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Marketing Characteristics Associated With Seafood Counters in Grocery Stores

GREGORY D. HANSON
JAMES W. DUNN

The Pennsylvania State University

GANESH P. RAUNIYAR
Massey University, New Zealand

Abstract *This study provides a benchmark analysis of seafood counter characteristics corresponding to the peaking of per capita seafood demand in the U.S. Logistic regression results show separate seafood counters are less likely in small stores, in rural stores, and in stores in low or medium income areas. Chain stores and stores with a significant number of non-white customers were more likely to have a seafood counter. Stores in the East South Central region were less likely, and stores in New England more likely, to have a seafood counter. The likelihood that stores will develop seafood counters was related to differences in sales volume, floor space, urban/rural location, income level of clients, and regional location. Continuing innovations in marketing technology of seafood counters are likely to provide expanded marketing opportunities in the future.*

Key words Seafood counters, seafood marketing.

Introduction and Objectives

Based on rapid growth in 1980s consumption of seafood, the U.S. Department of Agriculture (USDA) projected that continuation of the trend would result in approximately a 35% increase in per capita consumption between 1990 and the year 2000 (Harvey 1990). Concomitantly, U.S. aquaculture revenues were projected to increase more than three-fold, to about $3 billion, by the year 2000. So far, the growth in seafood consumption that USDA projected has not occurred. Instead, seafood consumption has leveled off. This research study provides an analysis of data that approximately coincides with a pivotal turning point in U.S. trends in seafood consumption. Its goal is to provide a better understanding of the characteristics associated with the presence of a seafood counter in a grocery store. Because preferences for seafood are dynamic and subject to change (Edwards 1992; Wellman 1992), benchmark analyses are useful to studies of developing market trends (Hanson, *et al.* 1994).

Consumption of seafood at home begins with the decision to purchase seafood

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Gregory D. Hanson and James W. Dunn are faculty in the Department of Agricultural Economics and Rural Sociology at Pennsylvania State University, 201 Armsby, University Park, PA 16801. Ganesh P. Rauniyar is on the faculty at Massey University, Palmerstown North, New Zealand.

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at the store or market. Although one cannot say whether demand or supply comes first, access to high quality seafood has been essential in the growth in seafood demand during the 1980s. A recent study concluded that "there is a dearth of time-series data on factors affecting the retail supply of seafood" (Edwards 1992, p. 147). However, there is little doubt that the creation of a separate seafood counter in grocery stores increased the visibility of the product for consumers, led to better handling practices by the stores, and made fresh seafood more accessible (Graul 1991). Generally, the development of more complex seafood counter marketing technology meant that consumers could buy a wider variety of fresh seafood, presented in a more attractive manner, and of higher quality than was available before in their grocery stores (National Fish and Seafood Promotion Council 1988; Rippen 1991). Accordingly, innovations in seafood counter technology make seafood less likely to be overlooked among the thousands of food products in grocery stores. Identifiable patterns exist that tend to differentiate stores that have, versus those that do not have, separate seafood counters. Region, store size, store volume, client's income, client's race, and store ownership are all possible factors in whether a store has now, or will have in the future, a separate seafood counter.

Aquaculture producers are keenly interested in identifying factors that are associated with the presence of seafood counters in grocery stores. Knowledge of these factors can be utilized by producers to develop marketing strategies that are proactive, in terms of targeting sales to stores that are more likely to add or sustain seafood counters. The presence of a seafood counter likely indicates a greater potential for sales growth for the producer, and for the development of a successful long-term marketing relationship between producer and store.

