Plant-Based for the Madison-Based: University of Wisconsin-Madison Student Perceptions of the Plant-Based Diet and Options in and Around Campus

Erin Hepp, Matthew Laska, and Sydney Lawson

Geog 565: Undergraduate Geography Colloquium
University of Wisconsin-Madison
Department of Geography
Fall 2019
ABSTRACT

The purpose of this study was to gain a better understanding of the perceptions and knowledge of plant-based diets among university students. We focused on showcasing local options, the benefits and barriers of the diet, and trends in the demographics of our survey data. We implemented a survey to gather primary data to gauge students' perceptions and knowledge. This sample included 193 students. Through a variety of questions, students offered their insight into how they individually understand the plant-based diet and its consumers. This resulted in a fairly positive perception of the plant-based diet from University of Wisconsin-Madison students, despite many factors deterring them from adopting it. Survey data revealed that most students do not have a complete understanding of the plant-based diet but desire to learn more.
# Table of Contents

1. Introduction
2. Literature Review
   1. Defining a Plant-based Diet
   2. Demographics of Plant-Based Diet Consumers
   3. Perceptions of the Diet (by Plant-based and Non-Plant-based Consumers)
   4. Plant-Based Restaurants in Madison
   5. Perceptions of the Benefits
   6. Perceptions of the Barriers
   7. Summary
3. Methods
4. Results
   1. Demographics
   2. Student Perceptions
   3. “Why did you choose to adopt a plant-based diet?”
   4. “What barrier(s) are deterring you from trying a plant-based diet?”
   5. “Why did you choose to stop eating plant-based?”
   6. Interactive Map
5. Discussion
   1. Demographics
   2. Student Perceptions
   3. “Why did you choose to adopt a plant-based diet?”
   4. “What barrier(s) are deterring you from trying a plant-based diet?”
   5. “Why did you choose to stop eating plant-based?”
   6. Interactive Map
   7. Unexpected Findings
   8. Alternative Explanations
   9. Suggestions for Future Research
   10. Limitations and Areas for Improvement
6. Conclusion
7. Acknowledgments
8. Bibliography
9. Appendix
1. Introduction

For our semester long research project, we decided to research how a population relevant and familiar to us, University of Wisconsin-Madison students, interpret plant-based and what might need to be changed in our community to improve it for the better. Throughout this report, the term ‘plant-based diet’ means not containing any animal products or by-products. The perceptions surrounding the plant-based diet continue to be unfavorable, with multiple studies even showing that vegetarians are seen in a more positive light than plant-based consumers (Corrin, et al., 2017, 42). Despite this, there are several benefits of adopting a plant-based diet, including that it leads to better health, it is more sustainable, and it is easier to adopt now than ever before (Kerschke-Risch, 2015, 101-103; Dinu et. al., 2016, 3641; Clonan et. al., 2016, 367-368). We think it is important to highlight the accessibility of plant-based options locally, in addition to the positive benefits of this diet.

Our project will focus on the current landscape of the plant-based diet based around the University of Wisconsin-Madison (UW) campus. We will tackle our project from three fronts. First, we will look to identify university students’ perceptions and knowledge of the plant-based diet, along with the availability of options in Madison. Second, we look to see why people choose to adopt a plant-based diet and what the perceived barriers are for those who have not. Third, we will examine the current composition of plant-based eating in regards to demographic factors among university students. In answering these questions, the goal is to gain a better understanding of the perceptions and knowledge of plant-based diets among university students in order to bring awareness to local plant-based options and inform the general public of the benefits.
We will apply two data collection methods to our research project. These methods include a survey and exploring the local food scene. Through this exploration on campus and the surrounding area, we hope to better understand what is available in the community and apply that knowledge to an interactive map for plant-based consumers. Through our surveying of students, we hope to understand the demographic landscape of diets in Madison, ascertaining how favored the plant-based diet is compared to other dietary choices, as well as possible reasons for or against choosing this diet.

Some key terms that will be addressed in our research include but are not limited to: plant-based, demographics, perceptions, barriers, benefits, vegan, and vegetarian.

2. Literature Review

Our research statements are focused on identifying the University of Wisconsin-Madison’s students’ various perceptions and attitudes towards a plant-based diet. In order to explore the perceptions and views, we first need to define what a plant-based diet is. Then, through a literature review on the perceptions of plant-based diets, perceived benefits and barriers of transitioning to the diet, and demographic characteristics of those who are plant-based, we set the stage for our survey and for the comparison to the results of our data analysis. The location of our research is the University of Wisconsin-Madison campus itself, as well as hotspots just outside where plant-based options are abundant (Figure 1). These areas include Atwood Avenue, Williamson Street, Regent Street, State Street and the Capital Square, and Monroe Street. Through our research of where plant-based options are most available in Madison, these streets have presented themselves as most friendly to the diet and where most of the restaurants we have identified for our interactive map are located.
2.1 Defining a Plant-based Diet

Currently there are several variations of a plant-based diet that are well-known and have taken ahold in mainstream society. A popular “plant-based” diet is vegetarianism, more specifically lacto-ovo vegetarianism, which is the “practice of abstaining from eating meat” (Ruby, 2012, 141). This means that those who abide by this diet are free to consume dairy products such as milk, cheese, and cream, as well as other animal by-products like honey and eggs. The lacto-ovo is important because it specifies that they eat dairy and eggs. There are other variations such as lacto-vegetarians who abstain from eggs but consume dairy products, and ovo-vegetarians who eat eggs but do not consume dairy (Deckard, 2016). Pescetarians, on the other hand, are similar to lacto-ovo vegetarians in that they also do not eat red meat or poultry, but they do include seafood in their diet (Tilman and Clark, 2014, 520). The reason why plant-based is in quotes at the beginning is because it can mean a lot of different things to many different people. For example, in a study researching the social lives of vegetarians and vegans, a participant self-identified as “plant-based,” but her definition of it varies from the definition we
will be using for the entirety of this report. To this participant, being plant-based meant “being close to vegetarian but not fully abstaining from meat” (Lindquist, 2013, 9). This is starkly different from the definition that will now be referred to from now on which is abstaining from all animal products and by-products. This diet is commonly referred to as “vegan”, but we chose to use “plant-based” instead because we are not looking into the ethical aspects of animal rights that often accompanies the term “vegan”. Throughout this report, the term “plant-based” will mean no meat, fish, eggs, dairy, or other animal by-products such as honey. Now that it is clear what a plant-based diet is, it will be important to know who is more likely to participate in this diet.

2.2 Demographics of Plant-Based Diet Consumers

Based on various sociodemographic factors, consumers can have different knowledge of the environment around them and are introduced to different views of the world. Experiences can impact the different beliefs and arguments that members of various groups may hold. These can affect choices and decisions they make; this is certainly true for dietary choices, which can be influenced by many aspects of life. This raises the question if there are certain segments of the population that tend to consume a plant-based diet more often than others. While the research on this topic is somewhat limited, there appears to be some socio-demographic trends that are emerging into who consumes a plant-based diet.

To situate ourselves, it may be beneficial to first look at the overall percent of the population that consumes a plant-based diet. According to the Food Demand Survey run in the United States, approximately 4.2% of respondents answered that they were either vegetarian or vegan (Lusk, 2014). A similar number appeared in the more recent Harris Poll commissioned by
the Vegetarian Resource Group (VRG), with 4% of American adults indicating they are vegetarian, half of them being vegan (Stahler, 2019). These numbers, with some minor fluctuations, appear to be consistent over the last decade based on other VRG polls.

The most prominent demographic trend that showed up was that of gender. There appears to be a consensus that females are more likely to follow plant-based diets than men (Graça, et al., 2015, 81). Men seem to be more likely to view various barriers to converting. Meat has often been depicted as a status symbol, one associated with masculine power (Pohjolainen, et al., 2019, 1151; Lea, et al., 2006a, 835). Because of this, more men are likely to believe that humans were meant to eat meat (Lea, et al., 2006a, 831). Along with this, men are more likely to perceive plant-based diets as tasteless and not nutritious (Pohjolainen, et al., 2019, 1154). On the other hand, women were more apt to viewing the perceived benefits of following a plant-based diet. Women generally view plant-based and vegetarian diets as healthier, and this outlook opens the door to them realizing other benefits, such as with environmental impacts and animal welfare (Lea, et al., 2006a, 835). These differences in gender views of the diet coincide with the Food Demand Survey’s result, which concluded that women were more likely to consume plant-based diets than men (Lusk, 2014).

Another demographic factor that appeared often was age, although there were mixed results regarding it. According to results from an article performing a literature review, at least four different studies placed the youngest respondents as being the least willing to convert to a plant-based diet (Corrin, et al., 2017, 45). For those aged 20-24, college-aged people, one study found the strongest barrier to be a lack of information (Lea, et al., 2006a, 831). However, in direct contrast to this trend, the demographics of a German study’s participants of solely plant-based consumers included 60% of people younger than 35 years old (Janssen, et al., 2016, 646).
This is seen further in results from the Food Demand Survey, which concluded with statistical significance that younger people tend to follow a vegetarian or plant-based diet more often than the older generation (Lusk, 2014). The survey’s results are supported by the younger population being more likely to perceive the environmental and health benefits of the diet (Corrin, et al., 2017, 45-46). If this side of the trend is true, our overall percentage of respondents consuming plant-based diets could be higher than the population because we are focusing solely on university students.

Along with this, level of education is also a demographic factor that shows an emerging trend of who consumes plant-based diets. A higher percentage of those consuming vegetarian and plant-based diets tend to have higher levels of education (Crnic, 2013, 1116; Corrin, et al., 2017, 45; Lea, et al. 2006a, 835). Plant-based diets are harder to prepare for than diets based around meat. “Education is required about how it is possible to obtain iron and protein from a plant-based diet, and tips on how to make a gradual, easy transition to a plant-based diet” are helpful (Lea, et al., 2006b, 349) Although this article uses plant-based to mean vegetarian, the idea rings true for vegan diets. It makes sense, then, that those who are more likely to perceive the benefits and seek out the necessary information on how to plan and change diets would be the consumers who are well-educated. Additionally, consumers with lower educational attainment were less likely to change their eating habits (Lea, et al., 2006a, 831) and viewed plant-based diets as less nutritious than those centered around meat (Pohjolainen, et al., 2019, 1154). The Food Demand Survey corroborates these findings, concluding that vegetarian and plant-based eaters tend to have higher levels of education (Lusk, 2014). With our focus being on college students, we could expect to see higher levels of plant-based eating than the general population.
Some other demographic factors in which there have been trends popping up are place of residence and whether one knows a plant-based friend or relative. Living in rural areas has been identified as a factor that increases meat consumption (Pohjolainen, et al., 2019, 1152). Most farms are found in rural areas, and they depend on the consumption of livestock for their business; thus, it would make sense that they, too, participate in the consumption of meat. People who have more plant-based friends and family members are more likely to consume a plant-based diet (Corrin, et al., 2017, 45). Consumers with connections in this way are more likely to have a support network that is there to provide information and guidance in making the transition to a plant-based diet. They also have someone who can hold them accountable and encourage them along the way.

