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Do Consumers Really Use Food Labels?

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Food labels are an integral part of our daily shopping experiences. They are a source of information and most often the first means for directly connecting with a potential consumer. In most food distribution systems some level of mandatory labeling is required through governmental regulations while additional aspects of a label may be from the industry or firm. Labels are there, but do consumers really care? In this study, we will turn to that issue using a large household survey as the data source for determining if consumers pay attention to food labels and to determine the level of importance consumers attach to food labels (NPD Group, 2004). Specifically, 14,514 households were asked to respond to two major questions: (1) "*I check labels for harmful ingredients "* and (2) *"My food purchase is based on using the labels."*

The first question is primarily one for dealing with determining negative attributes based on the label while the second one is a broader more positive role for labels when making purchasing decisions. For each question, responding households were asked to use a six-point scale to reflect their opinions where: 1=completely agree; 2=agree mostly; 3=agree somewhat; 4=neither agree nor disagree; 5=disagree somewhat; and 6=disagree. In addition, considerable information about the household was recorded as will be noted later. Since the household responses are binary, the importance of food labels can be determined through estimating the likelihood of using the label for both questions.

These scaled responses are ordered, yet each household may have a different level of understanding of the degree of meaning to each question as well as the intensity across the scales. These rankings immediately suggest the use of Ordered Probit models for estimating the likelihood of using food labels. Since Ordered Probit methods are well

documented, we will turn to the use of the methods in this paper without detailing the estimation methodology (Long, 1997; Verbeke and Ward, 2004).

Role of Food Labels

Food labels are ingrained in our food shopping experience and the impacts have both a conscious and likely unconscious impact on our decision-making. Labels provide a source of health related information for comparing products and may, occasionally, be the consumer's first exposure to a health related issue. For new young consumers entering the food-shopping arena, seeing the "fat free" information could be their first meaningful exposure to the issue. For all consumers, some attributes simply cannot be determined without the labels (i.e., credence attributes).

Labels may be an instrument for reinforcing generic claims and for establishing product differentiation, differentiation across food categories and within a specific category. Labels may add to the level of confidence and security when buying and this may be particularly true with new products and products purchased for the first time. They can reduce the search cost associated with the decision to buy as well as facilitate comparative shopping. As such, labels may add to the level of competition since potential buyers can quickly judge the attributes before making the purchase (Golan, et al, 2001; Caswell and Mojduszka., 1996). A really good example is the comparison of the nutritional attributes of say a major cereal brand versus the in-store brand. Consumers may save a considerable amount on the cereal price once they determine the level of substitutability. Yet with experience consuming the alternatives, the role of labels may be less important to many consumers. Even if consumers no longer use the label when buying a particular food, the label's importance for legal protection and for traceability is there and the benefits are only realized when a legal issue is raised. Legal requirements for supporting a label claim likely add to the product consistency and nutritional education (Verbeke, Ward, and Avermaete,

2002).

Clearly, the role of labels has many dimensions with their importance differing with the food category, the profile of consumers entering the shopping experience, and the dynamics in the food forms, packaging, ingredients, and presentation (McCullough and Best, 1980). While it may be nearly impossible to measure each dimension to labels, with the household scales indicated above one can gain considerable insight into the role of food labels while not attempting to separate each reason for reading (or not reading) the label.

Before turning to the actual estimation, Figure 1 provides an overview of our households scoring for labels. For this large demographically balanced survey, nearly 57 percent of the households checked food labels for harmful ingredients and 60 percent used the labels for broader purchasing decisions. Again the latter question includes both positive and negative aspects of the product. About 10 to 13 percent of the households indicated that labels were of little importance. These probabilities are for the average household and, obviously, the values may differ across consumers. Differences in these probabilities can

