2010

VEGETARIANS AND VEGANS IN KENTUCKY

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ABSTRACT OF THESIS

VEGETARIANS AND VEGANS IN KENTUCKY

Kentucky has a health crisis and most of the causes can be linked to diet, smoking and physical activity. Vegetarian and vegan diets have numerous benefits for many diet related health problems such as obesity, heart disease, Type 2 diabetes and certain cancers. There has been limited research on vegetarians and vegans in the United States and none in Kentucky. This study used an anonymous electronic survey to examine the different characteristics, behaviors, experiences and opinions of adult vegetarians and vegans in Kentucky. Results were compared to statistical data reported on the general population of Kentucky. Calculated body mass index (BMI) from self-reported height and weight showed 36% of vegetarians and 21% of vegans to be overweight or obese compared to 67% of the general Kentucky population being overweight or obese. The impact on BMI due to type of plant based diet (vegetarian or vegan) was found to be of greater significance ($p=0.0030$) than that of exercise. Reports from both groups indicated that they may be underserved by health care professionals. These findings have important implications for dietitians, dietetics education programs and health care providers concerned with high rates of obesity and chronic diseases.

KEYWORDS: vegetarian, vegan, plant based diet, Registered Dietitian, obesity

Danita Martha Hines

December 8, 2010
VEGETARIANS AND VEGANS IN KENTUCKY

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December 8, 2010
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Vegetarians and Vegans in Kentucky

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
Danita Martha Hines
Lexington, Kentucky

Director: Dr. Lisa Gaetke, Professor of Nutrition of Food Science
Lexington, Kentucky

2010

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DEDICATION

In memory of my sister

Patricia Lee Hines

1966-1985

whose life and death inspired me to seek a healthy lifestyle and help others
ACKNOWLEDGMENTS

The successful completion of the following thesis, while my own work, benefited from the assistance of many important people. First, my Thesis Committee, Lisa Gaetke, Ph.D., R.D., Janet Tietyen Mullins, Ph.D., R.D. and Joanna Badagliacco, Ph.D. are excellent scholars and beautiful human beings and gave invaluable guidance throughout the process. I am honored to have my name forever linked to theirs in the archives of the University of Kentucky.

My beloved family has supplied me with the sustaining energy to keep my momentum during this adventure. I have been doubly blessed to have my dear husband Mark Williams and cherished son Isaac Hines-Williams in my life to provide love, patience and support. Our canine companions Jane, Arlo and Sadie and feline companion Ella also offered unconditional love and continuous inspiration to think beyond the limits of my perceptions.

My precious parents Jim and Betty Hines taught me the value of hard work and high standards and always encouraged me to follow my heart, do my best and strive to help others. My parents-in-law Carroll and Susan Williams have also blessed me with their love and support. I am the luckiest daughter-in-law in the world.

Numerous special friends have given valuable feedback and encouragement as this endeavor unfolded: Doris Ferm, Elizabeth Willett, Rae Sikora, Jim Corcoran and Marty Davey, M.S., R.D.

In addition to Ms. Davey, several other vegetarian or vegan Registered Dietitians provided input or inspired by example over the years: Jeff Novick, M.S., R.D., Jack
Norris, R.D., Mark Rifkin M.S., R.D., Reed Mangels, Ph.D., R.D., and Brenda Davis, R.D.

Finally, I wish to thank all of the anonymous vegetarian and vegan respondents of my study. Their participation allowed this informative and interesting project to proceed and yielded many opportunities for future work. My hope is that all of the people of Kentucky will have healthier lives because of their contributions.
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CHAPTER ONE

Introduction

Background

The word “vegetarian” was in use as early as 1839 (Davis, 2010) and prior to this, western adherents were commonly known as “Pythagoreans” (Smith, 2004). A vegetarian generally describes one who does not eat flesh or other byproducts of slaughter (such as rennet or gelatin) from non-human animals. Vegetarians are often further categorized by whether or not they consume non-flesh animal food products derived from reproductive processes such as cow’s milk, chicken eggs and honey which can be obtained without slaughtering the female animals. Ovo-lacto vegetarians are defined as those that abstain from flesh foods but include cow’s milk and chicken eggs in their diet. It is unclear whether the earliest vegetarians included any animal products in their diet.

A vegan is a vegetarian who omits all animal-based food products (such as dairy, honey and eggs) from their diet and may also avoid other animal-based consumer products like leather, down, and wool. Donald Watson and his wife Dorothy coined the word "vegan" (pronounced ‘VEE-gan’) in Great Britain in November 1944 as a derivation from the beginning and end of the word vegetarian. There had been growing frustration among the Watsons and others that the word vegetarian had come to include the consumption of dairy products. Donald Watson viewed veganism as the root of vegetarianism and the “logical conclusion of the vegetarian journey in pursuit of good health without the suffering or death of any animal (Rodger, 2002) (British Broadcasting Corporation, 2005). Subsequently they founded The Vegan Society, which to this day uses the following definition: “The word "veganism" denotes a philosophy and way of living
which seeks to exclude — as far as is possible and practical — all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose; and by extension, promotes the development and use of animal-free alternatives for the benefit of humans, animals and the environment. In dietary terms it denotes the practice of dispensing with all products derived wholly or partly from animals (Sanderson, et al., 1979).

Most historical vegetarian and vegan adherents appear to have been primarily motivated by morality and compassion for animal suffering, but many were also attracted to the perceived health benefits. Numerous studies in recent years have confirmed that vegetarian and vegan diets can be advantageous in preventing chronic conditions and has prompted many to consume less or no meat. Global warming, factory farming, food safety, world hunger and resource conservation are just some of the current issues that have been added to the growing list of reasons that some choose to follow a plant based diet today.

Various celebrities in the modern era and notable figures of the past have adopted plant based diets and influenced their fans and supporters old and new to model their dietary habits. News, entertainment and advertising media have mirrored these trends and magnified the influence of famous vegetarians and vegans across the generations. Popular children’s movies that have subtle or overt vegetarian messages include “Bambi”, “Babe”, “Chicken Run” and “Finding Nemo” and may have influenced children and families to entertain these dietary ideas while being entertained.

There are members and communities within all of the major religions that have embraced plant based diets, including Christianity, Judaism, Islam, Buddhism and Hinduism. The
Seventh-day Adventist Church is a unique Christian denomination that encourages healthful behaviors such as avoiding alcohol and tobacco and recommends eating a vegetarian diet. Healthful behaviors and traits have among vegetarian and non vegetarian Adventists have allowed this population to be an optimal cohort to study the effects of meat eating separate form other lifestyle factors. Hundreds of research articles about the Adventist lifestyle have been published since the 1950’s by the National Cancer Institute, the National Institute of Health and others and have shown that this population lives longer and has lower rates of many common chronic diseases than most other Americans. (Seventh-day Adventist Dietetic Association).

Several religions forbid certain foods such as alcohol or caffeinated items, but most often the limitations are for different types of animal based foods and/or the methods of slaughter employed. Others observe food restrictions due to various medical diseases, allergies, intolerances and metabolic disorders. Restricting allergenic foods or certain meats considered “unclean” is usually only moderately different from the standard American diet, whereas eliminating all meat is the most dissimilar diet for meat eaters to respond to with their own attitudes and beliefs. Povey et al. found that “respondents displayed most positive attitudes and beliefs towards their own diets, and most negative attitudes and beliefs towards the diet most different form their own (Povey, Wellens, & Conner, 2001).

The constraints imposed by religious and therapeutic diets may cause inconvenience, expense and occasional conflict, but do not usually generate the level of social friction sometimes observed between meat eaters and meat abstainers. Celebrity chef Anthony Bourdain may have expressed the irritation of many omnivores, "Vegetarians, and their
Hezbollah-like splinter faction, the vegans ... are the enemy of everything good and decent in the human spirit, and an affront to all I stand for, the pure enjoyment of food."
(Bourdain, 2000)

English philosopher Midgley has summarized the conflict between meat eaters and plant eaters, “The symbolism of meat-eating is never neutral. To himself, the meat-eater seems to be eating life. To the vegetarian, he seems to be eating death. There is a kind of gestalt-shift between the two positions which makes it hard to change, and hard to raise questions on the matter at all without becoming embattled.” (Midgley, 1998) Adams takes this view one step further, by stating that the meat eater sees the vegetarian as “eating death” by risking health and the “death” of certain tastes, traditions, pleasure and control (Adams, 2001).

Antagonism by some vegetarians and vegans may be due to their perceptions as social outcasts coupled with the moral imperatives of their food choices overriding their social discretion. For meat eaters, a vegetarian or vegan dining companion may be an uncomfortable and provocative reminder that “For most human beings, especially in modern urban and suburban communities, the most direct form of contact with non-human animals is at mealtimes: we eat them” (Singer, 2002). These tensions may make interactions difficult in social and professional situations. Health care providers, whether meat eater or plant eater, are cautioned to remain objective when counseling clients regarding diet and nutrition, where personal food preferences, habits and biases will come into play and may override the available evidence.
In spite of this discord, in recent years the vegetarian label has apparently acquired a positive association for some consumers and they label themselves as vegetarian even when they are not. (Stahler, 2009) As a result, the “vegetarian” description has been co-opted to describe various omnivorous diets. “Pescetarian” and “pollotarian” terms have been coined to describe those that abstain from flesh foods except fish or chicken, respectively. The descriptions “semi-vegetarian” and “flexitarian” have come into favor for those that eat less meat than the average consumer or alternate between meatless and meat based meals.

The rising popularity of plant based diets has led to a proliferation of food and consumer products, restaurants, cookbooks, magazines, fashion lines, organizations, conferences, websites and other media supporting this lifestyle pattern. An increasing number of packaged foods are labeled as vegetarian or vegan. According to the June 2010 issue of FoodService Director magazine, “For both health and ethical reasons, vegetarian and vegan menu items are growing rapidly in popularity across all market sectors.” (Holaday, 2010)

It is clear that vegetarian and vegan foods and eating habits are an expanding part of the American dietary landscape, some aspects of that trend will be explored in this document, along with the role of healthcare providers in this development.

Research Problem

There has been limited research done on the motivations, health behaviors and experiences of vegetarians, and vegans in the United States and no evident research has been done in Kentucky. Given the low numbers and lack of attention, vegetarians and
especially vegans, may be underserved by the health care community and may not receive appropriate guidance during all stages of the life cycle.

**Purpose of Study**

The purpose of this study is threefold: 1) examine the characteristics, behaviors, experiences and opinions of people in Kentucky who choose a vegetarian or vegan diet and 2) compare these findings to what is known about the general population of Kentucky 3) explore the implications for R.D.s, dietetic education programs, health educators and other health care providers.

**Scope of Study**

Adults age 18 and over residing in Kentucky that follow a vegetarian or vegan dietary pattern were electronically surveyed on their motivations for choosing a plant based diet, their associated lifestyle, consumer, health experiences, behaviors and opinions and general demographics.

**Research Questions**

Question 1 – Are there differences between vegetarians and vegans in their characteristics, behaviors and opinions in general and in the health related experiences in particular?

Question 2 – How do these findings compare to the general public of Kentucky?

Question 3 – What are the experiences of vegetarians and vegans with registered dietitians (R.D.) and other health care providers?
Justification

The people of Kentucky have numerous pressing health issues and a health crisis on the horizon and most of the causes can be directly linked to lifestyle choices such as diet, smoking and physical activity. Plant based diets have the potential for numerous benefits for the individual, community and planet regarding many of the diet related health problems. Full and partial plant based diets have been rising in popularity in recent years and have cultural, political, economic and environmental implications beyond the individual Kentucky consumer. For these reasons, there is a great need for research on the motivations, experiences and behaviors of vegetarians and vegans in Kentucky, how the wider community responds to them and what may be the implications for R.D.s, dietetics programs and other health care providers and education programs.

Assumptions

Several factors were assumed in this study: the participants were honest and accurate in their responses and were comfortable revealing personal information about their lifestyle due to the anonymity of an internet survey. Additionally, vegetarians and vegans in a community are likely to know of each other’s existence and therefore it was assumed that snowball sampling will be an effective means of publicity and gathering additional study participants.

