

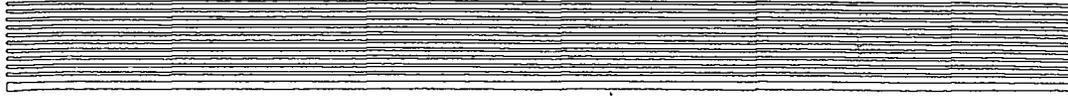
**Retailing Frozen Foods**  
*in Salem and Eugene, Oregon*

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## **INTRODUCTION**

The national production and consumption of frozen foods have staged a remarkable growth in the past decade. Per capita consumption between 1942 and 1952 increased more than 350 per cent for frozen vegetables and for frozen fruits and fruit juices.

This rapid growth in a relatively new line of food has introduced new marketing problems. Facilities for handling, storing, and transporting frozen foods have not always been adequate to take care of the increased volume. Much progress, however, has been made in developing better facilities. Retailers have also had problems in handling and merchandising frozen foods. In most cases they have replaced closed-top ice cream cabinets with larger open units which prominently display the frozen foods.

The change at retail from one type of cabinet to another and the expansion in frozen food storage and display space to accommodate the increased volume of sales have raised important questions to the frozen food industry. Distributors and wholesalers often feel that retailers are not providing adequate cabinet space. They contend that many cabinets are obsolete and the amount of space is not keeping pace with the demands of good merchandising and a constantly increasing volume of business from frozen foods.

Retailers often counter these claims by stating that the sale of frozen foods accounts for only a small portion of total store sales. Profits from the sale of frozen foods are low because of cabinet costs, which are high relative to gross profits.

## **OBJECTIVES**

In view of the interest which has been shown in the retail handling and merchandising of frozen food, this study was conducted for the purpose of obtaining factual information on retailers' costs and returns in handling frozen foods. The major objectives of the investigation were:

1. To determine the volume of sales and estimated gross profits realized from the sale of frozen food in a selected sample of retail stores in Oregon.
2. To determine the amount of retail cabinet space being used and its relationship to sales volume and total store selling space.

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## PROCEDURE

The sample of 20 stores included in the study consisted, with exceptions noted later, of all retail stores in Eugene and Salem, Oregon, having a volume of sales in excess of \$30,000 for the month of February 1953. Stores having rental lockers for frozen foods in conjunction with the retail operations were excluded from the sample. Also excluded were stores performing any significant amount of home delivery.

Information relating to frozen foods was obtained from retail store operators and frozen food distributors. All sales related to the one month, February 1953.

## RESULTS

In the summary of results which follows, sales of ice cream and ice cream products have been excluded from all sales figures. Space occupied by ice cream cabinets also has been excluded from estimates of store space. This procedure was necessary to make stores more comparable. Ice cream sales were not available in some stores because of that business being leased out on a concession basis.

Store selling space is the total square feet in which merchandise is displayed for sale. Storage areas were not included. Floor space for frozen food includes the area occupied by the cabinets and one-half of the aisle space adjacent to the cabinet.

The methods followed in obtaining the basic data and in analysis are for the most part self-explanatory. Further details relating to procedure will be found on a later page of this report.

### Frozen food sales

Sales of frozen foods averaged less than 2 per cent of total store sales (Table 1). Five of the twenty stores had 1 per cent or less of their total sales derived from frozen foods. Only one store had as much as 3 per cent.

Table 1. Sale of Frozen Food in Retail Stores of Different Size

February total sales volume per store	Number of stores	Average February sales frozen foods per store	Proportion total store sales from frozen food <u>/1</u>	Proportion total store selling space devoted to frozen foods
			<u>Per cent</u>	<u>Per cent</u>
\$ 30,000 to \$ 50,000	8	\$ 470	1.2	1.7
\$ 50,000 to \$100,000	7	1,253	1.7	1.8
\$100,000 and over	5	2,298	1.9	2.0

/1 See Table 8, Appendix, for proportion of sales from meat and other items.

In terms of dollar sales, larger stores obviously sold more frozen foods than did the small stores, but they also realized a higher proportion of their total sales from frozen foods. The largest stores had 1.9 per cent of total store sales derived from the frozen food sales area, which, in turn, accounted for 2.0 per cent of total store selling space. In the small stores 1.2 per cent of total sales came from 1.7 per cent of the store selling space. Two of the twenty stores had slightly more than 3 per cent of their sales area occupied by frozen foods. None of the stores had less than 1 per cent.