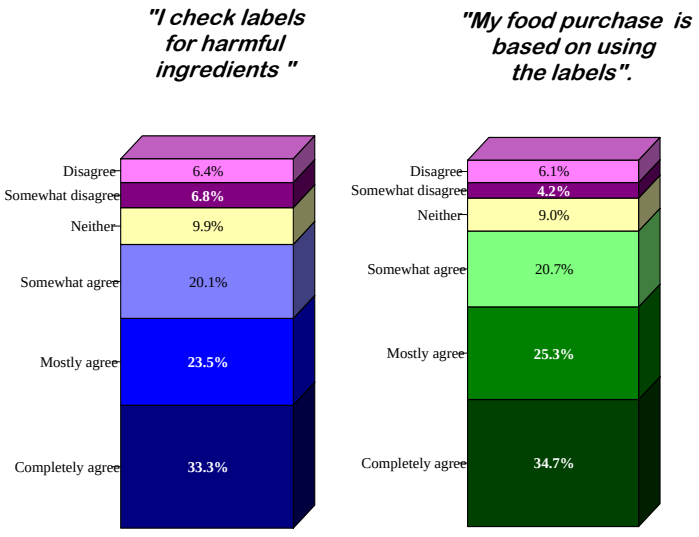


Figure 1. Overall distribution of households ranking of food labels.

be seen across household demographics; over lifestyle activities and attitudes; for health

concerns, and household eating habits.

For each household a number of questions about these aspects of the buyer were recorded as indicated in Table 1. Demographics include the standard measures while the health actions, concerns and eating habits provide a unique insight into the household. Under health action in this table, the role of country-of-origin, dieting, medical advice, exercising, and brands are measured. Concerns about fats, cholesterol, additives, and others are registered while the last section focuses precisely on eating habits. All of these values are binary using the appropriate scaling.

Table 1. Aspects of the household likely impacting the role of food labels when making the buying decision.

Demographics	Intercept
	Household size (1=1 mem, 2=2 mem, 3=3/4 mem, 4=5+ members)
	Children under 18 years (1=yes, 2= no)
	Employment of female head (1=employed, 2= not employed)
	Age of female head (1= < 35, 2= 35/44, 3= 45/54, 4= 55/64, 5= 65+)
	Education of female head (1= no high school, 2 = high school, 3 = some college, 4 = college graduate)
	Household income (1= under $30000, 2 = 30/49999, 3 = 50/69999, 4 = 70/100000+)
	Census region (1 = ne, 2 = ma, 3 = ecn, 4 = wnc, 5 = sa, 6 = esc, 7 = wsc, 8 = mtn, 9 = pac)
	Quarter (1-4)
Health action	Avoid foreign food (1-6)
	Adult female on diet (1=yes 2=no)
	Doctor gives advice on diet (1-6);
	Vitamins recommended by physician (1-6);
	Conscious of calories (1-6)
	Like to lose 20 pounds (1-6)
	Love to Swim (1-6)
	Overweight isn't attractive (1-6);
	Best known brands are highest quality:
	Food should have body building ingredients:
Concerns	Know more than most (1-6)
	A person should be cautious about sugar:
	A person should be cautious about cholesterol:
	A person should be cautious about additives:
	A person should be cautious about fat:
	A person should be cautious about salt:
	A person should be cautious about preservatives:
Eating	Hot Dog Sandwiches (1-6)
	Pizza (1-6)
	Lunchmeat (1-6)
	Tacos (1-6)
	Fried Chicken (1-6)
	Order Probit shifters:

As indicated earlier, in this paper we will concentrate on the results and not the many dimensions to Ordered Probit models with the focus being to determine the importance of food labels to assist in the purchasing decision. With the models, the probabilities across all dimensions in Table 1 are presented. As a reference point for the weighted average household, the Ordered Probit indicated that 49 percent of the households at least mostly agreed with the use of labels for judging harmful ingredients and 58 percent read the labels for buying in general. In the following sections, these estimated probabilities are shown across the categories in Table 1 and then they are ranked in terms for their relative importance when making food purchases.

Importance of Food Labels Across Demographics

Two Ordered Probit models were estimated, one for the two basic questions. Then the probabilities of at least *"mostly agreeing"* with the importance of food labels were estimated across each household demographic while holding all other factors to the average household. Similar estimates were also made for every factor noted in Table 1. Figure 2 shows these probabilities with the blue bars being the probabilities for the *"read labels for harmful ingredients"* and the green bars are for the *"my food purchases are based on using the labels."* Consistent throughout the probabilities is a higher level for using labels in

