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THE IMPORTANCE OF NUTRITION LABEL USAGE IN THE CONTEXT OF OBESITY: A CROSS-COUNTRY STUDY OF THE USA AND TURKEY

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ABSTRACT OF THESIS

THE IMPORTANCE OF NUTRITION LABEL USAGE IN THE CONTEXT OF OBESITY: A CROSS-COUNTRY STUDY OF THE USA AND TURKEY

Obesity, the second leading cause of preventable death in the U.S., and related health problems increase people's concerns about healthy food consumption. The increased prevalence of obesity is a major concern of societies both in developed and developing countries. Nutrition label usage has been increasing due to the link between diet and health. This study intends to provide a framework for describing profiles of consumers who are more likely to use nutrition labels in USA and Turkey, a developing country with increasing obesity rates in recent years. Empirical results present similarities and differences between consumers' attributes for food label usage in two countries.

The main contribution of this study is to investigate the relationship between the importance of serving size, while the number of expanded portion sized products in the market is increasing, and rising obesity rates. Ordered probit model analysis is used to identify the effects of demographics, health status and other components of the nutrition facts panel on selected dependent variables.

Better understanding consumers' responses to nutrition labels may guide consumers and manufacturers to broaden the communication channels through nutrition labels. The findings of this study can provide useful information to policy makers, agribusinesses, manufacturers and marketing professionals.

KEYWORDS: Nutrition Label, Obesity, Cross-country, Ordered Probit, Serving size

Emine Bayar

June 11, 2009

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THESIS

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2009

THE IMPORTANCE OF NUTRITION LABEL USAGE
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A CROSS-COUNTRY STUDY OF THE USA AND TURKEY

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Science in the
College of Agriculture
at the University of Kentucky

By

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Lexington, Kentucky

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2009

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To my Family

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Chapter 1

INTRODUCTION

1.1 Obesity Epidemic

Obesity is a growing concern both in developed and developing countries. World Health Organization's (WHO) new figures indicate that obesity is spreading all over the world as a "global epidemic." According to WHO's 2005 global projections, approximately 1.6 billion adults (age 15+) were overweight and at least 400 million adults were obese ("Obesity and Overweight").

In the United States, obesity is the second leading cause of preventable death after smoking. The Center for Disease Control and Prevention (CDC) estimates that 30.5% of the U.S. population has been declared obese; 65.2 % of U.S. adults and 15% of children have been declared overweight or obese. According to the most recent data of a National Health and Nutrition Examination Survey (NHANES), the prevalence of obesity was 33.3% among adult men and 35.3% among adult women in 2006.

Obesity is becoming a critical health problem in Turkey too, especially in the last decade. In 1997, WHO confirmed obesity rates in Turkey as 12.9% and 29.9% for men and women, respectively. The increase in the overall prevalence of obesity between 1990 and 2000 was reported as 17.7% (Yumuk, 2005). The Turkish Health Ministration announced that in 2008, 21.2% of the men and 41.5% of the women were obese.

For the objective of this study, obesity prevalence in the USA and Turkey with respect to genders in 2005 is illustrated in Figure 1.1 (WHO). There is a big difference between genders in terms of obesity rates in Turkey, whereas this difference is very small in the USA. This difference could be due to the frequent cigarette-smoking among men and low rates of employment among women outside the home (Delibasi, 2007).

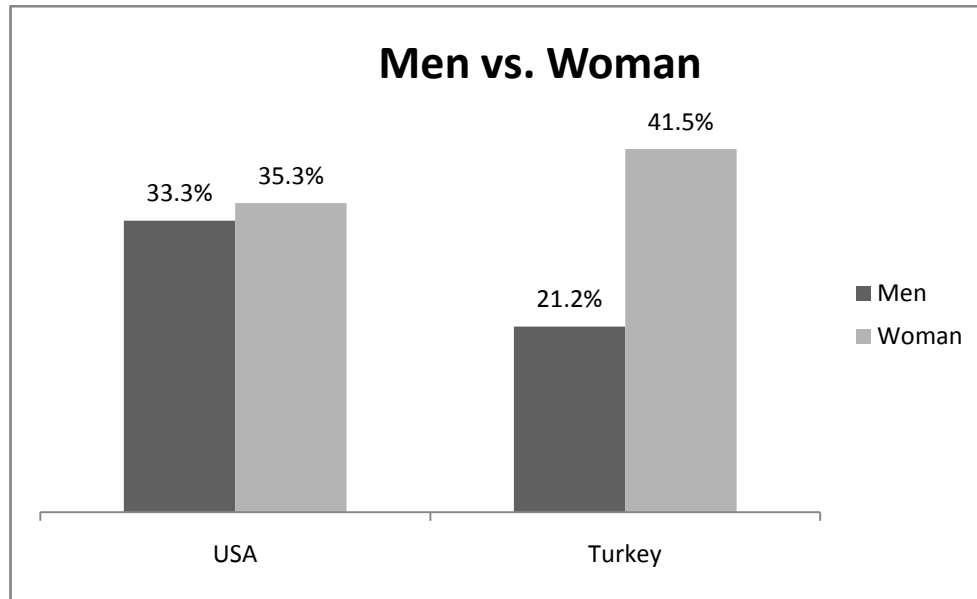


Figure1.1: Obesity prevalence in the USA and Turkey in 2005

Source: WHO

Obesity rates are usually reported by using the body mass index (BMI) which is a widely accepted diagnostic criterion of obesity. BMI is measured as weight in kilograms divided by square of height in meters (kg/m^2). BMI levels between a numerical value of 18.5 and 25 are defined as normal weight. An individual with a BMI between 25 and 30 is considered overweight, and an individual with a BMI above 30 is obese. On the other hand, individuals with BMIs below 18.5 are considered underweight (WHO, 2009).

The increased prevalence of obesity is a major concern not only from a social perspective, but also due to its costs to the economy. In 2000, obesity-related health care costs totaled an estimated \$117 billion (\$61 billion for direct medical costs and \$56 billion for indirect costs) in the United States (US DHHS, 2001b). Between 1987 and 2001, diseases associated with obesity accounted for 27% of the increase in medical

costs. The average obese adult spends nearly \$400 more per year on medical expenses compared to a healthy-weight adult (Sturm, 2002).

In the literature, there are not enough studies about the economic aspect of the obesity problem in Turkey. It is worth noting that most of the studies conducted in Turkey are on prevalence of obesity, potential reasons and prevention suggestions. Although obesity is an expeditiously growing problem, the literature is still narrow.

The overweight and obesity problem is simply defined as a function of imbalance between energy intake and energy expenditure. There is a great number of contributing reasons for this imbalance problem. Basically, the reasons are divided into two categories: genetic factors and environmental factors. One of the important contextual factors could be the usage of nutrition labels for food consumption decisions, since that can have an impact on energy intake. This study focuses on the relationship between the obesity epidemic and nutrition label usage attributes in the USA and Turkey comparatively.

1.2 Nutrition Label Usage

The most sustainable solution to a decrease in the rate of obesity and related health problems could be increasing awareness of the importance of a healthy lifestyle. At this point, the types of foods that are chosen for the diet play a crucial role. People use many different sources to gather information about diet choices and foods they consume, such as magazines, friends, doctors and dieticians. Another source is nutrition labels and the health claims on the food packages, which have become much more important since

they are one of the convenient points of contact between the producer and the consumer while making a purchase decision.

Due to an increase in the awareness of the linkage between diet and health status, consumers' demand for information about food products increased. These requirements concluded with new regulations and improvements in food labels. However, the global obesity epidemic has caught many governments and policy agencies by surprise since they do not have enough precautions. Nayga (2004) mentioned about the situation in Europe, the European Union (EU) Parliament has not yet passed and approved a Directory on mandatory nutrition labels. Hence, it is necessary and beneficial to understand the contributing reasons of this global epidemic and include effective improvements in the policies. Investigating the existing differences across countries may be helpful for policy-making purposes.

This study is designed to compare the food label usage in the USA and Turkey, a developing country faced with a growing obesity problem. Before investigating the consumers attributes to food labels, the regulations published in the USA and Turkey are investigated.

1.2.1 Food Label Regulations in the USA

Nutrition labels on packaged food products are designed to provide consumers with more information about the product that they are about to buy. By using facts listed on nutrition labels, individuals can choose a healthier food which will serve them with a healthier quality of life in the long term. The Nutrition Labeling and Education Act (NLEA) of 1990 aims to provide clear and accurate information to consumers during

their purchase decisions. This policy led the FDA to design nutrition labels. Nutrition fact panels listed on food packages include serving size and servings per container, total fat, total calories, sodium, cholesterol, total carbohydrates, total protein, dietary fiber and other nutrients (Burton et al., 1999). The list of information indicated on nutrition labels is so long that most people tend to use only part of it to minimize the difficulty of their decision making. A consumer might concentrate on calorie intake and fat content of the product s/he consumes; on the other hand, due to a particular health problem such as diabetes or heart disease, one might pay attention to sugar or cholesterol, respectively. NLEA sets some rules for the appearance and format of the nutrition information. It must be set off in a box and nutrition facts must be shown in bold and larger print than any other printed information on the nutrition label.

The definition of serving size is given in 21 Code of Federal Regulations (CFR) Section 101.12(b). Reference values are determined according to the 1977-1978 and the 1987-1988 Nationwide Food Consumption Survey conducted by the U.S. Department of Agriculture. Manufacturers are required to indicate serving size on the label in the way that is most appropriate to their specific product by using common household measures such as piece, tablespoon, cup, fraction, etc. according to the procedure in 21 CFR 101.8(b). For instance, the reference serving size amount for bakery products such as biscuits is given as 55 grams by the regulation; producers may change this gram amount into number of biscuits, which is much more convenient for consumers. (FDA, Attachment #5, 1995)

A package can be considered to be one serving if the whole package contains less than 200% of the applicable reference amount. If products have reference amounts of 100 g (or ml) or larger, and contains more than 150% but less than 200% of the reference amount, then manufacturers may decide whether a package is 1 or 2 servings. If the entire package can reasonably be consumed at one time and contains 200% or more of the reference amount, the manufacturer may label the product as a single serving. (21 CFR 101.9(b) (6)) (FDA, Guide to NLEA Requirements, 1995).

1.2.2 Food Label Regulations in Turkey

Regulations regarding agriculture and the food industry are designed and published by the General Directorate of Protection and Control, which is associated with the Republic of Turkey's Ministry of Agriculture and Rural Affairs. All regulations in Turkey follow EU declarations. According to the most recent regulation, updated and published in 2007, general labeling is mandatory for all the food products in the Turkish market. Food labels should include the name of the product, ingredients, total amount, brand, name and address of the manufacturer, expiration date, origin, production permit number and date, and storage conditions (if required). However, nutrition information is not mandatory for all products in the Turkish market.

Nutrition information must be given on one of the surfaces of the package, and it must be legible and easy to understand. If the surface is not large enough for a table then the information can be given in a linear format. If the manufacturer gives nutrition information such as calorie, fat, protein, etc. contents then these are based on a serving size of 100 grams or 100 milliliters for all products; this is the most common method in

the Turkish market. If the product is designed just for one portion then these values should be given for the whole package. Another option is to give the total number of portions for the whole package and indicate the nutrition information for only one portion. But, there is not any regulations that define “one portion” term like in the case of 21 CFR 101.9(b) (6) in FDA. Additionally, in order to be able to indicate the vitamin and mineral content of the products which include only one portion, they should provide a minimum of 15% of the daily requirements. (KKGM, 2002)

The figures in the following page show the application of Regulations in the USA and Turkey. The pictures are for the same product produced by the same company. Figure 1.2 is an example of a food label used in the USA. This product is produced in Turkey and packaged for exportation. The nutrition fact panel is easy to read, all information is given in a box and lines are used to separate information and provide easiness to differentiate information at the first look. On the other hand, Figure 1.3 represents the label for the same product which is sold in Turkey. The difference is obvious to be noticed immediately. The fonts in the second figure are very small compared to first figure. The product for export includes 330 grams of product whereas the one for local market has a net weight of only 120 grams. In Figure 1.3, due to the lack of enough space for a table, all information is given in linear format which cause a difficulty to differentiate the required information at the first look. Health claims, such as “No cholesterol” and “50% less fat” are readable in both labels.

Wholewheat Integ
Complet

No Cholesterol Low Fat

3 Individually wrapped packs

Net Wt: 11.64 OZ. (330g) 36 slices

Ingredients: Wheat flour, bran, dry vital gluten, fresh yeast, hydrogenated vegetable oil (palm, soya, sunflower, cottonseed), salt, malt extract, emulsifier (lecithin), antioxidant (ascorbic acid) sodium metabisulphite.

Nutrition Facts
Serving Size 1 Toast (9 g)
Servings Per Pack About 36
Calories 32
Calories From Fat 0

Amount / Serving	%Daily Values*	Amount / Serving	%Daily Values*
Total Fat less than 1 g	0%	Total Carbohydrate 6 g	2%
Saturated Fat 0 g	0%	Dietary Fiber 0.3 g	
Cholesterol 0 mg	0%	Sugar less than 1 g	
Sodium 32 mg	1%	Protein 2g	
Vitamin A 0%	Vitamin C 0%	Calcium 0%	Iron 0%

* Percent Daily Values (DV) are based on a 2000 calorie diet.

8 09747 017049
Made in Turkey by Eti Gıda San. ve Tic. A.Ş. Eskişehir www.eti.net.tr Code No: 21704

Figure 1.2: Food Label Sample (USA)



Figure 1.3: Food Label Sample (Turkey)

1.3 Objectives of The Study

Obesity is selected as a major topic of this study due to the increasing obesity epidemic both in developed and developing countries. Figure 1.4 shows the overweight and obesity rates among different age groups from 1960 to 2004.