Limitations

The sample was a convenience sample of the vegetarian and vegan population and there was no control group. No funding was available for publicity and therefore this study was primarily limited to email and internet communications and only minimal use of other means of contact. The population was limited to English literate adults age 18 and over. It
is likely that vegetarians and vegans without internet or email access would have limited knowledge of or access to the survey which may mean those of lower income, older age, less education or living in remote areas did not participate in proportional numbers.
CHAPTER TWO
Review of Literature

Prevalence and Traits of Vegetarians and Vegans

The Vegetarian Resource Group (VRG) is a non-profit organization that educates the public on vegetarian diets through publication of the Vegetarian Journal and production of other resources for consumers, food service systems managers and healthcare professionals. Since 1994 VRG has polled the number of vegetarians in the U.S. approximately every three years, with the most recent conducted by Harris Interactive® in 2009. The 2000 poll by the Vegetarian Resource Group indicated that U.S. vegetarians are more likely “living on both coasts, residents of large cities, and women working outside the home. Interestingly, the split between male and female vegans is about equal, while twice as many women are vegetarian as men.” (Vegetarian Resource Group, 2000)

Unlike other polls which are often dependent on personal definitions, VRG used the word “never” as a parameter of the questions with the name of specific animal foods to more clearly and accurately identify the prevalence of vegetarians and vegans. Comparable to the results in previous polls, VRG found, “In the survey, 3 percent of U.S. adults indicated they never eat meat, poultry, and fish/seafood. They were classified as vegetarian. About one third of vegetarians, or one percent of U.S. adults, also never eat dairy, eggs, and honey and, therefore, were classified as vegan.” (Stahler, 2009)

Fraser et al. examined the traits of middle aged adults and found that those with higher education levels ate less meat. (Fraser, Welch, Luben, Bingham, & Day, 2000) Others have observed that alcohol use and weight control behavior was associated with teenage vegetarian eating. (Greene-Finestone, Campbell, Evers, & Gutmanis, 2008) A very large
study conducted in the United Kingdom, found that those with “higher intelligence test scores in childhood were more likely to report being a vegetarian at age 30 years.” Interestingly, the authors also observed that “Although the vegetarians in this cohort were, on average, more intelligent, better educated, and of higher occupational social class than the non-vegetarians, these socioeconomic advantages were not reflected in their income. It may be that ethical considerations determined not just their diet but also their choice of employment. Compared with non-vegetarians, vegetarians were less likely to be working in the private sector and more likely to be working in charitable organisations, local government, or education: 17% of the vegetarians worked in education compared with 9% of non-vegetarians.” (Gale, Deary, Schoon, & Batty, 2007)

Another measure of the growing interest in plant based diets is the expansion of vegetarian media. Periodicals such as Vegetarian Times magazine have had an increase in both subscription and newsstand sales in recent years, with national circulation increasing 24% since 2005. Current circulation in Kentucky is over 2300. (Audit Bureau of Circulations, 2005) (Audit Bureau of Circulations, 2010)

The 2009 Census Bureau population estimate is approximately 300 million U.S. adults and 4.3 million Kentucky adults (age 18 and older) (US Census Bureau, 2010). Using the VRG estimations, 3% translates into roughly 6.9 million U.S. adult vegetarians and 99,000 Kentucky adult vegetarians and 1% indicates about 2.3 million U.S. adult vegans and 33,000 Kentucky adult vegans (Table 2.1). However, given Kentucky’s lower than average rates of income, education and the lack of large metropolitan areas as compared to the rest of the United States, it is presumed that the number of adult vegetarians and vegans in Kentucky is lower than this extrapolation would indicate. No specific
estimations on the prevalence of vegetarians and vegans in Kentucky are known of at this time.

Table 2.1, U.S. Census Bureau Data

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Kentucky</th>
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<tbody>
<tr>
<td>Population, 2009 U.S. Census</td>
<td>307,006,550</td>
<td>4,314,113</td>
</tr>
<tr>
<td>Bureau estimate</td>
<td></td>
<td></td>
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<tr>
<td>Persons under 18 years old,</td>
<td>24.30%</td>
<td>23.50%</td>
</tr>
<tr>
<td>percent, 2009 U.S. Census</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bureau estimate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Persons 18 years old and over,</td>
<td>232,403,958</td>
<td>3,300,296</td>
</tr>
<tr>
<td>(Calculated)</td>
<td></td>
<td></td>
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<tr>
<td>Adult vegetarians, 3%,</td>
<td>6,972,119</td>
<td>99,009</td>
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<tr>
<td>(Calculated)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult vegans, 1%,</td>
<td>2,324,040</td>
<td>33,003</td>
</tr>
<tr>
<td>(Calculated)</td>
<td></td>
<td></td>
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<tr>
<td>Median household income, 2010</td>
<td>$52,029</td>
<td>$41,489</td>
</tr>
<tr>
<td>High school graduates, percent</td>
<td>80.40%</td>
<td>74.10%</td>
</tr>
<tr>
<td>of persons age 25+, 2002</td>
<td></td>
<td></td>
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<tr>
<td>Bachelor's degree or higher,</td>
<td>24.40%</td>
<td>17.10%</td>
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<tr>
<td>percent of persons age 25+,</td>
<td></td>
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<td>2002</td>
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Motivations of Vegetarians and Vegans

Ogden et al. found that “becoming a vegetarian was associated with ethical and taste-related motivations, a lower positive attitude and a greater negative attitude for the foods being avoided. (Ogden, Karim, Choudry, & Brown, 2007) Fox and Ward proposed that the various motivations to eat a vegetarian or vegan diet often evolve over time for each individual. They documented in the literature over the past twenty years the following motivations for eating a plant based diet: health, weight loss, animal welfare, environment, revulsion with eating flesh, connection to patriarchy, food beliefs and peer
or family influences. (Fox & Ward, 2008) They also found that for many vegetarians and vegans there is an initial primary motivation of health or ethical concerns but eventually both of these reasons are embraced. Over time, additional motivations are adopted as the vegetarian or vegan is exposed to other concepts and viewpoints about their diets over time.

**Health Benefits – General**

The American Dietetic Association (A.D.A.) has stated in a 2009 position paper “that appropriately planned vegetarian diets, including total vegetarian or vegan diets, are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases. Well-planned vegetarian diets are appropriate for individuals during all stages of the life cycle, including pregnancy, lactation, infancy, childhood, and adolescence, and for athletes. A vegetarian diet is defined as one that does not include meat (including fowl) or seafood, or products containing those foods.” (Craig, Mangels, & A.D.A., 2009) Dr. Dean Ornish has affirmed these benefits in an editorial in The American Journal of Cardiology “There is a growing convergence of scientific evidence that an optimal diet is mostly plant based, consisting predominantly of fruits, vegetables, whole grains, legumes, and soy products”. (Ornish, Mostly Plants, 2009)

The A.D.A. statement further details a number of benefits associated with plant based diets. “The results of an evidence-based review showed that a vegetarian diet is associated with a lower risk of death from ischemic heart disease. Vegetarians also appear to have lower low-density lipoprotein cholesterol levels, lower blood pressure, and lower rates of hypertension and type 2 diabetes than non-vegetarians. Furthermore, vegetarians tend to have a lower body mass index and lower overall cancer rates.
Features of a vegetarian diet that may reduce risk of chronic disease include lower intakes of saturated fat and cholesterol and higher intakes of fruits, vegetables, whole grains, nuts, soy products, fiber, and phytochemicals.” (Craig, Mangels, & A.D.A., 2009)

In addition to the A.D.A, other professional health organizations have weighed in on the benefits of plant based foods for chronic disease prevention. Increased consumption of plant based foods is encouraged by The American Heart Association, the American Diabetes Association, and the American Institute for Cancer Research, The American Medical Association and the American Public Health Association. (Polis, 2010)

Kentucky is one of the unhealthiest states in our nation and any behaviors or social conditions that could help stem the tide should be explored for public health consideration. The leading chronic diseases occur in Kentucky residents at a rate higher than the U.S. average according to the Centers for Disease Control (Siameh, Kanotra, & Konnor, 2007) and contribute to ever increasing health care costs.

**Health Benefits – Obesity**

Kentuckians are not immune to the rising rates of obesity and overweight or the obesity-related co-morbidities such as cardiovascular disease, some cancers, diabetes, and hypertension. Kentucky is ranked 7th in the nation for adult obesity (30.5%) and 3rd in the nation for teenage obesity (21%) (Levi, Vinter, St. Laurent, & Segal, 2010). Taxpayers that bear the financial costs of skyrocketing obesity could benefit from knowing that research has shown that men and women who have changed their diet in the direction meat-eater > fish-eater > vegetarian > vegan have shown improvements in
weight gain, with vegans showing the least mean annual weight gain (Rosell, Appleby, Spencer, & Key, 2006).

The escalating rates of obesity among Kentucky’s children, adolescents and young adults are of particular concern since being overweight early in life is more likely to result in being overweight or obese throughout the adult years (Nelson, Kocos, Lytle, & Perry, 2009). Vegetarians are more likely to be “health conscious” than non-vegetarians, have a lower body mass index (BMI) and a lower prevalence of obesity is associated with vegetarian diets of adults and children (Bedford & Barr, 2005). Adolescent vegetarians have been found to be significantly more likely than their non-vegetarian peers to meet the Healthy People 2010 objectives for total fat, saturated fat and daily servings of fruits and vegetables (Perry, McGuire, Neumark-Sztainer, & Story, 2002). Having more vegetarian and vegan options available in schools, restaurants, groceries, hospitals and other venues may be an important tool in reversing obesity and other adverse health trends (Sabaté & Wien, 2010) among the people of the Commonwealth.

Some adolescents and young adults practice disordered eating habits to control weight gain (Greaney, et al., 2009). And there are indications that vegetarian and vegan diets are adopted by some in order to mask a disordered eating pattern from parents (Robinson-O’Brien, Perry, Wall, Story, & Neumark-Sztainer, 2009). In addition to appropriate mental health counseling, having more nutrient-dense, lower calorie plant based options that are convenient and affordable would assist professionals and wellness programs that emphasize lifestyle changes instead of unhealthy dieting and other extreme measures for weight management. Plant based diets may in fact reduce the incidence of disordered eating by preventing unhealthy weight gain (Barnard & Levin, 2009).
Health Benefits – Diabetes

According to the latest state report on the impact of diabetes, “Current data indicates that Kentucky ranks 7th in the nation in the largest percentage of adults diagnosed with diabetes. In addition, forty percent of all Kentuckians age 40-74 are estimated to have pre-diabetes putting them at high risk for heart disease and of future development of diabetes. In Kentucky, diabetes is the fifth leading cause of death by disease, and is responsible for numerous devastating complications (e.g., blindness, lower extremity amputation, kidney failure, heart disease, stroke). Direct and indirect costs are estimated to be 2.9 billion.” (Christian, Bush, & Anochie, 2005)

A recent study compared a low fat vegan diet with the dietary guidelines of the American Diabetes Association (Barnard, et al., 2006). Both diets improved A1C, body weight, plasma lipid and urinary albumin. However, among medication stable participants, changes in A1C, weight, BMI, waist circumference, total cholesterol and LDL were significantly greater in the vegan group.

R.D.s and other health care professionals may believe that advising patients to move towards a vegan diet is impractical and difficult. However, the dietary adherence criteria were met by 67% of vegan group participants, as compared to 44% of participants following the American Diabetes Association guidelines. This is likely due to the simplicity of the vegan guidelines: avoid animal products; avoid added fats and choose low–glycemic foods, such as green vegetables and beans. No restrictions were placed on portion size, calories or carbohydrates. Participants consumed vegetables, fruits, grains, and legumes, with ~10% calories from fat, 15% protein, and 75% carbohydrate.
The American Diabetes Association guidelines aim for 15–20% protein, <7% saturated fat, 60–70% carbohydrate and monounsaturated fats, and cholesterol ≤200 mg/day. Each participant in this group received an individualized plan, based on body weight and plasma lipid concentrations. Those with a BMI >25 kg/m2 (all but three of this group) were prescribed plans with energy intake deficits of 500–1,000 kcal. The difficulty of looking at a food item or a meal on a plate and estimating its saturated fat, cholesterol, carbohydrate or caloric content may be why the compliance was lower for the American Diabetes Association group.