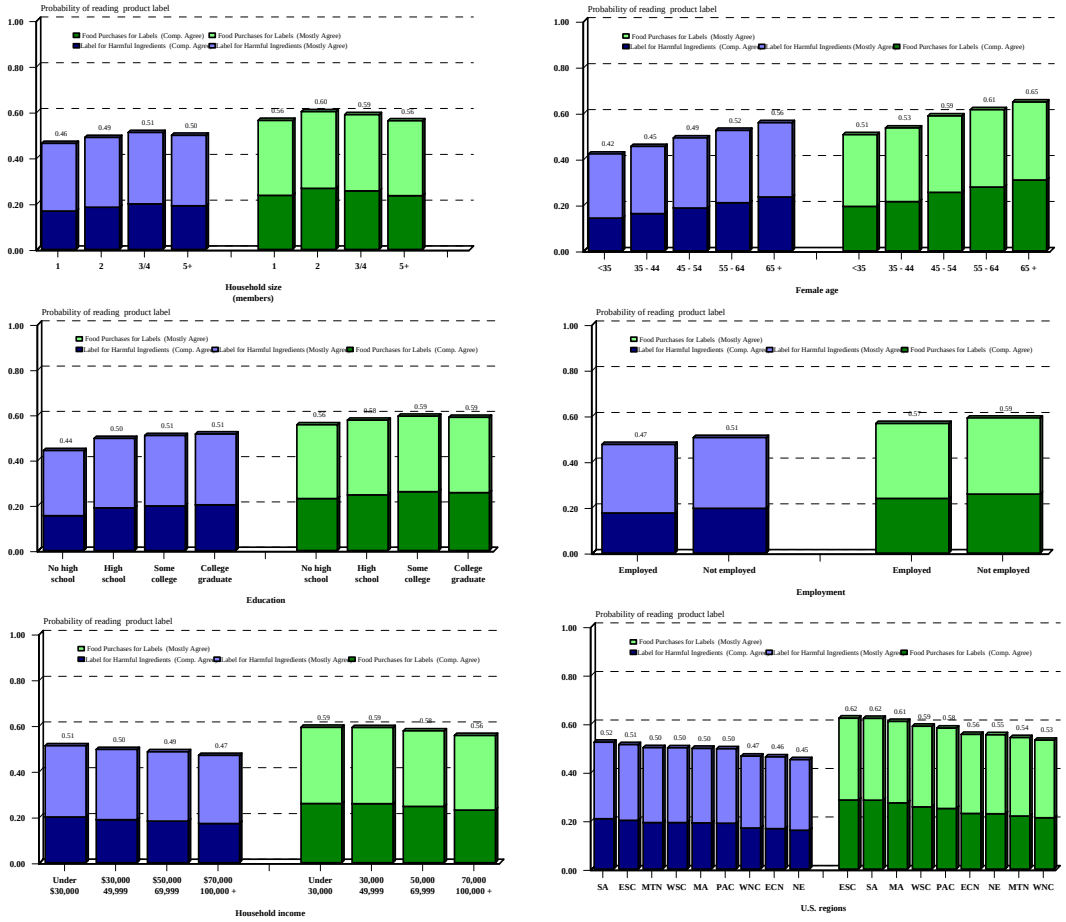


Figure 2. Household demographics and their impact on importance of food labels.

general than just for the harmful ingredients, thus clearly pointing to the role of labels

beyond the preventive dimension. Note in the figure that the bars are also divided by "*completely*" versus "*mostly agree*" with the statement and one can then see the intensity of agreement.

Among the demographics shown in Figure 2, age of the female household head showed the largest range of change with the probability of reading the labels increasing consistently over the age range from a low of 42 percent to 56 percent on the "harmful ingredient" question. Similarly, but to a must smaller degree, the probability of reading the labels increases with education with the big drop being among those in the lowest education level. Probably the most unexpected result is with the consistent drop in using labels across income levels. The response is very similar for both questions. For each demographic, the response intensity between *mostly* and *completely agree* remained reasonably proportional (e.g., the intensity did not increase even through the total likely increased with age.)

Finally, Figure 2 shows there are regional differences in using labels with the south and southeast states showing the highest probabilities of using the labels and the households in the north and northeastern states showing the least use of the labels. Except for knowing the regional differences in label importance, one cannot gain much insight into the underlying regional characteristics.

