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INTER-MARKET FOOD COST DIFFERENTIALS: A CASE STUDY OF HONOLULU AND THE SAN FRANCISCO BAY AREA†

The measurement of consumer food costs in a single market area presents a host of conceptual as well as data problems. Comparison of such costs in one area with those in another adds a number of other complexities, largely arising from differences in preference patterns and price relationships. Some type of index number can be constructed which summarizes the data available; but the problem of basis selection and weighting associated with index numbers may limit their accuracy, and this suggests that additional measures may be needed to support such single-number evidence.

The procedure and methodology of the study described here were developed as a three-phased approach to the examination and explanation of inter-market food cost differentials. The specific markets studied—Honolulu and the San Francisco Bay Area—exhibit wide variations in a number of key characteristics and should thus provide an excellent setting for such an analysis.

The first phase of the study received the major emphasis. A "food market basket" was selected to represent the principal dry grocery products purchased in each market area. The items in each basket were priced and weighted by their relative importance as described below. The resulting "market basket costs" in each area were then compared in several ways.

The second phase of the research considered the comparative operating characteristics and results of the major retail food stores in the two market areas studied. Such operating data add a needed dimension to any study of multi-product and multi-service marketing institutions. Food retailing, in particular, falls in this category. The major supermarket outlets stock up to 8,000 different items and provide a great many auxiliary services for which costs and returns cannot be rigidly allocated to any one product or group of products. As a result, only

measures of overall operations provide meaningful comparisons between two market areas.

In the third phase of the study several specific food products were singled out for individual analysis as to differences in marketing channels and transfer costs from a common point of origin on the Mainland to the retail store level both in Honolulu and in the San Francisco area. Differences in marketing channels and costs were noted, and an attempt was made to identify some of the major factors involved.

The comparisons developed in each part of this study were brought together in an effort to define and explain differences in consumer food cost levels between the two market areas. The various comparative estimates derived give an indication of the range of cost differentials that result from several measurement procedures, and they point up the difficulty of calculating any single, reliable measure of such differentials.

FOOD MARKET BASKET COST COMPARISON

There are a number of important constraints placed on any attempt to calculate consumer food costs. Retail price is one element of consumer cost and quantity purchased is another. These two elements are clearly interrelated since price changes cause shifting consumption patterns and substitution among alternative products. Thus, consumer food costs reflect not only individual tastes and preferences, but also the influence of comparative retail prices. These relationships suggest the following hypotheses to be tested in this analysis:

1. Average retail prices of the major grocery items sold in Honolulu are higher than the average retail prices of the major grocery items sold in the San Francisco Bay Area.

2. Consumption patterns in each of the two separate markets—Honolulu and the San Francisco area—reflect consumer adjustments to prices and preferences; thus, weighting food *prices* by some measure of the relative importance of the product category in each market provides an estimate of food *cost* differentials. Food *cost* differentials between the markets are lower than food *price* differentials.

3. Inter-market differentials in consumer food costs also arise from differences in merchandising practices and the availability of private-label products.

Procedure

In order to make data collection feasible, within the scope of this study, the "market basket" to be priced was limited to grocery items which could be distinctly defined by brand, size, and form of product—that is, the individual *item* as defined in the food trade.[1] Not included were perishables, such as meat and produce, and other products for which differences in quality and condition at the moment of consumer purchase cannot be accurately measured. Also, most retailer records of sales and prices for perishables are relatively incomplete and inaccessible.

The choice of general *product* lines to be included was based principally on

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[1] An *item* is defined as any unique member of a *product* line. For example, one brand and size of canned cling peach halves is a different *item* from a different size of the same brand or a different brand in the same size.

the grocery categories used by the Bureau of Labor Statistics in preparation of the Consumer Price Index. Within each of these categories, the *item* or *items* selected were those shown by retailer records to have had the highest volume of movement within the product category during a three-month period or longer. This procedure made it possible to define a "market basket" based on actual quantities sold in the major food stores, and it took into consideration the net results of substitution among items due to price changes over the period studied.[2] Also, the data clearly showed differences in purchase patterns between the two separate markets. This allows an evaluation of the impact of these variations on consumer costs.

Data Collection

The major sources of data were three major food retailers in Honolulu and three in the San Francisco Bay Area.[3] The cooperating Honolulu retailers are estimated to account for about 30 per cent of food store sales in that market, while the San Francisco area firms account for about 32 per cent of food store sales in the San Francisco Metropolitan Area.[4] These firms furnished detailed price and quantity data for a list of selected grocery items developed by the Food Research Institute. The San Francisco area market basket included 86 items and the Honolulu basket 78 items. For these items, the following information was obtained for periods during March to June, 1967: regular (shelf) prices, advertised special prices, number of times advertised, and quantities moved at regular and special prices.[5] The nature of the price and quantity data varied among the retail firms due to differences in record-keeping methods. While some firms furnished counts of items sold at special prices and at regular prices, others provided daily or weekly prices and store deliveries during the period studied. In the latter case, sales volume at regular and special prices was estimated using the procedure outlined in Appendix A.

The highest volume items in 20 product categories (selected as indicated above) for each firm were determined. In most cases two items in each category, or a total of from 40 to 50 items for each retailer, were chosen for analysis. These, of course, were not identical for all firms, although a representative group of identical items for all stores in both market areas was included and used for an additional comparison. However, the items in each product category were highly substitutable for each other and could be assumed to enjoy the greatest preference among the items available to fill consumer needs for these products.

Method of Analysis

A weighted average price for each item, reflecting movement at regular and special prices, was computed for each firm, and this price was weighted by the relative volume represented by each firm to obtain an average for each of the two

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[2] In the course of the research it was possible in some cases to utilize quantity movement records covering up to one year.

[3] The data obtained from the San Francisco area retailers also included some from stores in northern California cities outside of the immediate Bay Area, but all within the distribution area covered from San Francisco–Oakland.

[4] The estimates presented by *Supermarket News* are not precise measures of market shares (*13*, pp. 11–20). They are used here only to provide an indication of the coverage of this study in the two market areas.

[5] There was some difference in the weeks covered due to varying accounting periods.

TABLE 1.—COMPARATIVE MARKET BASKET COSTS BY PRODUCT CATEGORY, SAN FRANCISCO BAY AREA AND HONOLULU, 1967*

(Dollars, except as otherwise indicated)

Product category	Average price (Dollars per ounce)		Market basket weights[a]		San Francisco area consumption pattern		Honolulu consumption pattern	
	San Francisco (1)	Honolulu (2)	San Francisco (3)	Honolulu (4)	At San Francisco prices (5)	At Honolulu prices (6)	At San Francisco prices (7)	At Honolulu prices (8)
Flour	.007	.010	370.0	172.0	2.59	3.70	1.20	1.72
Cereal	.032	.052	288.8	89.4	9.24	15.02	2.86	4.65
Rice	.011	.008	176.4	1,221.2	1.94	1.41	13.43	9.77
Canned meat	.045	.047	56.7	298.7	2.55	2.66	13.44	14.04
Canned fish	.046	.046	100.9	147.2	4.64	4.64	6.77	6.77
Canned milk	.010	.012	347.0	404.2	3.47	4.16	4.04	4.85
Canned fruit	.011	.016	700.0	262.5	7.70	11.20	2.89	4.20
Canned fruit juice	.009	.007	594.4	657.1	5.35	4.16	5.91	4.60
Canned vegetables	.011	.015	804.5	522.0	8.85	12.07	5.74	7.83
Tomato sauce and catsup	.013	.015	393.8	312.7	5.12	5.91	4.07	4.69
Canned soup	.014	.017	331.4	371.2	4.64	5.63	5.20	6.31

TABLE 1.—COMPARATIVE MARKET BASKET COSTS BY PRODUCT CATEGORY, SAN FRANCISCO BAY AREA AND HONOLULU, 1967 (*continued*)

(*Dollars, except as otherwise indicated*)

Product category	Average price (Dollars per ounce)		Market basket weights[a]		San Francisco area consumption pattern		Honolulu consumption pattern	
	San Francisco (1)	Honolulu (2)	San Francisco (3)	Honolulu (4)	At San Francisco prices (5)	At Honolulu prices (6)	At San Francisco prices (7)	At Honolulu prices (8)
Margarine	.011	.016	388.2	127.5	4.27	6.21	1.40	2.04
Mayonnaise and salad dressing	.018	.019	252.8	191.6	4.55	4.80	3.45	3.64
Cooking and salad oil	.018	.019	135.0	161.1	2.43	2.57	2.90	3.06
Sugar	.006	.007	611.7	561.4	3.67	4.28	3.37	3.93
Spreads	.030	.034	141.3	82.4	4.24	4.81	2.47	2.80
Coffee (regular)	.035	.045	254.6	119.3	8.91	11.46	4.18	5.37
Coffee (instant)	.097	.123	27.9	24.1	2.71	3.44	2.34	2.97
Frozen fruit juice	.021	.031	281.4	76.1	5.91	8.72	1.60	2.36
Frozen vegetables	.019	.024	380.0	183.3	7.22	9.12	3.48	4.40
Total	.464	.563	6,636.8	5,985.0	100.00	125.97	90.74	100.00
Total as a per cent of San Francisco	100.0	121.3	100.0	90.2	100.0	126.0	100.0	110.2

* Methods and procedures explained in text and Appendix A.

[a] Ounces of the product category included in each $100 spent on the total market basket at local prices; i.e., for San Francisco area, column 5 divided by column 1; for Honolulu, column 8 divided by column 2.

market areas. This price per item was further standardized to a basis of the highest volume unit size in the product category; *e.g.,* the price of rice sold in Honolulu was converted to the basis of a 25-pound bag, the major seller. Finally, the average price per ounce was calculated for each product category in each market area—San Francisco and Honolulu. These average prices per ounce are shown in the first two columns of Table 1.

In order to test the hypothesis that differing consumer buying patterns between the San Francisco area and Honolulu have a significant effect on food costs it was necessary to develop a method of weighting. Thus, the average price of each group of high-volume items in each product category was weighted by a factor reflecting the estimated relative importance of each such category in the consumer's budget for these products in each market. In the development of these weights the principal assumption was similar to that underlying the determination of items to be included in the market basket categories. That is, the estimated sales of each product category relative to the total estimated sales of all these categories by major food retailers in each market were assumed to be representative of the typical consumer purchase pattern.