### Allocation of space - a difficult problem

It was not the purpose of this study to determine the effect of the allocation of floor space on total store sales, although it is recognized that this is a real problem facing retail food store operators. It has become especially important as a result of the shift to self-service, one-stop shopping which now characterizes most large retail food stores. This type of merchandising depends, for one thing, on an effective use of space and prominent and attractive displays of the products being offered for sale.

Just how floor space will be divided between different departments is especially important to those operators planning to build new stores or to remodel their present structures. Later alterations after plans have been put into effect are costly.

The problem of allocating space within departments is of similar magnitude. How much space should be devoted to frozen peas versus frozen green beans, frozen corn, and to one brand and another?

Very little if any research has been done in these areas, although retailers make decisions daily relating to space utilization. Research in this field could contribute toward better decisions, thereby increasing the efficiency with which farm products are marketed.

### Large stores effective in merchandising frozen foods

Sales of frozen foods in the largest retail stores were almost twice as great per square foot of cabinet space and per square foot of floor sales area as in the smallest stores (Table 2). This was true even though the larger stores devoted over 2 1/2 times more space to frozen foods than did the small stores (Table 9, Appendix).

Table 2. Frozen Food Sales Volume in Retail Stores of Different Size

February sales volume per store	Frozen food sales per square foot cabinet display space	February sales volume per square foot floor space	
		Frozen foods	Items other than frozen foods
\$ 30,000 to \$ 50,000	\$17.90	\$ 6.00	\$ 8.70
\$ 50,000 to \$100,000	30.80	10.10	10.80
\$100,000 and over	35.00	10.90	12.00

Sale of frozen foods per square foot of sales space were only slightly below that for non-frozen food items. The latter includes meat, dairy products, produce, drugs and sundries, household hardware, soft goods, and the grocery line of canned and staple goods. Undoubtedly, some of these products have relatively high sales volumes per unit of display space. Other research in retail stores of similar size indicates that the sale per square foot of meat and dairy products averaged about twice that of grocery items including frozen foods. /1

### Margins higher than for canned foods

The difference between cost and selling price for frozen foods ranged mostly between 22 and 25 per cent of normal selling price. If selling prices during periods of selling frozen foods on "specials" had been taken into account the percentage margins would have been lower. Margins on selling price for canned vegetables, fruits and juices generally were between 14 and 17 per cent, according to store operators.

### Depreciation largest of cabinet costs

Depreciation accounted for about 80 per cent of total cabinet costs (Table 3). Store operators indicated that the original investment in cabinets should be written off in 5 to 10 years because of cabinets becoming obsolete. They reported that the cabinets would operate satisfactorily at the end of this period, but improvements in design and construction have been so rapid that for good merchandising the cabinets should be replaced.

Returns above merchandise and cabinet costs averaged about 20 per cent of sales. After deducting cabinet costs from gross profits, /2 the net returns available for other store costs averaged \$79, \$264 and \$457 per store for the three groups of stores (Table 3). Returns above cabinet costs per square foot of cabinet were over twice as great for the two groups of larger stores. For the most part this was due to the greater sales per square foot of cabinet space in the larger stores. Cabinet costs per square foot in February were very similar, ranging from \$1.10 to \$1.30 per square foot for the three groups of stores.

The costs of operating frozen food cabinets are costs which would not be incurred in the sale of the same or similar foods that are canned. Cabinet costs shown in Table 3 averaged 7 per cent of frozen food sales in the smaller stores, 3.6 per cent of sales in the middle group and 3.2 per cent of sales in the group of largest stores. The return for frozen foods above costs of the merchandise and above cabinet costs averaged almost 20 per cent of selling prices. This return is above the estimated margin for canned goods of 14 to 17 per cent quoted earlier. Only in the group of smaller stores was the frozen food return above merchandise and cabinet costs as low as 17 per cent.

This suggests that frozen foods are profitable from the standpoint of margins alone as in the sale of similar canned products. Of course, there are other considerations than the selling margin and the few costs which have been discussed here. The cost of labor involved in handling

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/1 Bitting, H. Wayne, "Produce Department, Space Utilization, Gross Margins and Operating Costs in Selected Retail Stores," Charlotte, N. C., Bureau of Agricultural Economics, U.S.D.A., Marketing Research Report No. 36, June 1953.