Eating Habits and Use of Food Labels

Four variables have been used to reflect various dimensions to eating habits. As shown with Figure 3, country-of-origin, being on a diet, and two types of foods are identified. Again, using the average household as the reference base, the probabilities of

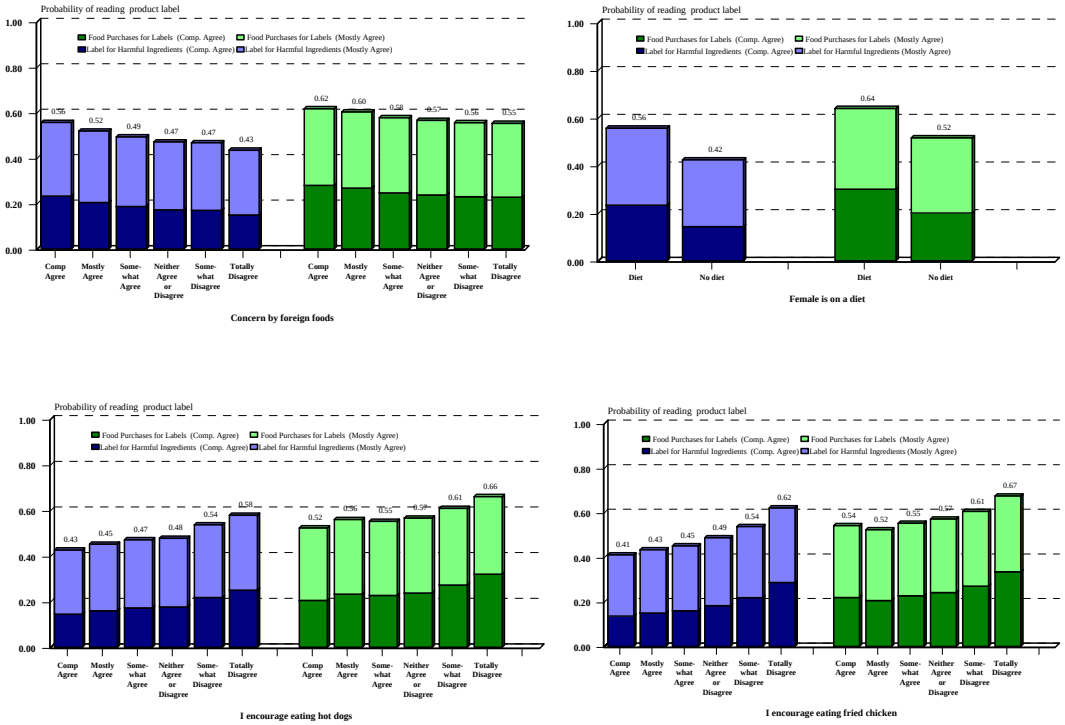


Figure 3. Eating habits impact on reading food labels.

reading food labels over each of these eating habits were estimated.

Households were asked if they were concerned about eating foreign foods and asked to scale their responses from *completely agree* to *totally disagree.* As shown in the first graph in Figure 3, there is a considerable impact when concerned about foreign foods and particularly so for the concerns about harmful ingredients. Households completely concerns about foreign foods show a 56 percent level of probability of reading the label for harmful ingredients; while for those not at all concern, the probability drops to 43 percent. A similar pattern is seen for labels in general, but the range of change is much less. Foreign foods and harmful ingredients are related in terms of concerns and reliance on food labels.

Dieting and the type of food consumed have major impacts on the use of food labels when making the purchase decision. When dieting, the female head of the household is about 12 percentage points more likely to rely on food labels when making their purchasing decisions. This is generally true for both uses of food labels. Similarly, household that

discourage the consumption of foods like hot dogs and fried chicken are considerably more likely to read the food labels. For example, households that discourage the consumption of fried chicken show a probability of 61 percent for harmful ingredients versus 41 percent when not concerned about consuming this product. Consumption of hot dogs and fried chicken are indicative of the more general type of eating habits reflective of ones overall types of food selections.

