

SUPERMARKET GUIDELINES ..

for Store Design and Layout

Square Feet:
 Building
 Backroom
 Sales Area
 Front End

Department Location

Traffic Flow

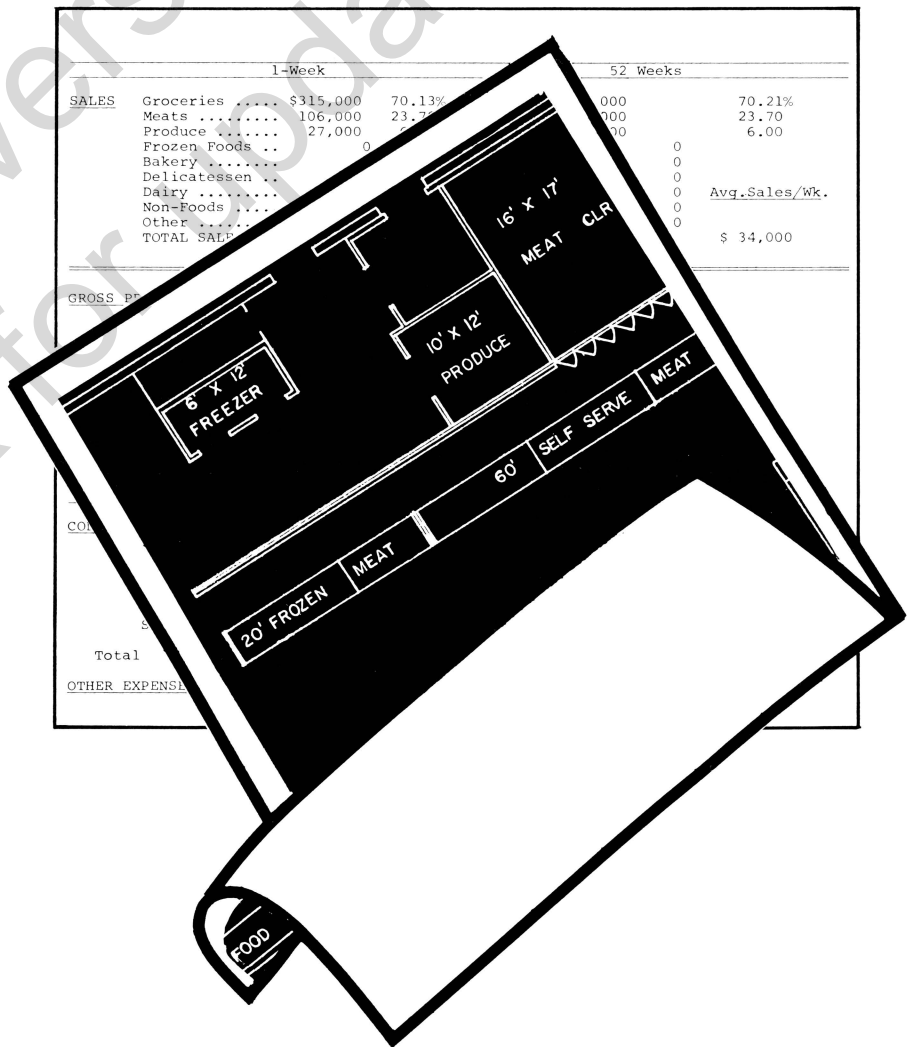
Equipment

Profitability

Gross Margins

Percent Distribution

Composite Store



A cooperative report by the University of Missouri-Columbia and the Agricultural Research Service, Agricultural Marketing Research Institute, Beltsville, Maryland.

SUPERMARKET GUIDELINES -- Store Design and Layout

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FOREWORD

This study was conducted under a cooperative agreement between the U. S. Department of Agriculture and the University of Missouri-Columbia. The data used in this study were provided by firms representing the corporate chains, independent chains, cooperatives, and voluntary independents. The basic information used was from a copy of the best plan and the corresponding operating statement for each store used in this study.

The type of data and information collected in this study is not new. However, in the review of literature no information was found comparable to the methods, objectives, and evaluation combined in this study.

Firms were selected from a cross-section of the United States, from east to west, and north to south. Those firms participating were from Washington, Utah, Missouri, Colorado, Tennessee, Illinois, New York, California, Texas, Wisconsin, Ohio, Virginia, Massachusetts, and Maine. Grateful acknowledgment is made to the management of the participating firms for their complete cooperation in making records and personnel available for the collection and interpretation of the respective data.

In addition to the authors of the report, Dr. Raymond W. Hoecker, Area Director, ARS, Hyattsville, Maryland, formerly with the Transportation and Facilities Research Division, U. S. Department of Agriculture, made valuable contributions to the study.

The authors especially appreciate the efforts of The Hill Refrigeration Company, Trenton, New Jersey, for the expertise and assistance of their personnel in the formulation of the three floor plan drawings for this publication.

The authors also appreciate the cooperation of Charles Cramer, Department Chairman of the Agricultural Economics Department and C. E. Klingner, Extension Project Leader, and others at the University of Missouri-Columbia, at the Dean's Office and Business Office for assisting with the administrative policies of this project. Also to Ms. June Johnson, Secretary to Clyde Cunningham for her untiring efforts in assembling the data and help in preparing the manuscript. Appreciation is also extended to George England, Extension Food Specialist, University of Illinois, for making helpful suggestions-- in reading and offering tips on organizational structure of the manuscript.

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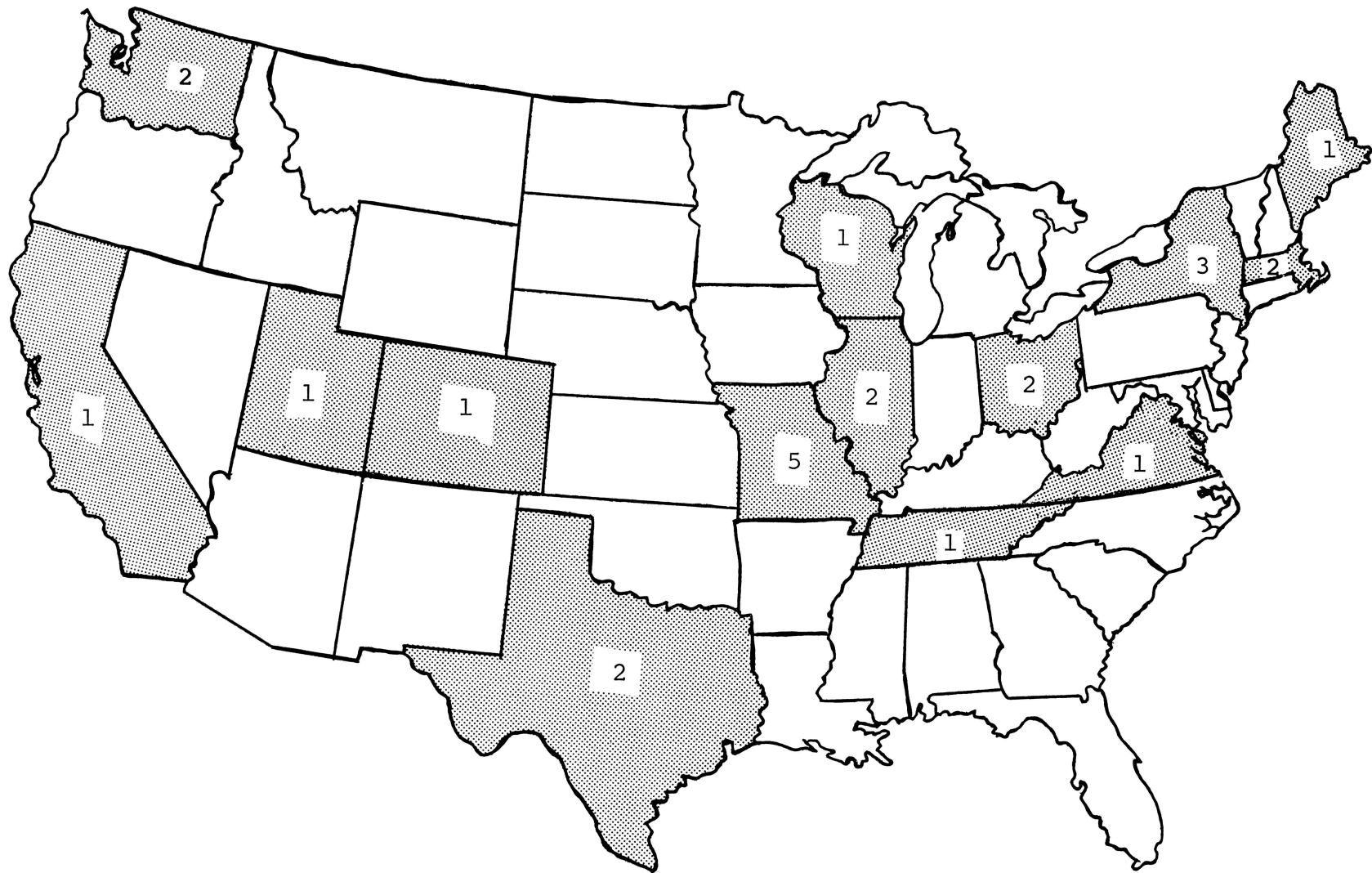


Figure 1. Location of states where the participating firms were selected.

SUMMARY

This study was designed to evaluate typical store layouts of representative food firms located throughout the United States. The objective was to determine and evaluate present methods, procedures, guidelines, and criteria used by food distribution firms in planning layouts for new supermarkets.

This data used in this study were provided by firms representing the corporate chains, independent chains, cooperatives and voluntary independents. Twenty-three firms, located in 14 states across the country participated and provided 25 stores. The basic information was submitted by the firm and the corresponding operating statement. Additional information was provided by personal interviews with the representatives of each of the participating firms who had the responsibility for developing store layouts.

Median size stores were deliberately selected, thereby attempting to find an area of uniformity in all the firms studied. The convenience store and the extra large supermarket--including extensive non-food departments--probably would be considered as separate distinct operations.

A main objective of this study was to determine how effective existing store plans are based upon actual performance. If a basic plan or plans could be identified, then they might be used as a guide in developing future layouts. This would not necessarily mean that all stores would be stereo-typed or look alike. The layout principles could be used, with individual identity maintained. Upon evaluating the data, two types of store plans were predominant. One utilized a single traffic pattern and the other utilized dual traffic patterns. A profile of these two plans and the operating results from the best store of each are included in the report. Both of these stores were realizing a net profit before taxes of better than 5.5 percent and performance indicates that they are achieving good productivity. A composite plan was also developed, based upon an evaluation of all 25 plans, that should result in good sales volume and improved productivity.

A considered objective for improved productivity is to obtain high dollar sales per square foot area. Increased product cost resulting solely from inflation does not achieve this objective. A higher customer count with similar individual customer sales is the most desirable for increasing volume. If the indicated higher costs are met, it should best be done by moving more customers, conveniently directed through a subtly controlled, one-way shopping pattern. This means the new store design should adequately move 30 to 100 percent more customers through

the present store layout during the same number of shopping hours.

Total store sales are based on weekly sales for each store. There was a wide range in total weekly sales--\$109,000 to \$20,000. The stores were ranked on sales per square foot, sales volume, and 26 other categories. The "Top 2" stores had an average sales per square foot of \$3.28 for the total store area and \$4.50 for the sales area. Sales volume for the "Top 2" stores was \$98,622 and \$81,205.

The question very logically could be asked, "Why were these two stores high volume stores?" These stores had a relatively high return per square foot as compared to other stores. However, the fourth ranked store in the survey had a weekly sales volume of \$34,592, a sales per square foot of total store of \$3.35, and a net before taxes of 3.8 percent. In terms of layout design it is comparable to, but proportionately smaller than the larger stores. This seems to indicate that the layout guidelines and principles may be scaled to fit stores of varying size, recognizing that there are lower limits at which it may not be feasible to include certain departments.

The composite of plans from 23 firms has not provided all the answers but guidelines have been developed to provide a direction for any firm to establish standards for any store in its operation, whether it is a new store or a remodeled one.

Adequate data for good management decision making on department operations was not available from operating statements except the "big three"--grocery, meat, and produce. Dairy and frozen foods, non-foods, etc., are generally a part of the grocery sales figures. This is the conventional method of reporting as illustrated by the operating statements observed, and tends to support the argument that in most cases management may not be fully aware of what these other departments are doing. Most of the procedures are programmed on a cost-in, mark-up basis. Any additional figures needed are requested from the supplier or warehouse.

There is a significant difference, between stores, in percent distribution for each department. The spread in distribution was greater, percentagewise, in produce than in groceries or meat. No one store had all departments in the high or low area of percent distribution. This could indicate that space is not the sole determining factor. However, it may also indicate that space is a main criteria for operational performance. Therefore, space, or department location, do

not seem to be the only factors involved in determining dollar return.

The sample of stores used in this study show some geographic area difference between plans used. The dividing line appears to be between Kansas City and Denver. Stores in Kansas City and east generally have a one-way traffic pattern. Stores in Denver and west generally provide a two-way traffic pattern.

The two-way traffic design locates the meat department on one side more consistently than across the back of the store. Produce was consistently located on either the left or right side. Both the meat and produce departments should be first or last in the shopping pattern--depending on the starting out point of customer traffic.

From these observations and data, it would appear the return per square foot of sales area could be higher with only one-way traffic flow. With one-way traffic and products located for impulse buying, departments

could be located as bakery first, then produce, with meat across the back and frozen foods last in the shopping pattern.

Additional information is needed to develop a more complete concept which involves the structural organizational chart. The store "engineering" department did not appear to occupy a well-defined part of the organizational chart. The position seemed to have responsibility but not the authority corresponding thereto. The position had often been added to relieve the work load of other operational, site, or building personnel. Eight were listed as engineers, 15 as operational, and one firm did not have a position identified as either.

The personnel of this office was asked to assume more responsibility than the credit received for getting the job done. Some personnel were labeled "engineers" without engineering training and some trained operational personnel were expected to do engineering tasks.

INTRODUCTION

In 1972 there were approximately 40,600 supermarkets in the United States. Representing 20.2 percent of the total number of grocery stores, they counted for 77.4 percent of the total sales.¹

Average sales per chain store reached a new high of \$2.43 million, while net earnings after taxes declined to 0.83 percent of sales --the lowest in a decade. Total expenses for all chains increased slightly to 21.29 percent of sales, primarily as a result of an increase in payroll cost from 11.09 to 11.38 percent of sales over the previous year.² The food retailer finds himself in a competitive cost-price squeeze.

Food retailing is undergoing other important changes. Among these are (1) expanding total sales, (2) declining number of stores, (3) expanding sales per store, (4) increasing sales per employee, (5) increasing hourly wages, (6) expanding sales area in stores, (7) increasing number of food and non-food items, and (8) increased emphasis on discount pricing. In addition, the retailer has become increasingly aware of his responsibility to the consumer. The consumer movement has resulted in increased pressure being placed upon the retailer to exercise greater judgment in offering items that will meet the best interest of his customers. Demands for full disclosure of product information, including dual- or unit-pricing open-date coding, and nutrition labeling, have produced an unexpected opportunity for image building and merchandising.

The consumer movement, combined with the competitive cost-price squeeze has placed the retailer in a continuing search for improved methods to provide for the efficient transfer in ownership of food products from sources of supply to the consumer. The need for designing, building, and operating efficient retail facilities that effectively serve the consumer is central to this effort.

The supermarket is the focal point where the consumer comes in contact with the food distribution system. It is here that she develops her image of the retail firm and impressions of the food industry. A successful image is a combination of many factors

¹"40th Annual Report of the Grocer Industry," published by Progressive Grocer, New York, N. Y., April, 1973.

²"Operating Results of Food Chains 1971-72," Cornell University, Ithaca, New York.

including: (1) quality and selection of merchandise; (2) values offered; (3) courtesy and friendliness; (4) decor and physical appearance of the facilities; (5) nature and type of services provided; (6) the manner in which merchandise is presented for sale; (7) cleanliness and neatness; (8) ease of shopping the store; and (9) checkout service. A negative reaction to any one of them by the consumer adversely affects the image of the firm. Store layout planning has an important role in that the layout is the framework on which all the factors are displayed or work. As such, the layout must serve four important functions:

1. Effectively serve the consumer--it should make it easy for the customer to move through the store and obtain the desired merchandise with a minimum of confusion, congestion, and delay.

2. Improve store efficiency--it should minimize labor and handling needed in moving merchandise through the store while satisfying the merchandising objectives.

3. Maximize sales--it should provide for a merchandising arrangement that assures maximum exposure for all merchandise carried, allowing for space costs and product movement, profitability, and perishability.

4. Implement the desired image--it should provide space and an arrangement of the departments consistent with the desired image goals.

In order to give proper attention to these functions, it is necessary that considerable time be spent in planning the layout. Even though it is often necessary to compromise the ideal, careful planning will help to minimize the built-in costs that often result when layout decisions are made in a hasty or piece-meal fashion.

This study was designed to evaluate typical store layouts of representative food firms located throughout the United States. The objective was to determine and evaluate present methods, procedures, guidelines, and criteria used by food distribution firms in planning layouts for new supermarkets.

The cost of an on-going supermarket continues to increase. All areas are involved, including current operations, replacement, remodeling or new construction. Obviously this means that it will be more significant to obtain a greater dollar return per square foot of operation if near current margins are to be maintained. The net return has been gradually decreasing during the past few years

and it is now at the lowest point of the last decade. The privilege of being in an operational area where mistakes could be tolerated does not exist today as in the past. Trends appear to be moving more toward the convenience store or the larger "one-stop" market. Therefore, accurate, current data is more in demand on which to base decisions.

The opportunities for decreasing labor costs do not appear encouraging. Labor, as a percent of total sales, has been trending upward during the past few years to slightly more than 50 percent of store operating cost.

The elimination of built-in costs relative to store design and layout is necessary for an efficient operation. Data obtained in this study indicate where some of the deficiencies might be.

