# INVESTIGATING THE FACTORS INFLUENCING
# CONSUMER EATING-OUT HABITS

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## ABSTRACT

Americans are eating out in greater numbers and in greater frequency than ever before. This phenomenon may not pose any major health threat as long as diners make healthy eating choices. Unfortunately, the popularity of fast foods, which typically contain excessive fat and calories, poses a tremendous threat to public health because of the well-known detrimental effects of excessive intake of fat, cholesterol, calories and salt on public health. Therefore, it is critical to public policy makers as well as to health care professionals to know what factors influence the food choices of restaurant diners. Earlier studies indicated that consumer eating habits may vary according to the demographic characteristics (such as income, age and occupation), and psychographic characteristics (such as lifestyle and personality traits). However, these results are for Americans in general, and may not be valid for restaurant diners specifically.

In this study, we explore the influence of these determinants on consumer preference of food (such as red meat, strictly vegetables, and everything in between) when they eat out. Our results support the hypothesis that consumers with different eating-out habits indeed vary according to their demographic and psychographic characteristics. Our research also found that a consumer's profession (white-collar job vs. blue-collar job) has a moderate influence on the decision to become vegetarian.  Also those who are health conscious are more likely to become vegetarian. Finally, we outline the significance of our results to marketers, and restaurant owners.
Key-word: Eating-out behavior; customer satisfaction; vegetarianism; consumer food choices.

## 1. INTRODUCTION

In recent years, physicians and nutritionists have been informing the public of the causal relationship between unhealthy eating habits and deterioration of health. Health reports systematically stipulate that excessive consumption of fat, cholesterol and salt are primary contributors to major diseases such as coronary heart disease, stroke and cancer (American Heart Association 2003).

As a result of these reports and ever increasing medical expenses, the healthcare industry has been urging consumers to take a more proactive role to adjust their lifestyles to lower the risks of acquiring these fatal diseases. One of the key steps is to convince consumers to exercise more and to maintain a healthy diet.

But what exactly is a healthy diet?  Answers will vary based on who answers this question and their motives. According to popular diets such as *Atkins Diet*, a healthy diet should include less quantity of carbohydrates. However there are other factors to consider than just carbohydrates. Recent research published by DefeatDiabetes.org suggests that eating red meat in large quantities can increase the risk of developing diabetes.  In their study, women who consumed the largest quantity of red meats were 28% more likely to develop diabetes than women who ate smaller amounts of red meats. This phenomenon is due in large part to the high levels of cholesterol found in red meat (McVeigh 2005).

In addition, according to research findings reported in a recent National Cancer Institute report, fruits and vegetables can help reduce risks of heart disease, high blood pressure, Type II diabetes, and some types of cancer. This is because fruits and vegetables are packed with "essential vitamins, minerals, fiber and disease-fighting phytochemicals" (National Cancer Institute 2005).

But is it true that a vegetarian diet is more healthful than a diet that includes meats? Once again, the answer will vary depending on who answers this question. As mentioned earlier, there is strong empirical evidence of the benefits of vegetarian diet over non-vegetarian (specially red meat) diet. On the contrary, several scientists maintain that vegetarian diets are harmful because they do not include the necessary nutrients, including calcium, zinc, and protein.  For example, Szabo (2005) points out that there are health risks associated with a vegetarian diet,

specifically the risk of osteoporosis due to the lack of low-fat dairy products. Hence it is our belief that a diet that includes a high level of fruits and vegetables combined with meat and diary products is perhaps the healthiest diet. However are healthy diets easy to maintain when dining out? Do restaurants offer a rich variety of vegetarian dishes? During the course of this study, we found that many restaurants lack a variety of vegetarian dishes thus making it difficult to maintain a healthy diet while dining out.

## 1.1 Scope

We focus on the consumer eating-out habits and their role in health conscious behavior. To be specific, we would like to identify the primary factors that influence an individual's choice of food (e.g., red meat, white meat and vegetables) while dining out. In the following sections, we review the literature on the antecedents of food habits, drawn from several disciplines including medicine, nutrition, and marketing. Next we outline the hypotheses to be tested in this study. We then describe the methodology of our study including data collection procedure and the description of the data. This is followed by a detailed description of the results obtained. Finally, we outline the managerial and public policy implications of our research findings.

## 2. LITERATURE REVIEW

Several researchers have investigated the determinants of eating habits. Nutrition knowledge (Bell & Lamb 1973, Pillai & Bandyopadhyay 1997), demographic and personality characteristics (Hertzler & Owen 1976; Jalso, Burns & Rivers 1965), and food related attitudes (Cosper & Wakefield 1975; Foley, Hertzler & Anderson 1979) have all been the subject of study. However, very few major studies have investigated the factors that influences vegetarianism. Notable exceptions are the studies by Variyam (1997) and the Vegetarian Resource Group (2003).