Marketing issues are considered to be critical to the future prosperity of the aquaculture and fisheries industries (Van Olst and Carlberg 1990; Wessells and Anderson 1992). Marketing research in agriculture has also recently placed more emphasis on market segments that appear most likely to increase sales (Senauer, Asp, and Kinsey 1991). Accordingly, income, race, region and other demographic and socio-economic variables have been incorporated in numerous analyses of aquaculture and seafood markets in order to distinguish between markets (*e.g.*, Cheng and Capps 1988; Israel, Kahl, and Pomeroy 1991; Wellman 1992). Kinnucan pointed out the importance of the "propinquity effect," where, "preferences for fish products are influenced to a large degree by source availability" (1993, p. 288). The perception of availability is likely influenced by the use of seafood counters, "We found that most varieties sold much better when presented in the service cases" (Graul 1992, p. 67). The presence of a clerk to service the seafood counter provides a value-added service in terms of monitoring freshness and quality, answering questions regarding cooking instructions, and, in some cases, providing types of in-store preparation services such as steaming of shellfish (Graul 1991; Mason-Jenkins 1991).

The objectives of this non-species specific marketing study are to identify grocery store characteristics important to the presence of seafood counters, and to further identify the socio-economic characteristics of store clientele that are consistent with the presence or absence of seafood counters in grocery stores. As such, this study is closely related to previous research focusing on channel catfish marketing issues related to grocery stores (Hatch, *et al.* 1991; Olowolayemo, *et al.* 1992). Those studies, however, focused only on access to catfish and not to seafood counters in general. The latter are far more important from an industry perspective since they create the visibility and quality image that benefit all species.

The results of this study could be used by someone in the seafood industry to help identify stores that are likely to be adding a seafood counter in the near future or that should be considering doing so. Someone selling either equipment or the seafood itself could cultivate such a store in the hopes of selling them more products.

Methodology

The study analyzed data collected with resources provided by the Southern Regional Aquaculture Center (SRAC) and several Southern universities. The data, consisting of 1,800 surveys of retail grocery stores, were collected in a nationwide telephone survey conducted in May and June of 1988. Survey questions solicited information about the characteristics of the store, the characteristics of the store's clientele, and about the store's seafood operations. A detailed list of the questions asked is found in Hatch, *et al.* (1991).

The SRAC data were collected primarily to analyze market potential for two aquacultured species important to the Southern region, channel catfish and crayfish. The SRAC data present a unique resource in that they constitute a large nationwide data set collected within a few months of the peak year, 1987, of per capita U.S. seafood consumption. At the request of Northeast Regional Aquaculture Center (NRAC) technical reviewers, one component of a recent NRAC marketing study was to analyze the SRAC benchmark data with respect to non-species specific seafood marketing in grocery stores.

Models using limited dependent variables now provide the accepted approach for dealing with problems that involve discrete choices, such as the decision to have a seafood counter in a grocery store. Examples from aquaculture alone include Cheng and Capps (1988), Olowolayemo, *et al.* (1992), and Pomeroy, *et al.* (1990). In these models the probability that an event will occur, given certain characteristics of the person (or business) making the decision, is estimated. The contribution of particular attributes of the person (or business) to the odds that an outcome will occur can then be estimated as well.

A logistic regression model was used to explore relationships between the characteristics of the store, its clientele, and its location and whether the store had or is likely to add a seafood counter. As discussed in Pindyck and Rubinfeld (1981), the log of the ratio of the probability that an event will occur to the probability that it will not occur can be expressed as:

$$\log \frac{P_i}{1 - P_i} = \alpha + X_i\beta \qquad (1)$$

where, P_i is the probability that store i will have a seafood counter, X_i is a row vector of attributes of the store, and α is the intercept and β is a column vector of parameters defining the relationship between the attributes and the probability a store will have a seafood counter.

