

CONSUMER PREFERENCE TOWARD VARIOUS MILK  
CONTAINERS IN EIGHT OHIO MARKETS

By

Glen H. Mitchell

Department of Agricultural Economics and Rural Sociology

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## Consumer Preference Toward Various Milk Containers in Eight Ohio Markets

### Introduction

This publication deals with the preference patterns of consumers toward various types and sizes of milk containers and related aspects. During recent years, there have been a number of changes in packaging - both in sizes and types of milk containers. In some cases, the practice of presenting milk in multi types and sizes of containers has increased both the capital investment and operating expense of the processing plant. It has complicated managerial problems, including handling of labor and machines in the processing line.

Packaging today is not only for protection and convenience in transportation and storage, but is also a medium of selling, differentiating the product, and advertising, particularly in self-service stores. It is not only a production cost, but also a sales cost.

The present economy is often called a marketing economy. The consumer in this opulent period often may be able to demand and obtain various services and product differentiation such as homogenized Jersey milk, home delivered in one-half gallon paper containers.

### Consumer Preference and Acceptance

With the given assumption that the per quart milk price was the same, persons were asked to state which milk container they would prefer.

Consumer preference, as used in this publication, means the individual's desires or wishes for a certain service and/or commodity . . . an ordering among various possibilities . . . which may or may not be presently known or available in the market. Consumer acceptance, as used herein, means the consumer's overt buying action in the market place from the alternatives

available to him. Consumer preference is what persons state they wish or desire, whereas, consumer acceptance is what they actually do.

However, there are a myriad of reasons why these people might operate differently from their stated preference pattern in actual buying conditions. Not the least of these reasons is that a person's purchasing habits tend to be influenced by his previous experience, alternatives available, and knowledge. Merchandising practices in the market, including pricing, are also a factor. It might be noted that expansion of demand for food products often comes from catering to or satisfying consumers previously unfilled desires.

#### Background of Study

Between September, 1954 and April, 1956, over 7400 families were interviewed in Akron, Canton, Cincinnati, Cleveland, Dayton, Ironton, Toledo, and Youngstown. The purpose of this study was to include comparisons of consumer reaction to these various milk distribution systems. A fuller description of both purpose and methodology may be found in research circulars 29 and 42 of the Ohio Agricultural Experiment Station.

These markets vary in population, containers used, per capita consumption of milk, retail milk prices, average family size, and median family income (Table 1).

Table 1

Population, Average Family Size, Median Family Income and Per Capita Consumption in Eight Ohio Markets. 1/

Markets	Population	Average Family Size	Median Family Income	(lbs.)
				Average Per Capita Annual Fluid Milk Consumption <sup>2/</sup>
Akron	66,765	3.34	\$3251.	275
Canton	173,967	3.32	3069.	377
Cincinnati	831,292	3.11	2882.	323
Cleveland	1,383,599	3.31	3446.	359
Dayton	346,864	3.31	3382.	359
Ironton	16,333	3.23	2687.	307
Toledo	364,344	3.23	3556.	366
Youngstown	298,051	3.55	3273.	396

1/ Population, median family income and average family size are for the year 1950 and derived from the U. S. Census.

2/ These figures are derived from the study conducted in 1954-56. These figures include all bottled products - buttermilk, chocolate milk, and skim milk.

Milk prices vary both in cities and between cities. A range of the price in the various marketing areas is shown in Table 2.

Table 2

Range of Published Prices for Regular Standardized Milk in Eight Ohio Markets According to Different Methods of Delivery and Size of Container, 1954-56

Markets	One Quart		Two Quarts		Gallon	Date of Study
	Store	Home	Store	Home	Store	
Akron	20-21¢	21¢	32-36¢	36-38¢	61-62¢	Sept, Oct, 1954
Canton <sup>3/</sup>	17-22	22	33-45	40	65	February, 1956
Cincinnati <sup>3/</sup>	21-24	22-24	40-42	44-47	74	November, 1955
Cleveland	19-22	20-21	31-28	37	58	Mar, Apr., 1955
Dayton	19-21	21	35-41	41	65	Jan, Feb., 1955
Ironton	23	22-24	44-46	43-46	83	November, 1954
Toledo	19-22	22	24-44	44	79	January, 1956
Youngstown <sup>3/</sup>	18-23	23-24	33-40	39-42	71	Mar, Apr, 1956

3/ Homogenized price 1¢ a quart higher than standardized milk by most dairies.