Various socio-demographic factors affect the environments in which someone grows up. This, in turn, impacts the interactions in one’s life, influencing daily decisions and views of the world. One of the decisions is the diet a person chooses. Among others, some of the more prominent socio-demographic trends seen amongst plant-based diet consumers are that they are increasingly female, younger, have a higher educational level, and reside in urban areas. We look to see if the university students on UW-Madison’s campus are representative of these apparent demographic patterns, while also building on the literature by taking a more in-depth look at topics such as major and year in school.

2.3 Perceptions of the Diet (by Plant-based and Non-Plant-based Consumers)

Despite not having a lot of comprehensive literature on this subject, most of what is available concludes a plant-based diet is perceived unfavorably. Looking at three studies on the perceptions of plant-based eating, all of them determined that vegetarians are seen in a better
light than plant-based eaters. In the United Kingdom (UK), a study showed that three-fourths of UK stories in newspapers had negative opinions of plant-based eaters (Corrin, et al., 2017, 42). In an American study, thirty-eight percent of those surveyed thought of plant-based eaters favorably, while thirty percent did not. It is important to note that both of these statistics are worse than the perceptions towards vegetarians (Lindquist, 2013, 2) Arguably, if a third of Americans surveyed do not like plant-based eaters, it still supports the idea that there is a negative perception towards the diet and its participants.

There are many reasons why omnivores and non-plant-based eaters have a negative perception of plant-based eating, and one of the reasons is because it is seen and often labeled as ‘extreme’. In an interview on the subject, a self-identified omnivore said, “Today, veganism is seen as unnatural, restrictive, bland, nutritionally unbalanced, and above all extreme” (Guerin, 2014, 6). Even in academic articles, plant-based eating is still being referred to as extreme (Larrson, 2003, 63). On the contrary, in an article looking at plant-based eating as a cultural movement, it was referred to as a “radical social movement” but stressed that this wording was used because it is not mainstream, not because it is extreme (Cherry, 2006, 158).

It seems there is a link between mainstream media coverage and perceptions of the plant-based diet and its participants. As previously stated, many newspapers refer to plant-based eating unfavorably. In another UK study, only 5.5 percent of printed media referred to the diet or its consumers positively. In a report looking at the conflict between omnivores and plant-based dieters, it stated,

Similarly, a study conducted on UK national newspapers concluded nearly 75% of news stories including the word “vegan” portrayed vegan issues as marginal, radical, faddish, crazy, or having impossible standards. Presumably, these stories are released with the understanding that most of the audience will be omnivorous and people are interested in
stories which confirm existing beliefs. Thus, a dominant culture containing anti-vegan messages is both inherent and perpetuated. (Guerin, 2014, 5)

This quote shows there is dual reinforcement going on. Mainstream media is mostly reporting plant-based eating as extreme and negative which further influences the unfavorable perceptions held by the general public. Additionally, newspapers are aware of this negative perception held by many people and write in favor of them.

It must be said that omnivores are not the only ones that hold negative feelings towards plant-based eaters. In this study, multiple plant-based eaters who were interviewed admitted that there are extreme individuals within the community they feel are counterproductive to the movement. While those interviewed said they agree with the reasoning behind these “extremist” views, they do not support the actions which ultimately lead to them being referred to as extreme. Some plant-based eaters reflected on their educational tactics since becoming plant-based. They agreed that leading by example and not being as aggressive in their interactions and activism helped lessen the negative stereotype that they felt others had placed on them (Guerin, 2014, 16).

It is also important to breakdown the interactions themselves that are often labeled as “conflicts” with plant-based eaters. The interviewer that talked to both omnivores and plant-based eaters admitted that it was hard to discern whether the conflicts were actual conflicts or not. While omnivores were more likely to use devise rhetoric when explaining their interactions with plant-based eaters, those who were not omnivore often referred to the interactions as discussions or debates, not conflicts. They tended to view it as an opportunity to educate, but omnivores often cited that they felt judged from these interactions. Those who are not plant-
based also often feel like plant-based eaters are pushing their lifestyle onto them, which they viewed as inappropriate (Guerin, 2014, 20-25).

Despite the external and internal conflict, plant-based dieters interviewed often talked about their community as similar to a religion because it is based on a set of similar beliefs and values. One said going plant-based was “an awakening” (Guerin, 21). Of the nine plant-based eaters interviewed, all of them thought of their diet as “positive and progressive” and led them to feeling more connected to living beings (Guerin, 22). They said that they often push to educate others because of all the benefits and also because they believe it has transformed their life. Despite the internal support from fellow plant-based eaters, those that identify as plant-based often feel judged and ridiculed themselves from omnivores. One plant-based interviewee explained: “people don’t understand how hard it is to live in a world where your highest beliefs are laughed at on an almost daily basis… Thank god I have friends who understand and are on my side cus’ some days are really tough” (Guerin, 24). Another plant-based interviewee reported feeling the need to defend herself when mocked by omnivores. Yet another said that at social gatherings, family and friends often mention that she eats plant-based as one of the first things to describe her which then forces her to talk about it (Guerin, 2014, 5-25).

While there are omnivores that view plant-based eating favorably, as shown with the nearly forty percent of Americans that said so in the Lindquist study, there still seems to be a fundamental difference in the way plant-based eaters see their diet and the way that omnivores do. Additionally, the way in which their interactions are seen from either side is also very divided. The negative media representation of the diet and its consumers along with the general public has led plant-based eaters to feel ostracized themselves.
2.4 Plant-Based Restaurants in Madison

One decade ago, the Madison community was graced with a plant-based restaurant for the first time in five years. This restaurant was to be called “The Green Owl Cafe.” Jennie Capellaro, owner and chef of the new restaurant located in the Atwood neighborhood, told Linda Falkenstein, an Isthmus Magazine writer, that she “started cooking only out of necessity” due to the lack of vegetarian or vegan options in the local Madison community. The purpose of Capellaro’s restaurant is to provide comfort food for vegetarians and vegans alike who can order anything off the menu without the fear of secret animal-derived ingredients incorporated into the recipes (Falkenstein, 2009). Over the years, the belovedness of The Green Owl within the Madison community has been supported by the abundance and variety of local awards and positive reviews.

Since the inauguration of a steady plant-based restaurant, the local climate has soared with options that are or can be modified to be plant-based. Although there are only three plant-based restaurants in the local community, a large majority of restaurants have an abundance of options to better serve those who prefer plant-based options.

Surya Cafe, an entirely plant-based restaurant, with locations on Madison’s East side and in the city of Fitchburg, has become a bright light for the plant-based community. Surya’s mission is to source local ingredients which are organic, whole, and in high regard to the earth. The hope of Surya Cafe is to produce a space where the environment is an encouragement of how to rightfully consume food in relation to its effect on the earth and in relation to other human beings (Krug, 2019).
Mother Fools Coffeehouse, located on the trendy Williamson Street, or the colloquial Willy Street, on Madison’s Near-East side, is a longstanding coffee shop with only plant-based options that are either made in-house or from various local purveyors. Mother Fools has brought a certain warm and cozy necessity to the Willy Street neighborhood through its local and ethically sourced coffees, beverages, soups, and baked goods, which eliminate animal-derived ingredients and are only plant-based foods.

In addition to the pure plant-based options, there are many other local restaurants to choose from. These choices are referred to as Plant-Based Friendly restaurants as they have at least one or more options for plant-based consumers. One popular and expanding Plant-Based Friendly choice is Forage Kitchen. Forage began as a spot for fast salads constructed with ingredients from locally-sourced farms. This allows for those who are more health and environmentally conscious to feel good about the choices they are making when choosing to eat there. Due to its popularity, there are now three locations at which Madisonians have access to (Probst, 2019). Himal Chuli on State Street, a Nepalese restaurant, is well-known for its abundance of plant-based dishes due to the traditional cuisine of Nepal. It provides a wide range of options from soups to rice dishes to vegetable stir-fry. Ian’s Pizza, a staple in the Madison community, is dedicated to making delicious plant-based pizzas which do not cost more due to their different cheese choices. The growing pizza chain has incorporated fresh and local salad ingredients to the available options for quick service and a more inclusive experience. In addition, Ian’s Pizza has vegan slice options on Mondays, Fridays, and Saturdays. Instead of having to buy an entire pie, plant-based customers have the ability to purchase only a slice, the common luxury of their omnivore and vegetarian counterparts (ianspizza.com, 2018).
Monty’s Blue Plate Diner, located on Atwood Avenue just a few blocks from The Green Owl Cafe, has an entire menu dedicated to the local plant-based consumers or those interested in trying something new. Besides the three plant-based restaurants, this is the most accommodating restaurant in town due to the wide range of options on the menu. Monty’s is a restaurant working to bring together the various types of local eaters with its wide-ranging and attractive menu. Natt Spil, an unidentifiable restaurant just a few blocks from the Capital Square, has a menu with nearly half of the options being plant-based. Similarly, Fuegos provides two menus, one for carnivores and one for plant-based consumers, to provide a welcoming Latin experience for either type of consumer (Krug, 2019).

These are just a few of the many local restaurants which are working towards accommodating the growing number of local citizens who choose to follow a plant-based diet. Although there is a growing abundance of restaurants offering plant-based options, these options are still limited. Many owners and chefs in Madison are still weary of adding them to their menu. In addition to the growing climate, some people desire to adopt a plant-based diet due to health reasons. The biggest misconception is that the plant-based diet will make the consumer shed extra pounds instantly (Cassetty, 2018). Due to the variety of junk foods which can be vegan, this is not true. Not to be forgotten, there are multiple other reasons as to why this is false, factors such as genetics, exercise, and mental health all can affect a person’s weight. Because of a diet though, those who consume plant-based foods are more likely to be seen as sexier because of their better smelling pheromones compared to their omnivore counterparts (Polito, 2016).

The University of Wisconsin-Madison’s campus has many students who choose to follow a plant-based diet. There is a student organization called Nature and Animal Protection, or NAP, which is dedicated to the education of the impacts of animal agriculture to students in hopes of
creating a more inclusive dining experience on campus. The current dining experience is dominated omnivorous options due to their popularity, but plant-based options are slowly becoming more widely available as most cafes and dining halls on campus are adopting at least a few options to accommodate students who follow a less traditional diet.

