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WHOLESALE MILK ROUTE OPERATIONS IN THE NEW YORK METROPOLITAN AREA

By

H. W. Ayres & R. D. Aplin*

Wholesale milk distribution in the New York Metropolitan Area[1/] accounts for a large majority of all milk distribution.

During 1974, a management-oriented study was conducted with a majority of the milk processing companies in the Metropolitan Area participating. The objective of the overall study was to develop and illustrate techniques that milk distributors could use to evaluate and improve the efficiency and profitability of their wholesale delivery operations.

A major part of the study involved riding more than 50 wholesale milk delivery routes in the New York Metropolitan Area, making time observations, and developing time standards for each work task performed by the routeman.

To facilitate selection of a cross-section of routes on which to ride and make time studies, a reconnaissance survey of wholesale milk routes was conducted. The 360 routes included in the reconnaissance survey were operated by ten companies. These ten compaines consisted of eight processing firms (which operated nine processing plants) and two "C" dealers. Not only did the information from each route assist in the selection of the routes on

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1/ The New York Metropolitan Area refers to New York City and the counties of Nassau, Suffolk and Westchester in the State of New York.

which time studies were made, but also provided descriptive information about a large number of wholesale distribution operations in the New York Metropolitan Area. 2/

> Reported herein are the results of the reconnaissance survey only. The major results of the overall research study - including the information obtained from the time studies - will be reported in subsequent weeks.
>
> The 360 routes covered in the reconnaissance survey were operated by ten companies in the New York Metropolitan Area. The information on each participating company's own routes is included in the tables. Consequently, if your company participated in the reconnaissance survey, you can compare the character of your routes with the other routes included in the survey. Your firm was/was not included in the reconnaissance survey. We received useable information on _____ of your wholesale routes.

Procedure Used in Reconnaissance Survey

Survey forms (Appendix) were distributed to the participating companies and a few sub-dealers, or so-called "C" dealers, to gather general information on each of their routes. One of the major objectives in developing the reconnaissance survey was to design a form which would be easy for company personnel to complete as well as one that would yield a maximum amount of information. A pretest was conducted to eliminate ambiguity and assure useage of words and terms familiar to industry people.

The information gathered from the reconnaissance survey concerned the delivery vehicle, customers, delivery conditions, and services provided to customers. The time period covered by this information was June - July, 1974.

Reconnaissance questionnaires were received on a total of 360 wholesale routes operating out of nine processing plants in the Metropolitan Area. Upon examination, information on sixteen routes was rejected because of inconsistent information or obviously incorrect data. Forms completed for some routes lacked complete information but could be used for a partial analysis. For example, data used in compiling mileage figures for routes were used from only 324 routes, while a total of 344 routes provided useable information on most of the other questions.

2/ The authors estimate that there are 850-950 wholesale dairy routes operating in the New York Metropolitan Area.

Number and Types of Customers

The number of various types of customers served by the 344 routes are reported in Table 1. The routes included in the survey served a total of 8,320 customers of all types. Supermarkets represented 19% of all customers while "other stores" (which includes delicatessens, bakeries, and "Ma and Pa" stores) represented almost half of all customers served by the routes.

Table 1. Types of Customers Served
344 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

Customer Type	344 Routes		Your Routes	
	Number of Customers	Percent	Number of Customers	Percent
Supermarket	1,586	19.1	_____	_____
Convenience and Modern Fruit Stand	589	7.1	_____	_____
Other Stores	3,908	46.9	_____	_____
Restaurants, Diners, Cafes, etc.	1,355	16.3	_____	_____
Institution (schools, hospitals, nursing homes, factories, etc.)	827	9.9	_____	_____
Vending	5	0.1	_____	_____
Other	50	0.6	_____	_____
TOTAL	8,320	100.0	_____	100.0

The routes in the survey served an average of 24 customers each. Eighty percent of the routes served between 11 and 35 customers (Table 2). Only 7% of the routes served 10 or fewer customers. About 12% of the routes had 36 or more customers. The average for the five routes with the fewest customers was six customers served per route, while the average for the five routes with the most customers was 53 customers.

Table 2. Number of Customers Per Route
344 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974.

