Identifying Drivers and Enablers of the Sovereign Shift toward a Plant-Based Food Culture: The Case of Freiburg im Breisgau

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psychological factors of social influence, habit formation, the individual self, feelings and cognition, and tangibility. The intended use for this exploratory research is that any identified factors might guide future confirmatory research or projects on initiating or furthering transformations both in Freiburg and abroad, improving the resilience of cities faced with food system vulnerabilities and climate disturbances

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activism in the area combined with an understanding of Germany's history of food scarcity appear to underpin an ecologically educated and conscientious populus with a strong culture of social responsibility, realized in the form of plant-based eating. Behavioral transformations were analyzed through the psychological factors of social influence, habit formation, the individual self, feelings and cognition, and tangibility. The intended use for this exploratory research is that any identified factors might guide future confirmatory research or projects on initiating or furthering transformations both in Freiburg and abroad, improving the resilience of cities faced with food system vulnerabilities and climate disturbances.

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Contents

1.0. Introduction

This research uses a multidisciplinary approach to identify the drivers of a sovereign transformation in the food culture of Freiburg im Breisgau, Germany from traditional to more plant-based consumption. The project is positioned against the three key backdrops: 1) There is a near certainty that food imports from regions heavily impacted by climate change will become less reliable in the future, and current dependencies on imports for a significant portion of Germany's sustenance make for a vulnerable local food system; 2) Food production everywhere will be subject to the disturbances and instabilities which result from climatic changes, increasing the need for resilient and adaptive local food systems; and 3) Social resiliency is an important consideration when preparing to face socio-ecological disturbances, such as those disturbances presented by the upheaval of food culture that occurs in the face of import flow precarity and climate famine. This project focuses on the adoption of a plant-based food culture as a means to improving social and ecological resiliency, and does so for two primary reasons—Firstly, plant-based eating trends exemplify a consumer-level transformation in food culture. This is significant, considering that cultural acceptability is an important indicator of a sovereignly sustainable diet, with lack cultural acceptability posing a challenging adaptation obstacle, so following this trend may offer relevant insight to food culture transformations to improve social resiliency (Fanzo et al., 2012, as cited in Sebaté & Soret, 2014). Secondly, plant-based diets have proven to be more sustainable than diets rich in animal products, particularly with regard to resource-efficiency, providing greater possibilities for a local food system that is self-sufficient—Therein, transitioning populations toward more plant-based eating appears to be a viable option for improving food security, sovereignty, and sustainability (Sabaté & Soret, 2014; Pimental & Pimental, 2003; Dagevos, 2016). This exploratory thesis strives to identify which social and cultural factors have underpinned a rapid cultural shift toward a more plant-based food system and culture in Germany, analyzing primarily the case of Freiburg (im Breisgau): a city which appears to have already undergone such a transformation. The intended use for this exploratory research is that any identified factors might guide future confirmatory research or projects on initiating or furthering transformations both in Freiburg and abroad, improving the resiliency of cities faced with food system vulnerabilities and climate disturbances.

2.0. Background & Research Justification

2.1. Germany's globalized vulnerability & food geography

The situation of Germany and Freiburg's food imports is complicated, and therefor difficult to assess. Afterall, while certain foods may be produced domestically at first glance, they may require other imported goods in order to be produced, such as how 'locally produced' animal products are usually dependent on the flows of livestock feeds, often includes imports. The picture is further muddled by indirect import flows, such as how Germany imports certain food from the Netherlands which the Netherlands imports from South America (FAO as cited in Jumle, Kunesch & Tröbs, 2022; Kuepper, 2022; West et al., 2022). Even so, according to the Food Export Association, Germany is "the world's third largest importer of agricultural products after the United States and China" (2022, p. 2). Given the fluctuating stability of global markets, particularly agricultural markets which are extremely vulnerable to increasingly frequent climate disturbances, having such a high dependence on agricultural imports lowers Germany's resiliency and heightens its vulnerability (Rydman, 2022). There is already significant research demonstrating the connection between climate change, agricultural market disturbances, and food insecurity—particularly in countries where agricultural exports dominate GDP—and food deficits and climate famines are already devastating entire nations at an accelerating speed (Rydman, 2022; Balasubramanian, 2018).

There is contradicting peer-reviewed data on the percentage of food insecure people living in Germany, ranging from 1-7% with metrics for measuring insecurity and data collection methods being unaligned. However, one 2017 study showed that "46.6% [of Germans] cannot afford a drink or meal with others at least once a month—a very high percentage compared to the rates of the EU27 (28.8%)" (Pfeiffer, Ritter & Oestreicher, 2017, abstract). Turning our attention to Freiburg, while no statistics on food security could be found, a report on a study from the Research Institute of Organic Agriculture (FiBL) on the regionality of the Freiburg diet tells that only 20% of food consumed in Freiburg is produced regionally. However:

> Almost 70% of the milk (50% of the dairy products) and almost 80% of the beef offered in the city of Freiburg have been produced in the administrative district. The shares for pork, vegetables and fruit are significantly lower at about 10%. (Moschitz et al., 2015, p. 17)

Considering how prominent animal products are in traditional German cuisine, one might see the above quote and assume that these animal-centric elements of the traditional food culture are not so vulnerable after all. If the main metric being used to assess sustainable nutrition was direct product regionality, then this study would indicate that a diet high in dairy and beef would be the most sustainable. However, as the study acknowledges, "from the point of view of sustainability, [...] it is not always the case that regional products have better environmental balances or a higher level of animal welfare; the production method plays an important role here" (p. 4). Indeed, regionality does not account for metrics such as resource efficiency or indirect product regionality (i.e. livestock feed), which are important for determining the sustainability of a product, including how sustainable it is to produce specific products locally (i.e., consideration given to locally available natural resources, climate, and carrying capacities).

Even if the report were to disregard other metrics and exclusively pay mind to regionality, it still does not provide a complete picture. While most of the animal products in the region are produced locally, this does not mean that they are locally self-sufficient. Consider the variable of livestock feed. As it stands, "Germany's degree of self-sufficiency for feedstuffs with a high protein content is only about 30%" (IBISWorld, 2022, p. 12). For example, the two most important ingredients of livestock feed in Germany are wheat and soy—two products which Germany is heavily import-dependent for: "In 2020, Germany imported $905M in Wheat, becoming the 15th largest importer of Wheat in the world" (OEC, 2020). Soy is also imported both directly and indirectly through intermediaries such as the Netherlands, with both countries being top importers of soy from Brazil, a country extremely vulnerable severe agricultural disruptions due to climate disturbances (West et al., 2022; Kuepper, 2022; Mighty Earth, 2017; USAID, 2018). In fact, in Germany, "soybeans and soybean meal [accounts] for nearly half of net imports of so-called digestible protein" (IBISWorld, 2022).

While the traditional food culture of Germany does revolve around some plant-based products such as bread, potatoes, and cabbage, it is also heavily oriented around animal products, such as würste (German sausages) and schnitzel (a type of meat cutlet), with many dishes being meat- or dairy-based. Given how vulnerable these product flows appear to be via import disturbances and how entangled food culture is with the social environment, Germany's social resiliency would also logically be low in this regard.

Even so, Germany is the second highest ranking country in the world in terms of number of 'vegetarians' following India, and the fifth highest ranking country in terms of number of

‘vegans’ (Wunsch, 2022; Google Trends, 2020, as cited in Statista, 2022a). Similarly, meat consumption and production in Germany has shown a pattern of declining over past decades with the latest data from 2021 showing the lowest consumption and production since 1993 (BMEL, 2022). And yet, only 13% of Germans described themselves as ‘vegetarian’ or ‘vegan’ (Statsita, 2022a). As the production and consumption of meat has decreased, the ‘self-sufficiency’ rating of meat products has increased according to the German Federal Ministry of Food and Agriculture, or the BMEL, suggesting that demands for domestic consumption, in theory, is becoming more possible to meet with domestic supply—however, these self-sufficiency calculations do not appear to consider livestock feed and respective import flows, and instead mostly focuses on the import-export ratio of the meat products themselves, severely limiting this score’s usefulness (BMEL, 2022). Additionally, it is unclear under what assumed circumstances this self-sufficiency is calculated—for example, would a given product still hold its self-sufficiency score if *all* agricultural products had to be self-sufficient, as could be the future situation given climate change predictions, or is it only self-sufficient because so many other products are still being imported? I do not presume that the self-sufficiency scores are entirely uninteresting, but without these insights, the label of ‘self-sufficient’ appears to be misleading and based on a very incomplete analysis. Given the low self-sufficiency rating of livestock feed in Germany, I predict that a new analysis for the self-sufficiency of all animal-products which incorporated feed would result in much lower self-sufficiency ratings in which domestic supply could not support demand.

For other animal products, such as milk products and cheese, trends have been less pronounced. Milk production has been steadily and slightly increasing since 1990, but 2021 showed the lowest production since 2014 (albeit only by a very small margin) (European Commission, 2021 as cited in Statista, 2022b). However, consumption of milk products has been gradually decreasing, both per capita and in total tonnes consumed, in a study showing consumption patterns from 2010 through 2021 (BLE et al., 2022, as cited in Statista, 2022c). Meanwhile, sales of plant-based milk alternatives have nearly doubled just between 2018 and 2020, and sales of plant-based substitutes were predicted to multiply by more than five by 2030 (Statista, 2022a). Cheese consumption on the other hand has been increasing for decades, with 2021 being the highest rate of consumption on record, both per capita and in total tonnes consumed (BLE et al., 2022 as cited in Statista 2022c). The import-export ratio of these products gives it a high self-sufficiency score from BMEL, although this calculation again does not appear to consider livestock feed flows (2021, as cited in Statista 2022c).

Comprehensive reports such as those cited above did not exist for eggs, but there were statistics to show that egg consumption has shown a general trend of increasing (BMEL as cited in Statista, 2022d). No BMEL self-sufficiency score could be found.

Based on all of this knowledge regarding imports, German food culture, and consumption patterns, it is reasonable to conclude that Germany's food system is extremely vulnerable with low social-resiliency pertaining to food culture disturbances. There is a need to improve this resiliency, which might be accomplished by reducing Germany's high dependency on animal products, which have particularly low resilience due to import flows as well as low resource-efficiency (more on this in 2.2.).

To the best of my knowledge, there is no peer-reviewed literature or statistical data demonstrating the legitimacy of a plant-based food culture in Freiburg. However, there is some media suggesting that this plant-based food culture exists, or at least that Freiburg has this reputation. Whether or not this reflects the reality of Freiburg residents' consumer behaviors could not be determined from pre-existing data, although there are correlations drawn that are discussed further in the literature review. All in all, the background research reveals a research gap, where there is insufficient data to suggest national self-sufficiency for animal-products in Germany or Freiburg (with existing data being unreliable), and no peer-reviewed data describing the food culture of Freiburg as plant-based or otherwise. However, if Freiburg does indeed have a strong plant-based food culture, then background data suggests this would be a case of a sustainable transformation in food-culture which could improve social and ecological resiliency. Therein lies the justification for the undertaking of this project.

2.2. Plant-based eating & sustainability

First, I define my usage of the term 'plant-based.' While there are many words and terms used to describe plant-based eating behaviors such as 'vegan' and 'vegetarian,' an important distinction lies in the consumer motivation.

Plant-based eating has existed for thousands of years all over the world, and research even shows that early hunter-gatherers ate diets of mostly plant materials (DeVore & Lee, 1998, as cited in Nestle, 2000). Turning to the history of plant-based eating in Western cultures, as is most relevant for this particular study, some of the earliest notable figures advocating for plant-based diets were Greek philosophers such as Pythagoras and Plato, who believed in the equality between human and non-human animal souls (Cooper & Hutchinson, 1997). Plato believed in an ideal society of vegetarians for reasons of animal welfare, but also

because of how much less land was required to support a vegetarian diet (Plato, as cited in Cooper & Hutchinson, 1997). Flashing forward to 'modern' plant-based eating, there are several key labels for popular food behaviors such as veganism, vegetarianism, pescetarianism, flexitarianism, and simply plant-based living. Importantly, there is a critical distinction to be made not just between what these labels actually imply for behavior, but also between what values motivate those behaviors. Specifically—20th and 21st century 'veganism' was more than just a set of dietary behaviors, and necessitated that a 'vegan' behave in ways that assume priority of animal welfare and equality. Denoting this motivation is important, because, for example, if someone were to say that they were 'vegan' for reasons of environmental protection, then hypothetically, if mass-slaughtering cattle became a sustainability practice, those people might once again consume cattle products. This hypothetical scenario tells us that these people were then, in fact, not 'vegan' since their motivations were not first and foremost concerning animal welfare, even though they may still may have been considered plant-based.

It should be noted that these distinctions are not necessarily adopted by the general public in Germany or even agreed upon unanimously among experts, and I do not expect consumer participants or all studies cited to use these terms to my technical satisfaction. That being said, I find these distinctions to provide useful nuance, and choose to respect them in the context of this project by using the term plant-based to cover those who fall into a particular behavioral category. For convenience's sake, this paper will therefore assume plant-based eating as an umbrella term, under which the numerous differently labeled behaviors of animal-product reduction might fall (i.e. veganism, vegetarianism, etc.), regardless of motivation. I will occasionally 'translate' data from study participants to meet this definition where it is suitable or will otherwise directly quote the language used by others cited. To help avoid confusion during these situation, I shall here clarify what I have found in this study to be the most commonly used interpretations of these labels with regard to behavior, indifferent to motivation: 'vegan' diets exclude all animal products (meat, milk products, cheese, lard, gelatin, fish, etc.) while vegetarian diets only exclude products which were once animal flesh (meat, fish, lard, gelatin, etc.). Pescetarian diets are like vegetarian diets, but do not exclude fish, and flexitarianism is an extremely loosely defined term used to describe a diet that reduces animal products to varying degrees, but with a principal of flexibility rather than stringent guidelines or 'harsh' restrictions. Again, I will group these definitions more broadly, and typically describe individuals as plant-based if they self-identified as 'vegan,' 'vegetarian,' or (rarely) 'pescetarian,' and consider flexitarians to be in the same group as those who self-described as having a diet reduced in animal products.

Plant-based eating is generally established as more sustainable than conventional diets that include animal products. This is of course limited, and the metrics used to measure sustainability should be made clear in any study on the topic. Common indicators of sustainability for a food product include low food-miles (the product did not have to travel far from its production location to its consumption location), low or no reliance on fossil fuels (limited dependence on industrialized processes and machinery operated using fossil fuels), low pollution production (often associated with high use of chemical fertilizers and pesticides, polluting the environment directly and also contributing to feedback loop processes that contribute to pollution, such as soil erosion, eutrophication of waterways, and global warming), and resource efficiency (the water, land, crop, and overall resources involved in the lifecycle of a product, including fossil fuels, fertilizers, pesticides, and elements of the previous metrics). It is my opinion that resource efficiency is the most comprehensive metric for sustainability when it comes to food, as I find it encompasses many aspects of sustainability and environmental problems, and that improving resource efficiency addresses many environmental problems at once. Of course, the resource efficiency of a given product depends on locally available resources, so there is no one-size-fits-all analysis of a given product's resource efficiency. However, I also find it relevant to point out the logical connection between plant-based eating, resource efficiency, and local self-sufficiency for sustainability, and how resource efficiency through plant-based consumption can positively impact the capacity for a population to live within the limits of the local ecosystems and carrying capacity.

In Germany, the average annual CO2 emissions of one's diet vary quite significantly depending on animal product consumption. Here I will use the terminology used in the study I reference. For German consumers, while the average emissions for an 'omnivore diet' produced 1,730 kg per year, the average 'vegetarian diet' produced 1,280 kg, and the 'vegan diet' produced only 1,040 kg, a whole 40% less than the omnivorous diet (FEA, 2020, as cited in Statista, 2022a). It is unclear in this study how these CO2 emissions were calculated, and if resource-efficiency variables were considered. Even still, by this metric, plant-based diets appear to be much more sustainable than those including animal products. There is also significant literature demonstrating how "raising animals for human food is an intrinsically inefficient process" (Sabaté & Soret, 2014, p. 478S) with regard to energy, water usage, land usage, and even the ratio of protein grams to total grams of the food product, with plant-based foods usually being the overwhelmingly more efficient and sustainable option in every area (Sabaté & Soret, 2014). The soundness of the argument for plant-based eating as a

sustainability solution, combined with the demonstrated need for sustainability solutions given German's food system vulnerability, I find further justifies the need for this study.