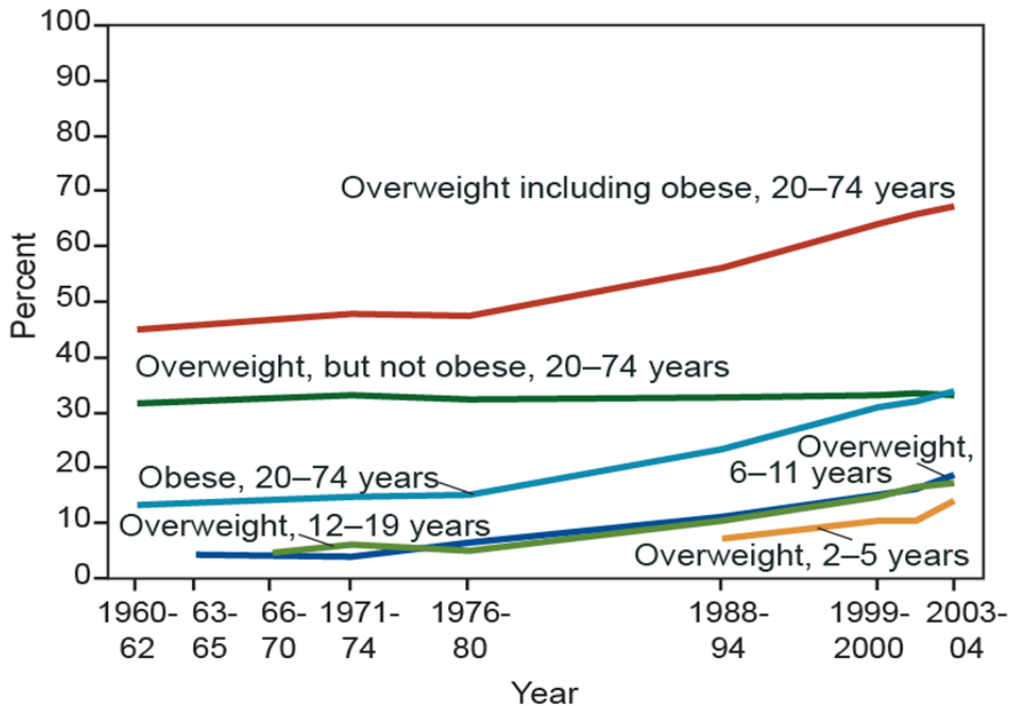


Figure 1.4: Prevalence of Overweight and Obesity in the US

Sources: Center for Disease Control and Prevention, National Center for Health Statistics, Health, United States, 2007, Figure 13. Data from the National Health and Nutrition Examination Survey.

A significant increase was in the obesity rate among adults (20-74 age) starting from the 1980s. It is clear that there are many contributing reasons for this increasing rate. As previously mentioned there have been many studies in literature conducted about the contributing reasons of this epidemic.

The relationship between the energy intake and obesity epidemic raise the importance of a link between healthier diet and food choices. Thus, consumers'

requirement for the information given by food labels has been increased for better purchase decisions.

This study aims to investigate to what degree consumers pay attention to nutrition labels and analyze the impact of demographics and health status for the importance of labels. In addition to the importance of labels generally, importance of calorie and serving size information are also analyzed.

Young and Nestle (2002) published a study on the contribution of expanding serving sizes to obesity. Figure 1.5 is taken from this study. It is shown that the contribution of new and larger portions to the food market indicated a sharp increase starting from the beginning of the 1980s, which corresponds with the start of increased obesity rates in Figure 1.4. These figures raise a question if there is a relationship between larger portions and the obesity epidemic in the USA. Even though there is a continuous increase in the portion sizes starting from the beginning of the 1980s, the nutrition labels still use the same reference serving sizes.

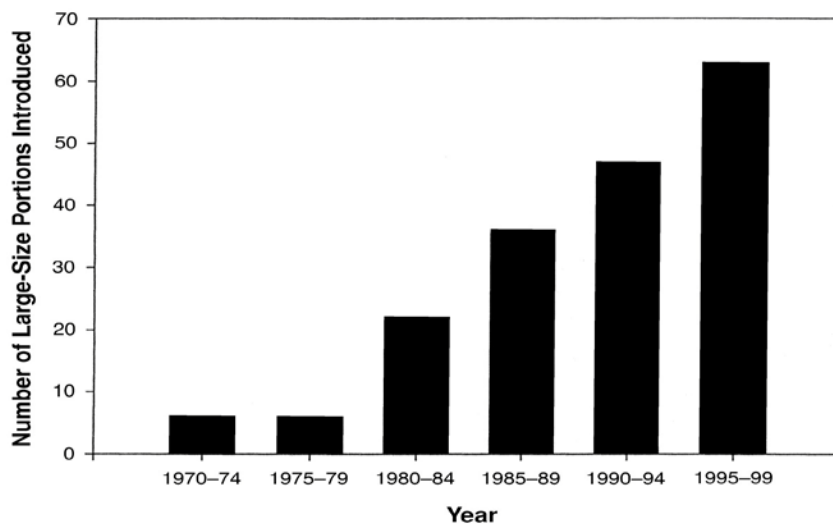


Figure 1.5: Introduction of Larger-size Portions, 1970–1999

(Young and Nestle, 2002)

Using calorie or fat content by itself is not enough, especially after the introduction of increased portion sizes using reference serving sizes listed on nutrition labels need to become much more important.

The information, such as calorie, fat and carbohydrate contents, listed on nutrition fact panels is calculated based on a reference serving size. Consumers need to be aware that consuming more than the indicated serving size leads to taking in more calories and consequently to overweight and/or obesity. Thus, the hypothesis is that directing consumers' attention to "serving size" shown on the nutrition labels might play a role in decreasing the rate of obesity.

This is also a cross-country study of USA and Turkey. Turkey is selected as a comparison country because it is an example of a developing country which has an increasing obesity rates in the last decade. The similarities and differences between these two countries in terms of food label usage are analyzed. Label regulations are similar in terms of the purpose which is to provide consumers with a clear and informative knowledge for their food purchase decisions. However, labels used in these two countries shows a difference in terms of the method of indicating serving size information. Reference serving size is defined separately for each product in the USA whereas it is 100 grams (100 ml) for all the products in Turkey. This study intends to compare the consumers' ideas for the importance of nutrition labels, calorie and serving size information in two countries.

This research can provide useful information to both consumers and producers. Individuals who use labels more frequently and start to have a healthier diet will have better health conditions. Consequently, medical costs to societies due to obesity and

related health problems would decrease. In the long run, both the individual and the society will benefit from this. Results of the study may help agribusinesses, manufacturers, marketing professionals and policy makers to understand responses of consumers to nutrition labels. Manufacturers, Research and Development (R&D) and marketing departments can use the results as a guide to increase the effectiveness of their food labels' innovations in the food market.

1.4 Organization of the Study

This chapter has presented the issue this thesis addresses and the objective of the study. The next chapter provides the literature review for the studies done about the nutrition label usage. Chapter 3 presents an analytical frame work and the description of data sets. Chapter 4 is the results chapter where the empirical estimation results are discussed and summarized. Chapter 5 concludes with a summary and suggestions for further studies.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

This study focuses on nutrition label usage and the impacts of demographics, health status, including being overweight and obese, and the usage of other parts of the labels such as fat and carbohydrate contents. There has been an enormous amount of work done on nutrition label usage. Studies which investigate nutrition label usage intend to explain the relationship between demographics, health concerns and food consumption behaviors (Jacoby et. al., 1977, Nayga, 1996, Kim et. al., 2000, Jauregui and Ward, 2006). In addition, the studies in the literature which are on the obesity epidemic all use the BMI as the dependent variable and analyze the impact of demographics, health status, eating habits and lifestyle (Kyureghian et. al., 2007, Cai et. al., 2008). Using BMI as a continuous dependent variable will provide information about the impact of regressors to this index when there is a unit change in the selected independent variables. This information is not specific to the case of overweight or obesity; it just provides general information about the impacts of different attributes on the BMI. However, there is little research which examines the relationship between nutrition label usage and the obesity epidemic. The contribution of this study is using being overweight and obese as regressors rather than dependent variables. BMI is calculated according to height and weight values given by respondents, and participants are grouped as overweight or obese according to their BMI levels. Using these health statuses as regressors provides information about these individuals' perception of nutrition labels in general. More specifically, their attitudes toward the importance of

using calorie and serving size information are also included in this study. The other goal of this study is to compare consumers in the USA and Turkey in terms of the framework of the people who are more likely to give importance to label usage. This chapter will summarize the theory and empirical results of the studies done on nutrition label usage and the obesity epidemic.

2.2 Literature Review: USA

Developments in food processing and retailing infrastructure have improved consumers' access to diverse products, and allowed processors to better differentiate products by origin, quality, and credence attributes such as nutrient content of the product. There is a shift in the market from homogenous commodities (search/experience goods) to differentiated (credence) goods. Features and characteristics of search goods can be easily evaluated before purchase. In the case of experience goods, characteristics such as quality or price are difficult to observe in advance, but can be ascertained upon consumption. However, even after consumption utility gain or loss is difficult to measure in credence goods (Reardon et. al., 2001). For the credence goods, consumers rely on third parties or external information for the existence of attributes.

According to Lancaster's new consumer theory, consumption is an activity which has a single good or combination of goods as an input and collection of attributes as an output. Utility is not provided by the good itself, but the attributes of the goods consumed have an impact on how utility is ranked (Lancaster, 1966). Following this consumer theory, economists started to analyze food products not only as a commodity but as a bundle of attributes. (Fischer,2005, Mitchell,2004,Lazaridis and Drichoutis,2005) It is easy to determine the utility for experience and search goods since the attributes are

observable. For the credence attributes, like nutrition value of the product, it is not easy to evaluate even after consumption, therefore consumers rely on third parties or external information for the existence of attributes. On the marketing side, repurchase depends on these information sources and usually it is not as consistent as in the case of experience goods.

As consumers gain awareness of the link between diet and health they demand more information about the food they consume. The food industry has responded by indicating more information on packages such as health claims. Additionally, due to the improvement in food production technologies they have changed the recipes of some existing products in order to provide consumers with healthier products: reduced fat items, functional foods such as fortified milk (Vitamin D added), and probiotic yoghurt. Consumers who have obesity and related health problems such as high cholesterol, heart disease, and diabetes start to pay more attention to the additional information and attributes of the products in the food market (Caswell and Mojdzuska, 1996).

Jauregui and Ward (2006) made a survey by asking the participants whether they are using the labels to check for “harmful ingredients” and/or for purchase decision. According to the results of their research 57% of the respondents use labels to check for “harmful ingredients” and 60% use them in their purchase decision. Only 10-13% of the participants think that food labels are not important. Females and more educated consumers are more likely to use nutrition labels. This article also indicates that labels are important for the purchase decision of foreign foods due to the increase in the diversification of imported food products. While fast food consumers are less likely to

use labels, people who are on a diet and paying attention to calorie intake increase the label usage.

One of the most significant causes of the increased obesity rate in the U.S. is the prevalence of home-away food consumption and ready-to-eat foods. As the report of USDA indicates in 2002, the budget for home-away food increased from 27% to 46% (Figure 2.1), and as a result of this daily calorie intake from foods way from home increased from 18% to 32%, which may be one of the contributing factors for the increased obesity rate in the U.S. This report also compares the nutrition value of home-made foods versus food away from home and offers ways to provide healthier foods in food services.

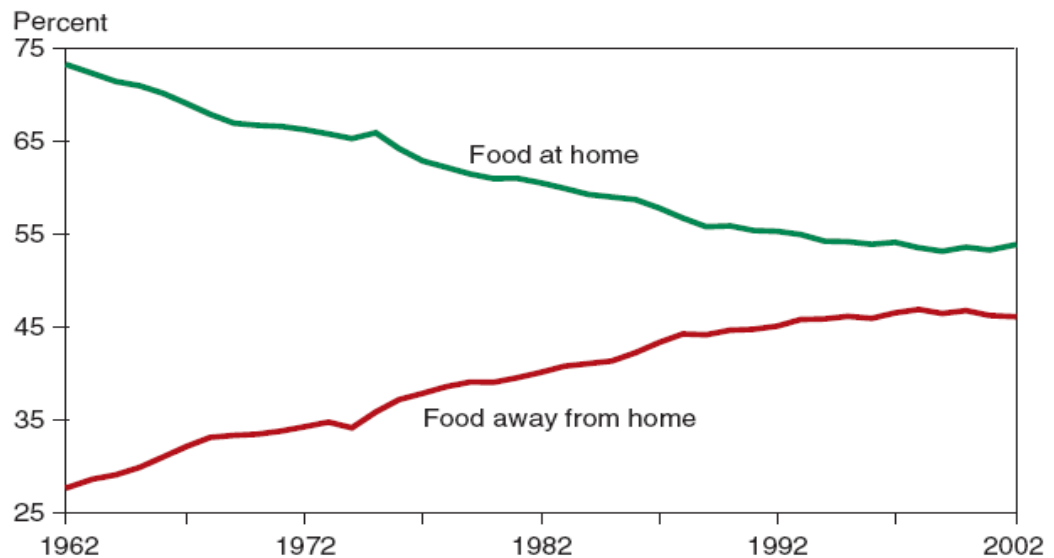


Figure 2.1: Share of Total Food Expenditures on Food at home and away from home (1962-2002)

Source: Economic Research Service, USDA

The demand of consumers should also be determined carefully. People may prefer healthier foods but perhaps they would not like to compromise taste and enjoyment. Food producers make some adjustments to improve the nutrition value of a product and putting some additional health claims such as “Trans-fat free” or “Lower Fat”. These changes should also be evaluated economically to determine the cost and benefit of the use of informational labels. (Variyam, 2005)

The study conducted by Drichoutis et al. (2006) related to the consumers’ use of nutrition labels has resulted in some meaningful findings. Food labels are mostly used by people who do grocery shopping, who have concerns about nutrition and health, who are on a special diet, or are organic product buyers. Price sensitive buyers are less likely to use labels. One of the important outcomes of this article is the requirement for the easiness of understanding food labels. Results of the study showed that “more information is better” statement is not suitable for food products. Labels need to be informative, but also be easy to understand, since mostly older people tend to read labels so being simple is important. Thus, determining the profile of consumer who usually uses food labels is critical to make the required improvement on food labels to increase the label use.