Number of Customers Per Route	344 Routes		Your Routes	
	Number of Routes	Percent	Number of Routes	Percent
1 - 5	2	0.6	_____	_____
6 - 10	21	6.1	_____	_____
11 - 15	42	12.2	_____	_____
16 - 20	56	16.3	_____	_____
21 - 25	94	27.3	_____	_____
26 - 30	51	14.8	_____	_____
31 - 35	36	10.5	_____	_____
36 - 40	23	6.7	_____	_____
41 - 45	8	2.3	_____	_____
46 - 50	8	2.3	_____	_____
more than 50	3	0.9	_____	_____
TOTAL	344	100.0	_____	100.0

Customer Size

The number of cases of product that customers received per delivery is reported in three size groupings in Table 3. More than half of the 8,320 customers were reported to receive from 1-5 cases per delivery. The remainder of the customers were nearly equally divided between those who took 6-10 cases per delivery and those who received more than 10 cases per delivery.

Table 3. Quantity of Product Taken Per Delivery
344 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

Number of Cases Per Delivery	344 Routes		Your Routes	
	Number of Customers	Percent	Number of Customers	Percent
1 - 5	4,838	58.1	_____	_____
6 - 10	1,789	21.5	_____	_____
more than 10	1,693	20.4	_____	_____
TOTAL	8,320	100.0	_____	100.0

The single largest delivery to a customer was reported for each route and is given in Table 4. The range of these "largest customers" was from 8 cases to 216 cases. 3/ It is important to realize that there were several routes on which the largest delivery was more than 200 cases, but on approximately 50% of the routes the largest delivery was 40 cases or less.

Table 4. Largest Customer on Route
343 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

Number of Cases Received Per Delivery by the Largest Customer on the Route	343 Routes		Your Routes	
	Number of Routes	Percent	Number of Routes	Percent
1 - 10	16	4.7	_____	_____
11 - 20	54	15.7	_____	_____
21 - 30	53	15.5	_____	_____
31 - 40	57	16.6	_____	_____
41 - 50	44	12.8	_____	_____
51 - 60	34	9.9	_____	_____
61 - 70	18	5.2	_____	_____
71 - 80	18	5.2	_____	_____
81 - 90	9	2.6	_____	_____
91 -100	15	4.4	_____	_____
more than 100	25	7.4	_____	_____
TOTAL	343	100.0	_____	100.0

Mileage on Routes

The number of miles traveled on a typical day was reported for 324 of the routes. Some routemen noted that the mileages given for their routes were estimates since the odometers on their trucks did not work. The average miles traveled per route day was 45 (Table 5). Approximately 70% of the routes traveled between 10 and 49 miles a day, with more than half of the routes traveling between 25 and 49 miles per day. Twelve percent of the routemen reported driving 75 or more miles each day. The five routes with the lowest mileages averaged 12 miles per day, and the five longest routes averaged 184 miles a day.

3/ The upper end of the range was computed by averaging the observations of the five routes that reported the highest single largest delivery. The lower end of the range was computed by averaging the observations of the five routes that reported the lowest single largest delivery.

Table 5. Miles Traveled Per Day
324 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

Miles Per Day	324 Routes		Your Routes	
	Number of Routes	Percent	Number of Routes	Percent
1 - 9	0	0	_____	_____
10 - 24	54	16.7	_____	_____
25 - 49	174	53.7	_____	_____
50 - 74	57	17.6	_____	_____
75 -100	23	7.1	_____	_____
more than 100	16	4.9	_____	_____
TOTAL	324	100.0	_____	100.0

The number of customers per mile was determined by dividing the number of customers on a route by the mileage reported for that route. More than three-fourths had less than one customer per mile (Table 6). The average for all routes was 1.75 customers per mile.

Table 6. Number of Customers Per Mile
324 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

Number of Customers Per Mile	324 Routes		Your Routes	
	Number of Routes	Percent	Number of Routes	Percent
less than 1	251	77.5	_____	_____
1 - 2.9	71	21.9	_____	_____
3 - 4.0	2	0.6	_____	_____
TOTAL	324	100.0	_____	100.0

Vehicle Size

The 339 vehicles[4/] used on the routes included in the survey ranged in size from 12 foot to 20 foot bodies (Table 7). Few of the smaller trucks were used, with 85% of all trucks being 17 foot, 18 foot, or 20 foot vehicles. Often a

4/ Information on the size of the vehicle was not reported for 5 of the 344 routes included in the survey.

routeman did not know the exact length of the body on his vehicle and instead indicated the case capacity. This case capacity was then converted into an estimated body length.