2.3. Research Questions & Hypothesis

In order to understand the drivers of Freiburg's potential plant-based food culture, I broke my inquiry down into two key questions, which I intended to interpret through a multidisciplinary social science lens. Although primarily exploratory, this research does have confirmatory elements, hence my generation of a corresponding hypothesis. My research questions and hypothesis are as follows: What is the food-culture of Freiburg? In this, if the food culture is significantly plant-based, then why? There is also the necessary sub-question of: do study participants actually exhibit behaviors aligned with how they describe the food culture of their city, or is there a noticeable attitude-behavior gap? Hypothesis: I predicted that the data would demonstrate that Freiburg has a significantly plant-based food culture driven primarily by environmental concerns, but that its reputation for being plant-based would be more pronounced than actual behavioral patterns reported by study participants. Regarding the question of what may have incited a widespread culture of environmental concern (and other motivations as determined through the data) that influences consumer behavior, I remain true to the exploratory methodology and allow the data found here to shape these questions for future research.

3.0. Literature Review

3.1. Meat, Identity, and the Attitude-Behavior Gap

There is significant literature testifying to the integral role of food in cultural identities, and on the importance of considering food culture in sustainability solutions (Fanzo et al., 2012, as cited in Sebaté & Soret, 2014). Carol J. Adams dives into the ways that meat consumption in particular plays a role in people's identity and self-concept, and addresses the question of cultural and social motivations behind meat consumption in her novel *The Sexual Politics of Meat* (1990). On the very first page of her 20th anniversary edition (2010), she gives the following quote, clarifying environmental issues as a key influencer of her work in meat politics and identity:

> Imagine the day when people respond to someone who says 'but I need my sausage in the morning,' by saying, 'oh that's so 20th century. You know, the century when some of the earliest people talking about climate change were animal activists who understood the interconnections between environmental destruction and animal agriculture' (p. 1).

Adams offers an analysis and historical review from the perspective of a feminist vegetarian critical theory and demonstrates several aspects of cultural identity which are linked with meat consumption. One cultural motivation for meat eating, and the most notable motivation discussed in her work, corresponds with cultural ideas of masculinity, and how people identify with, praise, and generally positively regard those ideas. She asserts that, animals and women alike, are treated with an ideology of equality, but a practice of domination. It states that women and animals suffer at the hand of the cognitive dissonance which takes place when there is an 'absent referent.' The absent referent has to do with the loss of subjecthood and simultaneous objectification—i.e., when a cow becomes steak, or a pig becomes bacon. The referent is lost in this linguistic shift in a way that robs a subject of its subjecthood and leaves intact the cognitive dissonance of those who might be anti-animal abuse or unnecessary suffering, but who still willingly contribute to these problems with their consumption behaviors. It reinforces an attitude-behavior gap surrounding the ethical stances that one feels are part of their identity, and their consumer behaviors, which they also identify with. There are also the parallel notions of bodily consent in both mainstream feminism and in animal welfare movements, where Adams draws connections between Western ideals of masculinity and their praising of traits such as dominance, power, ownership, and simply full-subjecthood for the masculine man. More plainly, the sexual politics of meat "is an attitude and action that animalizes women and sexualizes and feminizes animals. [It] is also the assumption that men need meat, have the right to meat, and that meat eating is a male activity associated with virility" (2010, p. 4). To offer one of many examples of the sexual politics of meat given in the book, here is one that succinctly demonstrates the way the meat-masculinity relationship is built into even the most seemingly unrelated and trivial representations of Western consumer culture:

> A 2006 Hummer advertisement features a man buying tofu in a supermarket. Next to him a man is buying 'meat that sweats' – gobs of it. The tofu-buying man, alert to and anxious about his virility because of the man with all his meat next to him in the line, hurries from the grocery store and heads straight to a Hummer dealership. He buys a new Hummer and is shown happily driving away, munching on carrot. The original tag line for the ad was 'Restore your manhood.'

This, of course, is an example from the United States, which holds its own distinct variation of the sexual politics of meat and Western masculinity culture. Yet, whether it is centuries-old paintings of European kings and nobility surrounded by meat while servants, women, and animals eat breads and produce, or a Hummer advertisement, Adams demonstrates how

meat's association with virility, luxury, status, and general masculine power is built into some of the most rudimentary and internationally-encompassing fabric of Western culture. Further, *full* subjecthood, according to Adams and the many other thinkers cited in the text, is not traditionally afforded to non-men, animals, or even non-meat-eaters in the West. Continental philosopher and animal theorist Matthew Calarco offers that "meat eating is not a simple, natural phenomenon, but is irreducibly linked in our culture to masculinity along multiple material, ideological, and symbolic lines" (as cited in Adams, 2010). For Germany specifically, as is demonstrated in 3.4. and in one 2021 study by Forsa, German "men are significantly more likely than [German] women to consume meat or sausage at least once a day" (p. 11). While this project does not have an explicit focus on feminism, this literature is insightful for understanding gendered differences in food behavior. The results of this study and of the cited literature confirm that men indeed have different food motivations than women when it comes to plant-based eating or meat-eating. Even similar plant-based behaviors will be demonstrated as gendered, with various product attributes of plant-based foods appealing differently to plant-based men and women. All the while, the absent referent makes way for objectifications that support cognitive dissonance, widening the attitude-behavior gap. Adam's text is extremely relevant as a backdrop for this study given how deeply entangled meat consumption is with cultural identity and masculine identity. It not only provides a cultural reference point rather than assuming that the significance of meat in the West is a universal one, but also provides an avenue for further exploration of cultural transformations, the entanglement of cultural gender ideologies and meat consumption behaviors, and a gendered attitude-behavior gap.

Adams provides an example of how animal-products are related to important notions of identity in many cultures, and provides clarification on what the implications might be of a food culture transformation. Changes to food culture, particularly those which involve a change in meat consumption patterns, might also indicate a simultaneous change in other cultural variables such as gender politics. A change in food culture often necessitates a change in identity. The changing of the role of meat in a culture, therefore, means the changing of peoples' identities. It is this sentiment which makes Adams text so relevant in this project, and so crucial to understand in any research or work that involves advocating for a food culture transformation.

3.2. Meat Culture & Scarcity in Germany

The literature suggests that the food culture of Germany with relation to animal-products has a history of being impacted by scarcity, which strengthens reasoning for concerns of food

scarcity in the future. It also offers insight into the ways that different generations of people living in Germany may have different food cultures as scarcity has fluctuated. For example, in a text by Spicknall, Fishburn & Baum (1943) regarding the impact of World War II on the German diet, it is stated that "consumption of food by German civilians was restricted. Such products as peanuts and bananas had all but disappeared from the markets and there were shortages of meat, fats, and dairy products" (p. 1669). Regarding eggs, "the average, over the ration period up to May 1942, was three eggs per person per month" (p. 1670). Meat was exceptionally limited, and plant-based substitutes for animal products made from soybean, oils, and small portions of skimmed milk or margarine fortified with vitamins from fish liver were used by civilians and in German Army rations. Jewish people had even fewer products available to them, and were not allowed to buy cheese, fish, poultry, or game, and were also not permitted to shop until later in the day after the 'best' of rations had already been purchased by non-Jewish citizens. Data available for comparing domestic production and import patterns of these products during WWII compared to the 21st century is too misaligned and sparse for an analysis to be feasible for this project. However, this story serves as an example of how a reliance on imports and resource-inefficient products lowers resilience, and extremizes any disruptions. It also provides an important backdrop for how generationally, the relationships that German residents have with animal product varies significantly. In fact, my inclination toward researching the impacts of the war on German diet was inspired by the story of an interviewee talking about their grandparents. The grandparents, who were alive during WWII, considered meat a luxury to be consumed only once a week, whereas for the interviewee and their peers aged mostly in their twenties, meat substitutes were considered more luxurious than meat, which is no longer regarded with scarcity or the same degree of luxury their grandparents experienced. In both cases, meat was infrequently consumed, but the cultural associations with meat that underpinned their infrequent consumption were vastly different.

This led me to further explore generational differences in food culture in Germany, especially as a means of accounting for the low representation of older generations among my study participants, presenting a demographic misrepresentation of the general population in my samples. However, this kind of data was extremely limited, and I was not able to find anything very notable regarding the food habits of elderly people in Germany, and nothing novel concerning meat consumption. The most notable findings were that people in Germany over 65 years old were much more likely to eat at home than to eat outside of the home than younger people, that they purchased more organic foods, and that older people were more likely to change their food purchase behaviors amid economic crisis (Drescher & Roosen,

2013; Kamenidou, Stavrianea, & Bara, 2021). There were not significant differences in the frequency of meat consumption between people over 65 and other age groups according to Forsa (2021), but I predict that further research on the significance of meat (i.e. how people relate it to their identity, the cultural associations they make with it, the product attributes they look for and the motivations behind purchase decisions) would vary between Germans over 65 and German young adults. This would be an interesting avenue for future research that would build on this study.

There is also literature discussing the phenomenon of panic-buying in Germany, when German residents stockpile non-perishable foods in times of crisis when consumers are concerned about scarcity. For example, Lehberger, Kleih, and Sparke (2021) produced a study on this phenomenon amid the COVID-19 pandemic. The start of the war in Ukraine in 2022 also caused Germans to panic-buy, stockpiling vegetable oil, flour, sugar, pasta, and other goods that people believed would become unavailable due to precarious import flows coming from Russia and Ukraine (Mehlhose & Profeta, 2022). Anecdotally, I remember during this time that I went to four different grocery stores near my home, all of which had empty shelves where vegetable oil and flour would have normally been found. Although this study focuses on sovereign food culture changes, scarcity (or even perceived scarcity) as a result of precarious imports or lack of self-sufficiency shapes the perception of food products. This implies that attitudes surrounding the cultural significance of food items might be explained by contextualizing consumer experiences with events that cause a perception of scarcity, even if that scarcity is no more. This analysis is outside the scope of this study, but future research with this focus would build usefully on this topic.

3.3. Freiburg's Reputation – The 'Green City' & Food

Much of my personal experience at the time of this project suggested that Freiburg has a reputation for being a 'green city' among both Germans and international migrants alike, and that part of this 'green'-ness has to do with its reputation for having a plant-based food culture—in part, inspiring this project from the beginning. However, I needed further evidence to prove or disprove the reality of these reputations, as I was unable to find peer-reviewed literature on the subject. Considering that cultural reputations do not exist in a vacuum of academia, I wanted to gather information in a way that any regular consumer might. Therefore, I first turned to Google, the world's most popular search engine (StatCounter, 2022). The following data includes quotations and article titles, most of which were originally found written in German and were translated to English for this project.

When conducting a search for ‘Freiburg Germany’, I was first directed to tourism websites. On Freiburg’s profile on Tourism.de, there is no mention anywhere of Freiburg being a ‘green city,’ though many of the city attributes that are advertised make environmental appeals; For example, it is called “The Sunny City” in the title of Freiburg’s designated webpage, and praised as “the gateway to the Black Forest” (TourismAdmin, 2022). Yet, on the ‘cities’ webpage on Tourism.de, the very first article listed is titled “Berlin – The Green Capital” (TourismAdmin, 2019a). The local gastronomy advertised for Freiburg included exclusively animal-product-oriented dishes. The website also offered four articles listed under the ‘German Food’ page in the website menu, with the top article titled *Top 100 Most Delicious German Meals*. This article depicted almost nothing that would traditionally be void of animal-products, with a vast majority of dishes having an animal-product (most frequently meat) as its focal point (TourismAdmin, 2019b).

On the website Visit.Freiburg.de, Freiburg’s attributes appealing to environmental motivations are still advertised, but they are explicitly accompanied by a large panel titled “Experience Ecology in the Green City” right on the website’s main page above a footer advertising the website’s carbon neutrality (Stadt Freiburg, n.d.-a). The ‘Experience Ecology’ panel redirected me to the website GreenCity.Freiburg.de, or *Green City Freiburg*. The Visit.Freiburg.de website also offers several pages to give tourists culinary guidance, one of which has an alphabetized list of restaurants, the first of which happened to be vegetarian. There was also a ‘Freiburg menu’ that was offered at certain hotels and restaurants, which requires certain criteria be met. Primarily, these criteria appeared to demand ingredients be mostly locally sourced, but there appeared to be no explicit concern with plant-based eating. Regardless of whether or not local people eat plant-based diets, a plant-based food culture was not the one advertised online to tourists in my search.

In a search of ‘Freiburg City,’ the Freiburg City website (Freiburg.de) appeared, which also advertises the *Green City Freiburg* link on its main page (Freiburg im Breisgau, 2022a). While scrolling down the main page of the Freiburg City website in October, 2022, several other featured pages also stood out to me, such as one with a title describing how elementary schools and daycares in Freiburg were switching to an all-plant-based menu, an energy saving portal, and another large advertisement for the ‘Waldhause Freiburg’ (translated to ‘Forest House Freiburg’), an environmental education institute. Revisiting the website in November, 2022, the featured pages had changed, but were still ecologically oriented with titles on climate protection, solar energy, and new bike paths.

Upon visiting the *Green City Freiburg* page, visitors are immediately greeted with the following statement:

> The time to act is now. Freiburg realized this as early as the 1970s and set out to become an environmentally friendly city. Since then, the city has come up with many sustainable solutions and carried out numerous projects. The WE at the heart of Freiburg was, and still is, the focus at all times. With input from residents, businesses, scientists and researchers, educational institutions, churches, cultural organizations, and many other institutions, a unique Freiburg MIX has emerged, now known the world over as "Green City Freiburg." (Stadt Freiburg, n.d.-b)

The website includes many resources, including a timeline of the city's environmental history, beginning in 1975. There are several notable milestones which reinforce the idea of Freiburg as a 'Green City' that lives up to its reputation according to this timeline, including the honoring of the 2012 German Sustainability Award to Freiburg as the most sustainable major city in Germany. While none of the events listed on the timeline were explicitly food-oriented, there were several vague events that would have included food-related initiatives, such as the setting and implementing of climate protection goals by the Freiburg Municipal Council.

Diving into the climate protection goals on the timeline, as of 2021, part of Freiburg's climate protection goals included having the city reach carbon neutrality by 2038—a more ambitious goal than had been set in 2019, which strove for climate neutrality by 2050. This was also more ambitious than the national goal for carbon neutrality, with a deadline of 2045 according to the 2021 Climate Change Act (Federal Ministry of Finance [FMF], 2021). In the German Climate Change Act of 2021 section V, *Measures in the Agricultural Sector*, I found the only measures being taken that appeared to have any explicit relation to food. While this measure acknowledges the ecological problem of livestock ammonia emissions, rather than aiming to reduce animal agricultural production, the following goal is stated:

> The Federal Government will increase federal GAK funding to support structural and technical modifications to livestock stables in order to achieve a significant reduction in the size of ammonia-emitting areas. These modifications will take both climate and animal welfare targets into account. In addition, the Federal Government will provide funding for the construction of low-emission storage facilities for liquid manure and the retrofitting of covers for these facilities. (FMF, 2021).

To the best of my knowledge, this was the extent of attention paid to animal-product consumption regarding the sustainability goals on part of the national government. On the other hand, Freiburg's Climate Protection efforts as described on the *Green City Freiburg* website included a section of 'sustainable lifestyle,' which had its own focus on sustainable nutrition. After following the link to the 'sustainable lifestyle: nutrition' webpage, five sections on focal topics were presented, with the first section providing a link to the previously mentioned FiBL study on the regionality (or lack-thereof) of the Freiburg diet.

The second section offered resources for nutritional advice via The Nutrition Council Freiburg & Region eV in collaboration with the Freiburg House of Food (FHoF). The first link to the Nutrition Council provided another link to the same FiBL study on their home page, emphasizing the issue of low self-sufficiency of Freiburg. The website also included many other approaches to improving sustainability, but I found nothing specific regarding plant-based eating. The FHoF link directed me to a page on the Nutrition Council website, describing the institute as an agriculture center committed to "promotion of regional structures, the exchange of knowledge and the expansion of networks for regional nutrition" (Nutrition Council Freiburg, 2022, para. 3). This website also discusses many political and sustainability projects and goals which may or may not have included an effort toward reducing animal-product consumption in their application, but this was unclear online. Their primary focus appears to be on things such as Food Policy Councils (an effort toward improving food democracy) and mentioned key subject areas where their work was focused, including regional catering, agriculture, environmental protection, and Urban-rural relationships. Further specifics on how sustainability was measured were not included. In any case, the work of the Nutrition Council, the FHoF, and the many other collaborative institutions mentioned and linked on these websites suggests that the effort and support going into Freiburg's sustainable food system initiatives reinforce its reputation as a 'green city.'

