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Nutritional Labeling for Food-Away-From-Home

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Food-Away-From-Home is becoming a very substantial part of our food expenditures and our food intake. While a great amount of energy, study and development costs have been applied to provide a sophisticated system of nutritional labeling for Food-At-Home, little thought or investment has been applied to the challenge of providing basic nutritional information concerning Food-Away-From-Home. The great explosion of fast food retailers provides consumers with nutritional choices which may be important in the diet of the middle-aged healthy citizen, but even more important for citizens who are older, younger and those with special dietary requirements. Choices among and between meals is especially important because the feeding institution makes the decisions concerning ingredients and preparation. In addition to meals purchased for consumption away from home, there is also an increasing volume of food purchased as meals to be eaten at home.

Need for a Policy Initiative

Nutritional labeling for food-away-from-home would provide a guide for consumer choices and purchases. A large part of our population has concern for weight control and other dietary considerations. With better information, consumers will be more able to eat responsibly and to enhance their health and well being. In addition, it is generally considered that product information is a basic consumer right. Without question, a labeling program is a major educational medium for consumers.

Consumer interest in nutritional information and nutritional labeling programs is well understood by the body politic. When the legislation was developed in 1993 for updating and improving the nutritional labeling program for food at home, there were many congressional sponsors and the measure enjoyed broad bipartisan support–in a period famous for party bickering.

Aside from the results flowing from improved consumer choices enabled by nutritional labeling for food-away-from-home, this information will influence the incentives affecting food manufacturers and eating places. At present, most food service firms have little awareness of nutrition. Their choices concerning their offerings are influenced more by efficiency, cost savings, food appearance, taste and aroma, and other operational considerations than nutritional factors. This information will stimulate these firms to learn a lot about nutrition. Nutritional quality, if measured and labeled, will become a factor in the competition among these firms. The result will be a healthier diet for all Americans using food-away-from-home--whether or not each customer reads or studies the new labels.

A New Concept is Required

The nutritional labeling policy which works so brilliantly for food-at-home is not directly applicable

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to food-away-from-home. There are two reasons why a new concept is required. First (and least important) the present system provides of a grid of nutritional facts pertaining to a single ingredient or food component. A great deal of label space is required for each grid. Comparisons must deal with conflicts among the several dimensions of nutritional information contained in the label. Some way has to be found to rate a whole meal and easily compare it to a different meal choice. Some kind of composite or index of all of this basic information must be developed which could fit on a menu.

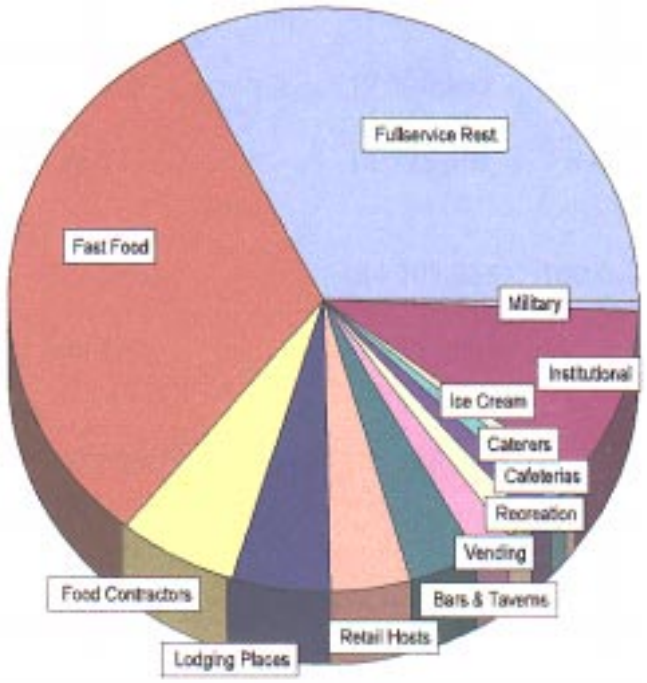
In addition, the basic concept of the (food-at-home) nutritional label is that each attribute is described without any normative judgements. Nutritionists have a concept that no food ingredient is intrinsically good or bad--except as they are used in combinations. In this setting, the task for the label is to provide the basic information to be used in making combinations of ingredients for meals. Since the manufacturers and food service firms choose the ingredients or components for us, we need a labeling system that encompasses normative judgements--that rates one meal combination as compared to others. If a quality index could be developed to evaluate the nutritional value of meal combinations, it could be expressed as a number which could fit on menus.