Demand for label use is increasing but consumer understanding of nutrition labels is required to have a meaningful feedback to improve the health of people. However, European Union Member States report that the current nutrition labels are difficult to understand, which underlines the requirement for the modification of label format and suggests the benefit of these modifications. Research shows that food labels have an impact on the purchasing decision of consumer so understanding the label and ability to

use information on labels is important. When using the information on labels is mentioned the importance of using serving size information again comes to the point. (Byrd-Bredbenner et al., 2000)

Since it is known that labels have an impact on purchasing then evaluation of how do consumers use labels is required. A study conducted by Godwin et al. (2006) related to this question has some surprising results. Nearly 50% of both males and females read food labels most of the time. 47% of respondents read the calories almost always and 35% of this sample population read serving size information almost always. Additionally, amount of fat and sugar are the mostly read part of labels. One of the striking facts of this survey is that 65% of people said that they would eat the snack food even they know that it is high in calorie or fat. This shows that people do not want to stop enjoying snack foods, but they would like reformulated foods without losing the taste.

On the other hand economists also analyze the economic consequences of obesity. The degree of the decline in the productivity of obese people and their additional cost of medical expenses are another effect of the increase of obesity. Since obesity is costly for both individuals and society, government action alone is not enough so it is worthy to make people conscious to prevent the increase of obesity by using different aspects. (Runge. 2007)

Nayga (1996) analyzed the nutrition label usage of household meal planners for each separate part such as calorie, fat, fiber content, ingredient, etc. The results of this study indicate that as household size increases the likelihood of using nutrition information about vitamins/minerals and sugar content increase. Nonwhite meal planners and males are less likely to use nutrition labels. Employed meal planners are less likely to

use labels most probably due to time constraint. Additionally, participants living in non-metro areas are more likely to use nutrition information for ingredients, vitamins/minerals and fiber content of the food. As age increases the likelihood of using food labels increases and higher income and higher educated main meal planners are more likely to use nutrition information.

Ordered probit and ordered logit are being used as econometrics models in the papers searching for the qualitative attributes such as consumer behaviors. Zepeda and Li (2007) used probit and ordered probit model in order to investigate the characteristics of organic and non organic food shoppers. Demographics, knowledge about organic products and food shopping habits included in the research as regressors. Marginal effect analysis results were also included in the results in order to compare the frequent and occasional organic food buyers. Nayga (1998) used ordered logit model in order to explain the consumers; use of nutrition labels both during shopping and at home. Results of this study show that more educated consumers and people on a special diet are more likely to use nutrition labels. When the time constraint considered, unemployed people are more likely to use labels more frequently compared the employed people. Additionally, people who give high importance to the price of the product are less likely to pay attention to nutrition labels. This study also suggests that individuals who gather nutrition information from books and magazines are less likely to use labels hence buy foods according to brands.

2.3 Literature Review: Turkey

Guven et al. (2008) performed a study with participants aged 11-17 (a total of 87 normal weight and 78 obese adolescents included) in order to investigate the effects of individual factors on adolescent obesity in Turkey. They found that as the education level of parents increases the probability of the participants' obesity decreases. Another finding of this study was that 66.7% of the normal weight adolescents have at least one obese person in their family, but obese participants have fewer obese people in their family. This finding of the study is explained by the effort of families to prohibit high-calorie foods to prevent obesity among the children. The occupation of the father also has an impact on the prevalence of obesity among adolescents. 26.9% of the obese participants' fathers are unskilled workers; however, this rate is only 9.2% among normal weight participants.

Another study about the national prevalence of obesity in Turkey was done by Delibasi et al. (2007). They used a representative sample of adults (older than 18 years) from the Turkish population living in urban and rural areas. In total, 8,674 people participated in this study. The results indicated that the overweight and obesity rates among adults starts to increase after 30 years of age and reaches its maximum level between ages 50-59. No difference was observed in the prevalence of being overweight and obese in rural areas and big cities. As education level increases the prevalence of obesity decreases in Turkey.

Ozgul and Aksulu (2006) conducted a survey about label usage attributes in Turkey. They concentrated on the changes of nutrition label usage from 1995 to 2005. For the comparability of the results researchers were careful to conduct the same survey

between similar sample populations both in 1995 and 2005. Results of the study point out that due to the increased awareness of the importance of healthy diet among Turkish consumers, the usage of labels on packaged food products increased. A considerable increase was observed for label usage attributes and people started to give more importance to labels. This study indicates that there is an increase for the importance level of the information about the production company and the ingredients. However, consumers decreased their self-evaluated importance level towards the information about price, serving size and expiration date, but production and expiration date are still the most important parts of the labels for Turkish food consumers. The authors also mentioned that there are very few studies done about nutrition label usage in Turkey.

Similar to the results of studies done in the US, overweight and obese people are a growing proportion of the population in Turkey, a developing country. Therefore, government and health organizations should implement mechanisms to prevent overweight and obesity epidemic.

CHAPTER 3

ECONOMETRIC MODEL

3.1 Model Specification

The objective of this study is to define a framework for the demographics and health status of consumers who are more likely to use nutrition labels and particular parts: serving size and calorie information. The dependent variables (importance of nutrition labels, calorie and serving size information) are measured on a scale that is discrete and ordinal; therefore, ordered multinomial models are estimated. The ordered logit and ordered probit models have been used extensively in the literature (Greene). For example, Nayga et. al. (1998) used an ordered logit model to identify the consumers' use of nutrition labels; additionally Zepeda and Li (2007) used the ordered probit model to study consumer preferences for organic foods. Similarly, in this study the ordered probit model is used in order to define nutrition label usage of consumers in the USA and Turkey.

The ordered probit model is based on the following implicit function:

$$y_i^* = x_i' \beta + u_i$$

In the above equation, y_i^* is the unobserved choice of individual i , β is a vector of parameters, x_i' is a matrix of explanatory variables, and u_i is the error term. In the ordered probit model, u_i has the standard normal distribution. Following Cameron and Trivedi (2005), an m -alternative ordered model has $y_i = j$ if $\alpha_{j-1} < y_i^* < \alpha_j$ where $\alpha_0 = -\infty$ and $\alpha_m = \infty$. Then the probability that y_i will be classified in a particular category j is:

$$\begin{aligned}
\Pr [y_i = j] &= \Pr [\alpha_{j-1} < y_i^* < \alpha_j] \\
&= \Pr [\alpha_{j-1} < x_i' \beta + u_i \leq \alpha_j] \\
&= \Pr [\alpha_{j-1} - x_i' \beta < u_i \leq \alpha_j - x_i' \beta] \\
&= F(\alpha_j - x_i' \beta) - F(\alpha_{j-1} - x_i' \beta)
\end{aligned}$$

where F is the cdf of u_i . The regression parameters β and the $(m - 1)$ threshold parameters $\alpha_1, \dots, \alpha_{m-1}$ are obtained by maximum likelihood methods using Stata (Cameron and Trivedi, 2009). The signs of the regression parameters β can be interpreted as determining whether or not the latent variable y^* increases with independent variables.

The marginal effects are obtained as $\frac{\partial \Pr [y_i=j]}{\partial x_i} = \{F'(\alpha_{j-1} - x_i' \beta) - F'(\alpha_j - x_i' \beta)\} \beta$

where F' denotes the derivative of F . The term in brackets can be positive or negative and therefore the signs of the coefficients do not necessarily correspond to the signs of marginal effects. Marginal effects of each variable on the different importance level sum up to zero.

3.2. Data Sources

A web survey was designed to determine and compare the nutrition label usage attributes of consumers in the USA and Turkey. The questionnaire included 25 short-answer questions on nutrition label usage and a set of demographic questions. The same set of questions was asked in both countries; questions were translated into Turkish for participants from Turkey (Survey questionnaires are given in the Appendix).

The survey for the collection of data from the USA was conducted between December, 2007 and February, 2008. Participants were reached by using e-mail lists of the University of Kentucky. In total, 437 participants answered the survey. Observations with incomplete information were deleted, so the final sample included 344 observations.

The survey for the collection of data from Turkey was conducted in March, 2009. Participants were reached by using a variety of e-mail lists including university e-mail lists. A total of 510 people participated in the survey with a final sample of 417 observations.

3.2.1 Description of Data Sets

Table 1 gives the definition for variables used in the study. Table 2 represents summary statistics and also difference of means. Table 3 shows the distribution of responses for dependent variables in each category as well as the demographics of the participants.

Data Set Collection: USA

The sample has 79% female (21% male) with an average age of 44. The average years of education are 16.3 years which corresponds to a bachelor's degree. The average annual income of the participants is \$71,500. The average household size is 2.5 people. Possibly due to the high proportion of female participants, 86% of the survey sample population is the primary grocery shopper for the household. Average time spent for grocery shopping per week is 1.5 hours. With regard to particular diet attributes, 73% of the participants claim that they have been trying to limit calorie, fat, salt (sodium) or cholesterol intake in recent days. Twenty-one percent of the participants are on a weight loss program, and only 10% say they are on a special diet due to a health condition. The BMI calculation, which is based on the height and weight given by the participants, determines that 32% and 31% of the sample population is overweight and obese, respectively. The average BMI is 27.96 corresponds to overweight. Three percent of the participants reported having heart disease, 4% diabetes, and 17% high cholesterol. To the extent that demographic characteristics in this study differ from those in the general population, the results here may not represent behavior of all U.S. consumers.

Data Set Collection: Turkey

The sample has 51% female (49% male) with an average age of 33. The average level of education is a bachelor's degree with 16.4 years. Monthly income data of the household was collected in Turkish currency; a currency rate of 1.6 was used to convert it to US\$ and multiplied by 12 to get the annual income. The average annual income of the participants is \$52,000. The average household size is 3 people. Sixty-three percent of the survey sample population is the primary grocery shopper for the household. Average time

spent for grocery shopping per week is 1.8 hours. With regard to particular diet attributes, 64% of the participants claim that they have been trying to limit calorie, fat, salt (sodium) or cholesterol intake in recent days. Twenty percent of the participants are on a weight loss program, and only 8% say they are on a special diet due to health conditions. The BMI calculation, which is based on the height and weight given by the participants, determines that 32.5% of the sample population is overweight and only 10% are obese. The average BMI is 24.07, corresponds to normal weight. Two percent of the participants reported having heart disease, 2.6% diabetes, and 9.5% high cholesterol. As in the USA survey, the demographic characteristics of the sample population may differ from the general Turkish population; therefore, the results may not represent the behavior of all Turkish consumers.

Data Set: Pooled for Comparison

As the mean values indicate above, these two data sets are similar in terms of demographics and health status (Table 2). The questions in the given surveys are identical but the time the surveys conducted is different. The only difference is the labels used in these two countries. USA follows the NLEA for food labels whereas Turkey uses the European Union (EU) food label regulations. Both styles aim to inform consumers during their food purchase. For the purpose of this study, the only difference between these two label standards is the representation of the serving size information. In the USA, different food products have different serving sizes, such as two cookies or 8 oz. of the product for a 12 oz. beverage. On the other hand, EU labels are based on 100gr. of the product for any packaged food item in the market. In Turkey, food producers have started to use labels which include nutrition information for the entire amount of the product in the

package. In spite of this difference, the purpose of both label standards is the same: to provide consumers with nutrition information about the food product that they are about to buy. Therefore these two data sets collected from USA and Turkey can be used as a pooled data set to compare label usage attributes of consumers across these two countries.

Table 4-9 show the results for the coefficient and marginal effects include ordered probit results for both separate data sets and the pooled data set. A dummy variable (USA=1 for data collected from USA, =0 otherwise.) is defined in order to determine the differences between two countries.

3.3 Variables Used in Empirical Models

There is a natural ordering among importance levels of dependent variables, nutrition labels, calorie and serving size information. A Likert scale is used with five levels in the design of survey questions: very important, somewhat important, undecided, somewhat unimportant and not important at all. After the data collection the distribution of responses for the importance levels are analyzed and the total number of levels decreased to three due to the few responses on the somewhat unimportant and not important at all categories. Thus, the last Likert Scale used in the analysis: very important, somewhat important and not important (Table 3).

3.3.1 Importance of Nutrition Labels

The distribution of responses for the importance of nutrition labels is given in Figure 3.1. It is shown that the number of American consumers who think that nutrition labels are very important is slightly more than the number of Turkish consumers. However, Table 3 shows that the distribution of responses from the USA and Turkey are indifferent from each other in term of the idea of the giving no importance to nutrition labels over all. Consumers in both countries are giving high importance to label usage during their food purchase decision.