The third section was about the role of canteens, and how they "contribute to a regionally, seasonally and ecologically conscious and meat-sensitive diet" (Freiburg im Breisgau, 2022b, para. 3). It offers a link to a 2018 campaign where four municipal canteens served menu items that focused on regionality, seasonality, and meat-reduction, explicitly references the need for this in accordance with the data from the 2016 FiBL report. Looking beyond municipal canteens, much more recent campaigns have also taken place. Even as I write this sentence on the 18th of November, 2022, the Studierendenwerk Freiburg-Schwarzwald (SWFR) in collaboration with the Energy Agency's 'Food For The Future' project are on the final day of their week-long campaign for Pro Climate Week, where

supposedly all of their canteens offered a special meal everyday, all of which were completely plant-based. The SWFR website stated on their page titled 'Pro Climate Week in all canteens' that as part of this campaign, "At least one climate-friendly meal is offered daily. Opt for it and make a contribution to environmental protection" (2022).

The fourth section was titled 'AgriKultur,' which is a concept that situates "agriculture and nutrition in a cultural framework and thus communicates the enormous importance for society and the environment" (Freiburg im Breisgau, 2022b, para. 4) through the organization of cultural agriculture events. This concept endorsed by the local government appears to reaffirm and act on the same concepts found in Fanzo et al. (2012) as cited in Sebaté & Soret (2014) and the literature of section 3.1, which stress the importance of 1) cultural acceptability as a sustainability indicator, and 2) food as a cornerstone piece of culture and cultural identity.

The fifth section titled 'school meals' followed suit in providing a link to a page delineating the many inter-institutional projects taken up to improve the sustainable nutrition in schools, emphasizing the cultural and social significance of food beyond just its biological necessity for human survival. The solutions offered in these projects are multifaceted and tackle many faces of sustainability problems, ranging from increasing the share of organic food in schools, to offering one euro meals to low-income students, involving students in canteen design, involving rural women in advisory boards, and the offering of cooking classes in schools (Freiburg im Breisgau, 2022c).

Through my Google search and thorough investigation of Freiburg's official city websites, I was thoroughly convinced of the significant effort the city has put into earning its 'green' reputation. However, I still wondered if these efforts had been fruitful. Was Freiburg only *The Potentially Green City*, or had all its efforts produced real-world 'green' impacts?

Unfortunately, I was unable to find any peer-reviewed literature or official reports on whether or not Freiburg has actually been successful in reducing their emissions. However, in a 2019 new article by Tobias Buck interviewing Mayor Martin Horn as well as local climate and sustainability experts, it was reported that greenhouse gas emissions had decreased by over 37 per cent per person since 1992, with the share of city traveling done by bike having risen from 15% in 1982 to 34% in 2018, and car journeys dropping from 40% to only 21%. The article also discusses other means by which Freiburg has truly earned its reputation, such as strict building standards and investments in renewable energies, and stating that Freiburg's reputation "attracts more than 200 international delegations every year

who come to inspect its green programmes, including from China, South Korea, Australia and the US. They find an approach to climate policy that centres not on one or two sweeping reforms but on myriad individual measures — many of them small and seemingly unspectacular — that are refined over many years" (para. 11). These small and seemingly unspectacular measures apparently reflect Freiburg's notorious bottom-up approach, and how the city's sustainability is the result of overwhelming citizen action and support, citing the successful anti-nuclear environmental protests that took place in and around Freiburg in the 1970s. Though there is no explicit mention of any food sustainability in this article, there is a serious emphasis on locality, and I have already demonstrated the links between locality, sustainability, and plant-based eating.

3.4. Plant-based eating in Germany

Conveniently, Statista (2022a) produced a report compiling the most relevant statistical information regarding plant-based eating in Germany, including information from more studies than I would have normally included in this section of the literature review. Consequently, for the sake of efficiency, consistency, and due to the fact that this document exhaustively addresses all of my curiosities regarding plant-based eating statistics in Germany, I do not include additional literature in this section. All sources should be considered to be as cited in Statista, 2022a.

This report demonstrates that the production volume of plant-based foods in Germany increased by nearly 40,000 tons between 2019 and 2021, with a production value increase of nearly 200 million Euro. The global 'vegan food market revenue' increased between 2020 and 2021 by about 1.3 billion USD, and is projected to increase by another 6.5 billion USD by the year 2025. A POSpulse and PWC study cited in the report states that about 13% of Germans described themselves at 'vegetarian' or 'vegan' (9% and 4% respectively), with another 7% self-describing as 'flexitarian' and 1% as 'pescetarian.' However, a Veganz study also included in the report shows that 29.1% of surveyed Germans were self-described 'flexitarians,' 4.6% as 'pescatarian,' 4.4% as 'vegetarian,' and 3.2% as 'vegan.' An IfD Allensbach study calculated that there were 7.9 million people in Germany who self-described as 'vegetarian' in 2022, which is the highest number on the chart, going back to 2007. The number for 'vegans' was 1.58 million, nearly double the count of 0.8 million in 2016. The Guardian and Veganuary provided that between 2017 and 2021, 'veganuary' participants multipled by almost ten, with 513,663 official registrations in 2021. LZ reported that 42% of Germans had purchased plant-based meat alternatives within the past three months.

A Splendid Research study in the report showed that ‘Vegetarians’ in Germany in 2020 were 80% women and 20% men, while ‘flexitarians’ were 60% women and 40% men. Women and men also had different motivations for plant-based eating, according to a PHW group report. Regarding sustainability, 60% of women and 59% of men cited this as a reason. 65% of women and 52% of men cited animal welfare. The majority switches to men when the motivation turns to health, with 55% of men and 45% of women citing this motivation. Finally, 23% of men and only 9% of women cited being motivated by third parties, such as their partners. A POSpulse study asked participants their reasoning for giving up dairy, to which 50% of respondents cited animal welfare, 38% environmental protection, 27% an intolerance, among various other listed reason with smaller percentages. Overall, POSpulse reported that the primary reasons why people adopted a ‘vegan’ diet were animal welfare concerns, health concerns, and environmental concerns, in that order. There were also other less prominent motivations, such as disliking the taste of animal products or saving money.

The product attributes people were most concerned with for meat substitutes, also according to POSpulse and as cited in Statisa (2022a), were ‘natural’ ingredients, meat-like taste and texture, regional production, and price. The most notable barriers reported for meat renunciation were a loss in taste and a perceived price increase.

3.5. Behavioral Changes & Consumer Psychology

There is significant research in consumer psychology and marketing that discusses the various influences of consumer behavioral changes. Some of these will be discussed in 5.2, diving into the SHIFT framework as discussing the roles of social influence, habit formation, individual self, feelings and cognition, and tangibility. However, here, I will focus on additional works regarding the role of social influence and cultural values.

According to Kuenzel and Musters (2007), “consumers are unlikely to function as single independent units that strictly follow their own course” (p. 876) and are extremely influenced by social factors and other consumers. In particular, small, close social networks are the most influential, and “the inner family and close friends are the key groups exerting social influence on the actual shopper” (Kuenzel & Musters, 2007, p. 883). It should be noted that, while there is significant literature demonstrating generational differences as a critical indicator of behavioral differences (such as Gillespie, 1995 in section 3.6), intergenerational influence is extremely strong in that consumers often inherit products from their parents and usually choose the same products as them (Moore et al., 2002, as cited in Kuenzel & Musters, 2007), particularly those parents who they consider to be part of their ingroup (i.e. daughters being more associated with their mothers than their fathers, or dissociated with dislikable

family members who fall into an outgroup) (Fournier, 1998, as cited in Kuenzel & Musters, 2007).

Similarly, there is the idea of Prototype Matching, where "people base their choice of products and brands on the choices made by an imaginary prototypical user while aiming at a maximum resemblance of their choice patterns with that of this desired prototypical user" (Niendenthal et al., 1985, as cited in Kuenzel & Musters, 2007, p. 877). This matches findings discussed later regarding social desirability in the SHIFT framework, found in 5.2.1.

There is also the matter of product involvement. Food is higher involvement than many other products (i.e. electronics) due to its cultural embeddedness, but there are varying involvement levels between food items, which I suggest are reflective of the cultural significance of the item in question. The more culturally significant an item, the higher involvement it is. Notably, level of involvement is also correlated with potential susceptibility to influence on that product, with low-involvement products being less susceptible than high-involvement products (Kuenzel & Musters, 2007). This is important, because this suggests that culturally significant food products as high-involvement products might be more susceptible to change via social influence.

Consumer purchase decisions also have to do with perceived product attributes, which are sought out or avoided according to purchase motivations, self-relevant consequences, and consumer values (Kuenzel & Musters, 2007), as is laid out in means-end chain theory: "According to the means-end chain theory the instrumentality of an attribute – and consequently its importance to the consumer – depends on the strength and numbers of cognitive links between the attribute, self-relevant consequences and consumer values" (Gutman, 1982, as cited in Larsen et al., 1997). To understand consumer motivations and values, it is important to nuance the cultural reference point even further than merely the "meat is king" (Adams, 1990, 2010, p. 55) stance of the Global North by looking at more localized cultural factors. When considering cultural variances, attributes themselves are insufficient to analyze on their own—are consumers making different purchase decisions in different cultures because the perceived self-relevant consequences associated with certain attributes are different, or because their personal values on those consequences are differences (Nielsen et al, 1998)? To use a hypothetical example regarding meat consumption – if the backdrop for marketing alternative meats were focused on guilt/pride appeals for reducing one's carbon footprint, would consumers disagree on the perceived *attribute* of reduced CO2 emissions from meat-alternatives, or would they disagree on the *motivation* to reduce their contribution to climate change? The answer has to do with

culturally relevant values. The question here becomes: what attributes of foods are linked to what motivations, underpinned by what values? It appears possible that identifying these motivations and values in a particular cultural context could guide how product attributes are marketed to that culture in a way that may influence consumer behavior toward plant-based eating.

3.6. Whole-Scale Sovereign Changes in Food Culture

There are many ways in which cultural changes are discussed and described with different language across different disciplines. Additionally, much of the literature that discusses cultural change does so with examples of unsovereign changes—changes incited via colonialism, natural disasters, poverty, or other situations of hardship which forced changed upon unwilling populations. Still, there were useful findings on the matter of sovereign cultural change, only a handful of which I have selected to discuss here. Even still, it should be noted that the concept of cultural change is one commanding decades of research which I do not attempt to exhaustively analyze in this paper. Much of these findings come in the form of theory, which I find is fitting, as the question I ask of what has caused the cultural change I predict has occurred in Freiburg might be described as theoretical in nature. Rather than choosing to select one of the many theories on what causes cultural change as a theoretical framework for this project, I use this study to provide insight on which theories would most accurately depict the situation at hand and be most suitable for future research, and only offer a brief insight into which theories might be most relevant.

According to Gillespie (1995), cultural change takes place via recreative reception of media. Gillespie explores the ways in which "young people negotiate between the local and global, national and international contexts and cultures which traverse their lives" in ways that "both reaffirm and challenge parental traditions, at the same time formulating their own aspirations towards cultural change" (abstract). Perhaps the most relevant takeaways from this book are Gillespie's take on globalization and localization, where she discusses the formation of a global culture brought about by "the interconnectedness of cultures brought about by the transnational flow of images, commodities and peoples" and "dominated by transnational corporations" (p. 15). Gillespie denotes how anthropologists and cultural studies at the time were beginning to understand how consumers across the world and in various settings "create or conform to personal and social identities through acts of consumption, and how commodities provide a resource for developing shared, collective frames of reference" (p. 15)

Articles such as that of Cleveland et al. (2016) assert the importance of globalization research due to its role in consumer behavior, as "culture is the principal explanation of consumer behavior disparities across countries" (abstract). Differences in consumer behavior between cultures are assumed by this article to be lessening due to globalization. Yet, trends of globalization also motivate some to preserve cultural differences. The article submits that, generally, globalization embodies complex cultural change toward acculturation for most populations, particularly when it comes to culture-specific consumer behavior. In order to contextualize globalization as a potential driver of cultural change, one might also turn to cultural evolution theories, such as those presented Varnum and Grossman (2017) discussing the role of information transmission, institutional reliability, religion, and ecological pressures in culture change.

There is also the widely critiqued modernization theory, which, succinctly, states that cultural and political changes are the result of industrialization and economic 'development.' In traditional modernization theory, cultural values which may once have been absolute and inflexible become more tolerant, rational, and inclusive through increased income, education levels, and occupational specializations. One of many critiques is offered by Inglehart and Baker (2000), proposing adjustments on how values change with which human needs are being prioritized. They find that the cultural changes do not occur as a result of 'modernization' per say, but are dependent on security: "rising security tends to produce a shift toward secular values and tolerance, trust, subjective well-being, and a post-materialist outlook, while social and economic collapse propel a society in the opposite direction" (p. 44). The text suggests significantly different values between members of the same society who occupy different economic classes, which has been recognizable in food culture behaviors observed in many more recent studies. This is relevant when considering how the food culture of Germany and Freiburg has changed over time alongside economic fluctuations (consider the WWII-related food scarcity and generational differences in food culture discussed in 3.2. and 7.2.).

There is also literature emphasizing the important of innovation, entrepreneurship, and industry in cultural change. For example, Inglehart and Baker made an important distinction between ideas of 'modernization' compared to 'industrialization,' claiming the latter to be the truer driver of cultural change between the two. Lehdonvirta (2013) gives an example of entrepreneurship and its impact on culture in industry, referring to a 'revolution' that has been taking place since the beginning of the start-up craze in 2010, in which a culture of solidarity in industry and a pay-it-forward attitude replace an older dog-eat-dog mentality.

Of course, even more visibly, entrepreneurship, industry, and innovation have led to technological advancements that have been massively culturally influential, particularly with regard the role they have played in media, globalization, and economic 'development' as discussed in other literature (Murphie & Potts, 2017). Innovation also might refer to more than just industrial or technological innovations, and include many kinds of mental constructs and even philosophical innovations that impact culture (Barnett, 1953).

Importantly, cultural change and how it is defined is heavily dependent on individual conceptualizations of culture. As Meyerson and Martin (1987) describe, "cultures are socially constructed realities and, as such, the definition of what culture is and *how cultures change* depends on how one perceives and enacts culture" (p. 623). This project, therein, can offer but a limited perspective on the culture and cultural change it analyzes, and should not be misinterpreted as postulation.

4.0. Methodology

Seeing as there is not yet any data specific to Freiburg on what factors might have influenced a plant-based food culture transformation, this study is primarily exploratory. That being said, as a means of justifying my exploratory topic, I use exploratory methods to answer the confirmatory question of whether or not there is a plant-based food culture in Freiburg. The project is otherwise exploratory, and offers results which can hopefully guide future confirmatory research hypotheses.

This study adheres to the grounded theory approach. The grounded theory approach is used to perform inductive research, which allowed me in this project to explore and observe patterns, theories, and possible explanations. It is an appropriate approach for exploratory research in that is allows the researcher to analyze data as it is collected and respond with adjustments or directional changes as is suitable. I find that this results in better-informed research decisions for exploratory research, avoiding the notorious 'streetlight effect,' and enabled me in this project to truly explore the phenomenon rather than just verifying a potentially misguided hypothesis. Additionally, the grounded theory approach offers a level of flexibility that is quite forgiving of research misdirection, which I have found to be practical and beneficial to my work as someone still relatively new to formal research.

5.0. Theory

There are multiple reasons why I utilize several theoretical frameworks for this study. Firstly, this is an exploratory study (which I will elaborate on further below), meaning that part of my research question involves a curiosity surrounding the best way to approach the topic.

During the preliminary stages of the project when I was informing the background and rudimentary literature review of the paper, I came across several theoretical frameworks which I found could be suitable for this project, but did not feel strongly enough about any one framework to justify using it in favor of others. Therefore, one element of this project involves the testing of the various frameworks, and discovering the benefits and drawbacks of each one for a project of this nature. This leads me to my second reason for using multiple frameworks: I am in the early stages of my research career, and use this project as an opportunity to develop my knowledge and skill as a researcher, and find that exploring multiple framework applications is a useful pedagogic exercise that will guide how any follow-up research for these finding may best be conducted. Thirdly, this project involves analysis of data from multiple disciplines and across multiple scales. This level of versatility compels me to use several frameworks that allow me to consider these variations at multiple angles, and apply certain frameworks as necessary to cover the blind spots of others.