To educate the greater Madison community of the plant-based diet, Mad City Vegan Fest, which is held once a year, hopes to create an environment which encourages and inspires anyone to change their dietary choices, either indefinitely or to greatly reduce consumed animal products. Even if attendees have no interest in changing their own lifestyle, it can be an opportunity to learn about someone in their life’s lifestyle choices. Through an abundance of vendors, speakers, and samples, attendees can develop the skills needed to understand and appreciate a plant-based lifestyle. Through this event, motivation is often gained to transition because of the reality of the possibility to follow a plant-based diet in Madison due to the community support and available options. In conjunction with the annual festival, there are multiple organizations around the city which hope to support those following a plant-based diet (madisonveganfest.org, 2019).

Many people who are part of the plant-based community in Madison in some way, or another, have expressed how it is not where it could be for such a progressive city which is always looking to support and incorporate local farmers into the dining scene. Despite this, there is still the sense that the city is not where it could be in terms of accepting and keeping plant-based diets and restaurants alive. There have been various plant-based restaurants over the decades, but the Green Owl Cafe is the longest standing restaurant with ten years of business in the city (Falkenstein, 2009). Despite the small community of plant-based eaters and restaurants in Madison, there is hope for its growth in the near future. Surya’s owner and chef, Lauren
Montelbano, is excited for the future of plant-based eating in Madison. Montelbano believes the plant-based community is “at a breaking point right now where the climate is changing. I think I entered the scene here at the right time” (Krug, 2019). Some local citizens who follow a plant-based diet are content with the number of solely plant-based restaurants and are better satisfied with restaurants that incorporate both omnivorous and plant-based options. The satisfaction comes from the ability to accommodate all types of dietary choices when going out to eat with family or friends (Krug, 2019).

2.5 Perceptions of the Benefits

There are several reasons to go plant-based: health, sustainability, friends and family, the next step in transitioning from any variety of vegetarianism, as well as morality. While morality and animal rights are not something that will be focused on in this report, it is important to mention because it is a prominent reason that individuals do go plant-based (Graça et. al., 2015, 81). One of the next leading reasons individuals go plant-based is for their health. Of 852 plant-based dieters or vegetarians surveyed for a study, health garnered 3.2 out of 5 in terms of importance for going plant-based, showing it holds significant weight to those going plant-based or who already are (Kerschke-Risch, 2015, 101). A meta-analysis of eighty-six cross-sectional studies and ten cohort prospective studies showed that a plant-based diet can have beneficial health effects including a reduction in BMI, total cholesterol, LDL-cholesterol, and glucose compared to omnivores (Dinu et. al., 2016, 3641).

It is important to note that the American Dietetic Association put out a statement in 2009 that looked extensively at the effects of vegetarian and plant-based diets on human health, and their findings, for the most part, are very positive. From birth onward, a plant-based diet is
appropriate for all ages and stages in life, including pregnant women. Along with BMI, cholesterol, and glucose levels, eating plant-based has also been shown to lower the risk of dying from ischemic heart disease. Compared to meat-eaters, being plant-based reduced an individual's likelihood by 57%. This is also better a vegetarian diet which only reduced the likelihood of dying from ischemic heart disease by 24%. It has also been found that plant-based dieters have the lowest risk of hypertension when compared to meat-eaters and vegetarians. In a five-month clinical trial, a plant-based diet was better at reducing the need for medication for type 2 diabetes than the American Diabetes Association’s own guidelines for eating (“Position of the American…”, 2009, 1266-1267). In all, two paradigm shifts are happening in regard to modern food choices. One, plants are being understood as a viable option to fit all our nutritional needs. Two, our recent diet trends can affect chronic degenerative diseases, and more research needs to be done on how our food is affecting our health and what ways we can eat better (Dwyer, 1999, 621-622).

While people are concerned with the health of their own bodies, there is a growing concern for the health of the planet as well. Research shows that the current industrial agriculture complex contributes to almost a third of all green-house gas (GHG) emissions, with livestock alone accounting for half of that. When comparing ruminant animals such as cows, sheep, and goats to legumes, it was found they produce 250 times more GHG emissions per gram. Sustainability wise, it is clear that eating more plant-based proteins would have a significant impact on one’s carbon footprint. In the same study, research found that if the European Union were to cut its meat consumption by 50%, they could reduce their emissions by 40% and reduce the amount of cropland used by 25%. Research also found that overall a meatless diet uses 1.4 times less pesticides, three times less water, and thirteen times less fertilizer (Clonan et. al.,
While those numbers are only for a vegetarian diet, a study looked at the standard diet across twenty-one countries and nineteen of the twenty-one showed a direct correlation between lowered consumption of animal products and a lowered GHG impact. The study concluded that a “model of future scenarios shows that consumption patterns are unsustainable and that reduction in livestock will be an important element in achieving food security” (Raphaely and Marinova, 2016, 13). It’s important to remember, however, that production methods matter when discussing agricultural sustainability. Cattle raised on adaptive multi-paddock pastures have the ability to off-set their emissions because the resting pastures can act as carbon sinks, so sustainability is more nuanced than just looking at a food source’s GHGs per gram or other single-factor determinations (Stanley, et al., 2018, 249-258) With the current threat of a climate crisis ahead, it is important that we focus on sustainability in all facets of life, including what is on our plate. Adopting a plant-based diet is an overall effective way of doing so.

Another reason many people go plant-based is because they already know someone who has adopted the diet themselves. Looking at the punk-rock scene, the average person may not know, but it has many ties to the plant-based community. A study done looking at these connections talked to a few of the self-identifying, punk-rock, plant-based dieters to get a better understanding, and it was found that many punk-rockers went plant-based through attending concerts and meeting individuals that were plant-based.

When I became vegan it was very easy because my roommate was vegan and my boyfriend was vegan, and the friend well, he became vegan, like we became vegan on the same day. One of our friends who went with us to the rally became vegan. It was very, lots of discussion about it helped a lot, because we were all in it together (Cherry, 2006, 164).
Later on, the person being interviewed explained that she is the only one left of that friend group that is still plant-based, so just knowing other people is not a sufficient reason to stay plant-based, but it often is effective at inspiring individuals to get started.

The last reason that we will touch on is the transition from any form of vegetarianism to plant-based as a reason people go plant-based. Referring to the Kerschke-Risch study (2016, 98-103), of the 852 people surveyed, almost 74% of them utilized a vegetarian diet before going completely plant-based. They used vegetarianism as a steppingstone instead of cutting out animal products cold turkey; however, a considerable amount, roughly 20%, did go straight from an omnivorous diet straight to a plant-based diet, showing it is possible (Kerschke-Risch, 2016, 100). To some vegetarians, a plant-based diet can then be seen as the next step in their progression of eating.

According to the literature, there are several reasons why individuals choose to adopt a plant-based diet. It has been shown to be a healthy option for all stages in life. It is an effective way of reducing one’s impact on the Earth. Having friends or family members that are already plant-based consumers is also another reason why people adopt the diet. Additionally, morality and progression of diet are another two reasons for people eating a plant-based diet. While it is important to look at the literature on this subject, what we are interested in is the perceptions held by University of Wisconsin-Madison students on the diet and its consumers. We measured this by surveying them.

2.6 Perceptions of the Barriers

Although there are plenty of reasons that excite local citizens to transition to a plant-based diet, there are also a variety of reasons as to why people choose not to follow one. The
most common barriers include, but are not limited to, the taste of the food, not knowing enough about the diet, lacking support from peers or family members, the cost of certain food items, the availability of plant-based foods, and the impact on their health (Lea, 2006b). These are just a few of the perceived barriers holding people back from considering or transitioning altogether to a plant-based diet.

Many people are not well-informed of what plant-based is. Plant-based means to abstain from meat, fish, eggs, dairy, or other animal by-products such as honey. There is a misconception that plant-based is only for the affluent, the white, and suburban individuals, but plant-based can be for anyone. Historically, many Asian countries, such as India, have adopted plant-based diets. These adoptions are often due to religious reasons or because meat was seen an item for the wealthy.

In addition to not always knowing enough about plant-based diets, many are discouraged by the lack of support from friends or family members or even the overall community in which they live. Especially in a place like Wisconsin, which has a Germanic food history and predominant agriculture industry, many people have been raised with a certain feeling towards meat. Meat is seen as the center of the meal and any meal without it is incomplete. When people in these circles adopt a plant-based diet, there can be backlash due to friends or family not understanding all the reasons why someone may choose this new lifestyle (Lea, 2006a).

Because of the common stigmatization of plant-based diets, some people are also put off from the idea of plant-based due to the actual taste of the food part of a plant-based diet. As populations have increased, the affinity of meat and processed foods in the western diet has as well. Because of this, many people are not familiar with the taste of whole foods such as
vegetables, fruits, legumes, grains, and other similar non-processed foods part of a plant-based diet. In addition, many have a stronger liking for meat and a smaller desire to eat something like a steamed vegetable. Few people have had good experiences with plant-based foods to consider them delicious and therefore have curated poor opinions on the possibility of a delicious plant-based meal (Lea, 2006a).

Another perceived barrier is the cost of adopting a plant-based diet. Grocery stores, convenience stores, bodegas, and other stores are often more likely to raise the prices of fresh fruits and vegetables, nuts, legumes, grains, and other whole foods compared to processed foods. This increased cost of individual food items is seen as an inconvenience and therefore extremely expensive compared to the cheaper and more convenient options of processed foods as well as meat products (Craig, 2009). Even though some foods are more expensive and less convenient there are many saved costs as the food purchased can often make more than a processed item or equivalent could make. In addition, there are saved health costs due to the healthier lifestyle of those who adopt a plant-based diet.

While there are many social barriers, others are nervous due to the perception that there are not enough nutrients to properly nourish the body and maintain a proper health. There is a misconception that plant-based foods are not rich in protein and other essential nutrients (Craig, 2009). Although plant-based consumers must take supplements to receive specific nutrients like B-12, which is today only found in animal flesh, this does not mean they are insufficient in other vitamins. Because of the common understanding of meat’s protein content, it is difficult for many to comprehend that plants can be rich in protein as well.
There are a variety of barriers holding people back from truly understanding, appreciating, or transitioning to a plant-based diet. These misconceptions are what continue the cycle of stigmatization of and difficulty for plant-based consumers. These are not the only barriers for people, but these are the most common and well-known, especially for those who are barely aware of the truths of plant-based diets.