The relationship of backroom space to sales space is also related to costs of investment and dollar return. The design for product flow programmed with work schedules has an effect on the productivity per man hour. The relationship of one department to another is also involved in the total operation.

The main objective of this study was to evaluate store design and layouts and corresponding operating statements in a cross-section of food retail firms of most of the United States to determine if there was a "composite" store.

If a basic plan could be identified, then it would be used as a composite. This would not necessarily mean that all stores would be stereo-typed or look-alike. The principle would be used, with individual identity maintained, decor inside, different roof lines or a different front could create that part of the firm's image.

The composite to be identified would be one designed to encompass the good points of all the plans and at the same time have the economic performance as a guideline. More simply, the basic data involved in this study was that obtained solely from the blueprints and the corresponding operating statements. Other comments and observations represent the views of the authors and are not intended to be the final authority.

Medium size stores were deliberately selected, thereby attempting to find an area of uniformity in all the firms studied. The convenience store and the extra large supermarket--including non-foods--probably would be considered as different operations.

An objective in this study was to attempt to identify the type of personnel involved in the "store engineering" department. That would encompass where this office or position appears in the organizational chart, the responsibility of the position, and training of the personnel before accepting the responsibility of store engineer. If the firm does not have a store engineer, then who provides this service and technology.

SCOPE AND METHODOLOGY

The major emphasis of this report is on supermarket layouts, with the purpose of developing guidelines that may be used by retailers in planning new supermarkets. General guidelines will be developed for the total sales and non-sales areas in a supermarket. Specific guidelines will be presented for each department. Composite store layouts that incorporate the guidelines and have proven to be relatively efficient will be presented. Measures of efficiency will be determined by analyzing actual operating data for the layouts of similar typical supermarkets.

It is NOT a purpose of this report to develop stereo-type supermarkets. Individual food firms typically prefer to differentiate their own stores and to project an image consistent with their particular goals and objectives. Techniques that are used for this purpose include: identifying signs and symbols, decor, merchandising mix, type and number of services provided, pricing and promotion policies, quality of perishables, type of building construction, etc. While recognition is given to the importance of these items, they will be considered only as they affect the layout of the entire store or specific departments. This will enable the individual retailer to use the guidelines and the composite layout and yet still differentiate his store from all others.

To facilitate development of the guidelines and composite layouts, it was necessary to evaluate typical store layouts and operating data for existing retail store operations. This information was obtained through the cooperation of 23 retail food firms located in 14 states across the U. S. The firms were selected to include the expertise of voluntary and cooperative groups and retail chains and to be geographically representative. The interest and attitude of these firms was excellent.

The firms were asked to provide a layout of their best store plan. This layout should represent the one they believed provided the performance they desired, that they were currently recommending, and that they intended to use in the future. These firms were also asked to provide an operating statement for this typical store in order for an evaluation to be made in an attempt to determine how the store compared in terms of various efficiency measures. Additional information was provided by personal interviews with the representative of each of the participating firms who had the responsibility for developing store layouts. Aside from discussing the operational features of the typical plan, information was obtained pertaining to how decisions are made in selecting or approving layout changes within the firm.

Additional sources of information included comments of trade association officials and equipment manufacturers' representatives, who were most cooperative and made information available for the study. Past research studies conducted by the U. S. Department of Agriculture, with major emphasis on layouts for perishable departments and backroom areas, were also of considerable value in establishing guidelines for those departments.

Definition of Terms Used

Aisle Space. The space in the aisle between each department was divided in half--one half used for one department and one half used by the other.

Distribution. Percent distribution is defined as each department's sales as a percent of total store sales.

Courtesy Booth. Area devoted to customer service--check cashing, payment of utility bills, returns, etc. A significant area in creating an image for the store.

Dual Traffic. Customer traffic entering at two different points and start shopping either to the left of the store or the right.

Front End. Space devoted to checkout, cart storage, courtesy booth, etc. (Everything from front door to half way into the aisle between checkout area and grocery gondolas).

Grocery Department. In this study all departments have been included in grocery except meat and produce.

Gross Margin. The difference between the cost of the product and its selling price.

Left-hand Traffic Flow. As the customer enters the store, the design directs them toward the left, with the left hand to the outside wall.

Linear Foot. Only the length of the case or gondola at floor level.

Median. The figure for the middle numbers (in total ranking--12 to 13) . This is not an average.

Operational Personnel. Personnel at store level.

Other Store Space. Employee lounges, compressor rooms, store maintenance, supplies, managers' offices, etc. located either in front or back of the store.

Definitions of Terms (Cont.)

Right-hand Traffic Flow. As the customers enter the store, the design directs them toward the right, with the right hand to the outside wall.

Single Traffic Pattern. Mainly one entrance-exit which encourages the customer to go in one direction--either to the right or left.

Sales Area. Area used for customer shopping--includes display of products--not the front end.

Storage Space (Usable Backroom). Mainly backroom for the salable product--either dry or refrigerated. Includes a portion of the receiving area used for movement of products to the sales floor by each department and that portion of the backroom used for storage and preparation.

RESEARCH FINDINGS

Complete Floor Plan Layout

The store size varied from a high total square foot store area of 29,990 to a low of 7,200, with a median square foot area of 16,000. The total square foot of store area includes sales, front end, backroom, and other store space.

Table 1, of the Appendix, shows sales area, front end, and backroom areas as a percent of total store area. This table also shows these areas in percentages for the complete floor plan for all stores in this study. In succeeding sections each department in the store is analyzed in more detail.

The backroom space, in Appendix Table 1, has been divided into areas used for storage of salable products and that part used for other purposes. Other purposes are defined as those used for employee lounges, compressor rooms, store maintenance, supplies, managers' offices, etc. The area used for movement of products to their respective areas on the sales floor is included in the square foot area used by each department.

The departments included in this study are grocery, meat, and produce. Only about half the study stores had data for any department separate from grocery, meat and produce. These did not give complete enough data to make accurate calculations so this study has combined all other departments with the grocery sales figure.

Front End

The front end area includes checkouts courtesy booth, cart storage and managers offices when located in the front of the store. In addition, ten stores of this study have conference rooms, customer rest areas, liquor storage, etc. These areas are indicated as the "other" front end, shown in Appendix Table 2. This is shown separate from front end used for customer traffic so a more representative square foot cost could be determined.

Operating data indicate that the percent of front end space could be about 10 percent of total store space, and perhaps 12 to 15 percent of total sales space would be a productive figure.

Sales Area

The median sales area as a percent of total store space varied from a high of 86.7 percent to a low of 55.8 percent, with a median of 68.3 percent. Ten stores in this study had a percentage of sales area to total store area of more than 70 percent and only

three stores had less than 60 percent of the total store space devoted to sales area. Sales area has been calculated to include the front end space.

Twenty-one of the 25 stores had 60 percent or more of total store space devoted to sales area. Relative operating data indicate that better performance is obtained in the high percentage of sales area. Appendix Table 3 shows more detailed figures on sales area for individual stores.

Backroom, Maintenance, and Supply

The backroom square foot area, as a percent of total store area varied from a high of 37.7 percent to a low of 13.3 percent, with a median of 28.6 percent. Ten stores had more than 30 percent of total store space devoted to backroom. Sixteen stores ranged from 21.5 to 28.6 percent, and only one store was below 20 percent--13.3 percent.

"Other" backroom area in this study is defined as that space used for other purposes than storage of salable products. This area includes employee lounges, offices, compressor rooms, etc., located in the backroom area. Appendix Table 5 shows the amount of backroom space used for storage than that used for other purposes.

Product storage space for the stores in this study seem to be somewhat larger than needed for the most economical operation. Eighty percent of the study stores had backroom storage space above 30 percent of total sales area. Twenty-four percent of the stores had above 50 percent total backroom area as a percent of total sales area.

Table 1
Allocation of Floor Space for Total Store
(25 Store Layouts)

Store Area	Range		
	High	Low	Median
Sales Area	86.7%	55.8%	68.3%
Backroom Area	37.7%	13.3%	28.6%
Front End	25.7%	4.5%\$	14.8%
Other	17.0%	.2%	6.4%

Source: 25 store layouts and operating statements.

I. Total Sales and Backroom Areas

After calculating the total overall floor plan, specific areas were then identified as the percentage of backroom space each department used for storage and preparation. Appendix Table 4 shows each section and percentage of space each store used for backroom storage and how it relates to the respective sales area. After the relationship to respective sales area was determined, the size of backroom space was then calculated as a percent of total sales area.

The percent of storage space allocated to each respective sales area included the portion of receiving area used by each section. Therefore, backroom space includes storage and preparation space, plus a detailed breakdown is included in Appendix Table 5.

Appendix Tables 3 and 4 has compared each department and percent of total sales area allocated to each section; also, the percent of storage space as it relates to the respective sales area. The median storage space allocated for groceries, meat, and produce was 4,500 square feet.

Other areas of backroom space do not appear to have any definite relationship to store size. Other overhead space is that occupied by compressor rooms, employee lounges, etc. Store No. 11 has .2 percent of total store space used for nonstorage, while Store No. 12 (being more than twice the size of No. 11) also has .2 percent of total store area used for other backroom. Therefore, these percentages are not included in the allocation of usable backroom departmental space.

Usable backroom space used here is defined as that area used for storage, preparation, and movement of salable products.

Table 2
ALLOCATION OF STORE BACKROOM SPACE
(25 Store Layouts)

Department	Range		Median
	High	Low	
Percent			
Grocery	80.0	37.6	62.6
Meat	39.3	10.8	22.1
Produce	26.8	5.0	13.3

Source: 25 store layouts and operating statements.

Courtesy Booth Location

Location of the courtesy booth is the area devoted to customer service, check cashing, payment of utility bills, returns, etc. This is a significant area in creating an image

for the store.

Twenty-two of the 25 plans have the courtesy booth located up front in the sales area. In these stores emphasis has been placed on providing the customer with information and service.

From personal observations, by the author, it was interpreted that the courtesy booth was a significant area for developing store image.

One store in the study did not have a courtesy booth for their customers, and one had it located on the mezanine. One of the top three stores put the courtesy booth in the grocery section--away and not convenient to customer traffic.

Traffic Flow Patterns

One objective for this study was an attempt to determine the relationship of sales per square foot in single and dual shopping patterns. Also to try and determine if there was a different departmental relationship in a right- or left-hand shopping pattern. Based on the operating statements, traffic patterns (right or left) did not appear to create much difference in departmental sales. Observations show that people tend to move toward the right when entering a retail store.

In heavy traffic, the one-way traffic helps to prevent congested areas. Display may be arranged to obtain better customer and product exposure. A common entrance, exit, area appears desirable in directing the traffic flow. The incoming traffic would move toward the courtesy booth and cart storage. The outgoing traffic moving away from the checkout to the exit door with no crossing of incoming traffic. An arrangement of this type will also assist in pilferage control because all traffic is moving near the courtesy booth as it goes through the checkout.

A. Grocery Department

Grocery Sales Area

Included in the total figures for grocery are all departments except meat and produce. All other departments include, frozen foods, non-foods, bakery and deli, liquor, etc. The largest percentage of stores in this study did not separate these figures from grocery in the operating statement.

The linear feet included the length on both sides of the gondolas and does not include total shelf space. There was no way to determine from the floor plan the exact amount of shelf space included in each store since the number of shelves in each gondola was not indicated.

Table 3

PROFILE OF THE GROCERY DEPARTMENTS

Category	Range		
	High	Low	Median
Sales	\$76,969	\$14,308	\$25,839
Square Foot	20,323	5,163	8,592
% of Sales Area	80.5%	29.9%	69.4%
Sales/Sq. Ft.	\$ 6.24	\$ 1.69	\$ 3.18
Sales/Lin. Ft.	\$68.72	\$14.45	\$28.33
Gross Margin	22.3%	14.4%	18.5%
Distribution	73.3%	59.4%	69.4%
% Backroom to Groc. Sales	96.6%	10.3%	36.4%

Source: 25 store plans and operating statements.

B. Meat DepartmentLocation of the Meat Department in the Store's Shopping Pattern

The location of the meat department is indicated as it appears in each store's shopping pattern. This was done for the purpose of trying to determine if location had any effect on sales return for this department.

The meat department makes its best total contribution when located across the back of the store, in a right-hand, single traffic flow pattern. This makes it more convenient for the customer to make her selection and provides more space for wider aisles. The aisle widths for meat, in this study, generally ranged from 6 to 9 feet in all stores.

Best performance for the department is normally expected when located first in the shopping pattern. Whatever is gained in meat sales however is usually lost in impulse sales in other departments; thereby adversely affecting total sales.

Case studies of store operations have shown, by dollar sales in traffic counts, that the total store layout performs best to have the impulse departments first and locate the meat department at the back. When meat is located first, it often experiences only one exposure. When it is across the back, the customer may shop each time she comes down the grocery aisle. Shoppers have been observed to exchange meat items during shopping procedures in this type of department location.³

Meat Sales Area

The percentage of meat sales area to total sales area varied from a high of 12.2 percent

The percentage of square feet of grocery sales area to total sales area varied from a high of 80.5 percent to a low of 29.9 percent with a median of 69 percent. Three stores had a percentage of grocery sales area above 80 percent, 19 stores were in the range from 79 to 62.5 percent, and three stores had below 60 percent of the sales area devoted to grocery sales.

Other detailed figures for the grocery department are shown in Appendix Table 6.

Sales per Square and Linear Foot of Grocery Sales Area

There does not appear to be any uniform pattern between sales per square foot or linear foot and gross sales in the grocery department. Sales per square foot in grocery ranged from a high of \$6.06 to the low of \$1.69, with a median of \$3.01. Sales per linear foot ranged from \$68.72 to the low of \$14.45, with a median of \$28.33.

Grocery Gross Margin

The range from a high of 22.3 percent to a low of 14.4 percent, with a median figure of 18.5 percent. Seven stores had a gross margin of 20.0 percent and above, and only two stores were below the 15 percent margin.

Distribution of Grocery Sales

Groceries, as a percent of total sales ranged from a high of 73.3 percent to a low of 59.4, with a median of 69.4 percent. Eleven of the stores in this study had a distribution above 70 percent and only one store was below 60 percent.

Backroom Storage

Ten stores had backroom space for grocery storage ranging from 30.5 to 10.3 percent of the grocery sales area. Nine had from 33.0 to 47.3 percent; and five stores had over 50 percent of storage space in relation to the grocery sales area. The median in this category was 36.4 percent.

Grocery storage used as much as 80 percent of the total backroom area for one store and as little as 37.6 percent in another. Grocery backroom showed considerable variation. The comparisons indicate that more definite guidelines can be developed as a standard for determining the optimum size of grocery backroom.

Appendix Table 7 shows usable square feet of grocery storage, percent of usable backroom area, and percent of grocery sales area. Usable space was defined as that area of the backroom which could be identified as being used for the movement of a specific product from the receiving area, through storage and/or preparation area to the sales floor.

³Twelve Traffic Flow Studies conducted in Missouri by Clyde R. Cunningham and Ted L. Joule, Department of Ag Economics, University of Missouri, Columbia.

to a low of 6.0 percent. Only six stores in the study used less than 5 percent of the total sales area for meat sales.

Meat Gross Sales

Sales ranged from \$33,091 to \$4,720 with a median of \$9,128. There did not appear to be a uniform relationship between meat sales space and gross meat sales. The store with the highest gross meat sales used 4.0 percent of the total sales area, while the store with the second highest gross meat sales used 8.6 percent of the total sales area. The store with the lowest meat gross sales used 7.8 percent of the total sales area. This might indicate that some stores had better management and merchandising programs than others. Appendix Table 8 illustrates the variation between all the stores.

Sales Per Square and Linear Foot of Meat Sales Area

There does not appear to be any uniform relationship between sales per square foot and total meat sales area. For example, Store No. 5 with 720 square feet of the sales area has the highest sales per square foot (45.95) and Store No. 1, with 780 square feet of meat sales area has the lowest (\$6.72). The same holds true for sales per linear foot. The median sales per square foot for the meat department was \$15.20.

Stores with the meat department located to the left of the store ranged in sales per square foot \$26.77 (second place in total ranking) to \$6.83 which was ranked next to last in the total sample. Stores No. 5 and 1 represent the extreme in sales per square foot for stores with the meat department across the back. For information on individual stores, refer to Appendix Table 8.

Sales per linear foot ranged from \$31.18 to a low of \$7.23, with a median of \$126.71. The store with left-hand traffic pattern, with meat first, had sales per linear foot of \$7.23 (last in total ranking) and \$72.73 which ranked in twenty-third place in the total study for all stores.

Meat Gross Margin

The meat department is one of the departments with the highest operating costs. The factors involved are the cost of product, equipment, operation of equipment, product perishability and labor. Because of this a good gross is a necessity. A gross margin of near 26 percent is considered an optimal objective. The opportunity to reach this objective exists as proven by the four stores in the study that have been able to exceed this objective. Anything less will not permit this department to make the contribution to overhead, for it to amortize the equipment in order to pay its contribution to overhead. In all stores, the highest gross margin was

38.4 percent, the low was 15.0 percent, with a median of 20.8.

As shown in Appendix Table 8, the stores with a good gross margin and high sales were Stores No. 5 and 6. This should provide a desirable contribution to profit.

Distribution of Meat Sales

Total distribution for the three stores with meat on the right side, was 23.8, 26.7, and 26.1 percent. The three stores with meat on the left side had meat distribution as a percent of total sales of 20.8, 22.7, and 30.8. In stores with meat located across the back, a wide range in percent distribution was found-- 33.6 to 18.7 percent.

Backroom Storage

Storage and preparation area for the meat department as used in this study, include the cooler space, preparation area, and a portion of the receiving area.

The percent of total backroom area used for meat preparation and storage ranged from a high of 38.1, to a low of 10.8, with a median of 20.7 percent. In comparing the backroom space to the respective sales area for meat, the percentages ranged from a high of 327.8 to a low of 70.9. Table 5 compares the meat departments in four stores and illustrates the variability in percent backroom to sales area.