Data on sales by product categories for a three-month period were made available by firms in each market area. The relative share of estimated sales of each category to the total sales of all these categories was calculated. This figure (which for San Francisco appears in Table 1, column 5, and for Honolulu in Table 1, column 8) reflects the relative expenditure for each product category per $100 of expenditure for the total defined market basket in each market. The estimated quantity of each type of product purchased per $100 spent on this market basket was obtained by dividing the category expenditure share by the average price for the category that was calculated in each market.[6] The resulting figure is an estimate of the relative quantity, in ounces, of each product category to the total quantities in the market basket. These weights are shown in columns 3 and 4 of Table 1. Applying these weights to the average prices in each market results in the estimated relative consumer cost estimates shown in columns 5–8 of Table 1.

Results of "Market Basket" Analysis

The unweighted average prices per ounce of these 20 product categories indicate that their Honolulu prices are 21.3 per cent higher than San Francisco[7] (Table 1, totals of columns 1 and 2). Among the individual products, only the prices per ounce of rice and of canned fruit juice were found to be lower in Hono-

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[6] The weights for each product category (i) in the San Francisco and Honolulu market baskets, respectively, are as follows:

$$W_{SFi} = \frac{S_{SFi}}{P_{SFi}\,\Sigma\,S_{SFi}}, \qquad\qquad W_{Hi} = \frac{S_{Hi}}{P_{Hi}\,\Sigma\,S_{Hi}},$$

where S_{SFi} and S_{Hi} are the dollar sales of each product category in each market during the time period covered; P_{SFi} and P_{Hi} are representative prices for each category calculated from average prices for high-volume items as developed in this study. Multiplying these weights by the prices in each market is equivalent to multiplying relative shares of sales of each category by relative prices in each market.

[7] These "unweighted" prices are actually implicitly weighted by one ounce of each product. An estimate of the weighted average price per ounce can be obtained from the totals of columns 3 and 4 of Table 1. These totals represent the number of ounces of these products purchased per $100 of expenditure in each market. As shown in Table 1, these data indicate a price difference of about 10 per cent in the weighted price per ounce of products in this market basket.

lulu than in the San Francisco area. The average price of cereals was found to be considerably higher than the San Francisco price, due in large part to the greater preference for sugar-coated breakfast cereals in Honolulu.[8] Other product categories showing relatively wide differentials are flour, canned fruit and vegetables, margarine, and frozen fruit juice.

Differing food expenditure patterns among market areas result from price differentials and many other factors. In the case of Honolulu as compared to other American cities the diverse composition of the population is probably a major factor. In addition, consumption patterns are affected by the availability of various kinds of foods and the relative prices of food from all sources, local and imported. Preferences that originate from traditional, racially oriented tastes or carry over from previous areas of residence shift in varying degrees according to prices and availability in any specific market. Hence, Hawaii's geographic location and the resultant important role of ocean freight lead to dietary adjustments based on freight and other transfer cost relationships. Similarly, consumer food expenditure patterns in Fargo, North Dakota, for example, are likely to vary considerably from those in Miami, Florida, or San Diego, California. Such differences reflect a complex blend of population and locational characteristics.

For the purpose of this analysis it is only the net result of the above influences that is important, and this can be estimated in the manner described above. On the basis of the food market basket defined, the following relationships were calculated:

1. The San Francisco market basket reflecting that area's consumption pattern but purchased at average Honolulu retail prices would cost 26.0 per cent more than it would if purchased at San Francisco prices (Table 1, columns 5 and 6).

2. The Honolulu market basket purchased in Honolulu would cost 10.2 per cent more than in San Francisco (Table 1, columns 7 and 8).

These findings are, of course, based on a food market basket that includes only grocery items and, thus, excludes perishables such as meat, produce, and dairy products which make up as much as 40 per cent of total food purchases. Obviously, substitution occurs between many of the grocery products included and many perishables not included in the market basket defined here. Rice and canned meats are the most extreme examples of differences between Honolulu and San Francisco buying patterns noted in this group of products. However, the San Francisco consumer may substitute fresh potatoes for rice, and fresh or smoked meats for canned meat. On the other hand, cereals (other than rice), canned fruit, and frozen foods are considerably more important in the San Francisco area market basket than in Honolulu. This suggests substitution of rice and fresh produce for these products by the Honolulu consumer.

The relative importance of specific product categories in the San Francisco and Honolulu consumption patterns is another cost differentiating factor between the two markets. In Table 2, the product categories included in this study are ranked according to their expenditure share in each market. It is apparent that the Honolulu cost of those products making up about 50 per cent of the San Fran-

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[8] The largest volume breakfast cereal items in Honolulu are the variety packs of individual-serving sizes of sugarcoated cereal products. These are probably the highest cost form of cereals, but, of course, the consumer cost also includes the sweetener.

TABLE 2.—COMPARATIVE FOOD COSTS BY PRODUCT CATEGORY RANKED ACCORDING TO RELATIVE SHARES OF THE
SAN FRANCISCO AND HONOLULU MARKET BASKETS*

		San Francisco area consumption pattern					Honolulu consumption pattern		
		Share of market basket expenditure at San Francisco prices		Honolulu cost as per cent of San Francisco cost cumulative[a] (3)			Share of market basket expenditure at Honolulu prices		Honolulu cost as per cent of San Francisco cost cumulative[b] (6)
Rank	Product category	Product category (1)	Cumulative (2)		Rank	Product category	Product category (4)	Cumulative (5)	
1	Cereal	9.24	9.24	162.6	1	Canned meat	14.04	14.04	104.5
2	Coffee (regular)	8.91	18.15	145.9	2	Rice	9.77	23.81	88.6
3	Canned vegetables	8.85	27.00	142.8	3	Canned vegetables	7.83	31.64	97.0
4	Canned fruit	7.70	34.70	143.4	4	Canned fish	6.77	38.41	97.5
5	Frozen vegetables	7.22	41.92	140.4	5	Canned soup	6.31	44.72	100.3
6	Frozen fruit juice	5.91	47.83	141.3	6	Coffee (regular)	5.37	50.09	102.7
7	Canned fruit juice	5.35	53.18	134.9	7	Canned milk	4.85	54.94	104.1
8	Tomato sauce and catsup	5.12	58.30	133.2	8	Tomato sauce and catsup	4.69	59.63	104.9
9	Canned soup	4.64	62.94	132.3	9	Cereal	4.65	64.28	107.6
10	Canned fish	4.64	67.58	130.1	10	Canned fruit juice	4.60	68.88	105.0
11	Mayonnaise and dressings	4.55	72.13	128.6	11	Frozen vegetables	4.40	73.28	106.0
12	Margarine	4.27	76.40	129.5	12	Canned fruit	4.20	77.48	107.6
13	Spreads	4.24	80.64	128.7	13	Sugar	3.93	81.41	108.0
14	Sugar	3.67	84.31	128.1	14	Mayonnaise and dressings	3.64	85.05	107.9
15	Canned milk	3.47	87.78	127.8	15	Cooking oil	3.06	88.11	107.8
16	Coffee (instant)	2.71	90.49	127.8	16	Coffee (instant)	2.97	91.08	108.4
17	Flour	2.59	93.08	128.2	17	Spreads	2.80	93.88	108.5
18	Canned meat	2.55	95.63	127.6	18	Frozen fruit juice	2.36	96.24	109.2
19	Cooking oil	2.43	98.06	127.0	19	Margarine	2.04	98.28	109.8
20	Rice	1.94	100.00	126.0	20	Flour	1.72	100.00	110.2

* Based on Table 1.
[a] Table 1, column 6, cumulated by San Francisco product category ranking as a per cent of column 2 above.
[b] Column 5 above as a per cent of Table 1, column 7, cumulated by Honolulu product category ranking.

cisco expenditures is about 35 to 40 per cent higher than their cost in San Francisco (Table 2, column 3). On the other hand, in order of importance, the group of products making up about 50 per cent of the Honolulu expenditures cost only about 3 to 4 per cent more in Honolulu than in San Francisco (Table 2, column 6). Thus, while the cost of the total market basket at Honolulu prices ranges from 10.2 to 26.0 per cent higher than San Francisco, depending on the consumer's expenditure pattern, the range in cost differentials between the two markets for product categories accounting for 50 per cent of the consumer's expenditures is much greater.

This finding indicates that the difference in consumer costs for the high-volume product categories in the respective markets is considerably less than the difference in costs of products of less relative importance. This strongly suggests, for example, that consumers in Honolulu who adhere to Mainland consumption patterns (say, recent arrivals or tourists) are likely to incur considerably higher food costs than those consumers who follow the "typical" Honolulu pattern.

Comparison of the average prices of *14 identical items* in both the San Francisco and Honolulu market baskets indicates an unweighted average price in Honolulu that is 13.8 per cent higher than San Francisco (Table 3). In Table 4, the prices and market basket costs to consumers for a selected group of identical items are shown. This comparison of identical items illustrates a major danger in attempting to measure differences in food costs between market areas on the basis of item prices. For example, the average price per 5-pound bag of Gold Medal flour in Honolulu is 23.9 per cent higher than in San Francisco, but when that price is weighted in accordance with the importance of the product in the Honolulu food basket, the resultant consumer cost is only 57.6 per cent of the San Francisco cost. Honolulu prices range from 77.1 per cent of the San Francisco

TABLE 3.—COMPARATIVE PRICES OF IDENTICAL ITEMS, SAN FRANCISCO BAY AREA AND HONOLULU, 1967

Item	Unit	Average price (Dollars per item)	
		San Francisco	Honolulu
Gold Medal flour	5-pound bag	.547	.678
Pillsbury flour	5-pound bag	.546	.737
Bisquick	40 ounces	.406	.538
Hormel Spam	12 ounces	.483	.531
Libby Vienna sausage	4 ounces	.280	.216
Carnation evaporated milk	14.5 ounces	.156	.176
Niblets corn	12 ounces	.231	.244
Del Monte tomato sauce	8 ounces	.097	.116
Del Monte catsup	14 ounces	.191	.221
Campbell's mushroom soup	10.5 ounces	.159	.181
Campbell's chicken noodle soup	10.5 ounces	.159	.174
Best Foods mayonnaise	1 quart	.590	.635
C & H sugar	5-pound bag	.548	.557
Van Camp pork and beans	16 ounces	.150	.164
Total	....	4.543	5.168
Total as a per cent of San Francisco	....	100.0	113.8