Health Benefits – Cancer

The Centers for Disease Control and Prevention reports that the state of Kentucky has the highest death rate for cancer out of all 50 states (Xu, Kochanek, Murphy, & Tejada-Vera, 2010). The vast majority of all cancer cases (90–95%) can be attributed to one’s environment and lifestyle. A strong link between diet and certain cancers has been established over the years, with approximately 1/3 of cancer deaths attributed to diet and about 70% for gastrointestinal cancers. (Anand, et al., 2008)

Numerous studies have linked animal product consumption, particularly red meat, processed meat, (Cross, et al., 2010) saturated fat and dairy to several cancers. Hu, et al. found that “Total meat and processed meat were directly related to the risk of stomach, colon, rectum, pancreas, lung, breast (mainly postmenopausal), prostate, testis, kidney, bladder, and leukemia. Red meat was significantly associated with colon, lung (mainly in men), and bladder cancer.” (Hu, La Vecchia, DesMeules, Negri, & Mery, 2008) High intake of dairy products is associated with a higher risk of prostate cancer while high intake of saturated fat increases the risk of breast cancer. (Gonzalez & Riboli, 2010)
Likewise, ample research indicates that the phytochemicals in fruits, vegetables, spices, and grains have the potential to prevent cancer through multiple pathways. (Anand, et al., 2008)

The link between diet and certain cancers is sufficiently supported such that The American Institute for Cancer Research has simplified its recommendations to three, with two directly related to food intake: “1) Choose mostly plant foods, limit red meat and avoid processed meat; 2) Be physically active every day in any way for 30 minutes or more; 3) Aim to be a healthy weight throughout life.” (American Institute for Cancer Research, 2007) Additionally, recent studies indicate that after cancer has been diagnosed, a healthy diet, in particular a plant based diet may significantly slow the progression of breast, prostate and colon cancer. (McEligot, Largent, Ziogas, Peel, & Anton-Culver, 2006) (Nguyen, Major, Knott, Freeman, Downs, & Saxe, 2006) (Meyerhardt, et al., 2007)

**Health Benefits – Heart Disease**

The Mayo Clinic states that “Heart disease is the No. 1 worldwide killer of men and women, including in the United States. For example, heart disease is responsible for 40 percent of all the deaths in the United States, more than all forms of cancer combined. Many forms of heart disease can be prevented or treated with healthy lifestyle choices and diet and exercise.” Dean Ornish states that “Cardiovascular diseases kill more people each year in the U.S. and worldwide than all other illnesses combined.” (Ornish, Dean Ornish on the world's killer diet, 2006) In Kentucky, heart disease claims 30 percent of all deaths and heart related hospitalization costs totaled over $1,640,620,000 in 2002. (Department for Public Health, 2003)
Former President Bill Clinton may be the most famous heart patient who has chosen to use a plant-based diet to lose weight and stop or reverse the progression of his heart disease by following the guidance of Dean Ornish, Caldwell Esselstyn, Jr. (Stamford, 2010) and T. Colin Campbell (Sherwell, 2010). These renowned physicians and nutrition researcher have promoted vegetarian and vegan diets in their respective programs to prevent and reverse heart disease over several decades. (Ornish, Mostly Plants, 2009) (Esselstyn, 2010)

**Nutritional Health Risks**

The A.D.A. position paper points out that the authors reviewed “the current data related to key nutrients for vegetarians including protein, n-3 fatty acids, iron, zinc, iodine, calcium, and vitamins D and B-12” and concluded that “a vegetarian diet can meet current recommendations for all of these nutrients. Whether an individual identifies oneself as “omnivore”, “vegetarian”, “vegan” or some variation, these labels only reveal broad categories of what is or is not eaten. Given the wide range of plant and animal food products available in our society, and the infinite variations on relative qualities and quantities of each, these labels are not very useful to the clinician. Fraser found high variability in the levels of fruit and vegetable consumption among vegetarians and meat eaters. British vegetarians consume more fruits and vegetables than British non-vegetarians, but much less than some Mediterranean non-vegetarians. (Fraser G. , 2009) Omnivores that eat a poor diet and then become “vegetarian” by replacing the meat, dairy and eggs with highly processed, high fat, high sugar plant foods and little to no fruits, vegetables, whole grains or legumes are not likely to reap the potential benefits from whole plant foods.
Another portion of the A.D.A. position paper addresses this concern and states, “The variability of dietary practices among vegetarians makes individual assessment of dietary adequacy essential. In addition to assessing dietary adequacy, food and nutrition professionals can also play key roles in educating vegetarians about sources of specific nutrients, food purchase and preparation, and dietary modifications to meet their needs.” (Craig, Mangels, & A.D.A., 2009)

Other Health Risks

Eating animals in general and intensive modern animal agriculture practices in particular has led to millions of deaths with great evolutionary and historical significance. Many zoonotic infectious threats are continuing to impact human health – with risks borne by both meat eaters and vegetarians. The origin of AIDS has been linked to eating chimpanzee flesh (Sharp, Bailes, Chaudhuri, Rodenburg, Santiago, & Hahn, 2001) and SARS to live animal markets selling palm civets and raccoon dogs for consumption (Kan, et al., 2005). Other diseases likely to have originated with various domesticated livestock include: diphtheria and rotavirus A (domestic herbivores); influenza A (ducks and pigs); measles (cattle); mumps (pigs); smallpox (camels), tuberculosis and East and West African sleeping sicknesses (ruminants). (Wolfe, Dunavan, & Diamond, 2007)

Kennedy F. Shortridge who first discovered the H5N1 virus in Asia, states in the foreword of Bird Flu: A Virus of Our Own Hatching, “Chicken, once consumed only on special occasions, has become a near-daily staple on dinner tables around the world as a result of animal agriculture practices that have dramatically changed the landscape of farming by confining ever greater numbers of animals in ever decreasing amounts of space. In China, the shift from small, backyard poultry rearing toward industrialized
animal agribusiness began to take root in the early 1980s. In just two decades, Chinese poultry farming has increasingly intensified—and has developed an unintended by-product: the prospect of an influenza pandemic of nightmarish proportions, one that could devastate humans, poultry, and ecosystems around the world.” (Greger, 2006)

Antibiotics have been used in livestock for over 60 years and concerns about negative impacts on human health have been voiced by the medical community since the early 1950s. (Love, Davis, Bassett, Gunther, & Nachman, 2010) According to the Union of Concerned Scientists, “Livestock use accounts for the lion's share of the total quantity of antimicrobials used in the United States. Our estimates suggest that nontherapeutic livestock use accounts for 70 percent of total antimicrobial use. When all agricultural uses are considered, the share could be as high as 84 percent. This estimate is far higher than the 40 percent figure commonly given in the literature for the agricultural share of antimicrobial use.” (Mellon, Benbrook, & Benbrook, 2001) This practice is “condemned by the American Medical Association, the American Public Health Association, the Infectious Diseases Society of America, and the American Academy of Pediatrics, among 300 other organizations nationwide. Despite the widespread outcry against this practice from the public health community, agribusiness continues to engage in this dangerous practice.” (Humane Society of the United States, 2010)

In the late 1980s bovine spongiform encephalopathy (BSE) in cows and variant Creutzfeldt–Jakob disease in human beings demonstrated just how fatal the consequences of animal factory farming could be to human health and nearly fatal to the beef industry. Since that time, enhanced detection methods have revealed novel prion diseases, so-called atypical transmissible spongiform encephalopathies (TSEs) in cattle and small
ruminants (Biacabe, Morignat, Vulin, Calavas, & Baron, 2008). Seuberlich et al. state, “In case atypical TSEs in ruminants indeed turn out to be spontaneous diseases, their eradication will be difficult. At this stage, the impact of atypical TSEs on public health and disease control certainly needs to be reassessed. However, with decreasing coverage of active surveillance, it will be difficult to identify such cases in the future. This dilemma points to the importance of maintaining a certain level of efficient TSE surveillance until there is clarity regarding risks from atypical TSEs. (Seuberlich, Heim, & Zurbriggen, 2010)

**Environmental Sustainability**

Frances Moore Lappé in her book *Diet for a Small Planet* was among the first to emphasize the link between meat based diets, the environment and world hunger (Lappe, 1971). Since that time numerous others have expanded on her work. Pimentel and Pimentel compared the fossil energy requirements of a vegetarian diet and the standard meat-based American diet and found neither sustainable in the long term given the disturbing long term population growth predictions. (Pimentel & Pimentel, 2003) However, they found that in addition to energy, the standard omnivore diet also demands more land and water resources, making vegetarian diets preferable overall for long term survival.

More recently, researchers in California found that, “for the combined differential production of 11 food items for which consumption differs among vegetarians and non-vegetarians, the non-vegetarian diet required 2.9 times more water, 2.5 times more primary energy, 13 times more fertilizer, and 1.4 times more pesticides than did the vegetarian diet. The greatest contribution to the differences came from the consumption
of beef in the diet. We found that a non-vegetarian diet exacts a higher cost on the environment relative to a vegetarian diet.” (Marlow, Hayes, Soret, Carter, Schwab, & Sabaté, 2009)

In 2006 the Food and Agriculture Organization of the United Nations released “Livestock’s Long Shadow” which assessed the impact of livestock on the environment (Steinfeld, Gerber, Wassenaar, Castel, Rosales, & de Haan, 2006). According to this report, if trends continue, by 2050 global production is expected to double for meat (229 million tons to 465 million tons) and milk (580 million tons to 1043 million tons). A portion of the executive summary states: “The livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from local to global. Livestock’s contribution to environmental problems is on a massive scale and its potential contribution to their solution is equally large. The impact is so significant that it needs to be addressed with urgency. Major reductions in impact could be achieved at reasonable cost”.

The rising public consciousness of food origins has led to the emergence of the locavore movement, with “locavore” being named the New Oxford American Dictionary 2007 word of the year (Ford, 2007). This recent phenomenon does not specify whether foods are derived from animals or plants, but instead refers to an emphasis on local and sustainable food production and food communities. Surprisingly, some leaders in the locavore movement have proposed that vegetarian and vegan diets are antithetical to sustainability goals. (Stănescu, 2010) This has led Stănescu and others to suspect there are sexist and xenophobic motivations within the movement. They believe there is a danger to “focusing purely on the local at the expense of the global” and that stressing
food production while minimizing the impact of other consumer goods and activities is unrealistic and naïve.

It is not clear that the transportation phase should be the over riding environmental factor in determining food choices as compared to the production phase, as Saunders et al. demonstrated with dairy, onions, apples and lamb in New Zealand and the United Kingdom. “Food miles is a very simplistic concept relating to the distance food travels as a measure of its impact on the environment. As a concept, food miles have gained some traction with the popular press and certain groups overseas. However, this debate which only includes the distance food travels is spurious as it does not consider total energy use especially in the production of the product.” (Saunders, Barber, & Taylor, 2006)

Weber and Matthews completed life-cycle assessments of various foods and found that while eating local foods can reduce one’s greenhouse gas footprint, it is not as much as replacing beef and dairy for chicken, fish, eggs, or a vegetable-based diet. For example, consuming an all-local diet 7 days per week conserves the greenhouse gas equivalent of driving 1000 fewer miles each year, while choosing a vegetarian diet 1 day per week is on par with 1160 fewer miles per year. (Weber & Matthews, 2008)

Eshel and Martin examined the effect of dietary choices on one’s planetary footprint, and found it comparable in magnitude to the effects from the car one chooses to drive (Eshel & Martin, 2006). In fact, they concluded that switching from the average U.S. intake (27.7% animal products) to a vegan diet would reduce one’s greenhouse gas footprint to a greater extent than trading in an average sedan (Camry) for an ultra-efficient hybrid (Prius). Efforts to implement an economy wide cap and trade program to reduce
greenhouse gas emissions will not only impact the energy and transportation industries, but are also likely to include incentivizing farmers to sequester carbon through plant and soil management practices (American Farmland Trust, 2009), which may further encourage a move towards plant based diets in Kentucky and beyond.

The British National Health Service has responded to its role in the threat of climate change by reducing meat and dairy offerings on its hospital menus in its “Saving Carbon, Improving Health” strategy. (Jowit, 2009) Elsewhere in Europe, the German federal environmental agency has announced that citizens should “eat meat only on special occasions”, even though Germans consume a high level of meat and are considered “among Europe's most carnivorous people, drawing nearly 40 per cent of their caloric intake from animal products.” (The Telegraph, 2009)

Food Service

While vegetarians and vegans may be a minority, increasing numbers of meat eating customers are demonstrating that they prefer to have vegetarian and vegan choices available when they dine. (Lanou, 2007) In 2000 the world’s largest food service company, Compass Group initiated the Terra Ve vegan/vegetarian food concept on many of the campuses that it serves through its Chartwell subsidiary. (Nation's Restaurant News, 2000)

The “Meatless Monday” concept was developed in 2003 by the Johns Hopkins Bloomberg School of Public Health’s Center for a Livable Future as a result of the U.S. government’s Healthy People 2010 objectives. (Johns Hopkins Bloomberg School of Public Health, 2003) This program has been adopted by other schools of public health,
institutional food service vendors and health organizations to encourage a meat free day at least once per week to reduce the risk of preventable disease due to saturated fat intake.

Aramark, one of the other large food service providers, in 2004 completed a nationwide survey by over 100,000 college students with about 25% stating that finding vegan meals on campus was important to them. Subsequently Aramark added dozens of vegan menu items as part of its Just4U(TM) menu program. (Allbusiness.com, 2004)

In 2007 Sodexo, another top food service company demonstrated that it also was responding to the increasing demand for vegetarian and vegan menu items. Its food service program at Northwestern University in Chicago, IL was recognized as the “most vegan-friendly college” in America by the student branch of People for the Ethical Treatment of Animals (PETA) (Brooks & Heth, 2008).