Like many issues of social or ecological nature, the phenomena analyzed in this project involve cross-scale interactions (Cash et al., 2006). I do not pretend to have isolated each scale flawlessly in my research; however, I predict this is an impossibility, given the inherent entanglement of the variables and scales being considered. Utilizing multiple frameworks throughout this study accommodated the need for cross-scale data analysis, with some frameworks being more suited to certain scales than others. For example, the SHIFT framework described in section 3.4 appears to be useful for focusing on individual consumer psychology at the lowest scale, and social networks at the highest. It also primarily takes the perspective of marketing and consumer psychology research. However, my research requires looking beyond individuals and the small scale of social networks that SHIFT has been used for in the past, as well as looking through the lenses of multiple disciplines. For example, a significant amount of my literature review comes from research on Consumer Behavior, Psychology, and Marketing. However, literature on Food Cultures is more prevalent in the social sciences, and are most relevant for this project at the city, regional, and national scales. These larger-scale food cultures might be merely the sum of their parts (their parts in this instance being individuals and social networks)—or, they might hold their own order of operations for the food culture transformations I observe. I predicted the latter to be the case, given the presence of institutions and authority structures (i.e., governments, the media, universities, NGOs, etc.) that appear to be more relevant at these larger scales than at an individual one. For these reason, I believe the study benefits from applying different theoretical frameworks at different scales and with approaches from various disciplines as needed.

5.1. The Cultural Reference Point – 'Meat is King'

I take this opportunity to again acknowledge the cultural reference point for this project, and refer back to the literature from section 3.1. to do so. But first, I clarify the relevance of such a declaration. Culture, including food culture, is a very personal endeavor. Cultural change has occurred throughout history often through unsovereign means, such as colonialism, famine, poverty, and general misfortune. However, in order for a food culture to be truly sustainable, it must also be sovereign and voluntarily taken up by a willing population. Considering the cultural reference point of a project is of vital importance to avoid methodological nationalism and anthropocentrism while informing any attempted applications of the research so that sovereignty is retained and stakeholders empowered. I do not build a cultural relativism into the text, but clarify it here as an important contextualizing variable.

As is described in literature review sections 3.1. through 3.4., the food culture of Germany is one in which animal products have a positive connotation. According to feminist vegetarian critical theory and the review of the importance of meat in so-called 'Western' cultures, meat is highly regarded and associated with power, status, dominion, and a praised notion of masculinity. Said differently and using Adams exact words, "meat is king" (1990, 2010, p. 55). While the food culture in Germany is certainly unique to other 'Western' cultures and is changing alongside perspectives of meat consumption, Adam's analysis appears to be correct for the case of Germany in that meat and animal products are generally celebrated elements of the German cultural tradition, making the sexual politics of meat an appropriate cultural reference point. Even still, this should not be mistaken for a postulation on German meat culture, or an exhaustive explanation for peoples' behavior. In fact, equally as relevant for a cultural reference point is that all of the documented shifts that Germany has undergone in recent decades toward plant-based eating appear to be entirely voluntary and sovereign, and the transformations at the will of German people. Further cultural reference points from a more historical perspective are offered in sections 3.2. and 7.2.

5.2. The SHIFT Framework

One model created originally as a "tool for effective green marketing" (Nandish, Mathew, & George, 2021, p. 3) is the SHIFT framework. This framework considers the "important role of marketing in encouraging sustainable consumption" and looks at the "most effective ways to shift consumer behaviors to be more sustainable" (White, Habib, & Hardisty, 2019, abstract). Although not market-oriented, this research is aligned with the goals of SHIFT and benefits from the framework it outlines, which serves to identify drivers of sustainable

behavior shifts in consumers, then incorporate them into strategies to encourage plant-based eating. The term SHIFT, coined originally in the 2019 text by White, Habib, & Hardisty, is an acronym; It suggests that "consumers are more inclined to engage in pro-environmental behaviors when the message [includes]: Social influence, Habit formation, Individual self, Feelings and cognition, and Tangibility" (abstract). Each of these five psychological tools includes a set of factors to consider that aggregates the best of many theories across various disciplines, alongside techniques for implementation. I revisit these strategies for implementation in section 8.1., and utilize this section to go over White, Habib, & Hardisty (2019).

5.2.1. Social Influence

According to SHIFT and inspired in part by the Theory of Planned Behavior, the three types of social influence (social norms, social identities, and social desirability) can encourage sustainable consumption. Starting with social norms, concisely, social pressure regarding 'appropriate' behavior can predict what consumers will do—or, according to my understanding, it is even more useful to determine what consumers will *not* do out of risk of social repercussions or guilt. For example, in White, Habib & Hardisty, certain sustainability behaviors such as avoiding littering, energy conservation, and sustainable food consumption (which we have established often comes in the form of omitting particular products) can be attributed to the influence of social norms. However, according to Cialdini (2003), Schultz et al. (2007), and Kraft-Todd et al. (2018), these norms are only effective when adopted by either a majority of the population, or a population's most influential actors (as cited in White, Habib, & Hardisty, 2019). Social identities have to do with group membership, and influence toward sustainable consumption via social identities occurs when members of one's own group are participating in the behavior, or when one sees (or wants to see) themselves as a member of a group that is pro-sustainability. People want to view their ingroup positively when compared to other groups—especially with groups consumers do not want to be associated with, or 'dissociative groups.' This resembles the prototype matching discussed in Kuenzel & Musters (2007). Social desirability involves improving one's social status and making a good impression to others, and sustainable behavior is increased when made public in a way that might improve one's image to those around them (Green and Peloza, 2014, as cited in White, Habib & Hardisty, 2019). In line with the Feminist Vegetarian Critical Theory discussed in 3.1. and 5.1., Brough et al. (2016, as cited in White, Habib & Hardisty, 2019) demonstrates how social desirability can also harm sustainable behavior initiatives in an example when men avoided sustainability behaviors due to their perception that 'eco-friendliness' was overly feminine. This implies that

improving the desirability of sustainability behaviors in different group contexts would improve sustainable consumption. All of these social influences are notably underpinned by findings such as those in Kuenzel & Musters (2007), in that decision making is not an event isolated to the individual, but is social and heavily network-influenced.

5.2.2. Habit Formation

Habit formation is particularly relevant to this project, as food consumption does not involve one-time decision making, but regular habitual decisions. There are several mechanisms through which habits can be changed. According to SHIFT, those mechanisms are: Discontinuity to change bad habits, penalties for continuing bad habits, implementation intentions for new habits, making the change and new habits easy, prompts to remind and affirm consumers in new habits, new habit incentives, and feedback. All of these strategies work to disrupt and discontinue old, less sustainable habits while encouraging and rewarding new, more sustainable habits with as little resistance as possible, all while affirming the consumer.

5.2.3. Individual Self & Means-End Theory

The 'Individual Self' element of SHIFT pays mind to five different concepts of self-relation: self-concept, self-consistency, self-interest, self-efficacy, and individual differences. With the self-concept, people generally want to have a positive view of themselves, and consequently will defensively reject notions that threaten their own self-image. This is aligned with the ideas of cognitive dissonance and the absent referent in Adams (1990, 2010). It is important to mitigate this response to protect the self-concept from change, which can result in individuals intentionally acting in opposition to the suggested behavior; "Thus, positively associating sustainable behaviors with the self-concept and buffering against self-threatening information can be critical for sustainable behavior change" (White, Habib & Hardisty, 2019, p. 27). This also applies to material objects which people identify with, which can include food products, so avoiding assigning a negative image to these products can increase the likelihood that a consumer might give it up. Self-consistency also can reaffirm the self-concept, and individuals are more likely to engage in a certain sustainable behavior once they have started. This includes a positive spillover effect, where one kind of sustainable tendency can prompt other sustainable behaviors in a bid to achieve more consistency with environmental values, but there is also a negative spillover, where consumers feel that one sustainable behavior compensates for becoming less sustainable in others. Self-interest has to do with self-relevant consequences, and whether self-relevant motivations will be fulfilled by a particular behavior or not, and typically, self-benefits need

to outweigh the difficulty of barriers for sustainable behaviors (i.e. price, aesthetics, etc.), which aligns with the means-end chain theory described by Kuenzel and Musters (2007) and Larsen et al. (1997) and discussed in section 3.5., and largely underpins the consumer interview component of this research. Self-efficacy involves confidence held by a consumer that their sustainable behavior will have the desired impact, and sustainability behaviors are more likely adopted the higher this confidence is. Finally, individual differences involves the personal norms and values held by a consumer, including a sense of responsibility or obligation to uphold those values through sustainable behavior. Individual differences also include demographic variables such as those discussed in 3.4., and people who are women, young, highly educated, and politically liberal have shown to be most likely to engage in sustainability behaviors.

5.2.4. Feelings and Cognition

Feelings and cognition are present in all other SHIFT categories, and typically present a reinforcing causal loop (i.e. positive feelings could positively influence ones self-interest, causing more positive feelings, and so on). Feelings and cognition present one of two routes to decision making, according to Shiv and Fedorikhin (1999, as cited in White, Habib & Hardisty, 2019), with the other being based on affect. This distinction becomes relevant when considering what will incite changed behavior, particularly when it comes to how consumers react to new information, consider, and learn. This has to do with responses to negative and positive emotions. With negative emotions such as fear, guilt, and sadness associated with not engaging in sustainable behaviors, techniques which elicit moderate negative emotions are most effective in inciting sustainable behavior. For example, mild fear appears too distant to be addressed, but severe fear seems too big to overcome, both of which result in inaction. Similarly, anticipated guilt is more effective than explicit guilt, which merely asks consumers to consider how their own values align with their behavior rather than admonishing them for ‘bad’ behavior. Positive emotions tend to be more effective in encouraging sustainable behaviors, whether they are positive emotions outright, or the decreasing of negative emotions. Some of these emotions include joy and pride, which affirm one’s sense of self, positively impact social influence, and have positive self-relevant consequences. Other positive emotions such as affectionate feelings toward wildlife or ‘nature’ also promoted sustainable behavior. The way in which information is framed for consumers and the kinds of emotions elicited can impact behavior and purchase decisions.

5.2.5. Tangibility

One challenging aspect of encouraging sustainable behavior is that environmental problems and solutions can often appear as abstract, distant, speculative, and unclear. The most important sustainability goals are often long-term, and without an immediate or clear reward system for sustainable behavior. They have an aura of intangibility. However, there are various solutions for addressing this. Matching temporal focus by encouraging consumers to be more future-oriented than present-oriented, in-line with sustainability issues, can encourage sustainability behaviors. Also, when there are more immediate and local results to sustainable behaviors, these should be communicated. Similarly, concretely communicating more immediate, local, and self-impacting effects of climate change to lessen psychological distance from the issue shows positive results. Finally, encouraging 'dematerialization' on part of consumers can improve their capacity to comprehend and desire intangible benefits, rather than just those that are immediate, tangible, or possessable. This might come in the form of ideologies about community, minimalism, or even experiences.

6.0. Research Design

6.1. Secondary Research & Literature Review

The exploratory nature of the research topic required something of a 'working backwards' approach. First, I conducted a basic secondary and archival search of both primary and secondary data to construct a literature review that would underpin the project, illustrate the background of the topic, and inform the research design. However, in line with the Grounded Theory approach, I adjusted and added components to my literature review throughout the project after interview and questionnaire findings suggested diving deeper into certain topics and reorienting the focus of other topics.

For the initial literature review, I sorted the literature I analyzed into five groups with some pieces being in more than one group. The groups were: 1) Food Culture Transformations; 2) Identity & Meat; 3) History; 4) Freiburg Food Culture; and 5) Plant-based Eating. For certain topics, namely in the category of Freiburg Food Culture, there was little-to-no academic literature on the information I was looking for (i.e. plant-based eating), so I needed to look outside of academic literature. I have specified in this paper the instances when I refer to non-academic sources.

I used the same literature selection method for each group, but will explain only the first section in great detail, as I feel it sufficiently portrays my method with necessary brevity for

a paper of this length. For Food Culture Transformations, I first searched ‘food culture transformations’ in Google Scholar, which yielded 3.990.000 results. I then narrowed the search to only literature published between 2012 and 2022, which yielded 1.560.000 results. I decided from here to use a convenience sampling approach to literature selection due to time and resource limitations, and chose to look at only the 10 ‘most relevant’ search results after excluding results from irrelevant disciplines (biotechnology results were excluded, for example). For the same group, I also used the same strategy with the search term ‘food culture transition’. For group 2, I was recommended certain resources by supervisors, professors, and fellow students, all of which were more relevant than what I was able to find in a database search, so I analyzed exclusively those recommended resources (albeit having fewer sources in this category than others). For group 3, I searched ‘environmentalism Freiburg,’ ‘WWII German diets,’ and ‘Germany Food Ethnography,’ but used fewer of these sources than for other groups because of a lack of relevance in what I found, and because I felt the large amount of data provided to me by a local expert combined with the information available on the city website adequately substituted this small amount of academic literature. During this initial literature review, any literature selected from outside of the database search was selected through one of the following methods: recommendation by supervisors and professors, recommendation by relevant experts, or previous knowledge of the literature via past research work. Additional literature was also later analyzed after my data suggested further exploration of certain avenues, and the selection method differed, which I explain next.

The ‘working backwards’ strategy was very relevant during the literature review phase of the project for several reasons. Firstly, since I utilized the grounded theory approach which allows for analysis as data is collected and project adjustments as therefor deemed appropriate, I was exposed to many possible avenues for further analysis as I collected data from interviewees and questionnaire participants. For example, certain historical variables were brought to my attention during consumer interviews (such as the impact of WWII on German food culture), which I then felt the need to explore further in the literature review. During these instances, my data collection method was simpler than in the initial review and less inclusive. I only chose one or two pieces of literature to analyze for these topics, which were selected based on perceived relevance according to abstracts and paper titles. This allowed me to gather a few important data points that are worth considering for this project, while maintaining my research focus and respecting time limitations. Additionally, the ‘working backwards’ approach became extremely necessary after my initial literature review revealed no scholarly literature acknowledging the existence of a phenomenon of a unique

plant-based food culture in Freiburg, despite my own empirical observations and anecdotes received through interpersonal interactions. My own experiences alone were certainly not evidence enough to justify ascribing this plant-based food culture to the city, then base a research project off that ascription. Therefore, if I wanted to identify causal factors that would explain this phenomenon, I first would need to determine if it existed at all. Also, if it did exist, did it exist uniquely enough in Freiburg to an extent that would justify using Freiburg as the location for a case study? This brought me to the next phase of the project, which was a questionnaire.

6.2. Questionnaire

A questionnaire was conducted using the Qualtrics service operated by XM to collect data that would describe the modern food culture of the cities where participants were residents, and consequently provided the only confirmatory-style data in this project. Data was analyzed using Microsoft Excel. Staying true to the grounded theory, the results of this questionnaire were analyzed prior to making any further decisions on what research methods would be suitable to use for the remainder of the project, especially with regard to whether there was or was not a plant-based food culture in Freiburg. This technique, including how it brought a small confirmatory element into this exploratory study, was useful because of how it revealed which questions were relevant for the remainder of the project. The questionnaire was a total of 25 questions, which included questions inquiring into most of the variables that my literature review suggested may be relevant. Some of these variables were of demographic nature (gender identity, education level, student status, etc.), which were aimed at observing any possible correlations while also identifying potential demographic skews in the sample. While I would have liked my selection method to be simple random sampling, this was not feasible for me with the resources I had at my disposal. Therefore, I used cluster selection, which will have lowered the precision of the results. The selection of these clusters was also based mostly on convenience, which as a non-probability method, called for an increase in the sample size. I chose a flexible sample size goal of 300 minimum, with an ambition to get as many participants as possible to help improve precision.