/2 Gross profit or gross margin is the difference between dollar sales volume and cost of the frozen food.

Table 3. Gross Profits and Cabinet Costs in Retail Stores of Different Size

February sales volume per store	Gross profit from frozen food per store <u>/1</u>	Average of February cabinet costs per store <u>/2</u>				Returns above costs of merchandise and cabinets	
		Depreciation	Repairs and maintenance	Power	Total	Per store	Per square foot cabinet space
\$ 30,000 to \$ 50,000	\$ 112	\$ 24	\$ 3	\$ 3	\$ 33	\$ 79	\$ 3.00
\$ 50,000 to \$100,000	309	36	1	8	45	264	6.40
\$100,000 and over	531	59	4	11	74	457	6.90

/1 Sales less cost of frozen foods.

/2 It should be noted that interest on the investment in frozen food facilities has not been included as a cost.

and merchandising the two competitive products and the costs of storage are costs which have not been considered. Volume of sales of the two types of products also have not been taken into account.

### Quantity discounts

Some retailers received savings when frozen food sales in the individual store were large enough to permit case lot replenishment of cabinet supplies or when back room freezer storage facilities were present. Seven of the twenty stores had storage space outside the display cabinet. Five of these stores had walk-in storage, and two others made use of smaller storage units.

The use of walk-in freezer storage for retail stores appears to be increasing, especially in the newly constructed larger stores. They make possible savings in the cost of frozen merchandise through quantity discounts and savings through special purchases from supply sources which might not be available otherwise. Storage space also permits more flexibility in merchandising. The retailer may stock his cabinets as he wishes; he is not confronted with a re-supply problem when consumer demand exceeds the supply available in the display cabinet.

Other considerations, however, may be weighed against these advantages. In some stores backroom space may be so small that frozen food storage is not feasible. Another consideration is the initial cost and the annual operating and maintenance costs incurred during the life of the frozen food storage equipment.

In some stores the addition of walk-in storage would require additional labor in supplying the display cabinet, since frozen food distributors sometimes stock cabinets and price mark frozen foods for the retailer. These jobs more than likely would be shifted to the retailer if the cabinets were stocked from walk-in storage.

### Frozen vegetables sales

Vegetables led all February sales from the frozen food cabinets in all three groups of stores (Table 4). Juices were next in importance in the smaller stores but were exceeded by fish and meat in the other two size groups. Fruit and specialty items accounted for the smallest proportions of frozen food sales. Specialty foods include tamales, pies, waffles, Chinese foods, and other miscellaneous foods.

Frozen food sales shown in this report are for the one month, February. It is likely that the sales pattern for other months would be different because of consumption habits, supplies of fresh vegetables and fruit, weather, etc.

Table 4. Sales of Frozen Food in Retail Stores of Different Size

February sales volume per store	Proportion total frozen food sales from:				
	Fruit	Vegetables	Juices	Fish and meat	Specialties
	<u>Per cent</u>	<u>Per cent</u>	<u>Per cent</u>	<u>Per cent</u>	<u>Per cent</u>
\$ 30,000 to \$ 50,000	8.1	37.2	24.9	19.3	10.5
\$ 50,000 to \$100,000	6.0	39.3	22.4	23.2	9.1
\$100,000 and over	4.9	33.0	22.5	27.3	12.3

## Fish and meat cabinet space

On the average fish and meat occupied 34 per cent of the square feet of cabinet display space. Vegetables were next in importance with 30 per cent. Fish and meat tended to utilize the most space in the largest stores; the reverse was true for vegetables (Table 5). Fruit, juices, and specialty items each occupied about the same proportion of space irrespective of size of store.

An attempt was made to determine the effects on sales of changes in the amount of space devoted to a particular class of product. In other words, would an increase of 10 per cent in space devoted to vegetables increase the sales of vegetables by more or less than 10 per cent? Results of this analysis were not conclusive. This subject may warrant a more detailed investigation.