TABLE 4.—COMPARATIVE PRICES AND MARKET BASKET COSTS OF SELECTED IDENTICAL ITEMS, SAN FRANCISCO BAY AREA AND HONOLULU*

| Item | Unit | San Francisco area | | | Honolulu | | | Honolulu as a percentage of San Francisco | |
		Price (1)	Market basket category weight (2)	Weighted cost (3)	Price (4)	Market basket category weight (5)	Weighted cost (6)	Price (7)	Weighted cost (8)
Gold Medal flour	5-pound bag	.547	370.0	202.39	.678	172.0	116.62	123.9	57.6
Bisquick	40 ounces	.406	370.0	150.22	.538	172.0	92.54	132.5	61.6
Libby Vienna sausage	4 ounces	.280	56.7	15.88	.216	298.7	64.52	77.1	406.3
Carnation evaporated milk	14.5 ounces	.156	347.0	54.13	.176	404.2	71.14	112.8	131.4
Niblets corn	12 ounces	.231	804.5	185.84	.244	522.0	127.37	105.6	68.5
Del Monte catsup	14 ounces	.191	393.8	75.22	.221	312.7	69.11	115.7	91.9
Campbell's chicken noodle soup	10.5 ounces	.159	331.4	52.69	.174	371.2	64.59	109.4	122.6
Best Foods mayonnaise	1 quart	.590	252.8	149.15	.635	191.6	121.67	107.6	81.6
C & H granulated sugar	5-pound bag	.548	611.7	335.21	.557	561.4	312.70	101.6	93.3

* Prices are from Table 3, weights from Table 1. No comparison from item to item should be made except in columns 7 and 8, since prices are for different units, and weights are for product categories, not for the specified items.

price for Libby Vienna sausage to 132.5 per cent of the San Francisco price for Bisquick. However, the weighted costs of these two items are almost at the opposite extremes, 406.3 per cent and 61.6 per cent respectively. Although this limited sample of items certainly cannot be considered representative of the whole list of identical grocery items sold in both market areas, it does serve to illustrate the importance to the consumer's food budget of the prices of certain types of products. As would be anticipated, the prices of the products of most importance in the Honolulu food budget are generally lower relative to the San Francisco price than those of lesser importance.

The impact on food costs of the use of so-called "high-low" pricing in Honolulu as compared to "everyday low" or "level" pricing in some Mainland market areas was also tested with the data compiled in this study. It is evident in Table 5

TABLE 5.—"MARKET BASKET" ITEMS: NUMBER OF TIMES ADVERTISED ON SPECIAL AND AVERAGE DEPTH OF PRICE CUT, SAN FRANCISCO BAY AREA AND HONOLULU, 12-WEEK PERIOD, 1967

	San Francisco Bay Area		Honolulu	
Product line	Number of times[a] advertised	Average depth of price cut (*Per cent of regular price*)	Number of times[a] advertised	Average depth of price cut (*Per cent of regular price*)
Flour	7	19.2	28	16.9
Cereal	4	10.1	5	20.2
Rice	4	4.8	41	6.4
Canned meat	4	11.8	41	10.2
Canned fish	9	15.0	30	10.0
Canned milk	4	10.7	19	7.7
Canned fruit	11	16.1	34	18.3
Canned fruit juice	2	13.8	13	22.3
Canned vegetables	7	15.7	65	14.9
Tomato sauce	2	15.4	13	26.1
Catsup	2	20.0	12	16.9
Canned soup	1	8.3	13	21.8
Margarine	4	7.8	13	6.1
Mayonnaise	0	—	21	4.9
Cooking oil	5	22.1	17	12.7
Shortening	8	16.0	0	—
Sugar	7	13.0	14	9.7
Spreads	7	11.8	9	17.7
Canned beans	13	22.6	22	14.2
Coffee	44	15.0	26	19.6
Tea bags	4	10.1	17	6.9
Soft drinks	0	—	39	13.3
Canned spaghetti	2	5.1	6	14.2
Baby food	10	5.1	38	12.4
Frozen foods	3	27.5	37	13.2
Total number of times advertised	164	...	573	...
Average depth of price cut	...	13.8	...	14.0

[a] Total number of weeks that the selected high-volume items in each product category were advertised by sample firms during the 12 weeks studied.

TABLE 6.—AVERAGE RETAIL PRICES FOR SELECTED PRODUCTS BY TYPE OF LABEL,
11 RETAIL CHAINS, 1965*

Product	Private brand		Major comparable national brand	
	Number of chains	Average price[a] (Cents per unit)	Number of chains	Average price[a] (Cents per unit)
Frozen orange concentrate, 6 ounces	8	18.2	7	24.1
Frozen cut green beans, 9 ounces	2	20.6	2	26.7
Canned cut green beans, No. 303	11	19.0	10	26.9
Canned green peas, No. 303	10	19.8	10	23.1
Canned sliced cling peaches, No. 2½	11	26.0	11	27.2
Canned Bartlett pears, No. 2½	9	45.2	9	54.2
Canned applesauce, 25-ounce glass	6	27.4	5	30.4
Catsup, 14 ounces	8	18.6	8	22.9
Tuna fish, light chunk, 6.5 ounces	7	26.5	6	32.2
Evaporated milk, 14.5 ounces	10	13.6	10	15.6

* Calculated from Table 8-1, p. 66, in The National Commission on Food Marketing, "Private Label Products in Food Retailing," *Special Studies in Food Marketing*, Technical Study No. 10, June 1966.

[a] Simple average of the 12-week average price computed independently for each chain.

that there is a considerable difference in the frequency of use of advertised specials between major food retailers in Honolulu and the San Francisco area. During the 12-week period studied, the market basket items were advertised 573 times by the three Honolulu retailers and 164 times by the three San Francisco area retailers. Among the items advertised on special, the average depth of the price cut as a per cent of the prevailing regular (shelf) price ranged from 4.9 to 26.1 in Honolulu and from 4.8 to 27.5 in San Francisco, averaging about 14 per cent in both markets. Identical items in both market baskets were advertised on special 230 times in Honolulu compared with 75 times in San Francisco, with depth of cut in both markets averaging about 15 per cent. Thus, it is frequency of specials rather than the depth of price cuts that differentiates the two areas in respect to this merchandising practice.

A study by Larson and Boyer in 1966 concluded that a Honolulu consumer could save as much as 20 per cent on his food bill by taking advantage of the available advertised special prices (*6*, pp. 11–12). Gray and Anderson reported very similar findings in a 1960 study of retail food prices in Palo Alto, California (*4*, p. 128).

An indication of the differential effect of specials on consumer food costs in Honolulu as compared to the San Francisco area was obtained from the data on *identical items* developed in this study. The average reduction from the regular (shelf) prices of these items to their average prices,[9] with specials movement considered, was 3.6 per cent in the San Francisco area and 7.4 per cent in Honolulu. While average prices of these items, specials considered, are 13.8 per cent higher

[9] These are the prices developed in the market basket analysis which considered quantity movement at special and regular prices over the period studied.

in Honolulu than in San Francisco, their regular (shelf) prices are 18.4 per cent higher.

An additional element to be considered in comparing merchandising practices in relation to food costs between markets is the relative importance of private and national brands. The results of a recent study for the United States as a whole, shown in Table 6, indicate that unit prices of products sold under national brands average 20.6 per cent higher than under private brands. Although such a comparison lacks accuracy in many respects, such as the obvious problems of quality comparability, it does suggest that these food products under private brands are usually priced lower than national brands.

An indication of private brand and national brand use in the San Francisco area and in Honolulu is given by comparing the availability of products under the two types of label among the market basket items in the two markets. As shown in Table 7, 24.3 per cent of these products appeared under private brands in Honolulu compared to 45.1 per cent in the San Francisco Bay Area. Information obtained in discussions with members of the food trade confirms the finding

TABLE 7.—NUMBER OF NATIONAL AND PRIVATE BRAND ITEMS APPEARING IN SAN FRANCISCO BAY AREA AND HONOLULU MARKET BASKETS*

Item	San Francisco Bay Area			Honolulu		
	Total items	National brand	Private brand	Total items	National brand	Private brand
Flour	4	3	1	4	3	1
Cereal	2	2	–	3	3	–
Rice	3	2	1	4	2	2
Canned meat and fish	9	7	2	9	7	2
Dairy products	4	1	3	2	1	1
Canned fruit	9	2	7	6	5	1
Canned fruit juice	2	2	–	3	2	1
Canned vegetable products	8	2	6	7	4	3
Canned soup	3	3	–	2	2	–
Dressings	1	1	–	1	1	–
Catsup	1	1	–	1	1	–
Margarine	2	2	–	4	2	2
Cooking oil; shortening	4	2	2	3	3	–
Mayonnaise	1	1	–	1	1	–
Sugar	3	2	1	2	2	–
Jelly, jam, etc.	4	1	3	3	3	–
Canned beans	3	2	1	3	3	–
Coffee (regular)	5	2	3	3	2	1
Coffee (instant)	3	2	1	2	1	1
Tea bags	2	2	–	1	1	–
Canned spaghetti	1	1	–	1	1	–
Baby food	2	2	–	2	2	–
Frozen juice	2	–	2	3	2	1
Frozen vegetables	4	–	4	4	2	2
Total	82	45	37	74	56	18
Per cent of total	100.0	54.9	45.1	100.0	75.7	24.3

* Based on market basket items in stores operated by cooperating retail firms. Private brands include both retailer- and wholesaler-controlled brands.

that retailer and distributor brands are relatively less important in Honolulu than in most Mainland cities.[10] To the extent that food savings can be achieved by purchasing private brands, it appears that at least part of the higher consumer costs in Honolulu as compared with the San Francisco area can be attributed to the greater use of national brand items in Honolulu.

In summary, the comparisons presented in this section indicate the range of consumer food costs that results from various consumption patterns. The upper limit of the range is reached by the Honolulu consumer who spends his food budget on the basis of a San Francisco expenditure pattern. That is, food costs of those who follow the San Francisco pattern in Honolulu would be about 26 per cent greater than the costs of the same pattern in San Francisco. The lower limit of the range is attained by those who follow the typical Honolulu expenditure pattern in Honolulu. Food costs of these consumers are about 10.2 per cent higher than if this same pattern were followed in San Francisco. This study also shows that average prices of the items in this market basket are about 21 per cent higher in Honolulu than in San Francisco. This figure falls about halfway between the limits and reflects the total mix of products that is sold by Honolulu retailers. These prices include both the high- and low-volume *product categories* of foods carried on the retail shelf. For example, while rice, a high-volume product, is sold in Honolulu for about 73 per cent of its San Francisco price, flour, a relatively low-volume product in Honolulu, is priced at about 143 per cent of the San Francisco price.