THE MARKET FOR MEALS

In their *Restaurant Industry in Review, 1995*, the National Restaurant Association identifies 789,887 establishments in the business of providing prepared food. Clearly, the size and complexity of this industry is impressive. While it seems impossible to develop and enforce a policy which would relate to every establishment, it may be possible to find some components to which nutritional labeling might be effectively applied. As shown in Figure 1., food is prepared by many kinds of firms and organizations. In some of them, nutritional labeling to assist consumer selection may not be very important. Institutional feeders and food contractors serve hospitals, airlines, universities and many employers. In these cases, meals are usually designed by nutritional professionals and consumer choice is not important in most of them.

On the other hand, the main food service firms, including fullservice restaurants, fast food, lodging places, and cafeterias use food appeal as an important competitive channel. This leads to menu development where nutritional considerations may be in a low priority. Consumer information and labeling may have quite an important impact on these sectors. That still leaves hundreds of thousands of firms just in the "eating places" category. There must be a way to relate to the larger more aggressive firms while exempting the smaller ones.

Figure 1.
Components of Food away from Home, 1995



During the past two or three decades, significant structural changes have come to eating places. The "fast food industry" has created quick and inexpensive meals that are at convenient locations. While hamburger firms seem to be the leaders in this field, the concept has been applied to many foods and establishments initially offering hamburgers only have added many alternatives to their menus. In addition to fast food offerings, chains of "family restaurants" have also grown rapidly (Olive Garden, Red Lobster, Applebys, etc.). This structural change has caused a large part of the restaurant industry to have centrally controlled menus. That is, menus are developed within a large and sophisticated firm which is more able to deal with nutrition and labeling than would be the case with small independent family owned and operating eating places. It is this more concentrated part of the industry to which nutritional labeling may be more reasonably applied.

Table 1. Structure of Eating Place Industry, 1992

	Firms	Establishments	Sales ($000)	%
Restaurants	148 068	170 183	85 178 356	46.2
MultiUnits (5 or more)	652	16 788	24 110 868	13.1
Cafeterias	3 839	5 513	3 619 172	2.0
MultiUnits (5or more)	54	1 564	2 273 896	1.2
Fast Food	105 538	164 341	77 695 530	42.2
MultiUnits (5 or more)	2 432	51 696	39 233 754	21.3
Other Eating Places	20 201	37 723	17 720 157	9.6
MultiUnits (5 or more)	202	16 735	11 775 408	6.4
Eating Places (Total)	276 426	377 760	184 203 215	100.0
MultiUnits (5 or more)	3 351	90 140	78 357 699	42.5
Smaller Firms (less than 5 units)	273 075	287 620	105 845 516	57.5

Source: 1992 Census of Retail Trade

The 1992 structure of eating places is shown in Table 1. These data are presented with large firms being defined as chains of five or more eating places. The reasonableness of this definition is debatable. It is felt that a chain of five or more eating places is likely to have a central competitive philosophy and a identifiable market niche. It also must have a substantial and sophisticated business management and control system. A firm of this scope would be able to execute a nutritional labeling program credibly and efficiently. It is likely smaller firms could not. A policy of nutritional labeling for food away from home should be oriented to the larger firms ("5 or more establishments" or some other appropriate definition).