This trend among the food service heavyweights is not limited to higher education. In January 2010 Compass Group announced its "Be a Flexitarian" program. This plan will increase the vegetarian options for all of their customers, not just high school and college students, in its 8,500 U.S. food service cafeterias. In addition, they will also be asking their customers to pledge to eat at least one meatless meal per week. (Holaday, 2010)

**Lactose Intolerance**

Vegans are not the only consumers that desire alternatives to products made from cow’s milk. Those that have lactase persistence beyond weaning age are often called lactose intolerant. “In the United States the prevalence is reported to be 15% among Caucasians, 53% among Hispanic Americans, and 80% among Americans of African ancestry” (Law, Conklin, & Pimentel, 2010)
Kentucky’s population is changing and has experienced increased immigration in the past 20 years similar to other states, many from Latin America and Asia. Many of these immigrants to Kentucky come from ethnic groups that are predominately lactose intolerant. According to the Kentucky Legislative Research Commission, “Even though Kentucky ranks among the lowest states in the proportion of immigrants to total state population, the state ranked third highest among all states in immigration increases in the 1990’s.” (Legislative Research Commission, 2002) While immigrants that work in low paying jobs get a lot of media attention, many immigrants to Kentucky are highly educated professionals. Both groups are an important component of the Kentucky economy. Cultural sensitivity while providing for dietary needs and preferences is important for restaurants, hospitals and schools to fully support their clients and the Commonwealth’s economic development goals. An unknown portion of native Kentuckians are also lactose intolerant and would also benefit from increased availability of nondairy options, along with vegans and vegetarians that prefer plant based milks. In addition, all consumers could benefit from restaurants, hospitals and schools enhancing accessibility to entrees made with calcium rich plant foods such as dark leafy greens.

It may be advantageous for Kentucky food purveyors to support their existing vegetarian and vegan customers with more vegan and vegetarian entrées overall. Providing these options may also appeal to a growing segment of their meat eating customers, enhancing customer satisfaction and strengthening the bottom line. Businesses may not be able to afford to ignore this trend since restaurants with no vegan or vegetarian options have often found that they are subject to the veto factor if just one person in a group of diners prefers to dine elsewhere to find meatless meals. (Veg Advantage, 2010) In fact, a
National Restaurant Association survey found that 56 percent of chefs rated vegetarian entrées and 51 percent of chefs rated vegan entrées among their top 10 trendiest menu items. (National Restaurant Association, 2007)

The A.D.A. Position Paper on Vegetarian Diets notes that: “Although a number of federally funded and institutional feeding programs can accommodate vegetarians, few have foods suitable for vegans at this time.” (Craig, Mangels, & A.D.A., 2009) R.D.s and other professionals in feeding programs and food service may wish to provide vegan options that would accommodate both vegan and vegetarian clientele and could passively encourage increased fruit, vegetable, grain and legume consumption among their omnivorous client populations.

Compassion for Animals

Broom has asserted that, “In relation to animal production throughout the world, consumers will increasingly demand the avoidance of adverse effects on human welfare, animal welfare, the environment, and fair trade and maintenance of the viability of human communities. All of these aspects are now part of product quality.” (Broom, 2010) Vegetarians and non vegetarians motivated by their compassion for animals have joined together in recent years in promoting a number of animal agriculture welfare issues. California Proposition 2 passed in November 2008 and requires “that egg-laying hens, veal calves, and pregnant sows have room enough to lie down, stand, turn around, and fully extend their limbs, effective 2015.” (American Veterinary Medical Association, 2008)
Intensive animal husbandry has become a concern among consumers, regardless of diet, disturbed to find out that, “About 95 percent of egg-laying hens and 70 percent of breeding sows in the U.S. are cruelly confined in cages and crates so small the animals can barely move for their entire lives.” (The Humane Society of the United States, 2010)

The growing public pressure has led Burger King, Omni Hotels, Whole Foods, Ben and Jerry’s, Wolfgang Puck’s restaurants, the Google cafeteria, SUBWAY®, Denny's, Burger King, Wendy's, Quiznos, Sonic, IHOP, Carl's Jr., Hardee's, Red Robin and others to only use cage-free eggs and adopt other relevant policies. (Severson, 2007) (The Humane Society of the United States, 2010)

Other vegetarians and vegans hold that “there is no such thing as humane animal products, humane farming practices, humane transport, or humane slaughter” (Brown, 2010) and are appalled that some animal activists have aligned with agribusiness. The ongoing animal rights debate between welfarist and abolitionist positions (Francione & Garner, 2010) has caused rifts between prominent vegetarian organizations and individuals and demonstrates that vegetarians and vegan are not a monolithic group of consumers. Agriculture, health and consumer policy discussions in the future are likely to continue to include surprising alliances and interesting twists when food animals are involved.

This literature review of the abundant support for the health, environmental and ethical motivations for consumers to choose a vegetarian or vegan diet, the prevalence of those consumers and the economic implications for the food industry, yields intriguing implications for the various stakeholders within the Bluegrass state.
CHAPTER THREE

Methodology

This research study was developed to gain insight into the primary motivations that lead consumers to choose a plant based dietary pattern, their subsequent lifestyle experiences, their nutrition knowledge, health and consumer behaviors and selected health parameters. This chapter discusses the research design, sample population, instrumentation and procedures used to collect and analyze the data.

Research Design

The methodology used was exploratory, and further research is necessary to extrapolate these findings to the general population of Kentucky and the vegetarians and vegans nationwide.

This cross-sectional descriptive pilot study uses an online anonymous survey and relies on snowball and convenience sampling. The survey instrument and overall study design was approved by the University of Kentucky Institutional Review Board. All questions were voluntary and unanswered questions did not eliminate participants.

Sample Selection and Data Collection

Self identified adult vegetarians and vegans throughout rural, suburban and urban areas of Kentucky were contacted primarily through email but also through printed flyers, the UK clinical research website, Facebook social networking website and word of mouth. Solicitation of potential participants occurred from February through October 2010. All study advertising included the eligibility parameters for the study, the link and password to the survey located on the Survey Monkey website and also the link to the electronic
file that was posted on the UK Clinical Research website which contained the same information. Participants were also asked to share the study information with any adult vegetarians or vegans that they knew in their community or elsewhere in Kentucky.

Both general and targeted approaches were utilized to discover likely eligible participants statewide. The initial general approach focused on organizations and individuals that had a presence on the web and were likely to include or be in contact with people interested in plant based diets. This included statewide, regional and local groups geared towards healthy lifestyles, animal welfare, the environment, hunger issues and religion and culture. Specifically, email addresses were gleaned from websites such as: private and public universities, colleges and technical schools, health food stores, public health departments, gyms, fitness centers and yoga studios, doctors, chiropractors, massage therapists, animal shelters, animal rescue groups, veterinarians, kennels, dog groomers, religious groups, cultural groups, environmental groups, food pantries and hunger advocacy groups.

After several months of collecting data with some counties showing no participation and the bulk of participants from the larger urban/suburban areas, a targeted approach of locating publicly available emails in underrepresented counties was adopted. Email addresses were obtained from websites for city and county governments, chambers of commerce, school boards and high schools in counties with zero or one survey participant were contacted but did not appreciably increase the number of participants. Four flyers were posted, slightly more than fourteen thousand email addresses were contacted in all and approximately 300 addresses were bounced as invalid addresses.
Instrumentation – Pilot Study Questionnaire Development

The survey instrument was developed after consulting with several nationally prominent R.D.s who specialize in vegetarian and vegan nutrition and/or serve vegetarian and vegan clientele. An abbreviated version was first utilized in a small study on vegans in Georgia for a graduate class assignment. In the current study participants were first asked to identify themselves as either vegetarian or vegan, and based on that designation answered questions on diet, lifestyle, social support, healthcare, media and consumer questions. Both vegetarians and vegans then answered the same nutrition, health and demographic questions.

Data Analysis

Statistical analysis was conducted by Xia Yu, graduate student of the University of Kentucky using SAS for the Exercise and BMI data and Excel for the remaining data. T-tests were run for ordinal data and chi-square independence tests were run for categorical data. P values less than 0.05 are italicized to indicate statistical significance.
CHAPTER FOUR

Results

Out of the original 807 who started the survey: 12 chose “no response” to the first question and ended their participation in the survey; 39 who chose “vegetarian” and 10 who chose “vegan” did not answer any other questions and were also thrown out; 1 participant chose “vegetarian” for the first question but then had answers to a few of the vegan set of questions, but no others, so this person must have gone back and forth between pages changing answers contrary to the skip logic of the survey software, and so their responses were also discarded.

There were 745 total participants in this survey: 593 (79.6%) self identified as “Vegetarian, (I avoid meat and seafood, but may include eggs and/or dairy.)” and 152 (20.4%) self identified as Vegan (Table 4.1). Among the vegans, 64 (42.1%) stated that they avoid all animal foods and 88 (57.9%) stated that they avoid animal foods but may include occasional, small amounts of honey (Table 4.2).

A majority of both vegetarian and vegan participants were female with a slightly larger percentage of males in the vegan group and the gender differences between vegetarians and vegans were significant ($p=0.0377$) (Table 4.3). Most of those surveyed were young adults age 18-39, with 61% of vegetarians and 58% of vegans falling in that range, but overall there was no significant difference in the ages of the two groups ($p=0.4020$) (Table 4.3). Classification by religion was not significantly different ($p=0.1003$) between vegetarians and vegans. The most common religious preference for all participants was Christianity, with 32 out of 248 (13%) Christian vegetarians and 10 out of 45 (22%) Christian vegans affiliated with the Seventh Day Adventist denomination (Table 4.3).
Data was adjusted for respondents who chose “other” but then clearly identified themselves by one of the listed religion choices. All “other” responses are listed in the Appendix. There was no significant difference for income or education between vegetarians and vegans (Table 4.3). Combining income data for vegetarians and vegans reveals that the median household income is between $50,000 and $74,000.

Most of those surveyed lived in an urban or suburban setting in Fayette or Jefferson counties (Table 4.3 and Table 4.4). The trend towards more urban and less rural was similar for both vegetarians and vegans, however the overall difference in type of community between vegetarians and vegans was significant ($p=0.0418$) with a larger portion of vegans being urban dwellers. Eighty three of the 120 Kentucky counties (69%) had at least one resident participate in this study.

Surveyed individuals were asked about their general motivations for choosing a plant based diet and were able to choose to rank any or all of them from “very strongly motivates to me” to “does not motivate me.” General motivations to choose a plant based diet were divided into the following categories: “compassion for animals”, “environment”, “personal health”, “religion or philosophy”, “world hunger” or “other”. Health motivations were further divided in a subsequent question into the following categories: “weight management”, “disease prevention”, “management of a chronic disease or condition” or “other”. Participants ranked their motivations using the following point value system: “very strongly motivates me” (4), “strongly motivates me” (3), “moderately motivates me” (2), “minimally motivates me” (1), “does not motivate me” (0). Vegetarians and vegans were similar in the ranking order of their general and health motivations to choose a plant based diet. Vegans were more strongly motivated by all
factors and had higher scores in all five general categories and all three health categories. Personal health \((p<0.0001)\) and compassion for animals \((p=0.0430)\) were significantly different between vegetarians and vegans for general motivations, and for the health motivations, a significant difference was found for both disease prevention \((p<0.0001)\) and management of or improvement in a chronic disease or condition \((p<0.0001)\) (Table 4.5).

Other reasons given by participants for both general and health motivations are listed in the Appendix. The two most common groupings of “other” motivations for both vegetarians and vegans were 1) thought or taste disgust of meat and 2) more energy and feeling better both physically, mentally and spiritually.

The difference in age for beginning a plant based diet was significantly different for vegetarians and vegans \((p<0.0001)\) with vegetarians initiating their chosen diet at a younger age. The average age for becoming vegetarian was 23-29 and the average age for becoming vegan was 30-39. Most vegetarians (76%) and vegans (55%) began eating a plant based diet before the age of 30, with the largest grouping for both during the years age 18-22 (Table 4.6).