Table 4
COMPARISONS BY CATEGORY FOR THE MEAT DEPARTMENT IN THE TOP FOUR STUDY STORES

Category	Store Number			
	5	6	14	2
Percent Backroom to Sales Area	320.3%	91.5%	174.9%	94.6%
Gross Margin	28.2%	26.2%	27.1%	22.5%
Distribution	33.6%	21.9%	26.1%	23.8%
Weekly Sales	\$27,143	\$19,172	\$21,180	\$12,718
Sq.Ft. Meat Sales Area	720	1040	936	780
Sales per Sq. Ft.	\$ 45.95	\$ 18.96	\$ 22.62	\$ 10.55

It does not appear that Store No. 5 should require a backroom space three times the size of the sales area, when Store No. 6 and 14 had relatively good gross margins, distribution and weekly sales with considerably less backroom space. Other charts in the appendix provide more information for comparisons with this data on meat department performance.

Projections for the Meat Department

Operations have been observed where the preparation or backroom area would not support the sales area. The product volume could not be produced to meet the demand during heavy shopping periods. This study shows the wide variability between the sales areas and backroom space. The one significant question which has not been explained here, is, the increased efficiency that can be obtained by improved work scheduling, product flow, and equipment location.

These particular areas would seem to need further research in order to determine the best methods to use. This study considered only the blueprint and corresponding operating statement for space allocation and how the allotted space measures up to the dollar return for that area.

Discussions with the store engineers indicate that not many changes were planned for the backroom. Some believe there will be less backroom space used for meat, with a trend in increasing box beef and pallet handling, including the use of wider cooler doors and fewer meat rails.

Table 5

PROFILE OF THE MEAT DEPARTMENT

Category	High	Low	Median
Meat Sales	\$33,091	\$4,720	\$9,128
Sq. Ft. of Meat Sales Area	1428	360	720
% of Total Sales Area	12.2%	3.9%	6.0%
Sales per Sq. Ft.	\$ 45.95	\$ 6.72	\$ 15.20
Sales per Lin. Ft.	\$318.18	\$ 7.23	\$125.71
Gross Margin	38.4%	15.0%	20.8%
Distribution	33.6%	18.7%	24.7%
% Backroom to Meat Sales Area	327.8%	70.9%	197.5%

C. Produce Department

The industry has generally accepted this department as one of the more important, since it is the department with color, and contributes effectively to store image, and it can make a significant contribution to profit.

Previous observations by industry representatives had indicated that this department

does best when located first in the shopping pattern. Studies conducted in Missouri indicate that produce departments located near first in the shopping pattern creates impulse buying. One objective in this study was an attempt to determine if department location had any relationship to performance of the department. The data shown in Appendix Table 12 indicates that location does affect performance. However, not many stores had produce located in the left-hand and last position of the traffic pattern.

Gross sales for the produce department, distribution of total sales, and gross margin are shown in Appendix Table 10. Linear feet and square feet of produce sales area are also indicated in this table. The second page of Appendix Table 10 has used the same figures but are arrayed from high to low sales for this department. This was done for ease in making comparisons for further study which will be discussed in another section.

Table 12 in the Appendix shows that the stores with the highest gross margin and percent of total sales in produce had this department located second in the traffic pattern.

Sixteen stores had the produce department appearing first in line of store shopping. Six stores having produce first, had the department on the right side, in a right-hand single shopping pattern. Five of the stores having produce first, had the department to the left, in a left-hand single traffic pattern. In stores with dual traffic flows, this study showed that four had the produce department on the right side and one store had this department on the left.

Appendix Table 10 shows gross sales, distribution of sales, gross margin, and sales per linear and square feet of the produce department. As was done for groceries and meat, the second page of this table has the same figures but are arrayed in descending order.

Appendix Table 11 shows the amount of storage space used for produce. Also, the percent of produce storage to total backroom space.

Produce Sales Area

The percentage of produce sales area to total sales area varied from a high of 18.7 to a low of 4.6 percent, with a median of 10.9 percent. There does not appear to be any uniform relationship between square foot allocated to produce sales and sales per square foot. Five stores had over 1500 square feet of sales area allocated to produce sales, including the one with the highest sales per square foot (\$6.09) and also included the store with the lowest sales per square foot (\$1.42).

Gross Sales

There did not appear to be a uniform relationship between produce sales space and gross produce sales. Sales ranged from a high of \$9,694 to a low of \$1,178 with a median of \$2,375. Store No. 5 held the second highest rank with only 1705 square feet of produce sales area and Store No. 6 had 2704 square feet.

Sales per Square and Linear Foot of Produce Sales Area

Sales per square foot of produce sales area ranged from a high of \$6.09 to a low of \$1.42 with a median of \$2.85. Linear foot of produce sales area ranged from a high sales of \$67.32 to a low of \$11.04 with a median of \$27.10.

Produce Gross Margin

The produce department is characterized with a product that is highly perishable, high risk department with risk of loss resulting in higher costs. Thus, a higher gross margin is a necessity. A gross margin of near 33 percent is considered an optimal objective. Ten of the stores have been exceeding this objective. The range for all stores is from a high of 38.7 percent to a low of 21.0 percent, with a median of 31.0 percent.

Distribution of Produce Sales

The percent distribution of the produce department ranged from a high of 11.9 to a low of 4.7 percent, with a median of 6.6 percent. For produce located first in the shopping pattern, the percent distribution ranged from 10.6 to 5.0 percent. Second, 11.9 percent to a low of 4.7, with a median of 6.5 percent. For produce located last in the shopping pattern a percent distribution ranged from a high of 6.0 percent to a low of 4.9, with a median of 5.6 percent.

Backroom Storage

The space allocated for produce preparation and storage varied from a low of 5.0 percent to a high of 26.8 percent of total backroom space, with a median of 13.3 percent. Five stores had a produce backroom space of more than 20 percent. Nine stores had a range from 20.2 to 26.4 percent total backroom space; eight stores ranged from 10.8 to 18.0 and five had produce backroom allocation of less than 10 percent--these ranged from 7.1 to 9.8 percent.

Table 6

PROFILE OF THE PRODUCE DEPARTMENT

<u>Category</u>	<u>High</u>	<u>Low</u>	<u>Median</u>
Produce Sales	\$9,694	\$1,178	\$2,375
Sq. Ft. of Produce Sales Area	2704#	384#	856#
% of Total Sales Area	16.6%	4.0%	9.5%
Sales/Sq. Ft. Pro. Sales Area	\$6.09	\$ 1.42	\$ 2.88
Sales/Linear Ft. Pro. Sales Area	\$67.32	\$11.04	\$27.10
Gross Margin	38.7%	21.0%	31.0%
Distribution	11.9%	4.7%	6.3%
% Backroom to Pro. Sales Area	193.9%	21.3%	106.0%

Source: 25 Operating statements and store plans.

II. Department Data Other Than Grocery, Meat and Produce

Table 13 in the appendix shows the number of stores with data for other departments than groceries, meat, and produce. Some of this information will make even more interesting comparisons when referred to the criteria charts. When the respective percentages are deducted from groceries, it tends to place each department in a more true perspective performance relationship. (An example: a 15 percent distribution of non-foods in a grocery distribution of 59 percent).

Non-Foods

Four stores had figures on this department included on their operating statement. The distribution ranged from a high of 15.0 to a low of 4.3 percent. The gross margin ranged from 31.5 to 14.8 percent. Three of the four stores had sales of between \$3,000 and \$4,000 weekly. No. 5 store had a relatively large area devoted to non-foods with weekly sales of \$14,747, a distribution of total sales of 15.0 percent, and a gross margin of 16.4 percent.

Stores will be using more space for non-foods in the future because of convenience and the attainable margins associated with this department. As in other departments there is a need for well-trained personnel to manage the department. Lacking proper management, some retail firms will be better off to remain in the food business rather than attempt to compete in the non-food discounters.

Bakery

The percent distribution in twelve bakery departments varied from a high of 7.0 percent to a low of .9, with a median of 2.5 percent. The gross margin of all but one of the operations varied from a high of 68.0 percent to a low of 17.6 with a median of 28.4 percent.

Only twelve operating statements had data for the bakery reported separate from other departments. Some earlier research studies provide information on locating this department either first or last in the traffic pattern but gave no specific data indicating success related to location. During the last few years it appears that this department has created an image of a "first" or "Impulse" department in the shopping pattern.³

Each department makes its own contribution. This depends somewhat on the local environment. Each should assist in making the total package that creates customer image.

³"Service and Self-Service Bakery Departments in Retail Food Stores." ARS, 52-4, May, 1965.

Deli

The percent distribution for the deli department ranged from a high of 7.3 percent to a low of .5--with a median of 6.0 percent. The gross margin varied from a high of 64.4 to a low of 24.4 percent.

The store with the highest gross had the lowest sales. The store with the highest distribution had weekly sales of \$3,157 which was second low to a weekly sales of \$4,901, with a distribution of 6.0 and a gross margin of 24.4 percent. For other comparisons see Appendix Table 17.

With the increasing demand for prepared foods, this department will increase in popularity and space requirements in supermarket operations. A successful deli department requires a commitment to well-trained personnel, proper equipment, good sanitary measures, and merchandising.

In addition to the bakery, deli, and non-food departments, Appendix Table 13 shows a department breakdown of three frozen foods, two with liquor, and two dairy departments.

III. Profitability

The Net Before Taxes varied from a high of 5.72 percent to a low of -1.80. There is evidence that the department performance and volume between departments mainly determine the profitability. The ranking order of Stores No. 6, 5, 14, and 2 did not change when labor expense, other operating expenses, total operating expenses, and net before taxes were eliminated, as shown in Appendix Table 18. The stores were located far enough apart geographically to involve different operating costs.

Generally the profitability was higher than expected with a median of 2.73 percent, which indicates that most of the stores were top performers for their area.

CTO and CTP

Only nine of the 25 firms in this study had departmental data for computing contribution to profit or overhead. This data was not a part of the original objective but was interesting when noted. Data of this type seems to be needed in making management decisions, because it tells more specifically what each department is contributing. Otherwise one department may be subsidizing another. This is not as significant as how much, and which department is carrying more than its fair share of the overhead costs.

Without this type of information management is making decisions without current accurate data. Data for the meat department does not provide all the information. It is

a high equipment cost department, uses more power and water than most other departments. These costs consequently should be considered as a part of the contribution so its contribution of this department can be accurately determined.

Without records on frozen food operations, management does not know the shrink factor, inventory turns. If any department does not pay its way, some other department must subsidize it. This appears to be associated with competitive situations in a given area; therefore, it is essential to know the department performance in order to be competitive.

Appendix Table 15 has listed, for grocery, meat, and produce, each department's share of these expenses. As mentioned before a sufficient number of stores did not report these operating costs to provide a representative sample.

Store No. 5 compares favorably in all categories used, except for sales distribution in grocery. It rated lowest in this respect. Gross margin would indicate distribution would have been adequate had volume been obtained. However, it is somewhat lower than the pace-setters of the high in grocery distribution. In other departments this store appeared to do well, however did not hold up in grocery for some reason.

IV . Productivity

Sales Per Man Hour

Figures were not conveniently available to make a detailed analysis of sales per man hour. With the few who provided this measure of productivity indicates that uniform data was not available.

This is a most important area as related to operational costs. This appears to be a fairly good criteria on which to develop standards because, obviously, this has a close relationship to sales costs. Labor is a major part of costs; therefore, sales per man hour is significantly related to productivity.

The data made available for this study, in this area, are listed in Appendix Table 16. Sales per man hour varied from a high of \$408 to \$37 for the grocery department, \$242 to \$34 for meat; and \$49 to \$15 for produce.

Sales Per Square Foot Area

Sales per square foot for the sales area and/or total store area seemed to be an acceptable criteria to use in rating these stores. This represents a basic cost for each store. Therefore, returns applied to the same area should be creditable procedures for evaluation. This attempts to eliminate a bias as to size or volume and provides a

reliable basis for comparing efficiency in stores of different sizes or volumes.

Appendix Table 17 shows sales area and sales per square foot, plus total store and sales per square foot for each store used in this study.

V. Refrigerated Equipment

While data for this survey was being collected, some information was obtained concerning the refrigeration equipment that was being used in the sales area, and changes contemplated for the future. The main reasons for requesting this type of information is that the operating statement provides a base for comparing specific departments, and knowledge of the types of equipment used in the departments help to eliminate most hypothetical assumptions concerning the operating performance of these departments.

The available literature does not present all the facts on the performance of refrigeration equipment. Very good information was available on the design of the equipment, but the operating information available from published research, or the equipment manufacturers, was related to either the specific case volume or the dollar sales volume that refrigeration equipment would hold, rather than showing actual operating costs as a background of performance.

The interviews continually pointed out that the retailer did not have good information on comparative costs of equipment, operating costs, and how expandable the system might be if he wanted to do some remodeling.

A recent USDA study to determine the most economical and efficient needs of supplying refrigeration to a hypothetical four-building food distribution center concluded that the most economical choice was to have one set refrigeration system for the entire complex.⁴ A question is whether this concept of one refrigeration system for all equipment could be applied to the supermarket. Comments from operators indicate that this might be the most economical system to install and operate as long as everything was performing on the line. However, there seems to be some question as to whether this would be economical if and when there needs to be some repairs or maintenance on one part of the equipment, which might necessitate the whole system being down. Operators have indicated that they

⁵"A Study of Refrigeration Systems for Urban Food Distribution Centers," published by the Agricultural Research Service U. S. Department of Agriculture, Washington, D. C., January 1972.

would have much more flexibility in their operation, for insurance of quality control of the products, if segments of the system could be isolated while work was being done on any phase of the system. This phase of the operation needs additional study with in-depth involvement of equipment personnel and retailers.

Refrigerated Equipment in the Store's Meat Section

The majority of the stores in this study have the single layer meat cases. Some have backfed, multi-tier and controlled-temperature. A definite trend was expressed toward a multi-tier display for fresh meat. The use of multi-tier equipment will undoubtedly increase because of additional product exposure, and better use of cube space, increasing sales per square foot of floor space use.

Table 7
Refrigerated Display Equipment

Store Number	Fresh Meat	Produce	Frozen Food
1	Single	Single	Bin
2	Single	Single	Bin
3	Single	Single	5-Deck, Door
4	3-Deck & Single FF 5-Deck	Single	Bin
5	Single	Single	Bin
6	Single	Single	Bin
7	Single	Single	Bin
8	Single	2-Deck	Bin
9	Single	2-Deck	Bin
10	Single	Single	5-Deck, Open
11	Single	Single	Bin
12	Single	Single	Bin
13	Single	Single	Bin
14	3-Deck	Single	5-Deck, Open
15	Single	Single	Bin
16	Single	Single	Bin, and 4-Deck
17	Single	Single	Bin
18	Single	Single	Bin
19	Single	Single	Bin
20	Single	Single	Three, 5-Deck Open
21	Single	Single	Bin
22	Single	Single	Bin
23	4-Deck	2-Deck	3-Deck, Open
24	Single	Single	Bin
25	(not indicated)		

Refrigerated Equipment in the Store's Frozen Food Section

It was noted that the frozen food department is not treated as a separate department as are meat and produce in many retail operations. Only three operating statements gave detailed information for this department. More detailed breakdown is needed before management can determine the performance of this department. The same would hold true for the other perishable departments such as dairy and deli.

The retailers did not have information on the operating costs of frozen food display equipment. Many indicated a need for comparative cost data on multi-deck open frozen food cases vs. freezers with doors on the front. Retailers indicated that there appeared to be considerable variability in the degree to which different types of equipment could hold product temperatures during defrost cycles. There is no information available to indicate customer attitudes, or the number of customers the different types of equipment could serve in peak periods. In addition, there is not information available that relates the performance of the frozen food equipment to the store's air conditioning system, or the location of doors or drafts within the sales area.

The retailers' opinions indicated that some of the latter information was available but not in the form that they could use it in planning their new store operations.

VI. Receiving

All stores in this study had either dock unloading, or utilized lifts. During the past few years there has been rapid movement toward unloading trucks by pallets. Twenty of the 25 stores had five-foot wide or wider doors to move products through. Four stores had doors four-foot wide; 12 stores had meat doors of less than five-feet; and seven stores had produce doors less than five feet wide.

More changes are needed to be ready for movement of box beef from truck to cooler. Four feet wide doors do not provide enough space to move a 40-inch pallet conveniently through, especially with the possibility of overhanging boxes, which often exist, or the inadequate "chauffering" of the pallets.

Consideration needs to be given to cooler door width for produce for the same reasons. A five-foot wide minimum door width appears to be the most desirable.

VII. Engineering Department

After observing the 25 plans, from different firms in a wide range of areas of the United States, there does not appear to be any formalized pattern used for store design

and layout. Someone seems to have had an idea, the idea appeared to be adequate in that area, so others picked it up and used it with slight modifications to fit their own store. In every case there was no data available to prove that their plan was the best one.

The "store engineering department" was usually located in the organization structure under the vice-president in charge of real estate, or store development, or management. In most cases it was located there because of the many engineering needs in planning associated with obtaining equipment, store location, construction, codes, zoning, and the alleviation of store operating problems. In the majority of the cases it was directed by personnel with practical experience, who had been brought up through the ranks. The obvious conclusion was that this position had more responsibility for improving operating performance than recognition for the need for applying the results of the latest engineering technology.

Often personnel in the independent retailer group would say, "I work for the owner." There is no argument here, but more could be done toward an attempt to convince the owner he may not be getting the best return for the dollars expended in store design and layout.

Most personnel in the "store engineering department" were not technically trained engineers--they were former store operating personnel. For the 25 stores, only eight of the personnel with responsibility for store design and layout had formal training in engineering or drafting. Analysis of the layout plans indicate that in too many cases, people that had worked in store operations were asked to be engineers. On the other hand, the few that were engineers were not well schooled in store operating procedures.

It is hoped that the material assembled in this report will assist somewhat in filling the gap by pointing out the need for engineers and store operating people to work together in planning new layouts.