In addition, there are other reasons for focusing this program on larger firms. Most of the wave of new firms and franchisers are within this group. They are a new force in our society. They employ food science, modern business management and media programs to influence the behavior of our population. Although some firms have made an effort to be sensitive to nutritional values, they have found that nutritional claims (without being supported by publically designed labels and standards) are not very important in their competitive efforts. As a result, this pattern of behavioral dynamics moves and changes our dietary patterns exploitive of our evolutionary attraction to sweets, fats and salt. While each consumer has a right to their preferences, those trying to avoid sweets, fats and salt should be able to know how the menu items stack up. It is important that nutritional sensitivity influence the patterns developed and powered within this new sector.

The smaller (mostly single unit) firms are the part of the industry in which much of the traditional food is found. This is much less of an engine of behavioral dynamics. Rather than changing things, it is mostly celebrating the past. It would be impractical to enforce a policy on this vast industry. These firms are not able to effectively respond to such a policy and they are less of a problem. It is also clear that the volume of trade is swinging toward the more modern firms. While the market share for the larger firms was 42.5 percent in 1992, it is undoubtedly more today and will be more yet in the future.

Purchased Meals Consumed At Home

In the past, "Food away from Home" is the term we have used to describe the event where a consumer buys a prepared meal--rather than purchasing ingredients to prepaid food at home. The structure of the food market is becoming more complex so that "Food away from Home" is no longer effectively descriptive of the market for meals. Currently, many meals are consumed at home which are purchased as prepared meals through "carry-out" at restaurants or other markets or received through home delivery (FMI). In addition, the supermarket sells many combined food products designed to be a replacement for a meal. The growth of this market shows the strength of the trend toward purchased meals. Certainly any policy developed for food away from home should also include this segment of purchased meals. The focus of this labeling proposal is the market for meals, not limited to restaurants or eating places. Most carry-out meals come from restaurants and fast food places. Less than 20% comes from supermarkets (Larson). If a labeling policy related to sellers with five units or more, it is likely that most of the carry-out market would be covered.

A NEW CONCEPT OF NUTRITIONAL LABELING

It is likely that any policy concerning nutritional labeling must recognize and relate to the present pattern of nutritional labeling used mostly on food products in supermarkets. This format has been in use for over a quarter of a century. Five years ago it was updated involving an act of Congress. This process illustrated the broad acceptance this federal program has among consumers and politicians. The format used in this labeling program is well known by sellers and buyers. It effectively communicates a large quantity of information. The information is descriptive rather than judgmental. The labels have very high credibility as a valid source of nutritional information. If there was any way to apply this format to food away from home, that would be the most feasible policy. As it turns out, the familiar and successful labeling format for individual food components does not adapt very well to meals purchased for consumption away from home or carried home. Restauranteurs strive to keep menus simple and easily readable. To burden them with a grid of nutritional information for each menu item would be unworkable.

In addition, purchasing prepared meals may require different information than buying ingredients or components of meals (see Table 2). There is no nutritional standard or guideline for ingredients. The nutritional shortcomings of a particular food ingredient can be offset by combining it with another meal component strong in that area. As these components are combined into meals and daily diets, we approach standards and guidelines for nutritional values. For this reason, shopping for a meal is different than shopping for ingredients. The proportions and combinations are set for the consumer by the restaurant or manufacturer of prepared dinners. We therefore need information on how these combinations compare with nutrition standards or guidelines. While the declarative information on the present nutritional label has been useful and appropriate for meal ingredients, that information is less adequate for purchasing prepared meals. The present label assumes diligence on the part of the consumer in making appropriate combinations. In a restaurant, the consumer cannot be diligent because the combinations are already made for him/her. The consumer deserves to know the nature of nutritional consequences flowing from the restaurants' choices. The question is: how do these combinations relate to nutritional standards and guidelines?

There may be several ways to deal with this situation. Perhaps a whole new system could be developed based on meals rather than meal components. Perhaps a "standard lunch/dinner" could be developed. Then offered meals could be compared to that standard with an orderly basis for premiums and discounts for discrepancies. Our nutritional guidelines are mostly related to "average daily diets." This could be put on a meal basis. While this approach seems to have some advantages, it certainly has problems. At the very least, it would require a great effort and would result in requiring businesses and consumers to learn a whole new system.