Variyam (1997) has shown that income, gender, and age are important variables in determining who will be more likely to be vegetarians. Also, a study conducted by the Vegetarian Resource Group in 2003 found that American vegetarians are more likely to live on either coast, reside in large cities, and be women who work outside the home. Furthermore, the group points out that of restaurants with the average "check size" less than $8, 70% offer vegetarian options. However of restaurants with an average "check size" greater than $25, 91% offer vegetarian entrees. These results suggest that income, particularly the level of disposable income, is a large determinant of vegetarians who dine out. The Vegetarian Resource Group also points out that the average meat alternatives shopper is a woman between ages 24 and 54.

According to Mintel (2003), those who lean toward meat reduction diet patterns include younger and older consumers of all income brackets and education levels, as well as across all regions of the U.S. Recent polls conducted by Harris Interactive for The Vegetarian Resource Group estimate that (1) 30-40 percent of US consumers are "a good market for meatless items", and (2) 4-10 percent of US consumers call themselves "vegetarians" (The Vegetarian Resource Group 2003).

In summary, research indicates that consumers are taking on a more pro-active role in leading a healthy lifestyle by reducing red meat consumption and increasing consumption of fruits and vegetables. But what factors influence people's food habits? Are they driven by the inner self to lead a healthier lifestyle? Are they influenced by the plethora of news items about the detrimental effects of red meat on health? Are they influenced by friends and family members? Do they avoid restaurants that serve no or limited vegetarian dishes? There may be many other factors – both socio-demographic and psychographic – that many influence consumer food habits. This paper attempts to identify these socio-demographic as well psychographic factors. In addition, we explore the effect of dietary preferences on consumption behaviors including the extent of eating out and preference for restaurant type.

## 2.1 Factors Influencing Consumer Food Habits:

2.1.1 Socio-demographic factors

Several socio-demographic factors have been associated with consumer food consumption. Previous studies (see, for example, Hertzler & Owen 1976; Jalso, Burns & Rivers 1965; Variyam, Blaylock and Smallwood 1997) included the demographic variables such as age, income, and occupation, and found significant correlation between some of these variables and an individual's food habits. In particular, Variyam, Blaylock and Smallwood (1997) reported the following findings:

(a) The person most likely to have a positive attitude towards healthy foods tends to be an older woman.

(b) Although gender, age, and vegetarian status have significant influence on attitudes towards healthy diet, these variables have no effect on an individual's level of awareness of diet-disease relationship.

(c) The awareness of diet-disease relationship is more influenced by an individual's household income, education level, race and ethnicity. To be specific, people with higher income and better education are more aware of this relationship. Also, blacks are less likely than whites to be aware of the diet-disease relationship.

In addition, reports by the Food Marketing Institute (www.fmi.org) reveal that shoppers who have some college education are more conscious about the link between health and food intake. Therefore, we expect these people to adopt a more balanced diet that includes more fruits and vegetables. The FMI research report also found that (1) shoppers who have a college education are more likely to hold white collar jobs and have a higher income level, and (2) shoppers who have college education tend to be older. Hence based on the FMI research and the findings of Variyam, Blaylock and Smallwood (1997), we propose H1, H2, and H3.

We test these findings in the context of our study to ascertain the validity and generalizability of these relationships. In particular, we explore the influence of education, age, and income on the likelihood of an individual being a vegetarian. We, therefore, test the following hypotheses:

H1: People with higher income are more likely to be vegetarian than those in lower income category.

H2: People who hold white collar (professional) jobs are more likely to be vegetarian as compared to those who hold blue collar (non-professional) jobs.

H3: Older individuals are more likely to be vegetarians than younger individuals.

2.1.2 Psychographic Factors

Various psychographic factors are also likely to promote healthy eating behavior. Prior studies suggest that two factors in particular, health consciousness, and extent of physically active lifestyle, may influence the choice of dietary intake (Plank and Gould 1990, Allard & Mongeon 1982). Plank and Gould (1990) found that health conscious individuals have a predisposed wellness approach to their health. Similarly, Allard and Mongeon (1982) demonstrate that nutrition knowledge influences eating behavior and nutrition attitudes. Those who are health conscious are more likely to believe in the dictum "you are what you eat" and, therefore, likely to include more fruits and vegetables in their diet in order to avoid the ill effects of red meat consumption (Variyam 1997). According to Variyam (1997), diets high in fat, saturated fats, cholesterol, and sodium and low in vegetables, fruits, and whole grains are linked to increased risk of coronary heart disease, stroke, diabetes, obesity and hypertension. In general, it is argued that the recent increase in the proportion of vegetarians in the population is driven by the improvements in people's awareness of the effect of food habits on physical health (also termed health consciousness).