I used three methods of distribution. The first method involved me standing or sitting in city locations with heavy foot-traffic, holding a posterboard that stated in both German and English: “Help me with my Master’s thesis! Please use the QR code to take a short survey about food. Thank you!” These words were accompanied by a large QR code, that directed people to the questionnaire. I did this in two German cities, Freiburg and Dresden, which were selected primarily for convenience reasons associated with where I would be spending

most of my time during this project. I first did this in Dresden, which resulted in only ~15% of the people who opened the survey moving any further than the introduction page. This drove me to change my approach to target people who were less 'on-the-go.' Before I used this method again in Freiburg, I attempted my second method of distribution, which was the digital distribution of the link. This was purely convenience sampling, and I shared the link on my own social media accounts, in all of my personal group chat conversations that included German residents, and in Facebook groups for people living in Freiburg, as well as Expat groups for Germany and Freiburg. From these participants, a majority of those who opened the link completed the survey. After I had collected 55 completed surveys between these two methods, I observed that students were significantly more likely to complete the survey in its entirety, and made up a majority of the overall sample, perhaps reflecting a higher willingness to participate in questionnaires within this demographic. I still had not received anything close to the amount of participants that I wanted, so I chose to embrace the student bias, and target areas in Freiburg that were heavily foot-trafficked by students, in hopes that I would receive many more participants. The location where I received the most engagement using this method was standing outside of the student canteen, which offered food that was both plant-based and non-plant-based, where many students appeared to be already waiting in line and looking at their phones. My third method involved fliers that stated the same message as the posterboard and with the same QR code. I taped one to a board in a busy walking area in Dresden, and had another 13 randomly placed on tables throughout the main University library in Freiburg and at random tables in the largest student canteen. I attempted to place these in the city library as well, where I hoped to access different demographics of the population and more non-student participants, but was not permitted to do so per library regulations.

The questionnaire had 313 total recorded responses when it closed. Of these responses, 111 respondents did not move past the introduction page, so these responses were automatically discarded. Of the 202 remaining responses, 12 needed to be discarded for being either nonsensical, or because the respondent lived outside Germany. Of the remaining 190 responses, 135 had completion levels over 80%, with 111 of them having 100% completion. I wanted to have as many responses recorded as possible, and since different questions inquired into different variables, I chose to not filter for 100% completion, and instead accounted for the unique sample size at each point in the questionnaire when calculating statistics for each variable.

6.3. Consumer Interviews

The design of the consumer interviews was inspired primarily by the question of which self-relevant consequences, purchase motivations, and values were culturally relevant for Freiburg consumers, in accordance with the means-end chain theory (sections 3.5. and 5.2.3.). They also allowed me to further explore the stories of interviewees and gain more intimate insight into the food culture of Freiburg, and how it has shaped peoples' lives and perspectives. The interviews were semi-structured, which allowed me to apply the 'laddering' interview method, while allowing me the flexibility to adapt to interviewee responses and in a conversational fashion. At times, this also allowed me to provide a piece of information to an interviewee regarding a topic they introduced, and collect their responses and how their opinions might have changed after having learned something new. I believed that this was a useful thing to do, given what SHIFT has to say about decision making regarding feelings and cognition with respect to learning and new information.

The core design of these interviews was inspired by Neilsen et al. (1998), an article which I came across while conducting research in contribution to another project. It lays out the steps of the laddering technique, starting with step one, which "is to find relevant product attributes that are important to the consumer when he/she chooses between varieties of the product class analyzed" (Neilsen et al., 1998, p. 456). I did this by asking interviewees, when they were shopping for grocery items, what drove their decision making. Then I moved to the next step, which pushes the interviewee "up a ladder of abstraction by asking 'Why is (the attribute elicited) important to you?', and, when he/she answers, continuing with a question like 'Why is that important to you?' and so on, until the respondent is unable to answer" (p. 456). The third step is analysis, and Neilsen et al. illustrated this via a Hierarchical Value Map (HVM). I decided to follow in their steps and also create a HVM, but used the example of Wansink (2003) for my own illustration.

In addition to gathering attributes and connecting them to consequences and values, I also used this as an opportunity to further understand Freiburg's food culture from the consumer perspective when the interviewee appeared to want to share their perspective. Some of the interviews, such as interview five, proved particularly informative in this regard, and even compelled me to collect more data on certain topics and include them in the literature review.

Interviewees were selected in two ways. Firstly, at the end of my questionnaire, I included an option for those who would be willing and/or interested in further participation in the project to include their email so that I might reach out to them. Of the emails included, only two were people who matched my criteria and were also people I did not personally know

already. When I reached out to them for an interview, I did not receive a response. For this reason, I personally knew six of the seven interviewees, with the exception being Interviewee 5, who was recommended by Interviewee 2 for participation due to a matching of criteria. I strove to interview equally as many non-plant-based eaters as plant-based eaters according to their questionnaire responses, but when in the interview, every single interviewee reported some degree of reduction in animal products with most matching my criteria for being plant-based. I also strove to interview mostly Germans rather than internationals, and ended up with three international and four German interviewees. None of the interviewees were raised in Freiburg, but all had either lived in the city for at least several years or been raised close by, which was an important minimum criterion I held when selecting interviewees. Rather than including all of the interview transcripts and notes in the appendix of this paper, per the approval of my supervisor, all interview data can be found in the USB included with my submission. This is where audio files for all of the interviews can be found, as well as the notes I took during the interviews and some of the transcriptions, excluding the audio file from consumer interview 8 since this data was unfortunately lost.

6.4. Expert Interviews

The expert interviews truly embodied the exploratory nature of this project, and my design of them was not complete until after I had gained the confirmatory insight provided in the questionnaire. Though there are many types of stakeholders with relevant expertise I could have interviewed which would have offered interesting insight, after several months of reaching out to potential interviewees and either receiving no response or a declination, I chose to change my selection method to one which incorporated a bit more of convenience-sampling strategy. While still only reaching out to people with fields of expertise which I felt would complement the rest of the data I'd collected, I began looking at experts who were less distantly separated from my own professional and academic network, and was able to schedule two expert interviews with the help of some match-making performed by former professors, supervisors, and colleagues. Both interviewees were contacted via email, where we scheduled a date and time for me to meet them at their places of work and conduct the interview. Both lasted approximately 45 minutes. These interviews were semi-structured, and I curated the set questions for each interview based on the unique expertise of the interviewee. I also occasionally asked additional questions to explore topics that the interviewee brought up in their responses, or probe for clarification. The interviews were recorded, but I tried to write down as much of the interviewees' dialogue as they spoke to avoid the time-consuming work of transcribing.

For both experts, I offered the option for them to retain whatever degree of anonymity that they felt most comfortable with. I offered either fully anonymous with only their area of expertise, partially anonymous with their area of expertise, appropriate gender pronouns, and their institutional affiliation, or not at all anonymous. The first interview was with a University of Freiburg geography professor with expertise in economic, political, and cultural geography, and chose to remain otherwise anonymous. The second interviewee was with Stefanie Koch, a project manager and environmental educator with the Freiburg organization Zusammen Leben, who did not request any anonymity. Like the consumer interviews, all of the data collected from these interviews can be found on the USB included with my submission.

7.0. Results

7.1 Questionnaire

The questionnaire had 313 total recorded responses. Of these responses, 111 respondents did not move past the introduction page, so these responses were automatically discarded. Of the 202 remaining responses, 12 needed to be discarded for being either nonsensical, or because the respondent lived outside Germany. Of the remaining 190 responses, 135 had completion levels over 80%, with 111 of them having 100% completion. I wanted to have as many responses recorded as possible, and since different questions inquired into different variables, I chose to not filter for 100% completion, and instead accounted for the unique sample size at each point in the questionnaire when calculating statistics for the variables being considered.

In the beginning of the questionnaire, I asked participants to provide the name of the city and federal state in which they currently live. My hope with this question was that I would be able to test if Freiburg as a city had a different food culture reported than residents of other cities, towns or villages within the same federal state of Baden-Württemberg, or if I were considering the wrong scale for my analysis. However, considering that 97 of the 115 Baden-Württemberg residents lived in Freiburg, any state-level analysis would have been heavily biased. For this reason I chose to analyze all data at the city level.

Figure 1 depicts the frequency distribution of the city of residence for respondents. Given that Freiburg was the only city with a frequency high enough to consider for any real analysis with 97 respondents (~51% of respondents) with Dresden following at 21 respondents (~11%), I chose to primarily analyze the data by separating respondents into the categories of Freiburg residents and non-Freiburg residents, the latter of which included a subcategory

of Dresden residents. Even still, any further interpretation of this data should take into account that these are extremely low numbers which consequently cannot realistically bear serious statistical merit, and that the extent to which this data is representative of the populations they describe is limited. For example, the following questions revealed notable skews in demographic representation: 131 of 140 (~94%) respondents reported having received some level of higher education in Question 12 (Q12), having completed anywhere from 13 to more than 25 years of schooling, with the average number of years being ~17, suggesting tertiary education. This is drastically different than the percentage of tertiary-educated people in Germany, which was 36% in 2021(OECD, 2022). Of the 140 respondents who reached Q13 which inquired into their student status, 85 (~61%) were students, which is a much higher percentage than that of the population of Germany, with only ~3.5% of residents being enrolled in a university as of 2021 (The World Bank, 2021, as cited in Data Commons, 2021; Statistisches Bundesamt, 2022a). Thirty-five (25%) of the 140 respondents for Q14 inquiring into nationality were non-German internationals, which is a much higher share of internationals compared to the national share of just 13.1% in 2021 (Statistisches Bundesamt, 2022b). Therefor, the sample for the questionnaire is more educated, more international, and with more students than the populations of Freiburg and of Germany.

Of the 97 respondents who were living in Freiburg, 59 (or ~61%) described the food culture of the city as plant-based, which I categorized based on which responses included ‘veg’ (to account for people who wrote various terms such as ‘vegan,’ ‘vegetarian,’ ‘vegetarisch,’ ‘veggie,’ or the like. This is visually represented as a Word Cloud in Fig. 2. To contextualize this data, I compared these responses to how residents of Dresden described the food culture in their city, and how all respondents described the food culture in Germany. Dresden residents did not have quite as strong of a consensus on their food culture, which made sense, given that some of the most words used were “diverse,” “multicultural,” “international,” alongside “traditional,” and less notably, “meat” and “vegetarian.” This is represented in Figure 3. The overall German food culture was described as starkly different than the Freiburg food culture in that “Meat” was the most used word, being used by participants significantly more than any other word. Some other words used were “traditional,” “potatoes,” “bread,” diverse,” and less notably again, “vegetarian.” These result indicate a confirmation of what I had hypothesized and what the literature review suggested, which is that Freiburg definitely has a perceived food culture that is uniquely plant-based. Not only does Freiburg have a plant-based food culture, but it is one that appears to reinforce itself—One response to Q5, which asked how participants felt their personal food culture aligned with that of the city they lived in, stated the following: “Since moving [to Freiburg] I’ve

started eating vegetarian and a lot of vegan food. This was definitely influenced by the food culture in Freiburg."

Figure 5 depicts a frequency chart for how 53 responses listed their motivations for plant-based eating. Some of these responses were from the same participant who listed multiple motivations. These indicate that people were most motivated to be plant-based for environmental reasons, then ethics/activism (which one might assume is referring to animal welfare concerns, but is too vague to know for sure), then health. There were also other infrequently mentioned motivations including animals (this time name explicitly), convenience, culture, price, social reasons, and taste.

To gauge a potential attitude behavior gap and see how perception was correlated with behavior, I asked participants in Q19 about their willingness to have "a diet with reduced animal-product consumption" on a scale from 1-5 (5 being extremely willing), and their actual food behaviors in Q24, then compared these with how participants described the food culture of Freiburg. Figures 6-9 depict responses to the question Q19. Figure 6 shows that a vast majority of Freiburg residents who described Freiburg's food culture as plant-based were willing to reduce their animal product intake, and Figure 7 shows that, while less willing than in Figure 6, people who did not describe Freiburg as plant-based were still overwhelmingly willing to reduce their animal product intake. Though skewed by the number of Freiburg residents in the sample size, German residents in Figure 8 overall were about as willing as those in Figure 7, and the least willing demographic was the small sample of Dresden residents in Figure 9. The average willingness for Freiburg men was 3.7/5 (n=31), while the average willingness for Freiburg women was 4.4/5 (n=34). There was insufficient data from non-men and non-women to consider these demographics.

Figures 10-15 depict how respondents described their actual behaviors. In figures 10 and 11, it is shown that just over half of Freiburg residents, 50.8%, described themselves as plant-based or as having a diet reduced in animal products. However, of the Freiburg residents who described Freiburg as plant-based, the number jumped to 57.1% (seen in Figures 12 and 13). Following the same trend, Figures 14 and 15 show that Freiburg residents who did not describe Freiburg as plant-based were only 36.8% plant-based, and had the smallest number of reported 'alternative' food behaviors of all three groups. Of the 31 Freiburg women who reached Q24, 18 of them (or ~58%) self-described as plant-based, and of the 29 men who answered the question, 12 of them (or ~41%) self-described as plant-based.

Converting both the responses to Q19 and Q24 to decimals to synthesize a result regarding the attitude behavior gap, men report a willingness score of 0.74 and a plant-based behavior score of 0.41, while women report a willingness score of 0.88 and a plant-based behavior score of 0.58. This would insinuate an attitude-behavior gap of 0.33 for men, and 0.3 for women. Perhaps a better way to analyze this data is to exclusively consider the behaviors of Freiburg residents who reported they would be 'willing' (a 4 on the scale of 1-5) or 'extremely willing' (a 5 on the scale of 1-5) on Q19. In total, 50 Freiburg residents responded with a 4 or a 5. Of this 50, 28 respondents (or 56%) described themselves as plant-based or as eating a diet reduced in animal products. That indicates an overall attitude-behavior gap of 0.44, or 44%. Of the original 50, 20 of the respondents who were either 'willing' or 'very willing' were men, and 30 were women. Of those 20 men, 11 described themselves as plant-based, indicating an attitude behavior gap of 0.55 or 55%. Of the 30 willing women, 17 described themselves as plant-based, indicating an attitude behavior gap of ~0.57, or ~57%. In either calculation, the attitude-behavior gap is very significant with very little difference between men and women, although women were both more willing and more likely to actually have plant-based behaviors.

7.2. Consumer Interviews

The first priority of the consumer interviews was to collect a list of attributes from consumers that I could link to consequences rooted in theory, and then to cultural values, which I then modeled in a HVM. This map can be found in the appendix as Figure 16. The HVM summarizes the most recurring attributes mentioned by interviewees, what consequences they attributed them to, how I connected them to the various concepts in SHIFT, then the values that consumers directly or indirectly appeared to use to guide their decision-making. The second interview priority was to dive further into the individual stories of interviewees, and gain more intimate insight on the food culture of Freiburg. First, I will start with the contents of the HVM[1].

People listed a variety of attributes that they looked for when choosing foods, with most consumers mentioning attributes related to good taste, familiarity, convenience, culturally significance, various health or nutrition-related attributes, price, and ethics-related attributes. These attributes are listed in the bottom section of the HVM. Much like the questionnaire,

[1] There are many ways that one could have differently grouped and connected the listed variables, and there are likely more/different variables that another researcher might have pulled from the same data. This figure does not intend to postulate, and I would be very interested in reconfigurations of this HVM to see other possible takeaways from the same data.

the main priorities that consumers reported having when making food decisions that omitted animal products tended to reflect environmental consequences, health consequences, or animal welfare consequences.

Environmental concerns were difficult to break down into values, as interviewees seemed to find this concern to be a fundamental one. However, it seems that these concerns were attributed to generally valuing the well-being of ecosystems for the sake of avoiding the suffering the climate change causes, and the inverse of contributing to improved well-being by climate-friendly consumption. I therefor connected these attributes to not only the consequence of 'sustainability,' but also 'reduced suffering of others/improved wellness of others.' It seemed that all elements of SHIFT were relevant for those who claimed sustainability-related attributes were important to them (i.e. plant-based, local/seasonal, organic, low/zero-waste, ethical perception). People experienced positive social influence, were adhering to environmentally-conscious habits or breaking less environmentally-conscious habits, having their individual selves affirmed while experiencing positive self-relevant consequences, were responding to positive/negative feelings or cognitive acknowledgements of affects, and were considering the elements of tangibility like dematerialization and temporal focus matching when making judgements on which products to purchase or avoid. People also reported that, particularly with the attribute of low/zero-waste, that it gave them a feeling of gratitude and a sense of humility for their privilege in having food surpluses, and choosing not to take it for granted. They also were able to avoid guilt associated with wasting food. I linked these consequences to 'feelings & cognition,' and then to the values of 'joy,' 'welfare of others', and 'positive self-relation.' To give one example, Consumer Interviewee Seven (CI7) made a statement that quite clearly exemplified the connection between their behavior and several of the SHIFT elements:

> I think that I would have a bit of an identity crisis at this point if I stopped being vegan. I mean, I have been for so long, and I think it's sort of become part of my identity, because it reflects my values as a person. I like to think of myself as a decent person, or at least someone who practices what they preach, and it would be harder for me to live with myself knowing I was acting so out of line with my morals. I'd also lose all credibility when talking about these issues with friends if I couldn't myself act in line with my belief system, so I think at this point there's some degree of—some kind of social element here as well. Even if I don't care to be known as 'vegan' or whatever, I still want to be known for being an honest and consistent person, and not hypocritical.