The extent of usage of different container sizes and types in which milk <sup>4/</sup> is sold in these cities vary considerably. For example, the gallon jug was available in stores in all marketing areas, but the gallon jug's sales was quite small in all areas except Akron, Cleveland, Canton, and Youngstown. Part of the difference can be accounted for by the number of stores offering the gallon jug by price differential between the gallon and other containers, whether the containers can be sold legally in the city or country, and the merchandising methods employed by the various companies. <sup>5/</sup> In some instances, a particular size or type is not offered, or at least not promoted in home delivery or in store purchases.

Table 3

Per Cent of Total Milk Sold by Different Types and Sizes of Containers in Eight Ohio Cities, 1954-56

Cities	Paper		Glass		Gallon
	1 Quart	2 Quart	1 Quart	2 Quart	
Akron	5.5	13.2	33.9	13.4	34.0
Canton	12.6	1.7	51.5	21.3	12.9
Cincinnati	10.0	11.1	54.7	23.3	0.9
Cleveland	11.3	16.4	50.3	10.1	4.9
Dayton	16.0	14.1	52.5	5.6	1.8
Ironton	42.8	11.9	31.5	11.9	1.9
Toledo	10.6	20.8	63.3	3.8	1.5
Youngstown	4.7	23.0	17.7	50.3	4.3
Average <sup>6/</sup>	14.1	14.0	46.6	17.5	7.8

<sup>4/</sup> With the exception of Table 1, milk as used here includes only regular and homogenized milk sold in containers one quart or larger. Milk as used in this publication does not include buttermilk, chocolate milk, skim milk or other "special" milk.

<sup>5/</sup> Other circulars to be published will deal with other aspects of the distribution systems including the effect of different containers and methods of delivery.

<sup>6/</sup> All cities given equal weight.

Preference

Consumers were asked what container would you prefer if the price per quart was the same. The interviewer then would read off the various size and types of containers. <sup>7/</sup> A small minority expressed no opinion or no preference. (Please note that the previous table was a percent of total volume sold, while the following tables show percent of families.)

With the exception of Youngstown and Canton, the one quart glass is the most preferred container. Youngstown and Canton, the two cities with the highest per capita consumption, preferred the two quart glass containers. It should be noted that in most cities there is a range of preference.

Table 4

Consumers Stated Preference as a Percent of the Families Studied  
in the Particular Market for Type and Size of Milk  
Containers, Eight Ohio Markets, 1954-56

Market	<u>Paper</u>		<u>Glass</u>		Gallon	No Prefer- ences
	1 Quart	2 Quart	1 Quart	2 Quart		
Akron	9.6	17.0	40.6	16.1	12.9	3.8
Canton	22.2	7.7	29.7	20.0	5.8	4.6
Cincinnati	17.9	11.7	49.9	18.5	.6	1.4
Cleveland	22.6	19.0	43.5	10.4	2.2	2.3
Dayton	20.6	13.2	56.9	5.3	2.9	1.1
Ironton	30.8	7.5	43.9	11.0	0.0	6.8
Toledo	16.5	19.1	54.7	3.8	.4	5.5
Youngstown	7.4	23.3	23.3	42.2	1.4	2.4
Average	18.46	14.81	14.81	17.16	3.27	3.48

Present Use

"How Much Effect Does Present Container Use Have?" was the next question asked. From Table 5, it could be concluded that consumers tend to prefer the container that they were presently using. However, in the

<sup>7/</sup> The various types and sizes of containers were rotated in order to nullify any effect of their position in the question.

vast majority of cases, this preference for the container currently being used was far from being one hundred percent. The one quart glass container in the aggregate had the greatest acceptance, but it is first in only four of the eight markets. For all markets, glass one quarts have greater acceptance than similar sized paper containers. However, two quart paper containers have slightly greater acceptance than two quart glass containers by their respective users. For an average of all markets, the gallon jug is preferred less by its users than any other container. This is also true in individual markets, with the exception of Dayton (1st) and Akron (4th). This would give evidence to the hypothesis that persons buy in gallon jugs not because of container preference alone, but because of merchandising practices, economy, availability and other reasons.