Table 7. Size of Delivery Vehicles
339 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

	339 Routes		Your Routes	
Truck Bed Length (feet)	Number of Routes	Percent	Number of Routes	Percent
12	2	0.6	_____	_____
14	6	1.8	_____	_____
16	43	12.7	_____	_____
17	97	28.6	_____	_____
18	74	21.8	_____	_____
20	117	34.5	_____	_____
TOTAL	339	100.0	_____	100.0

Table 8 reports the number of customers served by various sizes of delivery vehicles. Perhaps the most striking feature to be noted is the rather small difference in the average number of customers served by the various size trucks. However, the number of customers served tended to be somewhat lower on the routes using larger vehicles. Routes on which the 20 foot trucks were used served an average of only 19 customers; whereas routes on which 18 foot or smaller vehicles were used served an average of 24 or more customers. This tendency points out that management attempts to balance the size of the truck with the utilization of a routeman's time. Generally, the time required per case to accomplish delivery (with the same basic service being provided) declines as volume per delivery increases.

Table 8. Number of Customers Served by Various Size Trucks
339 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

	Truck Bed Length (feet)						
	12	14	16	17	18	20	Total
Number of Customers Served by this size truck	49	175	1193	2972	1778	2002	8165
Percent of all Customers served by this size truck	.6	2.1	14.6	36.4	21.8	24.5	100.0
Average Number of Customers served by routes on which this size truck was used	24.5	29.2	27.7	27.5	24.0	19.3	24.2

Use of Liftgates

As will be shown in the results of the time studies to be reported later, hydraulic liftgates are time-saving when unloading products at larger stops. Approximately 12% of all trucks were reported to be equipped with liftgates (Table 9). The large majority of the liftgates were on the 20 foot trucks.

Table 9. Number of Trucks with Hydraulic Liftgates
339 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

	Truck Bed Length (feet)						
	12	14	16	17	18	20	Total
Number of trucks with liftgates	0	1	2	5	3	28	39
Precent of all trucks of given size equipped with liftgates	0	16.7	4.7	5.2	4.1	23.9	11.5
Your Routes							
Number of trucks with liftgates	___	___	___	___	___	___	___

DELIVERY PRACTICES AND SERVICES PROVIDED CUSTOMERS

Information was gathered from the reconnaissance survey concerning some of the delivery practices and the services provided customers. At 93% of the 8,320 customer stops, it was reported that the product was unloaded and lowered to the ground by hand (Table 10). Hydraulic liftgates were used at 3.5% of the customer stops and docks or platforms were used for unloading at only 3.4% of the customer stops.

Table 10. Removal of Product from the Truck[5/]
344 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

	344 Routes		Your Routes	
	Number of Customers	Percent	Number of Customers	Percent
Platform or dock of same height as truck bed	285	3.4	_____	_____
Lowered to ground by hydraulic liftgate	293	3.5	_____	_____
Lowered to ground by hand	7,742	93.1	_____	_____
TOTAL	8,320	100.0	_____	_____

Method of Moving Product From Vehicle to Delivery Point

Four common means of moving product from the vehicle to the delivery point are reported in Table 11. A handtruck was the primary means used to move the product, accounting for 88% of all deliveries. Routemen hand carried the product at nearly 10% of the customer stops. Dollies and flat trucks were used at only about 3% of all customer stops. (A "dolly" is defined to be a 4-wheeled device with an open bottom, which measures 1 by 2 (or 3) cases and will hold 10 (or 15) cases if stacked 5 cases high; a "flat truck" is defined to be a 4-wheeled device with a handle and a solid bottom, which usually measures 2 by 3 cases and will hold 24 cases if stacked 4 cases high.)

Table 11. Method of Moving Product From Truck to Point of Delivery
344 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

	344 Routes		Your Routes	
Method of Moving Product	Number of Customers	Percent	Number of Customers	Percent
Handtruck	7,297	87.7	_____	_____
Hand Carry	755	9.1	_____	_____
Flat Truck	163	1.9	_____	_____
Dolly	105	1.3	_____	_____
TOTAL	8,320	100.0	_____	100.0

5/ "Removal" as used in this table includes both the point to which the product is removed (either platform or dock of the same height as the truck bed or the ground) and the method by which it is lowered to the ground (either by hydraulic liftgate or by hand).

Delivery Point

Information on the point to which the routemen delivered the product is presented in Table 12. At nearly half of the customer stops the product was moved to the display case area, at 25% of the stops the routeman left the product at the store door, at 19% the routeman moved the product into the cooler, and at 13% of the customer stops the product was merely unloaded and left at the curb or on the platform.