Almost one half of vegetarians (48%) changed their diet immediately, about one quarter (26%) shifted over several weeks to several months and the rest (26%) transitioned for about a year or longer. Approximately one third of vegans (35%) modified their diet immediately, another third (33%) changed over several weeks to several months and the rest (32%) took about a year or longer to complete the move towards a vegan diet. These differences were found to be significant \((p=0.0014)\) (Table 4.7).
A majority of vegetarians (89%) followed the transition pattern of meat eater to vegetarian. A minority (9%) had no transition steps as they had been vegetarian their entire lives. Even fewer (2%) had steps back and forth between meat eating, vegetarian and or vegan before settling on their current vegetarian diet. A majority of vegans (70%) followed the transition pattern meat eater to vegetarian to vegan. Another 18% went from meat eating directly to a vegan diet, while 9% had been raised vegetarian and then later became vegan. Only 1% had been vegan their entire lives and so had no transition pattern and another 1% followed some other multistep transition pattern to their current vegan diet (Table 4.8).

Neither group was likely to include meat in their diet in the next 12 months, as most vegetarians (85%) and most vegans (98%) disagreed or strongly disagreed with that possibility. Vegetarians were more diverse in their consideration of moving towards eating a vegan diet with 29% agreeing or strongly agreeing, 20% neutral and 51% disagreeing or strongly disagreeing with that statement. 94% of vegans disagreed or strongly disagreed that they were considering moving towards a vegetarian diet by adding dairy and/or eggs (Table 4.9).

A small number of vegetarians (2%) and vegans (3%) always have had positive experiences with their healthcare providers because they specifically have sought out healthcare providers who were knowledgeable and supportive of healthy plant based diets. 15% of vegetarians and 11% of vegans never told their health care providers about their diet and therefore avoided any possibility of positive or negative interactions regarding their plant based dietary pattern. A minority of both vegetarians (36%) and vegans (31%) indicated they have “always” or “often” had positive and supportive health
care experiences regarding their diet. This study determined that vegetarians had significantly more positive \( (p=0.0291) \) and fewer negative \( (p=0.0002) \) healthcare experiences than vegans (Table 4.10 and Table 4.11).

Among those individuals that had experience with hospital meals, vegetarian meals were provided for vegetarians more often than vegan meals were served to vegans and the difference was significant \( (p=0.0002) \). However neither group had appropriate meals available a majority of the time: vegetarians chose “sometimes”, “rarely” or “never” 63% of the time and 75% of vegans selected “sometimes”, “rarely” or “never” (Table 4.12).

A majority of vegetarians (67%) and vegans (81%) state that they would spend more money dining out in restaurants if more appropriate options were available to them in their community (Table 4.13).

Both vegetarians and vegans indicated that they read food labels for both nutrient content and animal ingredients the vast majority of the time. Most vegetarians picked “always” and “usually” for checking nutrient content (89%) and the absence of animal ingredients (91%). Most vegans revealed that they “always” and “usually” read food labels for nutrient content (88%) and lack of animal ingredients (99%). There was no significant difference between the two groups for reading food labels for nutrient content \( (p=0.3145) \) but there was a highly significant difference for reading food labels for animal ingredients \( (p<0.0001) \) (Table 4.14).

Both vegetarians and vegans were moderately or very confident in their adequate intake of all nutrients listed. Vegans were more confident in their intake than vegetarians for all nutrients. However the difference in confidence for calcium intake between the two
groups was not significant \((p=0.2775)\) while there was a significant difference for all of the other nutrients ranging from \(p=0.0251\) for water to \(p<0.0001\) for protein, essential amino acids, fiber, folic acid, beta carotene, iron, zinc, phytochemicals and antioxidants (Table 4.15).

Most vegetarians (88%) and vegans (92%) reported that they consume soy products on a regular basis from daily to several times per month and the difference between them in overall frequency is significant \((p=0.0054)\) (Table 4.16).

A minority of vegetarians and vegans sought out nutritional advice from an R.D., however vegans (29%) have utilized an R.D. more often than vegetarians (17%) and this difference was significant \((p=0.0015)\) (Table 4.17). Most vegetarians and vegans agree or strongly agree that they would be more likely to seek nutritional advice from an R.D. if he or she also consumed a plant based diet. Both groups were more likely to prefer an R.D. that ate the same type of plant based diet that the participant did (Table 4.18).

A majority of vegetarians (51%) and vegans (66%) report being in excellent health and the difference between them is significant \((p=0.0031)\) (Table 4.19). Similarly, 62% of vegetarians state that they are “healthier than” their friends and family and 82% of vegans state that they are “healthier than” their friends and family and the overall difference between them is highly significant \((p<0.0001)\) (Table 4.20).

Vegans reported more hours per week of moderate activity (mean=3.36) and strenuous activity (mean=1.94) than did vegetarians (mean=3.00 and 1.67, respectively) (Table 4.21).
Body mass index scores were calculated using self reported height and weight. 63% of vegetarians and 76% of vegans were found to have a BMI within normal limits and the overall difference between the two groups was significant \( p=0.0030 \) (Table 4.22). The impact on BMI due to type of plant based diet (vegetarian or vegan) was found to be of greater significance than that of moderate \( p=0.1335 \), strenuous \( p=0.0450 \), or both types of exercise combined \( p=0.0233 \) (Table 4.23).

Table 4.1, Survey Participants

<table>
<thead>
<tr>
<th>Vegetarian</th>
<th>80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegan</td>
<td>20%</td>
</tr>
<tr>
<td>N=</td>
<td>745</td>
</tr>
</tbody>
</table>

Table 4.2, Vegan Participants

<table>
<thead>
<tr>
<th>Avoids all animal foods</th>
<th>42%</th>
</tr>
</thead>
<tbody>
<tr>
<td>May include occasional honey</td>
<td>58%</td>
</tr>
<tr>
<td>N=</td>
<td>152</td>
</tr>
</tbody>
</table>
Table 4.3, Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Vegetarians</th>
<th>Vegans</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong> &lt;p&gt;=0.0377</td>
<td>N=565</td>
<td>N=137</td>
</tr>
<tr>
<td>Male</td>
<td>80%</td>
<td>28%</td>
</tr>
<tr>
<td>Female</td>
<td>20%</td>
<td>72%</td>
</tr>
<tr>
<td><strong>Age</strong> &lt;p&gt;=0.4020</td>
<td>N=565</td>
<td>N=137</td>
</tr>
<tr>
<td>18–29</td>
<td>36%</td>
<td>40%</td>
</tr>
<tr>
<td>30–39</td>
<td>25%</td>
<td>18%</td>
</tr>
<tr>
<td>40–49</td>
<td>17%</td>
<td>15%</td>
</tr>
<tr>
<td>50–59</td>
<td>15%</td>
<td>17%</td>
</tr>
<tr>
<td>60–69</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>70+</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Religious Affiliation</strong> &lt;p&gt;=0.1003</td>
<td>N=248</td>
<td>N=45</td>
</tr>
<tr>
<td>Christian</td>
<td>44%</td>
<td>33%</td>
</tr>
<tr>
<td>Hindu</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>Unitarian</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Buddhist</td>
<td>3%</td>
<td>4%</td>
</tr>
<tr>
<td>Jewish</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Quaker</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>9%</td>
<td>10%</td>
</tr>
<tr>
<td>None</td>
<td>33%</td>
<td>43%</td>
</tr>
<tr>
<td><strong>Household Income</strong> &lt;p&gt;=0.5888</td>
<td>N=547</td>
<td>N=134</td>
</tr>
<tr>
<td>&lt;$10,000</td>
<td>8%</td>
<td>4%</td>
</tr>
<tr>
<td>$10,000-$19,999</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>$20,000-$29,999</td>
<td>7%</td>
<td>16%</td>
</tr>
<tr>
<td>$30,000-$49,999</td>
<td>22%</td>
<td>25%</td>
</tr>
<tr>
<td>$50,000-$74,999</td>
<td>23%</td>
<td>19%</td>
</tr>
<tr>
<td>$75,000-$99,999</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td>$100,000 or more</td>
<td>18%</td>
<td>21%</td>
</tr>
<tr>
<td><strong>Community</strong> &lt;p&gt;=0.0418</td>
<td>N=563</td>
<td>N=137</td>
</tr>
<tr>
<td>Rural</td>
<td>27%</td>
<td>19%</td>
</tr>
<tr>
<td>Suburban</td>
<td>35%</td>
<td>31%</td>
</tr>
<tr>
<td>Urban</td>
<td>39%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Education</strong> &lt;p&gt;=0.0636</td>
<td>N=571</td>
<td>N=138</td>
</tr>
<tr>
<td>Did not complete high school</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>High school degree</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Some college, tech. or Assoc. degree</td>
<td>22%</td>
<td>27%</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>30%</td>
<td>37%</td>
</tr>
<tr>
<td>Master's degree</td>
<td>30%</td>
<td>21%</td>
</tr>
<tr>
<td>Ph.D. or equivalent</td>
<td>13%</td>
<td>11%</td>
</tr>
</tbody>
</table>
Table 4.4, Kentucky County of Residence

<table>
<thead>
<tr>
<th>County</th>
<th>#</th>
<th>County</th>
<th>#</th>
<th>County</th>
<th>#</th>
<th>County</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adair</td>
<td>1</td>
<td>Anderson</td>
<td>2</td>
<td>Bullitt</td>
<td>4 (2)</td>
<td>Franklin</td>
<td>20 (4)</td>
</tr>
<tr>
<td>Barren</td>
<td>1</td>
<td>Bell</td>
<td>2</td>
<td>Clark</td>
<td>4</td>
<td>Kenton</td>
<td>22 (7)</td>
</tr>
<tr>
<td>Bath</td>
<td>1</td>
<td>Christian</td>
<td>2</td>
<td>Henry</td>
<td>4 (3)</td>
<td>Madison</td>
<td>27 (3)</td>
</tr>
<tr>
<td>Breckinridge</td>
<td>1</td>
<td>Estill</td>
<td>2</td>
<td>Livingston</td>
<td>4</td>
<td>Jefferson</td>
<td>150 (46)</td>
</tr>
<tr>
<td>Butler</td>
<td>1</td>
<td>Harrison</td>
<td>2 (1)</td>
<td>Mason</td>
<td>4</td>
<td>Fayette</td>
<td>205 (40)</td>
</tr>
<tr>
<td>Carlisle</td>
<td>1</td>
<td>Hopkins</td>
<td>2</td>
<td>Meade</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carroll</td>
<td>1 (1)</td>
<td>Knox</td>
<td>2</td>
<td>Pike</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clay</td>
<td>1 (1)</td>
<td>Larue</td>
<td>2</td>
<td>Whitley</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fleming</td>
<td>1</td>
<td>McLean</td>
<td>2</td>
<td>Boyd</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floyd</td>
<td>1</td>
<td>Mercer</td>
<td>2</td>
<td>Henderson</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garrard</td>
<td>1</td>
<td>Nelson</td>
<td>2</td>
<td>Morgan</td>
<td>5 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hart</td>
<td>1</td>
<td>Russell</td>
<td>2 (1)</td>
<td>Taylor</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knott</td>
<td>1</td>
<td>Simpson</td>
<td>2</td>
<td>Jessamine</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lawrence</td>
<td>1</td>
<td>Wolfe</td>
<td>2 (1)</td>
<td>McCracken</td>
<td>6 (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leslie</td>
<td>1</td>
<td>Allen</td>
<td>3</td>
<td>Rowan</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewis</td>
<td>1</td>
<td>Bourbon</td>
<td>3</td>
<td>Shelby</td>
<td>6 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lyon</td>
<td>1</td>
<td>Carter</td>
<td>3 (1)</td>
<td>Daviess</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McCreary</td>
<td>1</td>
<td>Casey</td>
<td>3 (1)</td>
<td>Woodford</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marion</td>
<td>1</td>
<td>Green</td>
<td>3</td>
<td>Pulaski</td>
<td>8 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monroe</td>
<td>1 (1)</td>
<td>Hardin</td>
<td>3</td>
<td>Boyle</td>
<td>10 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pendleton</td>
<td>1</td>
<td>Harlan</td>
<td>3</td>
<td>Oldham</td>
<td>10 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perry</td>
<td>1</td>
<td>Laurel</td>
<td>3</td>
<td>Scott</td>
<td>10 (1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockcastle</td>
<td>1</td>
<td>Montgomery</td>
<td>3 (1)</td>
<td>Boone</td>
<td>12 (3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spencer</td>
<td>1</td>
<td>Owen</td>
<td>3</td>
<td>Warren</td>
<td>15 (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wayne</td>
<td>1 (1)</td>
<td>Powell</td>
<td>3 (1)</td>
<td>Calloway</td>
<td>16 (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Webster</td>
<td>1</td>
<td>Trigg</td>
<td>3</td>
<td>Campbell</td>
<td>19(3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Counts with no survey participants = 37

County x (y), x = total # survey participants, (y) = # vegans
Table 4.5, Motivations to Choose a Plant Based Diet