The significant effect on food costs of inter-market differences in product importance is clearly evident in this analysis. The data show that the average Honolulu costs of the product categories making up the highest-volume 50 per cent of expenditures in the respective markets range approximately from as little as 3 per cent to as much as 40 per cent higher than the San Francisco cost of these products.

Average Honolulu prices of *identical* high-volume items sold in both markets are about 14 per cent higher than San Francisco prices of these items. The Honolulu prices of selected identical items range from 77 per cent to 132 per cent of their San Francisco prices, but the weighted market basket costs of these items in Honolulu range from 58 per cent to 406 per cent of their San Francisco cost.

This analysis is limited to grocery products only. The evidence suggests that the cost of these products to the "typical" Honolulu consumer is about 10 per cent higher than it would be in the San Francisco area. However, the cost differential may be dramatically higher for the Honolulu consumer whose expenditure pattern more closely approximates that of the San Francisco consumer. Considering the body of evidence presented in this section, it may be that those consumers not adapted to the Hawaiian market situation demand products which raise their food costs above the lower limit. The extent to which this differential may rise is

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[10] This situation might be explained in several ways. For instance, large food chains—the major distributors of private brand products on the Mainland—have a smaller share of the Honolulu market than is generally the case in the San Francisco area, and many national brands have long been established in Honolulu. However, another explanation rests on the proposition that the differential between the prices of products at point of production narrows as the products move to distant markets since transfer costs are equal on both high- and low-priced goods. Thus, the price to the Honolulu consumer of a national brand item may be lower relative to the private brand substitute than is the case for the San Francisco consumer.

suggested by the upper limit of 26 per cent over San Francisco shown in this analysis. This differential could be considerably greater if the Honolulu consumers' purchases reflect more than average expenditure on products which are the highest volume sellers in the San Francisco market and less than average expenditure on the high-volume Honolulu products.

COMPARATIVE FOOD RETAILING OPERATIONS

While it would be most helpful to compare the operations, including costs and margins, of all the major elements of the food marketing systems in the two areas considered, this was not feasible in the study. Data are not readily available on segments of these systems other than retailing, especially in Hawaii, where problems of confidentiality arise. In addition, the scope of the study was not such as to allow the development of sufficient data sources, except for retailing. The comparative data on retailers, however, are believed to be significant and illustrative of this element of food cost comparisons.

Retail costs and margins do not relate to the single product but rather to a total mix of products and services. In general, retail pricing is determined on an item basis which takes into consideration such factors as wholesale cost, the nature of relevant competition, merchandising policy, and some customary margin based on the type of product (5, pp. 92–101).

It is necessary to view the cost and pricing relationships of food products at the retail level as a part of a broader "package" offered to consumers. Profit margins (gross or net) for a single product are irrelevant. Operating data for commodity groups, if not the store or firm as a whole, provide a much more meaningful measure of retail margins. In order to develop a comparison between Honolulu and Mainland food retailers certain operating data were selected for study. Where possible, these data were obtained directly from cooperating firms. Other sources of data included the Governor's Committee report (10, p. 177) and publications of the Super Market Institute, the National Association of Food Chains, Cornell University, the National Commission on Food Marketing, and the U.S. Department of Agriculture. In all cases, the concern in this study was to obtain reasonable estimates of the operating characteristics, costs, and margins of major retailers in Honolulu and the San Francisco Bay Area.

The principal obstacle to any comparative analysis of operating data is the generally recognized lack of homogeneity among accounting and other record-keeping categories employed by individual retailers. As a result, comparison of specific expense classifications becomes largely meaningless unless based on extremely detailed examination of individual firm records. Such an analysis was not within the scope of this study, but two alternative procedures were possible. First, some general comparisons were made. These were based on Mainland data available from cooperating retailers and such sources as the Super Market Institute and the Cornell studies, and from Honolulu data calculated with information obtained from major Honolulu food retailers and University of Hawaii personnel. The second part of this analysis was developed with the cooperation of Safeway Stores, the only food retailer operating in both the Honolulu and San Francisco Bay Area markets. Safeway made available a great deal of information which is highly comparable between the two market areas, and it allows direct comparison

without the usual pitfalls arising from wide variations in accounting methods and definitions. Although the industry data reflect a broader sample, the Safeway comparison is likely to be considerably more precise for the specific markets considered.

Comparison of Industry-wide Operating Data

Sales per store.—Typical supermarkets operated by the leading food chains in Honolulu had average annual sales per store of about $2,216,000 per year in 1965–66. This compares quite favorably with similar data for the entire United States mainland, but is not quite as high as most of the larger California chain-store supermarkets. The national data are as follows:

AVERAGE SALES PER STORE PER YEAR

From the Cornell Study (1965–66) (3, pp. 10, 11, 19):

All food chains	$1,455,000
Chains with annual sales below $20 million	1,102,000
Chains in the Western Region (1966–67)	1,645,000

From Super Market Institute data (1965) (12, p. 9):

Average annual sales per supermarket	$2,010,000

From Chain Store Age survey (1967) (2, p. 9):

Average annual sales per supermarket	$1,163,120

The wide variations among these data illustrate the problems of comparison. Each source defines a supermarket and gathers its data somewhat differently. As a result, stores of great size variation are included and average sales figures lose meaning. There is also a wide range in store characteristics among Honolulu food retailers, but the data available to this study reflect only the operations of the major firms.

California data obtained from major chain-store operators in the course of this research indicate that their average San Francisco Bay Area supermarket has annual sales of about $2,140,000, which is very similar to the average of the major Honolulu food chains. But if a comparable product mix were assumed, and if Honolulu sales were reduced by some price differential over the San Francisco area level, it is clear that physical volume moved through the average Honolulu supermarket would be indicated as lower than for its San Francisco counterpart.

Size of stores.—Available data suggest that store sizes among Honolulu supermarket operators average somewhat larger than comparable firms in the Bay Area, although there are no stores in Honolulu as large as the very largest, new California stores.

Information gathered in the current study shows that the major Honolulu retailers' supermarkets average 25,000 to 27,000 square feet in total area, with selling area averaging 14,000 to 16,000 square feet, indicating a ratio of selling to total area of 56 to 59 per cent. San Francisco area supermarkets operated by the major food chains average about 19,000 total square feet, with about 12,500 square feet of selling area—66 per cent of the total. These data indicate that the Honolulu supermarkets average about 37 per cent larger than their San Francisco counterparts in total area but only 20 per cent larger in selling area. The lower Honolulu ratio of selling space to total area reflects the larger share of the store used for storage, packaging, and other nonselling operations.

The larger size of Honolulu supermarkets is principally due to the relatively recent advent of large-scale food retailing operations there as compared to the Mainland. Average store sizes do not necessarily reflect current changes and trends in different markets because of the wide differences among older and newer stores. For example, data from the *1966 Annual Report* of Purity Stores in northern California show that the firm's six newest stores range from 18,000 to 20,500 square feet, while the average store size for the entire chain is 14,600 square feet. In 1956 the average size of store was 7,200 square feet. In 1966 about 24 per cent of Purity's stores were more than 15 years old compared with 69 per cent over that age in 1956.

Sales per square foot.—Data from Honolulu supermarket operators indicate that their average weekly sales per square foot of selling area are about $2.63. Major San Francisco area food chains show an average of about $3.39. National data from the Super Market Institute indicate an average of $3.66 in 1965 (*12*, p. 12). Thus, Honolulu sales per square foot are only about 76 per cent of the San Francisco average and 72 per cent of the national average.

The Honolulu data suggest a range of $2.56 to $3.29 in sales per square foot of selling area among the major food retailers.[11] Available SMI figures for 1964 indicate an average of $1.90 to $3.27 in the Pacific Region (*8*, 1964 report). The narrower range for firms in Honolulu compared to the Mainland no doubt reflects the more homogeneous characteristics of supermarkets operated in Honolulu, and most of the homogeneity can be traced to the relatively recent growth of the supermarket industry there. Of course, the relatively higher price levels in Honolulu tend to raise the sales figures somewhat above the figures for comparable physical volumes moving through Mainland stores; hence, sales per square foot are correspondingly higher by this factor, other things (such as product mix) being equivalent.

Gross profit rates.—Average gross profit rates of major Honolulu food retailers range from about 20 to 22 per cent of sales. Data from tax returns for the largest Hawaiian-based firms showed gross profit rates as 20.04 per cent of sales in 1965; however, averages of all food retail firms with more than $1.5 million annual sales show a rate of 19.74.[12] Published data from various sources for Mainland food retailers are shown below and in Tables 8 and 9.

AVERAGE GROSS MARGINS AS A PER CENT OF SALES

From the Cornell Study (1965–66) (3, pp. 10, 11, 19):

All food chains	22.3
Chains with annual sales below $20 million	19.6
Chains in the Western Region (1966–67)	24.0

From Super Market Institute data (1964) (8):

All firms covered	19.1
Firms with sales of $5 to $15 million	18.9
Firms in the Pacific Region	22.1

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[11] These are averages for firms. The range among individual stores is somewhat broader.

[12] As reported by the *Governor's Committee on Food Prices* (*10*, Appendix Table II B2–3). These are percentages of sales *not including* Hawaii's general excise tax, and are thus more comparable to California. The gross profit figure for the large firms with excise taxes *included* was 22.75 per cent of sales.

From *National Commission on Food Marketing*
(*1964 data*) (*8*, p. 544):

Safeway Stores	22.0
Lucky Stores	21.4

The average of all of these Mainland data is 21.0 per cent; however, the average gross margin for the Western Region, Pacific Region, Safeway Stores, and Lucky Stores is 22.1 per cent. These various data suggest that gross profit rates among leading Honolulu retail food firms average about the same as similar retailers throughout the Mainland, although they are somewhat lower than firms in the West.