Table 5. Utilization of Frozen Food Cabinet Display Space in Retail Stores of Different Size

February sales volume per store	Number of stores	Proportion display cabinet devoted to:				
		Fruit	Vegetables	Juices	Fish and meat	Specialties
		<u>Per cent</u>	<u>Per cent</u>	<u>Per cent</u>	<u>Per cent</u>	<u>Per cent</u>
\$ 30,000 to \$ 50,000	8	6.0	35.1	17.9	30.2	10.8
\$ 50,000 to \$100,000	7	6.9	31.1	17.8	30.5	13.7
\$100,000 and over	5	4.8	25.7	16.2	40.0	13.3

## Juices and vegetables most profitable

Gross profits per square foot of cabinet space were highest for juices and vegetables in both large and small stores (Table 6). Vegetables led in medium sized stores. Fish and meat as shown earlier occupied the most space but had the lowest sales and also lowest gross profits per square foot of space devoted to their sale. The relatively low gross profit appears to be a result of two factors. These products occupy a proportion of total cabinet space considerably greater than their proportion of total frozen food sales. This results in low sales per square foot of cabinet space (see Table 10, Appendix). Gross profits are further reduced by a selling margin for fish and meat reported by the retailers to be lower than for the other frozen foods.

It may appear as though too much space is being devoted to fish and meat, but this conclusion cannot be substantiated by data from this investigation. Fish and meat occupied 40 per cent of the space in the largest stores (Table 5). This space sold only 27.3 per cent of the frozen foods (Table 4). Vegetables in the same group of stores occupied 25.7 per cent of the space, but accounted for 33 per cent of the frozen food sales.

Table 6. Gross Profits of Different Frozen Food Products  
in Retail Stores of Different Size

February sales volume per store	Gross profits per square foot cabinet space devoted to:				
	Fruit	Vegetables	Juices	Fish and meat	Specialties
\$ 30,000 to \$ 50,000	\$ 5.40	\$ 4.70	\$ 6.20	\$ 2.50	\$ 4.10
\$ 50,000 to \$100,000	6.80	10.50	9.90	4.80	4.60
\$100,000 and over	8.50	11.30	11.40	4.80	7.40

See Table 10, Appendix, for dollar sales per square foot of cabinet space.

### Store size and cabinet space

Frozen food sales for the month of February 1953, varied from a low of \$328 to a high in the store having \$2,825. Size of store and amount of display cabinet space together accounted for 90 per cent of this variation in sales.

Estimates based on regression analysis indicate that an increase of \$1,000 per month in total store sales volume was associated with an average increase of approximately \$13 in frozen food sales, assuming cabinet space remained the same. Each increase of 1 square foot of cabinet space was accompanied by an average increase of about \$17 in frozen food sales per month when size of store did not change.

Estimated changes in frozen food sales resulting from different sizes of store and from different amounts of cabinet space are shown in Table 7. The sales estimates are averages and apply to all 20 stores as a group. It is unlikely that the data will fit an individual store, though they do show a trend for all 20 stores. If it is assumed that sales in an individual store did follow the averages shown in Table 7, then an increase in monthly store volume from \$50,000 to \$75,000 per month would be expected to increase frozen food sales from \$800 to \$1,130 per month for a 35-square-foot cabinet area. The average sales per square foot show an increase from \$23 to \$32.

In the case of a store doing \$50,000 business per month the sale of frozen foods should increase on the average from \$466 to \$800 upon adding 20 square feet of cabinet space. Sales per square foot of cabinet space, however, would decline as cabinet space is increased. The same situation exists for the other store sizes and other amounts of cabinet space.

The individual retail store operator may find it much easier to add frozen food display cabinet space than to increase in any appreciable amount the volume of total store sales volume. Adding additional cabinet space, however, may not be a simple matter. There is only so much floor space in a given store. Profitable changes in its utilization will depend on circumstances present in the individual store. Store space already could be so efficiently used that any changes in its utilization would decrease store net profits. On the other hand, increased net profits from improvements in space utilization could be in part derived from the addition of more space to frozen foods.