There seems to be advantages to a system that would use present values and context as much as possible. First, a great deal of work has been done within the present system and the context is well understood by consumer and business after a quarter century of use. A "meal nutritional quality index" could be developed within the present system. Perhaps the most straight forward and simple index would be developed from a rating system for each nutrient. We could establish an "optimal level" for each nutrient for a perfect score of 100 with the scores declining for less than optimal levels of the nutrient. These rating arrangements would be drawn to reflect the consensus guideline

Table 2. Aggregation of Foods

	Food Components	Meals	Daily Diet	Diet
Composition	**20,000 items in Supermarkets and other retail food sources**	**100 menu choices in restaurants and carry-outs**	**Daily meals plus snacks & beverages**	**Average of daily diets**
Purchasing Motivation	**Choose harmonious variety for making healthy meals**	**Guess which industrial combination is best nutrition**	**Harmonize with past and future meals**	**Good Health (National Guidelines)**
Information Needsin	**Multi-dimensional nutritional formation in context of Nutritional GuidelinesIndex" (MNQI)**	**A basis for comparing the nutritional quality of meals: "Meal Nutritional Quality**	**MNQI**	**MNQI**
Applicability of National Guidelines	**Little**	**Much**	**Almost Directl**	**Directly**

for daily diets. The research and policy relating to claims--"an excellent source," etc. would also be useful is developing the rating systems. The index would be composed of the sum of these scores, standardized to a 0-100 scale. This index would measure the degree to which the restaurants choices are consistent with the national nutritional guidelines. In this sense, it would help the consumer know the relative nutritive value of alternative meal choices.

A problem with this index is that it would treat each nutrient as being of equal importance. Is cholesterol of the same importance as iron? Is saturated fat of the same importance as protein? Does a meal which deviated from the ideal with excessive fat have the same nutritional value as one that deviates the same degree from the ideal by having insufficient Vitamin A? Obviously, there seems to be a variation in the importance of nutrients and deviations from the ideal level. Dealing with this would require a weighting system which would establish the relative importance of each nutrient making up the rating system. There might be several ways to obtain such a weighting system. A consensus among nutrition experts could be sought. In addition, there are several ways that a more scientific measure could be obtained.

With a system of weights and ratings for each nutrient, we could have a "meal nutritional quality index" as follows:

1) $$MNQI = \sum_{I=1}^{N} r^i w^i$$

Where: r^i = the rating for the ith nutrient

w^i = the "importance" weight for the ith nutrient

N = the number of nutrients in the system

This index would facilitate comparison of meals. Rather than conflicting multi-dimensional declarative information, it indicates a similarity or divergence from a nutritional standard or norm. In that sense it is a normative statement. It is judgmental in its nature. It draws its normative character from the national nutritional guidelines. There might be a balance in an arrangement which would add this information to meals while leaving the present system for food at home. No normative judgements would be made concerning the consumer's diligence in combining food ingredients, but normative judgements would be made concerning the combinations made by food business--restaurants and other business selling prepared meals.

The purpose for such a policy would be to let the consumer know the nutritional consequences of the choices made by food businesses in combining foods to make meals. In order to accomplish this labeling pattern, businesses would have to measure the effects of their preparation methods upon the nutrition of the food they serve. With a Meal Nutritional Quality Index on the menu for each item, they would be motivated to develop methods that would be "competitive." Consumers might or

might not use the labels. If it were important to individual consumers, they could know which meals were the most attractive from a nutritional perspective. Whether or not they used the system, they would have the benefit of a food system in which operators were sensitive to nutritive values.

OPERATIONALIZING THE NEW CONCEPT

The concept of aggregating the essence of nutritional quality into a single number index is generally painful and repulsive to nutrition scientists. They have a proud tradition of splitting out ever more separate and individual dimensions of nutritional quality. The process of aggregation seems a natural enemy to their profession. In addition, nutrition scientists are more sensitive to the exploding and exciting methods of biological science than the social and political aspects of policy development. They are not easily convinced of the need or advantages of describing nutritional quality in ways that are most functional for labeling policy. Inter-disciplinary research relating nutritional scientists and policy specialists is poorly developed. For these reasons, there is little to consider and compare in the inventory of research that relates to nutritional labeling for food away from home.