Table 5

Percent of Consumers Preferring the Present Container Employed by Individual Market and Individual Type and Size of Container Eight Ohio Markets, 1954-56

Market	Paper Containers		Glass Containers		Gallon	Average
	1 Quart	2 Quart	1 Quart	2 Quart		
Akron	37.4	55.8	68.7	53.8	40.2	51.2
Canton	61.8	62.1	68.6	62.6	52.8	61.6
Cincinnati	61.1	64.0	71.6	74.4	00.0	54.2
Cleveland	55.2	63.0	64.0	49.7	39.1	54.2
Dayton	47.1	58.7	76.1	36.2	82.4	60.1
Ironton	49.3	72.7	68.4	77.0	00.0	53.5
Toledo	37.0	66.5	78.7	50.0	16.7	49.2
Youngstown	41.5	54.5	69.1	77.1	30.4	54.5
Average	48.8	62.2	70.3	60.1	32.7	

Preference by Method of Delivery

The following three tables show preference by three different methods of delivery - (1) store delivery only, (2) home delivery only, and (3) store and at home delivery combined.

By observation, and with the large numbers in the sample, there can be significant differences noted between preferences for a certain type and size of containers between individual markets and, also, between different methods of delivery.

The one quart glass container is predominately preferred by home delivery consumers. It is the leading container preferred by home delivery customers in all markets and desired by over 60.0 percent of all home delivery consumers in all markets except Canton and Youngstown.

However, home delivery consumers in the various markets showed wide differences for preferences of containers other than the one quart glass bottle. For example, the two quart glass container was preferred by 33.6% of the Canton home delivery consumers and 30.0% of the home delivery consumers in Youngstown, but only 1.7% of the Toledo home delivery customers preferred this container. (Readers might note here Table 3, which shows the percent sold by type and size of container by market. The gallon jug was preferred by only a very few of the home delivery consumers.)

Table 6

Preference of Families Buying Fluid Milk at Home Only,  
for a Certain Type and Size of Container in  
Eight Ohio Markets, 1954-56

Cities	Container				Gallon	No Preference
	Paper		Glass			
	1 Qt.	2 Qt.	1 Qt.	2 Qt.		
Akron	7.6	12.2	64.8	10.0	2.4	3.0
Canton	17.6	3.9	39.3	33.6	1.1	4.5
Cincinnati	12.1	4.6	67.1	14.7	0.5	1.0
Cleveland	13.8	7.4	65.7	10.3	0.7	2.1
Dayton	12.3	8.5	71.6	5.0	1.3	0.8
Ironton	21.7	3.3	60.0	11.7	0.0	3.3
Toledo	11.8	4.0	76.0	1.7	0.0	6.5
Youngstown	4.6	12.1	49.6	30.0	0.4	3.3
Average*	12.75	7.00	61.77	14.62	.8	3.06

\*All markets given equal weight.



Table 7

Preference of Families Buying Fluid Milk at the Store Only,  
for a Certain Type and Size of Container  
in Eight Ohio Markets, 1954-56

Cities	Containers					
	Paper		Glass		Gallon	No Preference
1 Qt.	2 Qt.	1 Qt.	2 Qt.			
Akron	11.1	20.0	23.0	20.8	21.1	4.0
Canton	27.5	11.7	18.3	26.4	11.7	4.4
Cincinnati	24.8	20.1	28.7	23.6	.9	1.9
Cleveland	36.0	34.7	14.2	8.6	3.8	2.7
Dayton	41.3	27.2	17.9	5.5	7.2	0.9
Ironton	39.2	11.4	31.7	10.1	0.0	7.6
Toledo	24.5	41.6	21.9	7.1	.7	4.1
Youngstown	9.0	30.4	8.1	48.1	2.1	2.3
Average	26.67	24.64	20.47	18.78	5.94	3.5

Families buying both at store and home preferred the one quart glass container as the leading container in all markets with the exception of Youngstown. However, this preference was not as strong for the one quart glass bottle among households buying both at the store and home as it was among those buying only at home.