Health Concerns and Use of Food Labels

Health concerns have many dimensions and information about cholesterol and fats are often the most visible messages on many food labels. Our households reflect the level of concerns of several health measures using the statement . . . *"A person should be concerned by cholesterol (or similar issues)."* As a general rule, when doctors give advice to consumers they are much more likely to use food labels and, in fact, the probabilities for harmful ingredients increase for 39 to 65 percent when the doctor give dieting advice. Importance of food labels increases almost linearly with the level of concern about cholesterol and fats when considering harmful ingredients. The trend is more mixed when using food labels in general. Patterns associated with concerns over fats are quite similar to those for cholesterol concerns. We have not shown the probabilities but will rank them later as all factors are considered together.

Attitudes and Use of Food Labels

In this section we concentrate on two of the most important attitude measures, calories and branding. Each household was asked to indicate their concern about calories and the six point agreement scale to the statement . . . *"I am concern about calories."* Expectations would be that those concerned about calories are more likely to read food labels. As shown in the upper part of Figure 4 this is precisely true where there is almost a linear relationship between the intensity of concern or not and the likelihood of using food

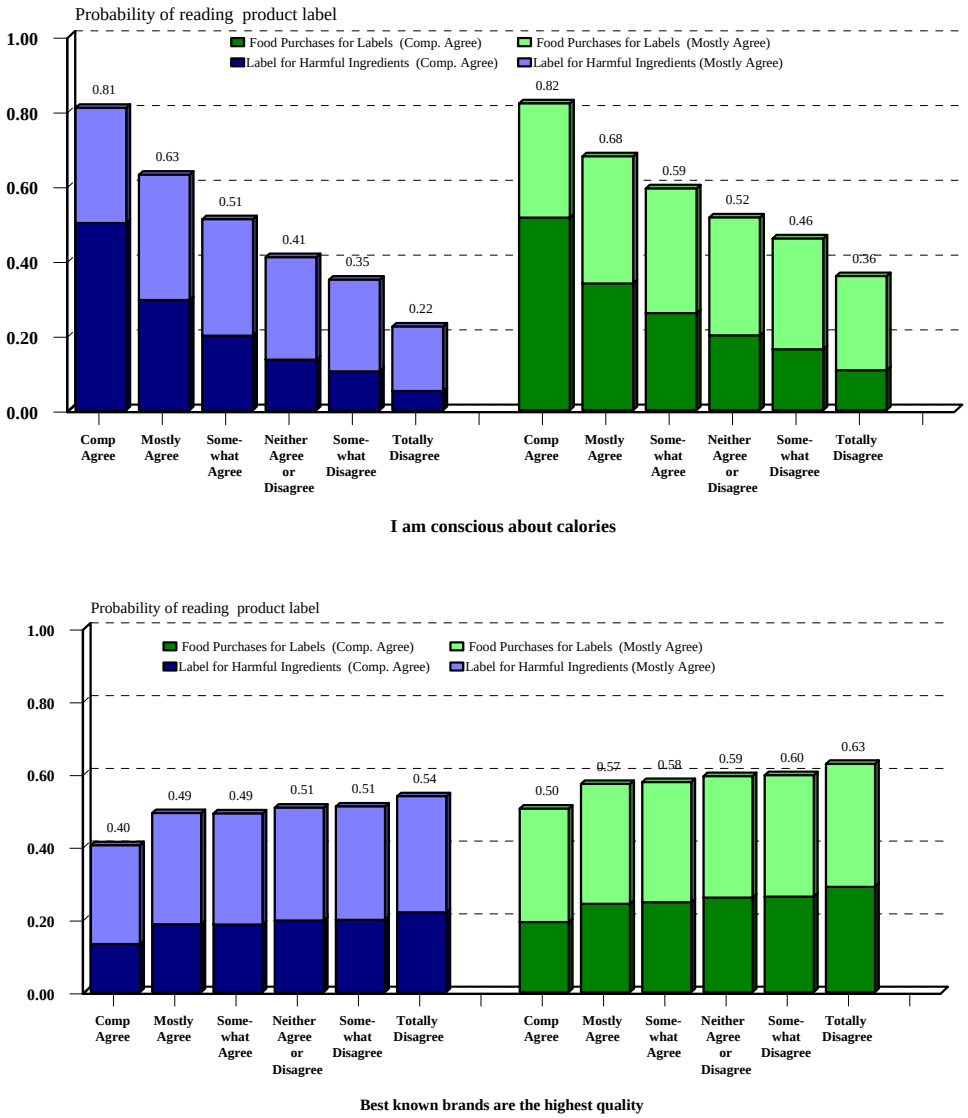


Figure 4. Attitudes and there impact of reading food labels.

labels. In fact, concerns about calories are one of the most important factors influencing the use of food labels for both harmful ingredients and food labels in general. Among those households showing no interest in calories, the probability of reading food labels drops to less than 23 percent of harmful ingredients and less than 36 percent for labels more broadly used. There is nearly an 81 percent probability of reading food labels when the household member is strongly concerned about calories. Parallel results are seen for the other label question.

