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# RETAIL MEAT SALES, MERCHANDISING, AND MARGINS: TWO SUPERMARKETS

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The study concerns itself with the evaluation of various merchandising methods on sales of various meat items.

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In the summer of 1971 in a large midwestern city, data were gathered in two supermarkets on the prices and volume movements of virtually all meat items. One supermarket was a unit of a large, local chain and the other was an affiliate of a local wholesaler. The two markets were located about two miles apart in a middle-income suburban area. Data were gathered in Store I (the chain) for 8 weeks and in Store II for 7 weeks with 6 weeks being overlapping.<sup>1</sup>

The study had multiple objectives. One objective was to observe the magnitude of variation in weekly sales of various items and categories as they were affected by various merchandising actions. Another objective was to observe the relative merchandising emphasis given to the major species--beef, pork, poultry--and the impacts, if any, upon sales. We were also interested in margins by species and categories and the impact upon them of differing merchandising strategies. A final, subsidiary objective was to measure pull-outs by items, categories and species.

The two supermarkets were observed to differ in their merchandising approaches. For convenience, the "species strategy" denotes the observation that Store I gave a stronger emphasis to beef by giving it a larger display space,<sup>2</sup> (38.6% versus 29.3%), by regularly pricing most beef items lower, and by more emphasis on beef in its ads. The "ad-price strategy" de-

notes the observation that Store I sought an image of everyday reasonable prices by repetitive weekly advertising of its more competitively priced meat items but few price reductions in its ads; in contrast, Store II, had higher average meat prices but ran more weekly specials involving sizeable price reductions.

## SALES

### Effect of Species Strategies

Beef sales dominated the two meat departments in tonnage and even more in dollars (Table 1). While there were small differences between the stores at this aggregate species level, the overall similarity is impressive. At this level, little effect of differing species strategies was evident. However, differences between stores were much more pronounced at the item and even at several of the major category levels (Table 2).

Differences in "species strategies" of the two stores pertaining to pork and broilers were accompanied by differing sales patterns. Store II gave proportionately more space to fresh pork and priced both loins and ribs below Store I (Table 3). A possible consequence was that dollar sales of loins as a percentage of department sales were significantly higher for Store II (Table 2). As further evidence of a relation of sales to "species strategies"<sup>3</sup> the policies and presumed consequences were the reverse for hams. Store II had higher prices, slightly less display and a significantly smaller percentage of dollar sales of hams (Tables 3 and 2).

As an aside, one of the more surprising results was the tremendous importance of

ground beef--about one-half the tonnage of all beef (Table 2). If that proportion is typical on a national basis, it is worth pondering with respect to the popularity of beef versus pork.

#### Weekly Variations in Sales

There has been considerable interest in the weekend or weekly specials at retail as they influence sales and margins. Table 4 gives some indication of the range of variations in sales of a sub-category of items. Weekly variations in sales of the ground beef group were relatively small, while variations in pork ribs and bacon were relatively large. Generally, very large increases in sales were associated with "specials", and very large declines were the aftermath of those specials. It should be kept in mind that these data in Table 4 represent groups of items. For example, Store I sold 13 ground beef items (4 sizes of "ground beef", 3 sized of "ground beef", etc.). Thus, weekly changes in ads or prices affected only a part of the sub-category.

Store I, presumably because of its "ad-price strategy" of less reliance on advertised price cuts, had less relative variation in weekly sales than Store II (Table 5). Store I had significantly lower variation (F test) in dollar sales of beef, poultry, and eight of the 17

major categories while Store II had significantly lower variation in only one--pork loins.

To the extent that tonnage changes were linked to opposite changes in prices, the sales variations in dollars would be less than in pounds. While that result occurred most frequently, there were several exceptions by categories and sub-categories, (Table 5). Moreover, the magnitudes by which the coefficients of variation for pounds exceeded those for dollars generally were not impressive. While important weekly variations occurred in total meat sales--ranges in pounds of 10,977 to 13,135 for Store I and 9,256 to 11,124 for Store II--both dollar and tonnage sales were still reasonably stable.