Conversely, it is quite possible that people involved in sports are choosing a healthier lifestyle and will therefore choose a different dietary lifestyle than those who are not physically active. The growing importance of physically active life styles indicated by the degree of participation in sports activities may induce people to eat more protein rich non-vegetarian items such as red and white meat. Hence it is unlikely that they will be strictly vegetarian. We, therefore, test the following hypotheses:

H4: Net of other factors (age, income, and occupation) those who report high levels of health consciousness are more likely to be vegetarians than the rest.

H5:    Net of other factors (age, income, and occupation) those who report high levels of involvement in sport activities are less likely to be vegetarians than the rest.

## 3. METHODOLOGY

### 3.1 Description of the Study

*3.1.1 Independent Variables*

The independent variables were split into two specific categories that correspond to the suggested model: demographic variables and psychographic variables.

3.1.1.1 Demographic Variables

As mentioned earlier, we attempt to confirm earlier studies by including some of the most relevant demographic characteristics in our study. Due to the limited scope of this study, we were unable to examine every possible demographic variable. We used two methods to determine three most important demographic variables: (1) a limited survey with 25 individuals, and (2) a review of the extant literature on this topic. Based on the survey and the literature review, we decided to include age (AGE), occupational status (JOB) and annual income (INCOME) in our study.

3.1.1.2 Psychographic Variables

We have included two psychographic variables, health consciousness (HEALTH) and extent of participation in sports activities (SPORT). SPORT is coded 1 if the respondent engages in sporting activity more than or equal to 3 times a week, and coded 0 if the respondent engages in sporting activity less than 3 times a week. The health consciousness (HEALTH) variable is the dichotomous variable, "do you consider yourself health conscious." It is coded 0 if the answer is "yes" and 1 if the answer is "no".

*3.1.2 Dependent Variables*

We have chosen the individual's meat eating pattern to be the dependent variable in our study. The following instruction was used to segment our sample:
Pick the category that most suits your meat consumption pattern.
1- vegetables, all meat and meat related products
2- vegetables, some red meats, dairy products, eggs, chicken and fish
3- vegetables, dairy products, eggs, chicken and fish
4- vegetables, dairy products, eggs and fish
5- vegetables, dairy products and eggs
6- vegetables and dairy products – no eggs
7- vegetables and eggs – no dairy products
8- vegetables – no animal related products of any type

Please note that category 8 is commonly referred to as vegans. According to Dictionary.com, a vegan is "a strict vegetarian; someone who eats no animal or dairy products at all" while a vegetarian is "[a diet] consisting primarily or wholly of vegetables and vegetable products."

A subject was designated to the "red meat eater" (henceforth called RME) category if she indicated that their eating habits were similar to choices 1 and 2. Similarly, a subject was categorized as "vegetarian" (henceforth called VEG) if her eating habit is similar to choice 8. All other subjects became part of the "in-between" (henceforth called INBET) group if they specified any of the choices 3 through 7. Two subgroups were created. The first subgroup consisted of RME and VEG. The second was composed of INBET and VEG. The first categorical variable RME was coded 1 for all red meat eaters and the pure vegetarians were coded zero. The second categorical variable INBET was coded 1 for all those "in-between" and the pure vegetarians (VEG) were coded 0.

We have chosen to categorize the general population in the above manner for two reasons. First, we felt that this categorization simplifies the complex eating habits of people. We

started with an eight-level eating practice question but soon realized that the only realistic categorization is between three groups: red meat eaters, pure vegetarians, and in-betweens. Interestingly, people's perception about their eating behavior varies a lot. For example, many subjects in our study consider themselves as "vegetarians" but in fact, they also eat chicken and egg. Hence the need for a multi-level measure of eating habits. Ideally, we should have conducted the analysis keeping intact the eight levels of the dependent variable. However, our subject pool was neither sufficiently large nor evenly distributed among the eight levels of eating habits**.**

### 3.2 Data Collection Procedure

A total of 222 subjects were recruited for the study in a major North American city. The questionnaire was administered to respondents at two different intervals in the same two-week period. The survey was conducted at two well known restaurants in the downtown area. Subjects were collected from restaurant diners to ensure external validity of our study. These two restaurants were chosen following a pre-test with 25 randomly chosen individuals. They were asked to name the two most popular restaurants in the downtown area. The chosen restaurants were the two restaurants listed by the maximum number of people. Restaurants were chosen as the source of data because they enabled us to capture a good mix of vegetarians and non-vegetarians – two *strata* or sub-groups of our interest. See Malhotra and Peterson (2002) for a detailed discussion on stratified sampling.