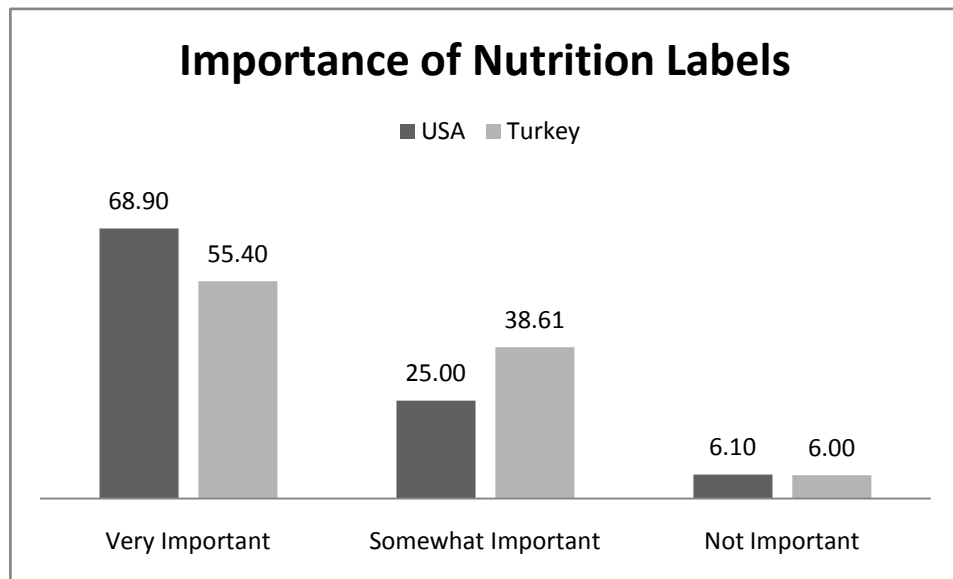


Figure 3.1: Percent Distribution of Responses for Importance of Nutrition Labels (%)

3.3.2 Importance of Calorie Information

The second dependent variable is the importance of calorie information. Figure 3.2 presents the percent distribution of the responses among three importance levels. Figure 3.2 indicates that the percentage of Turkish consumers is more for the not

important category compared to the American consumers in the same category; whereas the reverse situation occurs in the very important category. Hence, compared to Turkish consumers participated in the survey, American consumers give more importance to the calorie information indicated on the labels. Table 3 indicates that for the somewhat important category the distribution of the responses from two countries are indifferent.

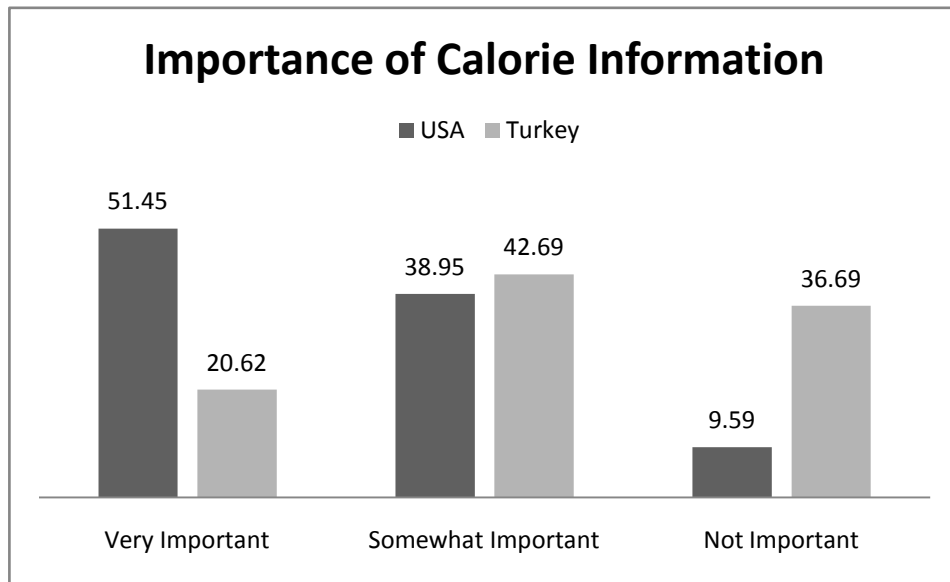


Figure 3.2: Percent Distribution of Responses for Importance of Calorie Information (%)

3.3.3 Importance of Serving Size Information

Similar to the previous two dependent variables, the distribution of the responses for importance of reading serving size information is given on the same three-level scale (Figure 3.3). Due to the difference in terms of the method indicating serving size information on the food labels in the USA and Turkey, the responses also show differences between these two countries (Table 3). Serving size is 100 grams for all the products on the Turkish market; hence Turkish consumers are less likely to think that this

piece of information is very important. On the other hand, reference serving size amounts differ among all product categories in the USA market, and American consumers are showing higher percentage for the very important category and lower percentage for the not important category. However, the distribution of responses from the two data sets is not different for the not important category.

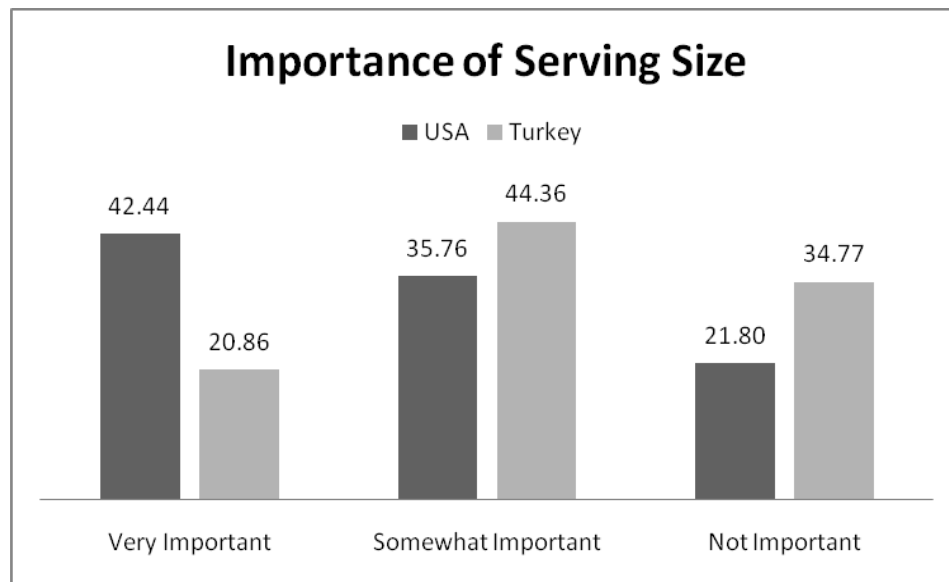


Figure 3.3: Percent Distribution of Responses for Importance of Serving Size Info. (%)

Detailed analysis and discussion of the ordered probit model results for the selected two countries and the comparisons are provided in the following section.

3.3.4 Independent Variables

Independent variables used in this study are divided into three subcategories: Demographics, Health Status and Other components of nutrition facts panel. Table 2 presents the mean of each independent variable. T-test is conducted to identify the differences among the means of the variables for the USA and Turkey. It is worth to

mention again the point that data sets collected from two countries are not representative of either nation. This may be considered as one of the shortcomings of the data sets.

Demographics include similar variables used in the previous studies done in the literature. Variables can be listed as gender (female consumers are selected as base category), age, education, income, household size. In addition to these variable “shopper” is used to identify the opinions of the participants who are the people doing the major grocery shopping for the household. Time spent on the grocery shopping per each week is also including in the model to see the impact of time. According to 2008 census results the median age of the USA are 36.8; however, the sample data set has a higher average age. In 2008 the median age in Turkey was 38.85 and the sample population has a lower average age. Additionally, there is a significant difference between the average ages of two data sets. Respondents are reached by using university e-mail lists in both countries and as a result of this the education level is higher compared to average of both nations. Education variable is not significant in any of the results this can be a due to homogenous education levels among participants. Moreover, the means of the education years in two data sets are indifferent (Table 2).

The health status subgroup has information about the health concerns of the individuals such as diabetes, heart disease, and high cholesterol. Other concerns related to health such as being on a weight loss program and having some limitations on particular intakes such as sodium, fat, etc. and time (hours) spent for exercising per each week are also added to the model. This subgroup also includes being overweight and obese for the purpose of investigating the attributes of these individuals for the selected dependent variables. In terms of the percentage of overweight participants two data sets are

indifferent; however, there is higher percentage of obese respondents in the data set collected from the USA. Additionally, two data sets are indifferent with respect to the percentage respondents with diabetes, heart disease and being on a weight loss program. Other components of nutrition panel are included in the study in terms of importance levels for the participants. The aim was to see which part of the labels leads consumers to give importance to the selected dependent variables. For instance, is serving size information important for people who are worried about their fat intake? Or, are labels important for the individuals who pay attention to the cholesterol content of the product they consume? Paying attention to calorie information by itself is not enough; consumers need to reference this information with the given serving size in order to know the calorie intake more accurately. The only common point for the other parts of the nutrition labels is health claims; the average frequencies of reading health claims are indifferent among participants from both countries. Detailed results including the coefficients for the ordered probit model and marginal effect for each importance level are given in the results section.

CHAPTER 4

EMPIRICAL RESULTS

4.1 Parameter Estimates and Marginal Effects

4.1.1 Importance of Nutrition Labels

The estimated coefficients from the ordered probit model for the importance of nutrition labels are summarized in Table 4, and marginal effects are given in Table 7. For the participants from the USA, the results indicate that nutrition labels are more important for the participants with diabetes because diabetics should monitor their diet more carefully. The results of the marginal effect analysis support this attribute. Consumers with diabetes are 24% more likely to give the highest importance to nutrition labels, and they are 22% less likely to say that labels are somewhat important. Obesity increases the risk of some diseases such as diabetes. Hence, diabetes is one of the most common diseases in the USA. The sample population of the USA has 3.7% participants who suffer from this disease, whereas this rate is only 2.3% in the sample population from Turkey. Thus, compared to Turkish participants, people who are diabetic in the USA are 34% more likely to claim that nutrition labels are highly important for them since they need to pay attention to their diet due to their particular health status.

When the labels in the USA and Turkey were compared in Chapter 1, it was easily noticed that nutrition labels have smaller fonts in Turkey compared to the USA. However, in both labels health claims are printed on the front of packages and with a larger font compared to other components of nutrition facts such as calorie, fat and protein contents. Health claims are one of the convenient pieces of information listed on the front part of food packages for both the consumers from USA and Turkey. Participants who are from the USA and read health claims are 8% more likely to think

that nutrition labels are very important. The result of the model among Turkish consumers shows that consumers who read health claims more frequently are 19% more likely to claim that labels are very important.

Additionally, individuals, from the USA, who care about their fat intake, are 12% more likely to give the highest importance to food labels. However, consumers who read carbohydrate content of the products are 4% more likely to think labels are somewhat important and 4% less likely to think they are very important. Turkish participants who pay attention to their carbohydrate consumption are 12% more likely to say that labels are very important. Compared to Turkish consumers, participants from the USA who monitor their carbohydrate intake are 16% less likely to claim that labels are very important. Additionally, Turkish individuals who give importance to protein and cholesterol information are 7% less likely to think that nutrition labels are very important. Fat content is one of the most read components of nutrition labels. Compared to Turkish consumers, people in the USA who pay attention to fat intake are 19% more likely to claim that labels are very important.

It is worth mentioning the importance of serving size because it is necessary to determine the particular intakes more accurately. Reading fat or carbohydrate information by itself is not enough; consumers should integrate this information with the listed serving size. Serving size information is easy to interpret by using labels in the USA; however, serving size is the same, 100 grams, for all products in Turkey. This leads USA consumers to use serving size information more frequently and results in their being 12% more likely to think that labels are very important compared to Turkish consumers who pay attention to serving size information.

Obese respondents from the USA and Turkey show a difference in terms of the importance of nutrition labels. Compared to Turkish obese participants, 9% of the sample population, American obese participants, 29% of the sample population, is 16% more likely to think that nutrition labels are very important.

4.1.2 Importance of Calorie Information

The results of the ordered probit analysis and marginal effects for the importance of calorie information are listed in Table 5 and Table 8, respectively. Caloric value is one of the most commonly used information, especially by female consumers. Data analysis for the coefficient estimates supports this by showing that male consumers in the USA are less likely to give importance to calorie information, which is consistent with the literature (Nayga, 1996 and Nayga et. al. 1998). Marginal effect analysis of data set collected from the USA indicates that, compared to females, males are 13% less likely to think that calorie information listed on labels is very important.

Using each piece of information listed on the nutrition facts panel requires extra time. The results of USA data set show that as time spent for grocery shopping increases by one hour, the likelihood to give the highest importance level for calorie information decreases by 8%. Compared to American consumers, as time spent for grocery shopping increases Turkish consumers are 10% more likely to give more importance to calorie information.

Turkish participants who do grocery shopping for their households are more likely to give importance to calorie information. Marginal effect analysis indicates that household members who do the majority of the grocery shopping are 6% more likely to say that calorie information is very important.

Compared to American participants, as time spent for exercising per week increases among Turkish consumers, the importance level of calorie information increases. Marginal effect analysis for the comparison of two data sets shows that one hour increase of the time spent for weekly exercise increases the likelihood of claiming the calorie information as very important by 4%.

Participants from the USA who pay attention to their cholesterol intake are 7% less likely to say that calorie information is very important. A reason for this could be that the amount of cholesterol intake is more important than calorie intake amount. However, individuals who limit their particular intakes such as sodium, fat, sugar, and who are on a weight loss program are more likely to give higher importance to calorie information. Individuals who watch their weight and who limit particular intakes are 19% and 12% more likely to claim that calorie information of the food they consume is very important, respectively.

Moreover, calorie information by itself is not sufficient for some of the consumers; they would like to know if that number of calories is coming from fat or carbohydrates. Therefore, consumers who read health claims, serving size information, fat and carbohydrate content more frequently are more likely to think that calorie information is important for them. Participants who pay attention to fat content of the products are 27% more likely to claim that calorie information is very important. Similarly, consumers who care about the carbohydrate amount in the product claim that calorie information is 10% more likely to be very important. Moreover, participants who frequently read health claims and serving size are 7% and 9% more likely to give the highest importance level to calorie information, respectively.

On the other hand, Turkish individuals who have a high cholesterol problem and who are on a weight loss program are less likely to give importance to calorie information. This may result because these individuals pay more attention to cholesterol and fat content than total caloric value of the product.

Turkish consumers who limit sugar, fat and sodium intake also monitor their calorie intake. These people are 10% less likely to say that calorie information is not important and 7% more likely to say that it is very important. However, participants those who are on a weight loss program are 6% less likely to claim that this information is very important but being obese also has a positive impact on the importance of calorie information.