<table>
<thead>
<tr>
<th>General motivations - Mean motivation scores</th>
<th>Personal Health</th>
<th>Compassion for Animals</th>
<th>Environment</th>
<th>World Hunger</th>
<th>Religion or Philosophy</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarians N=581</td>
<td>3.1</td>
<td>3</td>
<td>2.9</td>
<td>1.9</td>
<td>1.7</td>
<td>2.2</td>
</tr>
<tr>
<td>Vegans N=162</td>
<td>3.5</td>
<td>3.3</td>
<td>3.2</td>
<td>2.2</td>
<td>2</td>
<td>1.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health motivations - Mean motivation scores</th>
<th>Disease Prevention</th>
<th>Weight management</th>
<th>Management of chronic condition</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarians N=575</td>
<td>2.6</td>
<td>1.8</td>
<td>1.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Vegans N=162</td>
<td>3.3</td>
<td>2.1</td>
<td>1.7</td>
<td>1.7</td>
</tr>
</tbody>
</table>


Table 4.6, Age Began Eating Current Plant Based Diet

<table>
<thead>
<tr>
<th>Vegetarians N=590</th>
<th>Vegans N=150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age Range</td>
<td>Percent</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>0-12*</td>
<td>16%</td>
</tr>
<tr>
<td>13-17</td>
<td>19%</td>
</tr>
<tr>
<td>18-22</td>
<td>24%</td>
</tr>
<tr>
<td>23-29</td>
<td>17%</td>
</tr>
<tr>
<td>30-39</td>
<td>12%</td>
</tr>
<tr>
<td>40-49</td>
<td>7%</td>
</tr>
<tr>
<td>50-59</td>
<td>4%</td>
</tr>
<tr>
<td>60-69</td>
<td>2%</td>
</tr>
</tbody>
</table>

*p* Includes 51 (9%) vegetarian from birth  ** Includes 3 (2%) vegan from birth
Table 4.7, Transition Time to Current Plant Based Diet

<table>
<thead>
<tr>
<th>Transition Time</th>
<th>Vegetarian</th>
<th>Vegan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gradual process over several years.</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>Gradual process about a year long.</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>Gradual process over several months.</td>
<td>13%</td>
<td>11%</td>
</tr>
<tr>
<td>Gradual process over several weeks.</td>
<td>13%</td>
<td>22%</td>
</tr>
<tr>
<td>I had a sudden life changing moment and changed my diet immediately.</td>
<td>48%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Table 4.8, Transition Steps to Eating Current Plant Based Diet

<table>
<thead>
<tr>
<th>Vegetarian N=584</th>
<th>Meat eater &gt;&gt;&gt; Vegetarian</th>
<th>89%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vegetarian all of my life</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2%</td>
</tr>
<tr>
<td>Vegan N=148</td>
<td>Meat eater &gt;&gt;&gt; Vegetarian &gt;&gt;&gt; Vegan</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td>Meat eater &gt;&gt;&gt; Vegan</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>Vegetarian &gt;&gt;&gt; Vegan</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>Vegan all of my life</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1%</td>
</tr>
</tbody>
</table>
Table 4.9, Transition Away from Current Plant Based Diet

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vegetarians</strong>  N=583</td>
<td>2%</td>
<td>5%</td>
<td>8%</td>
<td>18%</td>
<td>67%</td>
</tr>
<tr>
<td><strong>Vegans</strong>  N=148</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>7%</td>
<td>91%</td>
</tr>
</tbody>
</table>

"I have considered moving towards eating a vegan diet by excluding dairy and eggs in the next 12 months."

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vegetarians</strong>  N=587</td>
<td>10%</td>
<td>19%</td>
<td>20%</td>
<td>25%</td>
<td>26%</td>
</tr>
</tbody>
</table>

"I have considered moving towards eating a vegetarian diet by including some dairy and/or eggs in the next 12 months."

<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vegans</strong>  N=147</td>
<td>1%</td>
<td>3%</td>
<td>2%</td>
<td>18%</td>
<td>76%</td>
</tr>
</tbody>
</table>

Strongly agree = 2, Agree = 1, Neutral = 0, Disagree= -1, Strongly Disagree = -2
Table 4.10, Positive Health Care Experience

<table>
<thead>
<tr>
<th>“I have had positive and supportive experiences with health care professionals regarding my vegetarian or vegan diet.”</th>
<th>Vegetarian N=580</th>
<th>Vegan N=148</th>
<th>p=0.0291</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always. I specifically seek out health care only from professionals that are knowledgeable and supportive of healthy vegetarian (or vegan) diets. (2% vegetarian, 3% vegan) OR Always. All of the health care professionals that I have encountered have been knowledgeable and supportive of healthy vegetarian or (vegan diets). (21% vegetarian, 11% vegan)</td>
<td>23%</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>Often</td>
<td>25%</td>
<td>20%</td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>24%</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>10%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Never. I have yet to find a health care professional that has been knowledgeable and supportive of healthy vegetarian (or vegan diets). (3% vegetarian, 7% vegan) OR Never. I do not tell my health care providers that I eat a vegetarian (or vegan diet). (15% vegetarian, 11% vegan)</td>
<td>18%</td>
<td>18%</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.11, Negative Health Care Experience

<table>
<thead>
<tr>
<th>“I have had negative and discouraging experiences with health care professionals regarding my vegetarian or vegan diet.”</th>
<th>Vegetarian N=575</th>
<th>Vegan N=148</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Never. (35% vegetarian, 20% vegan) OR Never, I specifically seek out health care from professionals that are knowledgeable and supportive of healthy vegetarian (or vegan diets). (1% vegetarian, 4% vegan) OR Never. I do not tell my health care providers that I eat a vegetarian (or vegan diet). (15% vegetarian, 12% vegan)</strong></td>
<td>51%</td>
<td>34%</td>
</tr>
<tr>
<td>Rarely</td>
<td>28%</td>
<td>27%</td>
</tr>
<tr>
<td>Sometimes</td>
<td>18%</td>
<td>30%</td>
</tr>
<tr>
<td>Often</td>
<td>3%</td>
<td>8%</td>
</tr>
<tr>
<td>Always</td>
<td>0%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table 4.12, Hospital Meals

<table>
<thead>
<tr>
<th>“I have had to eat institutional food and the food provided for me was.”</th>
<th>p=0.0002</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vegetarian</strong></td>
<td></td>
</tr>
<tr>
<td>Never vegetarian</td>
<td>13%</td>
</tr>
<tr>
<td>Rarely vegetarian</td>
<td>29%</td>
</tr>
<tr>
<td>Sometimes vegetarian</td>
<td>21%</td>
</tr>
<tr>
<td>Often vegetarian</td>
<td>13%</td>
</tr>
<tr>
<td>Always vegetarian</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Vegan</strong></td>
<td></td>
</tr>
<tr>
<td>Never vegan</td>
<td>30%</td>
</tr>
<tr>
<td>Rarely vegan</td>
<td>28%</td>
</tr>
<tr>
<td>Sometimes vegan</td>
<td>17%</td>
</tr>
<tr>
<td>Often vegan</td>
<td>13%</td>
</tr>
<tr>
<td>Always vegan</td>
<td>11%</td>
</tr>
</tbody>
</table>
Table 4.13, Money Spent Dining Out

"I would spend more money dining out if there were more vegetarian/vegan entrées available at restaurants in my area."

<table>
<thead>
<tr>
<th>Entrée Preference</th>
<th>&quot;True&quot;</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarians and Vegetarian Entrées</td>
<td>67%</td>
<td>584</td>
</tr>
<tr>
<td>Vegans and Vegan Entrées</td>
<td>81%</td>
<td>149</td>
</tr>
</tbody>
</table>

Table 4.14, Reading Food Labels

"I read food labels for:"

<table>
<thead>
<tr>
<th>Nutrient content</th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarian</td>
<td>59%</td>
<td>30%</td>
<td>8%</td>
<td>3%</td>
<td>0%</td>
<td>572</td>
</tr>
<tr>
<td>Vegan</td>
<td>68%</td>
<td>20%</td>
<td>10%</td>
<td>3%</td>
<td>0%</td>
<td>143</td>
</tr>
</tbody>
</table>

p=0.3145

<table>
<thead>
<tr>
<th>Animal ingredients</th>
<th>Always</th>
<th>Usually</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarian</td>
<td>73%</td>
<td>18%</td>
<td>6%</td>
<td>2%</td>
<td>1%</td>
<td>571</td>
</tr>
<tr>
<td>Vegan</td>
<td>97%</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>145</td>
</tr>
</tbody>
</table>

p<0.0001
### Table 4.15, Confidence in Nutrient Intake

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Vegetarians</th>
<th>Vegans</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Intake</td>
<td>N=</td>
</tr>
<tr>
<td></td>
<td>Confidence</td>
<td></td>
</tr>
<tr>
<td>Protein $p&lt;0.0001$</td>
<td>2.5</td>
<td>579</td>
</tr>
<tr>
<td>Essential Amino Acids $p&lt;0.0001$</td>
<td>2.33</td>
<td>573</td>
</tr>
<tr>
<td>Carbohydrate $p=0.003$</td>
<td>2.81</td>
<td>577</td>
</tr>
<tr>
<td>Fiber $p&lt;0.0001$</td>
<td>2.71</td>
<td>578</td>
</tr>
<tr>
<td>Essential Fatty Acids $p=0.0019$</td>
<td>2.35</td>
<td>573</td>
</tr>
<tr>
<td>Omega 3 Fatty Acids $p=0.0009$</td>
<td>2.26</td>
<td>571</td>
</tr>
<tr>
<td>Folic Acid $p&lt;0.0001$</td>
<td>2.39</td>
<td>577</td>
</tr>
<tr>
<td>Vitamin B12 $p=0.0007$</td>
<td>2.33</td>
<td>578</td>
</tr>
<tr>
<td>Beta Carotene $p&lt;0.0001$</td>
<td>2.43</td>
<td>574</td>
</tr>
<tr>
<td>Vitamin D $p=0.0197$</td>
<td>2.47</td>
<td>576</td>
</tr>
<tr>
<td>Calcium $p=0.2775$</td>
<td>2.54</td>
<td>576</td>
</tr>
<tr>
<td>Iron $p&lt;0.0001$</td>
<td>2.31</td>
<td>577</td>
</tr>
<tr>
<td>Zinc $p&lt;0.0001$</td>
<td>2.34</td>
<td>573</td>
</tr>
<tr>
<td>Phytochemicals $p&lt;0.0001$</td>
<td>2.19</td>
<td>563</td>
</tr>
<tr>
<td>Antioxidants $p&lt;0.0001$</td>
<td>2.5</td>
<td>576</td>
</tr>
<tr>
<td>Water $p=0.0251$</td>
<td>2.7</td>
<td>579</td>
</tr>
<tr>
<td>Average for all nutrients</td>
<td>2.45</td>
<td></td>
</tr>
</tbody>
</table>

Not very confident=1, Moderately confident=2, Very confident=3

### Table 4.16, Soy Intake Frequency

<table>
<thead>
<tr>
<th>How frequently do you eat a serving of a soy product?</th>
<th>p=0.0054</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
</tr>
<tr>
<td>Vegetarians</td>
<td>3%</td>
</tr>
<tr>
<td>Vegans</td>
<td>2%</td>
</tr>
</tbody>
</table>
Table 4.17, Nutritional Advice from a Registered Dietitian

| Have you ever sought out nutritional advice about your plant based diet from an R.D.? | p=0.0015 |
|---|---|---|
| | No | Yes | N= |
| Vegetarians | 83% | 17% | 576 |
| Vegans | 71% | 29% | 147 |

Table 4.18, Registered Dietitian's Diet

<table>
<thead>
<tr>
<th>&quot;I would be more likely to seek nutritional advice from an R.D. if he/she consumed a ________ diet.&quot;</th>
<th>Participant's Diet</th>
<th>R.D.'s Diet</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarian</td>
<td>Vegetarian R.D.</td>
<td>p=0.3706</td>
<td>2%</td>
<td>4%</td>
<td>15%</td>
<td>29%</td>
<td>49%</td>
<td>568</td>
</tr>
<tr>
<td>Vegan</td>
<td>p&lt;0.0001</td>
<td>3%</td>
<td>4%</td>
<td>15%</td>
<td>38%</td>
<td>39%</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Vegetarian</td>
<td>Vegan R.D.</td>
<td>p&lt;0.0001</td>
<td>3%</td>
<td>7%</td>
<td>27%</td>
<td>28%</td>
<td>35%</td>
<td>499</td>
</tr>
<tr>
<td>Vegan</td>
<td>1%</td>
<td>1%</td>
<td>7%</td>
<td>13%</td>
<td>78%</td>
<td>146</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.19, Health Status

| What is your health status? | p=0.0031 |
|---|---|---|---|---|---|
| | Excellent | Good | Fair | Poor | N= |
| Vegetarians | 51% | 45% | 4% | 1% | 576 |
| Vegans | 66% | 31% | 2% | 1% | 143 |
Table 4.20, Health Compared to Friends and Family

"In general, I am _________ my friends and family."