In this statement, we see that CI7 has established plant-based behaviors to be a long-term habit related to maintaining their social desirability, keeping intact their self-concept, and retaining self-consistency.

Health concerns came down to two different values, as some health concerns were more linked to the consequences of an improved self-image and physical appearance, while others were more linked to consequences of general wellness and health for the sake of bodily abilities, utility, and a healthy physical feeling. I considered these values to fall under the categories of 'physical wellness' and 'positive self-relation.' The health attributes people listed were relatively consistent. However, those who listed protein as an important attribute listed physical appearance consequences and correlated self-confidence as motivators for healthy eating, while those who did not list protein but listed other attributes such as unprocessed, low-sugar, and micronutrient-rich were motivated more primarily by physical wellness in and of itself, such as how it impacts their ability to function in daily life and how they physically feel as a result of their diet. It also might be relevant that there was a gendered correlation present here, in that the two interviewees who were men were those most concerned with physical appearance and self-confidence, listing protein as an important health attribute, while none of the five women interviewees listed physique as a concern, and only one listening protein. In any case, health-related attributes which were motivated by physical appearance and self-confidence consequences were related to social influence factors such as social desirability and the self-concept, while those motivated by physical wellness in and of itself were more related to self-interest. The former could be tied to the values of positive self-relation and joy, while the latter was tied to physical wellness and joy.

Animal welfare concerns appeared to also seem fundamental to interviewees, in that they viewed animals as conscious living beings, upon which it is unethical to inflict unnecessary pain and suffering. I put these into the vague category of 'welfare of others.' For example, when asked why they did not eat animal products, CI3 stated the following:

> Why? Because it's cruel, and disgusting. I mean, animals are things that are alive and they feel pain. Some of the animals are really intelligent, and I don't feel like you should eat something that is alive, that can feel pain, that thinks, and so it's cruel to the animals. And… what we are doing with the [food] industry right now, like focusing on meat and stuff like that, is just crazy. It's so much water that goes to waste and also so much food that could be distributed among people who starve or suffer from hunger, and we feed it to the animals. So that's kind of like, it's cruel to animals and also to humans.

According to SHIFT, behaving in ways that align with one's values affirms the self-concept and self-consistency, two elements of the Individual Self portion of the framework. Additionally, all people who cited animal welfare as a motivator for plant-based eating had reasoning that corresponded with the Tangibility piece of SHIFT, citing well-communicated repercussions of their actions and the ways in which their thoughts have been reframed in ways that reduce psychological distance to the problem—i.e., relating livestock animals to other living things that are more closely related to the consumer, or even relating their suffering to the self. CI7 exemplified this with the following analogy:

> Sometimes I've been tempted to eat meat again. I smell ham, specifically, and feel like I'm going to go into a feeding frenzy because it smells so good. But then I remember things like, how pigs are as intelligent as toddlers. There's just no way to justify it after that. And, even if they weren't, we don't go around eating stupid people because they're stupid, or even brain dead, because that would be [messed] up. Somehow people don't apply that same logic when it comes to other animals.

Notably, animal welfare was also mentioned by those who do purchase meat products as an important attribute. I asked CI2 about what attributes they looked for when purchasing meat, and they said they pay attention to "where it comes from, like regionally, what kind of animal it is, how the living conditions for the animals are supposedly… I don't do packed meat. I try to get it from regional [producers], like a butcher." When I asked where they typically learn information about their meat products, they claimed that regional producers are very transparent and aware the people are looking for things like organic and regional meat, where the animals had good living conditions.

Some of the other attributes that repeatedly came up with consumers were taste and cultural/traditional foods. For example, when making cultural/traditional foods that would typically include meat, people would be willing to use plant-based items when the taste was just as good or better. CI1 said that while they are happy to use plant-based replacements for products with similar tastes and nutritional values, even if they were more expensive, "there are just some things that I'm just not gonna replace, like cheese for example. And it's 'cause of the taste." Similarly, CI2 stated:

> There are some meals that I used to cook with meat in the past years and that I've substituted with tofu and liked it even better, or at least, liked it the same amount. And if I achieve that, I will only continue using tofu. And then there are some dishes

> that I just grew up with that in my opinion, don't work without meat, and then I'll use meat for that.

Similarly, turning to traditional and culturally significant foods, CI1 stated that they "very, very, very rarely buy meat products. It's only when I'm cooking a traditional dish from my country, which requires like meat or chicken. But otherwise, direct meat and chicken for me is a very rare occurrence." When choosing between multiple versions or brands of the same type of products, people were typically driven first by familiarity (and, naturally, a taste that they knew they enjoyed), and if they could not choose their regular products, would base decisions around price and quality. For example, CI1 said: "the increase in price, does that translate into increase in quality? If not, then I'm just gonna get the cheaper ingredient." Quality was generally associated with freshness, health attributes, and perceived ethics of the product production or brand.

Multiple interviewees had a difficult time explaining how they incorporated their ethics into their food decisions, partially because some things seemed too obvious to need to point out, or because their personal knowledge of my positionality made them feel some things were to be assumed. For example, CI2 and CI3 both mentioned that they would never purchase from the brand Nestle, and CI3 stated that they "wouldn't feel like I have to say that I don't buy from brands like Nestle, because it seems like [not buying from Nestle is] common knowledge. Also, I feel like I'm leaving things about being vegan out because I know you know, or it seems so obvious."

I also asked about how their patterns were established, and if they changed, what had influenced that change. The most consistent answers supported the literature in 3.5. in that small social-networks significantly impacted decisions, as well as self-relevant consequences and changes in one's home/social environment. Every single interviewee claimed that their plant-based behaviors were heavily influenced by close friends or family members. For some, such as those who were influenced by a parent during childhood, it was a matter of habit formation, underpinned by awareness of environmental issues on part of the parent. For others, it was social pressure in their social circle. CI5 stated that when they moved to Freiburg, they found that "there's this thing about not eating meat here; you would get judged if people knew you eat meat." CI3 said that they became vegan upon moving to Freiburg because "a friend from my undergrad studies introduced me to veganism. There was this bubble of vegans in my undergrad studies, and all my friends from that bubble are vegan." For CI7, it was first a matter of a family member providing them with new information, and CI7 recalls becoming plant-based after a sibling shared a documentary

about animal cruelty. Notably, CI6 and CI7 both said that later, their behavior changed with their environment and social-network made it easier to do so; nobody in their family was plant-based growing up, and while both self-described as vegetarian for over a decade, veganism was hardly plausible until more recently. CI7 said: "I was able to finally stick with veganism in a real way once I moved in with another vegan, and now that I live alone, I've been able to solidify my habits over the last three-ish years."

Even still, some types of social networks have different influences than others, and this rang particularly true for the German interviewees. According to CI5, although one may receive judgement for purchasing meat regularly while living in Freiburg, there are certain circumstances where it is deemed acceptable, such as when engaging in important cultural traditions with family. Perhaps the most important piece of this, however, is that part of the reason why family events are excused from certain expectations, appears to be in an understanding of generational differences. While CI5 did also think that being a student influenced plant-based cultures, this was still generationally dependent, and their grandparents being students or being educated did not influence their food culture in the way student-status might today, making it decidedly a difference of generation. CI5 told me a story of growing up close to their grandparents, and how much the Second World War influenced their attitude towards food. Specifically, food was more appreciated and meat more a luxury, and these values persisted into the youngest generation of their family. In this situation, the cultural significance of meat for this older generation, while still being tied to masculinity according to the interviewee, was also connected to other more sentimental concepts related to having survived the war and the hardships that followed. My interpretation was that, while meat eating was perceived as somewhat indulgent, this indulgence was a positive, physical realization of her grandparents' resiliency.

I found the interview with CI6 to be among the most interesting. A German woman, her experiences seemed to reflect almost the perfect average experience when considering how aligned her responses were with the cumulative data from all other interviews. CI6 appeared to be, to the best of my knowledge, a quite representative example of German plant-based eaters in Freiburg. CI6 was raised in a small town outside of Freiburg where she became 'vegetarian' during her childhood, despite no other family members omitting meat and it being unpopular in her community. She then became 'vegan' after moving to Freiburg, attending university, living with a 'vegan,' and spending time in social circles where many members were 'vegan.' CI6 stated that:

> Through university, I engaged more of the topic, especially of environmental protection and how food is being produced and stuff. So, I guess it was both a little bit of learning more about the origin of food, plus living with somebody and seeing how it's quite easy to actually live vegan.

CI6 also mentioned having witnessed a dramatic change in recent years in food culture, both in Freiburg and in her hometown. She said that while when she was growing up there were no 'vegan' options in her hometown, now there are plant-based items on menus, even including meat replacement products. However, if she grew up in the same place with today's food culture, she deems it likely would be easier and with more options than she had had. Even still, she stated: "I don't know anyone who, especially who of those people who stayed in my hometown, who became a vegan, whereas in a study program like Freiburg, and at the whole university and among students, it's super common." CI6 stated that in her experience, comparing her own hometown to the town of others, she has witnessed the trends of urban areas trickle outward and into the surrounding smaller towns as well. She said that generally, large cities in Germany tend to follow these food trends, such as Munich or Berlin, so in that regard, Freiburg does not seem unique to her. What makes Freiburg unique is the strength of the plant-based scene for the city size—and she believes that in her experience, cities of a similar size have not adopted plant-based eating to the same degree that Freiburg has. Those which have only did so to meet tourist demand, and the plant-based food culture in those locations is purely a product of globalization.

On the topic of the food-culture transformations, CI6 asserted that there has certainly been a change, and that according to her perception of the area, "veganism wasn't a thing" as recently as 10 years ago. However, she also emphasized, like other interviewees, that this perception might have been skewed by the fact that it was also around this time that she began having more agency over her food decisions, moving away from her family. She stated in other own words that as her involvement with food products increased, so did her tendency to incorporate her ethical and moral stances into her food behaviors. "If you don't have to buy your own food, you don't really consider as deeply, what product you buy." On the other hand, when a person is making food decisions independently, decisions become more intentional and "you think about it some more."

Much like the other interviewees, CI6's reasoning for eating a 'vegan' diet was motivated by concerns for animal welfare and the environment, with health benefits being a noted positive side-effect. However, CI6 had different motivations underpinning her meat omittance and her dairy/egg omittance, which also meant that her behavioral changes to omit

the products occurred at different points in her life. I found her reasoning and explanation for this to be particularly interesting. CI6 stated that she became 'vegetarian' at 12 years old because of a moral dilemma surrounding the killing of animals, then 'vegan' when she went to university and learned more about ecological issues further animal welfare issues surrounding animal products. She said that this experience was similar to nearly all of her 'vegan' peers—they first stopped eating meat, then stopped eating dairy and eggs at an older age. According to CI6, this has to do with intuitive decision making versus informed decision making:

> I think the moral reasons are easier to 'get' at a younger age, or if you're less informed. It's easier to feel it's wrong to not treat animals well. If you see the news and stuff, people know. Adults in Germany cannot *not know* that we have a problem with animal welfare. So, I feel like that's the easier, more intuitive reason, to say, 'okay, it's wrong to harm other beings.' Whereas in environmental reasons, they're more complex, right? You have to have quite some knowledge to really understand the processes and how and why and animal products are harmful to our environment. I would say it's probably, yeah, you have to have some education.

Additionally, several interviews support the findings of the feminist vegetarian critical theory and its stance on the relationship of meat with cultural ideas of masculinity. CI4 stated that they originally stopped eating meat because their mother did not eat meat, even though their father still felt it necessary. CI5 spoke on this topic as well, imitating men's reactions to plant-based dishes: "Men would say, 'what?! A dish without meat?! That's no dish!'" CI6 stated she only ever purchased dairy for her boyfriend, even though she herself did not eat it. CI7 also gave interesting perspective, stating the following:

> I actually think it's a really good example of toxic masculinity culture, and how men are actively taught that compassion is a bad thing or a sign of weakness. That's why so many more women than men tend to be vegan or vegetarian, and why men typically say it's for environmental reasons or health or whatever, something that can maybe be more plainly attributed to science, while woman are more comfortable claiming compassion for animals. That's definitely not a coincidence, you know? My brother used to eat vegan also, and he held very strongly to this belief that if men were raised to think compassion isn't embarrassing or feminine, a lot of things would be different, but probably more men wouldn't eat meat also.

One thing I noticed repeatedly in the interviews was a general positive connotation tied to intuitive eating, which for most people, came in the form of reducing their consumption of animal products as much as possible while still honoring family traditions from time to time, allowing oneself to indulge in strong cravings, responding to health events that indicated meat consumption may help relieve some discomfort or ailment, and generally having leniency with oneself while still attempting to 'do their part.' Additionally, the strength of social influence was undeniable, particularly with regard to social identity and group belonging. I couldn't help but wonder if some people would have observed the same degree of plant-based eating if they knew they would not be held accountable either way by their social networks. Several interviews also cited media which helped inform them in a way that influenced behavioral change, which typically was partnered with some direct or indirect mention of the influence of globalization.

There was also a pattern demonstrating the incorporating ethical stances into food decisions was connected to how involved the consumer was with the actual act of purchasing food, including how much agency they had over meals that would be prepared. This worked in both ways, in that those who had previously eaten animal products could finally choose to eat plant-based when they were more involved in purchasing, and those who had previously not considered plant-based eating were forced into consideration when they lost some food involvement and were eating what flat-mates or peers were consuming. However, in either situation, the result was that once the consumer had exposure to plant-based eating trends and full agency over purchase decisions and high product involvement, they leaned more heavily into plant-based behaviors. Importantly, there seemed to be a strong sense of value for the common good, and the welfare of others. This was clearly demonstrated by the way interviewees described their sense of responsibility to not harm the environment or other living things. Otherwise, the values most readily demonstrated by the data were those of physical wellness, positive self-relation, and joy.

7.3. Expert Interviews

7.3.1. Expert Interview 1

The first interview was with a University of Freiburg geography professor with expertise in economic, political, and cultural geography. I will refer to this person as EI1, standing for Expert Interview One. Firstly, I outlined my basic project topic to EI1, stating that I was interested in the exploratory question of what factors would have caused a transformation in the local food culture toward plant-based eating. I asked what factors EI1 predicted would have influenced this transformation. They responded, stating that they believed the primary

influencing factor was the student culture, and the student-related lifestyles. Referring to the University of Freiburg, they said that "it's a university that draws a lot of young people not only wanting to study, but also interesting somewhat in alternative lifestyles. I think it has this reputation of being progressive and alternative, which draws those people in—not only students, but especially students." While EI1 said that the University isn't necessarily a front-runner when it comes to progressive environmental policies, but that "not many universities have such large environmental faculties as the University of Freiburg." They discussed how they are particularly exposed to environmentally concerned students in their own faculty, and there is a common assumption among the students at group events that the food purchased will definitely without meat, and usually without dairy products as well. Even those who independently would not be plant-based seemed to have an understanding that this was the group dynamic, and so they would adopt this behavior in social settings. EI1 stated that they notice it is not nearly as possible presently for student to be honest about unsustainable behaviors in front of peers, as they will receive harsher judgements than they might have a decade ago, and will feel guiltier than students in the past would have been made to feel for the same behaviors.

Importantly, EI1 seemed to be confident in the push for environmental progressiveness at the university coming from the bottom-up. For example, they cited a successful student initiative to introduce a sustainability certificate so that students outside the environmental faculties can gain sustainability knowledge that might not be available within their own programs. There are also apparently student driven sustainability groups associated with the university.

I asked what other types of people might be driven to the alternative scene EI1 mentioned in Freiburg, to which they stated that many young professionals are attracted to Freiburg as well. They also gave some examples for the intrigue Freiburg possesses for entrepreneurs and young professionals, such as that "the Technical faculty here is big on these environmental issues, and they had a whole range of spin off companies which are [sustainability oriented]. There's the eco institute, also internationally an important player on research on sustainability issues, but I don't have any numbers on how important they are economically speaking or in terms of work force."