Buyers at both home and store preferred glass containers to paper containers approximately 67% to 27%. Again, this was much variation about preferences for containers between markets.

Families buying both at store and home preferred the one quart glass container as the leading container in all markets with the exception of Youngstown (Table 8). However, this preference was not as strong for the one quart glass bottle among households buying both at the store and home as it was among those buying only at home.

Buyers at both home and store preferred glass containers to paper containers (approximately 67% to 27%). There was considerable variation about preferences for containers between markets.

Table 8

Preference of Families Purchasing Fluid Milk Both at the Store  
and at Home for a Certain Type and Size of Container  
in Eight Ohio Markets, 1954-56

Cities	Container					
	Paper		Glass		Gallon	No Preference
	1 Qt.	2 Qt.	1 Qt.	2 Qt.		
Akron	7.0	20.9	51.2	11.6	0.0	9.3
Canton	10.8	10.8	40.6	32.4	0.0	5.4
Cincinnati	8.2	16.3	55.1	20.4	0.0	0.0
Cleveland	13.9	20.7	39.9	18.8	4.3	2.4
Dayton	20.4	10.7	56.3	5.8	3.9	2.9
Ironton	22.4	2.5	41.7	21.4	0.0	12.0
Toledo	12.2	24.4	53.6	4.9	0.0	4.9
Youngstown	6.4	12.7	39.7	41.2	0.0	0.0
Average	12.66	14.88	47.26	19.56	1.03	4.61

Table 9 is presented to show the preference difference for various sizes of containers between different methods of delivery. Generally, families buying at store only preferred the larger sizes of containers more than did the home only purchasers. As has been noted previously, there is much variation within and between markets. Youngstown, the city with the highest daily per capita milk consumption in the study, had a strong preference for two-quart containers (65.5%). Akron and Canton, the second and third highest cities in regard to per capita milk consumption in the study, showed a stronger preference for the gallon jug than did any other cities, and also a strong stated preference for the two-quart container.

Table 9

Consumers Stated Preference as a Percent of the Families Studied  
in the Particular Market by Place of Purchase and the  
Entire Market in Eight Ohio Markets, 1954-56\*

Cities	Home Only			Store Only			Market Wide		
	1 Qt.	2 Qt.	1 Gal.	1 Qt.	2 Qt.	1 Gal.	1 Qt.	2 Qt.	1 Gal.
Akron	72.4	17.6	2.4	34.1	40.8	21.1	50.2	33.1	12.9
Canton	56.9	37.5	1.1	45.8	38.1	11.7	51.9	37.7	5.8
Cincinnati	79.2	19.3	0.5	53.5	43.7	.9	67.8	30.2	.6
Cleveland	79.5	17.7	0.7	50.2	43.3	3.8	66.1	29.4	2.2
Dayton	84.4	13.5	1.3	59.2	32.7	7.2	77.5	18.5	2.9
Ironton	81.7	15.0	0	70.9	21.5	0	74.7	18.5	0
Toledo	87.8	5.7	0	46.4	48.7	.7	71.2	22.9	.4
Youngstown	54.2	42.1	.4	17.1	78.5	2.1	30.7	65.5	1.4
Average	74.5	21.6	.8	47.1	43.4	6.0	61.3	32.0	3.3

\*Percentages do not accumulate to 100% as no preferences are omitted.

Over three-fourths of the home only purchasers preferred glass containers (Table 10.) In contrast to this overall preference by home only purchasers for glass, the families buying only at the store were more evenly divided. In four cities, these purchasers preferred paper, while in the other four, glass bottles were preferred by the store only milk purchasers.

Considering all purchasers in a market-wide analysis, glass was preferred by the majority in all cities. However, it should be remembered that paper was preferred by a substantial number - never less than one-fourth of those in the sample in a city and over two-fifths in one city. With the exception of Ironton, more families preferred milk in a paper container than this type of container sold as a percent of the total market.