Gross profit margins vary among the departments of a supermarket. Unpublished data developed in 1962 estimate Honolulu chain-store margins as the following percentage of sales: groceries, 21.0; meat, 26.0; produce, 29.5 (*1*). Super Market Institute data for the same year show average gross profits in the Pacific Region (including only the Pacific Coast states) as follows: grocery, 21.44; meat,

TABLE 8.—COMPARATIVE OPERATING RATIOS, HAWAIIAN FOOD RETAILERS AND
MAINLAND FOOD RETAILERS*

(*Per cent of sales*)

	Hawaiian food retailers[a]		Cornell Study		
Profit or expense	Firms with annual sales over $1.5 million (1)	Discount markets (2)	All firms reporting (3)	Firms with annual sales under $20 million (4)	Western Region firms[b] (5)
Gross operating profits	19.74	12.02	22.32	19.57	24.38
Expenses					
Wages and salaries (including benefits)	9.61	5.29	10.51	9.26	11.82
Rent					
Real estate	1.92	3.29	1.84	1.51	1.86
Equipment	——	.62	.09	.42	.08
Amortization and depreciation	1.33	.21	.97	.85	1.12
Taxes	.61	.43	.85	.62	1.13
Advertising and promotion	3.13	.52	2.31	2.07	1.76
Repairs	.41	.07	.55	.36	.51
Insurance	.39	.20	.44	.45	.59
Supplies	.83	.94	.96	.83	1.17
Utilities	1.08	.29	.78	.71	.76
Donations	.02	——	.03	.02	.03
Other expenses	.31	.10	1.29	1.40	1.16
Interest	.26	.13	.76	.65	.83
Total expense	19.90	12.09	21.38	19.15	22.82
Net profit or loss	(−.16)	(−.07)	.94	.42	1.56

* Columns 1 and 2 from *Report of the Governor's Committee on Food Prices* (Honolulu, March 1967), Exhibit 10: columns 3, 4, and 5 from Wendell Earle and John Sheehan, *Operating Results of Food Chains 1965–66* (Cornell University, Ithaca, N.Y.), pp. 10, 11, 19.

[a] Ratio based on gross sales *not including* Hawaiian excise taxes.

[b] Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

TABLE 9.—TYPICAL MAINLAND SUPERMARKET OPERATING RATIOS FROM
SUPER MARKET INSTITUTE, 1964*

(Per cent of sales)

Profit or expense[a]	All companies (164 companies)	Multiple-store firms with sales of $5 to $15 million (30 companies)	Pacific Region, all companies (11 companies)
Gross profit[b]	19.1	18.9	22.1
Store door margin[c]	18.3	17.8	19.8
Store expenses			
Store labor expenses (including benefits)	8.2	8.0	10.3
Rent and real estate[d]	1.5	1.4	1.7
Equipment depreciation and rental costs	.8	.9	1.1
Advertising and promotion (including stamps)	3.1	3.1	1.3
Maintenance and repairs	.3	.3	.4
Supplies	.8	.9	.5
Utilities	.7	.7	.8
Other store expenses	1.3	1.3	1.2
Interest	.2	.2	.2
Total store expenses[e]	16.3	15.8	17.5
Net operating profit[e]	2.1	2.0	2.1

* Based on National Commission on Food Marketing, "Super Market Institute Figure Exchange Reports, 1954–1964," Supplement No. 1, *Organization and Competition in Food Retailing,* Technical Report No. 7, June 1966. Data from 1964 Report.

[a] Data categorized to more closely compare to classifications in Table 8.

[b] Firms without warehouse.

[c] Gross profit less headquarters expense.

[d] Includes taxes.

[e] Totals and net profit figures are typical ratios, not derived from individual expense categories shown.

23.88; produce, 33.51 (*8,* 1962 report). Estimates developed in this study suggest the following ranges in 1966:

	Honolulu	San Francisco
	(Average margin as a per cent of sales)	
Grocery	18–21	22–24
Meat	22–25	21–23
Produce	24–30	24–30

Operating expenses.—Tables 8 and 9 present comparative expense data from Honolulu food retailer tax returns and from various Mainland sources. As discussed earlier, comparison of these general data is subject to a great many qualifications—such as variation in accounting definitions and cost allocation among categories. Thus, only very tentative conclusions can be drawn from this type of information. The major expense category data for the larger Honolulu firms, not including Safeway (Table 8, column 1), and the averages of the Western Region

(Cornell Study, Table 8, column 5) and the Pacific Region (SMI data, Table 9, column 3) are shown below:

	Honolulu	Western Mainland areas	Honolulu more or less than Western Mainland
	(Per cent of sales)		(Percentage points)
Labor expense	9.61	11.06	−1.45
Real estate expenses (including amortization and depreciation)	3.25	2.89	+ .36
Advertising and promotion (including trading stamps)	3.13	1.53	+1.60
Taxes[a] (other than income taxes)	.61	1.13	− .52
Other expense categories	3.30	4.12	− .82
Total	19.90	20.73	− .83

[a] Mainland data from Cornell Study only.

These data indicate that while total operating expenses as a percentage of sales of Honolulu retailers are slightly lower than those of major firms in the western states on the Mainland, certain categories are considerably higher. For example, real estate expense is higher in Honolulu, and advertising and promotion expense is much greater than the Mainland figure; however, variation in merchandising practices, such as the use of stamps and games, occurs continually and wide differences in expense can be expected over time. Lower labor expense is the principal item that offsets these other higher Honolulu expenses, but trade representatives indicate that labor expense is rising toward the Mainland figure.

Net operating profit.—Differences in accounting definitions and reporting procedures are probably more significant in comparisons of net profits than in the other categories. However, on the basis of the various gross profit and expense data presented above it appears that Honolulu-based food retailers with sales of $1.5 million or more per year show a net operating loss of 0.16 per cent of sales.[13] Food retailers in the Western area of the Mainland had net operating profits averaging about 1.82 per cent of sales.

Sales by department.—The share of total store sales among departments also varies between Honolulu and the Mainland. Although data from San Francisco area retailers and national averages from trade sources are quite comparable, the data for Honolulu stores are considerably different, as shown below:

	Honolulu	San Francisco area	Mainland average*
	(Average per cent of sales)		
Grocery	58.9	66.4	66.5
Meat	28.9	24.5	25.5
Produce	12.2	9.1	8.0
Total	100.0	100.0	100.0

* *12*, p. 12; *2*, p. 27.

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[13] In regard to net profits of Honolulu-based food retailers, the Governor's Committee noted the following in its conclusions: "There is the strong possibility that the actual return to the owners of some closely held corporations may be higher than the corporate tax figures indicate. This could occur by the receipt of rent, trading stamp, and other income by the owners of the food marketing corporation" (*10*, p. iii).

Other operating data.—Available data on the size of individual transactions indicate a somewhat smaller average in Honolulu than on the Mainland. Boyer's data for 1962 show an average of $3.99 per customer check-out (*1*), while Super Market Institute data for that year show an average of $5.00 for all firms. However, in the Pacific Region this average was $4.10, which was the lowest for any region reported and much closer to the Honolulu figure (*11*, p. 14).

The number of stock turns per year for grocery items in Honolulu stores was estimated at 14 by Boyer in 1962. Trade sources currently indicate a range of from 12 to 14 turns per year. Super Market Institute data for the same year indicate that grocery items turn 19.8 times in Mainland supermarkets (*8*, 1962 report), but 1964 data for the Pacific Region show a stock turn of only 18.1 times for grocery items (*8*, 1964 report, Table 15). It is commonly asserted by members of the trade that Hawaii has higher inventory and lower turnover rates than does the Mainland, but there are no published data to support these contentions. Data collected in this study, discussed in the section on "Marketing Channels and Costs," suggest that inventory levels in Honolulu grocery channels may be double the Mainland level.

Comparison of Safeway Stores Data

Safeway Stores, Inc., is the only retail food firm operating in both the Honolulu and San Francisco area markets. As of July 1967, the company had 4 stores in Honolulu and 206 stores in its total San Francisco Division, of which Honolulu is a part. Safeway utilizes a uniform accounting system throughout its operations and, thus, develops comparable information for all stores and market areas. Safeway's Economic Research Department has made available to the Food Research Institute a considerable amount of confidential operating data for the Honolulu stores and for the San Francisco Division as a whole.[14] The comparisons in this section are based on an analysis of those data.

The time period covered by the Safeway data is the first 40 weeks of 1966, ending October 8.[15] Table 10 presents the differences in operating ratios between Safeway's Honolulu stores and its San Francisco Division as a whole.

As is evident in Table 10, Safeway's Honolulu store expenses were somewhat lower than the San Francisco Division average, principally due to lower labor expense and no trading stamp expense in Honolulu during this period. But the gross profit rate in Honolulu was considerably lower, with the result that net store operating profits as a per cent of sales in Honolulu were 1.68 percentage points below the San Francisco rate. This figure does not include nonoperating divisional or corporate-wide costs and income or taxes on income.

The major factors tending to raise comparative operating expenses in Honolulu are real estate, equipment, and utilities costs. The ratio to sales of these categories totals 2.11 percentage points higher in Honolulu than in Safeway's San Francisco Division as a whole (Table 10).

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[14] Some data showing the San Francisco Division with the four Honolulu stores excluded were also made available. However, the differences in various comparisons were so slight that it was decided to utilize data for the Division as a whole for all comparative purposes.

[15] A strike in the Mainland warehouse began at that time, and data for the remaining months of 1966 are not considered comparable to those for more normal operations.

TABLE 10.—DIFFERENCE IN OPERATING RATIOS, SAFEWAY STORES, INC.,
4 HONOLULU STORES AND ALL SAN FRANCISCO DIVISION STORES,
1966 (JANUARY 2 TO OCTOBER 8)*

Profit or expense	Honolulu ratio compared to San Francisco Division (*Per cent of sales*)
Gross profit rate	−2.54
Expenses	
Wages and salaries (including benefits)	−2.13
Real property charges (including taxes and insurance)	+1.22
Equipment rental (including taxes and insurance)	+ .57
Advertising and promotion (including trading stamps)	−1.04
Repairs	− .03
Utilities	+ .32
Supplies	+ .12
Other expenses	+ .11
Total expense	− .86
Net store operating profit	−1.68

* Data supplied by Economic Research Department, Safeway Stores, Inc.

Summary—Operating Data Comparison

Many operating characteristics of the major food retailers in Honolulu and the San Francisco Bay Area are quite similar. The principal apparent differences are the lower ratio of selling area to total store area and the lower sales per square foot of selling area in Honolulu, even with higher price levels. Both of these characteristics are generally viewed as evidence of less efficient use of physical facilities, although adjustment to local conditions must be considered. Since real property and equipment are the major sources of higher costs in Honolulu compared to the Mainland, lower utilization of such facilities tends to further increase the cost differential.

Evidence from general sources and from Safeway's operations in both market areas shows that as a percentage of sales, Honolulu gross profit rates and net operating profits are lower than on the Mainland. The lower operating expenses do not offset the difference in gross profit rates; however, in view of the generally higher price levels in Honolulu, it is apparent that the dollar amount of gross profits compares more closely to the Mainland figure than is suggested by these percentages. For example, if an average price differential of 15 per cent is assumed, the dollars represented by a gross profit rate of 20 per cent on sales in Honolulu would be the equivalent of a 23 per cent rate on the Mainland. Expense ratios also represent relatively larger dollar amounts due to the higher sales base. Thus, any general difference in price levels should be considered in comparing operating ratios between two areas. The comparison between the actual dollar amounts involved and the cash flows is relevant, as is the fact that investment costs in Honolulu are greater than on the Mainland.