EI1 held a similar position to me, stating that it would be interesting to analyze Freiburg in comparison to other cities. They predicted that in many urban contexts plant-based lifestyles are increasing, but that perhaps Freiburg undergoes these changes with less resistance than other cities likely would.

I asked EI1 next about where they believed this reputation of being ‘alternative’ and ‘progressive’ might have come from. To this, EI1 cited the region’s long history of environmentalism and progressive politics. From the antinuclear movements in the 1970s, to the high visibility of the sustainable restructuring of Vauban with international delegations visiting the city, to a long history of green city planning under “leftish” progressive city politicians, Freiburg’s reputation appears to have been historically precented.

Next, I asked about cultural values, such as those I attempted to gauge via consumer interviews, and how these cultural values surround environmental concern might underpin peoples’ food decisions. While they said that these values certainly do underpin behavior, there is an attitude-behavior gap:

> A lot of studies show that, A lot of people would agree that agriculture practices need to change, and that eating practices need to become more sustainable. This is not necessarily reflected in the buying behavior of consumers. From the studies that I know, a lot more people will agree with statements that more people need to buy [organic] food and should eat less meat, but they don’t necessarily do that.

Additionally, actual behavior was influenced by several factors, including labeling, accessibility, and even food culture variances between different parts of the city. EI1 stated, for example, that lower income neighborhoods would likely be consuming more meat products for their affordability, nutritional efficiency, and habits rooted in cultural traditions, and also that people were more likely to buy products that were labeled as regional even than products labeled as organic. Even still, seemingly more sustainable food vendors such as those at farmers’ markets have different levels of attractiveness, varying by neighborhood (between which EI1 distinguished based on average household income). This attractiveness was dependent on their alignment with working hours and affordability of the neighborhoods they operate in.

Although EI1 didn’t mention animal welfare as a notable motivation for plant-based consumption, given the data from the literature review, questionnaire, and consumer interviews, I decided to ask them about what they believed might insight this kind of cultural value in Freiburg residents. The following statement was given:

> My personal impression, but then I’m also biased teaching in geography and having lots of students concerned about sustainability issues, is that [animal welfare] is indeed an important issue for many people, also because in the media animal welfare was a major issue that was reported on in a lot of detail. I think it is only for the last

> couple of years that the connection between meat consumption and climate change has been problematized very prominently in the media. My guess would be there is a certain time lag between ways in which consumption of meat was problematized in the media and in public mainstream [discourse], and that it's somewhat changing from a problem of animal welfare to being an ecological problem.

When asked about potential political factors, EI1 again emphasized the prevalence of bottom-up approaches in the area. Even the Nutrition Council, a governance organization which EI1 stated has been important in working with large institutional actors on plant-based eating initiatives, started from the bottom-up and eventually became a political force. As far as more explicitly political actors, EI1 cited several occasions where political initiatives that tried to influence food decisions among citizens were treated as an infringement on personal freedoms.

Next, I asked if EI1 could tell me their perspective on any possible environment-society interactions that would have influenced this food culture transformation. At first, EI1 responded saying that "everything is a society environment interaction – the question of what motivates consumers to eat or not eat meat is a matter of society environment interactions." To make the question more specific, I brought up an additional reputation Freiburg appeared to have based on my literature review, which was that it was an excellent place to be for those who liked to spend time outdoors. Did this geographic location of Freiburg in the Black Forest, and therein the accessibility of outdoor recreation, perhaps have anything to do with this cultural change? EI1 said, "if I had a hypothesis, it's more about the high amount of young and educated people in the city. All of the less educated people I know, independent of what they do for hobbies, [environmental issues] are less a part of their everyday interactions and the problems they feel are most vital for their personal lives."

I inquired further into the role of institutions in this food culture transformations. EI1, as an economic geographer, distinguished between formal and information institutions. Describing informal institutions, EI1 gave the following statement:

> Informal institutions, [such as] rules or modes of conduct… these play a big role. There is a certain style of doing things, including feeding yourself, that is perceived as being typical or acceptable… that is considered a 'good way' to feed yourself in certain lifestyle groups in Freiburg. I think there are more people here that consider it a good thing to do to eat plant based.

Regarding formal institutions, EI1 was uncertain, but doubtful that there were any legal regulations or restrictions that might, for example, enforce a certain kind of food culture. However, EI1 mentions the institutional decision made within the governing systems for local schools that schools in the city of Freiburg would no longer serve meat products. EI1 said it was their understanding that this was an effort to reduce costs. With students coming from diverse cultural and religious backgrounds, catering to the various restrictions surrounding meat consumption posed something of a problem, which could be fixed by removing meat all-together and having all students eat the same types of meals. EI1 stated: "I don't think this would have been possible everywhere. I think there are other cities where protests would have been bigger."

After Consumer Interview 5 told me about a previous piece of legislation that was presented about six years ago that would have one day a week be only vegetarian meals, I asked EI1 to give their thoughts on the situation. "Vegetarian Friday might've been introduced. There were protests, and it did not happen. They took the position that personal freedoms would have been restricted in an unacceptable way."

EI1 and I both noted that a question is presented by this data: what might have changed in the past six years that caused such a dramatic transformation in the outlook of citizens and the involved institutional actors? Herein lies a clear path for further research.

Because EI1 mentioned having a bit more insight on the producer perspective than on the consumer perspective on sustainable consumption and animal product markets, I asked if they would tell me about their key thoughts on the topic through the producer lens. They gave the following quote:

> One of the major complaints of farmers, including meat producing farms of companies, is that consumers are not willing to invest enough money in food. They're very consistent in pointing out that what people are willing to spend on food does not cover the means of production that they want farmers to apply. The typical situation is that consumers judge farmers for not being sustainable enough while at the same time buying food that cannot be produced in sustainable ways. And that is especially true I think for meat producing industries. And I think that's a big issue in changing the animal welfare standards in meat production, in that a lot of people, although they want better meat, they aren't willing or able to pay for it. [It] would be an interesting question, to whether people who only eat organic meat would rather stop eating meat

> at all, or buy cheaper meat if they don't have the economic means to buy organic meat anymore.

7.3.2. Expert Interview 2

Stefanie Koch received her education in environmental planning, but now works in environmental education as a project manager with the local Freiburg organization Zusammen Leben. The organization works in the areas of 'Garden & Environment,' 'Eat and Drink,' 'Art and Culture,' and 'Work and Qualifications.' Between these areas, their team offers education and training on horticulture and sustainable living, emphasizes 'future-oriented' food in their 'social-ecological' Zuka Solicafé, fosters an intersectional cultural space, and offers vocational training and entrepreneurial support for migrants. Stefanie Koch is heavily involved in social, political, and environmental movements surrounding food system transformations in the area, and was able to offer useful insight and a unique perspective she has gained from her education, work, and activism.

When asked about how she would describe the food culture of Freiburg, she said that there is a large scene of consumers who have a lot of awareness regarding sustainable practices. She stated:

> It depends on which bubble you are taking a look. I think we have all kinds of [food cultures], of course, but we do have a big, big ecological food scene. The structure of getting good, ecological, regional food is there, and [there is] a quite convinced consumer community.

Similar to EI1's sentiment, Koch relayed the perspective of local farmers, and how their capacity to continue producing sustainable foods has been limited as consumer purchase behavior does not realistically reflect their demands for sustainability, or that peoples' capacities to prioritize sustainable food sourcing has become precarious as of late.

Yet still, she unmistakably has observed a transformation in Freiburg's food culture toward more sustainable behaviors:

> If you are asking my perspective as an activist, I can say in the last 10 years, there [has been] a big, big, big rise in the attention to subjects like the relation between food and environment, the relation between food and climate change, the human relationship with food.

She discussed how she helps to organize the annual Agricultural Festival in Freiburg, and then while 10 years ago there was minimal participation, the festival has grown substantially

with far more consumer attendance than when it started. Koch deems that there has been a noticeable change in dialogue, and that sustainability and food related topics have become "almost daily subjects in the news." Yet, current events have impacted how attitudes have been backed up by consumer behavior, in that security concerns have caused sustainability conversations to be deprioritized, and transformations interrupted. Concerning the money that people were willing/able to invest in sustainable food, she stated:

> We had a big rise during the Corona crisis. People had more money in their pockets because they didn't had to pay for long journeys, for cinema and theater visits, you know. and they invested the money in good food. We had a good rise in the local ecological market. Now with the war between Ukrainia and Russia, we can see a breakdown of this development because… first, there is a real difference: the inflation and the money you have to pay for energy. It *is* actually rising. Um, and you have personal fear of having less and less and less in the future. You are trying to save your money. So, food is one of the first things you are [spending less on].

Koch next shared her perspective on the political situation of Freiburg, and how it has played a role in sustainability and food culture transformations.

> If you ask me, I don't rely on politicians or if the needed decisions are going to be made in this short timeframe we have left… and I don't think so, unfortunately. I have to say that I think Freiburg is a very good city to live in because the local politicians are very supportive [when] it comes to the support to local initiatives.

Despite the positive outlook for Freiburg's political capacity at the city level, Koch acknowledged that fixing sustainability problems on a scale as small as the city of Freiburg was only a small part of addressing the bigger problem. Even still, she finds that a difference can be made locally in providing people access healthy and climate healthy food, or, "food for the future." She also emphasized how loss of diversity in processes such as monoculture and deforestation has resulted in a major crisis, but that this can be addressed through connecting people to the means of food production. This is a strength that Freiburg has due to its geographical location and local environment, in that city-dwellers are never too distantly connected from the countryside and small family farms. This connection and the communication that takes place between producers and consumers, Koch believes, has an important impact on the local food culture.

Regarding meat consumption specifically, Koch agrees with the findings of this study in that she perceives a significant plant-based food culture in Freiburg, and stated that

“organizations and initiatives are playing a very big role.” Additionally, even for those consumers who do not omit animal-products or meat from their diets entirely, Koch asserts that the most important thing is not necessarily that everyone removes meat from their diet entirely, but that meat eating is drastically reduced, and when purchased, is purchased from sustainable local producers who are stewards to the land. “I’m happy about every person who is vegan, about every person who is vegetarian, but the first rule for everyone should be at least eat much less meat, and take a look where you get it.” Again offering insight into the producer side of the equation, Koch emphasized that “having a message [that says small family] farmers who are producing meat are bad, no, no, no. [That is] not taking the perspective of people who are actually victims of the system right now, and actually need solidarity.”

Consistent with the data from the consumer interviewees, Koch stopped eating meat in childhood for animal welfare reasons, then later reduced her intake of other animal products after education to the animal welfare and environmental issues she discovered to be connected to these products. Although she and I had the same notion of the Western ‘vegan’ movement being born in the 1960s and 1970s, she reported that it only started becoming mainstream in the late 1990s and early 2000s, but that it was truly impacted by a person’s class, education, gender, as well as their generation. Her personal story reflected those of consumer interviewees—although independently, meat is an extremely rare indulgence, Koch will eat meat when avoiding it might equate a disrespect toward older-generation friends and family members. At this point in the conversation, I offered my findings thus far in that it appeared that the social judgements surrounding meat were context dependent, and that while meat in a familial context was deemed culturally acceptable out of respect for older generations, meat in the context of eating alone or with peers was seen as much less culturally acceptable. Koch concurred in my analysis.

8.0. Conclusion

8.1. Discussion & Result Synthesis

Here, I take the chance to revisit my research questions and how they were answered through the various methods used. What is the food-culture of Freiburg? In this, if the food culture is significantly plant-based, then why? Do study participants actually exhibit behaviors aligned with how they describe the food culture of their city, or is there a noticeable attitude-behavior gap?

These questions were answered quantitatively through the questionnaire, which offered the confirmatory portion of results in that, yes, the food culture in Freiburg is uniquely plant-based. This is in-line with my original hypothesis. However, this food culture has a reputation that appears grander than the behavior reality. Although a majority of study participants described the Freiburg food culture as plant-based and described themselves as willing to become more plant-based, and a majority (albeit a smaller majority) described their own behavior as plant-based, only about half of respondents who described themselves as willing to reduce their animal product intake actually described their behaviors as having done so. This further confirms my hypothesis of a noticeable attitude-behavior gap, but this is likely not specific to the city of Freiburg. Despite the attitude-behavior gap, participant behaviors were still strongly plant-based, particularly when comparing Freiburg residents to residents of other German cities. That being said, there appeared to be something of a 'social bubble' effect regarding perception, and both the questionnaire and consumer interviews suggested that those who self-identify as plant-based were more likely to perceive the food culture around them as plant-based.

Both the questionnaire and consumer interviews indicated that consumers usually had multiple motivations for their behaviors. However, the consumer interviews suggested animal welfare as being of much higher concern than the questionnaire did, which may be due in part to vagueness of questionnaire responses (respondents writing 'ethics' as their motivation for plant-based eating). On the same note, the consumer interviews suggested that animal welfare was even more motivating than environmentalism for plant-based eating, particularly for the German citizens, but that various forms of plant-based eating were motivated by different values which became relevant to them at different times in their lives. For example, reducing meat intake was mostly connected to intuitive animal welfare motivations than began at a younger age than dairy or egg reductions, while reducing dairy and egg intake was more connected to environmental or health motivations at an older age once one became more educated and/or gained food independence. EI1 with the geographer and EI2 with Stefanie Koch also supported this data interpretation. My hypothesis was correct that environmental concerns were a primary motivator for plant-based eating, but it was incomplete in neglecting to acknowledge animal welfare and health concerns as significant motivators as well. Consumer interviews also drew attention to the values that underpinned purchase decisions for both plant-based and animal-products, identifying the values of 'physical wellness,' 'joy,' 'wellbeing of others' (humans, animals, ecosystems), and positive self-relation, each of which was connected to one or more SHIFT element. This might provide guidance on how to further market plant-based or sustainable food behaviors

to consumers. However, these consumer interviews were limited to members of younger generations and students, with multiple participants pointing out generational differences they personally observed in their families. That being said, the cultural values which were tied to animal products varied in different contexts, with consuming animal products being appealing to the 'wellbeing of others' and 'joy' in the context of intergenerational familial settings, while omitting animal products served the same value in other settings (eating behaviors while alone or with peers).

The expert interviews further contextualized the data from the questionnaire and consumer interviews. Several influential factors were identified, however, most exist on a spectrum between being a 'causal' factor (a true 'driver' of change) and being an 'enabling' factor (removing obstacles for transformation, making it possible for true drivers to be effective). Therefore, while I originally sought to distinctly identify true drivers, my results merely indicate influencers. In any case, the expert interviews (supported by the data in the other methods and literature review) suggested that influential factors of this transformation were: environmental education, financial security, food accessibility (location and operation hours of distributors), access to well-communicated media, university presence (particularly with large faculties relating to environmental and social causes) for reasons relating to education and social involvement, institutional support, availability of industry/innovation opportunities, progressive politics, bottom-up local movements, close connection between consumers and local producers, a prominent history of environmentalism, a large population of people of younger generations, a strong city identity, as well as progressive gender politics (with women leading and dominating the plant-based movement). Both interviewees agreed that they had observed a noticeable transformation in Freiburg's food culture toward plant-based eating and more sustainability-minded food behaviors as a result of all the above listed influences, but also noticed a significant attitude-behavior gap. While there were multiple reasons for this gap, both noted that it could be contributed in-part to a mismatching of the price expectations between consumers and producers with consumers not willing to pay for the sustainability and ethical demands that they expected producers to meet. Even beyond a city-level transformation, consumer participants who had moved to Freiburg from elsewhere demonstrated a personal transformation associated with a change in identity related to their new Freiburg residence, which in turn transformed their food behaviors, supporting Adams' critical stance that identity and food transformations are deeply entangled and influential to one another.

It should be noted that all factors which have been identified as effective in Freiburg, whether direct drivers of transformation or merely enablers, are certainly not the only influential factors for inciting cultural change toward plant-based eating. As this project was a case study, I do not necessarily predict that these same influential factors would yield the same transformation if replicated in another location. Any implementation of this work in a different location would require attention to a new cultural reference point and a reassessment of the cultural values underpinning consumer decisions.

8.2. Applications & Significance

The SHIFT Framework, as previously stated, is more than a framework of aggregated theories on behavioral change and offers tools for applying data toward real-world initiatives. Yet, much like my sentiment in 8.1., White, Habib and Hardisty offer the following disclaimer:

> No single route to behavior change identified by the framework works 'best.' Rather, we suggest that practitioners should understand the specific behavior, the con-text in which the behavior will occur, the intended target of the intervention, and the barriers (and benefits) associated with the behavior. (p. 36).