There is one effort to develop a nutritional quality index (Padberg, Kubena, Ozuna, Kim and Osborn). It is an effort to operationalize Equation 1). Ratings were constructed by using Food and Drug policy concerning claims (Osborn, Kubena, Padberg and Kim). For example, the claims policy for dietary fiber allows labeling a food item an "excellent source" if a serving contains 20% or more of the daily value. Products with servings containing more than 10 percent, but less than 20 percent may be labeled a "good source." Products with servings containing less than 10 percent may not be labeled as source of any nutrient. If the product had over 20 percent of daily value, it was given 100 points on the rating scale. If it had between 19 and 17 percent of daily value, it was given 75 points on the rating scale. If it contained between 14 and 16, it was assigned 50 points. Twenty five points were assigned if the product contained 10 to 13 percent of daily value. For products containing less than 10 percent, no quality rating points were given. This process creates a step function. In order to give an incentive to manufacturers throughout the full range, these points were connected by straight lines. For nutrients where the health concern is excessive consumption, such as fat and sodium, claims policy similarly relates nutrient quantity per serving with claims such as "fat free," "low fat" and "reduced fat." Similarly, these levels were adapted to a rating system.

The purpose of the rating system is to give a recognition for levels of a nutrient which is consistent with the nutritional guidelines. It was felt that the claims policy was chosen with the same objective and was based on more research and experience than could be done independently. In addition, this policy is exposed to public view and gets attention and criticism where the chosen values are controversial. This process gives this policy a bit of an operational test which would be hard to duplicate in a research process. None the less, there seems to be a scaling problem. The claims policy is based on a serving size for food components smaller than complete meals. A daily diet may be composed of 30 or so servings of different food components. To perfect this rating system, we would need data and policy to relate to meals rather than servings.

It is interesting to consider the consequence of this apparent scaling problem. In the case of dietary fiber, if the serving size were a complete meal, a higher percentage of daily value would be required

for labeling as an "excellent source." In this situation, the use of the chosen rating system gives higher ratings than would be received in a more valid system (with meal level quantities, it is easier to meet the servings requirements). For fat, a higher physical amount would be allowed for a "low fat" rating because it would relate to a meal rather than a serving. In the case of fat, the use of the chosen rating system would lead to a lower rating than in a more valid system (the higher quantities in complete meals more quickly overruns the serving size restrictions). It follows that what seems to be a scaling problem may interject a systematic bias, which is especially harsh on foods containing significant amounts of the nutrients where the health concern is excessive consumption (fat, saturated fat, cholesterol and sodium). The policy guide from Food and Drug Administration contains some work on "meals" and "main dishes" which may provide a basis for adjusting these serving sizes (USFDA, p. 15)

A system of the weights required in Equation 1) were developed in this research (Kim and Padberg). These weights were estimated. A sample of 1329 Dieticians were presented groups of three nutritional labels to rank in relation to their nutritional value for adults and children over two. The nutritional labels represented 75 "combined food" products--such as TV dinners and main dish combinations. The groups of three were chosen at random. The survey yielded 372 usable questionnaires and 5,384 ranked observations were used in the analysis. A Logit analysis was conducted using the rankings as its dependent variable and the amounts of each nutrient as the independent variables. The coefficients estimated gave the level of impact each independent variable had on the ranking choice. The estimating model exhibited excellent statistical properties. The normalized coefficients are shown in Figure 2.

It is interesting to look at this process in several ways. First, the nature of the results reinforce the importance of weighting each nutrient separately. Some are much more important than others. If this variation were ignored, any composite would poorly represent aggregate values. In another perspective, the science aspect of this project--the application of an appropriate estimation method--is quite encouraging. In this application, practitioners were only asked to rank food products as represented on nutritional labels. They were not asked to indicate the relative importance of nutrients. It is likely that surveyed opinions would be much more affected by "political correctness" or what is current or popular--whether or not it is fully accepted and integrated into selection choices. It is felt that the use of dietitians rather than physicians or research scientists gives the results a broad general acceptance more than relating to the many special interests which could be involved.