Table 12. Point to Which Product Delivered
344 Wholesale Milk Routes, New York Metropolitan Area, June-July, 1974

	344 Routes		Your Routes	
Point of Delivery	Number of Customers	Percent	Number of Customers	Percent
Near display case	3,572	43.0	_____	_____
Outside store door	2,087	25.1	_____	_____
Into cooler	1,596	19.1	_____	_____
At curb or on platform	1,065	12.8	_____	_____
TOTAL	8,320	100.0	_____	100.0

Second Trip Customers

Many routemen returned to a few customer stops during the day (usually one return trip per day). Approximately 10% of the customers received a second trip. The reasons for the second trip varied but usually included picking up empty cases, getting the ticket checked, obtaining the order for the next delivery, or a combination of these.

Method of Ordering

Two methods of obtaining a customer's order were reported in the reconnaissance survey. One method was a telephone preorder and in the other case, the routeman obtained the order at the time of delivery. In the latter situation, the order could be either for the immediate delivery or for a later delivery, the important distinction being that the routeman took time to secure the order. Orders received by phone accounted for 20% of the 8,320 customers, while the routeman obtained the order for the remaining 80% of the customers.

Collection

Collection also was divided into two methods. If the routeman actually made collections from the customer - whether he collected daily or less frequently - the customer was considered a "cash account." On the other

hand, if the routeman did not collect from the customer, but rather the customer paid his bill directly to the company's office, the customer was viewed as an "office" or "ledger" account. Office or ledger accounts were used for 45% of the 8,320 customers and cash accounts for 55% of the customers reported.

APPENDIX

CONFIDENTIAL

Cornell University is doing a study of wholesale milk delivery in the New York Metropolitan Area. The information gathered from this questionnaire will be used to analyze the various delivery conditions, methods of delivery, equipment used, services rendered to customers and to relate these factors to direct delivery costs.

ROUTE IDENTIFICATION_____ COMPANY CODE_____

PLEASE ANSWER THE FOLLOWING QUESTIONS AS THEY APPLY TO THIS ROUTE.

1. Number of miles traveled on a typical day _____ miles.
2. What is the capacity (in cases) of the truck used on this route? _____ cases
3. Does the truck have a hydraulic tailgate? yes _____ no _____
4. What sections of the Metropolitan Area does this route cover or serve? _____

_____

5. Type of Stop: For each type of stop, indicate the number of customers on the route that fall in each size category listed below.

Type of Stop	Size Category: 1-5 cases per delivery	6-10 cases per delivery	11 or more cases per delivery
a. Supermarket	_____	_____	_____
b. Convenience Store (includes fruit stands, dairy jug stores)	_____	_____	_____
c. Other Stores (includes Ma & Pa's, Delis)	_____	_____	_____
d. Restaurants, diners, cafes, etc.	_____	_____	_____
e. Institutions (includes schools, hospitals, nursing homes)	_____	_____	_____
f. Vending Machines	_____	_____	_____
g. Other	_____	_____	_____

6. How are cases removed from the vehicle? Indicate at how many stops each of the following methods is used:
   a. product is lowered by hydraulic tailgate _____ customers
   b. product is lowered by hand to curb _____ customers
   c. product is moved to a platform at the same height of the truck body _____ customers
7. Method of Moving Product: At how many stops is the product moved by the following methods:
   a. hand carry _____ customers
   b. hand truck _____ customers
   c. dollies (two stacks) _____ customers
   d. flat truck (more than two stacks) _____ customers
8. Product Delivery Point: Indicate the number of customers who get product delivered to the following points:
   a. curb, platform or dock _____ customers
   b. store door _____ customers
   c. cooler _____ customers
   d. display case _____ customers
9. At how many stops are empty cases found at the delivery point? _____ customers
10. At how many stops do you "pack out" some or all of the product? _____ customers
11. Ordering: Indicate how many orders are obtained by the following methods:
    a. over the phone _____ customers
    b. at the time of delivery _____ customers
12. Collections: How many customers are:
    a. office or ledger accounts _____ customers
    b. driver-cash accounts _____ customers
13. How many second trip customers per day on this route? _____ customers
14. Number of cases delivered per day to the largest customer _____ cases.
15. At how many stops is product delivered at other than street level? (That is, elevator or stairs used) _____ customers.