#### MARGINS

Wholesale meat costs were estimated on the basis of prices furnished by one of the cooperators. Wholesale prices were quite stable during the entire period, so flow of product through the pipeline presented no problems in estimating wholesale costs. Meat department labor costs were estimated on the basis of labor wage rates and published productivity standards. (3)

The two merchandising strategies and their apparent consequences, discussed above, relate to the data on meat department margins. Store I's gross margin on beef was hardly

Table 1. AVERAGE WEEKLY SALES VOLUME

Category	Store I		Store II	
	Pounds	Dollars	Pounds	Dollars
Beef	5,289	5,616	4,126	3,998
Pork	4,210	3,505	3,514	2,805
Poultry	1,855	961	1,457	670
Lunch Meat, etc.	<u>941</u>	<u>841</u>	<u>892</u>	<u>733</u>
Total	12,295	10,441	9,989	8,206

Table 2. DISTRIBUTION OF MEAT DEPARTMENT SALES BY CATEGORY

	Store I		Store II	
	Pounds	Dollars	Pounds	Dollars
Beef Hinds	10.6%	16.5%	10.0%	17.8%
Beef Fores	12.0	14.1	9.4	11.4*
Ground Beef	20.5	18.8	22.9	20.3
All Beef	43.0	49.4	42.3	49.4
Pork Loins	7.2	8.1	9.7	9.9*
Pork Ribs	2.2	2.3	2.2	2.1
Pork Butts	4.3	3.3	6.5	5.1*
Callies	0.0	0.0	0.4	0.2
Sausage	2.6	2.5	3.4	3.3
Fresh Pork	16.3	16.2	22.1	20.5
Hams BI	4.2	2.3	1.6	1.2*
Hams BO	6.7	9.0	3.9	5.9*
Bacon	7.0	6.0	7.9	6.8
Cured Pork	17.9	17.3	13.3	13.9
All Pork	34.2	33.5	35.5	34.4
Whole Broilers	7.2	3.7	8.9	4.1
Broiler Parts	7.4	5.3	3.8	2.8*
Roasting Chickens	0.4	0.3	0.3	0.2
All Poultry	15.1	9.3	13.0	7.1*
Weiners	3.7	3.7	3.9	3.9
Bologna	3.1	3.2	3.7	3.2
Salami	0.6	0.8	1.4	1.9*
Other	0.2	0.1	0.2	0.1
Lunch Meat & Other	7.6	7.8	9.2	9.2
Department Total	100.0	100.0	100.0	100.0

Note: Percentages are computed from period totals and do not coincide exactly with weekly averages because of the method of computation of weekly averages.

\* indicates differences in dollar shares of sales of the two stores at 5% level of significance of the Mann-Whitney non-parametric U test as described in Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences, N.Y., McGraw-Hill, 1956, pp. 116-27.

Table 3. AVERAGE REALIZED PRICES<sup>a</sup> (GROSS RETURNS) OF  
PORK AND CHICKEN

	Store I	Store II
Pork Loins	\$ .94	\$ .85
Pork Ribs	.92	.78
Pork Butts	.65	.65
Pork Sausage	.80	.80
Fresh Pork	.84	.77
Hams BI	.47	.63
Hams BO	1.17	1.26
Bacon	.73	.72
Cured Pork	.83	.87
All Pork	.84	.80
Whole Broilers	.44	.38
Broiler Parts	.60	.62
Total Broilers	.52	.45

<sup>a</sup> Total dollar sales divided by total pounds.

Table 4. EXAMPLES OF WEEKLY VARIATIONS IN POUNDS SOLD

	Store I			Store II		
	Pk Ribs	Gr Bf	Bacon	Pk Ribs	Gr Bf	Bacon
Av. Weekly Sales	264	2516	857	215	2231	768
Changes from Preceding Week	-418	+75	+289	-87	-29	-1150
	-17	+308	-776	+58	+594	+242
	+131	-303	+356	-10	-546	+282
	-55	+72	+129	+3	+201	-206
	+103	-169	+413	+863	+23	+45
	-37	+184	-364	-853	+46	+51
	-30	-169	-310			

Table 5. VARIATION IN WEEKLY SALES BY CATEGORIES

	CV <sub>x</sub> of Sales in Pounds		CV <sub>x</sub> of Sales in Dollars	
	Store I	Store II	Store I	Store II
All Beef	.058	.145	.064	.172
All Pork	.213	.197	.188	.182
Poultry	.053	.914	.034	.607
L. M. etc.	.132	.351	.146	.277
All Meat	.057	.110	.057	.065
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G. Beef	.052	.095	.054	.087
P. Ribs	.512	1.521	.517	1.321