2.7 Summary

In mainstream society, there are several different diets that could be considered plant-based, but it is important to remember that throughout this report, the term ‘plant-based’ refers to a diet consisting of no animal products or by-products. Through our research we were able to discern a few main demographic factors that show emerging trends as to who is most likely to adopt a plant-based diet: females, those who are highly educated, urban dwellers, people with friends or family that are already plant-based, and those that are younger, although there is contestation about the age demographic. While there is generally an unfavorable outlook on the diet and its consumers, there are a lot of perceptions of the diet that were then disproven by science, such as that it is unhealthy and that it is an ineffective way of getting enough protein. In all, we believe that there needs to be more research done on this topic, and we look forward to being able to contribute to this field of study.

3. Methods

In order to gain insight into the various demographics and perceptions of a plant-based diet on campus, we will have to look at both qualitative and quantitative data. Through quantitative research, we can view the overall demographic landscape of students who have adopted plant-based diets and those who have not; this will also allow for comparison with
results from previous, although limited, studies. Through qualitative research, we can dig deeper into the perceptions of plant-based diets among university students and reasons why they may or may not have transitioned to the diet. To accomplish both, we need a way to receive feedback from many university students, not just a select few. Because of this, we decided our primary form of data collection will be through an online survey.

We chose to implement on an online survey for multiple reasons. As mentioned in *Key Methods in Geography*, surveys are helpful in evoking the attitudes and perceptions people have in relation to social and political issues (Clifford, et al., 2010, 77-78). This suits our goal well, as we want to draw out the various perceptions people have about the plant-based diet. Based on time and resource constraints, a survey is also a cost-effective and efficient way to get enough responses to be able to conduct meaningful data analysis.

We created the survey over the course of multiple group meetings. In creating the survey, we kept going back to the quote, “Good (survey) questions are ones that provide useful information about what the researcher is trying to measure” (Clifford, et al., 2010, 78). This guided us in making sure there was a reason for every question being asked and could be tied back to helping answer our research question.

The first step in designing the survey was deciding what kind of questions we wanted to ask. We included both fixed questions and open-ended questions, as each have several advantages. The questions pertaining to demographic characteristics are, for the most part, fixed questions. The set answers guide respondents through the survey; they make taking the survey easy. The responses are also easier to work with and conduct statistical analysis with, making it easier for us to interpret results and see if there appears to be any trends amongst those who
follow plant-based diets. Finally, we can compare the demographic results with the University of Wisconsin—Madison’s overall demographics to see if our sample is representative. We have further questions relating to the perceived barriers of adopting a plant-based diet and if they have ever tried or considered adopting a plant-based diet. These are ways to look at both perceptions of the diet and willingness or readiness to adopt the diet. Finally, we included a Likert scale with various statements pertaining to plant-based options, such as “Plant based options are inexpensive” and “Plant-based options are protein sufficient.” Respondents can rate on a 5-point scale how much they agree or disagree with the statements. This section is useful to demonstrate various perceptions of the diet as well as knowledge of it. We will also be able to compare answers between those who are plant-based and those who are not to see if there is a discrepancy between the two.

There are also a few open-ended questions included at the end of the survey. Although we would have liked to ask more in-depth questions, we tried to keep them as short and succinct as possible to maximize the amount of completed surveys we receive. They are necessary, as they provide valuable information to answer our research question that fixed responses are not able to accomplish. Speaking on open-ended questions, it is posited perfectly in Key Methods in Geography: “Respondents are not constrained in answering questions. They can express in their own words the fullest possible range of attitudes, preferences and emotions. Respondents’ ‘true’ viewpoints may be better represented” (Clifford, et al., 2010, 79). To gain overall positive or negative perceptions of the plant-based landscape on campus, we ask for a few words that respondents associate with a plant-based diet, followed by the same question relating to plant-based consumers. If students selected that they follow a plant-based diet, they are then asked why they chose to adopt it. This is a key question in the survey, as it gets at the perceived
benefits of following a diet, contrasting the perceived barriers selected by those who do not follow the diet. Finally, we have a text entry box at the end for respondents to leave any comments they may want to share that were not covered by the survey questions. A full list of survey questions can be found in the Appendix.

To ensure a successful survey is sent out, an important step is to do a peer review, or “pilot-testing”, before administering it (Clifford, et al., 2010, 82). We presented our survey in front of our Undergraduate Colloquium classmates and professor for review of things such as survey layout, question wording, and applicability to the overall research question. Modifications were then made based on the various suggestions.

We used Qualtrics to create and administer the online survey. Based on time and resource constraints, we had to adjust who we would administer it to. Ideally, we would be able to use a stratified random sample to get a sample representative of the population. However, knowing we needed as many responses as possible in a short amount of time to obtain meaningful data to analyze, we were forced to forgo that option. Instead, we distributed the survey through various clubs we are associated with, our undergraduate majors’ mailing lists, and to other peers through social media.

In addition, by looking into the local food scene, we hope to demonstrate all of the available plant-based food options in the area. To visualize the locations, we will be creating an interactive map using ArcGIS. We feel it is important to depict the availability of the options, as many people may not know of the plethora of choices. The goal is to have an easy-to-interpret visualization to capture the interest of the viewers while also informing them on the topic.
The goal of our research question attempts to look at various perceptions and knowledge of plant-based diets and options among students at the University of Wisconsin – Madison. Using a survey, we can gain valuable insights into these while obtaining enough data to perform qualitative and quantitative analysis. We will then be able to view the landscape of a plant-based diet across the university campus as well as identify if emerging trends from previous research studies are evident amongst university students.

4. Results

4.1 Demographics

A total of 224 students clicked on the link to our survey. After sifting through these and removing the surveys that did not have any responses or those that had only answered a couple questions, we had a final count of 193 survey responses. Although this response rate is low compared to the population (45,317 students), it is enough data to conduct some statistical analyses. Select demographic characteristics of the survey respondents and the general University of Wisconsin-Madison student population, as obtained from the UW-Madison Office of the Registrar Fall 2019 Enrollment Report, are listed in Table 1. These demographics are limited to those that were present in both our survey questions and in categories in the report. Compared to the university population, our survey was comprised of an overrepresentation of females, Caucasians, and seniors. Graphs depicting the representativeness from our survey sample of gender (Figure 2), class standing (Figure 3), and race/ethnicity (Figures 4a, 4b) can be found in the Appendix.

Overall response percentages to the question of dietary choice are presented in Figure 5. Nearly seventy-five percent of the students who responded follow an omnivorous diet. Thirteen
and a half percent of respondents consume some form of vegetarian diet, and slightly over five percent of the students consume a plant-based diet.

The five major demographic trends presented in the literature review are the focus of the demographic’s analysis relating who is more likely to follow a plant-based diet. By default, all the respondents of our survey are pursuing at least a college bachelor’s degree, meaning they all have a minimum higher education level. As for age, only five respondents are over the age of twenty-nine, with the oldest being forty-one, showing a majority are from the same age cohort of 18-29 years old. No statistical tests were run for these factors vs. dietary choice, as they are each considered to be their own individual groups.

Survey responses to the question regarding dietary choice were measured against three characteristics to identify trends and/or possible relationships. These demographic characteristics were the responses to questions about gender, geographic setting the student was raised in, and if the student knows a friend or relative who consumes a plant-based diet. Tables 2, 3, and 4 present the raw numbers from the survey comparing dietary choice to gender, geographic setting, and knowing a plant-based consumer, respectively. Of the ten people that responded with plant-based for the diet question, there was a 9:1 ratio of female-to-male, with our overall survey sample having a ratio of just under 2:1. For geographic setting, nine out of ten students who follow a plant-based diet were from suburban areas, with the lone other one being raised in an urban setting. However, a little over half of the total respondents were raised in suburban settings. Only nine students who follow a plant-based diet answered the friend/relative question, and seven of them confirmed that they have a friend or relative following a plant-based diet; this is in comparison to slightly over two-thirds of total respondents who know a friend or relative following a plant-based diet. After condensing the dietary choices into three categories (flesh-
based, vegetarian, and plant-based), we performed multiple Fisher’s exact tests. For each test, the null hypothesis is that there is no relationship between dietary choice and the selected demographic variable, meaning they are independent of each other.

To conduct statistical analyses, the optimal choice would have been a Chi-Square test to identify if the demographic characteristics are independent of one another or not. However, in each of the dietary choice vs. other demographic variables, there were cells present that had less than five, so we were forced to perform a Fisher’s exact test, calculating a probability based on all possible combinations. When running these tests, the resulting probability is ideally a small number, such as .05 or below. To set up the Fisher’s tests correctly in a 3x2 matrix, we also had to combine dietary choices into the categories of flesh-based diet (consisting of carnivore, omnivore, and pescetarian), vegetarian diet (lacto-ovo-, lacto-, and ovo-vegetarian), and plant-based diet. We left out the “other” responses, as they did not fit into these three categories.

Across the reviewed literature, there was a notable trend stating that females are more likely to consume a plant-based diet. For our survey, there was a range of responses across the three dietary groups of nine to ninety-three for females and one to fifty-three for males, with a flesh-based diet being the most common for both genders (Table 5). While the flesh-based diet and overall survey total were comprised of about sixty-six percent, there was a staggering ninety percent of those following a plant-based diet who are female. Calculating a two-tailed Fisher’s exact test probability, the result was \( P = .1994 \). This means there was about a 20% chance that we would be wrong in saying that gender and diet in this study are dependent on each other; in other words, there was about a 20% chance that they were independent of each other and the null hypothesis is correct. Although we could not conclude with statistical significance that there was a relationship among the two demographic characteristics, the ratios and descriptive statistics
suggested that there was a tendency for females to consume a plant-based diet at a higher rate, a finding the literature review supports.

The reviewed literature noted the trend that those from urban areas consume a plant-based diet at a higher rate than those from rural areas. To perform a two-tailed Fisher’s exact test on diet vs. geographic setting raised in, we had to combine the vegetarian and plant-based dietary groups (Table 6). The Fisher’s program could not handle data values of greater than twenty in a 3x3, so this was the only way to perform the test and determine if a statistical relationship existed. We understood that we were losing resolution in our data by doing this, but researchers have to make compromises sometimes when things don’t go according to plan. The resulting probability of the test was $P=.2020$, meaning there was about a 20% chance that the null hypothesis was correct, and the demographic variables are independent of each other. While just over half of both those who consume flesh-based diets and survey respondents were from a suburban origin, over two-thirds of those that consumed a plant-based or vegetarian diet were from suburban areas. When separating vegetarian and plant-based diets, ninety percent of those consuming a plant-based diet in our survey were from a suburban area. So, although no statistically significant relationship could be determined based on the test results, there appeared to be a suburban tendency based on the ratios between the demographic factors of who was more likely to follow a plant-based diet and the geographic setting in which they were raised.