In yet another perspective, it is not easy to imagine how such an involved and complicated process could be used in a policy process. It will not be easy to explain this process to the public. Yet, in a world where DNA analysis is coming into general acceptance, it seems that technical complexity is hardly a reason to reject this pattern of information gathering. Another thing that complicates the use of this instrument in a policy process is that the basic data are evolutionary. Our ideas about nutrition and the relative importance of each nutrient changes. Any realistic policy would have to update the estimation every few (five?) years.

In the reported study (Padberg, Kubena, Ozuna, Kim and Osborn), quality indices were computed for the 75 sample combined foods. The lowest index value was 6.1 and the highest was 70.1. It is not surprising that the fat and sodium levels were very important in the determining the ratings. This is

because of the importance of these nutrients in the weights but also because of the tendency for (multi-serving) combined dishes to overrun the levels of fat, saturated fat and sodium established by the FDA for "single" servings in their claims policy.

The indices developed in this study were presented as an addition to the conventional nutritional label. They were meant to represent a measure of nutritional advice one might receive from a professional dietitian in response to the question, "Which of these composite foods offer the best nutrition for healthy adults and children over two?" With food away from home, it would not be possible to provide the broader context of nutritional information on the menu. It might be possible to have it available upon request. That would be a great assistance in helping consumers learn to understand the new policy.

The reported study deals with products produced by large manufacturers and already labeled with the conventional nutritional label. The development of the index was a further step in providing comparative information. In food away form home, we come to an industry which to date is in a very primitive state of nutritional awareness. Consumers know little about the nutritional properties of items on the restaurant menu. More important, restaurants know little about the nutrition of their offerings in most cases. While most of the nutritional information about foods is available in reference books or computer databases, the nutritional consequences of preparation methods are less well know and certainly a policy issue. The most developed computer databases are able to provide some of this information.

