite favorably with the rest of the nation, it is only about half as large as it should be according to

dietary standards determined by the U. S. Department of Agriculture's Bureau of Human Nutrition and Home Economics.

The per capita rate of milk consumption was lowest among the smallest households and it increased as the size of the family increased to about six or seven members. This is to be expected since the proportion of children rises as the size of the household increases. The survey indicates, however, that the largest families (those with more than six or seven members) do not have the highest rate of consumption per capita. Apparently, after families reach a certain size, the pressure on the family budget is such that consumption of milk as well as some other necessities must be limited. Because the milk bill is a large part of the total expenditures as well as a large part of the food expenditures for these large families, it is to be expected that it is these families which would increase their milk consumption if lower prices were available under a quantity discount pricing plan.

It was found that about 75 per cent of the population of Fari-bault drank milk. The remaining 25 per cent consisted mostly of adults. However, about five per cent of the children did not drink any milk according to this survey. About 12 per cent of the families drank no milk at all. While evaporated milk and to some extent non-fat dry milk solids may be important substitutes for fresh whole milk in some markets, this is not the case in Fari-bault. About 70 per cent of the families used no evaporated milk and only about five per cent used as much as half of a large can ($14\frac{1}{2}$ oz.) per day. About 95 per cent of the families used no non-fat dry milk solids and most of the others used very little.

The Present Method of Pricing Fresh Whole Milk in Faribault

At the time of this survey, the prevailing price for milk was 20 cents per quart whether delivered to the home or purchased at stores. More than 80 per cent of the households bought all or most of their milk from either the milkman or the store.

A few of those who bought from the milkman received it for 19 cents per quart by taking 90 quarts or more per month (in some cases it was necessary to take 120 quarts or more per month to get the 19 cent price). No discount was given for purchase of large quantities at one time. If one took large deliveries but infrequently enough so as not to take 90 quarts per month, he was entitled to no discount. In a few cases milk was obtained at reduced prices as the result of bargaining with the route driver. These quantity discounts were not adequate to reflect differences in the cost of delivery and were available only to those who took 6 quarts or more at a time, on the average, and not to all of these. In practice a few customers who took less than 90 quarts per month received the discount.

Twin quarts of milk were sold by stores in Faribault generally at 39 cents for the pair, or 19.5 cents per quart. Only a few consumers reported buying at this price. Some stores charged 40 cents for twin quarts. The vending machine price was 35 cents for a half-gallon or 17.5 cents per quart. The prices paid by those who bought directly from farmers varied from 10 cents to 16 cents per quart.

The typical Faribault consumer bought two quarts of milk at a time. About one-third of the housewives bought in two-quart lots, one-fourth bought one quart at a time, and one-third bought from

three to five quarts at a time. Less than 10 per cent bought six quarts or more at a time. The average size of purchase for all consumers was 2.8 quarts. Approximately two-thirds of the people bought milk every other day. Even a large portion of those who bought milk from stores preferred to buy every other day. About a sixth bought milk every day and a sixth bought every third day or less frequently than that. Roughly seven per cent of the respondents reported buying milk once a week. One might summarize by saying that the typical housewife bought two quarts of milk at a time and bought every other day.

Quantity Discount Pricing

Quantity discount pricing establishes a schedule of prices per quart or unit which decline with increased size of purchase. It gives the consumer a part in determining her own price. The more milk she is willing and able to take at each delivery the lower the price she is charged. The discount pricing schedule in table 2 illustrates the method with reference to home delivered prices.

Table 2. An Illustrative Schedule of Quantity Discount Prices for Home Delivered Fluid Milk

<u>Size of delivery in quarts</u>	<u>Price in cents per quart</u>
1	26
2	21
3	19 1/3
4	18 1/2
5	18
6	17 2/3
7	17 3/7
8	17 1/4
9	17 1/9
10	17

The consumer who has milk delivered to the home pays for the

milk itself and the delivery services performed. The cost of delivery services is high and is practically the same whether one or several units are delivered. That is, the delivery cost per quart is less where several quarts are delivered at one time than where only one is left.

The price of milk to those who take one-quart deliveries is high because the cost of delivery is high. This cost must be borne by someone. Unless those who take small deliveries pay enough to cover the cost of delivery, those who take larger deliveries have to pay more to make up the difference. However, no one need pay the 26 cent price to have milk delivered. Those who have been taking one quart at a delivery can take two quarts at a time (perhaps less often) and thus receive a price of 21 cents per quart instead of 26 cents. A consumer who cannot use more than one quart at a time can buy at the store if she wishes. Any housewife can reduce the price she pays by taking larger deliveries.

This price schedule is used for illustration purposes only. Use of the method could result in any number of different price schedules but they would all be alike in the sense that, the more a customer buys at a time, the lower the price she would pay.