The permission of both owners was sought in advance. In fact, both owners extended full support in administering the survey, including offering a 10% discount to diners who agreed to participate in the survey. See Table 1 for the demographic distribution of the participants. Further discussion concerning the significance of these sampling criteria will be provided in the results section.

**Table 1**
**Frequency Distribution of Demographic and Psychographic Variables**

| Variable | Frequency | Percentage |
|---|---|---|
| Age | | |
| Under 34 | 56 | 25.2 |
| 34 and above | 154 | 69.4 |
| Missing value | 12 | 5.4 |
| Income | | |
| Less than $40,000 | 131 | 59 |
| $40,000 and more | 91 | 41 |
| Occupational Status | | |
| White collar | 89 | 40.1 |
| Blue Collar | 125 | 56.3 |
| Missing value | 8 | 3.6 |
| Do you consider yourself health conscious? | | |
| Yes | 156 | 70.3 |
| No | 66 | 29.7 |
| How often do you play a sport or work out? | | |
| Once or less than once a week | 46 | 20.7 |
| More than once a week | 168 | 75.7 |
| Missing values | 8 | 3.6 |

Each respondent was approached in the same manner by the interviewer. In order to prevent possible selection bias, tables were randomly assigned using a random number generator. In order to prevent possible temporal bias, the survey was conducted throughout the dining hours from 6 pm to 10 pm. After the diners were seated and ordered their food, they were asked to volunteer fifteen minutes of their time to participate in a study of consumers' current eating habits. Only one person was randomly selected from a party of diners. The respondent was directed to a desk specially set up for the study in order to ensure that (1) the respondent is able to concentrate on the study, and (2) the respondent is not able to consult with other

members of the party any time during the administration of the survey. If a diner declined to participate, the interviewer thanked him/her and moved to a new table. No other member from the same party was requested to participate. Interviewers ensured that none of the subjects consulted the interviewer or each other during the experiment. If respondents expressed interest in having more information, they were taken aside and debriefed after the survey was complete.

## 4. ANALYSIS AND RESULTS

We evaluated two sets of logistic regression models. We used logistic regression because it enabled us to investigate the relationship between the response probabilities (i.e., the likelihood of an individual to eat red meat, purely vegetarian food or a combination of vegetarian and non-vegetarian food) and the explanatory variables (e.g., income, occupational status, age, health consciousness and participation in sports). (See Cox and Snell 1989 for a detailed discussion on logistic regression and categorical data analysis.) The first set uses the subgroup containing RME and VEG. The second set uses the subgroup containing INBET and VEG. The reference category in the dependent variable is VEG. The independent variables consist of several demographic variables (income, occupation and age) and psychographic variables (health consciousness and extent of participation in sporting activity). Results are presented in Tables 2 and 3, and Tables 5 and 6.

**Table 2**
**Logistics Regression Results**
**Dependent Variable: Eating Behavior (Red meat eater vs. Pure vegetarian)**

| Independent Variables | B | S.E. | Wald | Df | Sig | Exp(B) | -2 Log likelihood | Cox & Snell R-square |
|---|---|---|---|---|---|---|---|---|
| Income | -1.099 | 1.156 | 0.903 | 1 | .342 | 00.333 | | |
| Job | 0.146 | 1.098 | 0.018 | 1 | .894 | 1.157 | | |
| Age | -1.529 | 1.583 | 0.932 | 1 | .334 | 0.217 | | |
| Health | -6.359 | 1.264 | 25.300 | 1 | .000 | 0.002 | | |
| Sport | 0.659 | 1.177 | .313 | 1 | .576 | 1.933 | | |
| Constant | 4.313 | 1.549 | 7.755 | 1 | .005 | 74.676 | | |
| Model | | | | | | | 38.617 | .554 |

**Table 3**
**Logistics Regression Results**
**Dependent Variable: Eating Behavior (In-between vs Pure Vegetarians)**

| Independent Variables | B | S.E. | Wald | Df | Sig | Exp(B) | -2 Log likelihood | Cox & Snell R-square |
|---|---|---|---|---|---|---|---|---|
| Income | -1.149 | 0.622 | 3.411 | 1 | 0.065 | 0.317 | | |
| Job | 1.385 | 0.577 | 5.768 | 1 | 0.016 | 3.993 | | |
| Age | -0.549 | 0.923 | 0.353 | 1 | 0.552 | 0.578 | | |
| Health | -2.029 | 0.614 | 10.910 | 1 | 0.001 | 0.131 | | |
| Sport | -0.605 | 0.657 | 0.847 | 1 | 0.357 | 0.546 | | |
| Constant | 3.5100 | 1.003 | 11.552 | 1 | 0.001 | 33.433 | | |
| Model | | | | | | | 106.964 | 0.207 |