Note: CV<sub>x</sub>, the coefficient of variation, is the standard deviation of weekly sales divided by weekly mean sales.

larger than Store II's, even though it sold a thousand pounds more weekly, because it took narrower margins on many higher priced cuts (Table 6). Moreover, its adjusted beef margin was lower than Store II's because of the extra labor costs associated with that greater tonnage. Conversely, Store II's narrow margins on broilers reflected one tremendous week's special, when an advertised price reduction from 39 to 29 cents generated sales of five times normal tonnage. Overall, there was a narrowing of results of the two meat departments as one approaches net results. Where as Store II's average dollar meat sales were only 79% of Store I, its gross margin dollars were 84% and its adjusted gross margin dollars were 94% of Store I.

While dollar sales of pork were only 33.5 and 34.4 percent of department sales in Stores I and II, respectively, adjusted gross margins for pork were 45.1 and 40.5 percent (Table 1 and Table 6). Although little evidence has been available, it is said frequently that pork subsidizes beef in the meat counter. (1, 2) During this period, pork did, in a sense, subsidize beef in these meat departments and particularly in Store I.

Data in Table 7 may be mainly of interest to those involved in retail case

management. Variations among subcategories and between stores were fairly large. Explanations for some of the larger discrepancies between stores have already been developed.

Store margins per pound varied considerably from USDA margins (Table 8). It would be surprising, of course, to find any two stores that coincided exactly with national averages. Moreover, in both pork and beef, and perhaps also in broilers, the product mix at store level did not coincide with the USDA mix. The USDA margins are computed of course, on a carcass balance basis. Both supermarkets sold a much higher proportion of ground beef than is implied by the USDA Choice carcass mix. That difference in mix is one reason that the average realized price of beef in the two supermarkets was about 8 cents below the national average retail price computed by the USDA for the third quarter. The store-USDA discrepancies in pork and broilers reflect higher realized prices than reported by the USDA and presumably reflect sales of a higher proportion of higher priced cuts. Certainly, the broiler parts sales elevated the margins of these two supermarkets. Store I sold no picnics but a much higher proportion of hams than was consistent with carcass percentages for pork.

Any detailed analysis of store sales is

Table 6. MEAT DEPARTMENT MARGINS BY CATEGORY

	Average Weekly Margins				Percentage of Adjusted	
	Gross		Adjusted		Margins by Category	
	Store I	Store II	Store I	Store II	Store I	Store II
Beef	\$1070	1053	376	566	26.3%	41.9
F. Pork	562	479	369	283	25.8	21.0
C. Pork	449	349	276	263	19.3	19.5
Broilers	381	183	223	82	15.6	6.1
L. M. etc.	242	211	187	156	13.1	11.6
Total	2704	2274	1430	1350	100.0	100.0

likely to point up some of the difficulties of computing margins via weighted retail prices. For example, Store I sold most of its beef ribs as rib roasts which were priced higher than its rib steaks. Store II had an opposite price ratio and sold most of its ribs as rib steaks. These results may suggest some of the difficulties that food retailers have in comparing USDA margins with their own departmental results.

#### PULL-OUTS

Another purpose of the study was to measure the size and nature of meat case pull-outs. In both stores, ground beef, which was completely pulled at the beginning of each day, had the highest pull-out percentage (Table 9). These percentages make no allowance for whether the pulled product was refaced, ground, or otherwise disposed of. Not surprisingly, beef had the highest percentage of pull-outs in both stores. A few individual items ran above 25 percent. The total meat department of Store I had 4.9% pull-outs compared to 6.3% in Store II.

#### SUMMARY

Two stores, located in nearly similar neighborhoods, contrasted considerably in their merchandising emphasis upon beef, fresh pork and cured pork. Their relative sales of fresh and cured pork appeared to reflect this relative emphasis.

Weekly sales were generally more variable in the store which put numerous and large price reductions in its ads than in the store which featured few such reductions.

Some of the effects of the differing merchandising emphases on margins are shown. Differences between store and USDA margins are discussed.