General Store Characteristics and Regional Differences

Differences in the demographic and socio-economic characteristics of clientele populations combine with geographic differences affecting costs of transportation for particular products to impact the distribution of grocery store characteristics we observe today. Key marketing characteristics of the sampled grocery stores for the census regions are shown in table 1. Although stores of all types are found in every region, differences in sales volume, floor space, ownership type and socio-economic factors relating to the race and income of the clientele base of grocery stores provide useful information in developing marketing profiles for seafood by region. The Pacific region has a greater proportion of large stores, *i.e.* 21.1% with weekly sales volume greater than $99,000 compared to 15.5% in the Mid-Atlantic region, and 7.0% or less in the East South Central and West North Central regions. Across all

Table 1
Characteristics of Grocery Stores by Census Region

Characteristics	New England	Mid-Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Weekly sales volume									
Less than $40,000	21.5	19.5	19.0	26.5	21.0	27.5	21.5	20.0	17.1
$40,000–99,000	9.0	8.0	11.0	13.0	8.5	11.0	9.5	14.5	10.1
More than $99,000	9.0	15.5	10.0	6.5	11.5	7.0	11.5	11.0	21.1
Unreported	60.5	57.0	60.0	54.0	59.0	54.5	57.5	54.5	51.7
Floor space									
Less than 20,000 sq. ft.	42.0	43.5	38.0	40.0	41.0	44.0	37.5	41.0	41.7
20,000–39,000 sq. ft.	17.0	17.0	21.5	21.0	25.0	15.0	17.0	20.0	22.1
More than 39,000 sq. ft.	7.5	7.0	10.0	9.5	8.0	4.0	7.5	13.5	10.1
Unreported	33.5	32.5	30.5	29.5	26.0	37.0	38.0	25.5	26.1
Rural location	35.0	34.0	38.0	54.0	45.0	49.0	39.5	50.0	40.2
Non-rural location	65.0	66.0	62.0	46.0	55.0	51.0	60.5	50.0	59.8
Client's race									
White	58.5	36.5	47.0	61.5	32.5	36.0	21.0	46.0	45.2
Non-white	41.5	63.5	53.0	38.5	67.5	64.0	79.0	54.0	54.8
Client's income									
Low income	24.7	22.0	20.0	21.5	32.5	27.0	17.0	15.0	23.6
Medium income	57.5	66.0	68.5	72.5	54.0	63.0	59.0	63.5	48.2
High income	11.5	4.5	7.5	4.5	5.5	6.0	5.5	6.5	11.6
Income group unknown	7.0	7.5	4.0	1.5	8.0	4.0	10.5	15.0	16.6
Store ownership									
Chain store	41.5	37.5	41.5	39.0	43.0	36.5	40.5	44.0	47.2
Not a chain store	58.5	62.5	58.5	61.0	57.0	63.5	59.5	56.0	52.8
Currently have a separate seafood counter (n=1,802)	29.0	23.0	24.5	21.0	23.0	14.5	22.0	23.5	21.6
Likely to have a separate seafood counter (n=1,398)	13.0	11.5	15.0	8.5	9.5	11.0	5.5	10.0	17.6

regions the percentage of stores of less than 20,000 square feet was about 40%. The stores larger than 39,000 square feet, however, were as high as 13.5% in the Mountain region and as low as 4.0% in the East South Central region. The percentage of the stores that were rural (non-urban/suburban) varied from 54.0% in the West North Central region to 34.0% in the Mid-Atlantic region. A marketing plan oriented to large stores with high sales volume and an urban or suburban location would be more likely to succeed in the Pacific region than in the East South Central region. In terms of sales volume, floor space, and location, the East North Central region is more similar to the Pacific and New England regions than to its neighboring West North Central region.

Race and income affect consumer preferences for the types and amounts of seafood products purchased. Stores with a primarily white clientele ranged from 21% in the West South Central to 61.5% in the West North Central region. The 40.5% difference in the white versus non-white clientele groups indicates the critical importance of race-related aspects to marketing plans for seafood. The regions with more than 60% of non-white clientele ranged along the Atlantic and Gulf of Mexico coasts from the Mid-Atlantic to the West South Central region which includes Texas.

The proportion of clients with low income was highest in the South Atlantic, 32.5%; the proportion with medium income was highest in the West North Central, 72.5%; and the proportion with high income was highest in New England and the Pacific, about 11.5%. A high proportion of low-income clientele corresponded to an

unusually high proportion of non-whites in the South Atlantic (respectively, 32.5% and 67.5%), but not in the West South Central region (respectively, 17% versus 79%). This indicates the importance of separate inclusion of both the race and income variables in developing market profiles for grocery store sales of seafood.