Additionally, Turkish participants who pay attention to serving size and cholesterol content are 4% more likely to think that calorie content of the product is very important. However, respondents who have high cholesterol are 12% less likely to say that calorie information is very important and 22% more likely to claim that calorie information is not important. This may be so because people with high cholesterol need to pay attention to the type of fat (saturated or unsaturated) in the products rather than the total calories.

There are some differences in terms of importance of calorie information between the USA and Turkey. Compared to Turkish consumers, American consumers who have high cholesterol, those who are on a weight loss program, and those who read health claims, fat and carbohydrate content frequently are more likely to give higher importance to calorie information. Among individuals in the USA, as time spent for exercise and weekly grocery shopping increases; the likelihood to give importance to calorie

information decreases. High cholesterol is a common problem in every age group in Turkey; therefore, people have become much more concerned about their cholesterol intake, especially in recent years. The results of the comparison analysis also support this issue. Turkish respondents who give importance to cholesterol content of food products are more likely to give higher importance to caloric content compared to American participants.

4.1.3 Importance of Serving Size Information

The results of the ordered probit analysis and marginal effects for the importance of serving size information are listed in Table 6 and Table 9, respectively. As in the case of calorie information, among American participants, compared to females, males are less likely to give importance to serving size information. Marginal effect analysis indicates that males are 14% more likely to think that serving size is not important and 20% less likely to think that it is very important. Compared to Turkish males, American males are less likely to care about serving size information. Male consumers in the USA are 22% more likely to say that serving size is not important and 15% less likely to claim that this information is very important.

Diabetic consumers from the USA claim that nutrition labels are important since they need to monitor their diet carefully and read the ingredients; however, serving size information is less important for them. Those individuals are 29% more likely to think that serving size information is not important and 27% less likely to give it the highest importance level.

Serving size information needs to be used in order to determine the required intake level of major elements of diet such as carbohydrates, fat, protein and vitamins. The amount of the intake of these major ingredients can be determined more accurately with the usage of serving size information listed on the labels. Those participants both from the USA and Turkey are in different in terms of the importance of serving size information. American consumers who care about carbohydrate, protein and vitamin intake are 5% more likely to claim that serving size is very important for them. Among Turkish consumers who pay attention to fat, carbohydrate, protein and vitamin content of the food products they consume are more likely to give importance to serving size. Respondents who pay attention to fat, carbohydrate and vitamin content of the product indicate that serving size information is 6% more likely to be very important. Likely, consumers who consider the protein content are 4% more likely to say that serving size information is very important. Thus, both American and Turkish participants are around 5% more likely to claim that serving size information is very important. Moreover, American respondents who are trying to lose weight are 12% more likely to claim that serving size is very important. Being on a weight loss program indicates a difference for the importance level of serving size. Compared to Turkish individuals who are on a weight loss program, Americans are 10% less likely to say that serving size information is not important when they are trying to lose weight.

In this model, one of the independent variables is the frequency of reading serving size information in order to identify the label usage of consumers. As expected, this variable is highly significant with a positive coefficient for the data set collected from the USA. Participants who read serving size information more frequently are 33% more

likely to think that this information is very important and 17% less likely to say it is not important. Compared to Turkish consumers, American respondents who read serving size frequently are 25% more likely to give more importance to this information.

The results of the data set collected from Turkey shows that education has a positive impact on the importance of serving size information. As number of years of education increases by one, the probability of giving the highest importance to serving size information increases by 1%. However, a raise in annual income shows a negative impact. Marginal effect analysis indicates that as annual income increases by \$1,000, the probability of saying that it is very important decreases slightly by 0.02%. Annual income has a slightly more positive effect on the importance level of serving size information for American participants compared to Turkish ones. Among American consumers, a \$1,000 raise in income increases the probability of claiming that serving size information is very important by 0.03% compared to Turkish consumers.

Participants with high cholesterol also show differences between these two countries. Turkish participants who have high cholesterol are 13% more likely to claim that this information is very important. Compared to people living in Turkey with high cholesterol, those who are from the USA are 22% more likely to think that serving size is not important. Additionally, they are 15% less likely to claim that this information is very important.

There is a difference between average BMI values of sample population of two countries. Average BMI of USA data set is 27.96 —corresponds to overweight— whereas it is 24.07 —corresponds to normal weight— for data set collected from Turkey. Number of obese people in USA data set is higher which mimics the real case. Among

Turkish participants, being obese increases the importance of serving size information since calorie intake should be monitored and incorporated with serving size information. Obese individuals are 14% more likely to say that serving size is very important. On the other hand, obese participants from the USA are 12% less likely to say that serving size information is very important. This result may be an indicator of the higher BMI rates among individuals in the USA. The majority of food packages are larger in the USA compared to Turkey; however, serving sizes are very small compared to the whole content of the product so that caloric content is low at first glance. But consumers, especially who are overweight or obese may be more likely to consume more than the indicated serving size. Additionally, paying less attention to this information increases the probability of gaining more calories than written on the label. On the other hand, participants in the USA who read serving size more frequently are 25% more likely to claim that this piece of information is very important.

CHAPTER 5

CONCLUSION

5.1 Summary

The prevalence of obesity has increased both in developed and developing countries. This thesis is a cross-country study of USA and Turkey, a developing country faced with an increasing obesity rate in the last decade. Basically, obesity can be defined as an imbalance between energy intake from the food consumed and the energy used by daily activities. There are many different contributing reasons for the obesity epidemic, including genetic and environmental factors. Lifestyle and choice of diet are factors that an individual can modify the impact on his/her BMI index. Discovering the link between the nutrition content of the food consumed and an individual's health status may increase the awareness of consumers for the nutrition fact panels listed on food packages.

Thus, this study concentrates on the usage of nutrition labels which is related to the process of choosing foods in diet decisions. The aim of the study is to investigate the effect of demographics and health issues, particularly being obese, on label usage in the USA and Turkey. Another important point that this study investigates is the relationship between the importance of calorie information and serving size. Using these two pieces of information integrated to each other is essential for the purpose of indentifying the calorie intake in a more precise way.

The importance levels used in the analysis are discrete and ordinal; therefore, ordered probit models are used to explain the impact of demographics, health status and other components of the nutrition fact panels on the importance of food labels, calorie and serving size information.

5.2 Conclusions

The main goal of this study is to draw attention to the importance of nutrition labels and the frequency of reading serving size information shown on these labels. This study is designed to determine the relationship between demographics and the importance of nutrition information listed on food packages. Demographics include particular health problems such as overweight, obesity, and heart disease. The conclusions provide answers to the objectives presented in Chapter 1 based on the empirical results given in Chapter 4.

Regarding the objective of defining the impact of demographics on nutrition label importance, the results show that American male consumers pay less attention to label usage compared to female consumers. They are 13% less likely to give importance to calorie content listed on the labels and 23% more likely to say that serving size information is not important. Defining the effects of health concerns on label usage is also one of the objectives of this study. According to the empirical results, compared to Turkish consumers, individuals who have high cholesterol are 22% more likely to claim that calorie information is very important; however, these participants are 15% less likely to think that serving size is very important. The importance of other components of a nutrition fact panel is also included as a regressor. Participants, both from the USA and Turkey, who give importance to fat, carbohydrate and vitamin content of foods, are 5% more likely to say that serving size is very important.

Lastly, the most important result of this study concerns the linkage between obesity and the integrated usage of calorie and serving size information. The empirical results indicate that compared to Turkish consumers, obese consumers in the USA are

16% more likely to say that calorie information is very important; however, these consumers are 12% less likely to think that reference serving size information is very important. This result may be an explanation of the higher obesity rates in the USA due to higher calorie intake. Drawing consumers' attention to the use of nutrition labels and serving size information, and make better decisions regarding a healthy diet, may help in decreasing obesity rates and related health problems.

Chapter 1 gives summarized information about regulations determining the reference serving sizes in the USA. These reference amounts are determined according to the 1977-1978 and the 1987-1988 Nationwide Food Consumption Survey conducted by the U.S. Department of Agriculture. There have been big changes observed about the obesity prevalence and portion size changes in the food market since then (Young and Nestle, 2002).

In addition to findings in literature, the result of this study shows that obese people, who are more likely to consume more food than the given reference serving size, give less importance to serving size information. If the increased portion sizes are considered then controlling the food consumption amount by the given reference serving size amounts has become more difficult.

There can be two suggestions to prevent the increasing obesity problem in relation to larger portions in the food market. The first one may be modifying serving sizes according to the increased portion sizes and increase the awareness of people to use this piece of information. Thus, more people would start to notice the connection between calorie intake and the amount they consume in comparison to the given reference serving size. The second suggestion would be to increase the number of smaller portion products

in the market. However, this might have an impact on the price due to additional packaging costs and also consumers who care about environmental issues may not prefer these products. On the other hand, consumers who are more concerned about their diet and pay attention to nutrition labels may agree with this kind of application.

This study aims to provide a framework to explain the demographics of consumers who are more likely to give importance to nutrition labels, calorie information and serving size information. Findings can provide useful information to policy makers, agribusinesses, manufacturers and marketing professionals. Food packages are one of the convenient points to present the benefits and potential differences of your product among your rivals in the market. Health claims and nutrition labels are crucial means to attract the attention of target consumer groups. Better understanding of consumer responses to nutrition labels and serving size information may help niche marketing and thus improve market efficiency. Designing the package and display the information on the labels and packages in the way that consumers can understand and interpret easily may help manufacturers and marketing people to increase the effectiveness of the investment on the packaging. It might lead to further consumer and producer benefits by broadening communication channels through nutrition labels. Results of this study may guide manufacturers, R&D and marketing departments to increase the effectiveness of their food label innovations in the market. Policy makers may search for different representation ways of the nutrition information that would be preferred to be used by more people. Labels may also play a role to provide some tips that can be beneficial to decrease the obesity rates and increase the importance of healthier diet choices.

5.3 Suggestions for Further Research

Additional research in this field will help us to deepen the knowledge about the relationship between nutrition label usage and particular health concerns including obesity. One of the drawbacks of the data sets used in this study is that they do not represent the overall population in either of the countries. Increasing the number of observations and gathering a national representative data may help to indicate more precise results for the objective of this study. Another suggestion may be to use Weighted Maximum Likelihood method to produce a national representative data set.

A more specific investigation with similar questions could be done to investigate label usage attributes for healthy products versus snacks. For instance, data could be collected based on selected food products such as vegetables, ready to eat meals, functional foods, beverages, candies, chips, etc. This could provide information on the product level and may be more useful for marketing departments and policy makers.

Without question, any study that can contribute literature toward a sustainable solution for the global obesity epidemic will be vital. Increase in the number of cross-country studies may provide beneficial information about different cultures' lifestyles and application in their policies. Other countries may benefit from these diversified applications to improve their solutions in order to decrease the rates of obesity and related health problems all over the world.

Table 1. Description of Variables

Variable	Description
Dependent Variables	
Importance of Nutrition Labels	3 Importance Levels are used in the analysis: Very Important, Somewhat Important, Not Important.
Importance of Calorie Info.	
Importance of Serving Size	
Independent Variables	
Demographics	
Male	1 if respondent is male, 0 if respondent is female
Age	Age of the respondent in years
Education	Education level of the respondent in years
Income	Annual household income (\$ in thousands)
Household size	Household size of the respondent
Shopper	1 if respondent does grocery shopping for house hold
Time	Total time spend for grocery shopping per week
Health Status	
Limitation	1 if respondent tries to limit certain intakes, 0 otherwise
Overweight	1 if respondent is overweight, 0 otherwise
Obesity	1 if respondent is obese, 0 otherwise
Heart Disease	1 if respondent has heart disease problem, 0 otherwise
Diabetes	1 if respondent has diabetes, 0 otherwise
High Cholesterol	1 if respondent has high cholesterol problem, 0 otherwise
Weight Loss	1 if respondent is on weight loss program, 0 otherwise
Exercise	Number of hours spent for exercise per week
Other components of Nutrition Facts Panel	
Importance of Total Fat	5 Importance Levels are used in the analysis: Very Important, Somewhat Important, Undecided, Somewhat Unimportant, Not Important at all.
Importance of Carbohydrate	
Importance of Protein	
Importance of Vitamin	
Importance of Cholesterol	
Freq. of Read Health Claims	Frequency of reading these components are measured in 5 levels: Always, Often, Sometimes, Rarely, Never
Freq. of Read Serving Size	

Table 2. Summary Statistics and Difference of Means

Variable	Mean		Std. Dev.		Comparison	
	USA	TR	USA	TR	Difference	t-test
Dependent Variables (Importance of ...)						
Nutrition Labels	4.63	4.49	0.59	0.60	0.14**	-3.04
Calorie Info.	4.41	3.83	0.65	0.74	0.58**	-11.27
Serving Size Info.	4.21	3.86	0.77	0.73	0.35**	-6.29
Independent Variables						
Demographics						
Male	0.21	0.49	0.41	0.50	-0.28**	8.31
Age	44.32	33.02	11.91	10.80	11.30**	-13.77
Education	16.43	16.48	2.58	2.36	-0.05	0.52
Income	71.23	52.03	36.73	19.26	19.20**	-9.16
Household size	2.56	3.01	1.19	1.17	-0.45**	5.01
Shopper	0.87	0.63	0.33	0.48	0.24**	-7.72
Time	1.48	1.81	0.78	1.02	-0.33**	4.64
Health Status						
Limitation	0.73	0.63	0.44	0.48	0.10**	-2.61
Overweight	0.33	0.32	0.47	0.46	0.01	-0.41
Obesity	0.29	0.09	0.45	0.29	0.20**	-6.91
Heart Disease	0.03	0.02	0.17	0.15	0.01	-0.67
Diabetes	0.04	0.02	0.20	0.15	0.02	-1.11
High Cholesterol	0.16	0.09	0.36	0.29	0.07**	-2.88
Weight Loss	0.21	0.19	0.41	0.39	0.02	-0.44
Exercise	1.32	1.57	1.60	1.41	-0.25**	2.49
Other components of Nutrition Facts Panel						
Total Fat	4.44	3.76	0.81	1.09	0.64**	-9.42
Carbohydrate	3.56	3.25	1.16	1.12	0.31**	-3.71
Protein	3.67	3.47	1.11	1.11	0.20**	-2.28
Vitamin	3.64	3.82	1.16	1.05	-0.18**	2.46
Cholesterol	3.77	3.60	1.16	1.12	0.17**	-2.06
Freq. of Reading Health Claims	3.49	3.45	0.98	1.14	0.04	-0.41
Freq. of Reading Serving Size	3.70	2.84	1.05	1.22	0.86**	-10.25
Number of obs.	344	417			761	

Note: ** implies means are different from each other at 5% significance level. (Ho: Difference=0)

Table 3. Percent Distribution of the Responses for Dependent Variables

Importance Levels	Nutrition Labels			Calorie Information			Serving Size Information		
	USA	Turkey	Comp.	USA	Turkey	Comp.	USA	Turkey	Comp.
Very Important	68.90	55.40	13.50** (3.80)	51.45	20.62	30.83** (8.92)	42.44	20.86	21.58** (6.42)
Somewhat Important	25.00	38.61	-13.61** (-3.99)	38.95	42.69	-3.74 (-1.04)	35.76	44.36	-8.60** (-2.40)
Not Important	6.10	6.00	0.10 (0.57)	9.60	36.69	-27.29** (-8.65)	21.80	34.77	-12.97 (0.79)

Note: * implies there is difference between two proportions at 5% significance level. (Ho: Difference=0). Calculated z-values are given in the parenthesis.