COMPARATIVE MARKETING CHANNELS AND COSTS

The marketing channel from point of production to the retail shelf consists of those institutions which provide physical transfer and handling, and such services as finance and communication. Marketing costs include the margins added by these institutions to cover costs of goods and services provided, losses from spoilage, pilferage, and other shrinkage, and the net return on capital investment. The differential in margins added to some equal price, such as the price at a processing plant door, results largely from different magnitudes of these cost factors. Cost variations may result from differences in the following characteristics: (1) distance between the points of equal price and the market; (2) the specific form of the product—such as packaging or other protective services; (3) the amount of credit needed or sales costs involved; (4) the efficiency of marketing organization in the different markets; and (5) the competitive factors present in the marketing channel.

To illustrate the typical marketing situation for various types of food moving from the Mainland to Honolulu, the following five specific products were selected: fresh beef, frozen fryers, canned cling peaches, fresh tomatoes, and frozen peas. Among these products, three—beef, chicken, and tomatoes—are produced in Hawaii as well as imported in substantial quantity. From 1960 through 1966 the average share of total Hawaiian market supplies of those products inshipped was as follows:[16]

Beef and veal	51.9 per cent
Chickens	61.7 per cent
Fresh tomatoes	34.3 per cent

Total supplies of frozen peas and canned cling peaches are shipped in from the Mainland.

The typical marketing channel for each of these products was traced from some equal cost or common starting point in northern California to the retail level in San Francisco and in Honolulu. Differences and similarities were noted and available cost and margin data were obtained. In particular, an attempt was made to isolate those costs associated with any "special" problems involving products moving to Honolulu rather than to San Francisco. Interviews were held with management personnel of firms at various levels of the marketing channels, and secondary data were developed from published sources. In addition, government and university personnel provided a great deal of information.

Marketing Channel and Cost Differences

The major differences between marketing channels from product origin on the Mainland to the retail shelf in Honolulu and in San Francisco are, of course, related to physical handling and transportation. As shown in Table 11, for the five products studied, ocean freight averaged 14.5 per cent of the cost to retailers and 11.2 per cent of retail price. Other marketing costs averaged 9.2 per cent of retail cost and 7.2 per cent of retail price. Total marketing costs up to the retail level in

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[16] Data for beef, veal, and chickens from Hawaii Department of Agriculture, *Statistics of Hawaiian Agriculture 1966*, Honolulu, Hawaii, June 1967, p. 12; for tomatoes, Rokuro Yamaguchi, *Honolulu Unloads*, Hawaii, 1962, pp. 15, 17; 1964, pp. 15, 17; 1966, pp. 15, 17.

TABLE 11.—MARKETING COSTS FOR SPECIFIED COMMODITIES FROM COMMON POINT OF
ORIGIN TO RETAIL STORES IN HONOLULU AND SAN FRANCISCO AS A
PER CENT OF RETAILER COSTS AND OF PRICES*

Commodity	Per cent of cost to retailer		Per cent of retail price	
	Honolulu	San Francisco	Honolulu	San Francisco
Fresh beef				
Ocean freight[a]	12.3	...	9.3	...
Other marketing costs[b]	3.7	4.4	2.9	3.4
Total	16.0	4.4	12.2	3.4
Fryers[c]				
Ocean freight[a]	13.9	...	11.1	...
Other marketing costs	8.3	6.0	6.7	4.7
Total	22.2	6.0	17.8	4.7
Canned cling peaches				
Ocean freight[a]	10.6	...	8.5	...
Other marketing costs	9.0	6.8	7.2	5.3
Total	19.6	6.8	15.7	5.3
Fresh tomatoes				
Ocean freight[a]	20.2	...	15.0	...
Other marketing costs	19.4	13.0	14.4	9.2
Total	39.6	13.0	29.4	9.2
Frozen peas				
Ocean freight[a]	15.3	...	12.2	...
Other marketing costs	5.8	4.3	4.6	3.3
Total	21.1	4.3	16.8	3.3
Average[d]				
Ocean freight[a]	14.5	...	11.2	...
Other marketing costs	9.2	6.9	7.2	5.2
Total	23.7	6.9	18.4	5.2

* Computed from Appendix Table I.
[a] Includes hauling to dock in San Francisco.
[b] Excluding shrinkage.
[c] Frozen, whole body in Honolulu; fresh, whole body in San Francisco.
[d] Simple average.

Honolulu averaged 23.7 per cent of cost to retailers and 18.4 per cent of retail price.
In the San Francisco area, from the same point of origin as for Honolulu ship-
ments, delivery costs and intermediary margins averaged 6.9 per cent of cost to
retailers and 5.2 per cent of retail prices. These data suggest differences in market-
ing costs related to the retail merchandise cost of 16.8 percentage points and of
13.2 percentage points in relation to the retail prices of these products.

These cost percentages do not include retailer margins. The following esti-
mated costs to retailers and retail price differences for these products between
Honolulu and San Francisco are calculated from the cost and margin data (see
Appendix Table I):

	Honolulu as a per cent of San Francisco area	
	Cost to retailers	Retail price
Fresh beef	116.7	119.8
Fryers	120.9	118.2
Canned peaches	115.9	111.6
Fresh tomatoes	126.5	121.0
Frozen peas	121.2	116.7
Average	120.2	117.5

The average retail margins in Honolulu are lower than in San Francisco and reduce the percentage differential in retail prices as compared to the retailer's merchandise cost. Of the average estimated retail price difference—17.5 per cent—about 11.2 per cent is accounted for by ocean freight and 2.0 per cent by other marketing costs, such as local hauling and wholesale or warehouse costs between a common Mainland origin and the Honolulu retailer. The additional difference of 4.3 per cent must be explained by other cost-raising factors peculiar to the Honolulu market.

Some Major Cost Factors

There are a number of major marketing cost factors that bear on food price levels in the Honolulu market. These data are based on interviews with members of the food trade and with informed university and government personnel. The five products studied received the major emphasis in these discussions, but the cost factors do not necessarily apply primarily to these particular products, nor to each of these equally.

Inventories.—The cost of maintaining larger inventories of food products in Honolulu as compared to Mainland cities is continually mentioned in discussions of food price differentials.[17] Accurate calculation of quantitative estimates of the actual cost of inventories in Honolulu as compared to San Francisco is probably not possible. Differences among types of products, sources of supply, trade practices, and related variables are so wide that generalizations, even as to one product category, are open to question. Among the five products studied, only the grocery products, including frozen goods, are normally stored. Fresh produce and meat are shipped in weekly, and supplies are rotated more in relation to shipping schedules than inventory stockpiles.

In the case of meat, there may be as long as 30 days involved from the time of shipment to the moment of sale to the consumer. This includes loading and shipping time, storage for distribution at a Honolulu warehouse, and in-store holding for sale at the retail store. Produce, except staples such as potatoes and onions, moves through Honolulu channels in a few days after arrival. In fact, due to the reduced shelf-life resulting from time in transit, most imported fresh fruits and vegetables may move more rapidly through Honolulu than through San Francisco marketing channels.

Trade estimates of the size of stocks for grocery items held in Honolulu vary

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[17] In the *Governor's Committee Report* a rough estimate indicated that inventory costs amounted to about 5.5 per cent of the price differential between San Francisco and Honolulu market baskets (*10*, p. 25).

from 28 to 40 days' supply. Similar estimates for San Francisco vary from 7 to 20 days' supply. Typical estimates are 30 days in Honolulu and 15 days in San Francisco. These stock levels refer to availability at the wholesaler or chain-store warehouse. On the Mainland such stock levels largely reflect the time required to obtain, record, and maintain a flow of supplies to retail stores. In Honolulu, the stocks held at the wholesale supply level, or in some cases in the retail stores, reflect not only these objectives but also the long pipeline from Mainland suppliers. The higher stock levels are a result of a number of interrelated considerations.

A principal reason for holding stocks of many products is the irregularity of shipping schedules that has accompanied the shift to containers now used for almost all commodities moved by ocean freight from the Mainland to Hawaii. The efficiency of the container program is credited with keeping 1967 ocean freight costs almost to 1962 levels. However, the necessity to achieve a high degree of utilization of container ships and related equipment has led to less regular scheduling than was the case prior to the inauguration of this service. No exact timetables are maintained, although Matson Navigation Company, the major carrier, periodically issues schedules covering about a month's sailings and arrivals.[18] The scheduling is largely dependent upon the coordination of *eastbound* loads of sugar, pineapple, and molasses from Hawaii with westbound loads from the Mainland. Delays in load availability, particularly of *eastbound* cargo, make precise scheduling difficult.

The problems arising from the lack of "regular" freight schedules were a chief source of complaint by interviewed members of the food trade. Needless to say, the scheduling issue has been the major topic of numerous meetings between carrier representatives, shippers, and receivers.[19]

The principal effects on food marketing of irregular shipping schedules relate to the out-of-stock or overstock conditions which result when two ships originally scheduled to arrive a week apart, for example, actually arrive 10 to 12 days apart, which results in the next shipments arriving within a day or so of the delayed ship.

Both of these situations play havoc with inventory controls, merchandising plans, and prices. Out-of-stock conditions lead to customer dissatisfaction and advertising waste—and a combination of both if an item advertised on special fails to arrive on schedule. Oversupply due to doubled-up arrivals results in excess inventories and, particularly for perishables, reduced prices as extra quantities are moved. The isolation of Honolulu provides no access to feasible alternative markets for these supplies. To protect themselves against situations such as these, the Honolulu food trade, generally, tends to maintain stocks at a higher level than might be the case if scheduling were more exact. Also, margins reflect, to some degree, the risks of loss that arise from price reductions, spoilage, and the holding costs of oversupplies.

As contrasted with delivery in San Francisco, shipping time and scheduling

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[18] Matson Navigation Company officials indicate that the current turnaround time from Honolulu is approximately 17½ days to San Francisco, 14 days to Los Angeles, and 18 days to Seattle or Portland. This compares with about a 35-day turnaround prior to World War II.