The reviewed literature suggested a trend of those who know a friend or relative consuming a plant-based diet to be more likely to adopt the diet themselves. Like gender, the range across the three dietary groups for knowing someone who follows the diet was 7-97, and the range for those that did not know someone following the diet was 2-50 (Table 7). Nearly sixty-six percent of those who follow a flesh-based diet and the survey overall know someone
who follows a plant-based diet. Although less than the seventy-eight percent of people who follow a plant-based diet who know a like-minded friend or relative, the ratios are comparable. This rough equivalence in ratios explains the Fisher’s exact P value. Performing a two-tailed Fisher’s exact test on these data revealed a probability value of $P = .8615$, meaning there is an 86% chance that we would be incorrect in saying that the demographic characteristics are dependent on each other, or there is an 86% chance that the null hypothesis is correct. We could not conclude there was a statistically significant relationship between the variables. However, it appeared in the ratios that there may be a slight tendency for those consuming a plant-based diet to know someone who does as well.

4.2 Student Perceptions

Utilizing a Likert Scale, we were able to understand how UW students perceived specific aspects of the plant-based diet. This data can be seen in Table 8. Of the twelve categories listed, eleven had “Agree/Strongly Agree” as the highest selected choice. “Plant-based options are important” and “Plant-based options are healthy” had the highest selections of “Agree/Strongly Agree” with 84% and 80% respondents, respectively. “Plant-based options are inexpensive” was the lone result with a majority negative response; 50% of the respondents selected “Disagree/Strongly Disagree”, and only 18% selected “Agree/Strongly Agree.” The second least positive response was “Plant-based options are protein sufficient” with 29% of respondents having selected “Disagree/Strongly Disagree” and 36% having selected “Agree/Strongly Agree.” The category with the highest number of responses for “Neither Agree nor Disagree” was “Plant-based options are inexpensive” with 26%. The category with the lowest number of responses for “Neither Agree nor Disagree” was “Plant-based options are important” with 12%. The category with the highest number of responses for “Not Sure” was “Plant-based options are accessible
throughout campus” with 11%. The categories with the lowest number of responses for “Not Sure” were “Plant-based options are important” and “Plant-based options are healthy” with 1%.

Utilizing a few open-ended questions, we were able to understand words or phrases students associated with plant-based diet and consumers. The word with the highest frequency in both categories was “healthy.” “Vegetarian” and “vegan” had a high frequency in both categories as well. Phrases such as “environmentally conscious” and “environmentally friendly” were also cited multiple times. Words with a more negative connotation like “unappealing,” “stubborn,” and “elitist” were also used as well, however. We utilized word clouds, which can be found in the Appendix (Figures 6, 7), as a visual aid for easier interpretation. The size and color of the words indicate frequency in our data set. The larger and darker the word, the more often it was submitted. These word clouds do not include every word or phrase that was submitted by respondents so that the data could be more easily visualized with fewer words.

4.3 “Why did you choose to adopt a plant-based diet?”

Of the ten respondents that claimed to be following a plant-based diet, there were three main reasons: environmental, health, and animal welfare concerns. While we did not specifically address issues of animal rights in our survey due to it being a controversial topic, half of our respondents did quote “animal rights,” “animal welfare,” or “animal cruelty” as at least one of the reasons for adopting a plant-based diet. Health was the third most referenced reason. Four of the ten respondents said they decided to rid their diet of animal products because they understood it to be healthier than the alternative. The most prevalent reason that respondents chose to adopt a plant-based diet was because of environmental concerns. Of the ten that follow this diet, nine respondents said in some way that they did it to reduce their impact on the Earth.

4.4 “What barrier(s) are deterring you from trying a plant-based diet?”
In our survey, we offered eleven barriers that we had come across in the literature or that were common perceptions of the diet that respondents could choose from. We also gave the option to specify a deterrent that was not made available by us. According to Table 9, the most prevalent barrier respondents felt was stopping them from adopting a plant-based diet was because they simply prefer to eat meat. That option was chosen eighty-six times, nearly 14 percent. The next three barriers most chosen were “Insufficient protein source,” “Taste,” and “Expensive,” which were all selected over seventy times. “Time consuming,” “Not filling enough,” and “Don’t want to alter my eating habits” were also close with less than ten votes distinguishing them. The rest of the options were chosen less than forty-five times out of 193 respondents, with “Stigmatization” being the least chosen option of all with only seven votes. It is important to note the total amount of votes equals more than the number of respondents who finished our survey because respondents were able to choose as many barriers as they felt reflected their lifestyle.

4.5 “Why did you choose to stop eating plant-based?”

Just as not every lifestyle choice sticks, we understood that diets can fluctuate and there might be respondents who have previously eaten a plant-based diet but stopped, and we were correct. In our survey, we asked the question, “Have you ever eaten a plant-based diet for an extended period of time (1+ week) and then stopped?” and had those that chose either the option “Yes, I tried and have stopped,” or “Yes, I have previously tried, stopped, and started again,” to explain why they stopped. Health reasons such as iron and protein concerns or feeling weak or tired were the most cited reasons for respondents stopping their plant-based diet. Reasons such as it being “too hard,” “time consuming,” and having difficulties finding options while eating out were raised as well. Interestingly, six people expressed that they only planned on eating plant-
based for a certain amount of time and once their project or time objective was over, they went back to eating their “normal” diet.

4.6 Interactive Map

Through delving into the local food scene, we identified eighty-six locations with plant-based options on or around the University of Wisconsin-Madison’s campus. While this is not an exhaustive list by any means, it encompasses the general areas we determined were “hot-spots” for places with plant-based options. Of the eighty-six locations, fifty-four have one or more plant-based options available on the menu, including Bel-Air Cantina, Graze, and Bassett Street Brunch Club. Another thirty-one of the locations have five or more plant-based options, including Monty’s Blue Plate Diner, Himal Chuli, Green Owl, and Fuegos. There is only one fully plant-based restaurant in Madison, Surya Café, and it recently opened this past year. A link to the online map can be found in the Appendix.

5. Discussion

5.1 Demographics

As stated in part three of our research question, we look to examine the current composition of plant-based eating with regards to demographic factors among university students. A few trends and patterns across demographic factors and plant-based eating did present themselves. Overall, a higher percentage of females in the study were seen to consume a plant-based diet. Higher percentages of those from suburban areas and those who have a friend or relative following a plant-based diet were also seen to consume a plant-based diet.

There were no statistical analyses run for the age and level of education demographic variables. Rather, because all our respondents are pursuing at least a 4-year college education and are largely from a similar age cohort, they were treated as one group in both instances to
identify any noticeable trend when compared to reviewed literature. Slightly over five percent of
our survey sample consume a plant-based diet, a number higher than that found in both the Food
Demand Survey and the VRG polls (Lusk, 2014; Stahler, 2019). With these numbers, it could be
argued that there is tangential support for the Janssen et al. study in which most plant-based
consumers were those younger than 35 years old (2016, 646). With this survey’s sample having a
higher percentage of plant-based consumers than the U.S. population overall, there could also be
support for a trend between a higher level of education and consuming a plant-based diet.
However, neither of these were tested and, thus, no statistical relationship between the factors
can be drawn; only noticeable trends can be pointed out. One thing that should be mentioned,
though, is that our survey sample contained a higher percentage of females than the United States
population overall. If the tendency of females being more likely to consume a plant-based diet is
true, this could have skewed our overall percent of these age and level of education groups who
consume the diet.

In comparison to the overall survey totals, an overwhelming majority of the respondents
consuming a plant-based diet were female. Although a statistically significant relationship could
not be drawn between gender and diet based on the Fisher’s test, there was a noticeable trend in
our data of females consuming a plant-based diet at a higher rate than males. While the flesh-
based diet and overall sample had around 2:1 female-to-male ratio, the plant-based diet had a 9:1
ratio. While there were only ten plant-based consumers in our survey, this trend coincides with
the literature review consensus stating that females are more likely to follow a plant-based diet
(Graça, et al., 2015, 81; Lusk 2014). They are possibly more conscious of the health benefits, and
they also are not as likely to view meat as an essential component of the diet or as a status
symbol.
Based on the numbers presented in the results phase, there appeared to be a tendency amongst those who follow a plant-based diet and the geographic setting they were raised in. Ninety percent of respondents consuming a plant-based diet were from suburban areas, while only fifty-five percent of the survey population came from suburban areas. Although not statistically significant, we were forced to combine the plant-based and vegetarian diets to perform the test due to small sample size. This detracted from the amount of meaningful information we could pull out of the result. Urban and rural were the only survey categories in most published articles, making it more difficult to compare with our data. The noted trend being that urban residents are more likely to be the ones following a plant-based diet. However, there is a link between urban and suburban areas, as they both have greater access to plant-based food options. Our survey supports the lack of plant-based eating from rural areas, as the majority of respondents consuming a plant-based diet were from suburban areas. Because suburban areas are more prevalent today, more research including this geographic region could lend support to this tendency from our study.

The final variable that we looked at was knowing a friend or relative who follows a plant-based diet. There was a trend across the literature of those that know a friend or relative following a plant-based diet being more likely to follow the diet (Corrin, et al., 2017, 45). While there were more consumers following a plant-based diet who know a friend or relative following the same diet, there was not as large of ratios when compared to the survey population overall to be considered a trend or tendency. Also, based on the results of the Fisher’s test, there was no statistical relationship that could be drawn between the variables. This suggests that informal knowledge sharing networks may not be as important as previous literature claims. This does not, however, discredit the argument that a tendency is there. Knowing a friend or relative who
consumes a plant-based diet could be very beneficial in deciding to adopt a plant-based diet; they are able to provide helpful information and guidance in the transition, and they can also hold you accountable along the way.

The results of this survey support the tendencies in the reviewed literature across most, if not all, of the demographic characteristics mentioned. No survey results were of statistical significance; however, it appears that female, younger, and more educated individuals are more likely to follow a plant-based diet. The trend of being more likely to consume a plant-based diet if you know someone else who does was less noticeable in our survey, although slightly present. There was certainly a tendency amongst our survey population of those being from suburban areas being the most likely to follow a plant-based diet, but this setting was not an option in the literature. As stated above, it must be said that these results and possible trends could have been slightly skewed based on the overall demographics of our respondents. Having a larger female response rate compared to the population is something that would have to be looked at more closely. The large response rate by those who identify as white would also have to be taken into account if the stereotype of this group being most likely to follow a plant-based diet is believed to be true. The results also show that these demographic factors could be connected, that there are multiple reasons for dietary choice rather than the singular reasons emphasized in the literature.