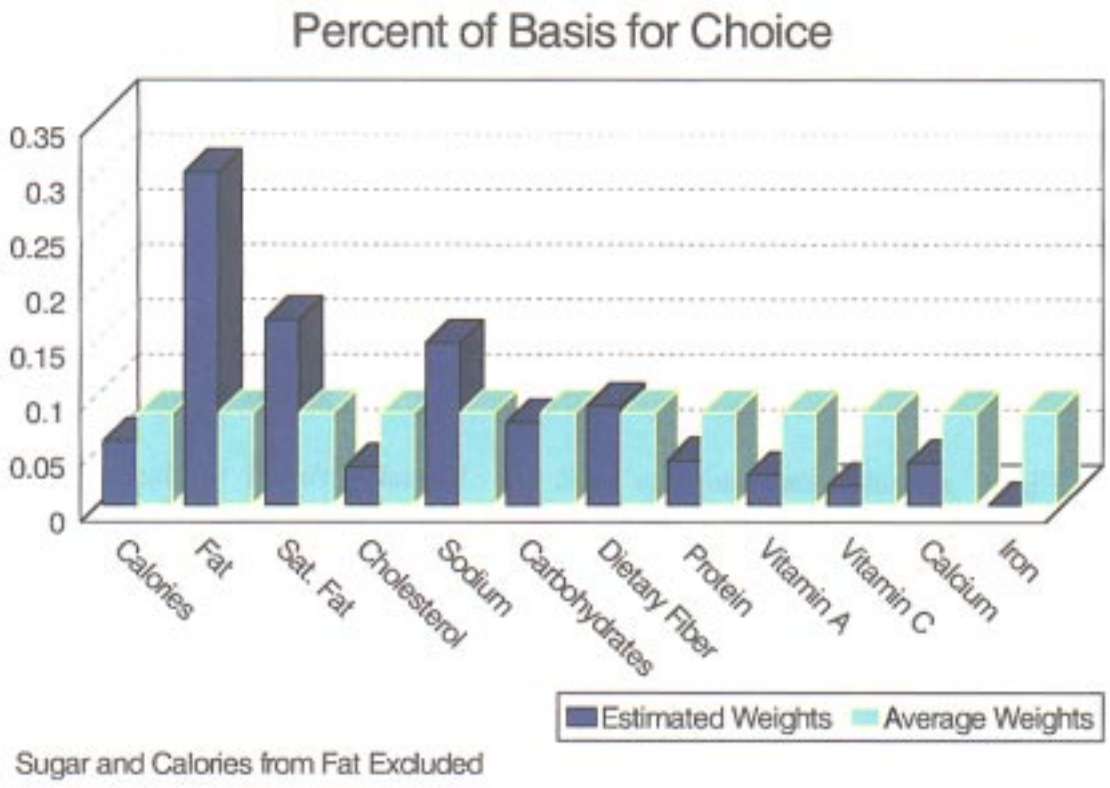
POLICY PROBLEMS

The food industries are very large and significant industries. Eating places employ many people and are very visible to the public. Their capability for lobbying in congress is substantial. Their reaction to any policy for nutritional labeling of food on the menu will be immediate and hostile. They will perceive that such a policy will add considerably to their costs (initially) and, as well, be another dimension of "governmental interference" in their operations (and they will be right on both counts!). Developing a "sensitivity to nutrition" within this industrial complex will take expertise and effort. It will involve redesign and some new management and competitive behavior. All of these changes are initially expensive.

In fairness to the food service industry, it should be pointed out that some major firms have made serious efforts to develop nutritional quality as a major competitive thrust. In general, this has not been greatly successful. Nutritional information has more credibility when it is managed by a government agency. This is not a competitive aspect that will emerge in the free enterprise system. Part of the reason is the vast amount of consumer education involved.

The introduction of the nutritional label on supermarket food required similar changes in the food manufacturing industries. Developing the present industrial sensitivity to nutrition was painful and expensive. Once in place, however, the addition to costs attributable to nutritional labeling are relatively small. The expertise and operational and managerial behavior have been developed and function smoothly. Some marketing activity is focused on nutrition competitiveness which might otherwise be channeled to different (and less valuable) rivalry. Just as small manufacturers are

exempted from this policy, they should be in food service. At the present level of development of this labeling policy, there is little active resistance on the part of food manufacturers. A major reason is because consumers like the policy.



The evolution of consumer interest is an important point. In the late 1960's when policy leaders were considering the possibilities and problems of nutritional labeling on supermarket food, there was minimal consumer expression of interest and need. Consumers were familiar with ingredient labeling but had little idea about labeling food nutrients. They had no idea how it might be done--and little interest. After a quarter century of experience, the label is in wide use and it is seen as an important consumer right.

From our experience with the conventional nutritional label, we can anticipate that consumers will not lead the charge for this new policy. It will take several years for the policy to become understood and accepted in everyday behavior. But, consumers will like it when they learn to use it. If this concept is developed into policy which is mandatary for firms with over five establishments, It will come into acceptance and use by consumers. In that situation, many smaller firms will adopt it voluntarily.

CONCLUSIONS

At this point, nutritional labels for food away from home seems a distant possibility. The research establishment offers little in terms of an operational concept for such a policy. Consumers have little idea or interest. The industry is predictably hostile. Yet, this growing sector is important to consumers and the national health and well-being. The lack of a public requirement for nutritional information allows the industry to continue with its insensitivity to nutrition. Many experts believe food away from home is generally poor in terms of nutrition.

While little has been done, the possibilities are clear. It is possible to develop a "meal nutrition quality index" that could bring nutritional information to a restaurant menu. A policy which requires nutritional information on the menus of larger eating place firms would: 1) sensitize the food service industry to nutrition and competition involving nutrition; 2) provide nutritional advice to consumers; 3) increase the nutrition credibility of the industry in the eyes of consumers; and 4) be picked up voluntarily by many small firms when accepted by consumers. It is worth considerable effort to bring these results into place.

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