**Table 4**
**Regression Results**
**Dependent Variable: Self-perception about being a vegetarian (VEGYN)**

| Independent Variables | B | S.E. | t-stat | Sig |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Income | 0.050 | 0.074 | 0.671 | 0.504 |
| Job | -1.50 | 0.073 | -2.704 | 0.040 |
| Age | 0.133 | 0.026 | 5.092 | 0.000 |
| Gender | 0.312 | 0.068 | 4.555 | 0.000 |
| Sport | 0.333 | 0.190 | 1.753 | 0.082 |
| Constant | -0.415 | 0.217 | -1.914 | 0.057 |

**Table 5**
**Logistics Regression Results**
**Dependent Variable: Eating Out Behavior (At least 3 times per week vs. Less than 3 times per week)**

| Independent Variables | B | S.E. | Wald | Df | Sig | Exp(B) | -2 Log likelihood | Cox & Snell R-square |
|---|---|---|---|---|---|---|---|---|
| Income | 0.672 | 0.454 | 2.186 | 1 | 0.139 | 1.958 | | |
| Job | 0.536 | 0.396 | 1.834 | 1 | 0.176 | 1.709 | | |
| Age | -1.457 | 0.457 | 10.155 | 1 | 0.001 | 0.233 | | |
| Meat | -1.386 | 0.374 | 13.750 | 1 | 0.000 | 0.250 | | |
| In-between | -1.917 | 0.674 | 8.086 | 1 | 0.004 | 0.147 | | |
| Constant | 0.324 | 0.304 | 1.136 | 1 | 0.287 | 1.383 | | |
| Model | | | | | | | 219.103 | 0.157 |

**Table 6**
**Logistics Regression Results**
**Dependent Variable: Restaurant Selection (Gourmet vs others)**

| Independent Variables | B | S.E. | Wald | Df | Sig | Exp(B) | -2 Log likelihood | Cox & Snell R-square |
|---|---|---|---|---|---|---|---|---|
| Income | 0.800 | 0.444 | 3.248 | 1 | 0.072 | 2.227 | | |
| Job | -.522 | 0.408 | 1.634 | 1 | 0.201 | 0.593 | | |
| Age | 0.333 | 0.516 | 00.416 | 1 | 0.519 | 1.395 | | |
| Meat | 2.591 | 0.458 | 32.026 | 1 | 0.000 | 13.343 | | |
| In-between | 02.917 | 0.568 | 26.334 | 1 | 0.000 | 18.486 | | |
| Constant | -2.836 | 0.508 | 31.143 | 1 | 0.000 | 0.059 | | |
| Model | | | | | | | 197.778 | 0.407 |

### 4.1 Influence of Demographic Characteristics on Eating Habits

Our results indicate that the influences of demographic characteristics on consumer eating habits (i.e., dietary preferences) are not widespread. The results from the logistic regression analysis of the first subgroup (RME and VEG) are presented in Table 2. None of the demographic variables included in this study (i.e., income, occupational status, and age) significantly influences the odds of being "red meat eater" as opposed to being a "pure vegetarian". The results from the logistic regression analysis of the second subgroup (INBET and VEG) are presented in Table 3. To be specific, those who hold white collar jobs are more likely to be in the "in-between" category than being "pure vegetarians". White collar workers, compared to those who do not have white collar jobs, have about 3.993 times the odds of being in the "in-between" category than being a "pure vegetarian". Thus, we find partial support of Hypothesis 2. We do not find any support for Hypotheses 1 or 3 since income and age do not seem to have any major influence on eating habits.

### 4.2 Influence of Psychographic Characteristics on Eating Habits

Interestingly, results shown in Table 2 indicate that consumer eating habits are significantly influenced by health consciousness, one of the psychographic variables included in the model. Net of the effects of control variables, those who are health conscious are less likely to

be red meat eaters (RME). In particular, the odds of those who are health conscious being red meat eaters are about 99 percent less than the odds of health conscious persons being pure vegetarians (VEG). The extent of participation in sports, however, had no significant effect on being a vegetarian or meat eater. In general, red meat eaters tend to be male, older, hold a blue-collar job, and earn more than the pure vegetarians.

Results are similar for in-betweens (INBET) and pure vegetarians (see Table 3). Net of the effects of control variables, those who are health conscious are less likely to be in-betweens (INBET) than pure vegetarians (VEG). The odds of those who are health conscious being in the "in-between" category are approximately 87 percent less than the odds of those who are health conscious and pure vegetarians (VEG). The extent of participation in sports, however, is not significantly related to being a vegetarian or in-between. Thus, in general, the likelihood of being a pure vegetarian as opposed to a non vegetarian is influenced by the value associated with health as an important component of human well being. Thus we found strong support for H4 but not for H5.