Table 7. Average Changes in February Sales of Frozen Foods Resulting from Changes in Size of Store and Cabinet Space

Sales volume for February 1953	Cabinet space	Estimated February sales frozen foods	
		Average per store <u>/1</u>	Average per square foot of cabinet space
	<u>Square feet</u>		
\$ 50,000	15	\$ 466	\$ 31
	25	633	25
	35	800	23
\$ 75,000	25	\$ 963	\$ 38
	35	1,130	32
	45	1,297	29
\$ 100,000	45	\$ 1,626	\$ 36
	65	1,960	30
	85	2,295	27

/1 Regression equation:  $Y = -444 + 13.19 X_1 + 16.70 X_2$ ; where  $Y$  = sales of frozen foods per store in thousands of dollars;  $X_1$  = total dollar sales volume per store and  $X_2$  = square feet of cabinet space. Coefficients of  $X_1$  and  $X_2$  were significant at the 1 per cent probability level.

## CONCLUSION

Frozen food sales represent only a small proportion of total retail store sales. Retailers, however, should not lose sight of the fact that frozen foods consumption is increasing at a remarkable rate. Statistics attest to this fact. If this rate of growth continues, retailers may have to make adjustments in the physical layout of their stores to handle the increase in demand. The addition of more cabinet space and the installation of frozen storage space are two changes which may be very important. Results of this report suggest that, for the 20 stores included in this study, increases in the amount of cabinet space are associated with increased frozen food sales. The desirability of any increase in cabinet space will depend, however, on the circumstances in the individual store, especially with reference to the effectiveness of the present utilization of store selling space.

More information is needed relative to how frozen food merchandising and storage facilities should be changed in order to promote greater efficiency in the merchandising of frozen foods. Information concerning the costs and benefits of retail frozen food storage facilities should be especially helpful to retailers considering this change. Additional and more conclusive research also is needed to assist retailers in their decisions relating to the amount of cabinet space that should be used.

## APPENDIX

### Determination of cabinet costs

All cabinet costs were obtained on a yearly basis and then were divided by 12 to get the average for the month of February.

Depreciation is the product of multiplying the sum of the original cost of the cabinet, the compressor and installation costs by 15 per cent. This arbitrarily assumes that the cabinet and compressor will have no sales value at the end of 6 2/3 years, and that their value decreases the same amount for each of these years. For example, the annual depreciation for a cabinet installation costing \$1,200 would be 15 per cent X \$1,200 or \$180.

The repair and maintenance costs were estimated by the retail store operator. They included the costs actually incurred during the 1952 calendar year.

Power costs were estimates based on the results of metering the electricity used by a sample of cabinets of different size and cabinets having compressor motors of different size. Electricity consumption was metered for a period of 30 days and averaged, for that period, 36 kilowatt hours per lineal foot of cabinet. The power cost was arbitrarily established at 1 cent per kilowatt hour.

### Physical measurements used

Inside dimensions of each frozen food cabinet were measured and recorded. Also measured at the same time was the amount of space being devoted to fruits, vegetables, fruit juices, fish and meat, and specialty items. The measurement was made only once in each store.

The sales area in the entire store was obtained from the store operator or was actually measured in a few cases.

Table 8. Source of Income for Retail Stores of Different Size

February sales volume per store	Number of stores	Proportion of total store sales from:		
		Frozen foods	Meat	All other items
		<u>Per cent</u>	<u>Per cent</u>	<u>Per cent</u>
\$ 30,000 to \$ 50,000	8	1.2	20.2	78.6
\$ 50,000 to \$100,000	7	1.7	19.4	78.9
\$100,000 and over	5	1.9	20.5	77.6

Table 9. Utilization of Floor Selling Space in Retail Stores of Different Size

February sales volume per store	Selling space		Frozen foods display cabinet space per store
	Total store	Devoted to frozen foods	
	<u>Square feet</u>	<u>Square feet</u>	<u>Square feet</u>
\$ 30,000 to \$ 50,000	4,540	79	26
\$ 50,000 to \$100,000	6,878	124	41
\$100,000 and over	10,277	212	66

Table 10. Sales Volume of Different Frozen Food Products in Retail Stores of Different Size

February sales volume per store	Sales per square foot cabinet space devoted to:				
	Fruit	Vegetables	Juices	Fish and meat	Specialties
\$ 30,000 to \$ 50,000	\$23.90	\$19.00	\$24.90	\$11.40	\$17.40
\$ 50,000 to \$100,000	26.80	38.80	38.90	23.40	20.40
\$100,000 and over	35.90	44.90	48.60	23.90	32.50