[19] The carrier argument in such cases usually suggests that their customers have a choice between scheduling problems and the higher freight rates that would result from less efficient utilization of equipment.

to Honolulu present numerous other problems. Shippers indicate that overtime handling and loading labor costs are a much larger cost factor in Honolulu ship- ments as compared to local delivery. The necessity to anticipate requirements 3 to 4 weeks in advance of arrival in Honolulu reduces the procurement oppor- tunities enjoyed by San Francisco buyers. The advantages of day-to-day local de- livery schedules and immediate knowledge of any special purchase "deals" are largely unavailable to the Honolulu food trade. Another issue frequently raised in trade interviews is the continuing specter of a strike that will disrupt ocean shipping. Although many government and university people were inclined to discount this threat in view of the long period of labor peace in Hawaii, most members of the food industry dependent on Mainland supplies continue to in- clude this risk in their inventory plans.

The combination of higher inventories, lower turnover,[20] and the various related issues cited above is no doubt a significant source of greater cost in Hono- lulu compared to San Francisco. The detailed studies of this specific cost that would be necessary to evaluate its actual importance are not available. However, some idea of this cost differential can be gained in the following manner.

Estimates presented above indicate that the size of stocks held in Honolulu may be double the Mainland quantity, and the number of stock turns per year in Honolulu may be only about 13 compared to about 19 on the Mainland. Assuming an equal rate of interest in both areas, the cost of inventory investment in Hono- lulu would be twice that of the Mainland. The differences in turnover rates sug- gest that comparable Mainland firms are able to use their capital about 1.5 times as much as Honolulu firms. This higher rate of turnover also reduces relative Mainland costs of other inflexible production factors, such as fixed plant, equip- ment, and permanent personnel.

Shrinkage and spoilage.—Of the products studied, fresh beef and tomatoes shipped from the Mainland are subject to a higher degree of shrinkage and spoilage than if utilized in the San Francisco market. Since the great majority of fryers shipped in from the Mainland are frozen there is less shrinkage and spoil- age than for the fresh product, which is the major form sold in San Francisco.

Fresh beef undergoes physical shrinkage due to moisture loss from time of slaughter. This loss is, of course, increased by the additional time in shipment from San Francisco to Honolulu. A more important factor may be the waste incurred in trimming beef for retail sale in Honolulu as compared to San Fran- cisco. The darkened portion of the exposed lean and fat surfaces of the beef quar- ter shipped is trimmed to make an attractive cut for retail sale. The Governor's Committee estimated that 12 to 13 per cent of the beef tonnage billed to Honolulu was lost in shrinkage and waste. The freight cost of this lost weight is no doubt reflected in the Honolulu price.

The range of possible loss on fresh tomatoes is so wide that estimates of its cost are largely meaningless. One effect of this spoilage risk is that Honolulu handlers of Mainland tomatoes tend to purchase higher quality—hence, higher priced— tomatoes. Thus, the original cost of the product shipped to Honolulu is probably more than for the average tomato sold in the San Francisco area. However, this

[20] Annual grocery turnover is estimated at about 12–14 times in Honolulu warehouses compared to 18–20 on the Mainland.

is a typical manifestation of economic rationality, since the delivered cost of higher quality products is relatively less compared to lower quality when equal and substantial transfer charges are added to each type of product. Hawaiian-produced tomatoes offer the Honolulu consumer a wide range of qualities, but their prices, of course, reflect the prices of the inshipped product.

Another element in perishable produce costs is the lack of alternative markets for excess supplies. Both Hawaiian-produced and Mainland tomatoes must be moved in the local market, whereas in most Mainland markets nearby consuming centers provide a much broader set of alternative outlets. Reduction of spoilage loss on highly perishable commodities in Honolulu must be achieved largely through price concessions. The risk of lost revenue from such concessions is reflected in average prices.

The shipment by air of fresh fryers from the Mainland is increasing somewhat and may reach major proportions if air freight rates are substantially reduced, as some members of the trade and government predict. However, the size of the Honolulu market and the lack of alternative outlets described above increase the risk of spoilage of fresh fryers. Prices will have to reflect this risk. In 1967, fresh Mainland fryers were sold only through the largest Honolulu food chain. This firm was the only retailer with sufficient outlets to assure distribution through its own stores. In view of the relatively short shelf-life of inshipped fresh fryers, independent suppliers are likely to be in a weak market position in the restricted market area of Honolulu.

Consumer preferences.—The differences in consumer preferences for grocery products between Honolulu and San Francisco are reflected in the purchase patterns discussed earlier. Several additional considerations were suggested by the case studies of individual products.

Marketing cost comparisons should ideally reflect the ultimate cost per serving to the consumer in the markets studied. Canned peaches provide a case in point. The cost per serving of a canned fruit product is affected by the size of the can purchased. For example, consider the following f.o.b. cannery prices of canned cling peaches, choice grade (*9,* p. 5):

48 8-oz. cans: Per case $4.90, per can .102, per oz. .013;
24 No. 303 cans (16.88 ozs.):   Per case $3.55, per can .148, per oz. .009;
24 No. 2½ cans (29.79 ozs.):   Per case $5.25, per can .212, per oz. .007.

An ounce of fruit in the larger, No. 2½ can costs about 54 per cent as much as that in the small, 8-ounce size. Data from Honolulu and northern California retailers indicate that Honolulu consumers purchase almost three-fourths of their canned cling peaches in size 303 cans, while the California consumers purchase about two-thirds of theirs in size 2½ cans. On the basis of the above costs and assuming comparable markups, it appears that the majority of Honolulu consumers pay about 0.2 cent per ounce, or 28 per cent, more for these peaches than do the majority of San Francisco area consumers solely because of the size unit purchased.

The wide product mix required to supply the diversity of preferences apparent in the Honolulu market also tends to raise marketing costs. Not only are inventories affected, but transfer costs are also raised. Freight and delivery rates are lowest for full container loads and high minimum tonnages per load. Most major

shippers and/or receivers importing from the Mainland to Honolulu attempt to ship full container loads to achieve the lowest available rate. Large Mainland food manufacturers may ship mixed containers of their products for various Honolulu buyers, and two or three different manufacturers or suppliers may utilize so-called "split pickup" service to load a full container from different shipping point locations. In Honolulu, container loads may be distributed to one or more buyers on a drop-shipment basis, or the containers may be unloaded at the carrier's freight station, where consignees can pick up less-than-carload shipments.

Although shippers and receivers utilize various methods of minimizing freight and handling costs, it is apparent that a great deal of consolidation and partial distribution is involved in getting many products from supplier to retailer. This is particularly true for the many relatively slow-moving items that are stocked. The segmentation of the consumer market is a contributor to this problem. A great many items are stocked which cater to only a fraction of the total consumers.

Market structure and organization.—Although no detailed analysis of the structure and organization of the Honolulu market for food supplies was possible in this study, several observations seem justified. The structure of a market may simply be defined as the number and size of buyers and sellers participating and the nature of their interrelationships. Typically, the nation's food industry at the retail and wholesale levels has been characterized by a large number of relatively small units. Many of the industry's major adjustments during the past two decades have been related to changes in the structure and organization at these levels. The nature of these changes has been well documented in many government and university studies, most recently the reports of the National Commission on Food Marketing (7).

Most of the research in the structure and organization of food retailing has related to Mainland markets. The Honolulu market has not generally been included, nor have there been specific studies of its structural characteristics. Only some general observations have been possible in the course of this research project. First, the increasing integration of the Honolulu food trade with the Mainland industry follows the pattern evident in the entire Hawaiian economy, particularly since statehood. The major changes that have taken place in Mainland food marketing are being transmitted to Hawaii, but, inevitably, these changes are not going to be as rapid in a market distant from the Mainland and with a long-existing food distribution system geared to an island economy.

For example, the traditional pattern of small food retailers may be more likely to endure in a city such as Honolulu, with many diverse consumer preference groups, than in a more homogeneous market. Coincidentally, the wholesaling industry is likely both to reflect and to sustain such a system. As has been evident in the Mainland industry, changes in food retailing and wholesaling have been highly interrelated. In Hawaii, a similar pattern would be anticipated, but the unique characteristics of the market may influence the nature and speed of change.

One such characteristic is the divergence of supply areas and the differing channels that result. For example, a share of many perishable products originates in Hawaii and is handled through wholesalers who specialize in these products. Other firms handle both imported and local produce, and others specialize in imported products, sometimes from Mainland or from other sources. It seems evi-

dent that at least part of the explanation for a large number of wholesaling firms in Honolulu is this wide variation in supplying channels coming into this type of market. For fresh fruit and produce originating in Hawaii a great deal of sorting and grading is done in the Honolulu produce markets. For Mainland fruit and produce, on the other hand, most of these services have been performed prior to arrival in Honolulu. Thus, the number of wholesaling facilities observed in Honolulu may result not only from the typical Mainland circumstances of structural adjustment, but also from the requirements of serving a unique market.

Retailing in Honolulu is changing in a manner similar to that observed on the Mainland; however, the differing interrelationship between retailing and the supplying levels is likely to affect the relative rate of change. The shift to supermarket merchandising on the Mainland has been accompanied by a consolidation and integration at all levels of the marketing channel for many products. Direct procurement arrangements by large retailers and buying groups, a major characteristic of the Mainland changes, may not be as feasible in the Honolulu market. The limited size of the market, its geographic isolation, and the diverse sources of supply seem to reduce this feasibility. Procurement and warehousing to be most efficient require sufficient volume as well as the flexibility associated with close proximity to supplies and continual availability of various methods of transport. Although there are examples of integrated wholesale-retail operations in Honolulu, they do not approach the volume usually associated with major San Francisco operations. The size of the available market, of course, plays a large role in this difference.

One additional characteristic should be noted. The Honolulu food trade is dominated by family-owned and/or closely held firms. Although such firms can be expected to operate generally in the same manner as any other type of firm in the market, there may be a greater tendency to base certain decisions on criteria which are not as directly related to food marketing. Among such criteria are inheritance and income taxes, ownership control, and real property appreciation.

In summary, evidence gathered in the course of these case studies suggests that Honolulu exhibits most of the structural and organizational problems commonly associated with food wholesaling and retailing on the Mainland. Institutional adjustment and change may be slower and the resulting pattern different because of many of the differences noted here. To the extent that change promotes efficiency and there is a lag between changes taking place on the Mainland and those in Honolulu there is likely to be an adverse effect on food cost differentials between the two areas.

SUMMARY AND CONCLUSIONS

This study of consumer food cost differentials between Honolulu and the San Francisco Bay Area considers three aspects of the problem. The first is the measurement of the average difference in food costs using a market basket comparison based on actual retail movement of high-volume grocery items in each market. Another part of the study compares retailer operating data and characteristics in the two areas, and the third part analyzes differences in costs of supplying various food products to consumers in both markets.