Table 4. Ordered Probit Results for Importance of Nutrition Labels

Variables	USA		Turkey		Comparison	
	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.
Demographics						
Male	0.1447	0.2207	-0.1436	0.1326	0.2927	0.2580
Age	-0.0103	0.0073	0.0015	0.0066	-0.0122	0.0099
Education	0.0356	0.0330	0.0156	0.0279	0.0227	0.0432
Income	0.0010	0.0025	-0.0006	0.0035	0.0017	0.0043
Household size	-0.0388	0.0698	-0.0435	0.0531	0.0019	0.0878
Shopper	0.3528	0.2312	0.0948	0.1329	0.2778	0.2670
Time	-0.0195	0.1007	-0.0285	0.0613	0.0044	0.1176
Health Status						
Limitation	-0.2053	0.1859	-0.0042	0.1301	-0.2118	0.2274
Overweight	0.2176	0.1907	0.1419	0.1446	0.0838	0.2393
Obesity	0.3031	0.2055	-0.1679	0.2183	0.4694	0.2995
Heart Disease	-0.4499	0.4035	-0.3019	0.4020	-0.1787	0.5696
Diabetes	1.2234**	0.6154	-0.4323	0.4147	1.6820**	0.7449
High Cholesterol	0.1466	0.2313	0.1851	0.2224	-0.0297	0.3208
Weight Loss	0.1224	0.2090	0.0034	0.1647	0.1169	0.2661
Exercise	0.0878	0.0559	-0.0219	0.0437	0.1105	0.0709
Other components of Nutrition Facts Panel						
Total Fat	0.3740**	0.1049	-0.1234	0.0840	0.5147**	0.1345
Carbohydrate	-0.1343*	0.0802	0.3107**	0.0878	-0.4422**	0.1187
Protein	-0.1225	0.0927	-0.1672*	0.0985	0.0357	0.1351
Vitamin	0.1349	0.0849	0.0422	0.0840	0.0977	0.1195
Cholesterol	0.0073	0.0841	-0.1908**	0.0846	0.1914	0.1191
Freq. of Reading	0.2438**	0.0884	0.4833**	0.0579	-0.2130**	0.1047
Health Claims						
Freq. of Reading	0.3792**	0.0901	0.0764	0.0514	0.3197**	0.1035
Serving Size						
Intercept 1	2.1265		-0.4425		-0.3804	
Intercept 2	3.4845		1.2432		1.1724	
N	344		417		761	
Pseudo R2	0.2020		0.1362		0.1725	

Note: (**) implies statistically significant at 0.05 level and (*) implies statistically significant at 0.10 level.

Table 5. Ordered Probit Results for Importance of Calorie Information

Variables	USA		Turkey		Comparison	
	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.
Demographics						
Male	-0.3332*	0.1992	-0.1871	0.1223	-0.0997	0.2302
Age	-0.0078	0.0065	0.0027	0.0060	-0.0997	0.0088
Education	-0.0043	0.0307	-0.0080	0.0258	0.0041	0.0397
Income	0.0028	0.0023	-0.004	0.0032	0.0077*	0.0039
Household size	0.0502	0.0656	-0.0402	0.0482	0.0883	0.0807
Shopper	0.1963	0.2247	0.2350*	0.1226	-0.0710	0.2524
Time	-0.1971**	0.0892	0.089	0.0567	-0.2769**	0.1041
Health Status						
Limitation	0.3152*	0.1711	0.2680**	0.1201	-0.0152	0.2057
Overweight	0.1038	0.1755	0.1545	0.1322	-0.0692	0.2179
Obesity	0.0857	0.1898	0.3502*	0.2070	-0.2944	0.2792
Heart Disease	-0.2384	0.3934	0.0112	0.3939	-0.2372	0.5541
Diabetes	-0.2267	0.3726	0.5388	0.3655	-0.8034	0.5199
High Cholesterol	0.2223	0.2076	-0.5768**	0.2095	0.8042**	0.2930
Weight Loss	0.4881**	0.1966	-0.2589*	0.1490	0.7148**	0.2440
Exercise	0.0573	0.0504	0.1565**	0.0407	-0.1107*	0.0644
Other components of Nutrition Facts Panel						
Total Fat	0.6825**	0.1074	0.0051	0.0749	0.6107**	0.1285
Carbohydrate	0.2635**	0.0732	-0.0979	0.0806	0.3419**	0.1080
Protein	-0.1322	0.0846	-0.0100	0.0894	-0.1066	0.1221
Vitamin	-0.0182	0.0787	0.0316	0.0762	-0.0577	0.1090
Cholesterol	-0.1727**	0.0786	0.1402*	0.0772	-0.3051**	0.1094
Freq. of Reading	0.1832**	0.0811	-0.0751	0.0501	0.2385**	0.0938
Health Claims						
Freq. of Reading	0.2311**	0.0811	0.1557**	0.0474	0.0448	0.0921
Serving Size						
Intercept 1	2.6196		0.3104		0.2807	
Intercept 2	4.4754		1.5844		1.7295	
N	344		417		761	
Pseudo R2	0.2630		0.069		0.2023	

Note: (**) implies statistically significant at 0.05 level and (*) implies statistically significant at 0.10 level.

Table 6. Ordered Probit Results for Importance of Serving Size Information

Variables	USA		Turkey		Comparison	
	Coefficient	Std. Err.	Coefficient	Std. Err.	Coefficient	Std. Err.
Demographics						
Male	-0.6020**	0.2082	0.0708	0.1287	-0.6683**	0.2443
Age	0.0059	0.0065	0.0023	0.0063	0.0035	0.0091
Education	0.0258	0.0310	0.0478*	0.0271	-0.0225	0.0411
Income	0.0009	0.0022	-0.0098**	0.0034	0.0108**	0.0041
Household size	0.0530	0.0671	-0.0347	0.0510	0.0875	0.0842
Shopper	-0.2063	0.2355	-0.0429	0.1286	-0.1608	0.2680
Time	0.0638	0.0933	0.0127	0.0593	0.0500	0.1105
Health Status						
Limitation	0.0620	0.1734	0.0380	0.1255	0.0229	0.2138
Overweight	0.1095	0.1766	0.0732	0.1381	0.0353	0.2241
Obesity	0.0534	0.1913	0.5018**	0.2142	-0.4528	0.2869
Heart Disease	0.1442	0.4500	0.4708	0.3957	-0.3301	0.5988
Diabetes	-0.9998**	0.3483	-0.3741	0.4146	-0.6095	0.5399
High Cholesterol	-0.1562	0.2095	0.4912**	0.2088	-0.6497**	0.2957
Weight Loss	0.3195*	0.1839	-0.1023	0.1561	0.4199*	0.2410
Exercise	-0.0368	0.0500	0.0016	0.0421	-0.0382	0.0654
Other components of Nutrition Facts Panel						
Total Fat	0.0766	0.1080	0.2539**	0.0814	-0.1795	0.1351
Carbohydrate	0.1319*	0.0717	0.2832**	0.0823	-0.1555	0.1087
Protein	0.1431*	0.0820	0.1704*	0.0907	-0.0297	0.1220
Vitamin	0.1299*	0.0767	0.2737**	0.0833	-0.1464	0.1130
Cholesterol	-0.0406	0.0784	-0.0780	0.0811	0.0391	0.1127
Freq. of Reading	-0.0306	0.0808	-0.0724	0.0529	0.0427	0.0965
Health Claims						
Freq. of Reading	0.8928**	0.0918	0.0491	0.0496	0.8336**	0.1009
Serving Size						
Intercept 1	4.3731		3.0687		3.0794	
Intercept 2	5.9844		4.6179		4.6512	
N	344		417		761	
Pseudo R2	0.3253		0.2005		0.2765	

Note: (**) implies statistically significant at 0.05 level and (*) implies statistically significant at 0.10 level.

Table 7. Marginal Effects for Importance of Nutrition Labels

Variable	Very Important			Somewhat Important			Not Important		
	USA	Turkey	Comp.	USA	Turkey	Comp.	USA	Turkey	Comp.
Demographics									
Male	0.0459 (0.0679)	-0.0565 (0.0521)	0.1032 (0.0852)	-0.0386 (0.0577)	0.0460 (0.0424)	-0.0886 (0.0752)	-0.0073 (0.0104)	0.0105 (0.0099)	-0.0146 (0.0103)
Age	-0.0033 (0.0024)	0.0006 (0.0026)	0.0045 (0.0037)	0.0028 (0.0020)	-0.0005 (0.0021)	0.0037 (0.0030)	0.0005 (0.0004)	-0.0001 (0.0004)	0.0007 (0.0006)
Education	0.0116 (0.0107)	0.0061 (0.0110)	0.0084 (0.0161)	-0.0096 (0.0090)	-0.0050 (0.0089)	-0.0070 (0.0134)	-0.0019 (0.0018)	-0.0011 (0.0020)	-0.0014 (0.0027)
Income	0.0003 (0.0008)	-0.0002 (0.0013)	0.0006 (0.0016)	-0.0002 (0.0006)	0.0002 (0.0011)	-0.0005 (0.0013)	0.0001 (0.0001)	0.0001 (0.0002)	-0.0001 (0.0002)
Household size	-0.0126 (0.0227)	-0.0171 (0.0209)	0.0007 (0.0326)	0.0105 (0.0189)	0.0139 (0.0170)	-0.0006 (0.0272)	0.0021 (0.0038)	0.0031 (0.0039)	-0.0001 (0.0054)
Shopper	0.01234 (0.0856)	0.0374 (0.0525)	0.1019 (0.0962)	-0.0982 (0.0652)	-0.0303 (0.0424)	-0.0854 (0.0811)	-0.0251 (0.0214)	-0.0070 (0.0102)	-0.0165 (0.0154)
Time	-0.0063 (0.0328)	-0.0112 (0.0241)	0.0016 (0.0437)	0.0053 (0.0273)	0.0091 (0.0197)	-0.0013 (0.0364)	0.0010 (0.0055)	0.0020 (0.0045)	0.0002 (0.0073)
Health Status									
Limitation	-0.0648 (0.0568)	-0.0016 (0.0513)	-0.0796 (0.0863)	0.0545 (0.0487)	0.0013 (0.0418)	0.0654 (0.0699)	0.0103 (0.0088)	0.0003 (0.0094)	0.0142 (0.0165)
Overweight	0.0693 (0.0591)	0.0556 (0.0563)	0.0308 (0.0869)	-0.0581 (0.0501)	-0.0457 (0.0467)	-0.0258 (0.0736)	-0.0111 (0.0095)	-0.0099 (0.0098)	-0.0049 (0.0133)
Obesity	0.0945 (0.0609)	-0.0666 (0.0870)	0.1602* (0.0914)	-0.0797 (0.0523)	0.0527 (0.0668)	-0.1389* (0.0821)	-0.0147 (0.0095)	0.0138 (0.0203)	-0.0213** (0.0101)
Heart Disease	-0.1629 (0.1569)	-0.1200 (0.1588)	-0.0683 (0.2227)	0.1255 (0.1104)	0.0913 (0.1111)	0.0551 (0.1737)	0.0373 (0.0475)	0.0286 (0.0481)	0.0131 (0.0489)
Diabetes	0.2431** (0.0543)	-0.1709 (0.1589)	0.3438** (0.0439)	-0.2180** (0.0522)	0.1251 (0.1010)	-0.3151 (0.0430)	-0.0250** (0.0079)	0.0457 (0.0597)	-0.0287** (0.0057)

Table 7. Marginal Effects for Importance of Nutrition Labels (cont.)