In regions other than the Pacific, approximately 40% of stores were affiliated with a "chain," indicating the importance of this form of business and marketing organization for seafood sales. Nearly half of the stores in the Pacific region, 47.2%, belonged to a "chain," again suggesting the uniqueness of the western-most region. From 14.5% to 29% of the stores had a separate seafood counter, indicating that seafood counters were not typical in 1988. However, when the stores likely to have a seafood counter are added to those already having a seafood counter (the bottom two lines of table 1), the total proportion of current plus potential seafood counters for New England was 42%, indicating wide acceptance of this form of intensive marketing of seafood in a region with a strong historical tradition of commercial fishing and seafood consumption. In contrast, in the West North Central, and both the East and West South Central regions, fewer than 30% of the stores have or are likely to have a seafood counter. Given that marked regional differences exist in store characteristics and likewise in the presence, or future presence, of a seafood counter, further analysis of the relationship between store characteristics and the presence of a seafood counter is appropriate.

Systematic Patterns in Store Characteristics Related to Seafood Counters

The distribution of stores, when sorted by their seafood marketing activities, is shown in table 2. Of the 1,800 respondents, 402 (22%) had a seafood counter. Of the remaining 1,398 respondents, 203 (14%) said they were likely to have a separate counter in the future. The distributions in table 2 are based on the subsample of observations shown in the column heading. For example, the sum of the nine regions in each column at the bottom of table 2 add to 100%.

Those stores having a separate seafood counter tend to be larger than stores that do not. They also tend to be in non-rural areas and to have a clientele base characterized by high income levels. Also, stores that are part of a regional or national chain have a much higher rate of seafood counters than those that are not. Regional differences are not large except in the East South Central region, 7.2%, where seafood counters are much less common than in the U.S. as a whole, and in New England, 14.4%, where seafood counters are more common.

Among the 1,398 stores that did not have a separate seafood counter, the 203 likely to add one also tended to be larger in terms of weekly sales and floor space than the 1,195 stores not likely to add a separate seafood counter (column 3 versus 4 of table 2). In general, the stores likely to add a seafood counter tended to be more similar to the stores that already have seafood counters, with a higher proportion of high-income customers and "chain" affiliation. One notable difference is that stores in the Pacific region anticipated adding a disproportionate share of the seafood counters, 17.2%, compared to the Pacific region's 10.6% share of seafood counters at the time of the survey. Stores in the West South Central region anticipated adding considerably fewer seafood counters, 5.4%, compared to their 1988 share of 10.9%.

The Logistic Regression Model

Using the general framework presented earlier, two similar models are estimated, one for the probability that a given store will have a seafood counter, and the second

for the probability that a store that does not have a seafood counter is likely to have one in the future. Both models have the same explanatory variables and are:

$$\log \frac{P_i}{1 - P_i} = \beta_0 + \beta_1 WS_1 + \beta_2 WS_2 + \beta_3 WS_3 + \beta_4 FS_1 + \beta_5 FS_2 + \beta_6 FS_3 \quad (2)$$
$$+ \beta_7 RL + \beta_8 I_1 + \beta_9 I_2 + \beta_{10} NW + \beta_{11} CH + \beta_{12} RE_1 + \beta_{13} RE_2$$
$$+ \beta_{14} RE_3 + \beta_{15} RE_4 + \beta_{16} RE_5 + \beta_{17} RE_6 + \beta_{18} RE_7 + \beta_{19} RE_8$$

where all variables are defined as being either 0 or 1 depending on whether the store has that characteristic or not,