Table 10

Consumers Stated Preference for a Particular Type of Container as a Percent of the Families Studied in the Particular Market by Place of Purchase and Entire Market in Eight Ohio Markets, 1954-56\*

Cities	<u>Home</u>		<u>Store</u>		<u>Market-Wide</u>	
	Paper	Glass	Paper	Glass	Paper	Glass
Akron	19.8	77.2	31.1	64.9	26.6	69.6
Canton	21.5	74.0	39.2	56.4	29.9	65.5
Cincinnati	16.7	82.3	44.9	53.2	29.6	69.0
Cleveland	21.2	76.7	70.7	26.6	41.6	56.1
Dayton	21.3	77.9	68.5	30.6	33.8	65.1
Ironton	15.9	77.7	66.1	29.7	35.6	58.9
Youngstown	16.7	80.0	39.4	58.3	30.7	66.9
Average	19.8	77.2	51.3	45.2	33.3	63.2

\*Percentages do not add up to 100% as no preferences are omitted.

Table 11

Preference for Containers in Eight Ohio Markets by Type of Delivery,  
and by Present Type and Size of Container Consumer Purchased Milk In,  
1954-56

(All Markets Given Equal Weight)

Preference	HOME DELIVERED					STORE DELIVERED					HOME AND STORE		
	Paper		Glass			Paper		Glass			Paper	Glass	
	1 Qt	$\frac{1}{2}$ Gal	1 Qt	$\frac{1}{2}$ Gal	Both*	1 Qt	$\frac{1}{2}$ Gal	1 Qt	$\frac{1}{2}$ Gal	Gal	Both*	Paper	Glass
Gallon	0.3	1.8	0.6	2.2	0	0.8	1.3	1.1	0.7	37.6	4.3	0	3.7
$\frac{1}{2}$ Gal. Glass	6.0	16.6	4.9	60.9	8.8	2.9	11.0	8.0	64.3	18.8	16.4	12.2	28.1
1 Quart Glass	30.6	14.9	78.7	8.7	50.0	18.9	6.1	65.1	6.2	18.4	28.1	26.6	52.9
$\frac{1}{2}$ Gal. Paper	12.7	54.4	2.7	19.5	13.3	10.6	70.7	2.9	22.1	18.8	21.5	27.2	5.6
1 Quart Paper	48.1	7.1	10.1	6.9	10.9	63.9	8.9	18.2	4.0	4.2	21.8	19.4	6.7
No Preference	2.3	5.0	3.0	1.8	17.0	2.9	2.0	4.7	2.7	2.2	7.9	14.6	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

\* Both indicates both paper and glass.

Table 11 shows many of the previously named indications in an aggregative manner. For instance, present use has a strong relationship with present preference. Families buying at home only in glass containers have a stronger preference for glass containers than do the families buying at home only in paper containers have preference for paper. The same relationship does not exist when comparing paper and glass users' preference who buy only at the store.

#### Income Effect

Although income is a factor or a consideration in consumption, the effect of income upon preference of milk containers appears to be minute, (Table 12).

Both the very low income group (under \$1,000) and the highest income group showed the strongest lack of preference for the one gallon container. The two lowest income groups and the highest income group exhibited the strongest preference for glass containers, the one quart containers, and the one quart glass bottle.

In all income areas, glass containers and the one quart size was dominate in preference by the majority of consumers in all cities.

Table 12

Preference for a Certain Type and Size of Container by  
Annual Family Income Groups in Eight Ohio Cities,  
1954-56

Annual Family Income	Glass			Paper		No Preference
	Gal.	2 Qt.	1 Qt.	2 Qt.	1 Qt.	
Under 1,000	0	10.1	58.4	14.4	17.1	0
1,000-2,500	3.3	12.5	50.8	9.3	20.0	4.1
2,501-4,000	3.7	18.1	38.3	16.7	19.7	3.5
4,001-5,500	3.2	17.9	40.5	16.5	18.2	3.7
5,501-7,000	3.4	17.5	43.3	16.1	17.0	2.7
7,001 and over	2.2	17.7	46.0	12.6	17.8	3.7
Average	2.63	15.63	46.23	14.26	18.30	2.95

Size of Family

As family size increases, preference for the one-quart container decreases. Conversely as family size increases, preference for the larger-than-one-quart container increases.