<table>
<thead>
<tr>
<th></th>
<th>healthier than</th>
<th>about the same as</th>
<th>less healthy than</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarians</td>
<td>62%</td>
<td>35%</td>
<td>3%</td>
<td>578</td>
</tr>
<tr>
<td>Vegans</td>
<td>82%</td>
<td>17%</td>
<td>1%</td>
<td>144</td>
</tr>
</tbody>
</table>

Table 4.21, Exercise

<table>
<thead>
<tr>
<th>How much do you exercise in a typical week?</th>
<th>&gt;5 hours per week</th>
<th>4-5 hours per week</th>
<th>2-3 hours per week</th>
<th>1 hour per week</th>
<th>None</th>
<th>Mean</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetarians</td>
<td>25%</td>
<td>23%</td>
<td>36%</td>
<td>12%</td>
<td>4%</td>
<td>3.00</td>
<td>562</td>
</tr>
<tr>
<td>Vegans</td>
<td>34%</td>
<td>23%</td>
<td>32%</td>
<td>9%</td>
<td>2%</td>
<td>3.36</td>
<td>140</td>
</tr>
<tr>
<td>Strenuous activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetarians</td>
<td>7%</td>
<td>12%</td>
<td>27%</td>
<td>30%</td>
<td>24%</td>
<td>1.67</td>
<td>504</td>
</tr>
<tr>
<td>Vegans</td>
<td>8%</td>
<td>11%</td>
<td>33%</td>
<td>14%</td>
<td>19%</td>
<td>1.94</td>
<td>119</td>
</tr>
</tbody>
</table>

Table 4.22, Body Mass Index

<table>
<thead>
<tr>
<th>Calculated Body Mass Index (BMI) from Self Reported Height &amp; Weight</th>
<th>Underweight</th>
<th>Normal</th>
<th>Overweight</th>
<th>Obese</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class I</td>
<td>Class II</td>
<td>Class III</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 18.5</td>
<td>2%</td>
<td>63%</td>
<td>25%</td>
<td>7%</td>
<td>561</td>
</tr>
<tr>
<td>18.5 – 24.9</td>
<td>2%</td>
<td>63%</td>
<td>25%</td>
<td>7%</td>
<td>561</td>
</tr>
<tr>
<td>25.0 – 29.9</td>
<td>2%</td>
<td>63%</td>
<td>25%</td>
<td>7%</td>
<td>561</td>
</tr>
<tr>
<td>30.0-34.9</td>
<td>2%</td>
<td>63%</td>
<td>25%</td>
<td>7%</td>
<td>561</td>
</tr>
<tr>
<td>35.0-39.9</td>
<td>2%</td>
<td>63%</td>
<td>25%</td>
<td>7%</td>
<td>561</td>
</tr>
<tr>
<td>≥40</td>
<td>2%</td>
<td>63%</td>
<td>25%</td>
<td>7%</td>
<td>561</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Body Mass Index</th>
<th>N=</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarians</td>
<td>561</td>
</tr>
<tr>
<td>Vegans</td>
<td>141</td>
</tr>
</tbody>
</table>
Table 4.23, Impact of Diet or Exercise on Body Mass Index

<table>
<thead>
<tr>
<th>Significance of Impact of Diet or Exercise on BMI</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Plant Based Diet (Vegetarian or Vegan) vs BMI</td>
<td>0.0030</td>
</tr>
<tr>
<td>Moderate Exercise vs BMI</td>
<td>0.1335</td>
</tr>
<tr>
<td>Strenuous Exercise vs BMI</td>
<td>0.0450</td>
</tr>
<tr>
<td>Moderate and Strenuous Exercise vs BMI</td>
<td>0.0233</td>
</tr>
</tbody>
</table>
CHAPTER FIVE

Discussion

Consistent with other studies, Kentucky vegetarians and vegans tended to be young, urban, female and well educated. While there was no significant difference for income or education between vegetarians and vegans, as a group their median income falls between $50,000 and $74,999, which is slightly or considerably higher than the median income for all Kentuckians ($41,489).

It is interesting to note that 73% of vegetarians and 69% of vegans (age 18 and over) have attained a Bachelor’s degree or higher, while among the general population only 17.1% (Ky.) and only 24.4% (U.S.) (age 25 and over) have a Bachelor’s degree or higher. These results lend credence to the Gale et al. data which found that vegetarians and vegans tend to be better educated, but may conflict with their data regarding income. Most of the respondents reside in the so called “Golden Triangle” of Kentucky, which is bounded by the cities of Lexington and Louisville and the northern counties nearest to Cincinnati, Ohio. This area may have different demographics and health status than the rest of the state, so further work is necessary to differentiate this possible influence on the sampled vegan and vegetarian population.

This study also found approximately one fifth of the participants to be vegans. This differs from the 2009 Vegetarian Resource Group national poll that found approximately one third of vegetarians to be vegan; however, the two results are not completely comparable due to different methodology.
The general motivations of the vegetarians and vegans in this study align with those found in other reports. Of particular interest for health care providers are the health motivations for disease prevention, management of body weight and chronic diseases or conditions. Controlled investigations of body mass index measurements and biomarkers for chronic disease might confirm why these motivations and behaviors have been reinforced and persisted among vegetarians and vegans.

The younger age for the onset of choosing a plant based diet for vegetarians as compared to vegans may be due to the transition patterns that were observed, that is, a vegan diet is usually preceded by a vegetarian diet. The vast majority of vegans (79%) were vegetarian for some time in the past, a strong indication that some portion of today’s vegetarians will be tomorrow’s vegans.

The quick transition and the long term commitment to a meat free diet pattern that most in this study have been able to achieve, are important for R.D.s to acknowledge in their approaches to counseling and nutritional assessment. Skeptical health care providers may need to reassess any personal biases regarding an omnivore patient’s ability to make fundamental changes in their diet in a short amount of time, especially after teachable moments such as a heart attack, diagnosis of Type 2 diabetes or encountering one or more of the myriad other motivations that have been documented. Dr. Dean Ornish has similarly called for redefining medical approaches, "I don't understand why asking people to eat a well-balanced vegetarian diet is considered drastic, while it is medically conservative to cut people open and put them on cholesterol lowering drugs for the rest of their lives." (Ornish, Dr. Dean Ornish’s Program For Reversing Heart Disease, 1996)

Moreover, R.D.s, pediatricians, obstetricians and other healthcare professionals should be
aware of the rapid changes in dietary patterns among young vegetarians and vegans while they are actively growing and during their prime reproductive years.

Practicing clinicians and health education programs should take note of the proportion of positive and negative experiences with health care professionals that were reported by vegetarians and vegans. Of particular concern are those vegetarians (15%) and vegans (11%) that never reveal that they choose to eat a vegetarian or vegan diet, because of the perceived or actual lack of knowledge or support by the provider.

R.D.s in hospital food service management positions need to consider the large number of vegetarians and vegans that do not get hospital meals that satisfy their plant based diet preferences. In addition to regular diets, vegetarians and vegans on clear liquid diets need accommodation. Meat based products such as broth and gelatin desserts can easily and inexpensively be substituted with vegetable broth and gelled dessert products that use carrageenan or other plant based gums. Expanding the hospital menu to include vegetarian and vegan options would benefit all patients in need of diet modifications and would support the physician and clinical R.D.’s education efforts following a motivating health event that may have precipitated the hospital admission. Many vegetarian and vegan options are also more appropriate for Jewish/Kosher and Muslim/Halal patients as well.

The substantial inclination for reading food labels by vegetarians and vegans is important for those in the food manufacturing industry to take into account. A number of products contain minor amounts of animal derived ingredients such as meat, meat broth or gelatin that could easily be replaced by plant based substitutions thereby expanding their
marketability to vegetarians and vegans. These modifications may also increase appeal to customers that follow Kosher and Halal dietary laws. Similarly, some products targeted to vegetarians often contain minor amounts of egg or dairy for texture or binding properties. It is quite feasible for many of these products to be made vegan, which would appeal to not only vegetarian and vegan customers, but also those with egg or milk protein allergies or lactose intolerance.

Restaurants, hospitals, schools and other institutional settings need to provide vegetarian and vegan entrées and non dairy milks to adequately serve their vegetarian, vegan and meat eating clientele. Continuously monitoring this dynamic population will be essential to protect long term success in the highly competitive food service industry.

Food manufacturers should be mindful of the national polls that indicate 1/3 of vegetarians are vegans. This study’s evidence for the strength of their motivations should also inform their business strategies with this segment of the market. If it is true that a sizable portion of today’s vegetarian customers are tomorrow’s vegans, a food manufacturer will eventually lose some of their vegetarian customers if none of their product line is vegan.

Participant preference for an R.D. who eats a similar diet is noteworthy. Cant and Aroni found that values and nonverbal communication were important for enhancing the dietitian–patient relationship, in addition to interpersonal communication and counseling skills (Cant & Aroni, 2008) Omnivore, vegetarian and vegan R.D.s may want to keep these results in mind when assessing whether to refer a client to another R.D. Stein has emphasized the necessity of cultural competency among R.D.s in order to be
professionally competitive. (Stein, 2009) This study’s outcomes indicate that information about plant based diets and related lifestyle issues should be included when discussing cultural competency, along with ethnicity, religion, age and other recognized categories. The significant difference found between vegetarians and vegans for most parameters is important to note. As with other cultural groups, educators and health care providers must guard against stereotyping and should respond to vegetarians and vegans as individuals with unique motivations, histories and goals.

The percentage of Kentucky vegetarians (36%) and vegans (21%) who are overweight or obese (BMI ≥25) is in stark contrast to the 67.1% of Kentuckians and 63.1% of Americans that are reported to be in the overweight or obese range by the federal government. (Centers for Disease Control and Prevention, 2010) While vegetarians and vegans have been observed to incorporate other healthy lifestyle habits besides diet, it is important to note that the BMI difference between vegetarians and vegans was more significantly different due to diet than exercise. Public health and public school officials, policy makers, R.D.s and other health care workers should consider what these results may mean for the overweight and obese population of Kentucky.

In addition to the health issues raised thus far, political, environmental, economic and ethical issues may also play a role in the future regarding the behavior of omnivores and the prevalence of vegetarians and vegans. The current industrialized model for modern animal agriculture utilizes economies of scale and externalized costs to provide a large volume of inexpensive animal food products to the market. Satisfying that demand with local, more land intensive, pasture fed livestock could lead to animal derived food products being less available and/or at a higher cost to consumers. Furthermore, rising
political pressure to eliminate or reduce federal farm subsidies could also lead to increased prices and/or decreased availability of animal based foods. Either or both of these situations could eventually lead to increased consumption of plant foods, whether or not there is a concurrent increase in the number of vegetarians and vegans.

**Conclusion**

These results confirm that it is unlikely that vegetarians and vegans are going to disappear as an influential cohort on the culinary and nutritional milieu of Kentucky. The existing and emerging science may encourage an increase in the size of this population in the near future. R.D.s and other health care professionals may need additional education to adequately assess and support existing and future vegans and vegetarians. Dietetic and other health profession education programs need to incorporate adequate and up to date information on the use of plant based diets throughout the lifecycle. Training to appropriately counsel those desiring to transition to or continue a plant based diet should address the internal barriers that may arise when discussing plant based diets. Likewise, vegetarian and vegan health care providers should check their own biases when interacting with meat eating clients.