5.2 Student Perceptions

Overall, the response towards specific aspects of the plant-based diet is mostly positive. A large majority of the surveyors responded positively to the statements or indicated that they are unsure or neutral in some regards. Our use of a Likert Scale to understand the student perceptions of a plant-based diet was the most effective way to gauge an honest ranking and
simple agree or disagree with each aspect. After reading the statements, respondents had the choice to select “Strongly Agree,” “Agree,” “Neither Agree nor Disagree,” “Disagree,” “Strongly Disagree,” and “Not Sure.” For our final analysis, we grouped together the levels of Agreement so the results would read as “Strongly Agree/Agree,” “Neither Agree nor Disagree,” “Strongly Disagree/Disagree,” and “Not Sure” for easier analysis and interpretation.

Aligned with our literature research, many people understood the importance of why a plant-based diet is gaining popularity and how it may be beneficial for health and environmental reasons. However, there was still a gap in understanding them past a surface level, as there are still negative perceptions, which are best evident in the word clouds. This could be seen by looking at the results for two of the first four statements, “Plant-based options are abundant on campus” and “Plant-based options are accessible throughout campus.” There was a small difference between each of the Level of Agreement categories, as there seemed to be a lack of awareness of what is available on the UW campus. In contrast, the statements “Plant-based options are abundant in Madison” and “Plant-based options are accessible throughout Madison” had 125 and 129 agreeable responses, respectively, helping us to discern that students understand that Madison, Wisconsin, has a growing list of options and availability in regards to a plant-based diet. This growth has been visualized through our interactive map, which includes many restaurants in the downtown area, as well as the Willy Street neighborhood. This is in no way an exhaustive list of what is available within the city limits, due to a lack of resources and time, but gives insight into some of the popular options near the UW campus and downtown Madison.

In our survey, we had a section for respondents to express any specific thoughts towards plant-based diets and its consumers. Similar to the Likert Scale, many of the responses were positive. One survey respondent said, “I feel like there is a wide misconception around young
people that what we eat now will have no effects on your health later in life. There is such a disconnect from consumers and their food, no one seems to care where their food is coming from. I think the way we eat and interact with food has a lot more of an impact on all aspects of our life than we think. From energy levels to health issues, I see it all as interconnected.”

Another said, “I don't think I could give up meat because I love the taste of it too much, but I'm willing to eat significantly less AND pay more for meat for a sustainable future.” A third said, “It seems like a good idea but I am not sure how to get enough protein from this type of diet. Meals seem to have a more complex and higher time requirement to make. This diet just doesn't seem as tasty as a burger. This diet does seem to be better for the environment, however I'm not sure if the entire population switched over that there would be enough farming space to feed everyone (this is just my take and I have no facts to back it up).” These quotes are just a few from our survey data which give insight into how students are thinking about the diet, the benefits, and barriers of them. Important to note, these respondents were not afraid of admitting their lack of knowledge of certain aspects of the plant-based diet and their desire to learn more.

In addition, many of the words and phrases that were positive were the ones that were mentioned the most. Many of the words that were negative are much smaller and lighter for both categories. The words submitted were aligned with many of the previously known perceptions from research, as they highlight many of the impressions surrounding plant-based diets. The visualized trends helped us to become aware of how students understood those who consume a plant-based diet as well as the diet itself. In the word cloud pertaining to those who consume a plant-based diet (Figure 6), many of the words to describe the consumers were about being out of the norm. For example, the words “crunchy,” “granola,” and “hippie” all have a specific
connotation that can be positive or negative depending on personal beliefs and backgrounds but are popular ways to describe plant-based consumers in pop-culture.

5.3 “Why did you choose to adopt a plant-based diet?”

Three commonly understood reasons for adopting a plant-based diet we found in the literature were environmental, health, and animal welfare concerns, and our results from this survey can attest to that. When asked “Why did you choose to adopt a plant-based diet?” ninety percent of the respondents that are currently eating a plant-based diet referred to the environment as at least one of their reasons for doing so. One respondent phrased it as their way to “combat climate change.” Another mentioned they were concerned about the environmental effects of animal agriculture and wanted to do their part to reduce their carbon footprint. Another stated that “being plant-based is better for the environment than driving a hybrid car.” As previously mentioned, animal welfare was the next leading reason for respondents to cut out animal products from their diet, with five of ten referencing it. Health was just below animal welfare with four respondents mentioning it. One respondent offered this explanation for adopting a plant-based diet, “Because it was the only proven thing to prevent cancer cells from forming and reverse cancer cells already formed in DNA strands (a couple family members have had cancer)...” In general, the overarching reasons given by those that have adopted a plant-based diet—environment, health, and animal welfare—are all supported by the literature in this report.

5.4 “What barrier(s) are deterring you from trying a plant-based diet?”

In this report, we are interested in UW students’ perception of the plant-based diet. This includes the perceived barriers stopping respondents from adopting such a diet. In making this survey, we wanted to highlight the barriers that were addressed in the scholarly articles used in this report as well as common perceptions that surround the diet. It is not very surprising that
preferring meat was the most chosen barrier. Developed countries such as the United States have historically consumed high rates of meat, and developing countries are on the rise, so it is something most people are accustomed to eating and preferring on their plate (Henchion et al., 2014, 261-268). “Taste” can be thought of as similar to preferring meat in that many respondents might not have eaten a diverse amount of plant-based dishes due to the high amount of animal products found in many dishes. The culture of eating animal products was brought up several times by respondents who chose to specify another barrier that was not given. One respondent said, “I eat meat in cultural dishes in which it is traditionally included.” Another one stated that, “Respecting cultural norms around food, eating food that others prepared,” was a reason they have not gone plant-based. Two other respondents also mentioned communal food and cooking for others was a reason they felt they could not adopt a plant-based diet. One of them said, “…[they] can’t impose [their] dietary changes on everyone.” There seemed to be such a culture of eating animal products that even one plant-based communally made meal could then be seen as “imposing” beliefs or diets onto others. It is worth noting that a misconception we addressed earlier in this report, protein sufficiency, was the second most voted barrier on the list. As addressed in our literature review, plants are fully capable of supplying a healthy amount of protein if executed appropriately (Marlow, 2009). We hope our survey and this report might encourage others to reconsider their stance on some misconceptions surrounding the diet, protein sufficiency being one with room to improve.

5.5 “Why did you choose to stop eating plant-based?”

While there were several barriers stopping people from adopting a plant-based diet, there also appeared to be a multitude of reasons for respondents stopping their plant-based diet after trying it. Health concerns seem to be the biggest issue, whether it was because of protein, iron, or
feeling weak or tired from not getting enough calories. Four respondents mentioned either being athletes or having a “high-activity” career as the reason why the felt they could not get enough calories. Several people referenced not feeling like they were getting enough protein or iron. One respondent said they developed “iron deficiency anemia.” Another respondent explained that they stopped “On the recommendation of [their] doctor and a dietician after experiencing GI health problems.” Interestingly, a respondent actually adopted a plant-based diet for health reasons and “once [they] were allowed to eat meat, [they] started again.” Feeling weak or fatigued came up more than once, with four people referencing that as a reason for stopping. Transitioning to a plant-based diet often takes education and knowledge of how to appropriately maneuver it, so it is possible that these respondents did not have proper knowledge of the diet before trying, which might have led them to not being able to sustain it (Lea, et al., 2006b, 349). It is also important to remember that everyone's health is different, however, and no diet is one-size-fits-all. Other reasons include it being too expensive for some, such as one respondent who told us, “Time and financial investments were too high. I have a toddler and a partner, and we’re low income as well as all full [time] students. We also eat organic and local for the majority of our intake. Sustaining only plant-based is a challenge we’ve yet to meet.” Social and cultural barriers were also commonly referenced reasons, as told by one respondent, “I was a guest in a social setting (rural) where not eating the food served was rude and wasteful (e.g., an animal was killed that day for my dinner).” Another said, “In my personal meal times, I’ll gladly eat plant-based meals. That being said, I’m not going to make anyone go out of their way to meet my dietary wishes. When I visit my grandparents, I’m not going to force them to make me tofu. It’s inconsiderate to them, and I’m fine with eating meat occasionally.” Three others stated being with family or friends was a reason for them to eat animal products again. One went even
further. They felt they did not have family or friend support when eating a plant-based diet and felt they were “seen as a hassle to eat with” because of it. Our research seems to be supported in the case of social support being a big factor in whether someone is able to keep up with a plant-based diet or not (Corrin, et al., 2017, 45; Guerin, 2014, 5-25). A few others felt that eating animal products in moderation was just a better fit for them than a fully plant-based diet. While there were many reasons people were not able to sustain a plant-based diet, the fact that thirty of our 193 respondents even tried is still significant considering two percent of the general population is plant-based (Stahler, 2019).

In general, there were three main reasons that led our respondents to adopting a plant-based diet: the environment, their health, and animal welfare concerns. There was a more diverse spread of perceived and actual barriers that led to our respondents not eating a plant-based diet, however. Those that have not previously tried said preferring meat, insufficiency of protein, and taste were their main perceptual barriers stopping them from adopting the diet. For those that previously had tried and stopped, health concerns and cultural or traditional troubles were the two main reasons why respondents chose to go back to eating some variation of animal products. Not having adequate social and peer support also seemed to be a fairly important factor in choosing to stop their plant-based diet as well.

5.6 Interactive Map

While we identified eighty-six restaurants for our interactive map, this does not constitute an exhaustive list of all the options available. We simply aimed to highlight some of the available options and bring attention to where these locations are concentrated on and around campus. With over one-third of the identified restaurants having five or more plant-based options on their menus, we demonstrated that there is not a shortage of available choices. However, with
most of the restaurants only having one or more options, there is room for improvement and for
restaurants to expand their selection. This also goes without mentioning that we did not include
any restaurants that had no options, as they are not plant-based friendly. The results of where the
locations are also somewhat coincided with the Likert scale responses of options being abundant
and accessible on campus vs. options being abundant and accessible in Madison. Most
respondents agreed that plant-based options are abundant/accessible in Madison, while a good
portion of respondents disagreed to some extent that options are abundant/accessible on campus.
This rings true, as many of the identified locations fall outside the boundaries of campus.
Although options are not as widely available on campus, there have been recent trends of
restaurants adding plant-based options to their menus, such as the Impossible Burger joining both
the Sett’s and Der Rathskeller’s menus. Based on the demographics of a college campus and the
various demographic tendencies described earlier, we are hopeful there will be an increase in the
number of restaurants that will cater to this dietary choice in the future.