### 4.3 Perception about vegetarianism

Interestingly, the perception about who is a vegetarian varies greatly among the respondents. In fact, many respondents consider themselves vegetarians but they tend to eat egg and meat products. Results indicate (see Table 4) that people who consider themselves vegetarians are more likely to be female, older (35+) and employed in a non-professional (blue collar) job. The case for blue-collar workers is particularly interesting – they are more likely to be red meat eaters yet they feel they are vegetarians. This interesting phenomenon merits further investigation, which we intend to do in a future study.

### 4.4 Eating-out habits

Table 5 outlines the results of a logistic regression that investigates the demographic and behavioral characteristics that influence a consumer's eating-out behavior. People's "eating behavior" is measured at the nominal level, with three categories: those who are "red meat eaters (RME)", those who are "in-betweens (INBET)" and finally those who are "pure vegetarians (VEG)". The reference category is pure vegetarian (VEG). The odds of a red meat eater (RME) compared to a "pure vegetarian" eating out at least three times a week are about 75 percent less than the odds of a vegetarian eating out at least three times a week. Similar results are found for in-betweens (INBET) also. The odds of an INBET eating out at least three times a week are about 86 percent less than the odds of vegetarian eating out at least three times a week. Thus pure vegetarians are more likely to eat out than the rest of the sample respondents. Also, older individuals tend to eat out more often.

Table 6 presents the results of the logistic regression of restaurant type on dietary preferences, being a meat eater or a pure vegetarian. Net of the effects of control variables, income, occupational status and age, the in-betweens (INBET) as well as red meat eaters (RME) are far more likely to visit gourmet type restaurants than "pure vegetarians". The odds of those who are red meat eaters visiting gourmet restaurants is at least 13 times the odds of pure vegetarians visiting a similar restaurant. Similarly, the odds of in-betweens visiting gourmet restaurants are at least 18 times the odds of pure vegetarians visiting a gourmet type restaurant.

## 5. DISCUSSION

We have been able to show certain factors that act as antecedents in an individual's eating pattern. An individual's eating preference is influenced by the degree of her health consciousness but not by the extent of her involvement in sporting activities. Consequently our results indicate that being involved in sports does not necessarily mean that the person will choose increase intake of vegetables in their diets. These findings perhaps indicate that those individuals who are health conscious and those who are active in sports vary in terms of their dietary expectations. Health conscious individuals are aware of the high fat and cholesterol content of red meat, and the concomitant danger of hypertension and coronary heart disease. Hence they view a diet rich in vegetables as healthier than a diet that includes red meat. On the other hand, people who are active in sporting activities prefer protein-rich diet to supplement the

energy spent. They may very well look at red meat as a major source of protein. Additionally, an individual's eating preference is positively influenced by her profession but not by her age.  We found that those in the 34-plus age group have begun to take action to rectify certain unhealthy eating behaviors. We also found that many consumers, especially those with blue-collar jobs, have a misconception about what is truly a vegetarian diet. They believe that they are following a strict vegetarian regimen but in reality, they are not vegetarians. For example, many consumers consider "fish items" as vegetarian dishes.

## 5.1 Managerial Implications

Our research findings unravel several important managerial insights. First, we found that vegetarians tend to eat out more than red meat eaters and in-betweens but they tend to visit gourmet restaurants less often than the other two groups. They believe that gourmet restaurants are typically limited in their offerings of vegetarian dishes. In fact, a random sampling of five gourmet restaurants in the Chicago metropolitan area reveals that, on average, only 10% of the dishes can be termed as pure vegetarian. Given the growing trend of vegetarianism and general movement towards healthy eating, gourmet restaurants should offer more vegetarian dishes.  In addition, gourmet restaurant managers should promote vegetarian dishes and side-dishes to attract the vegetarian market. Since research has indicated that 30-40 percent of the US consumer market is a target market for meatless items, managers need to include vegetarian dishes to maximize revenue from vegetarian diners who eat out more frequently than red meat eaters (The Vegetarian Resource Group 2003).

In addition, restaurants in general need to offer more vegetarian dishes for the INBET group who does consume a large portion of vegetarian dishes.  Many restaurants have started to offer vegetarian side dishes, for example McDonald's now offers salads and apples, and Wendy's offers salads and just started offering a fruit dish. However it is important for marketers to take full advantage of this group that could add substantial revenue dollars.

Some restaurants have started marketing campaigns to promote the importance of a healthy diet and exercise.  SUBWAY has effectively used the spokesman Jared who lost weight doing the "SUBWAY diet."   There are signs at the restaurant that promote the importance of a healthy diet and exercise. Obviously the SUBWAY campaign is encouraging its customers to improve physical fitness and eat less fat and more vegetables. Other restaurants need to design a similar campaign to attract customers who are becoming increasingly aware of the importance of diet and exercise.