P_i	=	probability a store has a seafood counter (model 1), or probability a store is likely to add a seafood counter (model 2)	
WS_j	=	weekly sales \$40,000–99,000	if $j = 1$
		weekly sales over \$99,000	if $j = 2$
		weekly sales not reported	if $j = 3$
FS_k	=	floor space 20,000–39,000 square feet	if $k = 1$
		floor space over 39,000 square feet	if $k = 2$
		floor space not reported	if $k = 3$

Table 2
Characteristics Associated Grocery Stores in the U.S.
(Percent Grocery Stores Reporting)

Characteristics	Stores Having a Separate Seafood Counter (n=404)	Stores Not Having a Separate Seafood Counter (n=1,398)	Stores Likely to Have a Separate Seafood Counter (n=203)	Stores Not Likely to Have a Separate Seafood Counter (n=1,195)
Weekly sales < \$40,000	11.9	24.2	14.3	25.9
Weekly sales \$40,000–\$99,000	9.9	10.9	15.8	10.1
Weekly sales > \$99,000	20.3	8.9	18.7	7.2
Weekly sales not reported	58.9	55.9	51.2	56.7
Floor space < 20,000 sq. ft.	24.5	45.6	40.4	46.5
Floor space 20,000–39,000 sq. ft.	23.0	18.5	27.6	16.9
Floor space > 39,000 sq. ft.	19.1	5.5	7.9	5.1
Floor space not reported	33.4	30.3	24.1	31.5
A rural establishment	30.9	46.1	36.9	47.6
Low income clients	15.8	25.8	17.7	27.1
Medium income clients	63.4	60.7	68.0	59.5
High income clients	14.4	4.7	7.9	4.2
Non-white clients	61.4	56.2	52.2	56.9
Regional/national chain store	65.1	34.2	53.7	30.9
New England Region	14.4	10.1	12.8	9.7
Mid-Atlantic Region	11.4	11.0	11.3	11.0
East North Central Region	12.1	10.8	14.8	10.1
West North Central Region	10.4	11.3	8.4	11.8
South Atlantic Region	11.4	11.0	9.4	11.3
East South Central Region	7.2	12.2	10.8	12.5
West South Central Region	10.9	11.1	5.4	12.1
Mountain	11.6	10.9	9.9	11.1
Pacific	10.6	11.1	17.2	10.1

RL	=	rural location	
I_l	=	medium income customers	if $l = 1$
		high income customers	if $l = 2$
NW	=	non-white customers	
CH	=	store is part of a chain	
RE_m	=	New England	if $m = 1$
		East North Central	if $m = 2$
		West North Central	if $m = 3$
		South Atlantic	if $m = 4$
		East South Central	if $m = 5$
		West South Central	if $m = 6$
		Mountain	if $m = 7$
		Pacific	if $m = 8$

The intercept represents the probabilities for the base store, which has weekly sales under $40,000, floor space under 20,000 square feet, a non-rural location, low income customers, white customers, is not part of a chain, and is in the Mid-Atlantic region. All variables are binary so that any particular store would have as its set of coefficients the intercept and any of the β_is that are appropriate. The choice of the base affects the size of the coefficients, but not the explanatory power of the model.

One variable that is not included and was not in the original survey was total fish sales. Obviously a store would not consider adding a seafood counter if they did not already have substantial fish sales, and conversely, they would be disappointed if their fish sales did not increase after a counter was added. The contribution of a seafood counter to fish sales is an important research question, but not one that can be addressed with this data set.

A second issue is whether floor space and the presence of a seafood counter are simultaneous variables. Although clearly the variables are related, the authors believe that causality is almost entirely one-way, *i.e.*, that having a large store creates the opportunity for a seafood counter, but a store would not be large in order to have a seafood counter. When considering what size store to build, the owners will undoubtedly view the possibility of having a seafood counter in their decision, along with having a bakery, a deli, a larger produce section, a flower section, and many of the other options that a larger store size provides. In our view, the likelihood that the owners would choose a larger sized store because they could have a seafood counter when they otherwise would not is small.