In Figure 4, a second attitude addresses the issue if brands are substitutes for reading the food label. Households were given the statement that . . . "*Best known brands are the highest quality*" and were asked to scale their response, again with the six point scale. One basic argument is that brands already have some level of consumer support and confidence and, as such, those households supporting this statement would be less likely to read the food labels since the brand identification is enough. While the responses are not profound, there does appear to be some substitution between the brand information and food labels. Households indicating total agreement with the best-known brand statement are less likely to read the food labels as shown with Figure 4, bottom chart. There is a consistent drop in the use of food labels with the more reliance on brands. A major drop is seen between the scales of completely versus mostly agree. This tradeoff between brand information versus the food package label is equally true for both reading labels for harmful ingredients and reading labels more broadly. This is interesting in that brands incur both the cost of branding and food labels but may have fewer relative benefits from the labeling compared with less branded food.

Ranking the Food Label Probabilities

As obvious from the selected probabilities presented above, there are considerable differences over the demographics, attitudes, and health concerns. Also, the Ordered Probit model is more complex than captured with the few examples shown. To have a complete perspective on the likelihood of reading food labels we have taken the range of changes in the likelihood of reading labels for each variable in the Ordered Probit model and then ranked them from the largest to smallest impacts. Figure 5a shows the ranking and range of change for the use of labels to understand harmful ingredients and Figure 5b shows the same information for using labels in general when making purchasing decisions. In both figures, the right-hand graph shows the range of change from which the ranking is made. That is,

the ranking is based on the range of change and not necessarily the absolute largest probability. They can, of course, be the same. See Ward, Briz and de Felipe (2003) for another application of these type rankings.

By far, conscious about calories is the single most important factor impacting the likelihood of reading food labels for both questions. As seen in Figure 5a, the likelihood ranges from 22 to 81 percent when using the labels to discern harmful ingredients and from 36 to 82 percent for using labels as an aid to making purchasing decisions. The ranges for both figures are substantially greater than any other factors. Consumer knowledge about nutrition is important and contribute to greater use of food labels. Except for the age demographic, the next several factors are related to health concerns and eating habits.

Moving down both charts, after about the 10^{th} entry the remaining variables have impacts that are relatively quite small in terms of causing deviations from the average household probabilities. One becomes particularly impressed with the limited role of many of the demographics except for age. Note also that the impact of branding on the use of food labels ranks quite high relative to most of the variables in Figures 5a and 5b. Clearly, there is some underlying tradeoff between identification with a brand and using labels to gain information.

There are also a few strange inconsistencies such as concern about calories versus being on a diet or would like to lose 20 pounds. Possibly if one is concern about calories, the food selection process is underway while the selection may have already been made when actually on a diet.

Another interesting difference is seen with the issue of foreign foods when considering harmful ingredients compared with food attributes in general. The range of change in using labels for determining harmful ingredients over the concerns about foreign foods is almost twice that for using labels in general. Consumers turn more to labels for

determining harmful aspects of foreign food than for simply helping making foreign food purchases.

Clearly, Figures 5a and 5b points the direction if one goal is to impact consumer use of food labels. One can quickly determine from these figures where little gain (or loss) in the use food labels would be expected.

Food Labels -What Does It All Mean?

As most apparent from the rankings and the probabilities for the average household, not everyone values food labels at least in terms for helping make buying decisions. Again the value could be in fewer apparent benefits from making the markets more competitive, for providing some level of transparency, and for legal/safety dimensions. The fact that a reasonable share of the buying population places little overt value to labels during the buying process should be of concern since most of the label content is mandatory and closely monitored. The content needs to be carefully designed to maximize the usefulness while not overwhelming consumers with too much information. See Verbeke and Ward (2004) for more insight into this issue using a case study of beef labeling in Belgium. It is apparent that there is little to no role for targeted labeling based on demographics except for the case of age. To be relevant, the label content must deal with health related concerns and particularly dieting issues and nutrition. Much of the current federal label guidelines require a precise focus on these dimensions. Finally the limited role of foreign foods and labeling parallel those discussed by Verbeke and Ward where they showed the limited importance of country-of-origin labeling in Europe.