Table 13

Preference for a Certain Type and Size of Container by Different Size of Family as Revealed in a Dairy Marketing Study in Eight Ohio Markets, 1954-56

Size of Family	Paper		Glass			No Preference
	1 Qt.	2 Qt.	1 Qt.	2 Qt.	Gal.	
1	29.0	7.8	47.5	10.8	0.6	4.3
2	24.1	11.2	47.5	11.2	1.8	4.2
3	17.4	15.6	43.6	17.0	3.1	3.3
4	14.6	17.0	40.8	20.9	3.8	2.9
5	13.5	19.9	36.2	22.3	4.7	3.4
6	11.3	18.4	36.7	22.3	7.1	4.2
7	20.8	18.1	32.0	21.2	6.0	1.9
8 & over	10.7	22.2	28.4	27.0	6.3	5.4
Average	17.68	16.27	39.09	19.09	4.17	3.70

Weekly Family Consumption

As family consumption per week goes up, preference for the larger-than-one-quart container increases. Like the size of family previously mentioned, the one-quart container preference was stronger among the consumers buying relatively little milk. There appeared to be little changes between paper and glass as family milk consumption changes in volume used weekly.



Table 14

Preference for Certain Types and Sizes of Containers by Weekly  
Family Milk Consumption in Eight Ohio Cities  
1954-56

Weekly Milk Consumption in Quarts per Family	Paper		Glass			No Preference
	1 Qt.	2 Qt.	1 Qt.	2 Qt.	Gal.	
01-09	20.8	11.3	47.4	13.1	3.6	3.8
10-19	13.9	17.6	37.9	22.7	5.4	2.5
20-29	11.1	18.8	35.3	22.1	8.7	4.0
30-39	7.9	17.7	34.8	27.0	11.4	1.2
40 and over	15.4	30.9	21.0	29.8	2.9	0.0
Average	13.82	19.26	35.28	22.94	6.40	2.30

### In Conclusion

Packaging may well be considered an integral part of promotion and merchandising in fluid milk marketing. Packaging of milk and milk products in various sizes and types of containers has in many cases added to the managerial problems, both in production and marketing of the finished dairy product.

Consumer's stated preference may not always be duplicated in consumer's acceptance of a product.

Consumers present usage or acceptance and preference of various sizes and types of fluid milk containers varied both within and between the eight markets studied in 1954-56. With the exception of Akron, Ironton, and Youngstown, the one-quart glass milk container was used by more families than any other container in all markets.

Consumer preference showed the one-quart glass container to be preferred by more families than any other containers in all markets with the exception of Canton and Youngstown. The two-quart glass was preferred in these last two mentioned markets. However, in no market did preference exceed 57% for one particular container.

Consumers tended to prefer the container they were presently using, although this preference never exceeded 83 percent and generally was lower.

Home buyers of milk tended to prefer the one-quart glass more than did store buyers of milk.

Families buying only at the store exhibited a greater preference for the larger size of containers than did those buying at home only. However, the one-quart container was the most popular in all markets combined.

Glass containers were preferred by the majority of the families in the study. However, paper containers were preferred in some markets by more families than received their milk in this fashion.

Container preference appeared to have no direct correlation with income. As family size and quantity of milk consumed by the family increased, preference for larger containers increased.

The foregoing data indicated that consumer preference was quite varied both between and within markets. Since little unanimity exists in any category, it might well be questioned if consumer preference is not affected greatly by marketing strategy, availability, habit, promotion and prices within the various markets.

Since consumer preference appeared to be rather varied, the individual firm might well adjust their line of products including size and types of containers more to their own cost structure, their own customers reaction to various containers and their own marketing strategy (which includes promotion, advertising, merchandising and competitive tools used) rather than consumers stated preference.