Engineering personnel usually made the basic plans, checked the plans, and assisted in obtaining and installing equipment. Operation personnel cooperated with the contractor, architect, and equipment people and coordinated the operational activities.

In operations, where management personnel or supervisors made these decisions, they generally left more responsibility with the contractor and equipment men to design the equipment layout for each department.

There is some feedback from the operation level to the engineering department, but evidently not enough. Operating experience is not being used to the best advantage because it is not adequately combined with engineering expertise.

Store engineering personnel commented that they checked with operational personnel, supervisors, store managers, and department personnel to obtain their evaluation of the utility, convenience and economic factors in the operations. This data was then used for their information and management decisions in what changes would be made in future plans. Operational personnel responded by saying they were not asked anything--someone else made the decisions.

Reactions such as these indicate that it would be productive to encourage more feedback from operational levels concerning the performance of specific pieces of equipment and problems associated with the design and layout of their departments.

In addition to establishing more communication between the engineering department and people at store level, it is important to establish assignments for the engineering department. The duties and responsibilities of the store engineer should be established as follows (along with the corresponding authority):

1. Basic design and layout (department location, traffic flow, type of equipment, service of equipment).

2. Assist department personnel in equipment location and planning product flow.

3. Administer all contracts in remodeling or construction.

4. Assist in site location (slope, unloading, parking, etc.).

SELECTION OF BEST LAYOUTS

After evaluating all of the plans and operating statements in detail for each department, the question naturally arises as to which plans appear to be the best for a total store layout. It was decided that a ranking system based upon 25 selected performance criteria might provide the best indication of a good, efficient, store layout.

The 25 criteria that were selected for the ranking system included: sales per square foot of total store area; backroom as a percent of total store area; sales area as a percent of total store; frontend as a percent of total sales area; and sales per square foot total sales area. Then for each department--(grocery, meat, and produce) measures included: sales per square foot of the respective sales area; sales per linear foot sales area; gross margin; percent distribution; sales area as a percent of total sales area; backroom area as a percent of the respective sales area; and department backroom as a percent of total backroom.

All stores in the sample were arrayed in ascending, or descending, order (depending upon the criteria being measured) and assigned a rank of from "1" to "25" depending upon the position in the array. A ranking of "1" was considered as the best performance and "25" poorest for each measure. The rankings for each store on all criteria were combined to determine a total score for each plan. The total scores for all the stores were arrayed in ascending order. The store with the lowest total score (207) ranked in first place, and the one with the highest score (462) ranked last. Of the top three stores, the first, and second, had single traffic patterns, while the third ranked store had a dual traffic pattern.

At this point, it should be recognized and emphasized that there are a lot of factors that are not readily quantifiable that influence the performance of a particular supermarket. Some of these include the number and aggressiveness of competition, the merchandising ability and image of a store, and certainly the personalities, attitudes and skills, of the employees. Recognizing the importance of these variables, one should remember that these plans and operating statements were selected by store management personnel as representing their more successful plans. Lacking information that might indicate otherwise one may assume that the non-quantifiable variables affect all of these operations similarly, or at least do not alter performance significantly.

Remembering that assumption one can examine the best single and dual traffic pattern stores in the survey and then develop a composite store plan. Store Number 6 and Store No. 5 both with single traffic patterns were

ranked first and second, respectively, for all stores using the quantifiable criteria. Store Number 14 ranked third and represents the best store with dual traffic patterns. All three stores are relatively high volume stores with average weekly sales ranging between \$81,205 and \$98,623. The total store area ranged between 25,000 and 30,000 square feet. The stores not only ranked at the top, but they happen to be comparable in size and weekly sales volume.

While the top two single traffic stores were similar in operating performance, Store Number 5 was selected to represent the best single traffic pattern store over Store Number 6 for the following reasons: (1) The layout for Store Number 5 serves to illustrate more good basic layout principles; (2) more information was available for this store; (3) the net before taxes 5.52 percent was higher than the 3.93 for Number 6; and (4) labor costs were approximately 51 percent of operating costs as opposed to 67 percent for store Number 6, and considered to be more typical.

A Good Single Traffic Pattern Store

Table 8 presents a profile of some of the major performance indicators for Store 5 and Figure 2 presents the corresponding store layout. Store Number 5 utilizes a right hand single traffic pattern with good individual department location to encourage smooth customer flow and provide merchandising flexibility. This plan locates the impulse bakery department first, followed by produce, along the side. The bakery is a bake-off operation with rolls, cakes, etc. and thus more attractive and appealing than the standard bread rack.

The deli, meat and dairy departments are located across the back, followed by specialty departments and checkouts on the remaining perimeter. The backroom storage and preparation areas for all perishable departments are located behind their respective sales display areas and provided with doorways for easy access for servicing.

This store has a weekly sales volume approaching \$100,000, with a sales per square foot of sales area of \$5.50. It has a very good meat and produce image with the highest sales per square foot of meat sales of any store at \$45.95, and the third highest sales per square foot of produce sales at \$4.11. Looking at the meat department further it is interesting to note that this store had a relatively low percent of the sales area used for meat sales, the second highest meat gross margin for all stores and the highest meat sales distribution. In the produce department

the gross margin was third highest for all stores at 35.8 percent while the store managed to rank in fifth place on produce sales distribution. Other features of the layout for this store include a relatively small backroom for dry grocery storage in relation to total backroom and in relation to the total grocery sales area.

While the list of positive features of Store Number 5 is substantial, there are also some questionable elements in this layout, and in the operating performance of the store. The more obvious questions center on the low grocery sales distribution and the amount of backroom space utilized for meat preparation and storage. This store had the lowest grocery sales distribution of the study stores, at 59.4 percent, and this includes 15 percent of its sales in non-foods. At the same time it is operating with one of the lower gross margins, at 17.2 percent, and the second highest percent of sales area used for grocery sales. With these conditions one might expect a slightly better balance between the grocery, meat, and produce department in sales distribution.

The meat department has the highest proportion of the total backroom space in relation to meat sales area of any store, at 327 percent. It is agreed that most any store operator might be happy with the performance of this department, but serious questions need to be raised concerning the necessity of such a

relatively large, costly, area being devoted to meat preparation and storage. A reduction in this space might have relatively little effect on the sales distribution for this department and "free up" costly space for alternative uses that might improve the return on investment. The gradual shift toward boxed beef or centrally processed meat increases the importance of evaluating this space allocation.

Another question that can be raised about this store concerns the fact that the operating costs, as a percent of total sales, are relatively high when compared to the other stores. This may reflect the emphasis placed on the perishables department and pharmacy including the services provided and the equipment costs associated with maintaining the desired image, but the point is that the costs are still relatively high.

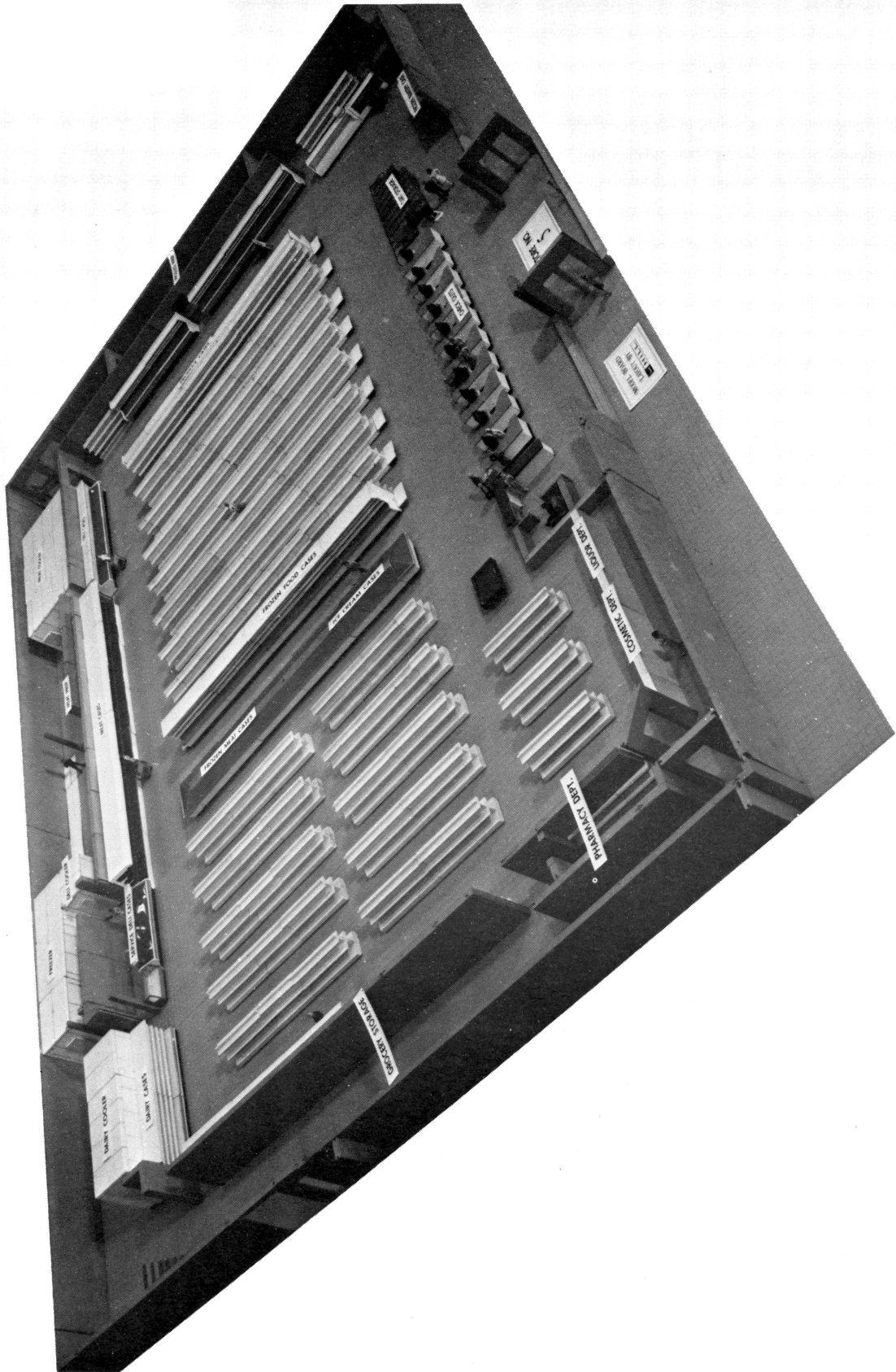
Additional questions might be raised concerning the location of the frozen food department and the use of tables in the produce aisles. Frozen foods would have better sales distribution if located nearer the end of the shopping pattern and help maintain product temperature and quality assurance for the customers. The location of tables in the produce aisle limits the exposure on the display racks and gondola and results in congestion in the aisles during peak traffic periods. Store 14 provides a good illustration of the recommended aisle layout and substantiates it with the highest distribution of produce sales of any store.

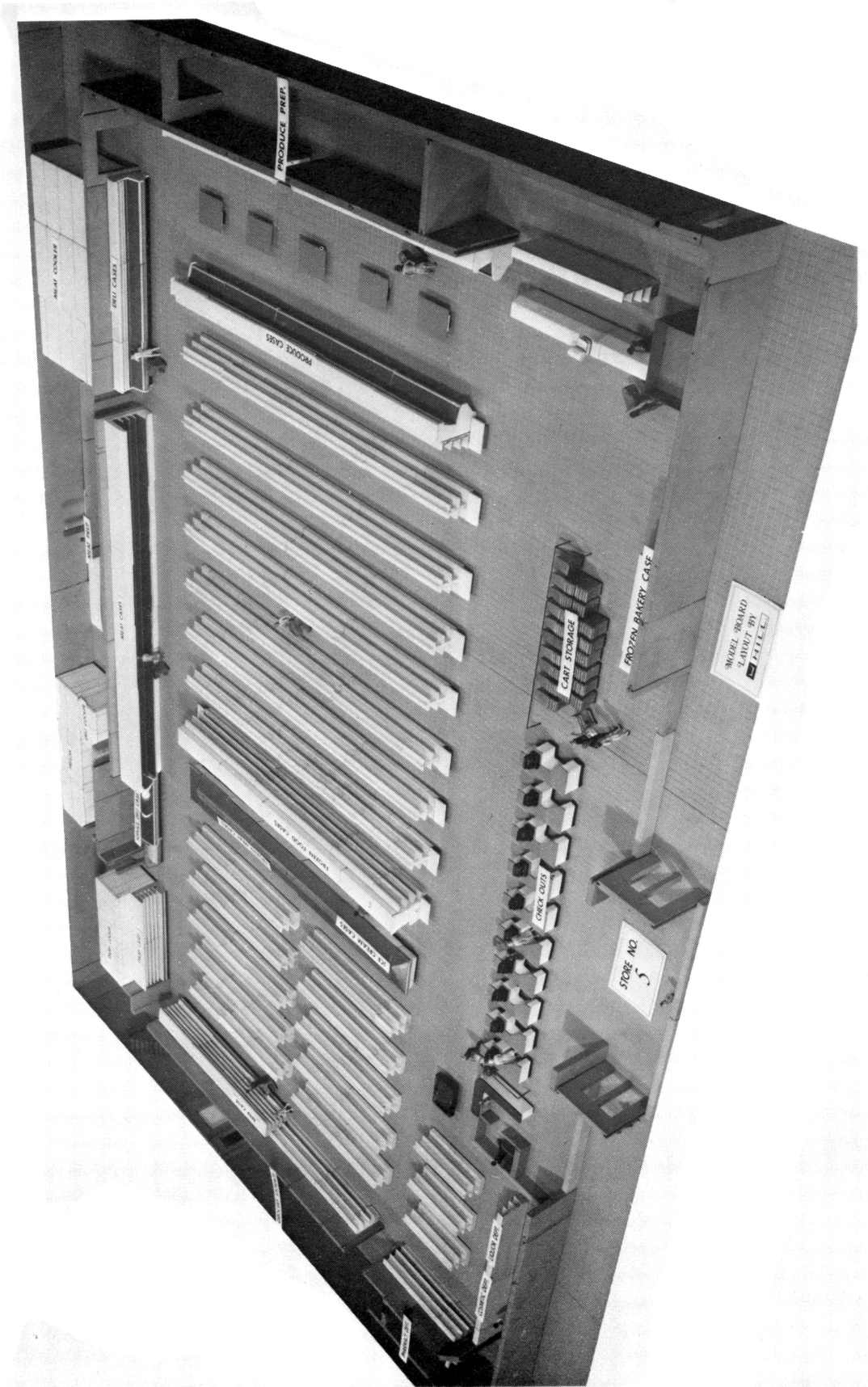
Table 8

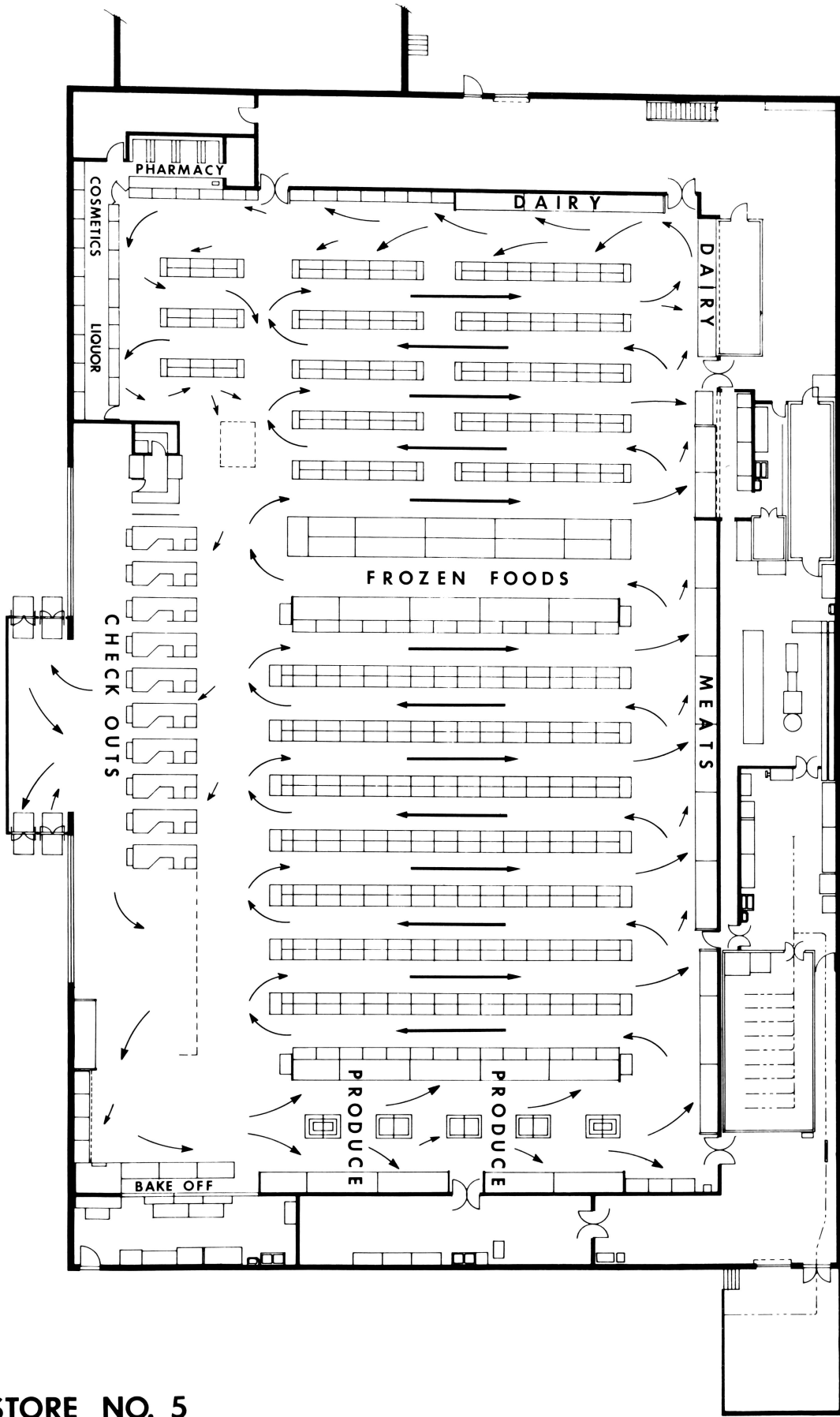
Profile of a Single Traffic Shopping Pattern Store
(Store Number 5)

<u>Total Store</u>	
Total weekly sales	\$ 98,623
Total store area	26,798 sq. ft.
Sales per sq. ft. total store area	\$ 3.68
Backroom area/total store area	22.6%*
Sales area/ total store area	66.9%*
Sales per sq. ft. sales area	\$ 5.50
Frontend/% of total sales area	12.8%
<u>Grocery Department</u>	
Percent of total store sales in grocery	59.3%
Gross margin	17.2%
Grocery sales area/total sales area	80.4%
Sales per sq. ft. grocery sales area	\$ 3.32
Sales per linear ft. grocery sales area	\$ 31.48
Grocery backroom/grocery sales area	19.8%
Grocery backroom/total backroom area	50.1%
<u>Meat Department</u>	
Percent of total store sales in meat	33.5%
Gross margin	28.2%
Meat sales area/total sales area	4.0%
Sales per sq. ft. meat sales area	\$ 45.95
Sales per linear ft. meat sales area	\$ 318.18
Meat backroom/meat sales area	327.8%
Meat backroom/total backroom area	39.0%
<u>Produce Department</u>	
Percent of total store sales in produce	7.1%
Gross margin	35.8%
Produce sales area/total sales area	9.5%
Sales per sq. ft. produce sales area	\$ 4.11
Sales per linear ft. produce sales area	\$ 54.75
Produce backroom/produce sales area	38.8%
Produce backroom/total backroom area	10.9%
<u>Other Operating Data</u>	
Operating cost/total sales	19.7%
Labor cost/total sales	10.0%
Net before taxes	5.5%

*Does not total to 100 percent because of 10.5 percent of total store area devoted to other uses such as mezzanine, etc.