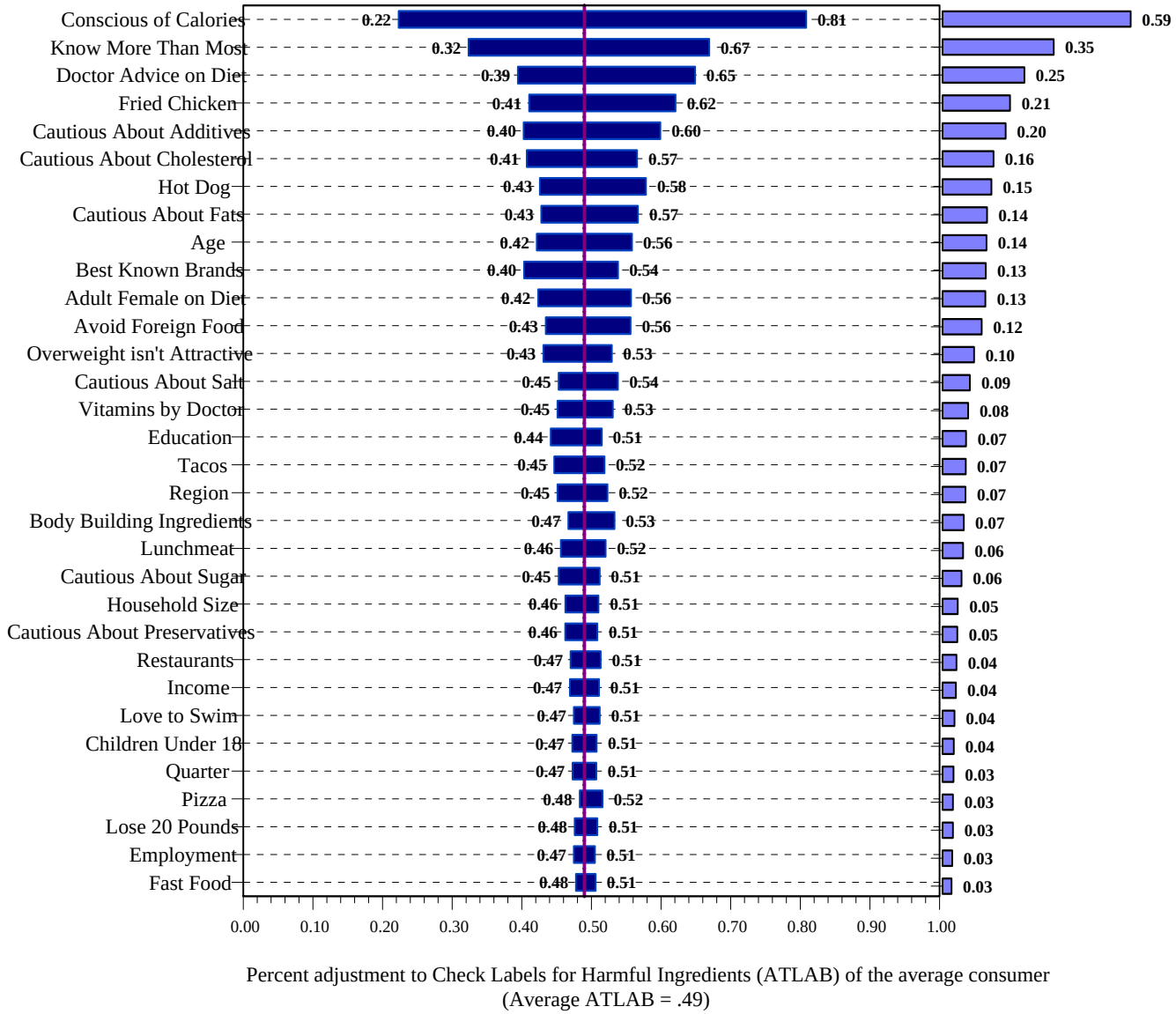
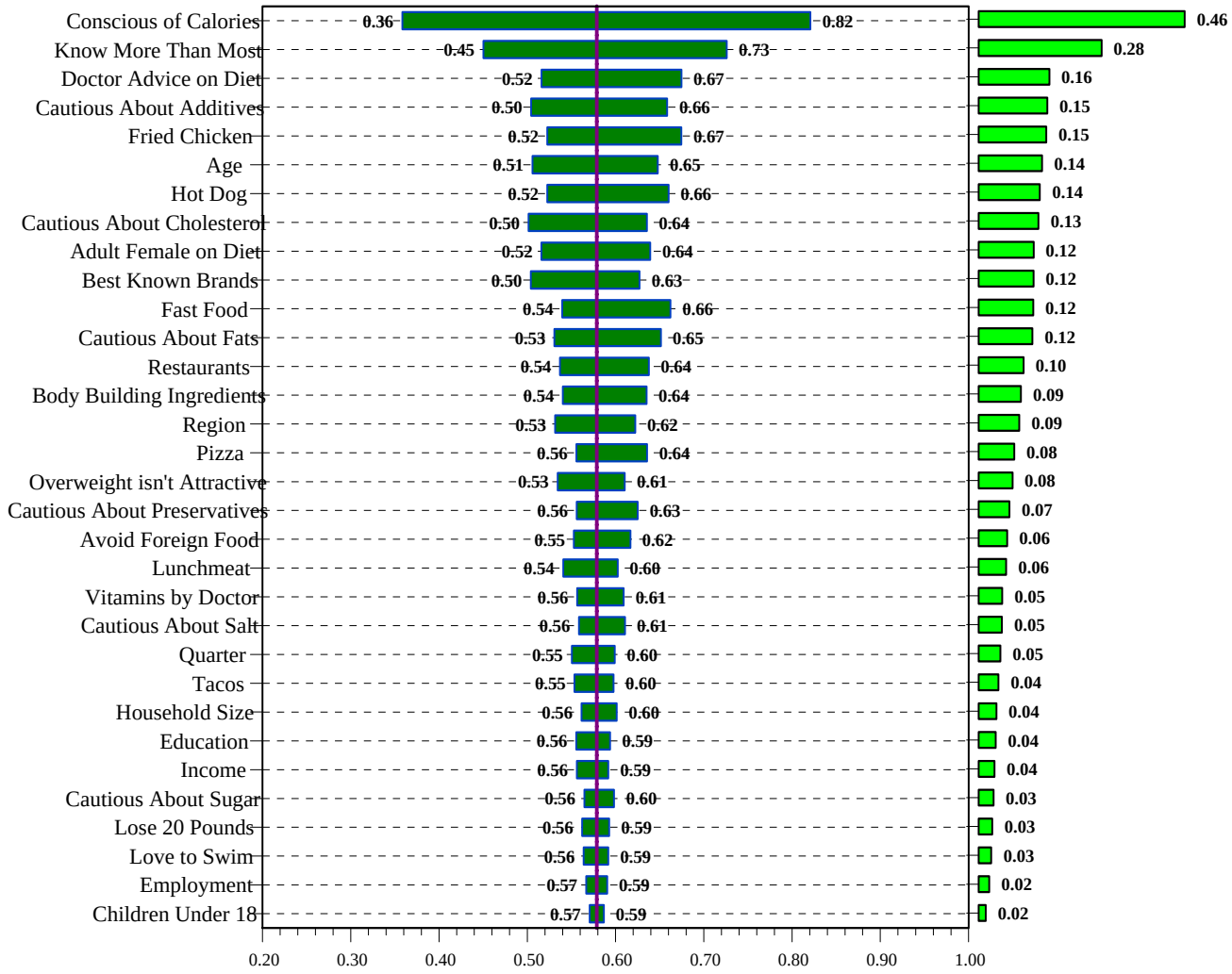


Figure 5a. Ranking factors impacting the likelihood of reading food labels of harmful ingredients.



Percent adjustment to Food Purchase for Labels (FPLAB) of the average consumer
(Average FPLAB = .58)

Figure 5b. Ranking of factors impacting the likelihood of reading food labels in general.

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