Variable	Very Important			Somewhat Important			Not Important		
Health Status (cont.)									
	USA	Turkey	Comp.	USA	Turkey	Comp.	USA	Turkey	Comp.
High Cholesterol	0.0462 (0.0703)	0.0717 (0.0845)	-0.0111 (0.1204)	-0.0389 (0.0600)	-0.0600 (0.0724)	0.0092 (0.0994)	-0.0072 (0.0105)	-0.0117 (0.0124)	0.0019 (0.0210)
Weight Loss	0.0390 (0.0649)	0.0013 (0.0649)	0.0426 (0.0951)	-0.0327 (0.0550)	-0.0010 (0.0529)	-0.0360 (0.0813)	-0.0062 (0.0100)	-0.0002 (0.0119)	-0.0066 (0.0138)
Exercise	0.0286 (0.0181)	-0.0086 (0.0172)	0.0411 (0.0263)	-0.0238 (0.0152)	0.0070 (0.0140)	-0.0342 (0.0220)	-0.0048 (0.0032)	0.0016 (0.0032)	-0.0068 (0.0045)
Other components of Nutrition Facts Panel									
Total Fat	0.1220** (0.0345)	-0.0486 (0.0202)	0.1915** (0.0500)	-0.1015** (0.0298)	0.0396 (0.0271)	-0.1594** (0.0425)	-0.0204** (0.0073)	0.0090 (0.0063)	-0.0321** (0.0095)
Carbohydrate	-0.0438* (0.0261)	0.1224** (0.0346)	-0.1645** (0.0441)	0.0364* (0.0219)	-0.0997** (0.0291)	0.1369** (0.0364)	0.0073 (0.0046)	-0.0227** (0.0075)	0.0276** (0.0083)
Protein	-0.0399 (0.0301)	-0.0659** (0.0388)	0.0133 (0.0503)	0.0332 (0.0252)	0.0536* (0.0318)	-0.0110 (0.0418)	0.0067 (0.0052)	0.0122 (0.0075)	-0.0022 (0.0084)
Vitamin	0.0440 (0.0276)	0.0166 (0.0331)	0.0363 (0.0444)	-0.0366 (0.0231)	-0.0135 (0.0270)	-0.0302 (0.0370)	-0.0073 (0.0049)	-0.0030 (0.0061)	-0.0061 (0.0075)
Cholesterol	0.0023 (0.0274)	-0.0752** (0.0333)	0.0721 (0.0433)	-0.0019 (0.0228)	0.0612 (0.0275)	-0.0592 (0.0370)	-0.0004 (0.0046)	0.0139** (0.0066)	-0.0119 (0.0076)
Freq. of Reading	0.0795** (0.0288)	0.1904** (0.0228)	-0.0792** (0.0390)	-0.0661** (0.0245)	-0.1551** (0.0218)	0.0659** (0.0326)	-0.0133** (0.0057)	-0.0353** (0.0047)	0.0133* (0.0068)
Health Claims	0.1237** (0.0291)	0.0301 (0.0202)	0.1189** (0.0383)	-0.1029** (0.0255)	-0.0245 (0.0166)	-0.0990** (0.0323)	-0.0207** (0.0067)	-0.0055 (0.0038)	-0.0199** (0.0070)
Serving Size									

Note: (**) implies statistically significant at 0.05 level and (*) implies statistically significant at 0.10 level.

Table 8. Marginal Effects for Importance of Calorie Information

Variable	Very Important			Somewhat Important			Not Important		
	USA	Turkey	Comp.	USA	Turkey	Comp.	USA	Turkey	Comp.
Demographics									
Male	-0.1316*	-0.0498	-0.0342	0.1028*	-0.0196	0.0077	0.0288	0.0694	0.0264
	(0.0772)	(0.0326)	(0.0773)	(0.0576)	(0.0135)	(0.0141)	(0.0210)	(0.0453)	(0.0633)
Age	-0.0031	0.0007	-0.0034	0.0025	0.0002	0.0009	0.0005	-0.0010	0.0025
	(0.0026)	(0.0016)	(0.0031)	(0.0021)	(0.0006)	(0.0008)	(0.0004)	(0.0022)	(0.0022)
Education	-0.0017	-0.0021	0.0014	0.0014	-0.0008	-0.0003	0.0003	0.0029	-0.0010
	(0.0122)	(0.0068)	(0.0139)	(0.0100)	(0.0027)	(0.0037)	(0.0022)	(0.0095)	(0.0101)
Income	0.0011	-0.0012	0.0027*	-0.0009	-0.0005	-0.0007*	-0.0002	0.0018	-0.0019*
	(0.0009)	(0.0008)	(0.0014)	(0.0007)	(0.0003)	(0.0004)	(0.0001)	(0.0012)	(0.0010)
Household size	0.0200	-0.0107	0.0309	-0.0164	-0.0042	-0.0084	-0.0036	0.0149	-0.0225
	(0.0261)	(0.0128)	(0.0283)	(0.0215)	(0.0051)	(0.0078)	(0.0047)	(0.0179)	(0.0206)
Shopper	0.0779	0.0609**	-0.0248	-0.0617	0.0271*	0.0065	-0.0161	-0.0881*	0.0183
	(0.0884)	(0.0310)	(0.0878)	(0.0676)	(0.0163)	(0.0224)	(0.0212)	(0.0463)	(0.0655)
Time	-0.0786**	0.0238	-0.0972**	0.0644**	0.0093	0.0263**	0.0142**	-0.0332	0.0708**
	(0.0356)	(0.0151)	(0.0366)	(0.0296)	(0.0063)	(0.0114)	(0.0070)	(0.0211)	(0.0267)
Health Status									
Limitation	0.1248*	0.0691**	-0.0053	-0.0987*	0.0315*	0.0014	-0.0260	-0.1006**	0.0039
	(0.0668)	(0.0300)	(0.0720)	(0.0515)	(0.0167)	(0.0191)	(0.0167)	(0.0454)	(0.0528)
Overweight	0.0413	0.0422	-0.0239	-0.0341	0.0145	0.0058	-0.0072	-0.0567	0.0181
	(0.0699)	(0.0369)	(0.0745)	(0.0580)	(0.0116)	(0.0163)	(0.0120)	(0.0479)	(0.0582)
Obesity	0.0342	0.1047	-0.0970	-0.0282	0.0169**	0.0141**	-0.0059	-0.1217*	0.0828
	(0.0756)	(0.0682)	(0.0854)	(0.0628)	(0.0082)	(0.0056)	(0.0128)	(0.0662)	(0.0855)
Heart Disease	-0.0942	0.0030	-0.0779	0.0731	0.0011	0.0107**	0.0210	-0.0041	0.0671
	(0.1527)	(0.1061)	(0.1685)	(0.1111)	(0.0396)	(0.0054)	(0.0420)	(0.1457)	(0.1714)
Diabetes	-0.0897	0.1738	-0.2137**	0.0699	0.0007	-0.0560	0.0198	-0.1745	0.2697
	(0.1451)	(0.1351)	(0.0916)	(0.1065)	(0.0389)	(0.1132)	(0.0390)	(0.0981)	(0.2037)

Table 8. Marginal Effects for Importance of Calorie Information (cont.)

Variable	Very Important			Somewhat Important			Not Important		
Health Status (cont.)									
	USA	Turkey	Comp.	USA	Turkey	Comp.	USA	Turkey	Comp.
High Cholesterol	0.0883 (0.0817)	-0.1219** (0.0340)	0.3084** (0.1125)	-0.0743 (0.0705)	-0.1026** (0.0516)	-0.1655** (0.0815)	-0.0140 (0.0117)	0.2246** (0.0821)	-0.1429** (0.0332)
Weight Loss	0.1911** (0.0740)	-0.0642* (0.0343)	0.2730** (0.0951)	-0.1634** (0.0664)	-0.0343 (0.0243)	-0.1380** (0.0652)	-0.0276** (0.0106)	0.0985* (0.0577)	-0.1349** (0.0320)
Exercise	0.0228 (0.0201)	0.0417** (0.0110)	-0.0388* (0.0225)	-0.0187 (0.0165)	0.0163** (0.0056)	0.0105* (0.0064)	-0.0041 (0.0037)	-0.0581** (0.0151)	0.0283* (0.0165)
Other components of Nutrition Facts Panel									
Total Fat	0.2722** (0.0428)	0.0013 (0.0199)	0.2143** (0.0453)	-0.2231** (0.0394)	0.0005 (0.0078)	-0.0581** (0.0171)	-0.0491** (0.0127)	-0.0019 (0.0278)	-0.1562** (0.0333)
Carbohydrate	0.1051** (0.0292)	-0.0261 (0.0215)	0.1200** (0.0380)	-0.0861** (0.0250)	-0.0102 (0.0087)	-0.0325** (0.0123)	-0.0189** (0.0064)	0.0364 (0.0299)	-0.0874** (0.0277)
Protein	-0.0527 (0.0337)	-0.0026 (0.0238)	-0.0374 (0.0428)	0.0432 (0.0279)	-0.0010 (0.0093)	0.0101 (0.0118)	0.0095 (0.0063)	0.0037 (0.0332)	0.0272 (0.0312)
Vitamin	-0.0072 (0.0337)	0.0084 (0.0203)	-0.0202 (0.0382)	0.0059 (0.0257)	0.0033 (0.0080)	0.0055 (0.0104)	0.0013 (0.0056)	-0.0117 (0.0283)	0.0147 (0.0278)
Cholesterol	-0.0689** (0.0313)	0.0374* (0.0206)	-0.1071** (0.0384)	0.0564** (0.0261)	0.0146* (0.0087)	0.0290** (0.0120)	0.0124** (0.0062)	-0.0521 (0.0287)	0.0780** (0.0281)
Freq. of Reading Health Claims	0.0731** (0.0323)	-0.0200 (0.0134)	0.0837** (0.0329)	-0.0599** (0.0270)	-0.0078 (0.0055)	-0.0227** (0.0101)	-0.0132** (0.0063)	0.0279 (0.0186)	-0.0610** (0.0240)
Freq. of Reading Serving Size	0.0922** (0.0323)	0.0415** (0.0127)	0.0157 (0.0323)	-0.0755** (0.0272)	0.0163** (0.0061)	-0.0042 (0.0088)	-0.0166** (0.0067)	-0.0578** (0.0176)	-0.0114 (0.0235)

Note: (**) implies statistically significant at 0.05 level and (*) implies statistically significant at 0.10 level.

Table 9. Marginal Effects for Importance of Serving Size Information

Variable	Very Important			Somewhat Important			Not Important		
	USA	Turkey	Comp.	USA	Turkey	Comp.	USA	Turkey	Comp.
Demographics									
Male	-0.2026** (0.0619)	0.0157 (0.0286)	-0.1553** (0.0421)	0.0636** (0.0191)	0.0095 (0.0174)	-0.0730 (0.0529)	0.1390** (0.0580)	-0.0253 (0.0460)	0.2284** (0.0929)
Age	0.0022 (0.0024)	0.0005 (0.0014)	0.0010 (0.0027)	-0.0010 (0.0012)	0.0003 (0.0008)	-0.0000 (0.0001)	-0.0011 (0.0012)	-0.0008 (0.0022)	-0.0010 (0.0026)
Education	0.0095 (0.0114)	0.0106* (0.0060)	-0.0066 (0.0122)	-0.0046 (0.0056)	0.0064* (0.0039)	0.0001 (0.0005)	-0.0048 (0.0059)	-0.0171* (0.0097)	0.0065 (0.0119)
Income	0.0003 (0.0008)	-0.0021** (0.0007)	0.0032** (0.0012)	-0.0001 (0.0004)	-0.0013** (0.0005)	-0.0001 (0.0002)	-0.0001 (0.0004)	0.0035** (0.0012)	-0.0031** (0.0012)
Household size	0.0196 (0.0248)	-0.0077 (0.0113)	0.0259 (0.0250)	-0.0095 (0.0122)	-0.0047 (0.0069)	-0.0006 (0.0019)	-0.0100 (0.0127)	0.0124 (0.0182)	-0.0253 (0.0243)
Shopper	-0.0781 (0.0910)	-0.0095 (0.0289)	-0.0470 (0.0772)	0.0426 (0.0547)	-0.0057 (0.0168)	-0.0001 (0.0040)	0.0355 (0.0369)	0.0153 (0.0457)	0.0471 (0.0796)
Time	0.0235 (0.0345)	0.0028 (0.0131)	0.0148 (0.0327)	-0.0114 (0.0169)	0.0013 (0.0080)	0.0003 (0.0013)	-0.0121 (0.0177)	-0.0045 (0.0212)	-0.0144 (0.0319)
Health Status									
Limitation	0.0228 (0.0633)	0.0084 (0.0275)	0.0068 (0.0638)	-0.0108 (0.0293)	0.0052 (0.0175)	-0.0002 (0.0023)	-0.0119 (0.0340)	-0.0136 (0.0451)	-0.0066 (0.0615)
Overweight	0.0407 (0.0660)	0.0164 (0.0315)	0.0105 (0.0677)	-0.0204 (0.0341)	0.0095 (0.0173)	-0.0004 (0.0041)	-0.0203 (0.0321)	-0.0260 (0.0487)	-0.0101 (0.0635)
Obesity	0.0198 (0.0712)	0.1355** (0.0677)	-0.1162* (0.0622)	-0.0098 (0.0360)	0.0236 (0.0161)	0.0307 (0.0408)	-0.0100 (0.0352)	-0.1591** (0.0584)	0.1470 (0.1019)
Heart Disease	0.0545 (0.1737)	0.1296 (0.1290)	-0.0853 (0.1316)	-0.0294 (0.1021)	0.0175 (0.0281)	-0.0215 (0.0814)	-0.0251 (0.0717)	-0.1472 (0.1037)	0.1069 (0.2127)
Diabetes	-0.2738** (0.0605)	-0.0676 (0.0590)	-0.1382 (0.0861)	-0.0201 (0.0771)	-0.0746 (0.1058)	-0.0732 (0.1246)	0.2940** (0.1309)	0.1423 (0.1641)	0.21142 (0.2099)

Table 9. Marginal Effects for Importance of Serving Size Information (cont.)