STORE NO. 5

A Good Dual Traffic Pattern Store

Table 9 presents a profile of some of the major performance indicators for Store Number 14 which was the best store with a dual traffic pattern and ranked third overall. Figure 3, presents the layout for this store. This store appears to have good balance in sales distribution among the three major departments with produce ranking highest for all stores. This store also ranked highest of all stores in overall net profit before taxes, with 5.7 percent.

Some of the major features of this store include the third highest allocation of sales area to total store area, with 76.2 percent of the total store space allocated to the sales area. For example, the grocery backroom is relatively small in relation to the total grocery sales area when compared with the other stores. This gives credence to the emphasis placed on displaying and merchandising rather than the storage of products. Also, the store was operating with a 20.1 percent gross margin in the grocery department. Only 8.4 percent of the total sales area was allocated to the front-end which made it the third smallest allocation, percentagewise, for the study.

This store has 936 square feet, or 4.1 percent of the total sales area, allocated for meat sales, which was the fourth smallest percentage for the survey. At the same time, the sales per square foot of the meat sales area was third highest with \$22.63. The store was operating with a 27.1 percent gross margin in the meat department and ranked sixth in meat distribution.

The produce department, located along the left wall, was located either first or last in the shopping pattern depending upon which store entrance was used by the customer. It utilizes long parallel gondolas without tables in the aisles and realized the highest sales per square foot of produce sales for any store at \$6.09. The produce sales area of 1,591 square feet was the fourth largest produce department in the study and utilized 6.7 percent of the total sales area in the store. With a low gross margin of 23.3 percent this store ranked first in produce sales as a percent of total store sales, or produce distribution. This produce department had weekly sales approximating \$9,700 which was \$7,300 more than the median for all stores in the study. It is not known whether the high produce sales can be attributable to the low gross margin, the department layout, or the merchandising ability of the produce manager. Very likely it is a combination of all three, although one wonders what the impact of a slightly higher gross margin might be on department performance. On the other hand, management may be using the produce department to draw people into the store, and,

with the high net before taxes it has attained, appears to be succeeding.

As with Store Number 5, there are a few areas in Number 14, aside from the low produce gross margin that ought to be questioned. The first is the need for a dual traffic pattern. It is noted that this customer traffic pattern is quite common in some parts of the country, but studies still indicate that it does not provide a smooth traffic flow with as good product exposure as is experienced with a single traffic flow pattern. This is especially true when meat and dairy departments are located along the sides of the store sales area.

Approximately 80 percent of the customers entering a supermarket make a purchase from the dairy department, and placement of this department along the side in a store with a dual traffic pattern will not expose many of them to other products in the store. Store Number 14 has the highest percentage of the total sales area allocated to groceries and similarly one of the lower sales per square foot figures at \$2.47. The grocery distribution was next to the lowest at 62.0 percent. The grocery department appears to be the weakest department in the store. One contributing factor may be the use of cross aisles in the department enabling customers to bypass a considerable amount of merchandise. A customer traffic flow study would very likely indicate that product exposure is relatively low in some aisles. Closing off the cross aisles would not appear to result in aisles that are too long for shopping convenience, and would help to minimize congestion in traffic flow.

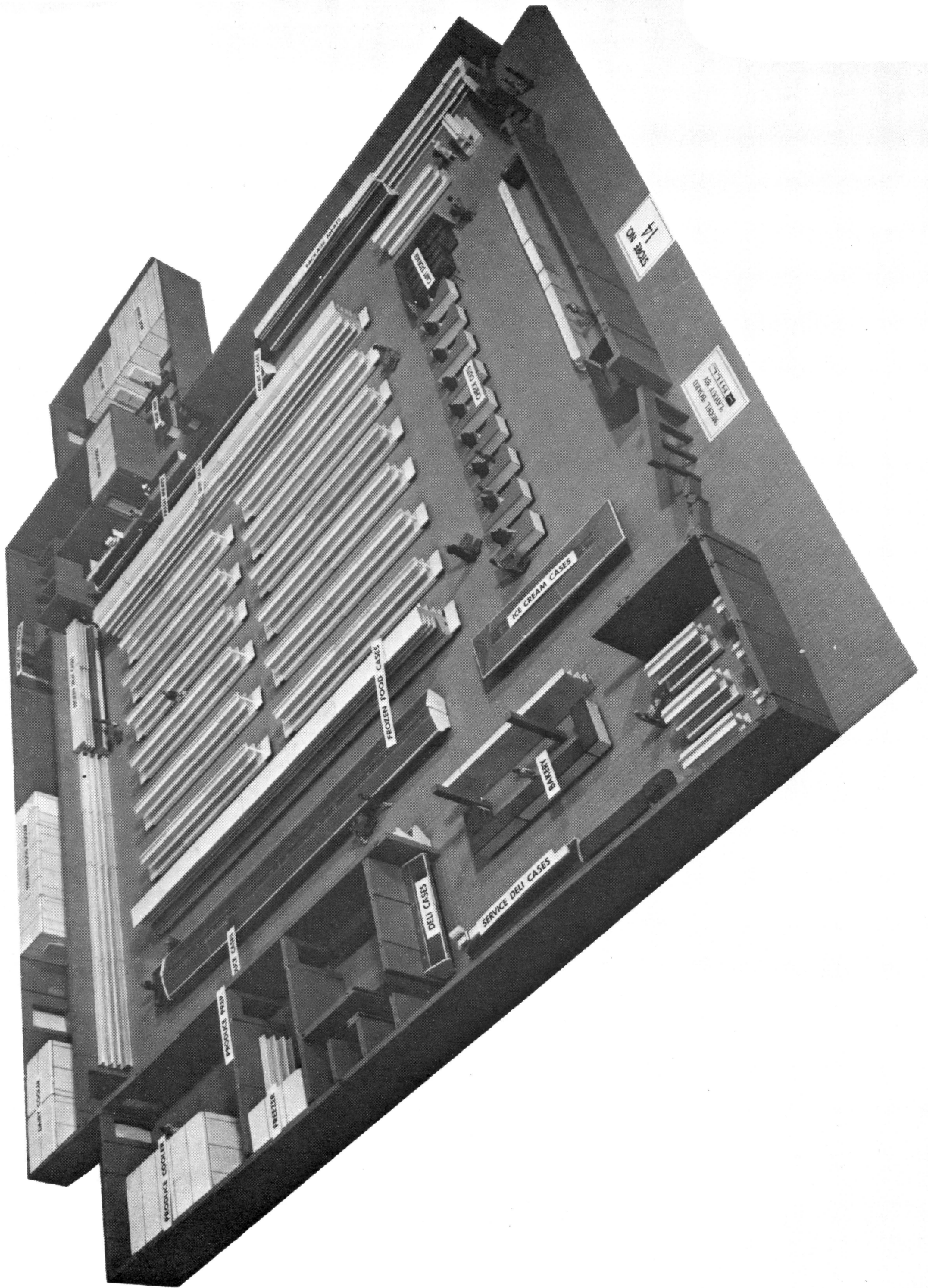
The dairy and meat departments should not have to compete with each other in the same aisle. Since these departments are frequented by most of the shoppers, placing them in the same aisle can result in congestion and loss of sales. Other negatives that should be noted about this store include a low sales per square foot of total sales area which was below the median for all stores, and a sales per square foot of total store area that was only slightly above the median. Lastly, the freezer for storing frozen foods in the backroom was judged inconvenient in terms of supplying the frozen food sales area.

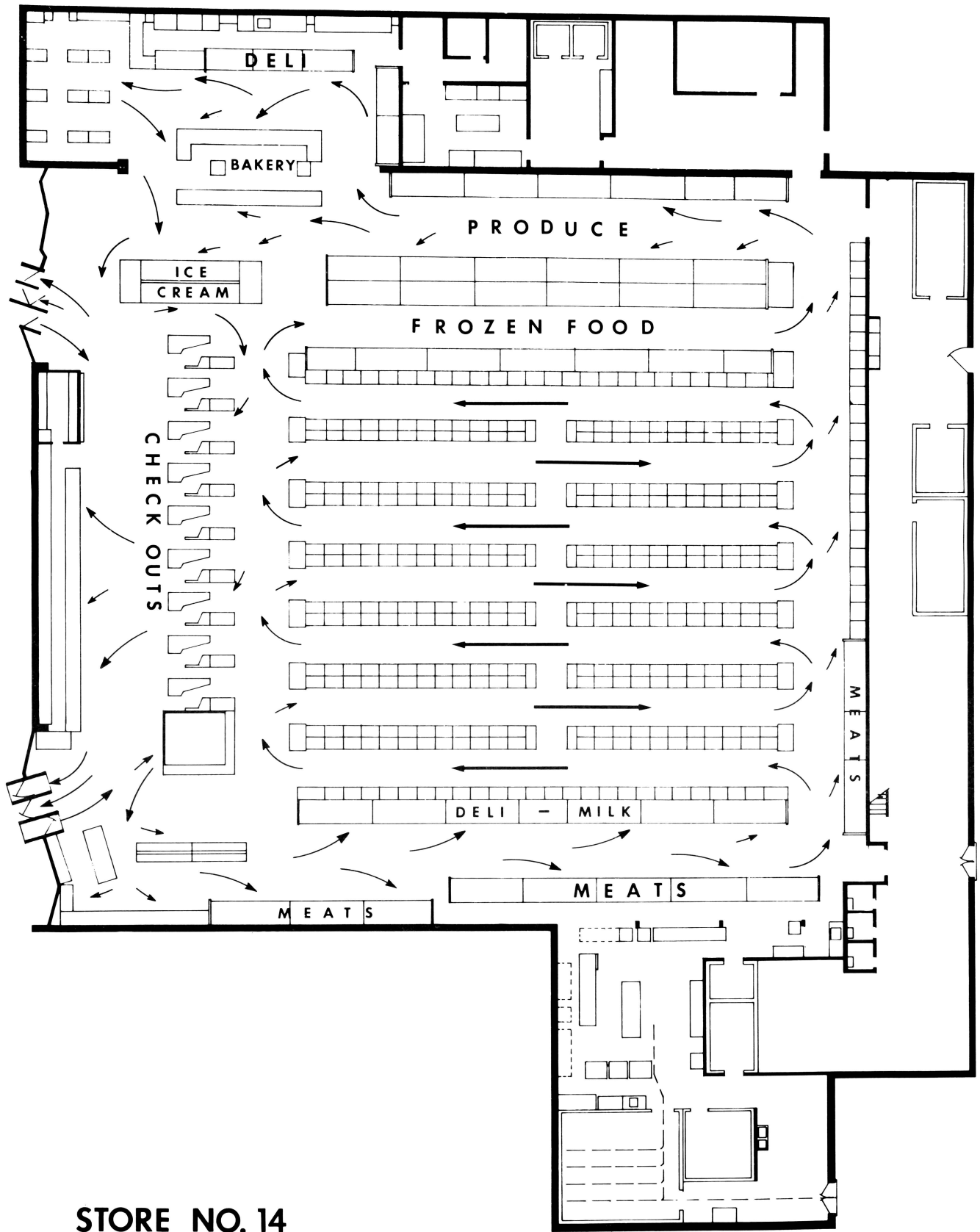
Table 9

Profile of a Dual Traffic Shopping Pattern Store
(Store Number 14)

<u>Total Store</u>		
Total Weekly Sales -----		\$81,205
Total Store Area -----		29,990 sq. ft.
Sales per Sq. Ft. Total Store Area -----	\$	2.71
Backroom Area/Total Store Area -----		21.3%*
Sales Area/Total Store Area -----		76.2%*
Sales Per Sq. Ft. Sales Area -----	\$	3.55
Front-end/Total Sales Area -----		8.4%
 <u>Grocery Department</u>		
Percent of Total Store Sales in Grocery -----		62.0%
Gross Margin -----		20.1%
Grocery Sales Area/Total Sales Area -----		80.5%
Sales Per Sq. Ft. Grocery Sales Area -----	\$	2.47
Sales Per Linear Ft. Grocery Sales Area -----	\$	25.27
Grocery Backroom/Grocery Sales Area -----		21.5%
Grocery Backroom/Total Backroom Area -----		61.9%
 <u>Meat Department</u>		
Percent of Total Store Sales in Meat -----		26.1%
Gross Margin -----		27.1%
Meat Sales Area/Total Sales Area -----		4.1%
Sales Per Sq. Ft. Meat Sales Area -----	\$	22.63
Sales Per Linear Ft. Meat Sales Area -----	\$	220.64
Meat Backroom/Meat Sales Area -----		174.9%
Meat Backroom/Total Backroom Area -----		25.7%
 <u>Produce Department</u>		
Percent of Total Store Sales in Produce -----		11.9%
Gross Margin -----		23.3%
Produce Sales Area/Total Sales Area -----		6.7%
Sales Per Sq. Ft. Produce Sales Area -----	\$	6.09
Sales Per Linear Ft. Produce Sales Area -----	\$	67.32
Produce Backroom/Produce Sales Area -----		49.7%
Produce Backroom/Total Backroom Area -----		12.4%
 <u>Other Operating Data</u>		
Operating Cost/Total Sales -----		16.3%
Labor Cost/Total Sales -----		8.2%
Net Before Taxes -----		5.7%

*Does not total to 100 percent because of 2.5 percent of total store area devoted to other uses.





STORE NO. 14

A Suggested Composite Store Layout

After examining good single and dual traffic pattern stores and the other 23 layouts and operating statements, it was apparent that it might be possible to develop some general guidelines for store layout. For example, while the top three stores were large with 25,000 to 30,000 square feet of floor-space, the next two stores (No. 2 and 19) were relatively small with total floorspace between 10,000 to 14,400 square feet. Although half the size of the first three, these stores were also high performance stores, yielding a net before taxes of 3.81 and 4.03 percent of sales. They were able to accomplish this only by incorporating good design and layout principles, and by adapting a merchandising strategy to serve their customers' needs. But, the point remains that a store does not have to be large to be successful.

Recognizing the variability in size that is possible, a composite store layout has been developed to illustrate a recommended proportional allocation of store space and departments. In developing this composite, an effort has been made to identify the best characteristics of existing layouts based on performance and previous research studies and to fit them together in the layout. The proportional allocation of total store space are designed to serve as guidelines, and while they may be adjusted to satisfy particular management requirements or to obtain lower store construction costs, have proven to be sound under actual store operating conditions. As construction site costs, and labor and equipment costs increase these design and layout factors will become more significant.

Table 10 presents the proportional allocation of space to each area of the composite store plan. A suggested arrangement of the departments is presented in Figure 4. Some of the important features of this layout are discussed as follows:

The suggested layout calls for a right-hand single traffic pattern for customer shopping. Studies continue to show that this pattern minimizes shopping congestion, allows for a relatively smooth flow of traffic, and enhances maximum product exposure.

The attractive, high impulse bakery and produce departments are located first and second respectively in the shopping pattern. The bakery department is considered in this plan to include the items such as rolls, pies, cakes, cookies, doughnuts, etc. as opposed to the loaf bread rack. Other research studies have provided information on suggested locations for this department.⁶

Recently it appears that this department has gained considerable support for the first location. This is especially true when some baked goods undergo final preparations at the store.

The attractive natural color, and freshness of the fresh fruits and vegetables, along with a good margin, help the produce department to attain either the first or second location in the shopping pattern.

The meat department is located across the back of the store. This location gives the department repeated exposures as the shopper travels the grocery aisles, encourages wider aisles in the meat area, and greater customer convenience. Most of the stores in the survey had the meat department located in this position.

The dairy department is located next, about as far from the entrance as possible, because nearly 80 percent of the shoppers will shop in this department. This location assures that the shopper will be exposed to a wide variety of other merchandise while making a dairy item purchase.

The frozen food department is placed near the end of the shopping pattern to minimize the chances of the product thawing with resulting quality depreciation. Placing it last also serves to eliminate some doubling back in the shopping pattern by customers as is presently the case in many stores.