Although some multicollinearity exists in the data, the large number and variety of observations reduces its impact. The greatest degree of multicollinearity was between store size and weekly sales (the largest correlation coefficient is 0.26), but even these variables showed substantial variation. The variability introduced by the various regions and urban versus rural areas was important enough to reduce the multicollinearity problems among the customer variables.

Logistic Regression Results

The estimated models and several descriptive statistics are shown in table 3. One meaningful indicator of the effectiveness of the logit model is the percent of correct prediction. The model predicting the presence of a seafood counter had 79.1% correct predictions and the likely-to-add a seafood counter model had 85.3% correct predictions. Rather than discuss the individual coefficients in this context it is more useful to discuss them in terms of odds. Odds ratios provide a superior interpretation

of the analysis, compared to marginal probabilities, when the variables are binary (Hosmer and Lemeshow 1989, pp. 39–44; Kennedy 1993, p. 235). However, an example will help this transition. The intercept of the first model is –2.696. This is

$$\ln\left(\frac{P_i}{1 - P_i}\right) \tag{3}$$

for the store in the omitted category from each binary variable group. Taking the antilog of this value gives 0.07, *i.e.*, the probability that a store of this type would have a seafood counter over the probability that they would not is 0.07/1.0 or about one chance in 15 that they would have a seafood counter. The other coefficients are the incremental impact on this probability of having this additional characteristic. Therefore, the coefficient of weekly sales between $40,000–$99,000 is 0.1652. The antilog of this is 1.18, that is, this characteristic increases the odds that the store will have a seafood counter, compared to the intercept store by 1.18 to 1. It is still unlikely, given the other characteristics, with total odds of 0.08 to 1. For any particular store, having a number of characteristics, the odds that it would have a seafood counter would be calculated by adding up the intercept and any other relevant coefficients and taking the antilog of that sum. Tables 5 and 6 do this for some typical types of stores.

The estimated odds associated with a store having a separate seafood counter, if a single characteristic varied from the base store, are given in table 4. The base case is a store not likely to have a seafood counter, with odds greater than 14 to 1 against. Factors that greatly increased the odds in favor of a seafood counter were floor space greater than 40,000 square feet, a high-income customer base, and being part of a regional chain. Grocery stores with weekly sales of $40,000 to $99,000 were 1.18 times more likely to have a seafood counter than grocery stores in the omitted category, with sales of $39,000 or less. The highest odds in table 4 are for stores with floor space of 40,000 square feet or more, compared to the omitted category of 20,000 square feet or less, 3.51, and for stores with high-income clients versus the omitted category of low-income clients, 3.54.

For stores that do not already have a seafood counter, the odds are that one will not be added. However, those odds increase most significantly for stores with weekly sales greater than $40,000 and with affiliation with a "chain." The odds of adding a seafood counter are substantially higher for the $40,000 to $99,000 sales category, 2.34, compared to the omitted sales category. In terms of the probability of adding a seafood counter, the New England, East North Central and Pacific regions all had odds ratios between 1.33 and 1.48 compared to the omitted category of the Mid-Atlantic region, indicating the higher potential for the development of seafood counter business for aquaculture and fisheries industries that target these regions.

The estimated probabilities of having a separate seafood counter for a representative type of store are shown by region, rural/non-rural location, and sales volume level in table 5. The probabilities are based on a large grocery store that is chain-affiliated with a primarily white, high-income clientele base. With the exception of New England, non-rural stores with over $99,000 weekly sales volume are about 10% more likely to have a separate seafood counter than stores with a weekly sales volume of $40,000-99,000, and rural stores are about 7% less likely to have a separate seafood counter. Non-rural grocery stores in the East South Central and Pacific regions are less likely to have a seafood counter for the type of store analyzed in table 5. The divergent results for the Pacific region in table 5 compared to tables 2 and 3 indicates the importance of the standard store characteristics employed in the analysis of table 5. The probability of a rural grocery store in New England, with the characteristics described in the footnote to table 5, of having a seafood counter is