Similarly, organizations that promote vegetarianism would do well to distribute free recipes for making a variety of vegetarian dishes. They need to collaborate with the produce and dairy food suppliers, who are likely to comply because of their mutual interest in promoting vegetarian diet. For example, they may consider including free recipes on the pack or inside the pack for frozen vegetables, fruits, cheese, and dairy products.  Several of our survey respondents indicated that they had a desire in making vegetarian dishes but had difficulty finding easy, tasteful recipes. Therefore, vegetarian food will gain in popularity and hence, market share, if these organizations start offering free recipes of vegetarian dishes.

In today's fast paced life, "ready-to-eat meals" are becoming increasingly popular. Food product suppliers should strive to develop a variety of tasteful vegetarian dishes to target those people who like healthy vegetarian food but are short of time to prepare them. Our survey indicated that vegetarian consumers dine out more frequently which may be due to the fact that it is more time consuming to prepare a vegetarian meal since they are usually created from scratch. If the "ready-to-eat meal" industry created easy to prepare vegetarian dishes, many of these consumers who dine out may eat at home more.

In the final analysis, marketers are influenced by the size and the growth of the market. If the vegetarian movement indeed catches steam, more and more companies will invest in research and development of tasty and healthy vegetarian dishes.

## 6. LIMITATIONS OF THE STUDY AND CONCLUDING COMMENTS

Our study has a number of limitations. The first one pertains to the sampling procedure. The nature of our study requires that we have a large number of purely vegetarians in our subject

pool. Accordingly, we had to collect the data in a couple of restaurants that are famous for their vegetarian dishes. Secondly, we would have preferred a larger sample size than the one we had for this study. Unfortunately, we were constrained by the time of operation and the frequency of patronage in the restaurant. We did receive utmost cooperation from the restaurant owners and the staff. Unfortunately, even they could do little with the time and frequency factors.

Our study demonstrated that people's eating habits depend on certain aspects of their demographic and psychographic orientations. Marketers can benefit from knowing these facts because they enable them to further satisfy changing consumer needs. We hope that this study will encourage further researchers on people's eating habits.

## 7. REFERENCES

Allard, Robert and Micheline Mongeon, "Associations Between Nutritional Knowledge, Attitude and Behavior in a Junior College Population", <u>Canadian Journal of Public Health</u>, 73, 1982, 416-419.

American Heart Association. 2003. Heart and Stroke Facts. http://www.americanheart.org/downloadable/heart/1056719919740HSFacts2003text.pdf

American Heart Association. 2005. Heart Facts 2005: All Americans. http://www.americanheart.org/downloadable/heart/1106668161495AllAmAfAmHeartFacts 05.

Bandura, Albert, "Self-efficacy: Toward a Unifying Theory of Behavioral Change", <u>Psychological Review</u>, 84, 1977, 191-215.

_____, "Self-efficacy Mechanism in Human Agency", <u>American Psychologist</u>, 37, 1982, 122-147.

Bell, Camille G. and Mina W. Lamb, "Nutrition Education and Dietary Behavior of Fifth Graders. *Journal of Nutrition Education"*, 5, 1973, 196-199.

Bjerklie, David, et. al., "Why So Many of Us are Getting Diabetes," <u>Time</u>, Dec 12, vol. 162, Issue 23, 2003, p 58.

Carruth, Betty R., Margaret Mangel, and Helen L. Anderson. 1977. Assessing Change – Proneness and Nutrition – related Behaviors. *Journal of the American Dietetic Association*, 70, 47-53.

CDC: Center for Disease Control. 2004. Highlights in Minority Health. http://www.cdc.gov/omh/Highlights/2004/HSept04.htm, September.

CDC: Center for Disease Control. 2003. Intake of Calories and Selected Nutrients for the United States Population 1999-2000. http://www.cdc.gov/nchs/data/nhanes/databriefs/calories.pdf, December.

Cosper, Barbara A., and Lucille M. Wakefield. 1975. Food Choices of Women. *Journal of the American Dietetic Association*, 66, 152-155.

Cox, D. R. and E. J. Snell. 1989. *The Analysis of Binary Data*, 2nd Edition, London: Chapman & Hall.

Diabetes Prevention Program Research Group. 7 February 2002. "Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin." New England Journal of Medicine, 346 (No. 6), 303-403.

Feick, Lawrence F., Robert O. Herrmann, and Rex H. Warland. 1986. Search for Nutrition Information: A Probit Analysis of the Use of Different Information Sources. *The Journal of Consumer Affairs*, 20 (No.2), 173-192.

Foley, Cynthia, Ann A. Hertzler, and Helen L. Anderson. 1979. Attitudes and Food Habits – A Review. *Journal of the American Dietetic Association*, 75, 13-18.