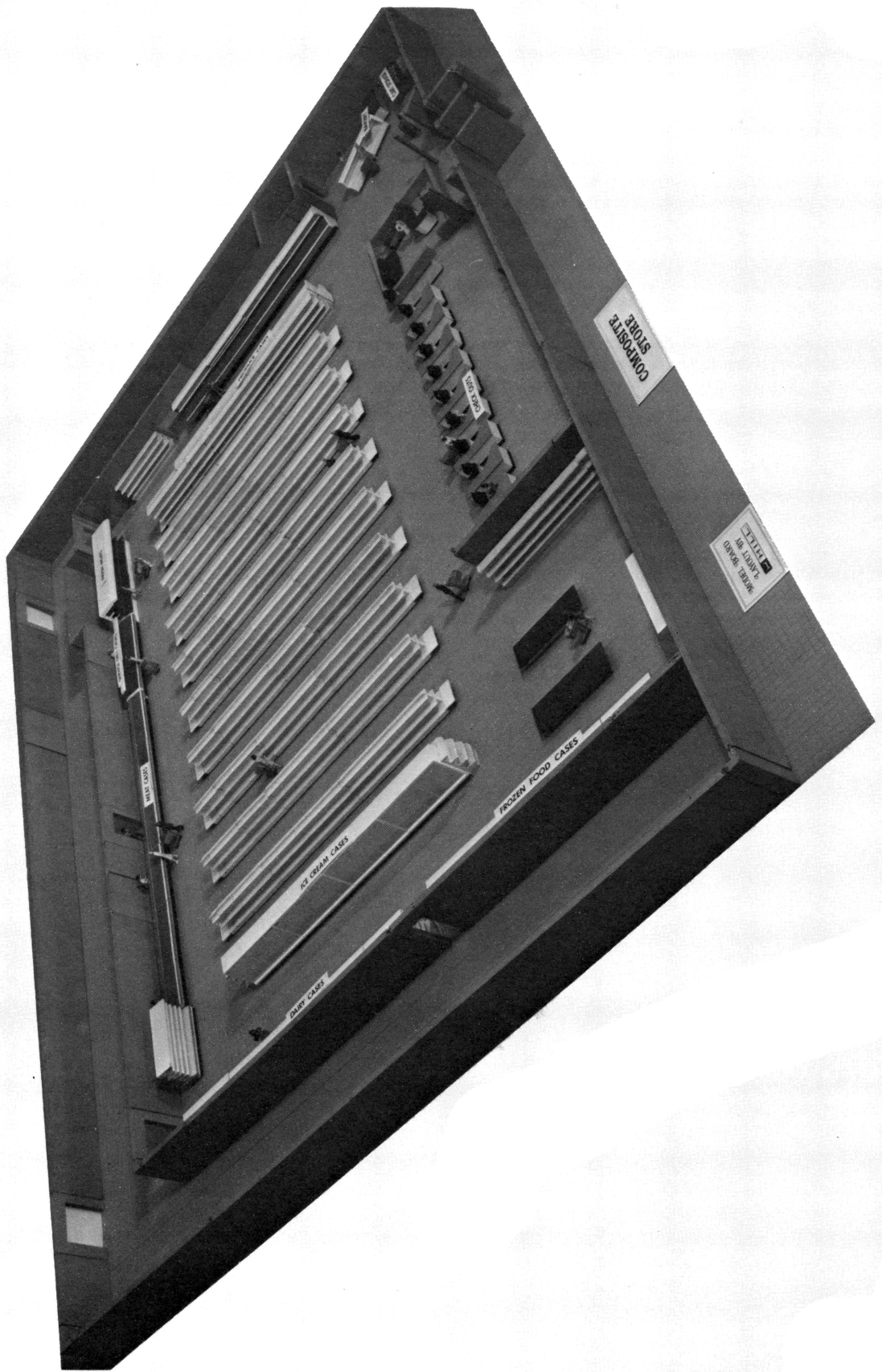
Table 10
Space Allocation for the Composite Layout

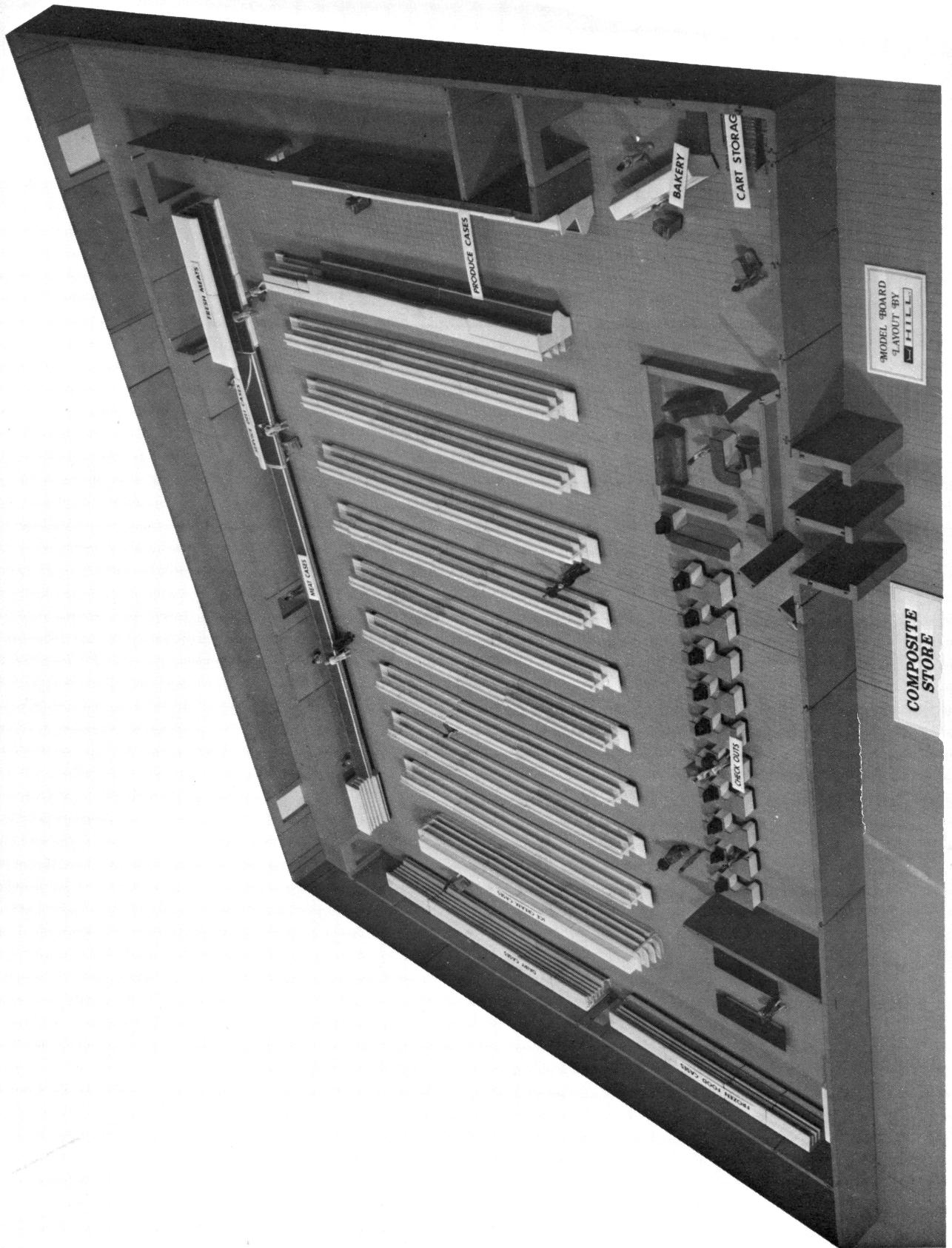
<u>Proportionate Allocation of Total Store Area:</u>	
Sales Area	71%
Backroom Area	29%
<u>Proportionate Allocation of Total Sales Area:</u>	
Product Sales Area	91%
Front-end Area	9%
<u>Proportionate Allocation of Product Sales Area:</u>	
Grocery Sales Area	83%
Meat Sales Area	6%
Produce Sales Area	11%
<u>Proportionate Allocation of Backroom Space:</u>	
Product Storage & Preparation	80%
Other*	20%

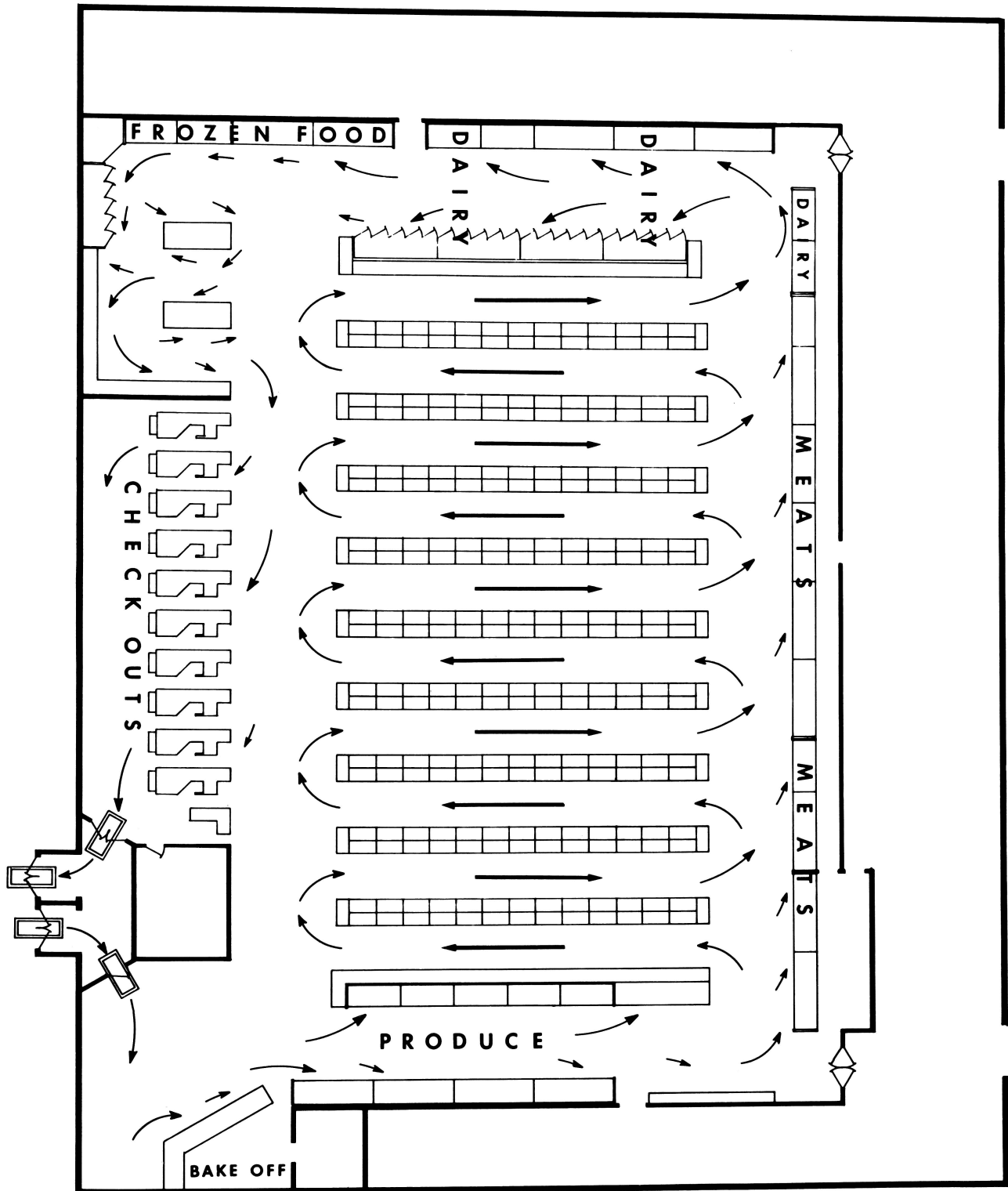
*Other space includes areas used for mezzanines, conference rooms, employees lounges, restrooms, compressor rooms, janitor closets, etc.

As much as possible, the backroom storage and preparation areas should be located so they are immediately back of, and supporting their respective sales display areas. All doorways for handling the receiving products should be at least five feet wide to accommodate materials handling equipment.

⁶ARS 52-4, May 1965.







COMPOSITE STORE

LIMITATIONS OF THE STUDY AND NEED FOR FURTHER RESEARCH

Evaluation of the store layouts and corresponding operating plans for 25 stores has provided considerable information and insight into some of the factors that are important in developing good store layouts. However, it should be recognized that there is considerable data about individual store operations that cannot be gleaned from operating statements and plans by themselves, and still contributes greatly to the success or failure of a food store. Some of this data includes: the competitive environment, store location, clientele, management policies, merchandising ability, personnel training, work scheduling, materials handling procedures and equipment, and sales per man hour. Interviews with people involved in store planning and operations have pointed up the need for additional research in some of these areas.

More specifically, a study should be undertaken to evaluate the various types of

refrigerated display equipment available for retail store use. They should be evaluated to determine operating costs, ability to display merchandise, and customer acceptance. Information needs to be obtained on space and power requirements for computerized checkout systems. The impact of a boxed beef program on meat backroom space requirements needs to be determined.

A major problem, identified by this study, is the fact that management lacks good reliable information to evaluate the operating performance of some very important departments in the store. Only one store in the survey had a detailed breakout of the operating performance of most of its departments. This may have accounted, or contributed greatly to the relatively high ranking for this particular store.

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5. A Study of Refrigeration Systems for Urban Food Distribution Centers." Published by the Agricultural Research Service, U. S. Department of Agriculture, Washington, D. C., January, 1972.
6. "Service and Self-Service Bakery Departments in Retail Food Stores." ARS 52-4, May 1965.

APPENDIX TABLES

Appendix Table 1

ALLOCATION OF TOTAL STORE AREA

Store Number	SALES AREA		BACKROOM		OTHER ^{1/}		Sq. Foot Area of Total Floor Space
	Square Feet	Percent of Total Store Area	Square Feet Storage	Percent of Total Store Area	Square Feet	Percent of Total Store Area	
1	11,993	74.9	3,580	22.4	427*	2.7	16,000
2	7,795	75.7	2,401	23.3	104	1.0	10,300
3	13,478	63.2	7,128	33.5	694	3.3	21,300
4	15,125	55.8	8,367	30.8	3634*	13.4	27,126
5	17,924	66.9	6,056	22.6	2818*	10.5	26,798
6	20,220	78.5	4,580	17.8	960	3.7	25,760
7	15,056	68.3	6,206	28.2	770	3.5	22,032
8	6,958	63.3	3,518	32.0	524	4.7	11,000
9	14,272	71.4	5,184	25.9	544	2.7	20,000
10	12,544	62.3	7,224	35.9	360	1.8	20,128
11	7,560	67.9	2,958	26.6	618*	5.5	11,136
12	18,786	73.4	6,758	26.4	56	.2	25,600
13	6,240	86.7	944	13.1	16	.2	7,200
14	22,850	76.2	6,375	21.3	765	2.5	29,990
15	8,240	68.3	3,206	26.6	614*	5.1	12,060
16	10,707	71.7	3,696	24.7	532	3.6	14,935
17	9,936	69.2	4,198	29.2	234	1.6	14,368
18	11,684	56.6	5,550	26.9	3408*	16.5	20,642
19	9,720	67.5	4,596	31.9	84	.6	14,400
20	7,768	72.8	2,700	25.3	204*	1.9	10,672
21	10,044	59.6	3,936	23.4	2856*	17.0	16,836
22	10,855	72.0	3,250	21.6	975*	6.4	15,080
23	9,450	64.3	3,645	24.8	1605*	10.9	14,700
24	11,530	65.9	5,838	33.4	132	.7	17,500
25	8,180	64.9	4,420	35.1	-	-	12,600

^{1/}"Other" space includes areas in the backroom and front part of the building used for mezanines, conference rooms, employee lounges, rest rooms, compressor rooms, supplies, etc.

*Part of this square foot area includes areas in the front part of the building rather than in the backroom area.

Appendix Table 2

FRONT END AREA

Store Number	Square Feet Front End Space in Sales Area	Percent of Total Sales Area	Sq. Feet of Other Front end ^{1/} Space	Total Front end Space	Percent of Total Store
1	1,022	8.5	280	1302	8.1
2	515	6.6	-	515	5.0
3	1,821	13.5	-	1821	8.5
4	2,211	14.6	3354	5565	20.5
5	2,288	12.8	764	3052	11.4
6	1,152	5.7	-	1152	4.5
7	2,784	18.5	-	2784	12.6
8	1,052	15.1	-	1052	9.6
9	1,792	12.6	-	1792	9.0
10	2,208	17.6	-	2208	10.9
11	896	11.9	72	968	8.6
12	3,450	18.4	-	3450	13.5
13	936	15.0	-	936	13.0
14	1,930	8.4	-	1930	6.4
15	1,012	12.3	384	1396	11.6
16	1,196	11.2	-	1196	8.0
17	1,248	12.6	-	1248	8.7
18	1,280	11.0	3072	4352	21.1
19	1,012	10.4	-	1012	7.0
20	1,460	18.8	120	1580	14.8
21	860	8.6	2856	3716	22.1
22	2,210	20.4	975	3185	21.1
23	2,167	22.9	1605	3772	25.7
24	1,404	12.2	-	1404	8.0
25	1,438	17.6	-	1438	11.4

^{1/}Conference rooms, employee lounges, and customer rest areas located in front part of the store building.