Table 3
Determinants of Having and Likely to Add a Separate Seafood Parameter in the Grocery Stores (Maximum Likelihood Parameter Estimates)

Determinants	Having a Separate Counter	Likely to Add a Separate Counter
Intercept	–2.6960***	–2.5091***
	(0.2878)	(0.3521)
Weekly sales $40,000–99,000	0.1652	0.8503***
	(0.2545)	(0.2887)
Weekly sales over $99,000	0.5858**	0.9004***
	(0.2370)	(0.3093)
Weekly sales (not reported)	0.3867**	0.3532
	(0.1825)	(0.2307)
Floor space 20,000–39,000 sq. ft.	0.3119*	0.1208
	(0.1776)	(0.2149)
Floor space over 39,000 sq. ft.	1.2546***	0.0811
	(0.2135)	(0.3347)
Floor space (not reported)	0.3973**	–0.3506*
	(0.1573)	(0.2074)
Rural location	–0.2876**	–0.2919*
	(0.1310)	(0.1681)
Medium income clients	0.3163**	0.1859**
	(0.1440)	(0.1859)
High income clients	1.2650***	0.6226*
	(0.2335)	(0.3414)
Non-white clients	0.3236**	–0.0837
	(0.1306)	(0.1655)
Store is a part of national or regional chain	0.9474***	0.7220***
	(0.1320)	(0.1741)
New England	0.3301	0.2845
	(0.2465)	(0.3252)
East North Central	0.0085	0.2876
	(0.2526)	(0.3163)
West North Central	–0.0227	–0.4743
	(0.2601)	(0.3553)
South Atlantic	–0.0148	–0.2543
	(0.2535)	(0.3456)
East South Central	–0.5143*	–0.1258
	(0.2774)	(0.3326)
West South Central	–0.1262	–0.8350**
	(0.2560)	(0.3959)
Mountain	–0.0683	–0.2947
	(0.2562)	(0.3434)
Pacific	–0.2813	0.3898
	(0.2607)	(0.3096)
Sample size (n)	1,800	1,398
Chi-square statistics, d.f.	236.2 (df=19)	95.7 (df=19)
Percent correct prediction	79.1	85.3
McFadden R-squared	0.123	0.082

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.001$

61% for sales of $99,000 or more, 21 percentage points higher than for a similar store in the East South Central region.

The estimated probabilities of adding a seafood counter for a store with the indicated characteristics are shown by region in table 6. The footnote to the table identifies the size and business organizational form of the store and the typical income level and race of the store clientele. The probabilities are substantially lower than in

table 5. For a non-rural, Mid-Atlantic store with weekly sales over $99,000, the estimated probability of having a seafood counter is almost 60%. For a non-rural Mid-Atlantic store with weekly sales over $99,000, the estimated probability of adding a seafood counter is 29%. The importance of the difference in the two categories of store sales is less for adding a seafood counter, table 6, than for stores that already have one, table 5. Rural versus non-rural and regional differences remain substantial regarding the probability of adding a seafood counter, table 6, but are less important than to distinguish stores that already have one, table 5.

Summary and Discussion

The research results, which correspond closely to the period of peak per-capita demand for seafood in the U.S., point out the critical importance of size variables, as measured by sales and floor space, and other demographic and socio-economic variables to the presence of a separate seafood counter in grocery stores. A separate seafood counter is most likely to exist in larger stores, with a high-income clientele, especially in an urban or suburban site. The largest stores with more than 40,000 square feet of floor space were far more likely to have a seafood counter than stores with 20,000-39,000 square feet. Stores identifying nonwhite customers as a primary clientele group were more likely to have seafood counters, but were less likely to add a seafood counter in the future if one currently did not exist. Chains are the leaders in employing seafood counters. Areas with a fishing and fish-eating tradition, such as New England, are more likely to have a separate seafood counter. The degree of regional differences, and the relative scarcity of seafood counters in some areas, such as the Pacific and East South Central regions are striking. Odds ratios and marginal probabilities present marketing information useful in the development of strategies to more efficiently target sales of seafood products.