Each housewife in our sample was shown a copy of this price schedule (see table 2) and asked for her opinion of the pricing method. About 75 per cent of the housewives voiced an opinion and of these 95 per cent favored this quantity discount pricing idea while only five per cent opposed it.

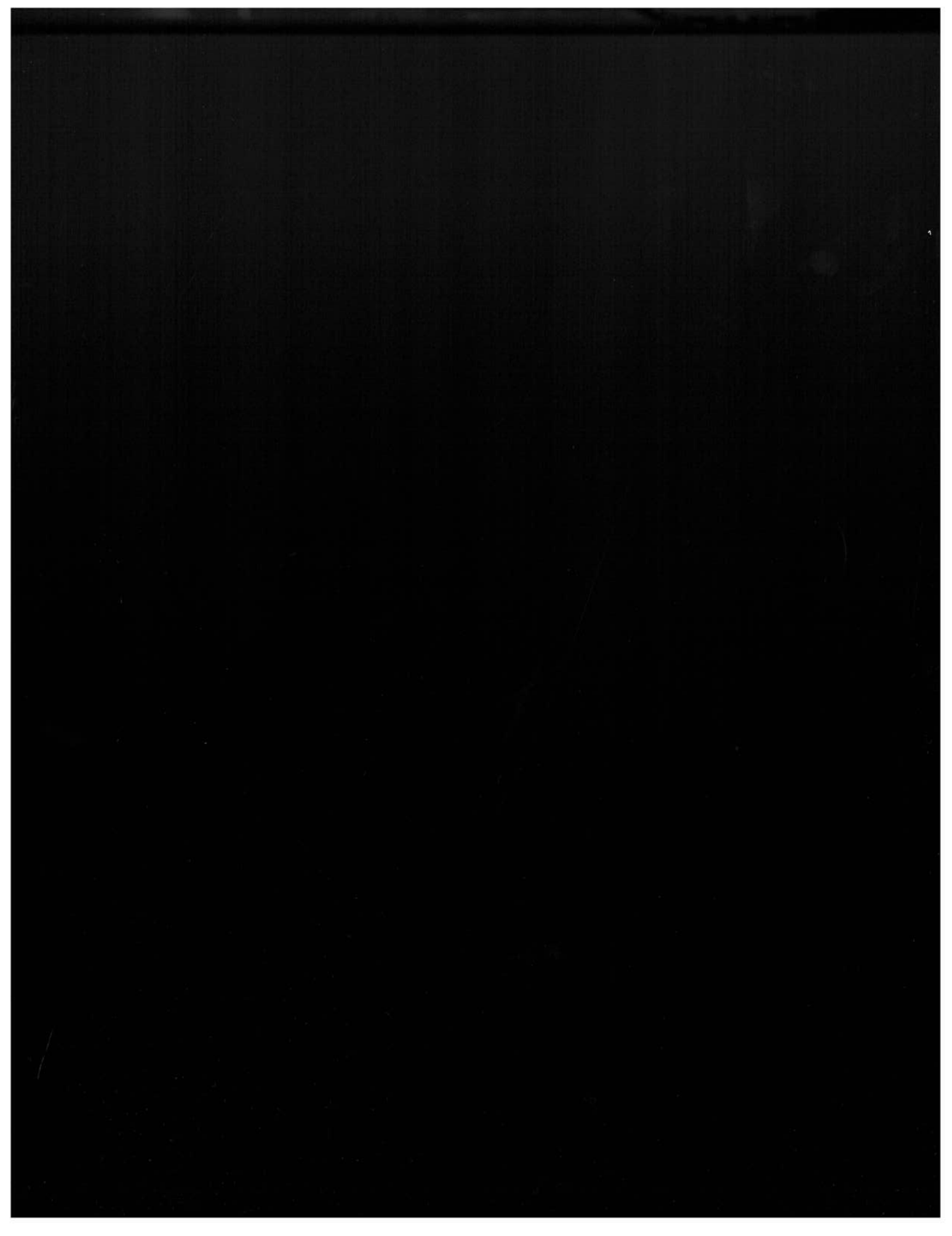
A surprisingly large number of small volume users favored the quantity discount pricing in spite of the fact that they themselves used too little milk to benefit from it. Many of the older couples

indicated that they wished this method had been used when their children were still at home and hoped for the sake of their sons and daughters who now have children that such pricing would be adopted now. About 25 per cent of the housewives expressed no opinion relative to the quantity discount pricing method, largely because they used so little milk that they were not much interested. A summary of answers "favorable", "opposed", and "no opinion" by household size is shown in table 3. It may be observed that a majority of every size of household favored quantity discount pricing.

Table 3. Opinions Expressed Relative to Quantity Discount Pricing of Milk By Families of Faribault, Minnesota, December, 1953.