Variable	Very Important			Somewhat Important			Not Important		
Health Status (cont.)									
	USA	Turkey	Comp.	USA	Turkey	Comp.	USA	Turkey	Comp.
High Cholesterol	-0.0564 (0.0738)	0.1323** (0.0659)	-0.1501** (0.0499)	0.0249 (0.0293)	0.0238 (0.0155)	-0.0728 (0.0649)	0.0315 (0.0450)	-0.1561** (0.0572)	0.2229** (0.1131)
Weight Loss	0.1214* (0.0712)	-0.0219 (0.0323)	0.1392 (0.0872)	-0.0673 (0.0447)	-0.0151 (0.0251)	-0.0347 (0.0379)	-0.0540* (0.0282)	0.0371 (0.0573)	-0.1044** (0.0504)
Exercise	-0.0136 (0.0185)	0.0003 (0.0093)	-0.0113 (0.0194)	0.0066 (0.0090)	0.0002 (0.0057)	0.0002 (0.0009)	0.0069 (0.0095)	-0.0005 (0.0150)	0.0110 (0.0189)
Other components of Nutrition Facts Panel									
Total Fat	0.0283 (0.0399)	0.0564** (0.0182)	-0.0532 (0.0400)	-0.0137 (0.0195)	0.0344** (0.0132)	0.0012 (0.0038)	-0.0145 (0.0205)	-0.0908** (0.0293)	0.0519 (0.0391)
Carbohydrate	0.0487* (0.0265)	0.0629** (0.0186)	-0.0461 (0.0322)	-0.0237* (0.0136)	0.0383** (0.0135)	0.0011 (0.0033)	-0.0250* (0.0137)	-0.1013** (0.0294)	0.0450 (0.0314)
Protein	0.0529* (0.0303)	0.0378* (0.0203)	-0.0088 (0.0361)	-0.0257* (0.0154)	0.0231* (0.0131)	0.0002 (0.0010)	-0.0271* (0.0157)	-0.0609* (0.0325)	0.0086 (0.0353)
Vitamin	0.0480* (0.0284)	0.0608** (0.0186)	-0.0434 (0.0334)	-0.0233 (0.0144)	0.0371** (0.0138)	0.0010 (0.0031)	-0.0246* (0.0147)	-0.0979** (0.0301)	0.0423 (0.0328)
Cholesterol	-0.0150 (0.0289)	-0.0173 (0.0180)	0.0116 (0.0334)	0.0073 (0.0141)	-0.0105 (0.0112)	-0.0002 (0.0011)	0.0077 (0.0148)	0.0279 (0.0290)	-0.0113 (0.0326)
Freq. of Reading	-0.0113 (0.0298)	-0.0160 (0.0118)	0.0126 (0.0286)	0.0055 (0.0145)	-0.0098 (0.0074)	-0.0003 (0.0011)	0.0058 (0.0153)	0.0259 (0.0189)	-0.0123 (0.0279)
Freq. of Reading	0.3299** (0.0338)	0.0109 (0.0110)	0.2471** (0.0309)	-0.1606** (0.0326)	0.0066 (0.0068)	-0.0059 (0.0173)	-0.1692** (0.0238)	-0.0175 (0.0177)	-0.2412** (0.0299)

Note: (**) implies statistically significant at 0.05 level and (*) implies statistically significant at 0.10 level.

APPENDIX

Appendix 1 : SURVEY QUESTIONNAIRE : USA

Nutrition Information on Packaged Foods Survey

WHY ARE YOU BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being invited to take part in a research study about food consumption and label use behaviors. If you volunteer to take part in this study, you will be one of about 500 people to do so.

WHO IS DOING THE STUDY?

The person in charge of this study is Dr. Sayed Saghaian (PI), Assistant Professor of the Department of Agricultural Economics, University of Kentucky. There may be other people on the research team assisting at different times during the study.

WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of this study is to examine food consumption and label use behaviors in order to determine the relation between serving size information and obesity rate.

RESEARCH PROCEDURES AND HOW LONG WILL IT LAST?

If you volunteer to participate in this study, you will be asked to answer the questions on the form below. The URL for the research study will be advertised through e-mail lists such as the UK staff e-mail list. The total amount of time you will be asked to volunteer for this study is approximately 10-15 minutes.

ARE THERE REASONS WHY YOU SHOULD NOT TAKE PART IN THIS STUDY?

Everyone over 18 years old is eligible to participate in the survey.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

There are no risks and/or discomforts.

WILL YOU BENEFIT FROM TAKING PART IN THIS STUDY?

We cannot and do not guarantee that you will receive any personal benefits from taking part in this study. Your willingness to take part, however, may, in the future, help society as a whole better understand this research topic.

DO YOU HAVE TO TAKE PART IN THE STUDY?

If you decide to take part in the study, it should be because you really want to volunteer.

IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THERE OTHER CHOICES?

Participation in this study is voluntary. If you do not wish to participate in this study, there is no penalty or loss of benefits to which you would otherwise be entitled. You may choose to discontinue participation at any time without penalty or loss of benefits to which you would otherwise be entitled.

WHAT WILL IT COST YOU TO PARTICIPATE?

There are no costs associated with taking part in the study.

WILL YOU RECEIVE ANY REWARDS FOR TAKING PART IN THIS STUDY?

You will not receive any rewards or payment for taking part in the study.

WHO WILL SEE THE INFORMATION THAT YOU GIVE?

Your information will be combined with information from other people taking part in the study. Your response will be completely anonymous and will remain confidential. We may publish the results of this study. You will not be identified in these written materials.

WHAT IF YOU HAVE QUESTIONS, SUGGESTIONS, CONCERNS, OR COMPLAINTS?

If you have questions, suggestions, concerns, or complaints about the study, you can contact the investigator, Dr. Sayed Saghaian (PI) at 859-257-2356. If you have any questions about your rights as a volunteer in this research, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-257-9428 or toll free at 1-866-400-9428.

WHAT ELSE DO YOU NEED TO KNOW?

You will be told if any new information is learned which may affect your condition or influence your willingness to continue taking part in this study.

Introduction:

This survey is being administered by the University of Kentucky Department Of Agricultural Economics. The survey is to determine the attitudes of consumers about food consumption and label use behaviors. The information you provide is confidential.

1. How much time do you spend for the grocery shopping per week?

- less than 2 hours 2 hours 3 hours 4 hours more than 4 hrs

2. How important are the issues listed below while buying a food product? Rank the following (1 = most important and 5 = least important):

	1 - Most Important	2	3	4	5 - Least Important
Price	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nutrition claims	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ingredients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Calories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. How often do you read the “Health Claims” on the front of the package?

- Always Often Sometimes Rarely Never

4. How important do you think the "Nutrition Labels" are on Packaged Foods?

- Very Important
- Somewhat Important
- Undecided
- Somewhat Unimportant
- Not Important at All

5. How many days a week do you participate in sports?

- More than 3 days
- 3 days
- 2 days
- 1 day
- Less than 1 day

6. How much snack foods do you consume in a day? (chips, pizza, fried foods, candy, soft drinks, etc.)

- More than 3 items
- 3 items
- 2 items
- 1 item
- Less than 1 item

7. How important are the following parts of the nutrition label to you?

	Very Important	Somewhat Important	Undecided	Somewhat Unimportant	Not important at all
Calories	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total Fat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cholesterol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sodium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Total	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Carbohydrate					
Protein	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Serving Size	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vitamin & minerals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percent Daily Values	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. How often do you pay attention to the “Serving size” information?

- Always Often Sometimes Rarely Never

9. How often do you pay attention to the “Calorie” information?

- Always Often Sometimes Rarely Never

10. Based on the calorie information, if the product doesn't have a healthy composition (as per your perception) do you:

- Look for other brands in the same product
 Still buy the same brand of the product
 Don't buy the product at all

11. If you still buy the same brand of the product, why is it so?

Rank the following (1 = most important and 6 = least important):

	1 = Most Important	2	3	4	5	6 = Least Important
Brand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Price	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Taste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your peers buy it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Are you on any Weight Loss program these days?

- Yes No

13. Are you aware of the daily calorie intake required by your body?

- Yes No

14. Do you have any particular Health Problem such as:
(Please check all that apply.)

- High Cholesterol
 Diabetes
 Heart Disease
 Overweight
 Obesity

15. Do you have any special diet due to a health problem?

- Yes No

16. Are you trying to limit calorie, fat, salt (sodium) or cholesterol intake these days?

- Yes No

17. How many members are in your household, including yourself?

18. Do you have children in your household under 18 years old?

- Yes No

19. What is the highest level of school you completed?

- Not a high school degree
 High school
 Collage-BS degree
 Master degree
 Doctorate

20. What is your gender? Female Male

21. What is your age?

22. What is your height? feet inches

23. What is your weight? lbs.

24. What is your annual household income before taxes?

- Under \$15,000
- \$15,000-\$24,999
- \$25,000-\$34,999
- \$35,000-\$49,999
- \$50,000-\$74,000
- \$75,000-\$99,999
- \$100,000-\$125,000
- above \$125,000

25. Are you the person who does the grocery shopping for the household?

Yes No

Submit	Do Not Submit
--------	---------------

Appendix 2: SURVEY QUESTIONNAIRE: Turkey

Paketlenmiş Gıda Ürünlerinde Etiket Bilgisi Kullanımı

Bu anket Kentucky Üniversitesi, Tarım Ekonomisi Bölümü tarafından uygulanmaktadır. Anket, katılımcıların gıda tüketimi davranışlarını ve gıda ürünlerinin paketleri üzerinde bulunan Etiket Bilgileri kullanımını belirlemek amacıyla hazırlanmıştır. Tüm bilgiler gizli tutulacak ve yalnızca akademik çalışmalar için kullanılacaktır.

1. Market alışverişi için bir haftada ne kadar zaman ayırıyorsunuz?

- 2 saatten az 2 saat 3 saat 4 saat 4 saatten fazla

2. Gıda ürünü alışverişleriniz için aşağıdaki kriterleri önem derecesine göre sıralayınız. (1 = çok önemli, ... , 5 = önemsiz):

	1 - Çok önemli	2	3	4	5 - Önemsiz
Fiyat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Marka	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sağlık beyanları (light, kolestrol düşürücü, vb.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
İçindekiler/Katkı maddeleri	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kalori miktarı	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Paketlenmiş gıda ürünlerinin ön yüzünde bulunan "Light, Kolesterol düşürücü, Antioksidan yönünden zengin" gibi ibarelere ne sıklıkta dikkat edersiniz?

- Her zaman Genellikle Bazen Nadiren Hiçbir zaman

4. Gıda paketlerindeki etiket bilgileri sizce ne kadar önemli?

- Çok önemli
 Önemli
 Kararsızım
 Az Önemli
 Hiç önemli değil

5. Haftada kaç gün egzersiz yaparsınız?

- 3 günden fazla
 3 gün
 2 gün
 1 gün
 1 günden az

6. Gün içinde kaç defa abur cubur gıdalar tüketirsiniz? (cips, pizza, kızartılmış gıdalar, şekerleme, asitli içecekler, vb.)

- 3 defadan fazla
 3 defa
 2 defa
 1 defa
 1 defadan az

7. Aşağıda listelenmiş olan Etiket Bilgisi kısımlarının sizin için önem derecelerini belirtiniz.

	Çok önemli	Önemli	Kararsızım	Az önemli	Hiç önemli değil
Enerji	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Yağ	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kolesterol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sodyum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Karbonhidrat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protein	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vitamin ve mineraller	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paketteki ürün miktarına göre besin değerleri	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. Etiket Bilgileri üzerinde yer alan Enerji bilgisini ne sıklıkta okursunuz/kullanırsınız?

- Her zaman Genellikle Bazen Nadiren Hiçbir zaman

9. Etiket bilgileri üzerindeki değerler 100 gr. ürün için hesaplanarak yazılmaktadır. Tükettiğiniz ürün miktarına göre aldığınız enerji, yağ, vb. miktarları ne sıklıkta hesaplırsınız?

- Her zaman Genellikle Bazen Nadiren Hiçbir zaman

10. Eğer bir ürün enerji miktarı bakımından sağlıklı bir ürün değilse (sizin değer kriterleriniz ölçütünde) ne yaparsınız?

- Diğer markaların benzer/aynı ürünlerine bakarım
 Yine de o ürünü alırım
 Ürünü hiç bir şekilde satın almam

11. Eğer üstteki soruya "Yine de o ürünü alırım" şeklinde cevap verdiyseniz, nedenini aşağıdaki kriterlere göre sıralayarak değerlendiriniz. (1 = çok önemli ... 6 = hiç önemli değil):

	1 = Çok önemli	2	3	4	5	6 = Hiç önemli değil
Marka	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fiyat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tat/Lezzet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Arkadaşlarım aldığı/tavsiye ettiği için	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Market rafında mevcut bulunduğu için	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Diğer (belirtiniz)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

12. Her hangi bir diyet/zayıflama programı uyguluyor musunuz?

- Evet Hayır

13. Gnlk kalori ihtiyacınızın ne kadar olduėunu biliyor musunuz?

- Evet Hayır

14. Her hangi bir saėlık probleminiz var mı?
(Ltfen geerli olan tm rahatsızlıkları iřaretleyiniz.)

- Yksek kolesterol
 Seker hastalıėı
 Kalp hastalıėı
 Ařırđ kilo
 Obezite

15. Saėlık problemleri nedeniyle uyguladıėınız zel bir diyet var mı?

- Evet Hayır

16. Enerji, yaė, tuz (sodyum) kullanımınıza dikkat ediyor musunuz?

- Evet Hayır

17. Aynı evde yařayan aile ferdi sayınız katır? (Kendinizi de ekleyerek belirtiniz)

18. Ailenizde 18 yařından kk birey var mı?

- Evet Hayır

19. En son tamamladıėınız eėitim derecesini iřaretleyiniz.

- Ortaokul
 Lise
 niversite-Lisans-n lisans
 Yksek Lisans
 Doktora

20. Cinsiyetiniz Bayan Bay

21. Yařınız

22. Boyunuz (cm)

23. Kilonuz (kg) (kg)

24. Ailenizin aylık gelir toplamı ne kadardır?

- 500 TL ve altı
- 500 - 999 TL
- 1000 - 1499 TL
- 1500 - 1999 TL
- 2000 - 2499 TL
- 2500 - 2999 TL
- 3000 - 3499 TL
- 3500 TL ve üstü

25. Aileniz için market alışverişi yapan kişi siz misiniz?

- Evet Hayır

Gönder

İptal Et

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Awards and Scholarships

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