Appendix Table 3
 SQUARE FOOT AREA FOR PRODUCT SALES AREA

Store Number	GROCERY		MEAT		PRODUCE	
	Square Feet of Grocery Sales	Percent of Total Sales Area	Square Feet of Meat Sales	Percent of Total Sales Area	Square Feet of Produce Sales	Percent of Total Sales Area
1	9,615	80.17	780	6.50	576	4.80
2	5,771	74.03	780	10.70	729	9.35
3	9,353	69.39	808	5.99	1496	11.09
4	10,114	66.86	1300	8.59	1500	9.91
5	13,211	73.70	720	4.02	1705	9.51
6	15,324	75.78	1040	5.14	2704	13.37
7	9,732	64.63	1116	7.41	1424	9.45
8	4,506	64.75	544	7.82	856	12.30
9	11,331	79.39	572	4.01	576	4.03
10	8,024	63.96	832	6.63	1480	11.79
11	5,587	73.90	360	4.76	717	9.48
12	12,656	67.36	1360	7.24	1320	7.02
13	4,227	67.74	360	5.77	717	11.49
14	18,393	80.49	936	4.0962	1591	6.96
15	6,390	77.54	390	4.73	448	5.43
16	7,383	68.95	720	6.72	1408	13.15
17	7,400	74.47	672	6.76	616	6.19
18	8,208	70.24	1428	12.22	768	6.57
19	7,580	77.98	600	6.17	528	5.43
20	5,235	67.39	427	5.4969	646	8.31
21	7,044	70.13	468	4.65	1672	16.64
22	6,783	62.48	532	4.90	1330	12.25
23	4,859	51.41	1064	11.25	1360	14.39
24	8,910	77.27	448	3.88	768	6.66
25	5,882	71.90	476	5.81	384	4.69

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*Front end area is not included in the square feet of grocery sales in these figures.

Appendix Table 4
SQUARE FOOT AREA FOR PRODUCT BACK ROOM

Store Number	GROCERY		MEAT		PRODUCE	
	Grocery Storage Square Feet	% Groc. Storage to Groc. Sales Area	Meat Storage Square Feet	% Meat Storage to Meat Sales Area	Produce Storage Square Feet	% Produce Stg. to Produce Sls. Area
1	1855	19.3	764	97.9	961	166.8
2	1149	19.9	738	94.6	514	70.5
3	4830	51.6	1596	197.5	702	46.9
4	5235	51.8	2209	169.9	923	61.5
5	3034	23.0	2360	327.7	662	38.8
6	2879	18.8	952	91.5	749	27.7
7	4352	44.7	1230	110.2	624	43.8
8	2088	46.3	835	153.5	595	69.5
9	3735	33.0	990	173.1	459	79.7
10	4838	60.3	1205	144.8	1181	79.8
11	2036	36.4	624	173.3	298	41.6
12	4586	36.2	1644	120.9	528	40.0
13	436	10.3	355	98.6	153	21.3
14	3948	21.5	1637	174.9	790	49.7
15	1950	30.5	786	201.5	470	104.9
16	2070	28.0	1000	138.9	626	44.5
17	3170	42.8	600	89.3	428	69.5
18	3799	46.3	1013	70.9	738	96.1
19	2788	36.8	784	130.7	1024	193.9
20	1015	19.4	1061	248.5	624	96.6
21	2605	37.0	868	185.5	463	27.7
22	1680	24.8	1094	205.6	476	35.8
23	1971	40.6	780	73.3	894	65.7
24	4218	47.3	1150	256.7	470	61.2
25	3537	60.1	476	100.0	407	106.0

Note: Other backroom space is not included in the above totals.

Appendix Table 5
TOTAL BACKROOM SPACE

Store Number	Usable Backroom Space	Overhead ^{1/} Areas	Percent Overhead Area to Total Backroom	Total Backroom Area	Percent Backroom to Total Sales Area	Percent Backroom to Total Store Area
1	3580	147	3.9	3727	34.0	23.3
2	2401	104	4.2	2505	34.4	24.3
3	7128	694	8.9	7822	67.0	36.7
4	8367	280	3.2	8647	67.0	31.9
5	6056	2054	25.3	8110	51.9	30.3
6	4580	960	17.3	5540	29.1	21.5
7	6206	770	11.0	6976	56.8	31.7
8	3518	524	13.0	4042	68.4	36.7
9	5184	544	9.5	5728	45.9	28.6
10	7224	360	4.7	7584	73.4	37.7
11	2958	546	15.6	3504	52.6	31.5
12	6758	56	.8	6814	44.4	26.6
13	944	16	1.7	960	18.1	13.3
14	6375	765	10.7	7141	34.2	23.8
15	3206	230	6.7	3436	47.5	28.5
16	3696	532	12.6	4228	44.5	28.3
17	4198	234	5.3	4432	51.0	30.8
18	5550	336	5.7	5886	56.6	28.5
19	4596	84	1.8	4680	53.7	32.5
20	2700	84	3.0	2784	44.1	26.1
21	3936	-	-	3936	42.9	22.8
22	3250	-	-	3250	37.6	21.6
23	3645	-	-	3645	50.0	24.8
24	5838	132	2.2	5970	59.0	34.1
25	4420	-	-	4420	65.6	35.1

^{1/} Same as "Other" store space.

Appendix Table 6
DATA FOR THE GROCERY DEPARTMENT

Store Number	Gross Sales	Distribution of Sales	Gross Margin	Square ¹ / Feet	Sales Per Sq. Ft.	Linear ² / Feet	Sales Per Lin. Ft.	Total Store Sales
1	\$19,650	73.3%	22.0%	10,637	\$ 1.85	851	\$ 23.09	\$ 26,798
2	24,259	70.1	20.3	6,286	3.86	570	42.55	34,592
3	47,883	73.1	22.3	11,174	4.29	1348	35.52	65,585
4	76,969	70.1	16.5	12,325	6.24	1120	68.72	109,710
5	58,523	59.4	17.2	15,499	3.78	1859	31.48	98,622
6	64,828	71.8	20.0	16,476	3.93	1607	40.34	90,270
7	36,262	67.2	15.9	12,516	2.90	994	36.48	53,958
8	14,308	70.2	18.4	5,558	2.57	990	14.45	20,397
9	29,614	69.4	17.3	13,123	2.25	1045	28.33	42,706
10	62,001	72.9	14.4	10,232	6.05	956	64.85	85,052
11	23,325	70.4	14.7	6,483	3.59	587	39.73	33,131
12	37,649	66.6	17.7	16,106	2.33	1012	37.20	56,501
13	14,466	68.5	15.0	5,163	2.80	650	22.25	21,127
14	50,330	62.0	20.1	20,323	2.47	1991	25.27	81,205
15	22,299	68.7	16.8	7,402	3.01	821	27.16	32,470
16	23,239	72.4	18.9	8,579	2.71	945	24.59	32,090
17	21,423	68.6	19.3	8,648	2.47	986	21.72	31,230
18	30,210	70.3	21.6	9,488	3.18	1144	26.40	42,959
19	35,308	69.9	16.3	8,592	4.10	909	38.84	50,521
20	15,006	66.5	16.5	6,695	2.24	668	22.46	22,568
21	25,839	63.5	19.9	7,904	3.26	923	27.99	40,743
22	26,883	68.8	17.7	8,993	2.98	1059	25.38	39,082
23	24,036	68.8	22.1	7,026	3.42	736	32.65	35,002
24	17,460	71.4	18.5	10,314	1.69	868	20.11	24,459
25	24,659	69.3	19.2	7,320	3.36	844	29.21	35,505

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¹/ Square foot sales area includes frontend space for determining total grocery sales per square foot.

²/ Linear feet calculated as to length of gondolas (both sides) and not amount of shelf space.

Appendix Table 6 (Continued)

Ranking Order	Store No.	GROSS MARGIN	Store No.	GROSS SALES	Store No.	DISTRI-BUTION OF SALES	Store No.	TOTAL SALES	Store No.	SQUARE FEET	Store No.	SALES PER SQUARE FOOT	Store No.	LINEAR FEET	Store No.	SALES PER LINEAR FOOT
1	3	32.3	4	\$76,969	1	73.3	4	\$109,710	14	20,323	4	\$ 6.24	14	1991	4	\$68.72
2	23	22.1	6	64,828	3	73.1	5	98,622	6	16,476	10	6.05	5	1859	10	64.85
3	1	22.0	10	62,001	10	72.9	6	90,270	12	16,106	3	4.28	6	1607	2	42.55
4	18	21.6	5	58,523	16	72.4	10	85,052	5	15,499	19	4.10	3	1348	6	40.34
5	2	20.3	14	50,330	6	71.8	14	81,205	9	13,123	6	3.93	18	1144	11	39.73
6	14	20.1	3	47,883	24	71.4	3	65,585	7	12,516	2	3.85	4	1120	19	38.84
7	6	20.0	12	37,649	11	70.4	12	56,501	4	12,325	5	3.78	22	1059	12	37.20
8	21	19.9	7	36,262	18	70.3	7	53,958	3	11,174	11	3.59	9	1045	7	36.48
9	17	19.3	19	35,308	8	70.2	19	50,521	1	10,637	23	3.42	12	1012	3	35.52
10	25	19.2	18	30,210	4,2	70.1	18	42,959	24	10,314	25	3.36	7	994	23	32.65
11	16	18.9	9	29,614	19	69.9	9	42,706	10	10,232	21	3.26	8	990	5	31.48
12	24	18.5	22	26,883	9	69.4	21	40,743	18	9,488	18	3.18	17	986	25	29.21
13	8	18.4	21	25,839	25	69.3	22	39,082	22	8,993	15	3.01	10	956	9	28.33
14	12,22	17.7	25	24,659	22,23	68.8	25	35,606	17	8,648	22	2.98	16	945	21	27.99
15	9	17.3	23	24,036	15	68.7	23	35,002	19	8,592	7	2.90	21	923	15	27.16
16	5	17.2	2	24,259	17	68.6	2	34,592	16	8,579	13	2.80	19	909	18	26.40
17	15	16.8	11	23,325	13	68.5	11	33,131	21	7,904	16	2.71	24	868	22	25.38
18	4,20	16.5	16	23,239	7	67.2	15	32,470	15	7,402	8	2.57	1	851	14	25.27
19	19	16.3	15	22,299	12	66.6	16	32,090	25	7,320	14,17	2.47	25	844	16	24.59
20	7	15.9	17	21,423	20	66.5	17	31,230	23	7,026	12	2.33	15	821	1	23.09
21	13	15.0	1	19,650	21	63.5	1	26,798	20	6,695	9	2.25	23	736	20	22.46
22	11	14.7	24	17,460	14	62.0	24	24,459	11	6,483	20	2.24	20	668	13	22.25
23	10	14.4	20	15,006	5	59.4	20	22,568	2	6,286	1	1.85	13	650	17	21.72
24			13	14,466			13	21,127	8	5,558	24	1.69	11	587	24	20.11
25			8	14,308			8	20,397	13	5,163			2	570	8	14.45

^{1/} Same as preceding page except in decending order.

Appendix Table 7

BREAKDOWN OF GROCERY BACKROOM

Store Number	Square Foot of Usable Backroom Alotted to Grocery Storage	Percent of Usable Backroom	TOTAL USABLE BACKROOM AREA	Grocery Storage as a Percent of Total Backroom Area	TOTAL BACKROOM AREA
1	1855	51.8	3580	49.8	3727
2	1149	47.9	2401	45.9	2505
3	4830	67.8	7128	61.7	7822
4	5235	62.6	8367	60.5	8647
5	3034	50.1	6056	37.4	8110
6	2879	62.9	4580	52.0	5540
7	4352	70.1	6206	62.4	6976
8	2088	59.4	3518	51.7	4042
9	3735	72.0	5184	65.2	5728
10	4838	67.0	7224	63.8	7584
11	2036	68.8	2958	58.1	3504
12	4586	67.9	6758	67.3	6814
13	436	46.2	944	45.4	960
14	3948	61.9	6375	55.3	7140
15	1950	60.8	3206	56.8	3436
16	2070	56.0	3696	49.0	4228
17	3170	75.5	4198	71.5	4432
18	3799	68.5	5550	64.5	5886
19	2788	60.7	4596	59.6	4680
20	1015	37.6	2700	36.5	2784
21	2605	66.2	3936	66.2	3936
22	1680	51.7	3250	51.7	3250
23	1971	54.1	3645	54.1	3645
24	4218	72.3	5838	70.7	5970
25	3537	80.0	4420	80.0	4420

Appendix Table 8

DATA FOR THE MEAT DEPARTMENT

Store Number	Gross Meat Sales	Percent Distri- bution	Gross Margin	Square Feet of Meat Sales Area	Sales per Square Foot	Meat Sales Linear Feet	Sales per Linear Foot	Total Store Sales
1	\$ 5,241	19.6	20.8	780	\$ 6.72	64	\$ 81.89	\$ 26,798
2	8,231	23.8	22.5	780	10.55	52	158.28	34,592
3	12,284	18.7	25.5	808	15.20	120	102.36	65,585
4	27,142	24.7	21.4	1300	20.87	124	218.88	109,710
5	33,091	33.6	28.2	720	45.95	104	318.18	98,622
6	19,725	21.9	26.2	1040	18.96	136	145.03	90,270
7	14,172	26.3	21.7	1116	12.69	80	177.15	53,958
8	4,720	23.1	21.0	544	8.68	74	63.78	24,397
9	10,722	25.1	18.8	572	18.74	52	206.19	42,706
10	18,590	21.9	15.5	832	22.34	100	185.90	85,052
11	7,600	22.9	16.5	360	21.11	68	111.76	33,131
12	15,078	26.7	20.1	1360	11.09	119	126.71	56,501
13	5,264	24.9	16.2	360	14.62	28	188.00	21,127
14	21,181	26.1	27.1	936	22.63	96	220.64	81,205
15	8,553	26.3	22.7	390	21.93	72	118.79	32,470
16	6,573	20.5	23.4	720	9.13	72	91.29	32,090
17	8,348	26.7	16.1	672	12.42	70	119.26	31,230
18	10,280	23.9	20.2	1428	7.20	118	87.12	42,959
19	12,719	25.2	38.4	600	21.20	60	211.98	50,521
20	6,384	28.3	17.7	427	14.95	60	106.40	22,568
21	12,529	30.8	19.9	468	26.77	51	245.66	40,743
22	8,428	21.6	19.8	532	15.84	73	115.45	39,082
23	7,273	20.8	22.3	1064	6.83	100	72.73	35,002
24	5,559	22.7	16.7	448	12.40	768	7.23	24,459
25	9,128	25.6	15.0	476	19.17	65	140.43	35,606

Appendix Table 8 (Continued)

Ranking Order	Store No.	GROSS MARGIN	Store No.	GROSS SALES	Store Number	DISTRI-BUTION of SALES	Store No.	SQUARE FEET	Store No.	SALES PER SQUARE FOOT	Store No.	LINEAR FEET	Store No.	SALES PER LINEAR FOOT
1	19	38.4%	5	\$33,091	5	33.6%	18	1428	5	\$45.95	24	768	5	\$318.18
2	5	28.2	4	27,142	21	30.8	12	1360	21	26.77	6	136	21	245.66
3	14	27.1	14	21,181	20	28.3	4	1300	14	22.63	4	124	14	220.64
4	6	26.2	6	19,725	12,17	26.7	7	1116	10	22.34	3	120	4	218.88
5	3	25.5	10	18,590	7,15	26.3	23	1064	15	21.93	12	119	19	211.98
6	16	23.4	12	15,078	14	26.1	6	1040	19	21.20	18	118	9	206.19
7	15	22.7	7	14,172	25	25.6	14	936	11	21.11	5	104	13	188.00
8	2	22.5	19	12,718	19	25.2	10	832	4	20.87	10,23	100	10	185.90
9	23	22.3	21	12,529	9	25.1	3	808	25	19.17	14	96	7	177.15
10	7	21.7	3	12,284	13	24.9	2,1	780	6	18.96	7	80	2	158.28
11	4	21.4	9	10,722	4	24.7	5,16	720	9	18.74	8	74	6	145.03
12	8	21.0	18	10,280	18	23.9	17	672	22	15.84	22	73	25	140.03
13	1	20.8	25	9,128	2	23.8	19	600	3	15.20	15,16	72	12	126.71
14	18	20.2	15	8,553	8	23.1	9	572	20	14.95	17	70	17	119.26
15	12	20.1	22	8,428	11	22.9	8	544	13	14.62	11	68	15	118.79
16	21	19.9	17	8,348	24,22	22.7	22	532	7	12.69	25	65	22	115.45
17	22	19.8	2	8,231	6,10	21.9	25	476	17	12.42	1	64	11	111.76
18	9	18.8	11	7,600	23	20.8	21	468	24	12.40	19,20	60	20	106.40
19	20	17.7	23	7,273	16	20.5	24	448	12	11.09	2, 9	52	3	102.36
20	24	16.7	16	6,573	1	19.6	20	427	2	10.55	21	51	16	91.29
21	11	16.5	20	6,384	3	18.7	15	390	16	9.13	13	28	18	87.12
22	13	16.2	24	5,559			11,13	360	8	8.68			1	81.89
23	17	16.1	13	5,264					18	7.20			23	72.73
24	10	15.5	1	5,241					23	6.83			8	63.78
25	25	15.0	8	4,720					1	6.72			24	7.23

Note: Same as preceding table except these are in descending order for ranking purposes.