The extent of pull-outs is summarized by major category and by store. Beef, of course, had the highest percentage of pull-outs, but pull-out of broiler parts was also relatively high in one store.

#### FOOTNOTES

- 1/ Further details of research procedure are available from the senior author.
- 2/ Each market had about 1000 linear inches of meat case.
- 3/ Other analysis indicates that the relative price levels were probably much more important than the relative space allocation in affecting the sales results. See reference 4.

#### REFERENCES

- (1) "Hannaford - Pillsbury Meat Case Study," Copyright, 1970, by the Pillsbury Co., Minneapolis
- (2) Luby, Patrick J., "Communications and

Table 7. MARGIN PERCENTAGES AND DISPLAY SPACE

Store	Category	Gross Margin	Adjusted Margin	Display Space	Adjusted Margin Per Inch Display
I	Beef	20.7%	7.3%	38.6%	\$ .94
II	Beef	26.3	14.2	29.3	1.97
I	Pork Loins	34.6	23.6	7.5	2.55
II	Pork Loins	29.0	17.3	10.5	1.34
I	Pork Ribs	40.1	28.8	2.3	2.93
II	Pork Ribs	34.5	21.7	2.1	1.78
I	Pork Butts	27.7	11.6	3.1	1.22
II	Pork Butts	26.4	11.2	4.7	1.00
I	Bacon	33.8	26.5	9.1	1.75
II	Bacon	24.4	17.5	8.1	1.19
I	Hams BI	31.0	17.6	2.2	4.23
II	Hams BI	50.9	41.7	2.7	4.34
I	Hams BO	10.1	1.8	4.1	.25
II	Hams BO	24.8	17.5	3.5	1.49
I	Total Pork	28.8	18.4	33.7	1.85
II	Total Pork	29.9	19.7	43.9	1.27
I	Whole Broilers	31.1	11.9	4.0	1.09
II	Whole Broilers	21.4	0.7	3.8	.06
I	Broiler Parts	47.4	32.3	9.5	1.79
II	Broiler Parts	48.8	34.8	4.3	1.89
I	Total Meats	25.9	13.8	100.0	1.39
II	Total Meats	28.2	16.8	100.0	1.38

Notes: Several categories omitted. Margins defined in text. Percentage margins are margins  $\div$  gross sales. Display measured in linear inches.

Table 8. RETAIL-PROCESSOR MARGINS PER POUND

	Store I	Store II	USDA National
Beef	20.2 <sup>c</sup>	25.5 <sup>c</sup>	29.3 <sup>a/</sup>
Pork	24.0	23.9	18.5 <sup>a/</sup>
Broilers	21.1	14.8	13.2 <sup>b/</sup>
L. M. etc.	25.7	23.6	--
Total Meat	22.0	23.3	--

a/ Marketing Transportation Situation, February, 1973, using 3rd qtr. 1971 data

b/ Poultry and Egg Situation, November, 1972, computed as the difference between price of truckload lots delivered Chicago and fryers at urban retail for July and August, 1971.

Table 9. PERCENTAGE OF PULL-OUTS

	Beef			Pork		Broilers	
	Hinds	Fores	Ground	Fresh	Cured	Whole	Parts
Store I	5.6	7.1	11.7	2.1	0.3	0.5	4.3
Store II	3.1	7.3	17.6	2.4	1.7	0.0	0.3

Note: Percentage is number of packages pulled from meat case divided by the number placed there.

Pricing--What We Know and What We Need to Know," pp. 167-76 in Long-Run Adjustments in the Livestock and Meat Industry: Implications and Alternatives, N.C. Regional Research Pub. 199, March 1970.

(3) Marion, Bruce W., Leland E. Ott and Francis E. Walker, Meat Department Labor Requirements, Ohio Ag. Res. Bul. 982, June 1966.

(4) Rhodes, V. James, Roger Scheider, Dwight Smith, William Stringer, and

Glenn Grimes, "Customer Responses to Retail Meat Prices and Ads", Unpublished Manuscript, University of Missouri Department of Agricultural Economics.

(5) Contribution from the Missouri Agricultural Experiment Station. Journal Series Number 7077. Approved by Director. The authors gratefully acknowledge the computational assistance of Labh Singh.