Prices and availability of various foods in any market reflect geographic loca-

tion in relation to supplies, dietary preferences of the population mix, and local comparative advantage or disadvantage in production. The results of the market basket analysis support the hypothesis that consumer food costs are substantially affected by the manner in which the consumer adjusts to the characteristics of the market. For example, the cost of the selected Honolulu market basket is about 10.2 per cent more in Honolulu than it would be in San Francisco; but the San Francisco market basket would cost about 26 per cent more if purchased in Honolulu rather than in San Francisco. These differences reflect the price differentials between the two market areas and the average consumer expenditure patterns in Honolulu and San Francisco as evidenced by purchases in supermarkets.

The analysis clearly illustrates the fallacy of making simple price comparisons between two market areas. The average unweighted price of all items in the Honolulu market basket was about 21.3 per cent higher than that of the San Francisco items. The figure reflects the product mix of high-volume items in each market but does not take into consideration the relative importance of each product category. Further evidence of the influence of consumption patterns on food costs in different areas is supplied by a comparison of weighted prices of the products of most importance in each area. Consumer costs of these products differ much more than those of the less important products in each market. For example, the Honolulu cost of grocery products accounting for 50 per cent of the market basket expenditure is only 3 to 4 per cent greater than it would be in San Francisco. On the other hand, the Honolulu cost of products making up about 50 per cent of the San Francisco market basket expenditure is 35 to 40 per cent higher than the San Francisco cost.

The exclusion of perishables such as meat, produce, and dairy products from the market basket analysis means that this comparison is not completely representative of all food cost differences between the two areas considered. However, to the extent that there is substitution between products in the market basket studied and various perishables, such as fresh meat and fresh fruit for the canned products, it can be expected that the prices and relative consumption levels of the product categories included in the market basket reflect the availability of substitutes.

The analysis of comparative retailer operating characteristics and costs and the case studies of five types of food products shipped to Honolulu from San Francisco add another dimension to this study of food cost differentials. These explored two possible sources of variation in price levels between the two markets.

Comparative data for leading supermarket retailers in Honolulu and the San Francisco area indicate very similar operating characteristics. Lower turnover rates on grocery items, a higher level of stocks held, and a higher ratio of non-selling area per store in Honolulu add to relative operating cost differentials. But gross and net profit rates in Honolulu are lower than in San Francisco. In general, the average Honolulu supermarket is of larger size than its San Francisco area counterpart, but its sales are about the same, so sales per square foot are somewhat less. If price differentials are considered, the physical volume moved through the average Honolulu supermarket is probably lower than in San Francisco. This suggests a less efficient use of considerably more expensive buildings and equipment, with the resulting cost-raising effect. Labor expense is relatively lower in

Honolulu supermarkets, but it is rising as wage rates are pushed toward Mainland levels.

The case studies of five specific food products traced from a common point of origin to retailers in both market areas indicated an estimated average retail price in Honolulu about 17.5 per cent above the San Francisco price. About 13.2 per cent of this difference is made up of transportation and other specifically identified marketing costs. The remaining 4.3 per cent reflects a combination of cost-raising factors related to the Honolulu food marketing situation. It is interesting to note that an average price difference of 13.8 per cent was found between identical items included in the market basket comparison. This closely approximates the 13.2 per cent transfer cost difference found in the case studies and lends support to the conclusion that prices of food products sold in high volume in both market areas tend to reflect quite closely the transfer cost differentials. As noted in the market basket analysis, products of widely differing importance in the respective markets exhibit the greatest difference in price.

In evaluating the results of a case study approach it is clearly as erroneous to draw conclusions on price differentials solely on the basis of a simple compilation of average marketing and transportation costs as it is to utilize unweighted prices to judge consumer food cost differences between two markets. The bundle of goods and services offered to the consumer through the retail food store is a complex package reflecting the retailer's costs, competitive situation, merchandising methods, and other elements related to the characteristics of the local market. Tracing a single product or commodity group through the distribution channels to two separate markets may suggest specific areas for further intensive investigation, but this procedure alone says little about the ultimate cost to the consumer of that product. Only within the context of total consumer expenditure patterns in each market are realistic cost comparisons possible.

In general, this study suggests that available retailer records can be used to estimate inter-market food cost differentials. The inclusion of perishables as well as dry groceries is of course desirable, but this poses a great many problems of data availability and accuracy. Case studies of various segments of the marketing system and of individual commodity costs and margins are helpful in suggesting major sources of price differentials. The major conclusion from this study is that close attention to the specific consumption patterns in each market is of prime importance in any analysis of comparative consumer food costs.

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APPENDIX A

METHOD OF ESTIMATING AVERAGE PRICES

Price and quantity data available from several of the retail food chains cooperating in this study specified the volume of each item that was moved on special and the prices at which it was sold. For the other firms it was necessary to estimate specials movement from records showing daily or weekly shipments to stores from a central grocery warehouse. Regular and special prices for all weeks were supplied by the retailers. The method used to estimate specials movement for each item was as follows:

1. Weekly quantities shipped from the warehouse to stores were ranked from highest to lowest. The first week in the 12-week period studied was excluded, but price data for the week following the last week's shipment were obtained, since shipments prior to the first week were not known.

2. The *median* weekly quantity shipped was chosen as representative of the *normal* volume of each item shipped to stores. This choice was made on the basis of an inspection of the data from all firms and after testing other possible methods.

3. This median quantity was subtracted from the quantities shipped during weeks in which the item was on special and during the three previous weeks. It was assumed that excess shipments (above the median quantity) were used to build up stocks for the forthcoming special.

4. The median quantity was also applied to the weekly shipments following the *special* week until the buildup for the next special began. If these shipments were less than the median it was assumed that they reflected a reduction in *normal* sales of the item due to the special movement, and the difference from the median was subtracted from the estimated movement on special. If these shipments were greater than *normal* the excess was added to specials movement on the assumption that sales on special had depleted *normal* supplies.

5. The quantity movement figures resulting from these calculations were related to the applicable regular and special prices, and a weighted average price for each item was calculated.

6. The calculated prices for each item for each set of firms were then averaged together after weighting according to the relative volume of sales of each firm to the total sales of the cooperating firms in Honolulu and the northern California area.

7. The weighted average prices for each item were then combined in the relevant product categories, and an average price for each of these groups of highest volume sellers was obtained. These are the prices utilized in the market basket comparison.

APPENDIX TABLE I.—MARKETING CHANNELS AND COSTS TO SAN FRANCISCO AND HONOLULU RETAILERS FOR 5 SPECIFIED COMMODITIES*

	To San Francisco retailers	To Honolulu retailers
FRESH BEEF (*Cents per pound*)		
Assumed f.o.b. price at San Francisco area slaughterhouse (beef carcass)	43.00	43.00
Hauling to dock and ocean freight	....	6.50
Delivery to jobber or chain store warehouse	1.00	....
Hauling from Honolulu dock to wholesaler or chain store warehouse	....	1.00
Delivery to retail store:		
including jobbers margin	1.00	....
including wholesale or warehouse margin	....	1.00
Loss from shrinkage	.45	1.54
Total cost to retailers	45.45	53.04
Estimated retail margin:		
22 per cent	12.82	....
24 per cent	....	16.75
Estimated retail price	58.27	69.79
FRYERS (*Cents per pound*)		
Assumed f.o.b. price, San Francisco area distributor	27.50[a]	27.50[b]
Hauling to dock and ocean freight	....	4.91[c]
Hauling from Honolulu dock to wholesale or chain store warehouse	....	.45
Delivery to retail store:	1.75	....
including wholesale or warehouse margin	....	2.50
Total cost to retailers	29.25	35.36
Estimated retail margin:		
21.8 per cent	8.15	....
20.0 per cent	....	8.84
Estimated retail price	37.40	44.20
CANNED CLING PEACHES (*Dollars per case[d]*)		
Assumed f.o.b. price, San Francisco area canner's warehouse[d]	3.40	3.40
Hauling to dock and ocean freight	....	.45
Hauling from Honolulu dock to wholesale or chain store warehouse	....	.10
Delivery to retail store:		
including wholesale margin	.15	....
including wholesale or warehouse margin	....	.18
Brokerage	.10	.10
Total cost to retailers	3.65	4.23
Estimated retail margin:		
23 per cent	1.09	....
20 per cent	....	1.06
Estimated retail price	4.74	5.29

Appendix Table I.—Marketing Channels and Costs to San Francisco and Honolulu Retailers for 5 Specified Commodities (*continued*)

	To San Francisco retailers	To Honolulu retailers
FRESH TOMATOES, SEPTEMBER–OCTOBER (*Cents per pound*)		
Assumed f.o.b. price:		
San Francisco area wholesale market	11.40[e]	....
San Francisco area assembly point	....	10.00[f]
Hauling to dock and ocean freight	....	3.35
Hauling from Honolulu dock to wholesale or chain store warehouse	....	.25
Delivery to retail store:	1.70	....
including wholesale margin	....	2.97
Total cost to retailers	13.10	16.57
Estimated retail margin:		
29 per cent	5.40	....
26 per cent	....	5.82
Estimated retail price	18.50	22.39
FROZEN PEAS (*Cents per 10-ounce package*)		
Assumed f.o.b. price, San Francisco area processor's storage	15.00	15.00
Hauling to dock and ocean freight	....	2.90
Hauling from Honolulu dock to wholesale or chain store storage	....	.30
Delivery to retail store:		
including any distributor margin	.68	....
including wholesale margin	....	.80
Total cost to retailers	15.68	19.00
Estimated retail margin:		
23 per cent	4.68	....
20 per cent	....	4.75
Estimated retail price	20.36	23.75

* Data developed from tariff schedules, trade records, and interviews with government, university, and industry personnel.

[a] Fresh, whole body fryer.

[b] Frozen, whole body fryer.

[c] This figure is an average of LCL and 26,000-pound minimum freight rate, the two most commonly used freight categories for this product. The rates have been adjusted to reflect cost per pound *net* weight.

[d] Case of 24 No. 303 size cans. Price estimated from trade records.

[e] Estimated from 22-pound box, 5x6 size and larger, at $2.50, San Francisco wholesale market. Federal-State Market News Service, *San Francisco Wholesale Market Prices, Fresh Fruits and Vegetables, 1966* (San Francisco, January 1967), p. 15.

[f] Estimated from $4.00 f.o.b. per 40-pound carton at San Francisco area assembly point; approximate equivalent of 11.4 cents per pound, which includes 15 per cent wholesale commission, in the San Francisco market.