Opinion Expressed	Family Size						
	1	2	3	4	5	6 or more	All Sizes
				per cent			
Favor	56.0	66.0	71.0	77.0	73.0	86.0	71.0
Opposed	0.0	2.0	7.0	6.0	5.0	0.0	3.5
No Opinion	44.0	32.0	22.0	17.0	22.0	14.0	25.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Before the housewives were shown the quantity discount pricing schedule in table 2, above, they were asked to state the current source of their fresh milk supply. After they were given a copy of the schedule to study, each was asked where she would get her milk supply if she could buy milk delivered at home at prices shown on the schedule. Tabulation and analysis of the answers received indicate that adoption of the quantity discount pricing schedule would cause the number of households which take their milk from the milkman to increase more than 20 per cent, those which would take milk from the store to decrease about 14 per cent, and those which would obtain milk from vending machines to decrease somewhat.



Half of those who bought milk from both the milkman and the store in December said they would buy all their milk from the milkman if they could buy milk at prices shown on the schedule. Table 4 shows the sources from which Faribault families expected to obtain their milk if a system of quantity discount pricing, such as the one shown here, were made available. A comparison of table 4 with table 1 shows the shifts which these families would probably make in their sources of milk.

Table 4. Expected Source of Milk If Quantity Discount Pricing Were Adopted in Faribault, Minnesota*

<u>Source</u>	<u>Per cent of Families</u>
Milkman (exclusively or nearly so)	56.0
Store (exclusively or nearly so)	24.0
Vending machines (exclusively)	4.0
Milkman <u>and</u> store	4.0
Other**	8.5
None (Use no milk)	3.5

*Opinions expressed were based on the assumption that the quantity discount prices used would be those shown in table 2.

**This category includes those who buy milk from both milkman and vending machines, from both store and vending machines, from both milkman and farmer, from farmers, or produce their own.

Advantages and Disadvantages Expected From Quantity Discount Pricing

The advantages expected from quantity discount pricing center around the lower average price. This could reduce costs to consumers. In turn, however, it probably would encourage the use of more milk thereby increasing the volume of business of the milk plants and expanding the market for farmers. Distributors would stand to benefit because increased overall volume would probably reduce processing costs per quart and increased size of deliveries would probably reduce delivery costs per quart. However, distribu-

tors would need to reorganize their delivery systems to reflect the changed work loads to make the advantage to them fully effective.

The disadvantages stem largely from inertia. It is difficult to adopt a different pricing method after an old one has been used over a long period. Many distributors may be concerned about selling at prices below their current prices to those who take large deliveries. It is true that if most customers take larger deliveries in order to get a lower price that total receipts might fall. But so will costs fall after proper adjustments are made. To effect economies in milk distribution it is a desirable goal to have families buy milk in large quantities at a time. This is the principal objective of quantity discount pricing of milk. Larger deliveries help to reduce cost. If the size of the discount is right and adjustments are made in delivery organization, it is believed that cost will fall more than receipts (if receipts do fall), and that net receipts will rise.

In the use of quantity discount pricing, milk sales people especially will be concerned about the loss of sales. Many do not understand that one or two quart deliveries are not profitable to the distributing firm. Unless these customers who take small deliveries pay for the increased service that goes with small delivery, they should either take larger, less frequent delivery or go out to get their milk supply. If there are customers who cannot be kept on the route except they be served at a loss, it would be an advantage to the distributor to have them obtain their milk supply at stores. They are not necessarily lost customers; they may be served indirectly, and profitably through different channels.

The method of paying for milk delivery labor would have to be

overhauled if the quantity discount were adopted. Commissions paid for milk delivery would have to be revised. Routemen could be paid as much as they are now or more and be more secure in the long run.

Unless significant economies are introduced into the door-to-door distribution of fluid milk, it is likely that more and more people will go to stores or vending machines to get their milk supply. It is estimated that more than 70 per cent of the milk sold in New York City and Chicago now is sold through stores. The proportion sold through stores has been increasing all over the country.^{2/} Unless economies are introduced, more and more men currently engaged in distributing milk will have to find employment elsewhere.

The task of overcoming inertia and misgivings of both consumers and milk distributors is a formidable one if the quantity discount plan of milk pricing is adopted. However, the advantages appear to outweigh the disadvantages. The economic gains from making better use of labor and equipment in milk distribution could lead to reduced costs to milk distributors. Some of this saving could be shared with consumers in the reduced price for milk and some with the producer of milk in better returns.

^{2/} See Bressler, R. G., Jr.; City Milk Distribution Harvard University Press, 1952, pp. 377-81. Bartlett, R. W.; "The Behavior of Marketing Margins on Dairy Products", Journal of Farm Economics, Dec., 1952; p. 929. Report of the New York Milkshed Price Committee, Feb. 1949, pages 47 and 63.