Appendix Table 9

BREAKDOWN OF MEAT BACKROOM

Store Number	Square Foot of Usable Backroom Alotted Meat Storage	Percent of Usable Backroom	TOTAL USABLE BACKROOM AREA	Meat Storage as a Percent of Total Backroom Area	TOTAL BACKROOM AREA
1	764	21.3	3580	20.5	3727
2	738	30.7	2401	29.5	2505
3	1596	22.4	7128	20.4	7822
4	2209	26.4	8367	25.5	8647
5	2360	39.0	6056	29.1	8110
6	952	20.8	4580	17.2	5540
7	1230	19.8	6206	17.6	6976
8	835	23.7	3518	20.7	4042
9	990	19.1	5184	17.3	5728
10	1205	16.7	7224	15.9	7584
11	624	21.1	2958	17.8	3504
12	1644	24.3	6758	24.1	6814
13	355	37.6	944	37.0	960
14	1637	25.7	6375	22.9	7140
15	786	24.5	3206	22.9	3436
16	1000	27.1	3696	23.7	4228
17	600	14.3	4198	13.5	4432
18	1013	18.3	5550	17.2	5886
19	784	17.1	4596	16.8	4680
20	1061	39.3	2700	38.1	2784
21	868	22.1	3936	22.1	3936
22	1094	33.7	3250	33.7	3250
23	780	21.4	3645	21.4	3645
24	1150	19.7	5838	19.3	5970
25	476	10.8	4420	10.8	4420

Appendix Table 10

DATA FOR THE PRODUCE DEPARTMENT

Store Number	Gross Sales	Distribution	Gross Margin	Square Feet	Sales per Square Foot	Linear Feet	Sales per Linear foot	TOTAL STORE SALES
1	\$ 1,905	7.1	35.3	576	\$ 3.30	80	\$ 23.82	\$ 26,798
2	2,102	6.1	21.5	729	2.88	56	37.53	34,592
3	5,418	8.3	32.9	1496	3.62	116	46.70	65,585
4	5,599	5.1	33.2	1500	3.73	185	30.26	109,710
5	7,008	7.1	35.8	1705	4.11	128	54.75	98,622
6	5,716	6.3	38.7	2704	2.11	184	31.06	90,270
7	3,524	6.5	29.4	1424	2.47	88	40.04	53,958
8	1,369	6.7	34.0	856	1.59	124	11.04	20,397
9	2,370	5.5	28.9	576	4.11	96	24.68	42,706
10	4,461	5.2	35.5	1480	3.01	156	28.59	85,052
11	2,206	6.7	31.0	717	3.07	96	22.97	33,131
12	3,774	6.7	25.2	1320	2.85	139	27.15	56,501
13	1,397	6.6	26.1	717	1.94	104	13.43	21,127
14	9,694	11.9	23.3	1591	6.09	144	67.31	81,205
15	1,618	5.0	35.1	448	3.61	66	24.51	32,470
16	2,278	7.1	35.6	1408	1.61	154	14.79	32,090
17	1,459	4.7	27.0	616	2.36	92	15.85	31,230
18	2,469	5.7	28.3	768	3.21	72	34.29	42,959
19	2,494	4.9	26.4	528	4.72	92	27.10	50,521
20	1,178	5.2	21.0	646	1.82	97	12.14	22,568
21	2,375	5.8	26.3	1672	1.42	145	16.37	40,743
22	3,771	9.6	36.8	1330	2.83	138	27.32	39,082
23	3,692	10.5	25.2	1360	2.71	140	26.37	35,002
24	1,440	5.9	31.7	768	1.87	96	15.00	24,459
25	1,819	5.1	32.3	384	4.73	48	37.89	35,606

Note: Linear ft. was measured by length of gondola at floor level--shelf space not included.

Appendix Table 10 (Continued)

Ranking Order	Store No.	GROSS SALES	Store No.	DISTRI-BUTION	Store No.	GROSS MARGIN	Store No.	SQUARE FEET	Store No.	SALES PER SQUARE FOOT	Store No.	LINEAR FEET	Store No.	SALES PER LINEAR FOOT
1	14	\$9,694	14	11.9	6	38.7	6	2704	14	\$6.09	4	185	14	\$67.32
2	5	7,008	23	10.5	22	36.8	5	1705	25	4.73	6	184	5	54.75
3	6	5,716	22	9.6	5	35.8	21	1672	19	4.72	10	156	3	46.70
4	4	5,599	3	8.3	16	35.6	14	1591	5,9	4.11	16	154	7	40.04
5	3	5,418	5,1,16	7.1	10	35.5	4	1500	4	3.73	21	145	25	37.89
6	10	4,461	8,11,12	6.7	1	35.3	3	1496	3	3.62	12	139	2	37.53
7	12	3,774	13	6.6	15	35.1	10	1480	15	3.61	22	138	18	34.29
8	22	3,771	7	6.5	8	34.0	7	1424	1	3.30	14	144	6	31.06
9	23	3,692	6	6.3	4	33.2	16	1408	18	3.21	23	140	4	30.26
10	7	3,524	2	6.1	3	32.9	23	1360	11	3.07	5	128	10	28.59
11	19	2,494	24	5.9	25	32.3	22	1330	10	3.01	8	124	22	27.32
12	18	2,469	21	5.8	24	31.7	12	1320	2	2.88	3	116	12	27.15
13	21	2,375	18	5.7	11	31.0	8	856	12	2.85	13	104	19	27.10
14	9	2,370	9	5.5	7	29.4	24,18	768	22	2.83	20	97	23	26.37
15	16	2,278	10,20	5.2	9	28.9	2	729	23	2.71	9,11,24	96	9	24.68
16	11	2,206	4,25	5.1	18	28.3	11,13	717	7	2.71	17,19	92	15	24.51
17	2	2,206	15	5.0	17	27.0	20	646	17	2.36	7	88	1	23.82
18	1	2,102	19	4.9	19	26.4	17	616	6	2.11	1	80	11	22.97
19	25	1,819	17	4.7	21	26.3	1,9	576	13	1.94	18	72	21	16.37
20	15	1,618			13	26.1	19	528	24	1.87	15	66	17	15.85
21	17	1,459			12,23	25.2	15	448	20	1.82	2	56	24	15.00
22	24	1,440			14	23.3	14	384	16	1.61	25	48	16	14.79
23	13	1,397			2	21.5			8	1.59			13	13.43
24	8	1,369			20	21.0			21	1.42			20	12.14
25	20	1,178											8	11.04

Note: Same as preceding page except these are arrayed in decending order for final ranking purposes.

Appendix Table 11

BREAKDOWN OF PRODUCE BACKROOM

Store Number	Square Foot of Usable Backroom Alotted to Produce Storage	Percent of Usable Backroom	TOTAL USABLE BACKROOM AREA	Produce Storage as a Percent of Total Backroom Area	TOTAL BACKROOM AREA
1	961	26.8	3580	25.8	3727
2	514	21.4	2401	20.5	2505
3	702	9.8	7128	9.0	7822
4	923	11.0	8367	10.7	8647
5	662	10.9	6056	8.2	8110
6	749	16.4	4580	13.5	5540
7	624	10.1	6206	9.1	6796
8	595	16.9	3518	14.7	4042
9	459	8.9	5184	8.0	5728
10	1181	16.3	7224	15.6	7584
11	298	10.1	2958	8.5	3504
12	528	7.8	6758	7.7	6814
13	153	16.2	944	15.9	960
14	790	12.4	6375	11.1	7140
15	470	14.7	3206	13.7	3436
16	626	16.9	3696	14.8	4228
17	428	10.2	4198	9.7	4432
18	738	13.3	5550	12.5	5886
19	1024	22.3	4596	21.9	4680
20	624	23.1	2700	23.1	2784
21	463	11.8	3936	11.8	3936
22	476	14.6	3250	14.6	3250
23	894	24.5	3645	24.5	3645
24	470	8.1	5838	7.9	5970
25	407	5.0	4420	5.0	4420

Appendix Table 12

DATA FOR THE PRODUCE DEPARTMENT BY LOCATION IN SHOPPING PATTERN

Store Number	Gross Margin	Percent Distribution	Sales Per Square Foot	Sales per Linear Foot
<u>First in Shopping Pattern</u>				
<u>Right Side--Single Traffic</u>				
4	33.2	5.1%	\$ 3.73	\$ 30.26
5	35.8	7.1	4.11	54.75
8	34.0	6.7	1.59	11.04
10	35.5	5.2	3.01	28.59
13	26.1	6.6	1.94	13.43
15	35.1	5.0	3.61	24.51
16	35.6	7.1	1.61	14.79
<u>Right Side--Dual Traffic</u>				
20	21.0	5.2	1.82	12.14
21	26.3	5.8	1.42	16.37
23	25.2	10.5	2.71	26.37
24	31.7	5.9	1.87	15.00
<u>Left Side--Single Traffic</u>				
1	35.3	7.1	3.30	23.82
3	32.9	8.3	3.62	46.70
7	29.4	6.5	2.47	40.04
11	31.0	6.7	3.07	22.97
22	36.8	9.6	2.83	27.32
<u>Second in Shopping Pattern</u>				
<u>Right Side--Single Traffic</u>				
6	38.7	6.3	2.11	31.06
12	25.2	6.7	2.85	27.15
17	27.0	4.7	2.36	15.85
<u>Left Side--Dual Traffic</u>				
14	23.3	11.9	6.09	67.32
<u>Last in Shopping Pattern</u>				
<u>Right Side--Single Traffic</u>				
2	21.5	6.0	2.88	37.53
18	28.3	5.7	3.21	34.29
19	26.4	4.9	4.72	27.10
<u>Left Side--Single Traffic</u>				
9	31.3	5.5	4.11	24.68
25	32.3	5.1	4.73	37.89

Appendix Table 13

SALES, DISTRIBUTION, AND GROSS MARGINS FOR OTHER DEPARTMENTS

Store Number	Sales	Percent Distribution	Gross Margin
Frozen Foods			
1	\$ 1,136	4.2	17.39
20	1,006	4.5	NA
23	1,488	4.3	26.20
Bakery			
1	450	1.7	21.91
3	789	1.2	28.40
5	1,865	1.9	31.50
9	2,971*	7.0	25.60
15	825	2.5	22.00
17	437	1.4	46.00
18	1,411	3.3	17.60
20	537	2.4	NA
21	1,301	3.0	54.80
23	1,365	3.9	22.50
24	1,057	4.3	68.00
25	310	.9	20.20
Deli			
1	134	.5	64.60
3	1,673	2.6	31.80
14	4,901	6.0	24.40
17	970	3.1	34.80
18	3,157	7.3	42.70
23	2,139	6.1	31.10
25	1,211	3.4	44.90
Liquor			
3	11,371	17.3	19.90
19	4,137	8.2	10.5
Dairy			
4	9,252	8.4	20.00
6	11,492	12.7	25.00
23	3,553	10.2	8.90
Non-Foods			
3	3,387	5.2	31.50
5	14,747	15.0	16.40
14	3,465	4.3	23.80
18	3,555	8.3	14.80

*Includes Deli figures.

Appendix Table 14

PERCENT DISTRIBUTION FOR ALL SALES INCLUDED IN THE GROCERY DEPARTMENT

Store Number	Grocery Distribution	Frozen Foods	Bakery	Deli	Dairy	Non-Foods	Home Center	Liquor & Beer	Pharmacy	Total Dist. for all Other Departments	GROCERY TOTAL DISTRIBUTION
1	66.9	4.2	1.7	.5	-	-	-	-	-	6.4	73.3
2	70.1	-	-	-	-	-	-	-	-	-	70.1
3	46.8	-	1.2	2.6	-	-	5.2	17.3	-	26.3	73.1
4	61.7	-	-	-	8.4	-	-	-	-	8.4	70.1
5	42.5	-	1.9	-	-	-	-	-	15.0	16.9	59.4
6	59.1	-	-	-	12.7	-	-	-	-	12.7	71.8
7	67.2	-	-	-	-	-	-	-	-	-	67.2
8	70.2	-	-	-	-	-	-	-	-	-	70.2
9	62.4	-	7.0*	-	-	-	-	-	-	-	69.4
10	72.9	-	-	-	-	-	-	-	-	-	72.9
11	70.4	-	-	-	-	-	-	-	-	-	70.4
12	66.6	-	-	-	-	-	-	-	-	-	66.6
13	68.5	-	-	-	-	-	-	-	-	-	68.5
14	51.7	-	-	6.0	-	4.3	-	-	-	10.3	62.0
15	66.1	-	2.5	-	-	-	-	-	-	2.5	68.6
16	72.4	-	-	-	-	-	-	-	-	-	72.4
17	64.1	-	1.4	3.1	-	-	-	-	-	4.5	68.6
18	51.4	-	3.3	7.3	-	8.3	-	-	-	18.9	70.3
19	61.7	-	-	-	-	-	-	8.2	-	8.2	69.9
20	59.7	4.5	2.4	-	-	-	-	-	-	6.9	66.6
21	60.5	-	3.0	-	-	-	-	-	-	3.0	63.5
22	68.8	-	-	-	-	-	-	-	-	-	68.8
23	44.3	4.3	3.9	6.1	10.2	-	-	-	-	24.5	68.8
24	67.1	-	4.3	-	-	-	-	-	-	4.3	71.4
25	65.0	-	.9	3.4	-	-	-	-	-	4.3	69.3

*Includes Deli distribution.

Appendix Table 15

CONTRIBUTION TO PROFIT AND OVERHEAD

Store Number	GROCERY		MEAT		PRODUCE	
	CTP	CTO	CTP	CTO	CTP	CTO
1	-	-	-	-	-	-
2	-	36.4	34.8	3.0	2.7	5.2
3	-	-	-	-	-	-
4	6.9	29.9	-	12.9	7.9	19.4
5	-	-	-	-	-	-
6	-	-	-	-	-	-
7	-	-	-	-	-	-
8	3.0	2.1	10.5	3.3	4.4	2.4
9	1.1	1.9	2.4	1.8	3.7	3.2
10	-	-	-	-	-	-
11	-	-	-	-	-	-
12	-	-	-	-	-	-
13	-	-	-	-	-	-
14	-	-	-	-	-	-
15	1.5	-	10.0	-	-	-
16	-	-	-	-	-	1.7
17	-	-	-	-	-	-
18	-	-	-	-	-	-
19	-	-	-	-	-	-
20	-	-	-	-	-	-
21	-	5.9	33.2	-	7.6	-
22	8.3	-	8.3	-	24.7	-
23	2.1	-	(- .5)	-	3.0	-
24	4.6	4.6	4.6	4.6	14.3	14.3
25	-	-	-	-	-	-

Appendix Table 16
SALES PER MAN HOUR

Store Number	Grocery	Meat	Produce
1	\$ -	\$ -	\$ -
2	-	-	-
3	242.90	53.90	-
4	319.00	65.00	-
5	37.43	-	-
6	408.28	224.36	36.19
7	48.56	46.67	49.29
8	41.47	43.95	33.21
9	42.93	47.34	34.90
10	92.00	41.00	25.00
11	61.00	34.00	15.00
12	37.00	51.00	37.00
13	-	-	-
14	-	-	-
15	-	-	-
16	-	-	-
17	-	-	-
18	-	-	-
19	-	-	-
20	-	-	-
21	-	-	-
22	47.08	47.58	37.59
23	-	-	-
24	48.89	63.00	38.72
25	-	-	-

Appendix Table 17

SALES PER SQUARE FOOT FOR TOTAL SALES AND TOTAL STORE AREAS

Store Number	Gross Weekly Sales	Square Foot Total Sales Area	Sales per Square Foot of Total Sales Area	Square Foot of Total Store Area	Sales per Square Foot of Total Store Area
1	\$ 26,798	11,993	\$ 2.23	16,000	\$ 1.67
2	34,592	7,795	4.44	10,300	3.36
3	65,585	13,478	4.87	21,300	3.07
4	109,710	15,125	7.25	27,126	4.04
5	98,622	17,924	5.50	26,798	3.68
6	90,270	20,220	4.46	25,760	3.50
7	53,958	15,056	3.58	22,032	2.45
8	20,397	6,958	2.93	11,000	1.85
9	42,706	14,272	2.99	20,000	2.14
10	85,052	12,544	6.78	20,128	4.23
11	33,131	7,560	4.38	11,136	2.98
12	56,501	18,786	3.01	25,600	2.21
13	21,127	6,240	3.39	7,200	2.93
14	81,205	22,850	3.55	29,990	2.71
15	32,470	8,240	3.94	12,060	2.69
16	32,090	10,707	3.00	14,935	2.15
17	31,230	9,936	3.14	14,368	2.17
18	42,959	11,684	2.72	20,642	2.08
19	50,521	9,720	5.20	14,400	3.51
20	22,568	7,768	2.91	10,672	2.11
21	40,743	10,044	4.06	16,836	2.42
22	39,082	10,855	3.60	15,080	2.59
23	35,002	9,450	3.70	14,700	2.38
24	24,459	11,530	2.12	17,500	1.40
25	35,606	8,180	4.35	12,600	2.91

Appendix Table 18
FINAL RANKING TOTALS

FIRST RANKING			SECOND RANKING			THIRD RANKING			FOURTH RANKING		
Rank	Store Number	Total	Rank	Store Number	Total	Rank	Store Number	Total	Rank	Store Number	Total
1	6	194	1	6	196	1	6	200	1	6	207
2	5	233	2	5	255	2	5	273	2	5	275
3	14	253	3	14	264	3	14	275	3	14	276
4	2	267	4	2	277	4	2	292	4	2	301
5	19	278	5	3	288	5	3	311	5	4, 19	329
6	3	285	6	19	301	6	4	314	6	3	330
7	4	292	7	4	305	7	10	319	7	22	331
8	11	306	8	22	311	8	22	320	8	10	335
9	22	307	9	25	316	9	19	323	9	21, 25	340
10	10	309	10	10	318	10	25	328	10	12	344
11	25	311	11	11	326	11	21	337	11	7	353
12	21	317	12	1	333	12	11, 12	339	12	13	361
13	15	318	13	12	334	13	13, 15	348	13	11	364
14	7	322	14	21	335	14	7	349	14	1	366
15	13	324	15	13	340	15	1	352	15	9	369
16	9, 12	328	16	15	342	16	9	359	16	15	370
17	1	332	17	7, 9	343	17	16, 18	389	17	16	406
18	23	352	18	18, 23	369	18	23	393	18	18	409
19	18	357	19	16	375	19	17	411	19	23	414
20	16	367	20	17	401	20	24	432	20	17	435
21	17	376	21	24	426	21	20	439	21	24	450
22	20	417	22	20	436	22	8	450	22	8	458
23	24	419	23	8	443				23	20	462
24											

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Note: First Ranking: 26 Categories
 2nd Ranking: 26 Categories plus Operating Cost
 3rd Ranking: 26 categories plus, Operating Cost and Labor Cost.
 4th Ranking: 26 Categories plus, Operating Cost, Labor Cost, and Net Before Taxes.



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