5.7 Unexpected Findings

The general popularity of the plant-based diet among our respondents was unexpected.
Through our research of the literature on this diet, we found it is generally perceived
unfavorably, so for our respondents to have a more positive view of it was unanticipated but
encouraging. Another unexpected finding was taste being the second most chosen perceived
barrier among our respondents. In our literature review, it was explained that males are more
likely to choose taste as a barrier, but our survey was majority female. However, after further
investigation, the proportions reflected our research as there were more females who chose taste
than males who chose taste as a barrier. Forty-four of 129 women chose taste, equaling thirty-
four percent. Thirty-two men of sixty-four chose taste, equaling fifty percent. While the overall
number of those who chose taste was surprising, further investigation shows our survey is on par with our research of males believing taste is more of a barrier than women.

5.8 Alternative Explanations

Looking at a distribution of our respondents according to race, 179 of our 193 respondents were white. Additionally, two thirds were female. Because these two demographics were overwhelmingly skewed, there is a possibility that they were driving up our survey results, especially because women are found to limit animal product consumption more than men. Education level also might have inflated our results. Our literature review explained that those of higher education were more likely to follow the diet and everyone in college is considered to have some higher education, so this might also have been a factor as well.

5.9 Limitations and Areas for Improvement

There were plenty of limitations that we encountered while creating our project and report. Being college undergraduate students, we were limited in resources and time. If possible, we would have liked to have implemented a stratified random sample of the population instead of just surveying people we know. We also would have tried to match the demographics of UW-Madison, ensuring more diversity. Race became a non-factor in our results because ninety-three percent of our respondents identified as white. We also would have liked to have had a larger sample size in order to perform a Chi-Square test without divisions. We had to combine plant-based and vegetarian in some of our statistics in order to fit within the limitations of the tests.

Along with things we would do differently if we had more time and resources, there were multiple things we would do differently if we were to recreate this project. One is to change our demographic questions to UW-Madison labeling instead of the US census because that is what we were comparing to. We also ran into the issue of respondents seemingly not fully
understanding our definition of plant-based, despite defining it multiple times. On many occasions, respondents would use the term plant-based but refer to occasions or instances that reflected some form of vegetarianism instead. If we were to recreate our survey, we would make the definition a statement they first had to agree to understanding before they were allowed to move onto the rest of the survey so as to reduce confusion and misuse. Lastly, we would also change the way we asked for racial demographics. Along with having labeled them according to UW-Madison demographics, we would also not have included the choice of ‘multi-racial.’ Instead, we would have encouraged those who are to pick the two or more races they identified with. Because we had the option of picking several races as well as the option of ‘multi-racial,’ some chose ‘multi-racial’ but did not specify while others did not choose ‘multi-racial’ but selected multiple races available. This confusion caused our demographic count to be thrown off, so we would be sure to fix this problem if we were to redo our survey.

5.10 Suggestions for Future Research

After completing our own research, we think there is more to be done in this area of study. Some future research we believe could be valuable would be to do more comprehensive surveys and studies on this subject at other universities to see if there are trends across the country or even across the globe. It would also be interesting to see how location and political beliefs affect results such as ours. UW-Madison is a northern, fairly liberal institution, so it would be intriguing to see if our results transcend geography and political ideologies or if there is a relationship between the two.

6. Conclusion

While none of the demographic variables were proven to be statistically significant in terms of who is more likely to consume a plant-based diet, our results showed there were
certainly tendencies as to who follows the diet. Given that our survey of university students yielded a higher overall percentage of those who consume a plant-based diet in comparison to the general population, an argument could also be made with tangential support that younger, more highly educated individuals may show a tendency to consume a plant-based diet more often. Barring the geographic setting in which one was raised, all the trends mentioned in the literature review were supported by the resulting tendencies observed in our survey, however, it must be mentioned that the various demographic factors could be interconnected when looking at dietary choice. The trends and tendencies could be more complex than the reviewed literature made them appear.

Through surveying University of Wisconsin-Madison students on campus, our research shed some light on a possible turning of tide among college-aged individuals and their perceptions of the plant-based diet and its consumers. With a mainly positive perception of both, our results rivaled the idea that both the diet and its participants are viewed and understood negatively, as found in the literature on this subject. Some of the most popular words mentioned in our survey results were healthy, environmentally conscious, green, and hippie which all have rather positive connotations. Students had a general knowledge of how plant-based diets can be beneficial for their own health as well as the Earth’s but still held some misconceptions. Despite this, according to our survey, students did want to learn more about the plant-based diet and how they could implement it into their own lifestyle.

While there were a variety of perceived barriers stopping those who are not plant-based from adopting the diet, there were three reasons among our plant-based respondents for why they chose to adopt it: environment, health, and animal welfare. For those who have not, our current
culture and customs surrounding food, a preference for meat, its taste, personal health concerns, and a lack of support from social groups were in the way of such a transition.

In addition, we have learned that Madison’s plant-based community and options are growing as the diet is becoming more popular, whether as a long-time change or an occasional choice. Local restaurants are also making an effort to improve their businesses to accommodate a growing community. In all, we hope that our research can serve as advocacy for more people to investigate the diet and consider adopting it for whatever reason they see fit. We also hope that our report challenged the misconceptions surrounding the diet that might be deterring individuals from trying it and act as a steppingstone in making a positive change in our community, especially our campus here at UW-Madison.
7. Acknowledgments

We would like to take the time to thank everyone who has been instrumental in helping us throughout this semester. Thank you to our fellow Undergraduate Colloquium (Geography 565) classmates for their input and suggestions to help improve our project. Thank you, Joel Gruley, Undergraduate Advisor in the UW-Madison Geography department, for helping us distribute our survey. Thank you to all our survey respondents; without their participation and feedback, our project could not have come to fruition. Finally, a huge thank you to William Gartner, our professor, for his endless advice and guidance in helping through the entire process.
8. Bibliography


### Table 1. Survey Sample Representativeness

<table>
<thead>
<tr>
<th></th>
<th>Survey</th>
<th>UW-Madison Population</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>32.60% (63)</td>
<td>48.20%</td>
</tr>
<tr>
<td>Female</td>
<td>66.80% (128)</td>
<td>51.80%</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>0.60% (1)</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Class Standing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshman</td>
<td>7.30% (14)</td>
<td>11.80%</td>
</tr>
<tr>
<td>Sophomore</td>
<td>13.10% (25)</td>
<td>15.00%</td>
</tr>
<tr>
<td>Junior</td>
<td>19.40% (37)</td>
<td>17.60%</td>
</tr>
<tr>
<td>Senior</td>
<td>46.60% (89)</td>
<td>24.30%</td>
</tr>
<tr>
<td>Graduate/PhD Student</td>
<td>13.60% (26)</td>
<td>20.00%</td>
</tr>
<tr>
<td>Special/Professional</td>
<td>0% (0)</td>
<td>11.30%</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>92.70% (179)</td>
<td>65.70%</td>
</tr>
<tr>
<td>African American/Black</td>
<td>0.50% (1)</td>
<td>2.80%</td>
</tr>
<tr>
<td>Asian American</td>
<td>6.20% (12)</td>
<td>8.20%</td>
</tr>
<tr>
<td>Native American</td>
<td>0.50% (1)</td>
<td>0.90%</td>
</tr>
<tr>
<td>Native Hawaiian</td>
<td>0% (0)</td>
<td>0.20%</td>
</tr>
<tr>
<td>Hispanic American</td>
<td>3.10% (6)</td>
<td>5.10%</td>
</tr>
<tr>
<td>International</td>
<td>0% (0)</td>
<td>14.40%</td>
</tr>
<tr>
<td>Unknown</td>
<td>0% (0)</td>
<td>2.70%</td>
</tr>
</tbody>
</table>

Our survey sample overrepresents females, seniors, and white students in comparison to the UW-Madison population.

**Notes:** Numbers in parentheses are the overall number of respondents selecting that option. UW-Madison population data is taken from the UW-Madison Office of the Registrar Fall 2019 Enrollment Report. The survey sample percentages for race/ethnicity add up to more than 100% because students had the option of selecting more than one race. Our original categories for race/ethnicity were adjusted to align with the UW-Madison Enrollment Report categories.
Table 2. What is your gender?

<table>
<thead>
<tr>
<th>Diet</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omnivore</td>
<td>89</td>
<td>50</td>
<td>139</td>
</tr>
<tr>
<td>Lacto-ovo vegetarian</td>
<td>13</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Plant-based</td>
<td>9</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Lacto-vegetarian</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Pescetarian</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Carnivore</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ovo-vegetarian</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>129</td>
<td>62</td>
<td>191</td>
</tr>
</tbody>
</table>

Females constituted most of our survey respondents, and they also made up a majority of those that follow both a plant-based diet and a vegetarian diet.

Table 3. What geographic setting were you raised in?

<table>
<thead>
<tr>
<th>Diet</th>
<th>Rural</th>
<th>Suburban</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omnivore</td>
<td>38</td>
<td>74</td>
<td>27</td>
<td>139</td>
</tr>
<tr>
<td>Lacto-ovo vegetarian</td>
<td>3</td>
<td>11</td>
<td>4</td>
<td>18</td>
</tr>
<tr>
<td>Plant-based</td>
<td>0</td>
<td>9</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Lacto-vegetarian</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Pescetarian</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Carnivore</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Ovo-vegetarian</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>47</td>
<td>106</td>
<td>38</td>
<td>191</td>
</tr>
</tbody>
</table>

Most of our survey respondents grew up in a suburban setting, and they also were the ones who how had the most plant-based diet responses.

Table 4. Do you know a friend or relative who follows a plant-based diet?

<table>
<thead>
<tr>
<th>Diet</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Omnivore</td>
<td>93</td>
<td>46</td>
<td>139</td>
</tr>
<tr>
<td>Lacto-ovo vegetarian</td>
<td>11</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>Plant-based</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Lacto-vegetarian</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Pescetarian</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Carnivore</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ovo-vegetarian</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>128</td>
<td>63</td>
<td>191</td>
</tr>
</tbody>
</table>

Most survey respondents know a friend or relative who follows a plant-based diet.
Table 5. What is your gender?