The abundance of scientific support and other motivations for choosing plant based diets can lead to a concurrent abundance of enthusiasm among some individuals and a reactionary response from others. Both meat eating and plant eating health care providers must stay current on the available research in the best interest of their clients and patients, without minimizing or exaggerating the existing evidence.
In conclusion, this description of the vegetarian and vegans of Kentucky has many important implications for the entire state and may serve as a bellwether on many fronts. As more Kentucky consumers look beyond their usual dietary pattern and consider its impact on their health, the environment and the animals involved, they may choose to eat less meat, which could have a large impact on Kentucky’s health, education and agricultural future.
APPENDIX

“Other” religious affiliations for vegetarians:

- Pagan/Wiccan
- Secular Humanist
- wiccan
- Don't follow a religion, but believe closest to a mix of Buddhism and Paganism
- atheist
- Non denomination
- non-practicing Catholic
- undecided
- Pagan
- dirt worshiper
- Atheist/Secular Humanist
- Shamanism
- personal spiritual path, trending towards Quaker
- Christian with Adventist background
- Catholic
- eclectic - closest to Buddhist
- Wiccan
- atheist
- Baha’i
- Athiest
- Mostly Christian with a little bit of Buddhism thrown in for fun. I'd call it 90-10.
- Agnostic

“Other” religious affiliations for vegans:

- I follow my own spiritual calling, a combination of christian/ hindu/ buddhist
- raised Catholic. None right now.
- Pagan
- Wiccan
- a highly spiritual, personal blend of Christian/buddhist/hindu

- Agnostic
- Rhuhani Satsang
- Quaker
- agnostic
- a mixture of all of the above
- pantheist
- pantheist
- Christian ideaology but I am not affiliated with any church
- Agnostic
- Atheist
- Buddhist, Christian, Unitarian (didn't know that was not Christian)
- Religious Society of Friends (Quakers)
- Unitarian is probably closest, but I do not attend any church
- agnostic theist
- I study yoga and all religions to find their common truths
- nonaffiliated
- Private Information
- Atheist
- All Inclusive Personal Spirituality
- non-practicing

- atheist
- Goddess and Earth worship
- Catholic
- Spiritual, not religious
- in transition
- spiritual
- unitarian buddhist
- yoga
- No brand name religions, please. But still religious.
- Quaker (Religious Society of Friends)
- non-affiliated with Buddhist leanings
- Christian but not a Churchian
- believers in Yahweh and Yeshua
- Atheist
- Seventh-day Adventist
- Atheist
- Pantheist
- Mix of many beliefs.
- atheist
- not religious, believe in all paths to God
- native american spiritual
- pagan

- Agnostic/Earth-Based
- Spiritual not religious
- born Christian but not affiliated with any church- would go Unitarian if I 'had' to join one.
- wiccan
- Atheist
- Vegan - smile!
- antitheist

- Spiritual No religion
- Quaker
- Catholic
- Atheist
- Quaker -- spiritual but not religious
- Spiritual but not religious
- Quaker
- Humanist
“Other” general motivations for vegetarians:

- The methods of factory farming and mass manufacturing and artificial additives, ie: growth hormone, antibiotics.
- I think too much about what I am eating and it bothers me to eat "flesh."
- It makes me ill to think of chewing flesh.
- This goes with "world hunger" but it's more efficient to eat the plants rather than feeding them to animals and then eating the animals.
- Sustainability.
- Do not like the taste or texture of meat.
- "Skinny Bitch" Book.
- Food industry corruption.
- The wish to reduce toxin intake concentrated in animal fat.
- I don't like Agribusiness & its effects on the animals and the environment.
- Meat industry practices.
- Higher cost of meat.
- Quality of non-vegetarian food is poor.
- I dislike the texture of meat.
- Can't stand the thought of eating an animal.
- Exposure to antibiotics -- goes beyond personal health but also a pitch for organic.
- Minor point: It is cheaper to eat vegetarian.
- Bad chicken- not a red meat eater.
- Was raised as vegetarian.
- Why to kill somebody if you have other things to eat. Think, if someone kills you, just to satisfy hunger, though other thing are available.
- Personal taste.
- The people who work in the industry are almost always already disadvantaged in some other way.
- Hormonal use on animals.
- Poverty.
- Equitable distribution of resources on global level.
- Concerns about meat producing practices: antibiotics, et.
- To distinguish a philosophical claim from "Religion or Philosophy" - animals feel pain, which is appropriate to avoid causing for trivial reasons.
- No religious aspect.
- I was raised around beef cattle and haven't been able to overcome visualizing the animal itself when I see a meat product. The thought is disgusting to me. But I don't mind cooking meat, eating foods that use beef/chicken stock or being around others while they're eating meat.
- I do not like the taste or texture of meat.
- Financial - meat is expensive!
- I feel animals have souls and intelligence. I couldn't eat my dog, cat, or father, so I can't eat meat.
- Intense hatred of vegetables.
- Routine.
- Something I set forth to do 14 years ago and once I began, I never went back to eating meat.
- Health issues.
- Workers exploited in meat packing industry.
- Taste preference- don't like taste of meat.
- It is a much cheaper way to eat - and I will never be overweight on this diet - whole grains and veggies!
- I dislike our practice of agronomics in America.
- I just don't like the taste of meat.
- Don't like eating meat.
- Never liked the taste or texture of animal meat.
- Access to organic, locally raised meat is very limited.
- It's better for the earth and all it's people to eat low on the food chain.
- Self-discipline, and a flat-out dislike of meat.
- Factory farms & slaughterhouses abuse workers as well as animals.
- I was raised as a vegetarian due to my parents religious beliefs and have never eaten meat.
- Opposition to corn-based economy.
- Hygene of animal food.
- Psychological disturbance of eating a dead animal.
- Upbringing - never have eaten meat.
- Rotting flesh disgusts me.
- The gross factor of eating dead flesh.
- Tired of eating meat and not cooked properly.
- Food allergies and sensitivity to MSG and other additives. Migraine control. Also- No gallbladder, can't handle greasy foods well.
- Specifically, I do not support the industrialization of agriculture and avoid meat.
because I don't want to support the industry.
- horrors of factory farming
- Environmental reasons: I don't like the addition of antibiotics and hormones added to animal feed just to keep the animals from disease and fatten them prior to slaughter.
- My mother is a vegetarian, who is very healthy, so I tried it.
- the taste of meat disgusts me
- Owned a restaurant years ago and the smell of the meat caused me to gradually cut down and then stop.
- Life is precious and the less of it we take from this world the better off we will be.
- For my parents' approval
- I don't need to eat meat to live
- The brutality of the industry and lack of mindful diets
- I simply do not like the taste of meat, poultry etc. I think the texture is off putting and it tastes gross.
- I've never liked the taste or texture of meat.
- Dislike of the taste
- misappropriation of natural resources
- I have no qualms about eating meat, but I find factory farming to be morally reprehensible and therefore refuse to support the industry.
- Vegetarian diets are often more cost-efficient
- I do not like the fact that meat is like a muscle or fat. It grosses me out.
- I simply have a hard time seeing meat as food, to me its dead flesh and that disgusts me
- Disliking the taste of meat
- Derive pleasure and satisfaction from producing my own food, but don't care to raise or kill animals
- All the hormones and pharmaceuticals given to animals.
- Protein Intolerance
- I've been a vegetarian for so long that the thought of meat is disgusting to me.
- Meat eating is not natural for humans and not needed to survive
- My family having farm with cows at our family business and I used to play with and pet these cows when I was younger, till I found out these were the cows we were eating.
- I feel better physically and spiritually.
- Sanitation of Slaughter Houses
- I do not digest meat well. It makes me very sick.
- Avoiding chemicals that concentrate in animal products
- Meat grosses me out!
- I will only eat what I would feel comfortable killing myself.
- I never really liked meat when growing up, although it was a staple in our house. As soon as I moved out on my own I became vegetarian.
- Parents raised me as a vegetarian since birth
- my fathers cancer was in part due to meat consumption
- filth from CAFO Operations strong motivation
- Restrictive foods makes me more aware of what I'm putting in my body.
- I wouldn't kill an animal in order to eat it, so it is kind of hypocritical to eat an animal you had to have someone else kill for you.
- Never liked meat
- Morality
- Meat industry exploits animals and humans alike
- Began when my son started
- I was raised on a vegetarian diet.
- food safety issues & terrible treatment of animals in the industry
- Personal preference (meat just doesn't taste good, so it's not as though I'm making a sacrifice)
- Repulsive to me, to eat anything that has had a face!
- I do not like the taste or texture of meats
- taste preference/aversion
- Don't like red meat
- A challenge to myself
- Processing meat far from the dinner plant.
- Habit
- I rarely ate meat anyway! I hardly needed the motivation.
- I find meat disgusting

“Other” health motivations for vegetarians:
- Avoidance of artifical perservative and additives.
- I can't eat the flesh of an animal. The blood just makes me sick thinking about consuming
something that was a living thing.

- simply proving that meat isn't necessary in the human diet, especially through athletic competition and talking to other athletes about my diet
- Cut out alien chemicals and hormones
- The hormones and unnatural things they put in the animals
- I actually think not eating meat makes me less healthy, but choose the spiritual path over my own personal health
- General health
- I was sick a few years ago and given WAY too many antibiotics -- not really chronic condition, but that's my motivation
- SAKERFICE MAKES YOU STRONGER
- Always feel good about plant and dairy based diet
- Vegetarian does not mean that you wont have diseases.
- Fear of infection transmission from meat products
- none
- Religion and philosophy
- In my opinion, a diet consisting of meat would be healthier. I tend to consume to much dairy and too many carbohydrates. My protein and iron intake falls short.
- I love the taste of fresh fruits and vegetables
- Pleasure - I enjoy this diet more than when I was eating meat regularly.
- Energy level - I feel better during the day
- I try to eat organic when I can. I'm worried about antibiotics and hormones in any milk or eggs.
- Overall feeling a higher level of health
- wanted to see if there would be an improvement in energy levels
- Overall health
- Philosophical; do not like the taste or texture
- Thought of needing to eat animals when so many alternatives are available, sickens me.
- Diet that is not high in fat/proteins - well-balanced, etc.
- makes me feel better
- I just feel better on a vegetarian diet.
- Better for me not to eat meat
- general overall health
- Have been able to stop taking prescribed stomach meds.
- Avoiding high cholesterol
- consuming less modified or processed foods
- holistic wellness, eating clean, chemical-free food
- Cannot eat it now. It would make me sick.
- Concern about the effects of factory farms on the health of those living nearby, and the effects for me of the antibiotics and growth hormones given to the animals.
- many animals are fed antibiotics from birth, among the other unnatural substances put into our food. By consuming these animals we are consuming the damaging substances they are fed.
- Easier to find/afford organic and hormone-free food
- I do it to show my compassion for animals and the environment.
- General health is improved when one does not eat meat
- I feel better physically and spiritually.
- Eating meat is not worth the sick feeling afterwards and digestion issues.
- Family history of diabetes, high blood pressure and cholesterol
- Heart health, lots of vitamins & low fat
- It makes me feel nauseated sometimes to smell or eat.
- Knowledge as a Dietitian of where foods come from
- Carbon emissions and environmental destruction
- Prevention of chronic disease or condition
- health not a motivation
- Better food options
- chemicals and hormones in industrial meat
- Avoiding antibiotics, growth hormones, etc. found in animal products
- Heart health
- how I feel physically
- clear mind and spiritual discernment
- Being vegetarian is part of a general commitment to eat locally produced foods and avoid consuming toxins and synthetic foods, for health reasons.
- I believe that you can eat a healthy (or unhealthy) diet as either a vegetarian or an omnivore, so health is not a strong motivation overall.
- Minimization of toxins, additives, pesticides, etc in food intake
- Reduce antibiotics and hormones from meats that I take in
- Avoiding GMOs, ASHs and other additives from factory farming
Hormones
Avoidance of bioaccumulated toxins (heavy metals and dioxin), pesticides, herbicides, growth hormones, and antibiotics in the industrial food system (Frankly, I am surprised this topic is not part of your survey!!)

My father had his first heart attack when I was very young. He cut down on red meat and it was around this time I started avoiding it too.

“Other” general motivations for vegans:

- Science proves it better for you and what we are naturally meant to be.
- My children
- To much tax subsidy in the meat/dairy industry
- WE CAN SOLVE HUNGER IS THE US IF WE DECIDED TO DO SO.
- I have always eaten this way and don't know another way
- A vegan diet reflects my beliefs and values regarding my awareness of my own actions.
- The Politics of the meat/dairy industry - 3
- personal joy in staying healthy and eating the right foods
- Resistance to capitalism.
- Mental health
- Food Politics/Social Justice
- Breastfeeding - Daughter
- has milk allergy
- i am using food therapy to treat a mental illness
- lower cost of vegan diet

“Other” health motivations for vegans:

- Lower risk of cancers and heart disease, diabetes etc.
- My childrens health
- Energy, blood sugar, brain activity
- LACK OF PROPER MEAT INSPECTION.
- Overall feeling of physical and mental health
- to provide my body with a balanced and healthy diet
- I like the way it makes me feel.
- Not consuming hormones and antibiotics that are in meat
- Maintains clarity of thought and high energy level, especially eating a raw, vegan diet
- Overall increase in energy and health
- Formally high cholesterol
- I found that eating vegan, like regular exercise, has been an effective way to manage my depression.
- i am using food therapy to treat a mental illness
- Avoidance of persistent organic pollutants and heavy metals
- i am doing all these things but it is not working
- keep my blood vessels clean as possible
- * I am a Raw Vegan
REFERENCES


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VITA

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