Even still, the results from this study in alignment with the SHIFT tools offers its significant in how it can be applied in marketing, informing policy, and any initiatives striving to create sustainability changes in food systems—especially with regard to plant-based eating and improved resiliency. This is possible through incorporating data into measures to remove primary and secondary barriers for desired behavioral transformations, or barriers which elicit avoidant responses, then select tactics to overcome them from the SHIFT framework. As an exploratory study, I do not intend to dive deeply into how exactly one might incorporate the data provided by this project into tactics, but I here offer just a few examples of hypotheses that can be tested with future confirmatory research.

It appears that men in Freiburg are more likely to purchase foods that have a high protein content because of how this attribute appeals to SHIFT elements such as social desirability, self-concept (related to the connection between meat consumption and masculinity), and self-relevant consequences associated with their value of 'physical wellness.' Therefore, if plant-based products were marketed as having a high protein content (maybe even as having a higher protein content than animal-product alternatives), it likely would result in more sales from men, and may even offer them the additional appeal to self-consistency. In another example, if meat-eating is currently only perceived as socially positive when associated with

family tradition and intergenerational socialization, then perhaps plant-based alternatives or more 'sustainable' plant-based products could also be marketed to appeal to family values, reaffirming SHIFT elements such as social norms, social identity, or good feeling, which can be further connected to the value of 'wellbeing of others.' To give one more example, seeing as financial insecurity, inaccessibility of sustainability products or plant-based alternatives, and lack of education might be limited for more vulnerable populations within the city, policies which would provide discounted prices on sustainably-produced and ethical foods, farmers' markets which operated at times and locations that allowed working-class people to attend, or organizations which improved the coverage of educational materials or animal-ethics-oriented media, might result in behavioral changes in more vulnerable and insecure populations toward more sustainable and plant-based consumption.

8.3. Limitations

The limitations for this study were incredibly challenging to overcome, and I admit to being disappointed by the potential for this project that I feel was not met because of them. The most prominent and recurring limitation I encountered was lack of access to academic resources and data due to paywalls. A *vast* majority of data I attempted to access online for the Background and Literature review sections of this paper were not available for me as an individual or through my institution, and I spent a majority of my time on these sections trying to find ways around these paywalls, usually failing. This included days of waiting for responses from technical support for online databases, responses from authors whom I emailed privately to request copies of published works, working with University technical and library faculty members, and eventually even coordinating personal favors from friends and colleagues with different institutional access capacities for certain databases. This was an incredibly tedious and time-consuming process which severely hindered my capacity to gather and analyze relevant data.

My next limitation was, consequently, a lack of sufficient time to conduct this study. In total, this project needed to be carried out in the span of about five months, per the requirements of the University. However, I feel that this study could have occupied a much broader span of time, and I feel there are many stones that were left unturned due to this limitation, particularly when it came to the type and number of experts I was able to recruit for interviews. It should be noted that should the severe lack of access to resources not have been such a debilitating challenge, then there also would have been much less time pressure, as I would not have had to spend weeks at a time merely attempting to overcome obstacles like paywalls. Unfortunately, I also had a major obstacle with physical resource accessibility

after being robbed midway through the project, which created numerous personal problems that took significant time and resources to address, but more notably, resulted in the loss of my only working laptop and the data that was on the device. I predict that all in all, this incident resulted in the loss of at least one full month of work and severely hindered the project, requiring me to dramatically downsize in scope in order to complete it within the allotted time frame.

Another notable challenge was the language barrier. Much of the relevant literature for my review was only available in German, and there was notable effort put into the translation of these documents, as well as the translation of data collected in the questionnaire. Interviews were also always conducted with persons speaking English as a second language, and although all interviewees were very comfortable in their English skills, this still may have impacted responses. Likewise, interviews with non-English speakers were not possible, limiting my sample. Even still, this language barrier would not have been quite as significant of a challenge had my institutional access to resources have been less of a problem, because many of the language challenges could have been avoided through access to translation software. Additionally, a lack of funding proved to be a challenge when combined with the inaccessibility of data and time resources. For example, if I had had access to funds that allowed me to forgo working for subsistence purposes or simply pay to overcome paywalls for data, I could have allocated more time to the project or more time for acquiring access to data.

There were challenges associated with the distribution and sample selection methods of the questionnaire and interviews (both consumer and expert). For the questionnaire, the sample size was disappointingly small (and too small to bear any real statistical value) and demographically skewed toward students and internationals when compared to the general population of Germany and Freiburg. Cluster selection and convenience sampling lower the precision of the results. Additionally, convenience sampling is inherently biased. There is also the matter of self-selection bias, which may have been prevalent in all the methods utilized, but was likely particularly relevant in the sample selection for the consumer interviews. Consumer interviews were also conducted with a very small sample size, and volunteers for these interviews were likely also biased since they were almost entirely people I personally knew and had social ties with. I am confident that social factors and observation bias played a role in this data collection, as well as the fact that, as one interviewee pointed out regarding herself, participants who knew me may be omitting certain information in the assumption that it is common knowledge between myself and the interviewee—especially

when interview questions reflected personal conversations I had engaged in with the interviewee in the past. Finally, regarding expert interviews, potential interviewees were extremely difficult to access. Most of my efforts to reach out to experts resulted in either no response, or a response relaying unavailability for an interview. My expert interviews were therefore far fewer than I would have liked, and covered fewer areas of expertise than I would have found ideal. Additionally, many experts desirable for this project were automatically disqualified as potential interviewees because of the language barrier.

Lastly, there are those limitations which accompany any attempt at synthesizing results with cross-scale dynamics. Referring to the analysis of such challenges as reported in Cash et al., 2006, these challenges can be grouped into those of ignorance, mismatches, illustration, and plurality. Regarding ignorance, cross-scale and multi-level issues are difficult to analyze even when observing one scale at a time. Indeed, "scientific research often focuses on a single level and rarely examines the interactions of phenomena, either social or ecological, that cross levels" (p. 4). Ignorance, therefore, is inherent to these analyses. There is also the mismatching of systems which typically do not overlap neatly and in ways that allow for clean and clear analyses. In this case, some examples of mismatching would include the global issues of climate change and animal exploitation existing on long-term temporal scales and large, widespread geographic scales, but consumer behavior and decision-making existing on short-term temporal scales and often very local geographic scales. Plurality issues arise through the "incorrect assumption that there is a single, correct, or best characterization of the scale and level challenge that applies to the system as a whole or for all actors" (p. 4), and any solutions which adopt this assumption often result in inequity and disparities in what is gained and lost by different actors. For example, the insistence on any problem being purely global or local is not only inaccurate, but could result in damaging and ineffective proposed solutions. And finally, illustration challenges come into play. One example of this might be in that expressing data in tables and charts implies a lack of interaction between depicted variables, or in how data is interpreted differently and with different motivations in mind depending on the actor and their relevant scale reference-point.

Importantly, I also find it relevant to include my personal positionality, particularly as someone who considered themselves to be a plant-based resident of Freiburg at the time of conducting this research. I do not claim perfect objectivity, or that my data interpretation is completely free of the influence that my life experiences have on my personal perspectives and research practices. In fact, I assert here my conviction in the near-impossibility of true, pure research objectivity, wherein lies my insistence on always considering the positionality

of those producing research. In that, I do not claim a belief in determinism founded in culture, demographic variables, country of origin, or the general past of a researcher, though considering these elements may be useful as a means of accounting for otherwise potentially unaccounted-for variables.

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Appendix

Figure 1 *– Frequency Distribution for City of Residence of Questionnaire Respondents*

City of Residence	Frequency	% (rounded)
Freiburg im Breisgau	97	51.05%
Dresden	21	11.05%

Berlin	9	4.74%
München	4	2.11%
Hannover	4	2.11%
Köln	3	1.58%
Frankfurt	3	1.58%
Barsinghausen	3	1.58%
Stuttgart	2	1.05%
Hamburg	2	1.05%
Düsseldorf	2	1.05%
Kirchheim	2	1.05%
Saffig	2	1.05%
Münster	2	1.05%
Lahr	1	0.53%
Stegen	1	0.53%
Landstuhl	1	0.53%
Staufen	1	0.53%
Saarbücken	1	0.53%
Zeil am Main	1	0.53%
Emmendingen	1	0.53%
Essen	1	0.53%
Leipzig	1	0.53%
Erfurt	1	0.53%
Röbel	1	0.53%

St. Blasien	1	0.53%
Oberursel	1	0.53%
Karlsburg	1	0.53%
Rockenhausen	1	0.53%
Thalheim	1	0.53%
Telgte	1	0.53%
Unterschleißheim	1	0.53%
Fürth	1	0.53%
Langreder	1	0.53%
Stemmen	1	0.53%
Umkirch	1	0.53%
Ehrenkirchen	1	0.53%
Friedberg	1	0.53%
Plüderhausen	1	0.53%
Kenzingen	1	0.53%
Lenzkirch	1	0.53%
Heitersheim	1	0.53%
Nienstedt am deister	1	0.53%
Zähringen	1	0.53%
Karlsruhe	1	0.53%
Kollmarsreute	1	0.53%
Müllheim	1	0.53%
Total	**190**	**100%**

Figure 2 *- How Freiburg residents described the food culture of their city in the questionnaire (n=97, scale of √n)*

Figure 3 *- How Dresden residents described the food culture in their city in the questionnaire (n=21, scale of √n)*

Figure 4 *- How questionnaire respondents described the food culture of Germany (n=111, scale of √n)*

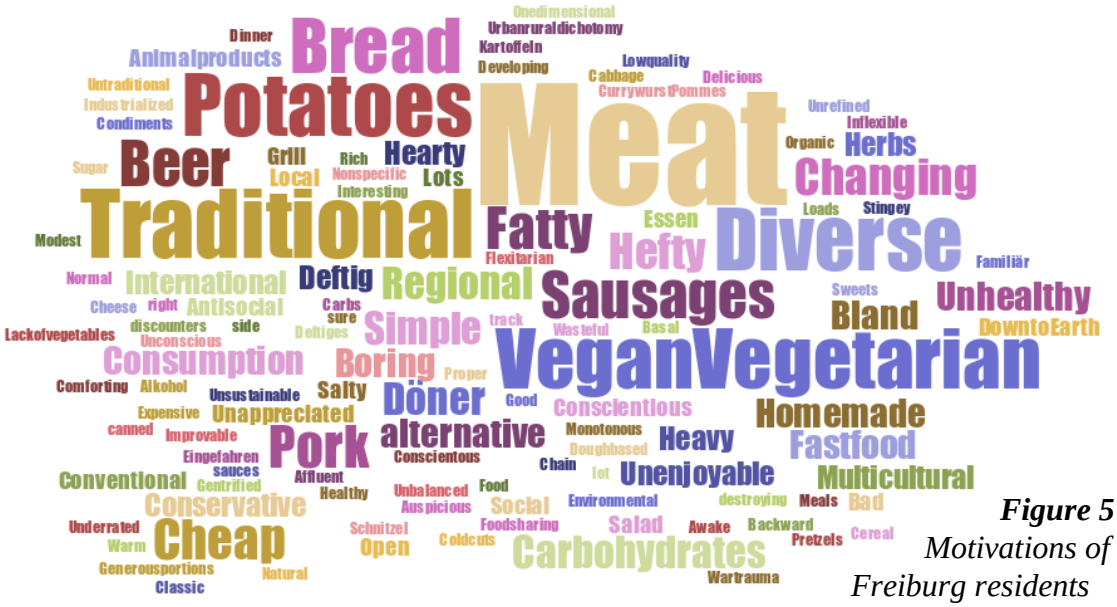


Figure 5 *– Motivations of Freiburg residents who self-described in the questionnaire as plant-based (or reduced animal-product consumers)*

Motivation	Frequency
Environmentalism	18
Ethics/Activism	15
Health	11
Animals	2
Convenience	2
Culture	2
Price	1
Social	1
Taste	1
Total	**53**

Questionnaire Q19 (Figures 6-9) - On a scale of 1-5 with 1 being 'very unwilling' and 5 being 'extremely willing,' to what extent would you be willing to have a diet with reduced animal-product consumption (namely meat, dairy, and/or eggs)?

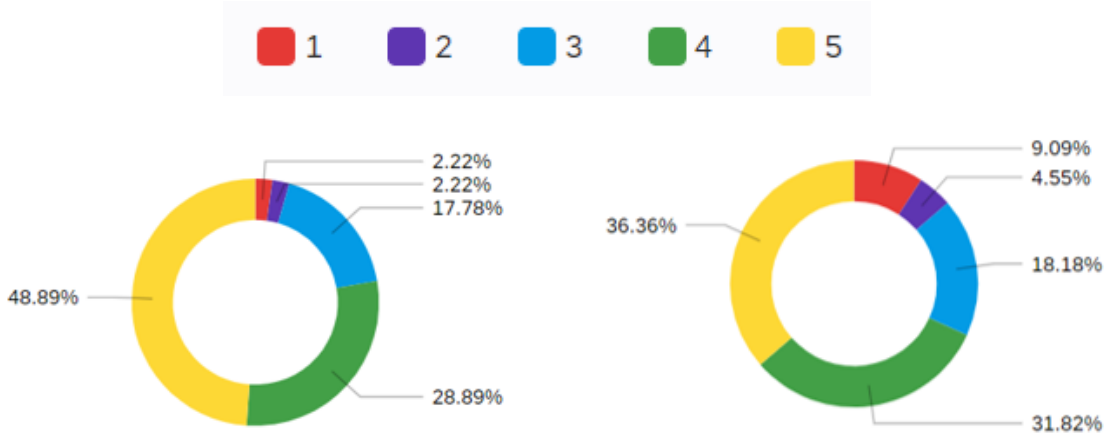
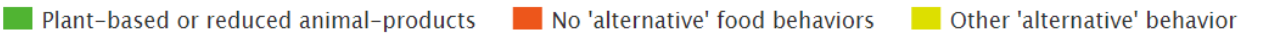


Figure 6 *- How Freiburg residents who*

Figure 7 *- How Freiburg residents who did*

Questionnaire Q24 (Figures 10-15) - Do you participate in any food behaviors that might be considered "alternative," or non-conventional? This might include dietary preferences, purchasing habits, or other 'non-conventional' ways of participating in food systems or food behaviors. Please describe. This may be a list of terms, complete sentences, or however you'd like to respond.



PB = Plant-based

AP = Animal product

Behavior	Frequency
PB or AP reduction	31
Other 'alternative' behaviors (not PB)	5
No 'alternative' behaviors	25

Figure 10

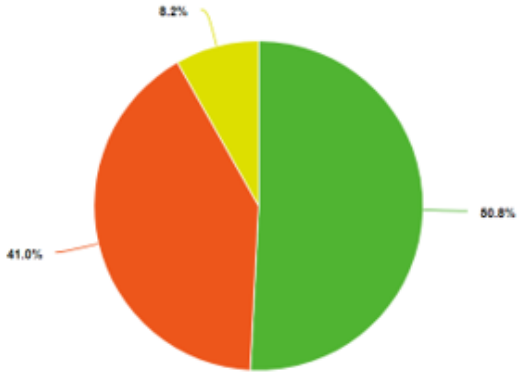


Figure 11

Figures 10 & 11 *– How Freiburg residents responded to Q24 (n=61)*

Behavior	Frequency
PB or AP reduction	24
Other 'alternative' behaviors (not PB)	4
No 'alternative' behaviors	14

Figure 12

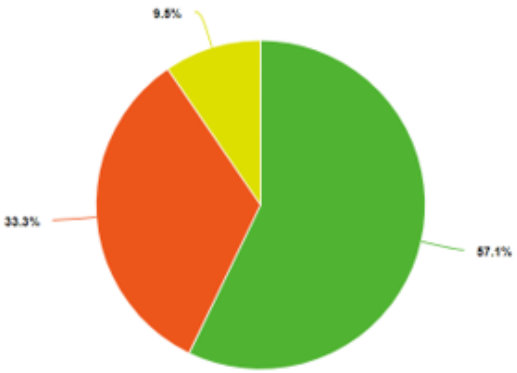


Figure 13

Figures 12 & 13*- How Freiburg residents who described Freiburg as plant-based responded to Q24 (n=42)*

Behavior	Frequency
PB or AP reduction	7

Figure 16 *– Hierarchical Value Map (HVM)*