A separate seafood counter increases visibility and improves handling practices.

Table 4
Estimated Odds Ratios for the Determinants

Determinants	Having a Separate Counter	Likely to Add a Separate Counter
Intercept	0.07	0.08
Weekly sales $40,000–99,000	1.18	2.34
Weekly sales over $99,000	1.80	2.46
Weekly sales (not reported)	1.47	1.42
Floor space 20,000–39,000 sq. ft.	1.37	1.13
Floor space over 39,000 sq. ft.	3.51	1.08
Floor space (not reported)	1.49	0.70
Rural location	0.75	0.75
Medium income clients	1.37	1.56
High income clients	3.54	1.86
Non-white clients	1.38	0.92
Store is a part of national or regional chain	2.58	2.06
New England	1.39	1.33
East North Central	1.00	1.33
West North Central	0.98	0.62
South Atlantic	0.99	0.78
East South Central	0.60	0.88
West South Central	0.88	0.43
Mountain	0.93	0.75
Pacific	0.76	1.48

At the time of the survey, many of the stores that were good candidates for a seafood counter already had one. However, a sizable number of store managers considered it likely that they would add a separate seafood counter. Subsequent changes in the supply and demand for seafood have undoubtedly influenced these decisions. From the aquaculture and fisheries industries' perspective, more seafood counters provide additional outlets for their product and expose potential new customers to an alternative they may not have otherwise considered. Aquaculture marketing strategies may beneficially include profiles of stores that are likely to install a seafood counter, or to maintain the presence of an already existing seafood counter, in the process of developing long-run producer linkages with stores that will tend to maximize profits and sales growth from seafood products.

Growth in the presence of seafood counters has likely continued in the 1990s as the trend to larger store size and the enhancement of fresh food technology that increases shelf life has become more widespread. Incorporation and updating of marketing factors related to seafood counters can contribute to baseline projections of trends in future seafood consumption.

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Table 5

Probabilities Associated with Having a Separate Seafood Counter in the Grocery Store (Grocery Store Presently Has a Separate Seafood Counter, n=1,800)

Region and Income Level	New England	Mid-Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Non-rural									
Weekly sales volume over $99,000	0.60	0.60	0.60	0.60	0.60	0.48	0.57	0.59	0.53
Weekly sales volume $40,000–99,000	0.58	0.50	0.50	0.50	0.50	0.37	0.47	0.48	0.43
Rural									
Weekly sales volume over $99,000	0.61	0.53	0.53	0.53	0.53	0.40	0.50	0.51	0.46
Weekly sales volume $40,000–99,000	0.51	0.43	0.43	0.43	0.42	0.31	0.40	0.41	0.36

Note: Probabilities associated with having a separate seafood counter in the grocery store has been computed for a grocery store that has 40,000 square feet or larger floor space, it is a chain store, and its clients are white and have high incomes.

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Table 6

Probabilities Associated with "Likely to Add" a Separate Seafood Counter in the Grocery Store (Grocery Stores Have No Seafood Counter at Present, n=1,398)

Region and Income Level	New England	Mid-Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain	Pacific
Non-rural									
Weekly sales volume over $99,000	0.37	0.29	0.29	0.29	0.24	0.27	0.15	0.23	0.38
Weekly sales volume $40,000–99,000	0.34	0.28	0.28	0.28	0.23	0.26	0.15	0.23	0.37
Rural									
Weekly sales volume over $99,000	0.29	0.23	0.23	0.23	0.19	0.21	0.12	0.19	0.31
Weekly sales volume $40,000–99,000	0.28	0.23	0.23	0.23	0.19	0.21	0.11	0.18	0.30

Note: Probabilities associated with "likely to add a separate seafood counter" in the grocery store has been computed for a grocery store that has 40,000 square feet or larger floor space, it is a chain store, and its clients are white and have high incomes.