Grossman, M., and R. Kaestner. 1997. Effects of Education on Health. *The Social Benefits of Education*, University of Michigan Press, Ann Arbor, MI, 69-123.

Harrel, Gilbert D., and Matthew F. Fors. 1985. Marketing Ambulatory Care to Women: A Segmentation Approach. *Journal of Health Care Marketing*, 5 (No.2), 19-28.

Hertzler, Ann A., and Carol Owen. 1976. Sociologic Study of Food Habits – A Review," *Journal of the American Dietetic Association*, 69, 381-384.

Hollis, Jack F., Timothy P. Carmody, Sonja L. Connor, Steven G. Fey, and Joseph D. Matarazzo. 1986. The Nutrition Attitude Survey: Associations With Dietary Habits, Psychological and Physical Well-Being, and Coronary Risk Factors. *Health Psychology*, 5(4), 359-374.

Jalso, Shirley B., Marjorie M. Burns, and Jerry M. Rivers. 1965. Nutritional Beliefs and Practices. *Journal of the American Dietetic Association*, 47, 263-268.

Kirscht, John P. 1983. Preventive Health Behavior: A Review of Research and Issues. *Health Psychology*, 2(No.3), 277-301.

Kuczmarski, R.J., K.M. Flegal, S.M. Campbell, and C.L. Johnson. 1994. Increasing Prevalence of Overweight Among U.S. adults: The National Health and Nutrition Examination Survey. *JAMA*, 272, 205-211.

Mahoney, Michael J. and Arlene W. Caggiula. 1978. Applying Behavioral Methods to Nutrition Counseling. *Journal of the American Dietetic Association*, 72, 372-377.

Malhotra, Naresh K. and Mark Peterson. 2002. *Basic Marketing Research: A Decision Making Approach*, Pearson-Prentice Hall: New Jersey.

Marlatt, Alan G., and Judith R. Gordon. 1980. Determinants of Relapse: Implications for the Maintenance of Behavior Change. *Behavioral Medicine: Changing Health Lifestyles,* 410-452.

McCoy, Judy. 1988. Wellness Program Can Be a Cost Effective Solution to Soaring Health Costs. *Journal of Compensation and Benefits*, 3, 5 (March/April) 278-284.

McCullough, S.W., Jones, S., and D. Vignalli. 2003. The Pot-Snack Market – Are Today's Consumers Demanding Heath as well as Convenience? *British Food Journal*, 105, No. 6, 395-404.

National Cancer Institute. 2005. Eat 5 to 9 a Day. http://www.5aday.gov/why/index.html.

NHANES. "Prevalence of Overweight and Obesity Among Adults: United States, 1999-2002." http://www.cdc.gov/nchs/products/pubs/pubd/hestats/obese/obsefig1.GIF

Pillai, Vijayan, and Subir Bandyopadhyay. 1997. Age Effects on Infant Mortality Controlling for Race: A Meta-Analytic Study. *Health Care for Women International*, 18 (1997), 115-126.

Plank, Richard E., and Stephen J. Gould. 1990. Health Consciousness, Scientific Orientation and Wellness: An Examination of the Determinants of Wellness Attitudes and Behaviors. *Marketing for Health and Wellness Programs*, 65-81.

Sanger, E. 2003. Atkins' Legacy: The Late Diet Guru's Company Lives on, Looking for Fat Profits from an Unlikely List of Low-carb Products. *Newsday,* Oct 20, A 29.

Schwartz, Nancy E. 1975. Nutritional Knowledge, Attitudes, and Practices of High School Graduates. *Journal of the American Dietetic Association*, 66, 28-31.

Szabo L. The health risks of new-wave vegetarianism. *CMAJ Canadian Medical Association Journal. 156(10):1454-5, 1997 May 15.*

Variyam, J.N. 1997. Role of Demographics, Knowledge, and Attitudes. *Americas Eating Habits: Changes and Consequences*, (AIB-750), www.ers.usda.gov/publications/aib750.

_____, J. Blaylock, and D. Smallwood. 1997. Diet-Health Information and Nutrition: The Intake of Dietary Fats and Cholesterol. U.S. Department of Agriculture, Economic Research survey, TB-1855.

Weimer, J. 1997. Accelerating the Trend Toward Healthy Eating. *Americas Eating Habits: Changes and Consequences*, (AIB-750), www.ers.usda.gov/publications/aib750.

American Demographics. 2001. Your Questions Answered—Letter to the Editor. November.

http://reports.mintel.com "Vegetarian Foods-US-November 2003."

http://www.defeatdiabetes.org "Red Meat Increases Diabetes Risk." 21 Sept 2004.

http://www.fmi.org/facts_figs/Nutrition.pdf "Nutrition"

http://www.usda.gov

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