<table>
<thead>
<tr>
<th>Diet</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flesh-Based Diet</td>
<td>93</td>
<td>53</td>
<td>146</td>
</tr>
<tr>
<td>Vegetarian Diet</td>
<td>19</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Plant-Based Diet</td>
<td>9</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>121</td>
<td>61</td>
<td>182</td>
</tr>
</tbody>
</table>

Almost two-thirds of the survey respondents were female, with almost all of them being the ones consuming a plant-based diet.

Notes: The table used for the Fisher test using vasserstats.net; P=0.1994 (two-sided).

Table 6. What geographic setting were you raised in?

<table>
<thead>
<tr>
<th>Diet</th>
<th>Rural</th>
<th>Suburban</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flesh-Based Diet</td>
<td>40</td>
<td>77</td>
<td>30</td>
<td>147</td>
</tr>
<tr>
<td>Vegetarian/Plant-Based Diet</td>
<td>5</td>
<td>24</td>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>45</td>
<td>101</td>
<td>36</td>
<td>182</td>
</tr>
</tbody>
</table>

Over half of the survey respondents were raised in an urban setting, as well as two-thirds of those who follow a vegetarian or plant-based diet.

Notes: The table used for the Fisher test using vasserstats.net; P=.2020 (two-sided).

Table 7. Do you know a friend or relative who follows a plant-based diet?

<table>
<thead>
<tr>
<th>Diet</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flesh-Based Diet</td>
<td>97</td>
<td>50</td>
<td>147</td>
</tr>
<tr>
<td>Vegetarian Diet</td>
<td>17</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>Plant-Based Diet</td>
<td>7</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>121</td>
<td>61</td>
<td>182</td>
</tr>
</tbody>
</table>

Most respondents have a friend or relative who follows a plant-based diet.

Notes: The table used for the Fisher test using vasserstats.net; P=0.8615 (two-sided).
Table 8. Likert Scale

<table>
<thead>
<tr>
<th>Statements</th>
<th>Agree/Strongly Agree</th>
<th>Level of Agreement</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant-based options are . . .</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>abundant on campus.</td>
<td>78</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>abundant in Madison.</td>
<td>125</td>
<td>29</td>
<td>22</td>
</tr>
<tr>
<td>accessible throughout campus.</td>
<td>87</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td>accessible throughout Madison.</td>
<td>129</td>
<td>29</td>
<td>17</td>
</tr>
<tr>
<td>important.</td>
<td>159</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>inexpensive.</td>
<td>34</td>
<td>49</td>
<td>96</td>
</tr>
<tr>
<td>protein sufficient.</td>
<td>69</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>eaten by a wide diversity of people.</td>
<td>93</td>
<td>31</td>
<td>53</td>
</tr>
<tr>
<td>filling.</td>
<td>85</td>
<td>41</td>
<td>54</td>
</tr>
<tr>
<td>delicious.</td>
<td>108</td>
<td>41</td>
<td>35</td>
</tr>
<tr>
<td>healthy.</td>
<td>152</td>
<td>31</td>
<td>4</td>
</tr>
<tr>
<td>more sustainable than meat based options.</td>
<td>129</td>
<td>28</td>
<td>25</td>
</tr>
</tbody>
</table>

Except for “Plant-based options are inexpensive,” all statements from the Likert Scale had ‘Agree/Strongly Agree’ as the most selected options, with “Plant-based options are important” and “Plant-based options are healthy” as the most widely agreed upon statements.

Table 9. What barrier(s) are deterring you from trying a plant-based diet?

<table>
<thead>
<tr>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I prefer meat</td>
</tr>
<tr>
<td>Insufficient protein source</td>
</tr>
<tr>
<td>Taste</td>
</tr>
<tr>
<td>Expensive</td>
</tr>
<tr>
<td>Time consuming</td>
</tr>
<tr>
<td>Not filling enough</td>
</tr>
<tr>
<td>Don't want to alter my eating habits</td>
</tr>
<tr>
<td>Lack knowledge/information</td>
</tr>
<tr>
<td>Food accessibility</td>
</tr>
<tr>
<td>Other(s) (please specify):</td>
</tr>
<tr>
<td>Lack of family/friend support</td>
</tr>
<tr>
<td>Stigmatization</td>
</tr>
</tbody>
</table>

Preferring meat, the misconception that a plant-based diet insufficiently provides protein, and taste are the main perceived barriers stopping respondents from adopting a plant-based diet.
Part 2. Figures

Figure 1: The site setting map created to show the various identified “hotspots” where plant-based options seemed to be most abundant, as well as to show their locations relative to the UW campus.

Figure 2. Survey responses to the question regarding gender vs. the overall UW-Madison student population. Females were overrepresented in the survey sample.
**Figure 3.** Survey responses to the question regarding class standing vs. the overall UW-Madison student population. Seniors were overrepresented in the sample, while Professional students were the most underrepresented.

**Figure 4a.** Responses to the survey question regarding race/ethnicity respondents identify as vs. percent of the total UW-Madison student population. Caucasians/whites were overrepresented, while international students were the most underrepresented.
Figure 4b. Responses to the survey question regarding identified race/ethnicity vs. percent of the total UW-Madison student population. The same as figure 3a, less the Caucasian/White category, to show smaller percentages that were not visible.

Figure 5. Percent of each diet selected in the survey.
Figure 6: A word cloud based on responses to the survey question, “What are a few words you associate with plant-based consumers?” The larger and darker words were said more by respondents.

Figure 7: A word cloud based on responses to the survey question, “What are a few words you associate with a plant-based diet?” The larger and darker words were said more by respondents.
Part 3: Survey

Privacy Policy and Informed Consent
Geography Undergraduate Colloquium, University of Wisconsin - Madison

Researchers:
Erin Hepp (ehepp@wisc.edu), Matthew Laska (mlaska2@wisc.edu), Sydney Lawson (slawson2@wisc.edu)

We are geography majors at UW-Madison working on our senior thesis project. We are interested in UW-Madison student perceptions of plant-based diets and options in Madison. The survey consists of 15 questions and should take less than 6 minutes to complete. Your participation is voluntary – you may skip any question or exit the survey at any time. We are not collecting any personal information. Finally, your responses are confidential. We will destroy all individual surveys once the results are tabulated.

You are cordially invited to attend a free public symposium on Tuesday evening, 10 December 2019, at 180 Science Hall on the UW-Madison campus, where we will present the results of our research. Our paper will be archived at the Minds@UW website, which is password protected. We will also send you a digital copy of our paper upon request. Simply contact one of us through an email address listed above.

By participating in the survey, you indicate that you: (1) have read the above privacy policy and consent statement, (2) understand how we will protect your privacy, and (3) voluntarily agree to participate.

Thank-you for helping us with our senior project!

If you have any comments, questions, or concerns about this project, please contact Dr William Gustav Gartner, 115D Science Hall, Department of Geography, UW-Madison, 550 N Park St, Madison, WI 53706. Phone: (608) 890-3816. Email: wgartner@wisc.edu

Disclaimer: Responses won't be recorded if you don't submit at the end. Please submit at the end, even if you don't finish. Thanks!

1. What is your age?
2. What is your class standing?
3. What is your declared/intended major(s)?
4. What is your gender?
   a. Male
   b. Female
   c. Another (please specify): _________
   d. Prefer not to say
5. What is your race? (can select multiple)
   a. White/Causasian
   b. Black of African American
   c. American Indian or Alaska Native
   d. Native Hawaiian or Pacific Islander
6. What geographic setting were you raised in?
   a. Urban
   b. Suburban
   c. Rural

7. Which of the following categories best exemplifies your diet at the present time? (please read carefully)
   a. Carnivore: I only eat meat, poultry, dairy, and/or eggs, and my diet excludes all plant foods.
   b. Omnivore: I eat meat, poultry, dairy and/or eggs as well as plant foods.
   c. Pescetarian: I eat fish, dairy, eggs, and plant foods, but my diet excludes any meat and poultry.
   d. Lacto-ovo vegetarian: I eat plant foods, eggs and dairy products, but my diet excludes meat, fish, and poultry.
   e. Lacto-vegetarian: I eat plant foods and dairy products, but my diet excludes meat, fish, poultry, and eggs.
   f. Ovo-vegetarian: I eat plant foods and eggs, but my diet excludes meat, fish, poultry, and dairy products.
   g. Plant-based: I only eat plant foods, and my diet excludes meat, poultry, fish, eggs, dairy, and other animal by-products, such as honey.
   h. Other (please specify): ________________________

8. A. Why did you decide to adopt a plant-based diet? (Only displayed if respondent elected plant-based diet)
   B. Why did you choose to adopt this diet? (Only displayed if respondent selected pescetarian or some form of a vegetarian diet)

(Page 3)

Please keep in mind that plant-based in this survey means no meat, poultry, fish, eggs, dairy, or other animal by-products, such as honey.

9. Do you have a friend or family member who follows a plant-based diet?
   a. Yes
   b. No

10. Have you ever considered adopting a plant-based diet?
    a. Yes
    b. No
    c. I am currently following a plant-based diet

11. What barrier(s) are deterring you from trying a plant-based diet? (Select all that apply):
    (Displayed to those that selected any diet besides plant-based for Q7)
a. Food accessibility  
b. Expensive  
c. Insufficient protein source  
d. Taste  
e. I prefer meat  
f. Stigmatization  
g. Time consuming  
h. Lack of knowledge/information  
i. Not filling enough  
j. Don’t want to alter my eating habits  
k. Lack of family/friend support  
l. Other(s) (please specify): ________________

12. Have you ever eaten a plant-based diet for an extended period of time (1+ week) and then stopped? If yes, please specify why:
   a. Yes, I tried and have stopped  
   b. Yes, I have previously tried, stopped, and started again  
   c. No, I have never tried following a plant-based diet  
   d. I am currently following a plant-based diet

13. Why did you stop eating plant-based? (Only displayed to those who selected a. or b. for Q12)

(Page 4)

14. Likert Scale

<table>
<thead>
<tr>
<th>Do you agree or disagree with the following statements?</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree Nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant-based options are abundant on campus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are expensive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are available throughout campus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are inexpensive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are protein sufficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are eaten by a wide diversity of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are filling</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are delicious</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are healthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant-based options are more sustainable than</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>meat-based options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am knowledgeable of the plant-based diet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
15. What are a few words you associate with a plant-based diet?
16. What are a few words you associate with plant-based consumers?
17. If you have any other comments concerning this topic, feel free to leave them below: (Text box provided)
18. If you would be interested in being contacted for a short interview for further research, please leave your wisc.edu email below: ________________________

Part 4: Interactive Map

This is a screenshot of the map, created in ArcGIS Online.
Shareable Link: http://www.arcgis.com/apps/View/index.html?appid=c8810fc086d440bea58be68dd73a70ef